Ecosystem Development Academy Transcription

Module 1: Foundations, Concepts and Ecosystem Framework

Lesson 1 - Introduction

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So let’s get started. There's plenty of information to cover so let's get started with that.

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First of all, the topics for today, we’ll go through, after interaction we’ll go into innovation megatrends, why startups, startups as a category. We’ll talk more about the terminology, look at the startup ecosystems conceptually. How is that kind of easiest to wrap your head around.

We’ll talk about typical organizations, their roles, the challenges with navigating ecosystems from different parties’ perspectives. We discussed about some of the key challenges with the siloed organizations and information from structural perspective.

And then we focus on getting more on the development perspective of the ecosystems and then look at various different key elements of that development from mapping to measuring to collecting data and so forth.

So this is the main topics for today.

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As a background information from myself, I have more than 20 years of entrepreneurship, innovation entrepreneurship behind myself through several ventures over the years, always building innovations, building those internationally, but also more than 10 years of developing local ecosystems and working as a mentor-advisor and also support service provider. So developing different support functions, instruments, funding tools, programs, event concepts and so forth, and really also doing the one-to-one advisory and mentoring for new startups in high volumes.

So really, to find also in-person experience and then combining that from a broad set of statistical perspectives and so forth.

Then also, in addition to working in different support organizations in a mentor and investor capacity as well, I'm also working with more like a higher-perspective instrument, specifically

when being part of designing European Commission Horizon 2020 support functions and funding instruments as well.

So this really has given a good perspective from various different angles and levels and roles to also contribute for the journey of Startup Commons.

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For several years, the overall development of innovation has been moving from this closed structures and into more open innovation and more collaborative ecosystems. There are still a lot of because a lot of the key organizations in the ecosystems are very old and traditional, sometimes more than 100 years old from universities and so forth. There's a lot of also structural legacy and structural history for some of how the organizations and some of the patterns still exist today, specifically around innovation, for example, around releasing IP from universities and research activities that are still, for the most part in the most part of the world, still very much built around the old closed-innovation processes where big companies buy the research IPs out of the universities with the model called technology transfer.

So a lot of those models still today haven't yet really changed to support the way the innovation really happens and where that research actually can become a commercial outcomes. So this is one of the areas where we still see a lot of challenges even today, even though we already know that a lot of the innovation that happens in the marketplace and innovations that get to the marketplace actually start and happen more and more outside of closed structures, both outside of big organizations, outside of big companies.

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It's also important when we talk about startups and ecosystems to spend a little bit of time in bringing clarity to terminology that is heavily used in this context. Some of the key terms are exactly ‘innovation’ and how that term is used and what does it mean to different people. We look this from the lens of how it's different from an idea.

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Also, we see a lot of the different terms or mixed use of the word ‘invention’ and ‘innovation’. There's a very big difference between these two words, but oftentimes for a lot of people who are working in developing ecosystems or support functions around startups and innovation entrepreneurship in general, oftentimes these terms are not used clearly enough and that can create a lot of misunderstanding in a broad scale, specifically if these types of unclarity is all the way at the policy level or funding instruments level and so forth.

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So the main difference between just an idea or an invention is that it is not validated that it actually has value. And what that means that it can be a really fancy or good-looking or interesting thing but the main difference is that it's actually not validated, so it's only hypothetical or theoretical value that is being described or communicated.

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Innovation on the other hand is validated. So that is the big difference what separates the 'innovation' word from 'invention' word. So invention is not proven in the marketplace. It's not tested. It has no value other than a theoretical value. Whereas innovation is actually validated. It is proven that it is valuable.

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And to open that a bit more, innovation is either a renewed method or process or business model or product validated to create new value compared to previous solutions. So the validation is really key factor to separate invention from innovation.

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And also that proven or that validation, what does it mean more specifically? It means that not only is the value that is created identified and validated but it's also because of that, to be able to validate, it is also known to whom or to what that value is being created.

So basically, it's not only the value itself but also to where that value is actually being delivered. And through that is also basically the validation of the actual value then also how that value is being generated.

Of course for innovation to work, it is delivering new value on a constant basis. So what value to who and how. This is exactly pretty much everything that startups do in the early phases is they focus on taking an idea or invention or research findings or whatnot and trying to validate that and getting it past the point where they know what value they can deliver, what value the idea delivers, to whom that value actually means something is valuable, and how are they doing that, so with what product or with what service or with what other method.

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And when we talk about innovation also, it's good to understand the different categories and types of innovations. So the categories, first, they can be iterative, lateral or disruptive.

Iterative is the most common type of innovation that you can see happening. For example, iPhone when it came out initially, it could be considered disruptive, but we can all pretty much agree that for the past years it has remained an iterative innovation. So just better version of the previous innovation. So it's iteratively getting better but it's not to be considered disruptive anymore. Now it's a new status quo on iterative development.

And something like Uber as a business model when that came out can also be seen as disruptive model that the actual thing that it was done all the time going from A to B, and even using the same or similar vehicles, then with Uber, the model was disruptive because it changed many of the other fundamental parts of the overall delivery.

The lateral innovation is then when you take an existing innovation where it is already known that we can deliver this value with this model to this group of users or consumers or companies. And we take that typically from one industry to another or to a different set of assets. As an example, you could take the Uber model and apply that for helicopters, or you could apply that for boats or you could apply that for a different type of setting and run a new company out of that and then you would be working with lateral innovation.

So these are the three different categories. And then of course as already mentioned that innovation can also be different types. So it can be iterative technology innovation. We're also applying a disruptive business model with a lateral process. [00:12:34] **Page 12 of 192** So in fact, the point is that the overall innovation can be also a combination or the overall delivery of that innovation can be a combination of multiple of these working together. So it's not necessary that it's only a lateral process innovation to a new industry, but it can also include elements then on the business model side or in the market position side and so forth.

Just a few examples in the technology business model process and positions, so taking from one industry to another or expanding to another country and so forth. But they can also be more of the types.

So it's really important how to very specifically understand innovation and then also more broadly the different types and categories of innovations because those are of course the parts that startups are actually building.

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What we have covered here has been this bigger transition that has been happening with this more closed innovation ecosystems into more broadly and more open startup ecosystems. And then we will dive deeper into what the startup ecosystem actually is about.

But generally, the visualization here is to communicate also where that innovation traditionally had been happening more, so through bigger companies and public sector organizations who have had bigger resources in past. They have been the ones really being able to develop those innovations where specifically the reason has been that it has been so expensive, resource intensive in the past, but with all of the technology developments and innovations on top of innovations with business models, with open source softwares, with software codes, free distribution, creative commons, general cost of technology, new platforms, new channels, new networks, the ability for anyone to innovate has gone down.

And it continues to go down more technologies, more advanced technologies being more freely available to more and more people, keeps feeding this open innovation side which most effectively happens in the form of startups and in startup ecosystems.

This shows really kind of the weight of the activities between different actors.

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So the old world used to be very simple and linear. There wasn't really multi-dimensional networks and instant connectivity to anything or instant distribution. There used to be no way of individuals to communicate to the whole world to be able to reach such audiences.

It used to be closed, expensive, less creative dependency on hosts and gatekeepers. And ideas and inventions and research by big companies that there was also more need and more use for things like patents and trying to protect those big investments that these big organizations have to put a lot of resources behind to protect their investments, to get enough time to get the products into the markets and so forth. But because of the accelerating pace of innovation and the cost, many of these things that come from past are less and less relevant methods today. Some of them still are, but also the way, for example, how patents are relevant, the business game around that has changed significantly from the original purpose. It's mainly something that the big companies can play with those, because also protecting and executing those patents are getting more and more expensive, whereas the innovation and protections through customer base and network effects are getting more achievable.

With this, we know that old models are already working at its best, so it's really, really hard to improve the old models without completely chasing them. That's what is happening in the market.

And specifically, these old models are extremely difficult to improve from outside, so basically we can't go if we want to as a government or public sector or bottom-up actors, which we can't just walk into companies and universities and say, “Hey, you should change your ways. You should do this and this differently.” But that can happen on the open environment where things are more dynamic and more independent.

So the old world really has less and less innovation impact achieved by outsider strategies and methods. [00:18:36] **Page 18 of 192** And the newer world, and this of course varies a lot depending on what countries or what cities you go, between where they are with this kind of older-world methods and approaches compared to the newer-world things already in place, because these transitions are measured in decades, not in individual years. So 10 years transition between these two worlds is still relatively short time. And there's big differences in these worlds around innovation in different countries.

So the new world is non-linear. It's global. It's very networked. It's fast-paced. There's free and cheap technology platforms, channels available for tiny companies to new companies, to even individual people. And innovation by startups is fast, it's flexible. People are highly driven, highly motivated, highly committed. But because of the lack of resources they have, in **counterwards** [**00:19:54**] they are extremely cost effective and they are more and more supported by private and public parties. So there's a constant support and there's also a constant demand for more and more innovation invited through these methods of new startups.

And this makes the whole innovation process more exposed to the markets. It's more open. Basically, as you can imagine in big corporations how they do innovations in the research lab and behind secret doors and NDAs and all of that where startups they keep running around in the markets, they pitch in events, they share their knowledge through blogs, they communicate openly a lot what they're doing, not necessarily from all aspects of their business but many aspects of their business.

And in return, they get a lot of feedback, ideas, people are able to follow, so the whole process how the innovation actually happens in the marketplace is more open to markets as well.

And a lot of big companies are working together and buying most potential startups, so the newer the big companies are, the more modern they are, the more digital they are, the likes of Facebooks and Googles and Amazons and so forth, so the more they work with startups.

I think we can all understand how Apple and App Store works with developers. That very similar analogy applies to how smart big companies are working with startups. They see that startups can deliver a lot of new value and a lot of new innovations also for their customers.

And once the innovations get validated and mature enough, they are interested in buying these companies. That is one typical way, of course, for standard companies to get exits and return of investments for their own risks and efforts as well as potential investors who have joined them as well. So it really is outsourced innovation for bigger companies.

And new companies, because of the side products, new companies are also the biggest job creators, because it's also logical that you need more people around to push and grow and validate that innovation, but even more clear is that once the innovation is validated and there is actually new value created, that new value is genuinely something that both require and can sustain those jobs, so basically there is a need, and at the same time there is value being created that can converge to resources to actually be able to sustain those jobs and develop them further.

Whereas if we think on bigger companies and organizations, that iterative development, while that may increase new value, typically it is only able to sustain value. So basically, there's an expectation that there is a constant innovation, because if there is none there is no ability to also sustain your business anymore into today's market. So there is no situation where you could just stay with your existing products and not need to do iterative innovation, but that iterative innovation starts to be to the point where that's not enough anymore.

At the same time, there's other innovations that come to organizations that helps make their operations more efficient and that actually reduces jobs because now, with these new technologies and methods, organizations are able to deliver the same value or iterative innovation with less resources.

So that is the challenge between where the jobs are created and where they are not created.

And of course these are not as black and white. There's always a lot of variety in this, but this point here is to communicate the bigger picture, the megatrends and their rationale and their impacts.

Lesson 2 - Why Startups

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So let's look at the startups a bit more closely. [00:00:06] **Page 19 of 192** And through the lens of study, now, it's already several years old, but it was a significant study by Kauffman Foundation [00:00:20] **Page 20 of 192** that calculated a very long time period of over 25 years, “almost all the private sector jobs were created by businesses less than five years old.” So really, new companies.

And this is not always startups. This also includes all the new small businesses and such generally new companies as well. So this extends broader [00:00:47] **Page 21 of 192** but, at the same time, during these calculated and measured years, “companies more than five years old destroyed more jobs than they created in all but eight of those years.”

So it's really [00:01:05] **Page 22 of 192** a statistical perspective as well.

And so we could stop here for a second to just check if there's any questions.

[**Speaker**: I think, Valto, that we can continue.]

All right. So moving to another aspect of the ecosystems, so looking from the lens of the digital economy developments, we all understand well the general thing that is happening in the business world now with the innovation and startups and so forth, but let's look at also, more specifically, another megatrend that lies on top of everything, not only of course the startup ecosystems and so forth, but the digital economy.

So in this digital economy, all the countries are competing to have the leading ecosystems to sustain their own economy. It can be achieved only when all startup ecosystem organizations and roles are well networked and there is a transparency of different actors in the field.

So in the digital economy, we can also see that startups are the app developers of the society as well, not only the business and the products and services but also for the public sector, and standard ecosystems in that context can be seen as the R&D department of a city or a country.

So there is no well-functioning startup ecosystem locally. It basically means that it's like missing an R&D department in a big company. So it is really important to get this also to the right level of understanding of the importance of that for the society.

So then what ends up happening if there is no homegrown innovations for all markets and to grow out from own markets to others, it also means that all of the new innovations and solutions are going to be bought from other countries and other ecosystems. So it's like becoming a consumer of innovative innovation at country level versus a contributor and creator of innovation to the market as well.

So it's really important from multiple different aspects for a country's economy, and specifically on digital context where the innovation and data spreads very fast. More and more countries are becoming very aware of this. There's actually been a lot of recent articles about this topic of how that is developing.

As we know from the startup world itself, for example, China has been an extremely difficult market for even the western giant technology companies to penetrate because there has been so strong protection of their digital economy from the Chinese perspective. And we can all look at from the perspective whether that is good or not, but it's clear to understand how important it is on how to look at how to position. We feel that open economy is still the right way to go and it's a way to expand, but at the same time it then at least requires you have a very effective own innovation and startup ecosystem to not become only a consumer of innovations for an economy.

So it's a very, very big topic but it's important that we go into the startup ecosystem development with enough importance and understanding of the bigger pictures from historical perspective, from megatrends perspective, from future progress, a future forecasting perspective and what is happening in the markets today.

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So this is the most recent startup ecosystem ranking from this year by Startup Genome. It's a company that does these reports. I think this is familiar for most of you. They do this research every year and they measure from multiple dimensions, and every year they introduce also new dimensions to get more **graduar** [**00:06:28**] representation of different aspects of the ecosystem.

But at the same time, this really shows that there is an ongoing competition and this typically gets a lot of attention every year when it comes out and people are really curious to see where the ecosystem is ranking and in what different dimensions, to what levels.

In a certain way, it's also a good external, neutral measure to get a pulse of own ecosystem as well. That also connects to one of the key topics for us at Startup Commons about the importance of data and measurability and information.

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So when we look at ecosystems, of course the analogy comes from the nature and so forth, but the term ecosystem is really to understand that it's not a network. It's not a community. It's not an organization. It is ecosystem for the reason that analogy tries to communicate the natural nature. That it's not to be controlled by anyone. It's not something that you should own. It's not something that you can call your own from the perspective of ownership, but it is something that is there always. So it always exists where there is activities happening with innovation and startups and so forth, so it's always there.

It is a type of infrastructure. If you can visualize it in your mind, you can see the different connections and so forth, so it really is the invisible infrastructure around all of those different actors and activities that are happening

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And when we look at startup, 'startup' is a very complex term. It's a very great term from many aspects. It's key also to bring clarity into the startup term itself. [00:08:56] **Page 26 of 192** And why startups are typically hard to categorize in traditional sense is because they are a moving object unlike the other categorizations of companies.

So you have a small company, you have a medium-size company, you have a large company, you have small business owners, solo entrepreneur, family businesses, micro-companies and so forth. [00:09:21] **Page 27 of 192** You can combine them with small and medium-sized companies.

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But their definitions really come from the old world so, again, this is stale. Not linear, not very dynamic world but something where we expect things to move slow and things to develop slow, and where the things are typically iterative innovation at best.

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Of course startups is a process of innovation and growth by design. So at any given time, it is a startup that we can call that, but at the same time, it does cross these different categories as it grows. So initially, it's also a micro-company at some point. It is a small company, medium company, and eventually it may be a large company if the progress continues.

Of course the target is to be a large company either by yourself or then the innovation or the startup gets bought out and it becomes part of the large company. So as such, they are not

easily cast, easily measured by the traditional structures that are based on the old ways of measuring and looking at companies. It's hard to look into any existing records and just find all of the startups because of their nature in the context of how companies are categorized.

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And startups are mainly beyond iterative innovation with growth focus. So they are more in the disruptive or high-growth business focus.

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To connect also on the other end of the growth, we have the term ‘scaleup’. And scaleups are often described as when it's past validation. It's oftentimes also combining that a scaleup is a startup who has grown.

But at the same time, when we look from this field, we have in the bottom corner we have also small business. And small business is of course something that we categorize that it's from the previous slide as well. It's more of a stale. So it can be a small family business or it can be a company that has been there for decades already, and so forth.

The dimensions here are whether there is a high growth ambition and a scalable business model or whether there is no growth ambition or there is no scalable business model.

And then the other dimensions are that startup with unvalidated business model and once they are in the scaling phase, they are operating with market-validated business model. So not only is the innovation validated in the market in a form of product or service that they're clear customers and they pay for the service that is delivered, they pay for the value that the new product or service innovation is improving. But they also have a market-validated business model, so meaning that not only they have a working product but they also have a working business model to be able to capture that value and feed that back into a future growth.

But the key point here is that scaleups can actually come also from small businesses or mid-sized businesses or even bigger companies if they are globally big but they may be still internationally relevant or mid-sized categories.

Typically, it is something that is not possible really by outside force, but typically where these types of things can happen where an existing company suddenly or surprisingly I would say becomes a scaleup, it’s either through, if it's a family business, either through a generational change. So the next generation when they get into an ownership or decision-making role, they have collected motivations and ideas or concepts or maybe they already have something in the

company but they haven't got all the resources yet to their possession to drive that forward to scale.

Or then the other part typically is that a company goes through a crisis, almost near-death experience, close to bankruptcy where they basically have nothing to lose in their existing business but they have, if they want to survive they have to come up with something new. So because oftentimes the companies that are doing okay and they're doing good and they are generating wealth, they're generating money for employees, for owners, individuals, typically people don't want to risk that. So the risk pattern is not there so typically there is no high drive to innovation.

Oftentimes, you may see companies that come and they start, they get into that innovation mode and then two years later, three years later they feel that, oh, it's now getting too risky. We have invested so much and we are not seeing any returns. And then they change the CEO and then they say, oh, we go back to the basics. We cut off these new ideas that were built here and we focus on our core business and we make our core business more efficient than it ever has been and so forth.

So those are some companies go through that same cycle back and forward many times, if you observe, over several years.

But the main point really is that these scaleups can also come from these existing companies, but it's less rare, but it does happen.

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And when we're developing a startup, and this is specifically important from anyone working on the ecosystem site to support startups and so forth, it's really important to look at them from a balanced development perspective, and make sure that the ecosystem supports a balanced development.

So the main failure factor for startups is premature scaling, which basically means that they go too far in any one dimension and forget to take care of all the other aspects of the company and then they end up getting in trouble because of those other aspects, not because of the part that was working really well but because of the parts that were failing.

So it may be too much money too early. It may be too many team members too early. It can be too much customers too early. Not enough support people to support those customers. It may be too many different products too early and not enough focus to grow with any of those products, and so forth and so forth.

So really looking at the startup development from a holistic perspective and when looking at ecosystem development, looking at ecosystem services development from a holistic perspective that it caters enough for balanced startup development.

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Then when we look at that startup growth in more detail and we look at taking that innovation more closely, typical language around there is overly simplified around having an idea then you launch it and then you scale.

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But really, the areas that oftentimes get less attention specifically from startup ecosystem development perspective or startup support functions perspective, typically, there is not enough focus on helping the startup to get a good team, a balanced team and validating that there is a team.

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There is not enough focus on properly structured ideation before going into product development. So really looking at are the best ideas already done or catered before we actually go into build mode, MVP mode, Minimal Viable Product development. So is the ideation phase properly handled.

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And then the validation. So skipping from idea to putting product out and trying to push that to the market is a wrong approach. So from idea to launch there is a whole validation of that potential, innovation potential that needs to be done. So it's really important to not look at such simplified approach, but really look at what are the key elements behind this.

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So moving on to the ecosystem framework concept. We need to talk about the startups properly and the terminology and the topics so that we can understand what we are talking about developing for. So when we're developing the ecosystem, startup ecosystem, we are looking to develop that ecosystem of course for the startups and to support that development.

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So moving to the ecosystem framework concept, so the foundational piece and we have what we covered so far about startups in about less than an hour, we have a separate growth

academy e-learning 26 hours about the whole startup development phases journey on top of this development phases framework, where we go deep into each of what happens in formation phase, what happens in validation phase, what happens in growth phase, from all the different various aspects.

And we connect all the key knowledge that the actual team members, the talent, the entrepreneurs and those business angels and so forth who take part in the actual ongoing development or longer-term journey with the startups instead of providing specific short-term service in their path.

And we cover all of the key topics in a structured way with that content. So we now have a very quick summary of those topics but this narrows down to the startup development framework that we have created to get this one-page visualization of all of the key activities and terminologies and identifying factors, how to know what development phase the company is.

And the first way to use this is to then also look at, for example, if we provide specific support service or if we will need to try to get startups from certain development phase to another, where should we look at that and what do we have in ecosystem that caters for that.

The reason why startup development phase starts from minus-two and not from the zero is that the point of zero is where it's not necessarily where companies form, it’s where the team commits to execute, so typically a shareholder agreement, where it's structured, the model, how the entity should look like, how the ownership should look like and so forth. And then the company may be registered later.

Or it may be the point where the company is registered but the point is that there's many things that happen prior to that that are part of the overall startup development journey that needs to be understood, and therefore also in the ecosystem, the support function should be available.

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If we just compare also the difference between an innovation and startup, [00:23:34] **Page 40 of 192** innovation itself, as we have discussed about this, innovation is about providing a new value generating product, service or business model to validated markets. Now, when we have validated innovation, we provide that to the market.

So this innovation of course can be any format. It can be product, it can be service, it can be a tool of some kind or a process and so forth, so in itself is not attached to anything.

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But startups they do both the innovation part to real business. So once they have validated that innovation, the product they have created that is validated, they actually deliver that as a business to markets, but at the same time, they also develop a new growing organization.

And the latter part here is something that often doesn't get as much attention. People and support functions and various different aspects are focused on the innovation and the business side, and oftentimes neglecting and not focusing on how does the company, how does the startup develop the capabilities to actually grow into markets. It's not as easy as let's hire people and they automatically know what to do and how that works. So startups have to do both of these things.

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And when we look at through the lens of startup development phases, there's two clear areas. And we talked about the balance, the premature scaling and how to keep things in balance. This is the minimum level of how to look balanced of startup development. So on one hand, they developed the business idea, or just a product idea in the beginning into a service product and ultimately a business.

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Then on the other hand, they take from talent, they build a co-founding team and then they have to build a scaling organization. These are the two different dimensions that needs to go hand-in-hand in balance. If these are offset or there's not enough support on the other side, it creates a big problem potentially in the future. So if either side gets too far too fast, that increases the likelihood of the failure of the company.

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So majority of innovation services and knowledge stereotypically focus on the innovation and market, yet all investors, as statistics say “team is key”, but where is the team support? How much there is support for team building for co-founder, commitment building, shareholder agreement, building, recruiting, process development for scaling organization and so forth. So it really is a significant typically missing part.

So a great team can make success out of average idea while average team can fail even a great idea. These are the common kind of phrases used to highlight the importance of the team side.

Focus on team instead of improving team building support activities and measuring the team ability to execute in addition to innovation, so really paying more attention to those who actually create the innovation, push the innovation, validate the innovation and scale the

innovation in addition to just looking at the innovation itself. And the key really is important to develop this in sync and in balance.

Lesson 3 - Startup Ecosystems

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So let's move on to startup ecosystems, to break that down and look at some of the fundamental piece. So now we have moved from looking at the startup company and the structure and the terminology, get the clarity on that. Looking at the startup journey, the development phases, the key aspects of how they develop and what they need to focus on developing in balanced manner.

And now, with that thought process and framework in mind, we'll start looking at the startup ecosystem.

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The main challenge with startup ecosystems are that if we look at them at the very early maturity level where people start to become familiar with the ecosystem term, they start to understand the concept and they start to look at the ecosystem. The first feelings that almost everyone gets regardless whether they're startup or support function or mentor or whatnot, that it's very confusing. There's a feeling that there's a lot, and at the same time it's very unclear what is the connection with this, what is the relationship with this, and so forth.

So a big part of startup ecosystem development in addition to thinking of what do we need in our ecosystem is to actually take index of that and really get more visual understanding and more proper structural understanding of what that ecosystem actually looks like and how it actually functions. [00:01:49] **Page 47 of 192** And when we talk about innovation entrepreneurship and startup ecosystems, we go through this, the visualization exercise to really go through this.

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So when we talk about typical old-school innovation in a bigger corporation R&D side, [00:02:14] **Page 49 of 192** and then on the other side we have entrepreneurial people, [00:02:20] **Page 50 of 192** so these two functions have typically lived much more separate from each other. They have always of course coexisted as well, but looking at that megatrend and shift of the old world and the new world, [00:02:39] **Page 51 of 192** we have the innovation ecosystem that is an ecosystem of its own, of course, because the innovations of products, like from technology transfer to one company to multiple companies and so forth.

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Or research and someone else takes that research, does something for that, moves that forward, eventually it matures. It can be an open source product or whatnot. So innovation can live in its own ecosystem and there is an innovation ecosystem separately to conceptually understand.

The same goes for the entrepreneurship ecosystem, the entrepreneurship the talent and so forth.

And in the innovation ecosystem side we have talent, we have theoretical models, scientist research. On the business side we have attorneys. So business side also represents market side. We have analysts, experts, planners, corporate people, attorneys, just to kind of give a flavor. There's of course much more and these are not any specific titles or such.

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And then on the entrepreneurship ecosystem, that of course also covers much broader scale and scope of entrepreneurs than just startups. So we have generally before they become officially entrepreneurs, registered entrepreneurs or companies, we have risk takers, doers, makers, multi-talents.

Then there's more on the market side, we have consultants, we have designers, we have developers, we have all kinds of business hustlers, so we have all types of different entrepreneurs exercising the entrepreneurial skills and opportunities at different scale from practical skills to different types of lifestyle businesses.

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And when we combine these two ecosystems, when we start to look at innovation ecosystem and entrepreneurship ecosystem, [00:04:55] **Page 55 of 192** together the startups are what is the combining factor. It's the best ingredients from both worlds optimally. We just theoretically consider it's like the optimal combination of best ingredients from both these worlds. Best findings, best ideas, best research combined with best market knowledge, combined with entrepreneurial skill set, motivation, energy, activity and then skill sets to combine and form startups.

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So other ingredients for startups we have, and in these roles we have big companies can contribute resources. We have advisors, mentors from bigger companies or outside of them. We have experts on specific knowledge from technology side, from market knowledge side. We

have talent. We have research. We have patents, other IPR, teachers, ideas, problems, ambitions, visions. So these are the typical ingredients that we can see.

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And really, the point here is that startup as its own separate legal entity that is being created encapsulates the innovation potential and entrepreneurial drive and team effort, not individuals but team effort in the separate own legal entity that becomes the startup.

And this is the connection where we talk more broadly about innovation entrepreneurship. So we talk about the innovation on its own. We talk about entrepreneurship on its own. Innovation entrepreneurship and then the form of how that goes to market is a startup because that's the separate legal entity that encapsulates both of these two elements into an understandable and investable format.

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So each of these ecosystems overlap. They are not clearly divided areas. They are all overlapping, but this is the point to communicate how conceptually they can be better identified and separated, but also understanding of to help making sure where the resources should be looked at and how do we kind of think what belongs into our area and what doesn't belong into our area. And this is not to put this in any order of importance or practice practice or priority. This is just to put them in a context of conceptual framework.

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So startup ecosystem it's the most attractive items from innovation ecosystem it's the most ambitious people from the entrepreneurial ecosystem. It's all the services, activities, items and people that are part of the startup growth journey. And those all combined are the startup ecosystem in a nutshell.

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So this is the part that we'll focus specifically. On the background we have the startup development phases as the overall framework.

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So when we look at them in general, so startups are sitting within innovation and entrepreneurship ecosystems, being influenced and fed by both ecosystems' best ingredients.

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And on those development phases, on the higher level we have these three key areas: formation, validation and growth. This is breaking this framework now in the context of ecosystem to really see that what are we looking that we are producing. I'm just using these analogies to communicate the concepts, like if we think ecosystem as a factory we have the factory as a whole, like the ecosystem. And somewhere there in the factory is the assembly line. The assembly line is where the startups go through from service to service to mature.

Outside of the service, the factory line you have remote setups that feed that different elements of the factory line. So this is the analogy to get in the head.

But the big difference is that that factory is not to be owned. It's not to be controlled. It's not to be controlled and there are many actually production lines there and they cross-cut and so forth but, for the sake of analogies, it's good to understand that there is an input and there is combined processes connecting to each other and there is an output, which is the scaleups of the growing companies and the inputs are ideas and talent.

So a formation a startup is born when the IPRs and the founding entrepreneurial team members commit to contribute to build the value and can confirm this value to be captured to a company with the founders shareholder agreement.

So there is some document, typically a shareholder agreement that defines what are the IPRs, what the company owns that the founders contribute, who are the team members, like who are the actual names. How many shares do they own? What is the ownership percentage? So all of those are documented. That there actually is a startup before there is a shareholder agreement created it's just a vague concept. Even if people talk about there's a team, but if there is no agreement, there is no team.

Validation. A startup is ready for growth after the core team’s ability and commitment to build and execute the vision is validated and product have cleared customer and market validation. So the validation phase is not only to validate the actual innovation in a form of service or product, but it's also to validate the team's ability and capability to execute and push that product and push that innovation to the markets. So validation is both for the market side and for the organization side.

And the growth area is about scaling and multiplying all required things that are validated to work in most efficient manner while having clear methods in place to actively measure and validate the scaling process and overall progress. So the growth becomes all about converting all of that knowledge that is created at the validation phase and scaling through a means of more team members and putting processes in place, replicating and scaling the business model that works.

So these are the three key areas to look at. It is important that that the services that are meant for the validation phase are targeted for companies that are actually ready for the validation phase and saying that they are ready for the growth phase. So it's important to find the right match with the services and the companies.

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But with this lens, we can really see ecosystem as a funnel. So the analogy from the factory product line but when we convert that more into more open concept, we really have the ability to look at through a lens of funnel.

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In this funnel, we can then start really measuring the effectiveness of the ecosystem by looking at how much of that funnel flow do we actually have in our ecosystem and how does the flow look like over a period of time from the lens of individual companies, from the lens of category of companies, from the companies that were started in a specific year, looking at three years later and so forth.

And with that, we can also look at what type of support services we actually have there to support these volumes, and we can get the sense of the measurability of the ecosystem.

And we have collected here a number, a statistical average from multiple different sources to validate that we have a round of numbers to indicate what type of conversions and what type of indicators we typically are looking at to get a funnel through. How many ideas and people and teams and types of companies we need to push through to get a significant scaleup company.

This is more to give a simulation perspective into when you look at your own ecosystem from this perspective, how do these numbers look like. And if you think of how much you want to get per year, then what type of support levels should actually be in place.

Of course, it's not that startups can't build everything on their own without any support. Of course they can, but most likely if they feel that kind of ecosystem, they most likely will move to an ecosystem where the support does exist. So it's not to say that support is there to create startups. It is to inspire and support and there's many ways to contribute for that, but of course it's the entrepreneurs who actually built the startups, but the environment matters significantly.

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And the typical organizations in an ecosystem include universities, advisory and mentoring organizations, incubators, accelerators, co-working spaces, service providers typically in a form

of private small companies, consulting, accounting, legal. Many of these organizations also themselves provide events, but then they are separate to those who just provide events. There are startup competitions, investor networks, VC companies, crowdfunding platforms, other funding providers, public grants, loans, startup blogs, business media that focuses also in innovations and new companies.

Economic development entities and other related facilitators and stakeholders. It's important to understand that the ecosystem is actually to look at all of them and not only look at university as an ecosystem or looking at one event organizer as an ecosystem. They are all communities and they may have, depending on the size, of course they can have their own ecosystem as well where that includes multiple different things.

But when we look at startup ecosystems as a whole, we need to take into account all of the different organizations, actors and services that contribute for the whole life cycle of the companies from before they are companies to when they are becoming significant, bigger companies already.

And maybe here also for sake of clarity also, some of these terms that come from a startup world, like the incubator and accelerator is one of the phrase where there can be a lot of inconsistency on what does an incubator actually look like in one ecosystem versus in another. And even more so with accelerators, like who—there is also definition for what accelerator is that has been created by the consortium of accelerators. Because there is sometimes those who call themselves accelerators that are just incubators that change their names, but their functions didn't really change.

And accelerator is a relatively new term, but it's not for our job to say what is right or what is wrong but to just highlight these different aspects that sometimes just because someone says they are something, doesn't necessarily resonate with someone who is looking for accelerator and then they come across something that doesn't match their understanding of what accelerators actually should be doing.

So this misguided terminology compared to what is a market average should be one of the areas to really pay attention as well.

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Ecosystem roles. So we have of course entrepreneurs and future entrepreneurs, so the upcoming talent. We have startups and ideas. We have team members. So another form of talent coming upstream. We have potential team members. We have ecosystem organizations own operative people. So we have support functions, mentoring organization, advisory and we

have all kinds of people there coordinating and supporting these organizations functions that also are directly interacting with startups.

We have experts and advisors, investors of various types. And then we have inventors, so those who don't even care to take their products any further but they are just happy creating new potential innovation in the form of inventions.

We have innovators similar that they like to create ideas and they maybe like to grow them to a certain point, but they don't really necessarily want to push them forward, or they do. They want to see some of their innovations more in the market.

You have mentors, researchers, supporters, other entrepreneurial people that are really proactive and engaging in the ecosystem support, but not necessarily entrepreneurs or don't even necessarily want to be entrepreneurs themselves.

And specifically, we see those in the US terms now in the form of ecosystem builders. So a lot of those individual people who are really, regardless of their organization where they work in a support function in a bank, in a government organization or in an incubator, they go way beyond their own official job or role. Very entrepreneurial, wanting to support and develop the ecosystem regardless of what the organization where they work is doing.

And of course they try to make that organization to do more as well. But even if they change their job, they most likely don't change their focus on entrepreneurial focus to develop the ecosystem. But these are more individual people rather than organizations.

Then other ecosystem stakeholders. So these are policy makers. There are those who have influence and they have impact for ecosystem but they are not necessarily actively operationally engaged. Development, financiers and so forth.

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So a startup, if you look at the startup ecosystem, also a bit more to summarize, the startup ecosystem is formed by people, startups in their various spaces and various types of organizations in a location, typically physical, a city setting or a virtual. That can also of course be built online, but it's a different shape. Interacting as an organic system to create new companies. And different organizations typically focus on specific parts of the ecosystem function and/or startups at their specific development phases.

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When we look at the interaction between the startups and ecosystems is that startups develop in startups ecosystems through the development phases in a constant interaction with various organizations, services and people. The more dynamic, transparent and balanced the ecosystem, is the more successful the startups ecosystem can create. So there is really this symbiotic relationship between these two.

And of course there are also people who change roles from being an entrepreneur to being a mentor to becoming back an entrepreneur to becoming an advisor to going back to being entrepreneur to coming back as an investor. So there's a lot of fluidity overall in the ecosystem to understand.

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Maybe I'll stop here to check if there's any questions.

[**Speaker**: We haven't got any question on the chat, Valto.]

All right. So just want to say to everyone that I know sometimes it can be a lot, but at the same time I encourage you, if you have questions on your own notes feel free to share those in the chat and we can cover those. But if not, we will just continue on the webinar.

So when we look at the startup ecosystem and the services in a more practical sense, we want to showcase the problem from two different perspectives. This is more like the real-life often startup entrepreneur or other individual people navigating the ecosystem, and then looking from the perspective of support organization providing the services.

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So a typical view from customer's perspective, so whether I'm a new talent with an idea or whether I'm already a startup entrepreneur pushing my venture forward, but coming from maybe another ecosystem, moving from one city to another or so forth. The confusion is that even if you know how to read ecosystem, like you know who is who and what this organization what do they typically do and so forth, but even let alone not having that, the typical challenge that you can come across is that there's a lot of organization and they also have multiple different services and, oftentimes, those services may be outdated, still available but not available, so still on the website but not available. Oftentimes because everyone wants to be helpful, they tend to cater for we do this and this and this and we also do this and this. But when you really look at maybe 80% of that goes to one service specifically or top three services. So oftentimes you may see organizations that try to do too much. They communicate too much and they're not very clear of what actually they provide.

And when you multiply this with the bigger the ecosystem, the more actors it is, the more confusing it becomes.

And because of this, you can actually many times see that even these individual ecosystem builders or those really active individuals, even as individuals they have tried solving this problem many times until they run out of resources or efforts and then it quickly becomes outdated. So you can see kind of this ghost lists in many places where the information exists but anyone who is familiar with the ecosystem can see, oh, that's outdated. Oh, that's not anymore relevant. Oh, that's…

And what happens when the next person who is very energetic and comes with the same problem, well, they may try to replicate the solution and they try to create a map and they try to do it. Sometimes this happens as crowdsource effort. It is an important exercise but there needs to be a continuum after that. It should not be repeated just for the sake of repeating, and typically in the same solution format by different actors, but not consistently making sure that the problem doesn't reoccur and there is actually a solution that keeps improving and developing and is always up to date.

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So when we look at the support organization perspective, we can basically simplify any support function into a process where there's a service process of some kind, whether even if it's a startup event, you go there, you acquire the knowledge, you acquire the contacts, you come out and you have more knowledge and you have more contacts. So that was the process that you went in. That was the improvement that you get. Led a long advisory process or accelerator process or incubator process, but you really should look at that as a process.

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And in this support organization's view, we have customers coming in, experiencing the process, the service. It may be two hours. It may be three months. It may be two years to be in a support process, but that's what this services are about.

Customers come in, typically the service people running the support function. They start from a perspective of where do you come from? Who are you? Where do you come from? What do you need? Do you fit our service? And then they engage that certain period of time, out they go. And oftentimes they have very difficulty to know what happens after that.

For the companies, the more volume they do, the bigger this problem becomes. At the same time, there's a very limited visibility of what are the other ecosystem organizations in the ecosystem.

So the similar limitation to see who they are as oftentimes, even though working there for a longer period of time, that understanding starts to develop, but also in support organizations people change. When people go, they may know when new people come in, everything is again a new thing. And needs to learn who are who and so forth.

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And there are many different customer journeys, so each of the startups may navigate different ways, so different paths, different roads. One may go through one path depending on industry or innovation and so forth. [00:30:51] **Page 74 of 192** And the customer experience is really through this service is that they are not really connected.

There is no clear path from one organization to another, and they need to navigate through. They may not even know about all of them. Oftentimes the support people they may know a couple of relevant organizations, but not all of the ones. And sometimes even the entrepreneurs or the startups when they come to support service the startups themselves know better because they just came from an organization and they just heard what services are being offered and what are the new things that are coming.

They may know more than the organization that they visit. Next, when they tell about this product and the next service may say, “Oh, I haven't heard about that,” so there's a lot of this disconnectivity between the information flowing and the knowledge about the ecosystem services and actors happening.

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In addition to that, there's a bunch of other challenges, multiple people with different needs, people from students to long-term civil servants, so very different profiles. Multiple organization types with different core purposes. So some only focus on entrepreneurship support. We don't support startups so we support innovation of all kinds and startups and so forth.

Multiple support services and service processes for different targets, so really big variety. Public, private, NGO, hybrid organizations and budgets. Oftentimes there can be project-based funding that allows to develop a service and then it's run for two years, three years until the project funding ends. And even though it was working great and everyone liked there is no continuum

with that project, a new project is created to get the organization funding so that the people don't lose their jobs, it's just a confusing thing for many.

Big, small and growing companies, constantly evolving innovative environment, variety of terminology, entrepreneurial culture, many different tools used by different parties for different purposes.

Limited availability of “real startup building experience”, and this is exactly why we have created a digitally distributable, scalable curriculum. We have an open source version of the whole curriculum, 900 slides, free to download from our website. We have the e-learning content and we have a certification model for increasing the in-person startup building experience training and knowledge there.

Success is based on volumes of new un-knowledgeable people joining, so basically meaning that not only new startups but new people coming to become a policymaker. New people coming to support function. New people coming from corporate background to support startups as advisory, but not having experience of building something out of nothing, but experience of running an existing company. Very different skill set.

So really a lot of people that constantly would not only training the new talent but really training everyone in the ecosystem repeatedly and ongoing basis in a scalable, repeatable manner, in a consistent knowledge format. Something that is not changing. Something that is more evergreen and applicable over decades of time.

Myths and wrong knowledge from startups and other regions. So consuming media perspective out of what's happening elsewhere versus then working on ecosystems thinking, well, our problems here are all unique and are just for us. And elsewhere, everything is working better. We should all understand that. And based on our experience of working with more than 30 ecosystems on the ground, we know that all the ecosystems are suffering from similar problems at different scale, excluding a couple of top leading ecosystems in the world that are in their own levels that cannot be replicated because there is no such capital available.

But when we look at thousands and thousands of cities across the board globally, the problems are not unique. They are very similar, depending on the different maturity levels of what are the most relevant problems at the time, but they are very similar everywhere.

There's no data sharing. There's no standard reporting. The KPIs and the metrics are random and not consistent year after year for comparability, for improvements and so forth.

So the good thing about these challenges of course is that there's plenty of field to work with. A lot of practical things to start working on, and not only looking at how do we get more VCs, how do we get more investors into our ecosystem. There's much more practical problems to work on that are much more solvable and much more tangible.

Lesson 4 - Ecosystem Development

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When we look at ecosystems as a whole, we can then start to identify the silos [00:00:15] **Page 77 of 192** and the fragmentation of different information flows and knowledge flows and so forth.

Before the ecosystem concept comes to people's minds, which is very hard to avoid these days anymore, but several years back, the ecosystem concept was very unknown. But because people's experience were so interconnected and so multi-dimensional, the concept of ecosystem is very easy to see and feel, but I think more exposes the old world and the problems with the old world.

The silos is the big problem, and there's smaller silos between making strategies in specifically like big public organizations, supporting versus what happens, actually what problems also, what happens in the organization level of advisers and mentors and providing a service versus what is happening in the policy making or next year's process or next year's funding cycle. There's a silo there and it's similar than in elsewhere more on the bottom-up **than top down** [**00:01:38**] actors.

With plans and reality, because oftentimes plans are created now and they may land in the markets a year later, two years later. The market may have changed in their consciousness, so gaps it will create that.

Services and customers. So those services you want to offer, because they have funding from EU or they have funding from other external financier, but what the market needs or what the customers would like to have.

Short term and long term thinking, mixing too much because different people have different perception out of what is short-term and what is long-term.

Separation between business verticals. So having like, okay, we have healthcare ecosystem for startups and then we have IoT ecosystem for startups and then we have Smart City for startups. And then when you break that down, everyone's trying to do all the different services and just having used the label on top of them, and that creates silos and replicated work and duplicated work in a local ecosystem setting versus having those on the labor phases on the scaling basis where the industries become more relevant but in the earlier phases they just create silos and separation.

Public and private, how to find the balance between the private organizations and public organizations because of the collaborative effort.

Top-down and bottom-up mentality. And then the bigger ones are the silos between support organizations, specifically with like continuing processes. Continuing from one organization to another organization.

Silos between cities, specifically where we have cities that are like neighbors connected to each other while the people between these cities feel that it's all the same. One area, such distance and connections that matter. The city policymakers may build a competitive game trying to get more economic development and more startups here, and services there are not being collaborative. The same between countries, silos between competing countries versus collaboration, again, specifically between neighboring countries.

So it's really not, in a certain way, instead of looking to compete is to looking to expand the ecosystem to include more countries. I can say that that has been one of the very positive developments here in the Nordics because all of the countries are small between Estonia, Finland and Sweden and Norway, finding more and more the organizations, specifically private or non-profits find more and more collaboration across countries.

Between local and global, so looking at the bigger global competitive ecosystems versus local ecosystems, the silos between non-digital mindset and digitally-oriented mindsets. So a lot of very clear separation that can be seen between those, specifically in software applications, information flowing from one application to another other than through people sending you PDF documents or Excel sheets and so forth, and databases.

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So when we look at we have the perspective of the existing structure mainly coming from the old world where things are more linear and everything is nice and clean in their own boxes to more connected, more digital world. And with the mindset of ecosystem here as an invisible infrastructure, we can start looking in those silos and seeing, okay, this doesn't make the ecosystem good or great. So how do we move into breaking those?

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One of the things is that we see a lot of effort behind people wanting to make these changes, but often the execution doesn't follow. So saying and reading doesn't make it happen, meaning to talk about collaboration, coming together, talking about it and agreeing and then going

separate ways and then meeting again two months later or one year later saying, okay, now this time we really need to work together. And again nothing happened.

So this is a type of repeating pattern that tend to stick. And the only reason really is missing the methods of moving forward rather than the willingness. When the willingness is there but nothing happens there must be something else that stalls that.

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So why is it so hard? If there is no natural way that collaborating fits to ongoing operative responsibilities or activities, it simply will be overdriven by other priorities. So basically it means that this is operating and so forth, this is very important that when I go to my office I have all my immediate short-term action things and so forth that it easily overtakes.

If there is no clear shared vision, it's hard to contribute and stay motivated. So if there is no direction that we can see and measure our way making progress then progress for the sake of progress doesn't feel like progress if there is no way of measuring are we making progress and what that progress looks like.

If there are no support at all levels in the organizations wanting to work together, so if there's only support by people on the bottom-up activities on the ground they want to collaborate, they will but it's very limited and it's not long-term and it's not even necessarily fully supported.

So there needs to be support at all levels, operative level, operative management, strategy level, funding level, and then much more smarter collaborative activities and a longer-term development can actually be put in place.

If there are little or unclear results to show from these activities on how those connect with other priorities, it will simply be overdriven again by other activities. So if there's no measures in place or if there are wrong measures in place, mainly using the internal metrics of the organization to measure collaborative outcomes of two organizations, it's clear that those measures will not work and don't show good results compared to focusing on the activities that you can control in your organization.

And for sure it takes extra effort compared to what's at hand. So it's always easier to fall back into whatever is on the table or waiting on the email and going there and feeling very productive and making a change, but it's a different level happening inside the silo versus what could be happening in building ecosystem collaboration.

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So converting those challenges and the opportunities, so only real operative cooperation actually works because of having shared targets with distributed roles and responsibilities between two or more organizations. Shared working space and/or tools physical or virtual, temporary or permanent, or more or less temporary or more or less permanent meaning that behind of all of these there are great examples around the world, inside even city officials having a internal co-working space where they get cross-teams working there for a certain period of time of a year periodically. And then going back and really that way helping to bring a totally new dimension between the collaboration.

Shared processes, benefits and, most importantly, measurable outcomes. So you get what you measure. And if you are measuring the collaboration outcomes versus your independent outcomes, you are looking at more correct measures for these types of activities.

Commitment at all levels. So really get the buy-in from the organizations at all levels and something that applies, that it is a priority for everyone. If it's only a priority at the operative execution level, the management will softly guide it back to doing the efficient parts that is on the management priority level.

The key here is that it doesn't need to be an organization but a “shared thing” developed together from own perspective, but where there are collectively recognized benefits as well. The simplest generic format that has been proven many times on the marketplace is how open source projects and software works.

Be part of the internet, including all the mobile phones. Majority of them are running on Linux, in different formats of Linux. Android is based on Linux. All of the internet connectivity server softwares, majority of that runs on Linux, including all Microsoft site.

So that's an open source project going well. And there's lots and lots and lots of other open source projects. The format of that is that there is no structured organizational ownership on top of Linux. There are some open source projects, like Android, how it's been made very strongly about Google, a version on top of Linux.

But Linux itself and that's exactly why Android can exist is that it's not owned by an organization and it's not constricted by organization, but it is a shared thing. Everyone benefits from it. Everyone can contribute to it, but it doesn't need an organization to get things to work in a collaborative way. The key is that there is a shared thing, whatever that shared thing is made to be.

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But startup ecosystems can be identified. They can be mapped out, like so many mapping exercises have been done out there. Some more successful, some less successful. But it is a necessary piece of the development work, but it should not be one-off exercise and it should not be left to get outdated. It's one of those potential shared things, but it needs to be treated as shared things not an individual effort.

Ecosystems can be measured, therefore because they can be measured they can be developed and, for sure, they can be improved. And there's many ecosystems in the world that are improving, some faster, some slower, but for the most part all of them are developing anyway with different efforts. And we'll focus on those on what we see as the most universally applicable approaches these days.

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So let's move to the developing of the ecosystems. [00:15:18] **Page 84 of 192** And some of this knowledge that we have started to develop and document the knowledge more than 10 years ago and then as part of the ecosystem development activities to build the consistent approach and find the proper frameworks and so forth. But even so, only through having worked with, for the past five years, more and more with ecosystems on going to other ecosystems to learn with them, to develop with them, to measure their progress with them, and to see some of the challenges , bigger problems that only replicate themselves after a few years.

So you don't see them in even inside one year, two years, not even necessarily inside five years. But when you have worked long enough, you may find some interesting insights, and we have included those here as well. This is one of the key parts.

But before that, when we look at typical ecosystem development initiatives starting, there's always this perspective of is it is it a bottom-up action or is it a top-down action, [00:16:48] **Page 85 of 192** and which it should be. And there's a strong, strong consistent perspective mainly because there has been books read about it. And they are the first books out there popular about how important the bottom-up is. We fully agree it's extremely important and it is the driving force behind many great ecosystem developments.

The challenge is that sometimes bottom-up is hard to initiate and that usually leads why top-down action, so coming from policy-making government side, comes the push to initiate the development to begin and to start. And sometimes that is not positively responded every time or it is put in the category of whatever the government has done last time at the previous time, at the previous time, and to say, well, this is going to go the way that that goes. And people can pick positive example, negative example, because there's plenty of examples out there.

But regardless of which is right or wrong, it's to get the development to start and to move forward. They are more both very much needed and the key is to find the right balance and [00:18:14] **Page 86 of 192** collaboration between what the bottom-up is best for is quick action energy, short term, let's get one version quickly out. Let's test it similarly as quick early startups compared to big companies.

But what the long term perspective requires the top-down, the policy making has an impact. There are some things that may take maybe a hindrance and it cannot be changed by bottom-up action. Like if you need to change the law in your country or in EU or whatnot, it doesn't happen. You can put as many people being very, very active and energetic, it will not happen easily from their perspective, at least without getting the top-down actors behind that. And also supporting it can start from there. It's a great place to start but the key is that these both need to work together.

At the same time, there should be more support provided for the energy, and specifically, for example, the ecosystem builders, those individuals who work regardless of the organization they are currently in or in between organizations, how they can be supported also from more sustainable actors of the ecosystem.

So there's a lot of balance to be found in here, but [00:19:50] **Page 87 of 192** there is a lot of [00:19:52] **Page 88 of 192**challenges of building this collaboration, specifically not only bottom-up and top-down, because those exist on both public side and private side, but when we look at specifically the relation with private side and public side, there is this dependency, obviously, that comes from economic perspective.

So private side, early startups need support in form of innovation policy, facilities, channels, knowledge and non-core items, so basically everything that there isn't in place or things that they are in place, and when they are successful they contribute value, equity, innovative solutions, jobs and taxes.

On the public sector side on one hand, in the beginning there's a lot of want and willingness to support more innovation and growth for economic development to happen and try to push that to happen more. On the other hand then on the later phase when things are more mature, this needs development, growth and tax income to maintain and improve a good society.

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And when we look at the frustrations on both of these sides, we can see that there are, on private side there's a feeling that we can't really get—we can't influence, we can't change the rules that are applied, we can't change the taxing, we can't change some of these things that

should be changed. Or we can't change these funding instruments or the restrictions that are behind these instruments.

We can't financially sustain or justify early phase support needs and expect it to have clear agenda to drive own or own sector interest.

So when public sector looks at—it's hard to see private side being genuine even when they are genuine in their suggestions. They have low-based history and so forth to how that impacts and how it's hard to look at that perspective.

And then when we look at on the public side, to really understand what or why changes are needed, also supporting different agenda. Commercially unsustainable, long-term or too high-risk areas are natural public support areas. So when we look at similarly this project-based cases, the project funding for public sector to create new services and so forth or public sector to initiate an incubator or accelerator when there is none in the marketplace by providing funding for the first ones while they're being target of privatizing those later.

And on public side, it's expected for private side to drive common interests. So there's really these types of things that are frustrations and friction, but the only solution is really to bring more dialogue between more parties and open discussion moderated by topic-knowledgeable outsiders. So bringing perspectives from outside of home markets is a way to get on specific topics, meaning specific now in context of startup ecosystems to really get a perspective on the matters. It can be really hard to get a neutral perspective and view from own ecosystem.

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When we look at these startup development phases and the support functions needed in the ecosystem from the ecosystem perspective, the earlier development phases they are, they are typically public services and public-funded services. And on the later basis it becomes more vertical specific private service providers and private investors and finance.

And when it comes to what the startups need, what is more valuable in the beginning part of the development phases, the knowledge is by far more valuable than the money, and later it becomes the money becomes more valuable together with connections and market access in addition to knowledge.

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And when we compare the ecosystems also from the perspective of geographical ecosystem, so geographical being a city or a broader city region or a country, a small country, or a state, and on the other hand when we look at vertical that can be like finance market, healthcare or so forth

as a vertical. And of course there are several verticals, [00:25:58] **Page 92 of 192** so the more of the ecosystems kind of this overall relevancy, the earlier it is, the more it tends to be locally geographical focused ecosystem that we should kind of look from the development perspective.

And the more global market we go and the more private side we go, it becomes more business vertical, becomes more relevant because now the companies are growing out. They're like teenagers. They're leaving their home. They're leaving the security, the support services and now they are there on the markets on their own. But now, more and more important are the business vertical ecosystems.

And of course these overlap, but it is not effective and healthy if there's too much vertical, business vertical focused support activities in very early development phases of the company. They benefit more from coming across with other industry knowledges for the innovation, and also the people who work on the support functions have much more knowledge to give than only for the business vertical focus. At least that's how it should be considered.

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And when we look at more of this global competition aspect and we look at how cities and countries compete, this is a typical perspective of how the ecosystems wd like, and specifically the public sector, how they would like to see happening with their ecosystem development that more talent can be attracted. And specifically companies formed in our ecosystem and headquarters that brings taxes and so forth.

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But when we look at business perspective and we look at the startups perspective, they really want to be, once they get comfortable they feel that their company presses wherever that may be right for them is right for them. And if the ecosystem is good for them, they typically want to be there and stay there. If not then they will shop around and find a better ecosystem.

But after that, they are not really interested in shopping around. Once they have established and they are on the marketplace they are not interested in shopping around and moving their headquarters. That's not interesting. That's not beneficial for them if they are pushing innovation that is scaling value. The saving on city location is not their primary concern.

But what they want to do is they want to be able to effectively be present in as many ecosystems as possible. So they want to have offices. They want to land. They want to learn. They want to partner. They want to spread and expand their business in many ecosystems. So more of that support function should be catered for making their business run.

And then if they also feel that actually this is where all of our management wants to spend time, maybe they move their headquarters there, but that should not be the primary target. It attracts one type of competition between ecosystems and cities.

And I would say one of the most visible case was in US market when Amazon started to shop around for the second headquarters inside the US states where they would go. And there was such a financial competition by the governments of that that it didn't—the outcome was not positive, I don't think for anyone. Not for the city, not for Amazon and, for sure, not for the general public that didn't feel it's right to give such huge incentives to companies that are already doing okay, I would say.

But the key is to understand these dynamics and think of the ecosystem communications and these competitions from this perspective.

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So the shared global reality is any way that companies and startups will move wherever they feel is most fitting for them. It's no more complex than choosing your mobile phone carrier or your cell phone. There's a certain pain. Maybe it's at the level to change your insurance company, but for sure it's not that hard if companies want to move.

So the key is to not try to stop them. The key is to make them feel comfortable, make sure the ecosystems are catering for the needs. And maybe selecting specific type of companies or specific verticals where there's clear strengths for that.

So that's the shared reality anyway, so the key is when you when you focus on making your own ecosystem great then it will attract. But if you focus on attracting and your ecosystem is not that great then, most likely, you have more leaving than you are able to incentivize to move in.

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So when we look at then how these two overlap, it's important to understand the geographical ecosystems and the business vertical ecosystems are cross cutting [00:32:03] **Page 97 of 192**, and understanding that these business verticals, specifically cut across multiple cities, city regions and countries. And this is the right type of perspective to look at the business verticals in a location in the city, and really what type, how to, from this lens, how to best organize most efficiently the support functions around ecosystems and the connectivity using the development phases as the framework.

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And when we look at the ecosystem from a segment's perspective, again on top of those development phases, on product side we have of course the ideas becoming products and services to become actual businesses. And on the organization side we have the talents become founders and the organizations.

And of course these two lines for the startups that go through the different development phases. And some of the support functions, like business advisors or investors for sure from where they joined the company, they typically are for the longer path through these development phases with the entrepreneurs, including the talent and the team that grows.

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Then when we look at the support functions we of course then have the matching support functions on development phases, but the key is really to understand that there are two clearly separate categories in addition to these development phases, focusing on ideation and product design in the beginning on the product side, then to actual product build, product validation, business model design and testing, and then finally product scaling, business model validation for further expansion.

And on the organization side we have educating the talent, inspiring them with entrepreneurial mindsets, co-founder matching services. And then we have team building, training for different various aspects about startups and validation phase, mentoring, city investors, expert matching. And then we have VC investors, corporates, international partnerships, international delegations and so forth. So these are really key categories.

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When you look at the ecosystems, [00:35:05] **Page 102 of 192** similarly as they are the startup development phases, the ecosystems can be put through a lens of maturity assessment. And we have used this format by this capability maturity model from Carnegie Mellon University. And we have converted the format into an ecosystem perspective versus an organization perspective.

So a maturity assessment can provide a useful information on an organization's capabilities. And this type organizations as combined ones, so this is for the organization perspective.

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But we have then used this model to apply more into ecosystem terminology and perspective. So we have the ad hoc to intuitive, defined, managed and optimized.

And when we look at this from the ecosystem maturity level, looking at what are the key—so basically, you could call this a lateral innovation of taking a concept and then applying that to ecosystem maturity, [00:36:32] **Page 104 of 192** but then really looking at what makes that clear in the ecosystem terminology.

These convert into awakening and manifesto. So that is more of the organization actors collectively coming aware about the ecosystem and starting to write a manifesto type of activity. What should be done? We will do this. And kind of building that that joint mission for the ecosystem.

The next development phase as a collaborative effort of maturity is when there's clearly mapping exercises happening, not independently but collaboratively. And having a more defined vision, not only what we want to do but where do we want to take it. And really kind of start looking at the development more as organized, aligned mission instead of individual we want to improve to get there and we are all aligned and contributing our own ways to get there.

And then after that comes actually then where they are aligned and they are actually executing those development activities together and measuring that progress. And you can find that these activities are happening. So when we go into an ecosystem development workshop or we do underground activities, we assess to get to where the general consensus of all the actors is where they are currently with their ecosystem and we look at that from a neutral perspective.

And then finally the last piece is that there's effective orchestration for the ecosystem activities. So not only pushing forward but also making sure that all of the different aspects that are not necessarily all active in the ecosystem development per se, but contributing for that understanding and helping to orchestrate. And then ongoing iteration with the long-term perspective that the ball is not dropped or the development activity, something that was created it's not disappearing, and then two years later, one year later reemerging and then starting from one year back. Because the policy makers need to understand what is a startup or the new people coming into play have no visibility what the ecosystem look like so that those are passed and moving forward.

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And with this, there is more specifically detailed descriptions. I'm not going to go reading this through, but these are four materials to be shared with you.

Lesson 5 - Ecosystem Mapping

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Then moving on to the ecosystem mapping. With the ecosystem mapping there are multiple different ways. Those have been done and, as mentioned, there's probably as many ways to map than there has been mapping exercises done.

And just like with all the other different aspects we have looked not only like from our own experiences but all the different works and finding where are the most effective and logical ways and then looking and combining those into the framework that we have structured , o that all of the individual pieces that you can find from Startup Commons they are independently effective but you can trust that all of those are connected with each other. And combined, they are even more effective, so it's like a suit of things that are all structured around same logic and same ecosystem framework.

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So for the mapping exercise, the top level steps to ecosystem development is map out the starting position, identify and fix gaps and bottlenecks, implement measurements, iteratively improve, measure and learn.

Usually where the things start and often also end is the mapping of starting position, and that's it. And therefore, okay, we have done it and that's it.

Sometimes, it continues to identifying and fixing gaps and bottlenecks. Maybe there is like identifying 25 things, maybe two of those keep moving forward and get fixed, the rest of them are forgotten. And someone creates that list six months later or two years later and the same happens again.

So these are kind of the main challenges that need to get past this repetitive replication of same solution in different years.

And implement measurements is already very, very rare that there are shared measures used for the ecosystem development or that they are created but they are not implemented to use.

And then this iteratively improve, measure and learn is the hardest part. This starts to connect back to what I mentioned that took us—we had to see this repeating several times enough in same ecosystems until we could say, yes, this is a repeating pattern that we see, before we can say that, yes, this actually does happen.

And in many ecosystems, those ecosystem builders or developers who have been there for long may have seen it in their ecosystem and got frustrated by thinking that that doesn't happen in other ecosystems, but it also does. So this is really to move past this.

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But we need to go through the mapping or update the mapping, what is there. Or aggregate the mappings that are there into something that can be then made that shared thing that could, like if there's three different mappings done, the effort should be to try to merge those and then all those three actors together push that mapping forward. That's of course the approach.

But to describe the ecosystem, to map the ecosystem level, common language to label, startup services, events, funding instruments, blog posts, tools, ideas and so forth. So the key being if there is no any other thing that should be shared terminology as a collaborative thing. So we can all understand that if we wouldn't have English now as shared language even though it's probably not all of our native language, it works. So we need to have a similar clarity in our ecosystem development. We can use terms that for different people mean different things. If I said ‘red’, it can't mean ‘green’ for you. Otherwise, we will not get to the same direction.

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So having the services, so you can use this development phase as a canvas, as a blank canvas [00:05:07] **Page 111 of 192** to look first through all of the different services in the ecosystem from the perspective of building services, products or supporting this development side.

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And we can look at building team, skills, commitment, organization, values, cultures, agreements, business processes and so forth.

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Then of course we need to map both of these and we can use the development phases to bring hardcore clarity to make it clear what service is meant, for what purpose, for what development phase, where you are as a talent or as an entrepreneur or as a startup. And this is very high level, but it brings that crucial dimensions of the development phase and the separation of these two things. It can be many, many different ways to go even more granular but it's a lot of value if even this simple high-level separation is used to make the services clear.

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So as a workshop session or as an independent project or hire people, consultants coming to do this effort doesn't really matter because it's existing information, putting it in the package, checking the information that it actually represents the right things, and putting those into place. Or asking every single organization, online exercise to put themselves in the map and then centralizing, collecting that.

Or doing a crowdsource exercise. Many of these things have been done before so that's not a challenge as such.

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It should be looked from the services target perspective. Again, idea creation, idea validation, product creation, product validation, team formation, team validation, attracting and inspiring and really making, helping everyone to understand what is the target of your service and to help find where does it fit on the development map.

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And when we look at kind of the cornerstone organizations, those are there but of course some of their services or some of their departments may extend much further. But we have typically higher education organizations feeding the talent and IPs or research findings. It's not limited to that by all means, but it is one source.

And on the other side you have big companies who are looking for outsourced validated innovations in a form of buying the company. But they are also interested in entrepreneurial talent regardless of whether those startups are successful or failed. So they want to find people to their organization that help drive entrepreneurial energy and knowledge talent that comes from being exposed to the markets and bigger challenges than just coming from education alone. So there is always a demand for entrepreneurial people whether they succeed or fail, at least in more mature ecosystems where failure is understood as a learning experience rather than a failure as a negative thing.

Then there are also funding and financial organizations that may have instruments themselves for multiple different phases or different funding organizations in different phases, and of course government is always there from when you're born to when you die and so forth. It's always there also in this context.

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And in between here is where the ecosystem lives with its startups at various development phases, the actual entities and the people, the talent the entrepreneurs, businesses and so forth and the support organizations and services in the middle of the mix of everything.

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So the general approach to kind of what type of services there should be this like generically available services being those like mostly event formats contributing different types of knowledge, but that are not time consuming. It's like “service buffet”. You go and pick what you need, when you need, what you feel like and focus on basic learnings, inspiration, and exploration of ideas for challenges or problems being faced at the moment.

Then you have the acceleration style format, which is for most potential ones. Fixed time period format, dedicated and planned services, focused on execution. And the key is that the acceleration phase is after where there's a commitment, ability to team to execute for a period of time on their product, because the acceleration style doesn't work if people are not there or they have to worry of other priorities. They don't have money and time to focus on the staff.

On open services side, they are more like startup weekends or all that type of areas.

And then showcase when there's a scaling phase, best startups for investments and inspiration for new talent and new entrepreneurs. But the focus on this area is for scaling.

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And the types of services was a little bit mentioned, but here's a section of connecting, quality, research, IP with the startups that rarely have those. It's usually not. It may happen in the form of companies that are in the connection of universities or students or the researchers but doesn't expand a lot so that entrepreneurs outside of universities would be connected effectively with the IP that the universities would have, for example.

Canvas workshops, basic website builds, presentation builds, so the type of services and just to give a generic highlight. [00:12:18] **Page 123 of 192** But then when [00:12:21] **Page 124 of 192** we really do the mapping properly, we can really put the services, like in every individual service we can put specifically for where does this service want to start catering for the company or the

individuals and where does they should exit from the service? So where does the service process start? Where does the service process end? And then what is the connected services and so forth.

And of course many startups consume multiple of these services at the same time, but they should be consuming services that are same time at the same development phase that they are.

And here is an example of a mapping exercise. This is already several years back. Some of these services are relevant, some of them have changed names. These are collections from multiple different ecosystems, but this is just an example of how the mapping can look like.

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Then of course when you do the mapping, then the next level beyond like getting it at that type of high-level format of what's the service name, which part does it belong to and what development phase is then of course to collect the key information of each of the service in a template-driven documentation fashion, so that it's not different formats of information collected.

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So we have created these templates to help collect standardized or use it as a template-driven documentation to collect relevant information also in addition to basic information, to really from the perspective of making sense of what the service is for, how it is measured, when is it available. So also from those aspects that actually matter for the customer.

So they need to know is it available to me? Is it available today? Is it available tomorrow? What is required for me to get that service? Does it cost money? Is it free? Is there entry criteria? Is there limitation of how many they can serve? And so forth.

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And then, most importantly, to also have the key performance indicators both sides. How do we measure the performance? How did we improve the startup with our service? And then the service-related KPIs. How effectively are we serving our startups? How many can we handle per person, per project and so forth? Type of KPIs for comparability between similar services across the ecosystem.

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So the key part really is that if we look at this map, and when you do the ecosystem mapping, and it may look nice and clean and full of different services and we may feel comfortable that, oh, we have really good services. But when you put it through the lens of how is the availability monthly, weekly and so forth, and you apply that to that ecosystem mapping, the reality may start to come through that actually, yeah, this is only available two times a year. This is an annual event, and these activities, yeah, we have that, but actually we are serving like 30 startups per year, and so forth.

So really getting a sense of what is the realistic expectation of how much the support can actually cater for the pace and volume in the ecosystem.

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And really the attached problem with this is to maintain a holistic picture of the constantly developing and evolving ecosystem, and measure the services and results of different development projects and policy actions over a period of time. Collect and maintain and share this data openly for the benefit of everyone in the ecosystem.

So that the Service A in the beginning part of the ecosystem can know two years later what happened to the company that they served two years prior, where are they now and so forth. So this type of information is what we're referring to.

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So these are, when we talk about those shared things, we have put these five principles for developing ecosystems.

One, only things that can be understood can be developed. So if the terminology is vague, if there is not enough accuracy in the language, and if it's not understood what the startup is, how innovative, what's the difference between entrepreneurs and so forth, it's really hard to develop if there's too much unclarity.

Two, only the things that can be measured can be improved. If there are no measures in place, if there's no proper measures and logical measures in place, if they are not used or if they kept changed all the time then, by definition, if you can't measure you can't improve, because how do you know if it went better or worse.

Only by sharing things and making them visible and available and known about can those become “commons”, a.k.a. “shared things”.

And if they are not, then people will keep recreating the same things over and over again. The worst case in the same ecosystem, because of the business vertical dividends, they may be creating same programs, same different things repeatedly that are very much the same using both sides efforts and then they are almost the same but they are not compatible and they are paid twice and so forth.

So this of course as Startup Commons name indicates as well we are very much focused on helping to make sure that shared things get spread, share knowledge gets spread, shared things are harmonized, aggregates merged from their best features and then collectively put out. And a lot of what we have are also open for contribution openly all the time.

On our Google Drive we have our curriculum for people to go and edit and contribute. We have our advisory booklets, our 'How to Build a Startup' booklets freely available for contribution to improve them and keep them fresh. And we of course do a lot of contribution our own based on all the learnings over time. But the key is that we need to make them visible, available and known about.

And ultimately, if there are no shared things being worked on, so if they are not in use, there really is no working together. So in the context of ecosystem, if I have mine and you have yours, and we both use our own then it's really hard for us to collaborate together. But if we have ours and I'm using that and you are using that then, by definition, if I want to make an improvement I can or we need to together make sense, like does that improvement make sense.

And if we need to make a separation, we can make an extension or addition to that, but we can still keep working on the shared things. And that brings that silo breaking in practice while at the same time saving on resources, financials and time.

And finally, only things that are in shared use can be benchmarked, scaled and developed together. So when they are really in use, they can then be improved together and their progress and improvements and iterations can be measured, their outcome outcomes can be better measured because the KPIs are expected to be also the same and results can be compared and so forth.

Module 2: Building Blocks

Lesson 1 - Intro and Building Blocks

So once more, welcome, everyone to Ecosystem Development Academy Webinar and Module 2 for building, for some of the key building blocks.

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Some of the key topics for today, we'll go through the main building blocks. We'll focus on the governance aspect, how to consider getting some structure around the ecosystem orchestration and development.

We'll look at the cultural aspects, building interoperability and interoperability in general, measurements and general sustainability for long-term development

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So just briefly from my background, for those who have joined on the second module, so I have a background serial entrepreneurship and entrepreneurship around innovation and building new ventures globally for more than 20 years, as well as business advisory experience over 10 years with high volumes of new innovative entrepreneurs as well as ecosystem development in the longer-term for local ecosystems and then also for more than five, six years, I think now, around helping ecosystem developments with other ecosystems around the world as well as then all various types of support function development, funding, instrument development and so forth.

So the key point from here is the holistic aspect from multiple different aspects looking into developing to support innovation entrepreneurship through ecosystem development.

And of course, I'm still currently an active entrepreneur involved with multiple ventures, building innovations as well.

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But before we start, I want to just quickly stop and check if there's any questions that we should take into account more towards leading to the materials for Module 2 that may be taken into account, like going through the materials.

So Oscar, anything from your side or from the participants that have shared upfront?

[**Oscar**: No, I think that participants are expecting to start the module.]

All right. Okay, let's get started.

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So towards the end of the last module, we will look at some of the key principles of the ecosystem development. These are kind of the fundamental core rules to think about and keep in mind when looking at ecosystem development.

Only things that can be understood can be developed, so there is a need for knowledge component and collective knowledge, improvement for the ecosystem, development activities.

Only things that can be measured can be improved, so KPIs, key performance indicators and aligning those are very important.

And then only by sharing things and making those visible. Is there an opportunity for some of the code development to actually become to life and become “commons”? But only if those shared things are actually being worked on together. There is not really working together in practice, but this is the way to really bring an effective way to develop that way of working together, because it's much harder to start directly between different processes than it is to looking at the shared things or shared challenges that are attaching the key actors looking to collaborate.

So getting things to shared use and then actually using those to benchmark different activities, does it materialize from wanting to develop ecosystem into actually not only through the tools but then also the practical development effort and measuring the outputs to share tools does it start to come kind of a more complete picture.

So these are good principles to always have available and keep in mind when thinking of the different aspects of multi-stakeholder joint development efforts.

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So we have multiple areas when developing the ecosystem. This is a core aspect where [00:05:45] **Page 7 of 183** when we look at the building approach [00:05:47] **Page 8 of 183** it's

not to be looked at this only like one after another but really to consider [00:05:56] **Page 9 of 183** each of these on one hand separately, but then most importantly, to consider them also collectively.

So initially, once the ecosystem concept has materialized in key stakeholders' minds and there's this multi-stakeholder collaborative effort and willingness and inspiration to go forward, it's already a good thing to start thinking of how do we build some structures around it, how do we make collectively decisions on what things we should prioritize and what not, how can we consider pulling resources and so forth.

So governance, overall, is a key aspect to think about how does that apply over and around those shared things and shared assets being both created and used and further developed.

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Then of course there is the whole culture aspect around there's a saying to moving from ecosystems to ecosystems, meaning that having that inclusive culture and the mindset of contributing towards the ecosystem, to benefiting from the ecosystem as such. So not immediately just thinking of what do I get from the ecosystem but more of what I can contribute for the ecosystem, any return. When others do the same, what is the collective benefits that we can achieve from this aspect.

So the cultural aspect of ecosystem mindset building is a key piece.

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Interoperability is basic core piece from multiple different aspects of considering the building connectivity or building measurability and making things click with each other. So this goes from connecting different services in the ecosystem coming from different development phase to connecting to other services on the following development phase support services and then also interoperability between the information exchange between those services and then, more broadly, with the services in their entire ecosystem.

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And then getting into the measurement part that looks into making sure that there are, first and foremost logical measures in place, that there are key performance indicators in place that actually give the type of information needed from the development aspect of the various different pieces of the ecosystem. And most importantly, that same functions, for example, in a support. In a support function, the same functions would be measured with same KPIs for

comparability on return of investment, for efficiency of output and so forth, and then also that these measurements can carry and sustain time.

So it's important that, in addition to having specific support function specific measures that they are also ecosystem level, collectively, your shared measures that sustain time to make sure that a longer-term development aspect can benefit from those measures and those KPIs in place that don't change while taking into account that there is also aspect to allow additional KPIs to exist for different functions being needed or new support functions to be implemented and so forth so that is to find the right balance

And taking into account that each of the measures in place need to contribute to the next level measures. So if there is no connectivity between kind of the overall ecosystem output target and then an individual mentoring system or individual accelerator program that there isn't a logical connection how those activities in the very hands-on level contribute for the output metrics, then that is a very problematic scenario and it doesn't bring logical approaches to develop and measure things in the ecosystem.

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And then last but not least, a lot of the ecosystem functions are being run with either very limited budgets or periodical budgets, as we discussed in the previous model that there's project-based funding, where there may be funding for three years, where during that time a support function as one piece of the ecosystem being developed needs to be planned. It needs to be implemented, resources being acquired, knowledge being acquired, operating the service, measuring the service, trying to get the target results out.

And then the worst case scenario is that the last six months goes into winding down the operations if sustainability is not reached for that program to continue.

So sustainability in all of the various levels for individual support functions, but even of, most importantly, for all of the key ecosystem functions, like maintaining ecosystem levels, shared knowledge, maintaining the governance structures and so forth, sustainability by itself is a very important factor to focus on development.

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And as mentioned, each of these should be looked at not as independent thing but with a cross-cutting theme, so that whenever the ecosystem development activities are happening, all of these different aspects are looked at and also being developed in parallel but in a

cross-cutting way so that those topics are both being developed independently but also collectively and holistically in a parallel manner.

So it doesn't work to just develop one of these aspects at a time until getting a more complete picture, but starting to develop different aspects of this in parallel and improving them over time.

Lesson 2 - Governance and Culture

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So, let's look at these pieces now then in more detail. To really get started as we went through those key elements from bottom-up approach, meaning that we need to look at the foundational pieces and then how different pieces sit on top of that, and then also finally making sure that we also look at the sustainability aspect, but as I said, to be looked at, developed in parallel, but for the visualization, the foundational aspect is really getting the covenants piece initiated to begin with.

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So when we look at the governance, the need for the governance, what we have done so far is very much globally validated. First of all, in many ecosystems, they may be feeling that the challenges that you have in your ecosystem or your ecosystem development that those are locally unique. But a lot, a majority of the activities in ecosystem development are in fact globally shared.

So very much same, similar problems in all of the ecosystems development where some of the key things are that all the ecosystems are really struggling with this fragmentation of ecosystem information and connectivity problems of making that information flow and available for all of the ecosystem actors collectively.

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So, in practice that means that it's really hard in the ecosystem perspective to really know what is going on in regards to new companies and innovations happening in European markets. So key industry verticals and so forth.

Who are the different key actors in an organization level? The actual individual level key people, key organizations, their roles and backgrounds, their motivators and so forth.

What is relevant for your business? So if you are looking to operate an accelerator model, what are the key actors that are relevant for your business? Or, if you are the entrepreneur building a venture, what services in general are relevant for you?

Who are doing what and why? So like many super organizations and organizations in general, part of the ecosystem that they may have a very broad offering of things that they do, but in reality, in their website, for example, but in reality 80% of their effort goes to some specific, more focused activities and that is their primary activities.

In addition, the kind of the external information may include update or project-based things that are not going to be relevant going forward.

Where and when are things happening? So from timing aspect, when are things going to be available in regards to your own startup development phases? Are they available now? Are they available six months from now? Where do I need to go to get that support?

And then, really, anyone entering that ecosystem as a new entrepreneur or as a new service function or as a new organization or international company, international talent, international investors, this is how do we connect to it all most effectively, and so forth?

So this is really just the tiny tip of the iceberg of the information disconnectivity due to fragmentation of the ecosystem information.

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When we look at the two kinds of the key aspect of the ecosystem development we have the sustainability and long-term perspective that we need to look after. And on the other hand, we have the quick and short-term tests and new elements and learnings that we need to apply.

And we have this top-down thinking and top-down actors and activities, and we have the bottom-up energy short-term, quick, bottom-up actors that both have different dynamics when they look at ecosystem development.

But both are equally important because of the different dynamics that they bring into the table.

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But the main challenge with that is that when we think of the whole ecosystem concept, by definition, it's not owned by anyone. It's not really to be considered being controlled by anyone. Therefore, it also means that when we look at the freedom and the responsibility, they work hand in hand. So if it's not someone whose responsibility it is, who is the owner of the ecosystem, it also means that there is nobody whose responsibility it in fact is to make it work.

So what that leads to is it's a collective multi-stakeholder responsibility but, as we can all understand, that doesn't work like that. In practice, there needs to be someone who takes some of the functions in the ecosystem and starts looking after everyone's shared interest towards where they are heading with the ecosystem development overall.

So the question really is that who should be that organization or how to structure this responsibility for the benefit of everyone to get to the right direction?

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So this gets to the terminology that lives around the ecosystem in a different way. So instead of thinking of controlling or managing the ecosystem or owning it or even driving it, it's more of the orchestration aspect.

So we need to look at like that bus driver. They are there basically making sure that everyone gets where they need to go. Their main role is to keep everyone safe, and the people in the bus can spend time on their mobile phones and chat with their family or whatever they need to do and feel comfortable that they are getting where it was agreed to be.

But at the same time, the driver is there to drive on behalf of the agreed destination, and so forth. So really just looking after that the collectively-decided things are actually happening.

So the orchestration is a neutral role, not a controlling role. The other terminology to help is like a moderator in a panel session, in an event. It's a very neutral role to drive the conversation and making sure that the panel is a good one for the audience. A coordinator who is not so much doing the actual activities but actually coordinating that the activities happen in a logical sense. Secretarial functions, taking notes, keeping information, communicating that information back to others, information management, communication and so forth.

So looking from the lens of ecosystem orchestration is the beginning part of then starting to look at how does a governance model would look like around this type of mindset.

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And also looking for what that is applied to. This is from the perspective of looking at the different types of organizations. Having the support organizations, having big companies, research organization, higher education, service providers, funding organizations. And if we think of the information flow and keeping everyone informed between this, it is very difficult for these organizations themselves to keep all the other organizations informed, because they themselves also represent a key function in the ecosystem itself.

So this becomes really a prospective question when we look at from the perspective of those who operate activities in the ecosystem versus the perspective that we're looking through this picture is how that function of an orchestration gets into the picture.

So some of the numbers indicated here, six applications, 15 two-way connections, five per each application. So this is like whether it's an organization or more deeply the applications in those organizations, how to build the information sharing. The more there's organizations that need to think of it from their own perspective, the more complex it gets, the better the ecosystem

develops. The more actors there are, the more activities there are, the more complex it gets to stay informed just between one-to-one relationship management.

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So when we scale that up once we are successful in the ecosystem development, when we get more of the organizations and actors on board saying, yes, we want to join this effort. Yes, we want to collaborate. The more there are organizations. And in technical level, the more there are applications to come think of sharing information, the more and more challenging this picture gets.

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But at the same time, when we look at that what is actually why these organizations are part of the ecosystems, why are they a counted part of the startup ecosystem mapping exercise when we look at what organizations are relevant, what organizations or services belong to the ecosystem, the key thing that is to understand is that they all share information from same elements that they're working with.

So whether those are ideas growing into businesses, ideas growing into companies through interaction of multiple services, whether those are entrepreneurs navigating of different support services, from ideas and works of startup weekends to incubators to accelerators through tens or hundreds of different event participations, workshops to help develop the companies and their teams into organizations. Those are all same information and part of multiple different organization support functions and applications. So CRMs, event systems and so forth.

And when we look at solving this puzzle, this problem, we need to start looking at the connection methods. We need to start looking at access rights to that data. We need to start looking at information around how can we build independently connectivity to your organization or your information. How will you document that information for others? What data, what information is there actually to be shared about? The ideas about entrepreneurs, about mentors, about investors, about events. What are the data models or in what structure does the information exist in Service A, Service B, Organization C and so forth? And who should have the ownership of this data? And how does that data ownership should be considered?

So these are all key aspects of thinking why there needs to be someone that starts to look at this from the governance perspective of starting to solve these problems.

And for any ecosystem, before there is someone who starts to look at things from this perspective, this problem never gets solved. It is basically impossible problem to solve without building some model that has logical chance of being able to solve it.

So a governance model that looks the whole ecosystem orchestration instead of only their own activities in context of the ecosystem.

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This brings us to the concept of ecosystem operators. The ecosystem operators are the ones who should start looking this from the operative perspective. So someone who actually looks this from doing activities in this context as their primary function. That's the terminology.

In addition to ecosystem orchestration, the operator is the one who just looks at making the system work and solving those problems that are forbidding or preventing this type of development to happen, from happening.

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So the ecosystem operators will sit in between the bottom-up activities and top-down activities. The key is that they don't represent either party, they don't represent either key activity, they don't represent the government, they don't represent the funding organization, they don't represent the entrepreneurs, they don't represent the accelerators, they don't represent the big companies, they don't represent any of those specifically, but they represent all of them collectively.

That is then the next phase to think of that forward of how should then the ecosystem operator be structured and how the ecosystem operator should be governance, and where does it get its mandate to become the operator for the ecosystem. And the key factor here also for the ecosystem operator is that that is the most important actor to get into a sustainable long-term ability to continuously be there for the ecosystem.

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So the ecosystem operator’s core areas are to focus on the key elements from holistic and neutral ecosystem perspectives. So these are the types of things, as in Europe, definitely GDPR, how does that apply at ecosystem level. That connects into users data and user account information in CRM system, event systems and so forth.

Related application, programming interfaces between connecting those user accounts or having ecosystem-level user accounts to connect different systems. Data and key performance

indicators that are ecosystem level, that are logically connected in different levels for the ultimate output targets of the ecosystem all the way to individual support function KPIs contributing for those output measures.

Service functions basic data, so measuring the service processes, the effectiveness of a support function, again, being that mentoring advisory accelerator program or even individual workshop around increasing topical knowledge of actors and so forth.

Developing the overall user experience at the ecosystem level. So instead of looking, again, individual support function or individual event or individual location that is responsibility of that specific actor, instead looking at that overall user experience from any ecosystem actor's perspective, but in the lens of how do they assess, how do they interact and how do they understand and visualize that invisible infrastructure that the ecosystem is. How does it make sense to them and how the user experience can be improved in them navigating through the ecosystem?

And then support local business growth via local connected applications and business model development. So really looking at how to improve the information flow and develop and measure, or develop through measuring the different activities and finding a business model to sustain their own operations as well.

That leads to maintaining the sustainability of overall strategy, processes and resources, funding, knowledge base and related shorter and longer processes. So really to be able to carry on the knowledge of the ecosystem across generations and decades, because if all of that knowledge is only attached to individual experts or individual support organizations, it's not neutral enough, it's not holistic enough. If it's only attached to government side that is very much under political cycles where these level of activities don't carry unfortunately such level of importance like many other topics. That they are in risk of total knowledge being vaporized from the ecosystem and many activities to be restarted again after the priority comes into play with the new government.

So there's a lot of different aspects for ecosystem operator, but these are really the core areas. And when we look at this from key segments, we have the ecosystem framework to help to think about, we have the digital connectivity as one key aspect, we have the metrics and the measurability and data flow as one of the key aspects. And then one more is to really protect the access to data, specifically protect users, individuals' users data rights when we look at building data sharing ability for the ecosystem level.

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So to look at how to structure the ecosystem operator, we need to first look at the structure from another perspective, and this is what we call ecosystem forum. An ecosystem forum is more open. It's that inclusive structure that doesn't really— it's not operated in that sense like the ecosystem operator.

So ecosystem operator's responsibility and role and mandate should be to really look at the ecosystem development from operational progress perspective, whereas ecosystem forum perspective is the whole process and structure and alignment around bringing all the ecosystem actors together to understand the ecosystem, to understand the current developments in the ecosystem, to divide and communicate about the priorities and the types of development areas that need to be developed looking at ecosystem development initiative, making decisions, making ideations around what should be done and when and by whom and finding solutions to those.

And that should be more of an event format, something like having an ecosystem forum to come together at least quarterly, maybe once a month, depending on the ecosystem size and level of progress or activities. And to really have a structured agenda and format on how to go through the different development initiatives, how to introduce new ones, how to prioritize the existing ones, how to track the progress of the existing ones, how to share resources or find new resources to make progress on the priority ones, and really be responsible of looking at the initiatives being developed.

So this can be divided in the specific topic teams and it can be divided on specific task forces that takes all those topics. And there's overlapping or cross-cutting themes like regulation or KPIs that apply to any topic and so forth.

And out of this work and out of these outputs of the ecosystem forum efforts, is the need that there needs to be someone who is driving those forward and who is keeping measures and who is practically working to make sure that these activities are moving forward, regardless that they are not responsible of moving all of those topics forward themselves but they are responsible of keeping track that progress is being made or what progress is being made, and reporting that back to everyone and making sure that this knowledge or this progress doesn't disappear just because a task force stopped working on it or a topic team just vaporized because of people involved didn't anymore have momentum of that.

Because that's the nature of the multi-stakeholder collaboration on its own, without having the governance structures or proper structures on top of that or in addition to that.

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So when we complete this picture, we need to introduce in addition to the forum that is the driving force of the communication activities, how new initiatives can be activated, how they can be prioritized, how their progress can be measured, how the resourcing can be shared between multiple actors and so forth.

The ecosystem operator comes into the picture to look at how to properly keep, maintain that information visible to everyone, how to be a contact point to introduce the right people to write topics when new things come into play, but do that in a neutral aspect of just making sure that whatever the ecosystem forum puts on the plate keeps moving forward.

And then in addition to look at these cross-cutting themes at the whole ecosystem level that were covered on the ecosystem operator's core functions, the KPIs, the digital aspect, the data ownership rights and so forth. So the whole digital aspect of the entire ecosystem, connectivity and data sharing is one of the biggest key responsibilities for the ecosystem operator to take responsibility as a neutral actor, or otherwise it is not realistically to expect that that type of solutions can be taken care by just bottom-up activity.

So looking at the sustainability of the digital development, looking at the sustainability of information and knowledge here over time and developing tools and services and growing the number of participants' connections, matching, rules and standards and so forth that are all raised from the bottom-up approach inclusive approach, but then concluded by the ecosystem actors together. And then based on that, the ecosystem operator takes the responsibility to push that forward together with whatever resources, additional resources would be available by any of the ecosystem actors, whether that's knowledge, whether that's finance and so forth.

And then last but not least, this ecosystem operator entity should be structured wisely so that it has a public and private representation of the cornerstone organization, typically the government, some of the universities, those that are extremely sustainable over time and have a significant role to contribute and look after the society of the local economy, from introducing talent to making sure that there's knowledge introduced in the talent and that they are proper responsibility to look after sustainability of the ecosystem operator entity but also private side bigger companies, maybe banks, these types of actors who have a significant and long-term perspective into the ecosystem both from the perspective of how they can contribute for that and also how does it benefit their business and operation in form of better knowledge, better information, better decisions, faster decisions in their own operations, and so forth.

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And then the last piece is how to design the board of the _____ [**00:30:45**] startup at the ultimate level. So if the ecosystem operator if it's a population or if it's a private company

structure but owned by government and key stakeholders, or maybe it's an association, it doesn't matter whatever is the most fitting into local touristics and local setting, but it should have either official board or, in minimum, the official board should be of course the key stakeholders that provide the biggest resources.

But even the board should operate on the mandate of the advisory report. And the advisory report should be structured from key actors of the key ecosystem functions representing entrepreneurs, representing accelerators, representing investors, representing event organizers and so forth and so forth, so that there is a representation of the best knowledge of the ecosystem key activities also on top of the ecosystem operator activity.

So this way, the operator really becomes the middle actor, the neutral middle actor for the ecosystem only looking to make sure that all of the ecosystem actors are actually getting to the same shared destination.

So there is a structure to put in place to really look at how the governance should be organized in the local ecosystem setting. And fortunately, many ecosystems have the a lot of these pieces. They do have in place some of the activities, but the picture is not complete. And the most needed actor or the biggest missing component typically is that there is no ecosystem operator who only looks at the ecosystem operator as a neutral actor to push that forward.

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So when we look at the ecosystem operator's role, what's locally important is to really have a clear mandate, roles and responsibility in ecosystem orchestration at different functions and levels so that mandate and those roles and responsibilities should be defined by the ecosystem operators advisory board represented by the ecosystem actors as well as open development, open conversations and conclusions from the ecosystem forum.

It should have a clearly defined vision, mission and roadmap with strategy and plans, again, created in a process through an ecosystem forum and the advisory board and the official board of the ecosystem operator. It should focus on being a neutral actor with a capable team, covenanced by the key ecosystem actors.

So the neutrality is a key. Ecosystem as their primary responsibility is a key. Capable team, meaning that there needs to be good capacity in the ecosystem understanding about innovation, entrepreneurship and startups, understanding about the ecosystem development, but most importantly also strong capabilities around digital transformation, software applications and digital economy overall. All those combined in the same shared, small enough, capable, effective team.

To be able to also focus on information management, from ecosystem actors and support services. So basically keeping that always up-to-date mapping of all the actors, organizations and services in digital format.

Development initiatives. What are the development initiatives? What are their priorities? What are their current status? What is holding them back? What progress has been made? How they are being measured? What are those measures indicating? And then overall statistics and outcomes. So not only measuring the development initiatives but also measuring the statistics and outcomes perspective of the ecosystem as a whole and then in different development phases and in development and specific types of services, like all of the accelerators, their outputs, best performing accelerators, all of the incubators shared outputs, best performing incubators, best return of investments, all the same measures that are collectively agreed, shared and used.

And then finally, to make all that happen is to systematically, on ongoing basis, focus on connectivity and data flow, data portability and sharing models. So really making the connectivity happen, an application level in practice and doing that starting from step by step, from simple connectivity to increase more based on the priority set by the ecosystem forum actors.

Making sure that the KPIs make sense at the ecosystem level between actors as well as logically connecting to the outcome, to the overall KPIs of the whole ecosystem, which of course is to make sure that there's a growing number of good growing companies coming out of the ecosystem. And on the other hand, that there is new talent and ideas increasingly joining the ecosystem.

And then looking all the time of developing the sustainable resourcing, meaning that there is right people that can sustain their positions to a longer development and the most important core activities needed for the ecosystem development. This doesn't start by thinking, okay, where do we get new resources? It starts by looking at what resources we are currently working on and how we can pool those resources together, find shareable things where we don't have to reinvent the wheel, and build same things by different actors over and over again, but instead pool those resources, work on shared things and, at the same time, free resources for the types of activities to start sustaining the types of activities that are new, because there are savings that can be cut from existing ones and those savings can be moved to start looking at the types of things that bring additional resources or freeze resources to do new things that are not being able to be done because nobody is looking at that collective and effective resource pooling.

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And then together with other operators globally, so now when you can visualize ecosystems having operators in each of the ecosystems and their focus is their own ecosystem and the key activities there, then what they can do together between other operators is to look at the connectivity for all ecosystem levels and functions.

So looking at more global standards, global open standards and pooling of resources across multiple ecosystems. So whether they are neighboring cities or whether they are cities in the same country or whether they are two twin cities or friend cities between different countries, to look at, okay, what are the activities where we can pool resources, do them together and implement in both of our ecosystems. It is to share best practices and applications and solutions, KPIs, whatnot from one ecosystem to another, and also to look at what best practices and software or KPIs or whatnot can be imported from other ecosystem to ours.

And to keep, to make that all happen is also to look at the standards that can be collectively developed around the compatibility of moving these best practices on applications or KPIs, across ecosystems and key piece when it comes to information and data and standards.

One of the key piece is data models, which is basically the structure of what data exists in our ecosystem in different functions and how can we make that compatible with other ecosystems so we can send and we can write and read information between the ecosystem functions within and between ecosystems.

APIs, so that's application programming interfaces. Those are the actual connectivity between aggregate information from our ecosystem to connect to other ecosystems. What are the interfaces how we can share this type of information across ecosystem? For example, measuring accelerator support function cross ecosystems or any other function. So these are two working together, again, with other ecosystems.

Building shared documentation. So documentation and data models are two of the kind of very key pieces where everyone has to create those to make things work. If we choose to do same or similar, we can work with same data models and we can work, therefore, with same documentation and therefore we can work with shared resourcing and shared efforts that we again freeze resources to do more on our local activities where we don't have to reinvent and create everything in our own ecosystem just because we choose not to build compatibility and open standard-based models with others.

So creating standards is a key piece of that to responsibility of creating standards for your own ecosystem and operation models doesn't stop there because the next silo would be your own ecosystem. So to collaborate with others to really develop our best standards with other

operators globally. The more there are standards, the more connectivity and comparability and connect data sharing there can be.

And we can all imagine the world without standards. There's actually a great video in YouTube that you can search by ‘world without standards’ and you'll get some funny things there that may make you laugh when you look at those but doesn't necessarily make you laugh when you think of your ecosystem development efforts, and realizing that there's a big lack of effort even around building open standards for this development.

And then because building the sustainability and better business models also for ecosystem operators to sustain developing models for data monetization is a big piece, data is extremely valuable. The better the data is, a bit more compatible it is, the more structured it is, the more available it is, the more real-time it is, the more historical data it includes, and so forth, the more valuable the data is.

And there can be many different ways to build monetization for big multinational companies, for research data, innovation data, for public sector, for policymaking, for many different aspects where that data, even at its simplest statistical format, let alone more informative data, it's extremely valuable. As such, a monetization opportunity to sustain the operations of actually being— to collecting that while even using it for our own ecosystem anyway.

So these are all the types of things and of course learnings, collective learnings and more. These are all types of things to really look at how to collaborate and work together with other operators globally.

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So really, the ecosystem operator’s key focus and role is to be effective, sustainable and systematic development and orchestration with long-term perspective as a mutual actor for the ecosystem.

And then the other core function and foundational piece is to look at the digital and data, the software, the APIs, data economy driven, real-time, globally competitive and connected digital single market. So really developing that aspect of it.

And a big point of looking at this from the aspect of if there is no local ecosystem operator, does it mean that these things don't happen? They do happen, and everything is always happening anyway, specifically in the global digital landscape. It just means that the value of those digital tools and data typically go somewhere else than the local economy and ecosystem.

So by creating focus around one ecosystem and capturing the benefits in their own ecosystem development needs and all the other monetization needs, and making that data still available but not for free, not by just— because that's how it happens now. Being uninformed and also losing value without even measuring it as a lost value in economic development is the problem that each of the ecosystems are pushing forward in their own economic development.

If they don't start looking at these aspects from how do we do this for ourselves? For us, for ourselves, by ourselves, but in a way where we are part of the global economy in a digital sense, in a smart way.

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So it really is about designing it to have best of both worlds.

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So to make things sustainable, those who take care of others need to be equipped properly and taken care as well. This means that not only the ecosystem operators which is the entity form key structure to get in place for long-term sustainable development of the ecosystem development and then operate it with the mandate of ecosystem forum structure.

It's also the individuals who work as ecosystem builders and ecosystem developers. It is important that there are structures to make these development roles sustainable. Until they are made sustainable, the randomness and the fragmentation, and sometimes even several years setbacks with missing or disappearing knowledge and information, all political cycles will keep repeating in every single economy repeatedly.

So there's ways to get there. There's models and structures to get there, but it is a collective effort to actually get there.

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So the ecosystem operator is accountable for entrepreneurship and ecosystem development, but it needs to sustain political and economic cycles. That's why the structure needs to be created so that this has a strong and broad and wide mandate, but that it has also sustainable resources to perform its responsibility as a neutral actor for the ecosystem.

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One of the aspects to when we look at the entity structure is that some of these are like fundamental principles that we are discussing here. Some of those can be hardcoded and this

depends on how the different models in different countries of the foundations typically are, such that there can be— these foundational principles can be really hardcoded into the entity when it's established. Or then the more modern things is like blockchain smart contracts.

So there are structures to make it so that nobody can hijack the operator when it becomes extremely valuable or that its mandate doesn't change to just cater for certain types of companies or big companies or so forth, but there's much more around that. So just wanting to highlight this point that there are ways of getting structures in place that can sustain time.

And some of the well-known global actors that are very much operating on one hand with these types of principles is like Kauffman Foundation in US for entrepreneurship. Set up by a rich entrepreneur decades ago who hardcoded the principles and gained the funding for the foundation of how it should operate and how it should not operate. And of course there's a lot of wisdom in that model, but of course over time, some of those hardcoded principles can be limiting. But nevertheless, it can sustain time in those structures.

And then here also an example of financially sustainable foundation model can be that there's initial capital that is given by the founding members, which is whatever the funding is, that the funding itself is actually not used to do any of the operations but it's only invested into global markets. And only the returns of investment can be used for operational expenditure to keep the structure sustainable pretty much forever if it's structured with right levels of capital and the cost structure has a buffer to sustain non-profitable years of that model.

And in addition, it's then supported with sponsorship funding and other revenue sources, for example, monetizing data and so forth.

So all of these models exist. It's just getting there and starting to put this in place and having enough rationale and justification and facts around or combined experience around to understand the significance and the need of putting these governance models in place.

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So again, at ecosystem level, moderator, orchestrator, coordinator, secretarial functions, information management, communication and so forth, that is a neutral actor key position.

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To enabling data flow collection, connectivity, distribution, protection and creating monetization opportunities. So data is really the key essence of reducing that fragmentation and to be data-driven in the development activities and so forth. So really taking this as the primary responsibility at the ecosystem level.

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So the digital economic development of city, region or country must be managed by knowledgeable and capable people under clear mandate. And if not, then it unfortunately slips easily and the control of foreign governments or freely monopolized by private businesses.

Of course we already know, and there's big examples of how this is happening in the ever accelerating and, on one hand, complex digital world, but at the same time, that same development creates the vast opportunities for new businesses and economies and jobs to be created as well as works as the R&D department to solve all of the various wicked problems that the world is facing.

But we have to find a logical model and have that in place in all of our own ecosystems.

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There's another simplified structure to really look at that ecosystem operator's role above. So we have the ecosystem forum kind of around or below, but then we have ecosystem of operator focus on support, digital and connectivity, information management and communications, and then having the governance board with these advisory groups that can represent. One group can represent like the startup entrepreneurs in general. One group can address the educational organizations. One group can represent the investors, and so forth.

And then there needs to be the founding financiers by the biggest and the longest history key organizations from public and private side and in the government university, governments, local state, national, the universities and the big companies, including local and even including multinational ones with their significant presence in the local ecosystems in a smart way.

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So here's a budgeting example just to kind of give some ideas of structuring a revenue source or having what type of personnel that should be in place as the expertise for that sustainable operations. And then what type of fees there could be collected, for example, from data monetization or providing the information or providing the support functions and so forth.

This is just a really simplified model, but the point is to indicate that there is a model and there should be a financial model that should be looked at, that should be played around to find a comfortable level.

And then whatever this model is, they can be separate subsidies, they can be separate project funding, they can be separate initial capitals, they can be various different aspects. But it helps

to start putting it down, breaking it down and looking at those numbers in a realistic lens and seeing how would that actually look like. How would our ecosystem operator's one side look like? How would the resources look like? What benefits it could create? What would be the willingness of someone to pay directly or what would be the value if someone pays funding directly if government provides subsidies so entrepreneurs don't pay directly or maybe starts to pay at some point when they acquire real benefits out of it and so forth.

But this is just a simplified model to get that thought process going.

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So next, looking at the culture aspect.

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We've talked about the fundamental things, the principles. Only the things that can be understood can be developed. And to build that understanding, it requires knowledge. It requires knowledge like what we are providing here. It requires knowledge that is coming from the data and information being collected. It comes from the silent knowledge that needs to be made tangible and visible by those who have accumulated it over time, and so forth. That's how the understanding is built.

And with that understanding, it's more knowledge for development of what do we actually want to change and improve.

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Understanding about the startups, understanding really what makes innovation entrepreneurship work. How does it actually work in practice, building something out of nothing? How does it actually work to take an idea and push that into a significant company? And making that knowledge available in effective, scalable way. And making that available for everyone who are making— who are taking part, or at least those who are making decisions impacting the ecosystem activities for others.

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So here, we have the key piece of the framework, so building things around the startup model and the startup development phases model and applying that framework into not only the how to build startup development, which we have a separate Growth Academy curriculum and a certification model to train trainers that train other trainers, and to combine that with

licensable, scalable digital knowledge combined with knowledgeable trainers who can train the same content.

And underneath that, we have the whole curriculum is under creative commons so the curriculum itself is freely available as well as an independent component. But it requires that type of cultural collective recognition to make sure that all of the key knowledge, not meeting the knowledge what we have but knowledge that we have indexed and put a framework around and pool the rationale and logic around is freely made available effectively and scalably to everyone. From policymaking to investors, to mentors, to entrepreneurs, to talent so that they can speak the same language that is the beginning part. To be able to build data models, open standard data models around what is a startup. So it is of the pieces of building that culture.

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So having really learning resources that are effective, affordable for everyone who needs those, a 24/7, 365 e-learning service contributing to increase the base volume of innovation entrepreneurship points and measuring future potential. But also same applies for ecosystem developers, policymakers, not only to understand about ecosystem development but to understand why the ecosystem development, how does it connect with actual innovation building through startups.

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So here's the summary of the curriculum and the Growth Academy for innovation entrepreneurship. It's through these modules. And the Module I covers the overall, like a snapshot summary of the whole journey from the eyes of investable, investment-ready companies regardless of whether they take investment or not, but how does it look from the eyes of investor and from the ecosystem actors' perspective.

We have Module I B, which is basically looking at from the support function perspective, specifically that journey, and from ecosystem development perspective. A small snapshot of that as one module in that curriculum, just few hours. Whereas similarly here, we have just a small snapshot of this curriculum on the ecosystem development economy side.

Then we have Module II that focuses on the formation phase. We have Module III that focus on validation phase. And Module IV that focus on scaling phase of innovation entrepreneurship, building new scaling companies and startups from the ecosystems.

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So it's a model that can be injected into an academic site or contributed to educate and empower the current and future generation of ecosystem builders, developers and operators, along with any individuals and entities who focus on economic development via entrepreneurship innovation, for new job creation and attractive investments.

So it's to understand the journey that the entrepreneurs go through, the other startups go through, all the talent, to co-founders, to growing organizations go through. And then to understand the ecosystem development around it.

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In addition to make available an open digital library of the local ecosystem knowledge and combined with whatever, all other key knowledge that is needed, regardless of different roles of the ecosystem actors. And really look at how to combine the knowledge library development with the ecosystem forum process of flow that it's not something that is a stale noise library but it's a dynamic also to be improved with new findings that are based on actual validations through the actual measurements and KPIs.

So it really, when there's no barriers to access knowledge itself, when there is no proprietary structures that are overly limiting of making that knowledge available, it pushes everyone to go one step further and start looking at, well, what is the areas where we can build additional value, because the value that already exists is made accessible to everyone.

So this is also of course what we practice by us having and making such education available. We help to create this common language and potential for the ecosystem actors to better collaborate with each other and, even more so, to be establishing those ecosystem operators, getting the ecosystem operating and orchestration functions cleared, and then helping to connect those ecosystem operators with each other to develop the global aspect of opportunities for all of those growing companies that grow out from the different ecosystems, enter the global markets to build connections and land in different ecosystems to build their business there, collaborate with local ecosystems and so forth.

Lesson 3 - Interoperability

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So continuing with interoperability.

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So it really means the connectivity, transferability. It means interfaces. It means analytics, so all of these various things when we think about interoperability.

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As we've discussed so far, the startup ecosystems really have a lot of interactions and data. So they have, depending on the ecosystem, size, maturity. Regardless, we have combined we have millions of ideas, entrepreneurs, startups, talent, investors, mentors, intellectual property, events, pitching sessions, pitching evaluation sessions, mentoring assessors, due diligence cases, investors making their final check if they invest into startups. Matching events, co-founding matching, investor matching, talent matching, services, assets.

So all of these are the valuable elements and pieces. And then all of the interactions between these valuable assets and actors in the ecosystem generate even more data. So not only the information about who they are, where they are, what they are, but what's actually happened. Who was where? Who took part in what program? How beneficial that program was? Who are interacting with whom? What industries are hardworking? And you name it, there's a lot of data.

And then the most important thing to really understand is that this is not some data that doesn't exist but already in a digital format. This information already exists somewhere, and that's the starting point. It doesn't mean that it doesn't exist therefore we need to ask, we need to start collecting that from asking from people in surveys and so forth. The question is how do we get that information in the primary level where it already exists?

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So to build the rationale and justification for the importance of interoperability is that there was a study several years back by a US Chamber of Commerce together with one private actor where they really did a big effort to measure multiple different aspects of the ecosystem development .And it concluded very clearly, like that one thing, if nothing else, what is the most important thing is the connectivity. The more connectivity is increased, the more direct it correlates with the growth of the ecosystem and the growth of the _____ [**00:03:28**] modules.

And of course the connectivity doesn't just mean a number of connections, but it's also effectiveness of that connectivity.

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And the speed of collective execution and learning is the new unfair advantage. So when we are in the digital world, it's all about how much data we have, how quickly we can make conclusions, reliable conclusions out of that data to make decisions that will help us move forward. And in that, the learning is a key piece. The more there is information about the various aspects and ability to analyze and conclude things, the faster the collective learning is. And this combination really is the new unfair advantage.

So those who have better systems to have more accurate data, more real-time, more historical data to compare, more comparable different actors to compare, the quicker this information can be pulled out the quicker it can be visualized and analyzed and look from collectively from multiple perspectives together in a forum, in an operator sharing this knowledge, the more advantage is being built for the global competitiveness.

And now the question is to ask where is this happening now and where is it not happening now? And comparing the pace of progress of those who have this with those who don't have this. I think it's very obvious that we can all imagine very clearly the types of actors who do and the types of actors who don't, and what is the difference between their ability to push their development forward. It really is the unfair advantage.

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So the data, information and knowledge is really the gasoline. It's really the thing that not only tells you what's happening but inspires you with new thoughts to see where things are missing, what gaps there are, what do we don't know, what we don't even know that we don't know, and so forth.

So really, the information and getting that information clean, analyzed and available for all stakeholders this is the gasoline.

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And to really make that work, the data infrastructure is the engine. So it doesn't matter even if that valuable information is siloed in individual organizations where they only use— it's like our brand capacity. And single organization only use that data for one purpose for why they created it for. Maybe they could use instead of using 10% of what that could tell them, maybe they can expand that to 30%.

But the point is not that. It’s what others can benefit from that information. If 99 other organizations can also pull 5%, 10% out of that individual's organization's data, that's collective benefit. But the beauty is that when combining and aggregating that data from multiple organizations for collective learning and new knowledge, now every organization can increase their own capability to understand and develop their operations to much higher than 30% that they could ever get output of their own data.

And this is exactly, again connecting back to the governance model and the ecosystem operator, how to really bring these things to existence. So the data infrastructure is the engine.

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And when we combine these things, the connectivity is the key factor, the data is the knowledge, the pace of learning from the data is the unfair advantage. It really comes down to the digital ecosystem connectivity is the key factor for enabling all of this. It's really when we say the ecosystems are the invisible infrastructure, the digital ecosystem connectivity helps make that invisible infrastructure into understandable, manageable, almost physical existence so that it's much easier to see it, to understand it, to improve it, to develop while still having all the benefits of it being digital that it can be much faster development, restructured and reshaped than any physical infrastructure ever can be done, so it really is significant.

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And if we just look at the increasing value of data, there's more and more data available every day. And the global data economy is predicted at three trillion at this point is for 2020 out of the World Economic Development Forum and EU.

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And by 2020, the value of personalized data alone will be one trillion Euros, so almost 8% of the EU's GDP. This is obviously connected why Europe has introduced the GDPR regulation is that this value doesn't just disappear from EU without having a structure how this value first even becomes visible while it's still fully open to build businesses around that, including foreign businesses.

But it doesn't get ignored. It doesn't remain invisible. But GDPR really helps to bring the whole personal data visible to everyone. And it creates new systems, and we are taking that into account in our work for several years already. But the key is to understand the value of data.

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So in addition, data is power.

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So data for sure can be also used in different ways. And it represents power in a new way. Information has always been power since the days of increasing knowledge in people or in point of trying to control media. In that sense, this is nothing new, but it's just the flexibility and the dynamics of how the data leaves today's world is at a totally different level. And people's ability to cope and understand these topics at the same time is not developing equally around the world.

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So data is power and it can also be misused. This is also why it's extremely important that each of the ecosystems have their own operators that are working on their own local mandates and that they are structured how to make it work and look at the proper rights of every actor from a properly mandated perspective.

But again, as to highlight that if it's not getting done in the local ecosystem setting doesn't mean that those things wouldn't be happening anyway. It's just different actors that are doing that for different purposes.

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So when we look at the value of data in the context of KPIs, in the form context of information, we need to also look at from the perspective of automation, because when we put digital infrastructures in place in simple forms when all of us we use applications, when we click a button, when we enter a site, when we reload the page. Whatever that is that some action, when we send an email, the other party can know if it's been read or not.

There's tons and tons of these actions happening all the time, but we need to look at the positive side of that and really think of how can we trigger automated actions that are actually beneficial for the ecosystem challenges. So this can be that someone opens an application. There can be email updates going to multiple places. Someone responds to notification. There can be social media updates happening or CRM records updates. There can be business intelligence created. One or unlimited number of actions can follow any action that makes sense.

So to turn that into positive side, we all understand or have general understanding about how advertising works online, in Facebook or Google. We search for something and we get better match results of advertised, suggesting in context of what we specifically searched for. Or when

our profiles are read based on our interactions, we are shown advertising that should be relevant.

Those have technical limitations and they don't work because of some of the outdated technologies, but in general it should be that if we turn that in a positive way, if my profile as an entrepreneur is known, I should get more guided information of most relevant events to me. If I'm doing a post about trying to find a co-founder, I would rather see LinkedIn people profiles that highlight people that are potential co-founders.

And this doesn't— of course you can have local applications, and most likely should have, but the point being that there's from functionality perspective there is enormous amount of existing methods and technologies that can be applied to bring much more and more specific value for any of the ecosystem actors than just showing ads. So showing most potential investors, showing most potential co-founders, most relevant events and so forth.

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And if the importance of getting these infrastructures in place, getting actors who can build these infrastructures locally and the value of data is not yet clear enough, then the next big evolution of development is of course the artificial intelligence.

And artificial intelligence is directly connected with the quality and availability of data. So the less there is data, the less there is possibility to develop AI businesses or AI services or AI anything. So all of the big digital giant companies are developing more and more ways how they can collect more and more data that they can use to help train their artificial intelligence to do more efficient services, human-assisted services, AI-driven models, and it's directly dependent on the available data.

So then of course this depends on whether it's from customer service calls or whether this is from search results or whether this is data from photos, you name it. That is the way how the AI can be trained. The quality of AI is directly dependent on the quality of the data.

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So poor data means poor AI, but we can also say that poor data, it doesn't need to be artificial intelligence, it's also human intelligence, that poor data means poor intelligence also for us humans.

So it's important for us but it's even more important for AI. Humans have capability of read intelligence, even much worse data than AI ever can, but this is exactly the challenge that

getting additional benefits, developing even more advanced features. Features in the future require the data as well.

So while AI may feel too far for ecosystem development today, it's not going to be like that forever. So five years from now, 10 years from now, it's the same as thinking of your ecosystem 10 years ago. What was important then? What is important now?

The only difference is that the types of actions that are not started today are not going to be available there, so there's the saying that the best time to plant a tree was 50 years ago. The next best moment is today.

So same applies to these things. When we look at the ecosystem development, there is never the right time but past and today.

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So if we look at from the interconnectivity and the digital aspect perspective for like vision, how does this could look at in the sense of the user experience in an ecosystem. So we mentioned that one of the operator's role is to really look at how is the ecosystem level user experience. So how could it look like from the perspective of ecosystem actor.

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So when we clean it all up, when we just don't think about any of the technologies in the background, what do we want? We just want what we want. And we want to get the shortest way to get that information. So this is the level of where we should be thinking, where the ambition levels should be created, but we should also understand that there are different steps how we can get there.

But the good thing that if all of those steps exist, all of those steps are logical, there are validations from different industries, from different use cases to see how they can be done, how they have benefited things. But we just need to bring all of that into ecosystem development context and get to work and start making and putting those in place.

And then we have to be able to do it sustainably so that it's not project-based funding or vision for one government and that gets thrown out of power and then there's another government who then comes up and decides that, well, this is not really important. There's other important things.

That's why it really needs a sustainable governance model and structure and mandate from big enough group that even those who could be temporarily in a position to change it don't want to do it because of the political outcome, for example.

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So when we look at then what we are doing on the Startup Commons side to support this is we are building that data infrastructure solutions. You can consider that as in a way of building any other infrastructure, like building roads to your city. It's not that we have roads in our inventory and we just put roads in place, and here's one piece of road and here's another, but it's more of utilizing all of the knowledge, the existing technologies, the documentations, the data models and so forth, and then adopting and installing or implementing them in your own ecosystems.

Together with the best local talents where we just bring the core knowledge or any of the missing pieces, or that the pieces that are already being collectively developed by existing ecosystem actors together with us, being under open standards, like the Growth Academy curriculum or some of the other components.

So with this, we built the infrastructure in such a way where organizations don't need to think how do I connect to five different organizations? How do I connect my application to this and this and this application in a local setting? But only think how do I connect myself into this set infrastructure? One connection to then have through that infrastructure connection to any number of other actors who in our ecosystem have connected to that infrastructure.

And that's the point of the data infrastructure is to take all of the connectivity pain away. It's like how our phones work. I only need to know where I want to call, the operator takes care of all the heavy lifting to make that happen. That's why you need a local operator to be the operator, but we can help on the technologies and these types of things. And these are the things that we are working on on the digital side.

And the key data categories and data models are to people and entities. So these are individuals and the companies, so it's the talent and entrepreneur and then it's their startup or the support organization and their people.

And then it's ecosystem support services and activities. So what are the entities creating as their services and what steps or activities those services include, and then what other activities happens between services and actors and so forth.

And then ecosystem development initiatives and projects. So how to track the progress of the initiatives that we put in place to develop our ecosystems. How do we measure them? What status they are? How they have made progress and so forth.

And then ultimately, the key aspect of the whole ecosystem level key performance indicators and visualizations and reporting. So they are around cross-cutting measures around any of the other key categories.

And for the data that is being captured, we develop the open standard data models, which is not the data itself. It's the model of how that data is structured and how that model can be used in connecting that data, what we have through that model to more shareable format.

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Then when we look at how the interaction with multiple ecosystems look like, this could be small countries, for top cities, national setup, but at the same time there is no factor of scale because the point through open standards and this shared development mentality is to make things scalable. So it doesn't matter whether there's one ecosystem or whether there's 2000 ecosystems, because the key is to take that into account in the design of the models being created.

So now it's more data, more shareable, more transferable, more connectivity but operated by local ecosystem operators. So no data moves without clear decision that data want to be moved. So the ecosystem operator works what are the rules in the local settings and what are the rules when this data is connected with other structures. And that data can physically reside in any of the existing applications where it is now at the moment. It's the connectivity infrastructure. It's not building a global database of data.

So it's building the connectivity and the models of how that connectivity can happen and that data can flow based on the decisions that any individual factor. Or if it's collected aggregated ecosystem level data, how does the operator choose to share that data with others.

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So connecting back with some of the visualization we used in the Module One as well to really put the ecosystem operator in place as a governance model, someone from a neutral perspective really only looking at the ecosystem as a whole not being an operator of individual support function per se. And the other aspect, looking all the underlying connectivity as the key piece to make the information flow, make the information visible, to carry the knowledge over

time, and acting as the neutral operative actor for representing under mandate all of the ecosystem actors collectively.

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And when we apply the digital infrastructure visualization on top of this picture [00:28:08] **Page 74 of 183** where we have the business creators, ideas, products, businesses. We have the service providers [00:28:17] **Page 75 of 183** and we apply the digital infrastructure on top of that, we can see how the ecosystem connectivity through APIs, through standards and documentations for connections, open standard data models, data sharing principles, how that looks like by connecting the service side data.

So this is if it's an event organizer, the event organizers cite information data that they have about their event, who it is for, when it's happening, ticket prices, whatnot. And then there is always the customer side. So the one who registered, when did they register, for what event they registered and who they are, their name, their address, so forth. So that every service have this kind of two pieces when it comes to serving ecosystem actors. So then there's a consideration for how that user data can be portable under regulations, like in Europe GDPR, across different services, and how the individual whose data is in question can actually themselves benefit the most by using that same data in the context of different services and also learning more about their own behavior with the connection of these different services and aggregated aspect of that information.

So two key pieces combining, collecting individuals' data under their control and making that data portable between the services brings also the capability to measure their progress throughout the ecosystem and their activities that they can share if they want to under their consent. And then the other part is collecting information of various different services and the actual service data that is collected by the service actor or the organization.

And aggregating this information and then making that aggregated data available and creating new visualizations and new applications from that, like dynamic service mapping, up-to-date information about the services, events, availabilities, visibility of ecosystem development projects and their outputs, ecosystem portal just to showcase the information in a dynamic way that is being collected from these different aspects, and looking at the KPIs, the performance of different activities, measures.

So this is how the infrastructure looks like in a simplified visualized format in practice [00:31:22] **Page 74 of 183** laid on top of these key activities that are happening in the ecosystem that we covered in more detail in the Module One.

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And as we already talked, there's many different types of data. So there isn't only the type of thinking and data as we experience as individuals today when we use Facebook or Google. There's data that is existing in public systems, in private systems, in small systems, in big systems, in global systems, in local systems, in custom systems, in paper format. The key is, whatever that is, it needs to be categorized properly and specific rules need to be applied on the type of category of data in question.

So there's profiling data. There's information and analytics data. There's statistics and benchmarking data. There's activity data, business data, user data. And we need to give control in these systems, ultimate control for those who are the owners of the data to decide which data they make private, which they make public, and which may they give access per request if they trust the requester.

And from same data element or topic, multiple different perspectives can be created. So while users data is who they are, what they did, but also from that what they did can be pulled statistical data that it doesn't need to connect at all to the actual individual in question to be useful. But the key is to really understand data in different levels and also categorizing and creating the controls around this.

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One of the big misconceptions that exists when ecosystems start to build the digital solutions is to build the portal and trying to create a one silo of database where they connect and combine all of this data. Oftentimes manually adding it there just to show how that information would look like.

Being a significant initial manual effort, oftentimes significant ongoing manual effort that doesn't produce quality data because what ends up happening is that it's not built as an infrastructure. And because of the laborious aspect of maintaining that portal then those who create the portal start to limit the information that they want to display because it's so laborious to get that information there in the first place. So it is limiting the usefulness by design because it's not rightly architecture.

So that's why the portal should be only a way to display data that is being collected with proper infrastructure in place and not a separate silo that is built by manually collecting information elsewhere into a single central database just to be displayed in a digital form.

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And when we think about this from the perspective, in a more global perspective and we think about these ecosystems, we have individual, city, local ecosystems. We have a neighboring city or another city in the same region. We have a country that has one or multiple regions that have multiple cities. These all needs to be considered geographical ecosystems or geographically located or geographically understood ecosystems.

And then we have business protocol ecosystems. We can have FinTech, we can have blockchain, we can have medical, we can have health, we can have IoT, we can AI. We can have manufacturing. We can have cars. It doesn't matter. We can have these business vertical ecosystems. The key is to understand is that business vertical ecosystems are more cross-cutting and they cover multiple different geographical ecosystems where they interconnect.

But the key thing is that any ecosystem element, be it a startup or an investment fund, typically is and want to be included in multiple ecosystems at the same time. So if we think an investment fund is in a specific city, making investments in a specific business protocol, one wants to operate nationally or even internationally making investments. So not only one city, region in the whole country or even across country, but they're only focused on one specific industry vertical type of investments.

Or it can be very early stage startup that is only part of one city local ecosystem, still unclear of whether they belong to one or multiple business vertical ecosystems with their solution, or so forth. But this is to really understand where does the benefits of collaboration come from because none of those actors enjoy, at least doing manually, going to register in different portals and being part of different places and always carrying and manually entering their data or maintaining their data in multiple different systems. So it doesn't also work from their perspective either.

And if there's more shared infrastructure, more ability to be present in multiple places, that also increases the information that the ecosystem operators and the whole ecosystem can have about the activities of a fund or a startup growth or development across multiple ecosystems, of course with the consent of the individual in question or the company in question or the service in question. But technically, it's taken care of then it's up to the business rationale whether they want to share or not.

So this is important to understand also how the presence between ecosystems go.

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So we can then also look at the interfaces, how to connect different ecosystems and what ecosystems we need to think of connecting with. So we can have City A wanting to connect with

City B. We can have City A wanting to connect with business or business vertical ecosystem B. We have the city level to regional that have different types of activities. The regional operator can have very different level focus, more aggregated focus than a city level that look at more operator actors activities.

And they can also share responsibilities when they can design between city government, local government, how do they pool their resources to operate these ecosystems. You have reasonable geographical location with national geographic. You can have national with national and so forth.

And the key to really understand is the aspect that each of these ecosystems can have shared data elements of multiple things: locations, venues, spaces, people, service organizations, services, companies, startups and so forth. So all of the knowledge or information about the ecosystem can be present in one or multiple ecosystems.

So there's obvious benefits of collaborating not only at the ecosystem level between the actors but cross-ecosystem when it comes to digital. And unfortunately, because this collaboration doesn't happen, the winning model at the moment is proprietary companies just blended in everything with whatever they want to blanket with their free services, indirect business models to capture the data, and getting happy users who will indicate that data.

And the challenges really come from the local economic development and local ecosystem development perspective is that it’s not a sustainable approach to develop digital competitiveness locally in the long term.

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So interfaces within the ecosystems. We then have, you can think these also like matching pairs. Like what you can benefit by better matching between these actors, better connectivity between these actors, or even further, more automation between these actors.

Talents and startups. How do I find co-founders? How do I expand my team with right talent?

Talent and events. How do we get the right audience in place that can most benefit from what we have to offer?

Talents and coworking space. How do we find the right talent to our coworking space depending on what type of activities we want to cater for? Whether it's more distance, SME-oriented, whether it's more design group or whatnot, and so forth.

So really to start understanding in a common language way what digital actually helps to do better, more scalable way. Humans always do things better but it's not scalable in the ways of, for example doing interactions between companies, interactions between co-founders. There's an extremely low number of volume that can be handled, and the number and the amount of knowledge that a person can carry to be able to connect right people with right other people or companies or elements or events and so forth.

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So in the context of using an analogy of a telecom industry, so because that's a lot what we have used so far as well, the ecosystem operators really are like the mobile operators. They are like the same as AT&T US or Orient or Rogers in Canada, or so forth.

And they really are the ones who just look at the infrastructure work and they look at and operate under mandate from government and public side and all of the key actors from the ecosystem.

The applications in mobile where there's the phones that connect to that network that the operator operates are like the applications. You can think of Eventbrite, CRM systems, Facebook, spreadsheets, wherever that application that is being used to collect and manage the information in a specific service or in a specific company. Those applications are like the devices connecting to this network.

At Startup Commons we provide standards. We work on the standards, helping to improve the connectivity operator network in front and to help enable roaming. So making sure that you can just connect in any operator's network with your application. So that's what we are working on on the digital side.

And of course we help to set up operators, we help to connect those applications to the network, but we mostly do that from the R&D perspective. We do that from deep knowledge perspective of not only the digital world but the innovation entrepreneurship and startup ecosystem development work all combined, taking those aspects into account and really to help get this set up and operational.

But all of the local responsibilities should be the local operators, local resources, local talent, local development companies, local systems, as much as there is available. Local applications or global applications if those are already the mostly used ones. It doesn't really matter. The key is to build the connectivity between them and have an operator who makes the information flow. And we help support that the local decisions made are aligned with open global standards between other operators and so forth.

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So I'll stop here just to check if there's any questions.

[**Oscar**: We don't have any, Valto.]

All right. So next, I will focus on standards. So we've been talking a lot about the open standards, so what does it mean more specifically? It's really the key thing to help the data flow.

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We all can relate to how it feels when the standards are not working for us. So we can all understand that, like from the historical perspective how standards have emerged, how they have spread the world. They have been seen as competitive advantages, but ultimately when we get down to it, we then experience this.

For example, how the national standards look for those who travel or work globally is the power outlets. We also know how, from user experience level, it feels when we have global standards, like the WiFi and how nice it is to go in another place and just pull out your laptop and ask permission to connect, but technically, it is being taken care of.

And that's very much the perspective we want to bring to the table that standards, connectivity, digital are needed to make sure that the connectivity is there by default, standard, working globally. But it's still a separate question do I let someone to connect? Do I share my data? But that is then a decision that can be made at the time.

If that interconnectivity standards don't exist, it doesn't matter if you have WiFi and they don't. They have something totally different. It doesn't matter. If they say, “Yeah, sure, you can use our network,” but it's not compatible then, okay, well, now you have a right but you can't— you don't have means because it was not designed like that.

So this is really about the standards.

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So for data infrastructure, preparing for a data-driven ecosystem that takes into account all ecosystem factors and items.

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So when we look at the individual application, if we break it down a bit more, a typical application includes the user interface. There is the business logic for the features of what the

application does. Then there's the actual features and software code. Then there's something to connect that code with the database and the data access layer. So that's as an example a MySQL database. So this is a typical application kind of simplified.

And all of the applications in the ecosystem are somewhat or mostly structurally the same. I mean, there can be different software language. There can be different database model but, ultimately, there's the user interface, business logic, code and database.

So now we have CRMs, event systems, platforms. So the portal is no different. Project tools, social networks.

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And when we think about these applications, they are like the wells. It's people put the information in and they pull information out. So instead of well, actually well the water just comes there and you just pull it out, but they are silos. They are not connected in any systematic way. So however the water flows between these is random, so limited use, flow and distribution.

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So application silos, meaning that the information of this digital analysis actually is transferred between humans, so that's not very efficient. Meaning that, okay, let me pull a report out of my system and send it to the Master PDF or let me export an Excel sheet and you can see this data and you can analyze. And the other person can actually see depending on how you read it, It depends on how you must pull it out, it depends on what data was put in, it depends on what the model is.

If I want to enter that into my system, most likely I would just, depending on the amount of information, I would just manually enter it, or I need a developer to put it in or have an import system for that. But it means that some people actually need to proactively move that information between the systems.

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So the data sharing today is looking like this. So I'm pulling water from one place and I'm taking it to another one, whatever digital format, PDF, Excel sheet, that's my bucket. I'm moving this data from one place to another.

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So then the APIs, the application-to-application sharing is the application programming interface a.k.a. the API, makes it possible to move that data from one system to another. There's other ways as well but the APIs is the common term and the specific model.

Now, what it means that now a person in another application could actually read data from another system. So that's basically that. Or they could actually use software features of another software through another software. So now it means that it's designed and put in place once, but once it's there it can be used immediately as many times as possible, with or without business terms attached, free or with cost.

So it just means that the human from their user interface can use data or functions of another system depending on business terms, but it requires connect once and use as many times as you want.

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So of course we take the water analogy. Now we have automatic data sharing. It's like, okay, let's put some connectivity in place between multiple applications of getting water out. So now we can share the water and we can get it out from any of the applications. It doesn't matter. I can go to Application A, B or C and I get the same water out.

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But as we discussed about the complexity of connecting multiple systems, if I want to connect one system to two systems I have to build two connections. If I want to connect one system to three systems I have to build three connections. And all of the three need to build three connections as well. So to make that more efficient, it means that we need to connect a smarter connectivity system that I only connect once and I can connect to any number of systems that are connected to same approach.

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So now we are talking about pipes instead of applications. And we're talking about data flows, so how the information flows. And not only space in the silo that we have put that data but how that actually flows and is available on any outlet or system that we want to pull it out from. So really bringing it to maximum use, maximum flow, maximum distribution, maximum availability.

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So this is the difference between the data pipes and with data silos. So a.k.a. applications of today are not connected. They are just silos of different sites. So even Facebook is a silo from a

Google ecosystem. So you can’t move data from Facebook to Google. You can’t pull your— you can't update your Facebook profile information from a Google application.

And there's business reasons why they haven't built those connections, but when it looks at Google ecosystem, they have pipes there inside of their applications. They look at Facebook ecosystems, they have pipes between Instagram and WhatsApp and so forth. You look at Amazon.

Now, we look at the ecosystems. We look at one of the most important drivers of our economies and societies for job creations, for economic growth and economic development. We are in the age of the wealth, so we are in the age of non-connected applications. And that's the big transition, the digital transformation that needs to happen as part of the ecosystem development.

But it requires much more than just technology. It requires all the various other aspects that we have started this module today from.

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So now, this is the challenge, the problem picture, where we need that operator with the proper governance model and resources to start solving and to bring it more into [00:56:47] **Page 95 of 183** a connectivity solution like this.

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And then comes the question of ownership.

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So the key is to make the software shared. So the more the software is shared, the more cost effective is the development and the maintenance and upkeeping of the software because of the shared documentation, shared software base, shared talent pool to help develop the software.

So software should be aimed as either open source or shared software licensing terms, or they can be of course proprietary software terms as well. But the key would be that the more the same software is shared, the more easier it is to build the connectivity, and the application should be designed around best support practices of ecosystems to get the right business logic and then the best softwares to support that, and then help spread those softwares across multiple ecosystems.

And we want to support that by whenever your ecosystem have great applications for any of the support functions or being that portal or whatnot, we're more than happy to help spread that software to other ecosystems. And I think under different terms, either just do introductions, marketplace.

But what we don't want to is we don't want to support those softwares. We don't want to overrate those softwares. We don't want to upkeep those softwares. Those should belong to those who actually have the software that they want to share or the local operator who takes into his shared software and puts it into place.

We look at to developing the connectivity data models, connectivity and so forth, the overall ecosystem development aspect where these all connect to.

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And then data. Data should belong to rightful owners and the rightful owner depends on the regulation, it depends on the business terms. So if it's data that you generate yourself as your business or support function with your own resources, then most likely you are the rightful owner of that data. And you decide where that data sits, where you share it, with what terms free or paid access to that data is.

If you're a public sector then now you're working with public money. It's run through individuals, the citizens, through taxes and so forth. So most public services share their data as open data, meaning that it's both free. It's universally made available. So as a public service you most likely want to make that data that you generate through your own activities that you would be the rightful owner, but because it's generated, paid by the public, you should make it free for the public. That's the common model that is spreading with the public data. Of course it doesn't include when the public has information about individuals. Then of course that cannot be made open data.

And then if you're an individual, then you should have the right to your data. And this is specifically like the new type of regulation that is spreading, like the GDPR and the similar regulations themselves where like CCPA coming into effect in California, similar regulations in Japan, in Canada, in Brazil and so forth, where more and more regulations start to say that regardless of you having the data about the individual, they actually have the right to decide what can be done with that data. And they can also request that data for themselves.

So the key is that the data always belongs to rightful owners.

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Lesson 4 - Measurement

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We've been talking about the various aspects of data and we're talking about the measures from the perspective of how this data have different shapes and forms and how the measurement itself should be connected in different levels.

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As part of also one of the key principles that only the things that you can measure can be improved.

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So when we look at the first what do we want to measure? We look at startup ingredients, so startups and startup process, as well as startup ecosystems and activities can all be identified, mapped, measured and improved.

To measure the ultimate output of an ecosystem is of course a measurement of how effectively startups emerge, develop and grow out successfully out of the ecosystem. So therefore, measuring the progress of the startup is key as well as measuring each of the support processes contributing for the development of the startup are key. But because of these factors, the startups themselves and the ecosystems supporting them can definitely be all the key elements can be identified, mapped, measured and therefore improved.

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If we think generally about data and metrics in ecosystem, it has many services and service paths. It is to find bottlenecks, remove overlaps, develop in balance so that we are not overdeveloping some function, specifically like later development phase, how to scale companies. And at the same time we see that, oh, but we don't have enough talent and new ideas developing to these scaled services.

So input and output volumes of each service. To measure, analyze, iterate and improve these services, improve overall efficiency, learn from others, compare and benchmark with others.

So really, to understand again here that any software that we use is just a tool. The data is the source of the value when we can pull this type of information from the interactions we document into systems, the interactions that the software does by people using the software, and so forth.

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So let's look at the KPIs a bit more closely. What do we need to measure? We need to measure the startups progress and contributing factors. Meaning that how do startups come together and what are the different factors to contribute that.

We need to measure individual service intake. So we think of the process. Where does it come from? What quality of talent or startups are we taking in? With what criterias? What is the process that we apply? What is the improved output? How efficient? What's the process and what is the quality feedback of the experience navigating through that? And then of course return of investment of the overall service.

Outcome of ecosystem development actions. So these are the development initiatives. Just put an initiative in place. We have a target. We are trying to do something split by certain criterias. We have the development phase of we are initiating. It's in progress. It's a second generation version. It's operating with this type of funding, and so forth.

And then also benchmark these development initiatives locally, nationally and internationally.

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Let's look at measuring startups progress.

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So we can look at the whole ecosystem as a funnel, not a closed funnel but an open funnel through a lens of those different support services that are there. But we can map it also on top of the development phases.

So in each of the development phases, we can look at the input of companies arriving, or talent arriving to that development phase, and the output of companies of talent coming from that development phase. So applicants, how many applicants? What type of applicants? How many graduates? Entry per source or where did these applicants come from. How many dropped off in between the development phases? What are the total numbers?

So these types of criterias we can have in every single development phase. And with this type of funnel measuring, we can also identify how much is missing between the development phases. We capture them here. We measured them here. They never arrived here. So how many did we lost along the way? Maybe the startup blew out. Maybe the team exploded, in the sense that the co-founders didn't want to work together. You name it. We can track it.

Also how many we have coming outside of our ecosystem. This may be talent. It may be startups moving from one ecosystem to another, and so forth. So how many new ones we captured that we didn't capture earlier and where did they come from and why so?

This is the types of high-level final measuring that can be put in place, and this information can be collected through those services and the applications. And but only if it's connected to a certain infrastructure that captures the individuals and the service data.

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So measuring ecosystem services is to apply commonly agreed open standard KPIs in places of similar services and also different services but they're not catering on the same development phases.

Having ecosystem level measures, having open standard measures for similar service or services on same development phases, and collecting that data with an actual data-sharing infrastructure.

Instead of manually collecting, connecting one time, using as many times in the future as needed in as many places as needed, the key is to understand the big benefit of plugging digitally in versus manually repeating costly and slow exercises that give poor outcomes in an open standard format.

Measuring the business ideas into businesses, talent into founders, into organizations.

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And with that information collective, depending on how gradual and detailed that is collected, it can always be aggregated into higher level, and higher level ultimately into a whole ecosystem level. So finding different way levels of sensible visualization for different needs.

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And as said, by using this type of framework and common language and open standard models that allow validated, proven, measured ways of improving things as new shared collective resource, it can bring these types of global benefits, global connectivity, corporate comparability without losing the local effectiveness and ability to focus on more using more resources from things that measure while having also the control in the local level.

So to identify startups in these different development phases is described to be able to effectively have a common language of measuring them through identifying them based on

their characteristics. In a way, that makes sense in an ecosystem development and global collaboration perspective, not only what makes sense as a local government definition or funding instrument definition of what is a startup or what is not. That is not progress based way of identifying them.

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So we discussed about the ecosystems where the startups seed. So that's where to seed for them.

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To identify the description in the formation phase. A startup is born when IPRs and founding entrepreneurial team members commit to contribute and build value and confirm this value by capture to a company with a founders shareholder agreement. So the company may still be registered or will only be registered two years from now, but there is a shareholder agreement that is in place. So there's something that actually says.

So before this type of identification can be known, it's something that is still in the formation phase. This is the output from the formation phase.

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So from formation support functions you can collect data and information, sources for assets, IPRs, APIs, data, market challenges. You can capture information to promote and market the function. You can promote pre-shareholder model. You can track marketing effectiveness via web traffic and KPIs.

So these are the types of things you can capture information. You can promote using the development phases. And you can promote some tools that with those tools you're able to capture the information that you need, and so forth.

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And the types of KPIs you can collect from formation services, you have volume-based measures, like number of assets, resources and tools in pool/library. You can measure volume and quality of sources of talent, like where does the talent came from. You can have quality of sources and channels. You can measure the talent itself and then you can measure the quality of sources and channels based on the quality of the talent.

You can measure the volume number of challenges or problems defined to work on, so identify challenges and some problems defined.

Number of events organized, number of potential ideas formed, quality of ideas formed even from a collective voting function, as long as it's every time the same way how to do it.

Volume of number of ideas and/or teams moving forward. Volume number of participants, total number of new participants and so forth.

So this is to give an idea or measuring the idea to business side from the formation services. The types of KPI categories are here, like volume, quality, return of investment and velocity.

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And then other aspect to look at from the startup idea, quality of ideas formed. So what are the outputs? So problem/solution fit, market potential, market timing. Volume of co-founder reach, volume of co-founder discussions, so really looking at the organization side.

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And then measuring the team's commitment.

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You can have formation services for building the team. So you have volume number of potential teams entering to commitment validation. So this can be like a scheduled workshop. Volume of quality of sources of teams. Volume number of committed teams, so who actually decided to commit, make a shareholder agreement.

Quality of teams, like what are their past skills? What is the balance of their skills? Quality of shareholder agreement, quality of legal support by partner, so if you have someone there to provide support for this function. Quality of service function, customers' feedback, velocity, time from entry to signed shareholder agreement. So organizing a matchmaking event for co-founders as one formation services.

Then having a shareholder work, so how to negotiate with your team. The outputs with the shareholder agreement, some support provider there. Now, measuring that what was the effectiveness of this service from co-founder matching to what was the quality and output of the committed team members or two committed teams forming a startup.

What is the ROI, so return of investment of the whole support function.

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And then startup team related KPIs. So this would be measuring number of meetings needed, independently or with advisors by those team members. Number of team members restructuring needed, so when they negotiate and they said, “Well, you are not fit for the co-founding team,” so forth. How many times they needed to repeat that until they were able to come and close shareholder agreement? And now we have the team in place. We can focus on executing.

Number of shareholder draft versions, iterations. So how many times do they have to go process whether through a lawyer or without a lawyer or whatnot, until it's done.

So these are all process-based measures to really measure the effectiveness of the services in a formation phase.

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And then on the validation phase, and of course these are not— I call it all-included metrics. These are samples to highlight how to measure effectively. Type of measures that make sense in the overall output of the ecosystem, like measuring all of the development phases and types of activities with logical measures that actually contribute to the overall output of the entire ecosystem.

So the validation phase. Now, when the company comes from formation phase, they enter validation phase. And the output of the validation phase is a startup is ready to grow, after the core teams ability and commitment to build and execute the vision is validated and product have clear customer and market validation.

So in the previous ways, the formation output was that there is actually a team in place. There's IPRs committee, there's the co-founders committee to build, and the product. So the validation is before going to scheduling is that now that team has worked together. They have managed to build a product. They have managed to validate there is a demand, and so forth. So this is the output of the validation.

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So the types of KPIs in the validation services, so support services in the validation phase. The common logical measures KPIs are something like volume, number of teams entering the validation, volume quality sources of teams. Again, where did they come from? How did they hear about?

Quality of teams, quality of the shareholder agreement, validating again here. While it was output from the other place it's an input here.

Quality of potential innovation, problem/solution fit, market potential, market timing, so the measure outputs from the other one, input measure on this one.

Quality of partners and trainers, so customers' and advisors' feedback. Quality of service function, customers' feedback.

Velocity, time from entry to validation, so when they start basically to build a product versus when they have product-market fit. How long did it take on average for this team and measuring from all the teams?

Return of investment, cost of support function, output and conversion rates. So how much did we lost along the way in these development phases in general?

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And then from startup validation related KPIs, so this is again two dimensions. Measuring on one hand the support side and on one hand the startup making progress in context of the support service.

So volume number of assumptions to validate. So they have assumptions that this product works because of A, B and C. Now, it didn't work because of A. It didn't work because of B. It didn't work because of C. Maybe it works because of D or it works because of D.

Quality methods to validate in place. So how will they go about validating A, B and C.

Volume number of actions validating assumptions. So how many times they— how many actions they are taking? How quickly they can take those actions?

Results of validations. So how do they document the outcomes? And they're all, like these are all coming from existing tools of validation canvases and so forth. So this is all coming from typical activities that the teams do or should do if they have like the _____ [**00:20:08**] of the proper knowledge for how to build companies.

Volume quality of data to evaluate versus effort of getting it versus usefulness. So when they are doing the validation, what data are they looking to evaluate? How hard it was for them to get it? So if they want to test with more customers, how did they find those customers? How were they able to reach them? How quickly they got answers from those customers versus how useful those answers were?

Quality happy customers/users, quality paying customers/users. Volume sold projects, if prior to product and so forth and so forth.

Quality of pitch, volume of business model canvas iterations and so forth.

So again, indicative types of measures that make sense to measuring the progress that contributes the ultimate output of the ecosystem.

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Growth. Now, growth output is, on the previous phase, the company was ready for growth when it has product-market fit validated and it had validated capable team that was executing. And now the growth phase is about scaling, multiplying all required things that are validated to work in most efficient way, while having clear methods in place to actively measure and validate the scaling processes and overall progress.

So growth doesn't of course have output. As such, so growth is expected to continue. For growth, it's more about understanding when the company is specifically on the growth phase.

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And on the growth phase, the types of service side KPIs would be types like number of introductions for investors, to channels, to customers. Quality measures matching results from introductions. So if making introductions with this company or angel investors, what was the likelihood of positive outcome.

Quality of advisory, quality of trainings. Velocity, so independent independency / handoff to others to take roles in advisory/strategy support. So in some ecosystems, there are services where there's support service taking a lot of like the board role of strategic help. But how well does that handoff between actual board members or more investors coming to invest into the board of the company take on that type of support that some of these companies have come and used to in their development while they have been in the incubator or accelerator service.

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And then startup growth-related KPIs. Now we have measuring the startups, so startups measuring themselves. Types of things like quality of go-to-market strategy, inbound traffic growth, inbound traffic quality, outbound contact volumes, outbound conversion funnels, development conversion rates and so forth.

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And an even more quality of value of customers, balance between happy versus unhappy customers, partner network quality, volume development. And a lot of these measures come out actually from the KPIs that are on the scaling module or educated in the Growth Academy for the talent and the founders themselves.

So again, the key is that that type of knowledge is also connected with the ecosystem development knowledge so that everyone is having opportunity at least to talk the same language between these two sides of the development effort.

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And then turning back into measuring ecosystems, so connections and dependencies is that, again, only things that can be measured can be improved. Like in all ecosystems, many things with startup ecosystem impact to many other things within it. With holistic approach, things will eventually show up in top-level metrics, but it's important to break things down in smaller, more understandable and digestible pieces to gain focus and get faster feedback loop for learning and measuring. So it's important to also understand the measure dependencies.

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So when we look at the key actors of startup ecosystems, we have of course a broader economic development perspective. We have people, talent, entrepreneurs, business angels, mentors. We have support organizations and services. And then we have the entities, the startups by talent being developed.

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And when we look at development focus areas, basically that we already used in those, some of the KPIs. We have items to improve. We have things that we are trying to improve: innovation, talent, entrepreneurship, support, money, growth.

And on the other side, on the horizontal side we have volume measures, we have quality measures, we have velocity measures, and we have return of investment measures.

So volumes are pretty self-explanatory, quality. Velocity is really to look at how quickly something happens from here to there. If I apply for support funding, when I apply it how quickly can I get it, the decision?

So this type of approach helps to see the dependencies of these things.

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So when we look at the vertical elements and the horizontal elements, we can now— this type of framework when we think about KPIs, we can always ask what are we specifically trying to improve.

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So we have items to improve, improving innovation. We are trying to improve talent. We are trying to improve entrepreneurs and so forth.

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We are trying to work the values of those we are trying to improve: volume, quality, velocity.

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So we're trying to improve volume of innovation. This balanced development framework helps to really bring this into an understandable form. What are we trying to improve? This goes into those development initiatives that we are putting in place. We're trying to improve the volume of talent.

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And with this type of model, when we collect enough of the measures from the ecosystem services with a consistent logic, we can now get like an index perspective into the outputs of all of the different development activities to see did we manage to improve velocity of entrepreneurship? Did we manage to improve the return of investment for support?

And when we calculate these types of index measures out of innovation or we calculate the index out of volumes and we calculate index of both, we can start to see a sensible index out of the whole ecosystem, but also we can see the dependencies and correlations of what happened with the different development initiative potential impacts to other areas.

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And of course we can then also break that down into a specific development phase perspective as well.

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So that is now enough for the Module Two.

Module 3: Ecosystem Digital Transformation

Lesson 1 - Intro and Data

So today, we are focusing on the ecosystem digital transformation. Basically, we have so far been discussing a lot from studying from the startup development phases and startup development framework as well as then the key elements and terminology of the ecosystem [Ref Module I] and moving slowly towards the digital infrastructures and the data, specifically looking from the key elements of data, from measuring the ecosystem, measuring the startup progress and so forth. But today, we will touch again of course some of those topics because we need to connect all of these things together. But today, we will focus on digital transformation.

Of course, the whole digital aspect is a broad topic and there is no business in the world pretty much that it wouldn't touch at some point, whether it's already happening, whether it's already very far or if it's heading to that industry and/or geography for that matter.

So, it was just a few days ago Elon Musk tweeted the first time using his own built new satellite internet thing that brings- that is planned to bring internet everywhere in the world, the fast global internet wirelessly through satellites everywhere. It starts to be very few places where there wouldn't be affordable access to that.

But anyway, so when we talk about digital transformation, we of course need to also understand what that more broadly translates into. So we'll cover that topic from that perspective as well.

So, welcome, everyone, for the third module and let's get going.

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So some of the key topics for today are getting more deeper into we discussed a lot about the KPIs as one of the key data elements that everyone can relate to, why they are important. Then we look more deeply in how to actually go about looking into how that collection is happening and how it can be incentivized.

We'll talk about the digital transformation. We'll look at the ecosystem architectures more closely. Also we'll take a much deeper dive into softwares and data and solutions, so when we go further in the technical terminology and language.

We'll look at the ecosystem level user accounts that are key factor in bringing the ecosystem level user experience, improving that. Improving the progress measures of individuals and startups within the ecosystem.

We'll discuss and build understanding around data models. And then we'll look at some ecosystem application concepts or existing applications and solutions where the type of infrastructure that we've been discussing about building a data infrastructure to connect applications versus looking at applications as their own individual silos. What type of applications then that brings.

And then also, from individual support function perspective, what types of existing or new applications there may be that are very interesting from the perspective of data collection and data availability. So we look at some existing ones, we look at some where there's a long history experience. And then we look also some of the future-looking concepts or models as well.

And then we also have the sustainability topic, but that starts to already translate to Module Four, so we may not have enough time to touch on that. But if we do, we can then look at the sustainability kind of opening for that, but we'll take a deeper dive in Module Four.

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So once more, I'm Valto Loikkanen, but I think at this point all of the participants have already taken part of the previous ones, so I'm not going to dive anymore deeper into that. But I guess if you want to tweet something about what you learned today then feel free to do so at the Twitter handle. So maybe you can take it from that aspect this time.

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Let's dive into the data collection aspect.

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The key element really to understand what we are also going to focus a lot today is to build a better understanding of like what those applications and how do we unbundle softwares to better understanding, because it's a key part for whole digital transformation to occur.

But regardless, the key point that we also established previously was the point that basically software is just the features. It makes things happen. It's the tool that brings automation. But data is then the real thing that captures all of that value that the software features and functionalities provide in a reusable, distributable, transferable, portable, replicatable,

adjustable format. So while the features do something to improve a process or function in the business, data extend the value.

And in most places, when we think about it, like CRM systems, for example, it's nothing more like a log of putting information in our own secret place that we know is valuable and we can go there and we can look at it and we can find and then we can share it with our colleagues the interactions we have had with customers and so forth. But it's really like the software has function as a place to put that value in and extract that value out.

But the key part to understand that that value really has a lot of other values, specifically when it's shared with others, when it's looked at from a different perspective, or when it's reorganized or when it's combined with something else. And so data has a lot more different value than just the value that typically the process that is around in the form of software is created for.

So really understanding that data is the value of the software. It's easier to think if you have like a project management software and there wouldn't be any projects in there. You would have a CRM software, there's no records there. Then you really understand that the software itself is pretty low value without having that data. Of course it provides that process support but empty software is pretty clear indication of where's the value.

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So let's look at the data value chain in how the data kind of comes to life from the perspective- not looking from the perspective of recording information. I enter something and then you look at that something. But when we extract that value out of the system or multiple systems, how does that happen.

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So it starts from the data acquisition. That can of course be also like research data that we look for something specifically. But regardless, we pull it from one or multiple sources.

We then need to prepare that data in some useful format, meaning that we need to make sure that it's clean, that overlapping data elements are merged. So if we have two or three systems so that it comes together.

Then we can do some analysis from that. So we can find insights from that.

And then there's data modeling that we can structure. We can restructure that data for different new uses, purposes. It can be merged from multiple places and really structured in a new shape and then that can be used in different ways.

Typically the visualization goes along with the analysis. So when we look at— just imagine a spreadsheet full of data. It's not really compelling. It's not really telling, isn't it? So we need visualizations to bring the charts and different views into that data.

And the most popular ones, of course, in the context of startup ecosystems or startups is infographics. Or even to very simple data when you bring like consumer level design on top of that, you can really make a simple data to be very impactful and very communicative. So when you imagine that taking data analysis and putting it in a really consumer level consumable format like dynamic infographics, you start to understand how powerful the data visualization can be.

And then of course there's further distribution. So when we open it, either fully open or permission-based data, so someone gets access but it's technically connected but you need to ask permission to access it, and then someone can grant that.

And then this whole model needs to be deployed and it needs to be maintained for that to continue functioning.

Then with data, we can also start building automation. So when we have data information changes or new information enters, we can then create software triggers that create new types of actions and functions in any kind of application.

So this is the general model of how we can think of data. And what is really the part where we apply this and where's the quickest place to start thinking of applying that and building the automation on top of is when you think the most common activities at ecosystem level that happen today, which are ecosystem mapping. So collecting basic information about organization and doing that manual process.

So almost with the same cost, like genuinely almost with the same cost and time that it takes to do that manual mapping exercise, once, can this type of a technical setup be deployed at the same time. Think of it at the same time with same timeline and almost with the same cost, you can instead of doing one ecosystem mapping, you can do the mapping, deploy a technical solution and have constantly repeatable solution to repeat that process automatically as many times as you like, as often as you like, as dynamically as you like. Build automation out of that.

That's really the level of separation between when we talk about the business operational side of people working in their own silo and then we talk about technology people and software people not connected into that manual process where we miss the opportunity. So instead of having ten-people team that are all non-technical people or more doing the manual collection,

instead having five business-side people and five technology people to do the same process. But in a way that it gets done, but also technology gets implemented at the same time.

So that's the type of thing. Either doing it fully manually, the same process, or doing the process and applying technology or software applications at the same time.

Lesson 2 - Collecting Data

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When we look at the data collection, we look at why do we do it. Of course we collect it for analyzing. We collect it for the measuring KPIs, as we discussed previously [Ref Module2 Lesson4] and to discuss of the types of measures that can be put in place in different development phases from the side of the companies and talent moving within the ecosystem, and then the support service processes around those support functions.

And we ended previous module looking at the data dashboards [Ref Module2] to looking at more holistic perspective of how that kind of analytics can look at the ecosystem level from different development phases and looking at different KPIs from different perspectives: from velocity, from quality, from volume perspectives and from different development phases. And then also from what elements are we looking those from.

Then the comparability when we build more shared models and shared standards, it becomes comparable between similar visions, similar support services, support models in same development phases based on the startup spaces and so forth.

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So this was the type of visualization. [Ref Module2 Lesson4] this is not an application dashboard, but this is the point to show in a matrix type of chart how then further analysis can be applied to looking at aggregated views of those development measures in different levels.

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And when we go to data collection, we come back to the key actors of startup ecosystems. [Ref Module2 Lesson4]. So we look at the support functions. So we have the organizations and their specific support service processes.

That can also be like funding instruments with application, grant funding or not granting funding, evaluating the applicant and so forth. We have policy level of course there as well that starts to be more on the economic development level.

Then we have the individual staffs and then we have the people who create those startups, so the individuals versus the entities.

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And the data collection, basically, we have this accountability approach. So when we align this, there is a value chain that goes from- this is basically the bottom-up or top-down, put on the sideways where you have, on one hand, you have the economic development that is a broader umbrella to contributing for support functions or private and public ones that then support the companies, of course startups. And before startups, there are also individuals.

But then in these startups there are the individual people working there, whether they represent talent, entrepreneurs, co-founders, employees, business angels and so forth. So really, if we put the segments here, we have the ecosystem level perspective, then we have the support providers, then we have the business creators.

So the basic logic is that everyone is contributing something for the next level. So the support service organizations are getting public finance to run their operations, whether it's project-based funding or whether it's non-profit, being tax exempt so that they're not paying taxes and therefore they can get incentives from the government side and so forth.

And then the support operator gives either free services, subsidized services, free advice. They give grant money, equity-based money, but they give something to support the startups.

And then in the startups, again, for the individual, they are giving salary. They're giving equity. They're giving something where the individuals are taking risks or working towards the startup's success.

And there's this level of getting something out of or, in each level, giving something. And in return, of course if we work in a company or in a startup, we use tools. So we report separately on progress and that gets collected, that information. And when a startup is making progress as part of the support services, they get something. It's totally fair to ask them for information as long as it's not painful to give. So if it's not disruptive for their work.

And the support organization when they get incentives from the government, from the economic development programs, funding, whatnot, they also can give return data.

And typically, these exist in the markets in different levels of detail and different levels of functionality, but the general process is there. So it's not something to reinvent but to improve. The most painful stories that we hear is where there are heavy reporting responsibilities which are totally justifiable, specific in the, for example, in the support function role or organization because it's spending general public, so citizens' money. Being citizens, being individuals and companies it's only fair to them to get real transparency of what is happening with the public money, so it's understandable. But the pain comes from having, the worst case, having manual

PDFs to fail or even manual reports that are information heavy. And then once those forms get in the second place, that data is not really used for full of its potential, and so forth.

So this is really the value chain of data collection. So there are incentives in place and there is a fair process to get the data flow.

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But the key again here is, as we looked at earlier, is how to make that more standardized, more automated, more effective and really flowing so that the data and the information can be collected where it happens and the data can also fit, not only the previous party but it can fit any party that would improve their visibility over this value chain.

So really having a data infrastructure to capture, manage and share that data. And that is the structural perspective between these different functions and the value chain.

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So then when we apply the same thinking based on more shared standards between actors, we get more into global benchmarking. So the things that we discussed about in the previous module extensively. So you can compare results between other regions and ecosystems. You can compare results with other startup support services. Or you can compare your progress with other startups in different markets.

And of course, the accuracy of the data can be separate from the identifiability of an individual company or startup. So while the data can be very accurate or correct, it doesn't mean that all of those startups can be identified, for example, if that's not what we agreed to or that's not what the startups agreed to do. You can't necessarily look at your individual competitor but you could see similar startups in similar industries. What is the progress pace? What types of valuation do they have in their companies? In the successful funding rounds, and so forth.

So there's a lot of different values that can be extracted by committing to more common practices.

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So really finding answers to questions like what's happening in a specific industry? What phases other startups are currently at? What are their velocity? Meaning their progress between development phases in general, in our ecosystem compared to others, or individual industry compared to other industries within our ecosystem. And really looking at this from volume perspective, from quality perspective, from progress, velocity perspective.

And of course, ultimately, it comes down to that return of investment spent, specifically public money spent on innovation support services. So when spending public money for transparency and accountability, to really get real metrics and not this kind of vanity metrics or made-up reports based on assumptions or surveys that are more of the secondary data or the worst cases where KPIs are created at the end of a project when the reporting needs to be done.

But you can really see all these types of things happening in the fields and in the markets. It's, unfortunately, common practice in many places.

So where to invest to further improve and accelerate. So having the perspective from the efficiency, not only from what's happening but also what are the outputs of the development initiatives happening in the ecosystem.

What startups to promote, showcase to global investors. So how to find the best ones for when international delegation comes and wanting to showcase your best companies. How do you know that they are best companies? If they come from an industry, specific industry, they like to know what's happening in the industry.

So what are the most interesting companies? So not only the ones who are currently already successful, but what are some of the newest things coming with a great momentum while they may not be significantly big yet, but they are working with newest technology, with most proven momentum-making progress regardless of their development phase.

So the easiest analogy that I like to use, usually sports. So who are the rising stars? Who is the next most likely Formula One winner currently driving somewhere in the car series or Formula Three or Formula Two? What is the visibility of these types of activities in the context of ecosystem? And to what that view is, perspective to if there is no data about their lifetime compared to their equal peers in age or history of how long they have been thriving.

And you can pick any sport. You can pick football. You can pick fencing. You can pick tennis. You can pick any sport and there's huge statistics available in every single country from their favorite sports from junior leagues and so forth.

How does that same data look when we talk about developing our economy to improve our jobs or to improve our climate change initiatives through innovation? Where is that data? That's the question.

So if we compare the methods and availability of different types of data, we don't have to look far to know the benefits and we don't have to look far to know how much of that data actually impacts the visibility to see what's coming and what's happening.

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So two types of data, open data and by-permission data, initially to apply metrics to get data for all needs, so whether that's records of CRM or whether that's measuring any of the KPIs. But then opening selected data to the world as open data it's just basically like the public sectors are doing in many other industries. It's like if we have no reason not to open, then we open it.

So it's not from the perspective that what data should we open but having a whole principle in place that if we have no reason not to open then, by default, we open to attract investments, to help startups to be discovered, to help scale innovation.

And then more data by permission access. So that can then be ask any as detailed data. It can be startups accounting data. It can be their invoicing data. How much they have invoiced? It can be subscription data. It can be the Google Analytics data. How many visitors do they have on their website?

So the question is what information could be made available? What information already exists? Who should get access to that? So most likely an investor. Investor would be interested and they will get that information anyway. Otherwise, the startup will not get money. They will do the _____ [**00:13:43**]. So it's not that it doesn't happen but all the processes are just not efficient.

And then access open data from elsewhere. So that's when you are on the receiving side. Compare your city performance to access innovation from other markets as solve local problems and so forth.

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So when we go to the use of data, it's obviously not only for measuring but it's also to attract investors, big companies, do benchmarking, do partnerships, collaborative development within the context of a certain business vertical ecosystem, like in agriculture. For example, high impact of our environment. So collaborative improvement in agriculture sector innovation could be a big collaboration effort.

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So the real key point when we look at the digital alone, so if you test the same way as the example of empty CRM, that's if your ecosystem is empty from data, it means in the digital world things don't exist. That's as harsh as it can be. If we look at the digital economy in more broader sense is that how to make things to exist and exist in a quality way in a digital world.

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So intelligent data for startup fundraising as an example. So startups today compete on a global level for investors in interest. Sometimes when working a lot with the support services we forget that investors, yes, they actually really, really want to find good startups to invest. And they are— some, like you've seen also big crazy cases where maybe they weren't that good but huge amounts of money have been invested.

Every year, there's more money to be invested into startups and it's venture capitals' and business angels' job to actually invest that money. Well, angels make this more voluntary, but for VCs, it's their job to invest. So they really do want to invest and they look and they have to put that money to work.

But how to make that really their job as easy as possible, as data driven as possible? It's what the government and support functions can do.

So the challenge for global investors is to identify a good deal flow, cutting through the noise and volumes. And really, they want to find them anywhere in the world where that is happening. To leverage, there are more intelligent data to meet the investors' requirements.

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Also, to engage investors further, the types of information is about exits, startup success stories from data perspective, not only like they are really good startups but how does it look in the form of numbers.

Startups that have transformed into real companies, so like all of those numbers visualized in an appealing and effective way is really what works.

Investment activity in the region, market opportunity, attractive industries and sectors for startups and investors. Underlying tractions, key performance indicators, so when startups some are successful, is there deeper data to look at why they are successful? What's different from the perspective of data?

Financial and operative metrics, so getting data out of Google Analytics combined with the project management tool combined with their subscription system in Stripe.

So startups' unique selling points, differentiating factors, competitive advantages, scalability, global nature of products, clients.

And a lot of the startups are already very transparent. Like they really do want to share about their progress because they understand that that is one way to build inbound attraction by investors and even team members. So they are blogging and tweeting and sharing and pitching.

This is, again, it's not that they wouldn't want to do that. They may put something for permission, but the key is really that someone has to start putting the sports tracking in place for the ecosystem level.

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And the same applies for attracting big international companies. So this is also from the perspective of seeking for exits or seeking for partnerships or seeking channels to build companies to global markets. Big companies are constantly doing it. They have big difficulties in keeping up with the pace of innovation, what's emerging in different industries, in different parts of the world.

Smart big companies are moving towards open innovation and tapping into innovation by startups. You can look at any multinational company and they have innovation or startup programs in one way or the other, being that co-working spaces to accelerator programs, to corporate venture funds, to innovation competition, to hackathons. And all of that is basically there to replace because there is no data available because it's not collected.

So a lot of these activities are done to replace manually things that could be there in a different approach, but at the same time those activities that are being done, they are not collecting data and they're not sharing data because no one's looking from that perspective as an ecosystem orchestrator or ecosystem operator.

So innovation by startups is fast and cost effective, more open and more exposed to market feedback. So these are more what we discussed already earlier.

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I'll stop here just to check if there was a question. I'm not sure if there was something, so let's check.

[**Speaker**: We don't have anything, Valto, from attendees.]

Okay. So if someone is wondering why I'm asking all the time, sometimes my system prompts, but it may be something else as well. Anyway, so let's continue.

The business case is one we- [00:22:44] **Page 23 of 180** one of the earlier startup ecosystems that we started to expand. This was end of 2013-2014 when we started to expand the ecosystem development concept for beyond just one ecosystem. So really bringing it more as a globally neutral work.

So one of the first ecosystem development efforts we did was with Startup Estonia.

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At the time, we already applied the foundational perspective, the pieces that we had or the framework around the ecosystem development built around the startup development phases.

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As one of the outputs afterwards, they implemented a startup ecosystem portal to communicate the information about the startups they have in different development phases as well as the services available to startups at different development phases. So two-sided mapping exercise and building a simple website to communicate that information to everyone in the ecosystem and everyone outside of ecosystem.

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So having very simple categories of companies like Transferwise, Pipedrive. I think Transferwise is pretty big at the moment and also shows in the numbers that that they were openly collecting and sharing.

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So the Estonian Mafia was the bottom line actor. So Startup Estonia was a top-down actor and the EstonianMafia is the bottom-up actor. They did a manual process to collect the information and record the funding rounds and the progress.

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This is the typical how a manual system looks like. So basically collecting through crowdsourced activity. You can see it's Google Spreadsheet shared by multiple actors currently interacting with the system and collecting that data. But nevertheless, the key is the data itself. You can see there on those different tabs per year. Of course this is very laborious but even with that type of manual approach it's extremely successful and powerful and has been for Estonia.

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So anyway, the output has been the ecosystem players talking the same language when it comes to Estonia startup ecosystem development, common framework for ecosystem players, things that are measured gets improved, manual data collection process to understand why is needed to be collected.

And why is the manual process there? Initially, is to validate the concept of course and the benefits, but at the same time, as it usually goes, there isn't money in bunches hanging around to necessarily convert once you get that going, and someone says, “Oh, but that's already working.” Because not understanding what is the next level of development.

And then the organizations change the project funding. This disrupts the ongoing path of development and people change their job positions. That's the challenge when there is no ecosystem operator. Any organization in place the progress becomes periodical by one group of actors. Then, when things mature, people mature, the progress may actually stop. The worst things would be that it actually starts to be repeated totally from the scratch by some other actor.

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So the types of data, just to kind of have a summary of that. So the ecosystem data refers to information that is collected from the ecosystem via various systems and applications, and interactions between people and services in online and offline settings, where this information is automatically captured and/or manually recorded into various different applications databases. So we have the data.

Then what we can do with that, we can educate, inform about needs and identify target items. We can develop priorities based on data-driven decision making. We can acquire resources, obtain funding, develop policies because we know what we need to do. We can evaluate programs, and so forth.

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Basically there's always two types of data, primary and secondary. Primary data is collected directly from the interactions. So this is like real applications of existing CRM records, existing event registration system, from existing project management software, from existing accounting software the primary data goes in.

And the secondary data is when someone tries to manually collect and ask this information from someone to send it to them manually or they do a survey-based approach. For example, the Startup Genome, the global startup ecosystem ranking is fully done based on survey data collected from multiple support organizations to submit information.

And then there's this similar data aggregation and cleanup process and so forth to be done, but it's not based on primary data. That of course, obviously influences also the accuracy of who are

the actors actually responding to that data. How accurate is that information that is entered into the system to be analyzed, and so forth.

So really, the source and the approach is to focus on primary data and build systems that are with the same effort and almost with the same money as doing the manual effort done into directly digital repeatable around primary data.

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Then of course we can also have qualitative and quantitative data. So qualitative is more data that can be measured or can be counted for to answer questions like what, who, when, how and so forth. The qualitative data can tell us what is impacting our ecosystem but it really can't tell us why.

And in quantitative data is more applied on top of that. So it's more analytics or further research into those topics, listening, observing people and services, recording perceptions on how they feel and so forth. So this can be feedback forms, questionnaires about different things. This is typically also based on more of the secondary data.

But depending on how the systems are put in place, if it's a system instead of one-off collection, even the quantitative data becomes much more accurate and useful because it's always the same format regardless of people and views.

Lesson 3 - Digital Transformation and Ecosystem Architecture

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So from present reality to future scenario vision. So when we take any ecosystem starting point, and from the maturity, like looking at those ecosystem maturity phases that we covered I think in Module One, we basically have the data that becomes information that becomes knowledge and that becomes wisdom.

So first we have just knowing what's happening, who, what, when, where. And then understanding how and really understanding how these things happen. So understanding those processes that could contribute. And then through data visualization and so forth and finally having wisdom. So understanding why, so why does these things work and look the way they do.

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So the typical mapping exercise is the beginning part. And then we have the orchestration level, so the later maturity of the ecosystem development phase where there is more wisdom in place. But the key thing here again as a reminder to understand is that, again, it's not only about understanding better, not only about the reporting perspective data, to know the numbers and KPIs, but all the other things that the data can actually do. So the automation of this.

Getting back to that whole point of developing anything around AI or improving any of those processes, to automate any of those processes needs that data to function. So it needs data triggers to improve the application. And that automation doesn't have to wait until the ecosystem reaches maturity level but is something that should happen following the initial phases early on, because it also starts to contribute more volume of data, different type of data, new types of data and information that will then also contribute towards the wisdom faster.

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So we need to get to this level of digitalization. You can already ask many things from Siri. You can ask many things from Alexa in Amazon but you can't ask questions like this. And the only reason the system can do whatever the system is designed to do, but it can't do if it doesn't have the right data to work with. So to get to this type of information that the pain needs to be faced from the data side and the software connectivity side first.

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So the automation part can be spread to many different levels as well, from simple, moving one data record from one system to another or to trigger if event is full, to notify people that maybe we need to create another similar event and schedule that earlier than later. So whatever that may be.

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And at the heart of everything, we have been discussing standards in many different levels. [Reference] We have discussed standards in terminology. We have discussed standards in the framework format. We have discussed standards in the context of KPIs, to have comparable data, to have comparable measures. And of course when we talk about standards, we also talk in the context of data.

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Again, we need to avoid creating bigger or smaller silos. We already have silos in every ecosystem in so many different levels. I think we discussed about those earlier, the types of silos we have. [Ref Module1]

And one of the biggest points that we want to communicate because we work as a globally neutral actor with any ecosystem who wants to make progress in these areas is to do not create a national silo. So don't create a silo around your city just to get the standards to work within your city. Don't create a national silo to just create models that are applicable in your national level or don't create- if you are a multinational organization, don't create standards that only reflect your business vertical when it comes to data about innovation, startups, progress, investments. Things that are cross-cutting through any vertical.

You can create your own standards in the context of your vertical but make sure that becomes the standard with other- even your competing vertical actors because, otherwise, you lose the benefits of commons because the models and standards are different than the actual data that is then cycling through because of those standards. So really, to co-create global ecosystem connectivity standards.

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This is of course the type of world we live because of the historical perspective of how this very physical infrastructure solutions have built their standards and there has been competing standards for whatever reason. And we also know and really experience the benefits of global standards, whether it's our mobile phones or whether it's the Wi-Fi. So really, to understand the benefits of building global standards.

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In the round of data we discuss about open standards around data models. So really bringing the interoperability, aggregation, comparability and automation capabilities because of the open standards data.

And we'll dive deeper later on into what- how does that look in practice, but we'll look at some other elements before that.

But really, open standard means that it's not controlled. It's not meant to be controlled by any individual country or organization, public or private. But it's more like open source software, building a common standard that everyone benefits from and everyone can contribute from and having an open governance model around that.

Similar to what we discussed about ecosystem forum and ecosystem operator governance models in previous module. [Ref Module2] but having that around specifically having in its ecosystem having their own teams looking at this and then aggregating that conversation at the global level. That's one area where we are orchestrating and contributing heavily because we understand and know this is a key factor for everyone.

But we are also hopeful that as things mature in more ecosystems, we have to be less and less responsible of pushing that agenda while we still want to contribute for those standards to follow because it's a requirement for everyone's collective and accelerating benefits in their own ecosystem developments.

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So because in this module we're focusing on the digital transformation, we really have to go through some of the really basic terminologies and key meanings of what digital transformation actually is about and to really get the essence of that. A key piece is to really understand the digital economy and all of its scale and size and understand some of the challenges. Why aren't we there then yet. Like why some industries move faster, some move slower, and why isn't this- like if it's all logical then why is it actually already happening/

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And the perspective I like to give here as an analogy is this how we see applications and how we see as when we look at as users, as consumers, as individuals using applications and software, whether it's even offline software. It's the same thing, but specifically when we look at software online we really see that, we see it all through the user interface.

So we see whatever the interface is that is given: Facebook, LinkedIn, Google, Trello, CRM. We understand the software and the digital world through that lens. We see email. We see PDF file. And that really changes our perspective, or it doesn't change. It's just how, without thinking, it's that maturity of people, how they understand digital economy is what they see.

An internet is like there's one application. I go there, and I can do things. I go to another one. I can go there and I do things.

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But what happens behind the scenes is actually what the real digital economy is all about. It doesn't mean that the other side wouldn't be included but the point is that, behind the scenes is the software features, is the data, is the real digital economy.

And the other, the related terminologies around that is API economy, data economy, platform economy, and typically this is more common for developer users to connect other applications with other- to make applications, to communicate it with other.

And also the key piece there is, similarly, as we as consumers or normal users go to register into new application, we're given the terms of use or the terms that we have to accept. We just go there click and access granted. But we don't really, like we don't read them. We don't really think of them too much. And it's actually of course also a big problem in today's world.

But regardless, there is a way for me as a customer to make an agreement with the service that I'm using, with the one tick box and a click, and the service for reasons we already understand and can understand. They want that to be very seamless and efficient.

I think if every single user would have to negotiate and agree about the types of terms, like imagine it has an offline sales process about an insurance or a bank relationship, that is now replaced with tick box and click yes.

So that's the level. It's not only the digital efficiency. It's all of those things that happen because of that. So, in the digital economy when looking at the application connectivity, there also needs to be business terms, so technical B2B user business terms. That also can be at the click of a button instead of this negotiate sale type of process of do you give access? What data would you like to have? I'm like I'm not sure. I have to ask for my boss. Well, we got this and we can give this, we can't give this.

And the other side as well, then that's not useful for me. There's a whole thing that needs to be put in a click a box, here's the terms you can use it this way. If you consume more than that, you have to start paying. If you use this openly, this you have to get a separate permission. Apply

here, submit, approved. That's how the connectivity and the digital economy works behind the scenes.

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But because of how maturity of those who are not software companies and digital actors, typically maturity of these applications that are currently in place, they are technically and practically not open for business. So only the normal users who the applications are designed for, it's open and it's working, but the whole digital, the bigger part of the digital economy is not open for business with that application, or with that company with that application, or with that company with that service, or that public sector actor with that support function. It's basically the only way to interact. It’s meant for the normal users.

And of course there are companies who have created techniques to make it work even if it's not technically open. But what is not in place at that time, regardless if they use some other technical means like website scraping with software scripts reading you know the user interface, there is no business terms because that software was never meant to be used that way, that they could check a box and say I can feel comfortable that they can interact that day and use that data that way.

So API economy and data economy means the certain user groups and it means the types of tools to make things open for them. majority of applications in the world technically and practically are not open for business.

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To change that is really to create those terms, technical B2Bn terms, create developer documentation. So these are the rules, these are the information how you can use it, and then here's practically where you can use it, so the application programming interface. And here is a list of data that you can extract what's available. And technical business terms say here are the- you can consume this data with these terms, and, yes, you can put a credit card here or you can make an annual agreement, but it basically means that you make your software technically and practically open for business in technical B2B use cases for developers, for other applications to connect, and technical B2B users to emerge, including startups building new innovations out of that data or from those software features that are available in your application or application that you use.

So whether you have custom-made software or whether you are using existing softwares, whether you are buying software as a service, these are the same questions that you need to

think is our service, is our business technically and practically open for business in a digital economy.

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So this is the transition, what enables the digital economy to grow when more and more choose to be more open and design connectivity under the user interface, so not what happens in the user interface but what happens in the logistics system. What happens in the value chain between actors in technical level directly between applications and reuse of data really creating new models by merging and combining data from multiple services, and so forth.

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So more technical perspective into what we in previous model looked, moving from applications to pipes, moving the mindset from application-centric mindset to data and value exchange and connectivity-centric mindset. So really thinking of and understanding what that digital economy means and its full scale. There isn't too many terms to pay attention to really understand what's happening.

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So moving into this world to have the application programming interface, APIs available and having data to move and software features to move between applications. And then it's a separate question between what applications and with how many applications, but the minimum requirement is that if the application is not designed to be available, by definition, it's not available. And others can't build new opportunities because of that, so missing a whole segment of extremely valuable use cases and users.

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When we look at startup ecosystems then from another perspective, more from the business operational perspective, moving away from data for a while, we look at the organizations [00:19:48] **Page 53 of 180** in the ecosystem.

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We typically have whether it's a co-working space full of startups, whether it's a support function, whether it's a government call center around company registration, we have the back-office functions where things happen.

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We have the middle office. We have those who run the processes, those who look at the rules and how the organization works. What are the do's and don'ts and instructions, guidelines, different things.

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And then we have the front office where people interact and face the service or the organization to enter.

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And you can put any organization here. It can be public sector, you can put a multinational giant company here. The key is that majority of organizations are analog. By analog we mean that everything is one, and the digital, how they see is based on the user interfaces from the perspective of how they understand and how the information is moved.

It moved one people, one person takes a report out of the system and then goes and communicates to another person or sends through an email, and this other person consumes that information through however it was sent or packaged.

Of course there are applications that are shared among the CRMs or whatnot, but typically there are also multiple applications in the organization that are not communicating with each other and therefore information is passed through people. There are offline software, SaaS software, and so forth. But the analogy comes that a maturity of the information actually goes through people and that's an analog organization. Even if it's an electronic PDF, doesn't make it a digitally operating organization.

So typically, it means that if the organization is built such that the technical tools are built just to help run the manual processes in a digital format where the key part of the processes is information passing from people to people directly, it's a very analog organization.

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And when we talk about the digital transformation, it really means that everything that happens in the organization is, similarly as we talk at ecosystem level, that information is primarily moving through application to application directly. And then people have different interfaces to see that.

So whether it's an accounting system or a CRM system, that the information doesn't go from Accounting to CRM through people. It goes from accounting to CRM directly. And then people have different views and they have different tasks to work with that application or to pull

information from that application regardless of whether it's from product management, whether it's from accounting, whether it's from CRM. They have their own interface where they can pull any of that information. That's how it looks in practice when it's a digital organization.

Now, you can all think of, well, how many digital organizations there are in the world that not only build digital products and solutions externally to others that they sell, but are actually internally digital as well. So they are not only building digital business, they are operating digitally-enabled organization.

Of course ecosystem goes broader but ecosystem is then connecting these different applications across different organizations. But if you take a big organization, like multinational, they have country offices, they have different functions. They have even multiple offices in the same city, it's not that different. But how they built their systems is very different.

So the key example is that we can think but you can think of any of the, you know, Facebooks and Googles and Amazons and Microsoft and Apple. They don't run internally either in the analog format.

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So that perspective applies to all ecosystem functions collectively and individually. That's what the digital transformation really needs to start coping is that where to start and where to end is when there is no longer those manual information passing processes in place where it can be done directly and automatically.

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And understanding that we started why to go into more technical things, and for some from the ecosystem development perspective or ecosystem builder perspective, you may feel that, well, this is too technical for me. This is technical stuff. This is something that belongs to developers. This is something that I should not need to worry.

And that's exactly what digital transformation is about. Everyone needs to worry and everyone needs to understand this at a deep enough level, but also high enough levels. So don't need to go needing to be a programmer. Don't need to know how to code. Don't need to know how to maintain servers, but to understand actually what is happening on the technology side.

The other key piece is that also those who are technical people, who are programmers, software creators, the technical system administrators, they may think, well, I don't need to know about ecosystems. I don't need to really know about innovation, entrepreneurship and startups and so forth, unless they want to build one of their own, but it's exactly the opposite.

If they work in ecosystem development they do need to understand the applications, the different actors, the terminology, because that's the only way we build the type of knowledge that can solve these challenges. And that's the same problem in any organization outside of ecosystem.

Let's take the shipping industry, logistics industry. Those who know the software and IT typically don't know that much about the industry itself because they think they don't need to know. On the other hand, those who work with the logistics, the most cost effective way to ship a product from A to B think that I don't need to know how the system works. I just need to know shipping products.

But the key thing is to be able to develop that requires people that can understand both sides to be really effective, because a lot of the challenges in digital transformation goes into lost in translation. So meaning that the operation, the non-technical side is unable to communicate clearly enough what and why and how things need to be changed for the technical people to be able to do that. Or on the other side, the technical people are unable to communicate what's actually relevant from the business operations perspective and why.

In the ecosystem, in the innovation entrepreneurship ecosystem context, we want to make sure that the level that we communicate these topics are able to breach both sides and we put it in digital format and visual format to help bring and bridge these silos together as well to improve the overall capability of developing the ecosystem, whether it starts from support functions to ecosystem level, to digital orchestration, to application, to data, to automation. We don't go as deep as starting to talk individual software languages or programming code snippets. We don't go that deep. We also don't go into explaining how business model canvas work we don't go into level of opening up accounting systems.

But we do bridge all of the key knowledge through the framework to make sure that it connects and you can from any ecosystem development role, whether it's technical or non-technical, you can kind of get the whole big picture built if you have enough commitment to pursue the knowledge and then research any topics deeper if needed.

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So we are all used to thinking or communicating that we have two sides of the brain. We have the more creative side and then we have the more analytical side. We used to think of like it's arts and mathematics and this is how our brains work.

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So when we talk in this context of building the digital transformation mindset and we talk about business context and ecosystem context, we're talking about understanding the business mechanics economic mechanisms on the creative side. And why they have the creative side is because they don't have to match always.

Look at any ecosystem and the KPIs, you look at any business accounting there's creative accounting down there. But when it comes to data, it only works if it's like really ones and zeros. And the more we have teams who share this knowledge, the more we have individual people who share this capability and knowledge to bridge these two worlds is where the talent for digital transformation emerge.

So, the digital transformation is dependent on finding a right way to communicate between business functions and technical functions and having teams that are capable of handling those like teams of two, teams of five, teams of ten and all the way to the point of having individuals who can handle both sides.

Again, this is not specific to startup ecosystems or ecosystem perspective. This is the same challenge in every single organization that are trying to convert themselves into digital economy, that there is not enough teams and people who can effectively understand the business that they are in, the customers they work with, and apply digital methods to improve the processes and information flow.

And therefore also, when we talk about individual startups, they're those who are capable of building the innovation as a team having the technical side, the business side and the design side, the creative and the creative side as a team. That's one of the reasons why there can be super powerful organizations having this digital DNA in their organization from the beginning.

So, this one slide is very much where the limitations, struggles, challenges but also the opportunities of digital transformation lies, is to have more minds that can build digital businesses, think digital businesses, digital processes, digital operations. And in the sense of not limiting to what the user interface communicates.

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The most notable organization in the world that has gone through this transformation and how it went through was Amazon. We can all see how Amazon continues to stay new industries and enter into new markets, whether it's geographically or industry-wise. There's something like we all know that Amazon started from the bookstore and e-commerce store and we see the outside, but what happened inside Amazon internal organization?

2002, 17 years ago is when Bezos said- this is the official letter that he sent internally into the organization. You can Google it. A lot of the exact same is available many places used as a case example to many different perspectives, but basically saying that all teams will henceforth expose their data and functionality through a service interface. So meaning that not through people, not communicated manually, but through a service interface.

Teams must communicate with each other through these interfaces. So no from me to you, through person-to-person communication for anything that needs to be accurate. We can of course brainstorm it and communicate what that means, but not the actual, like this is the factual data.

There will be no other form of inter-process communication allowed: no direct linking, meaning that I'll send you this link. No direct read of other team's data store. No shared memory model, no back doors whatsoever. The only communication allowed is via service interface calls over the network. So basically meaning that I can't give access to my interface that I'm using when my role is accounting or I'm in shipping. I can't give access to my interface. I will have a separate interface communicating to your interface and you will get that information that is relevant to you through your own interface. That's what it means.

And the key here was also it doesn't matter what the technology is in question. He didn't say use Microsoft, use this open source, don't use open source. It's just not relevant. The key is removing the factual information transferring from people to people and only through systems.

All service interfaces, without exception, must be designed from the ground up to be externalizable. That is to say that the team must plan and design to be able to expose the interface to developers in the outside of world. No exceptions. So, open by design, open for business in digital economy.

It doesn't mean that you can access Amazon's internal data, but if they want at any point that they can open that data technically just by deciding to do so. And it also doesn't matter then whether you are official part of the internal Amazon organization or if you're a subcontractor or you're part of the logistics chain. They can have access to that information if it's beneficial.

This is a great business term to that. And if it's something that keeps repeating, it's standard agreement, and that's how you can get access.

And then showing the true Jeff Bezos action is like anyone who doesn't do this will be fired. So, just making it very clear that that's going to happen.

But the point is that this did happen 17 years ago, and that's what a digital organization looks like. Of course it's not meant that things need to be done this harsh, but in the private sector someone can push the change through motivation or through the financial incentives of taking the money away if people don't do.

And that's a separate question whether that's right or wrong or who should do it, who should not do it, how to do it. That's not the point. The point is about clear examples.

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So when we look at the Amazon Effect, that means like when Amazon not only us introducing new products or services— by the way, these transferred to AWS, so the Amazon Cloud Services. When they build everything for internal use and then they decided to open not the data but the methods that they use internally, so as an external product, that's what created AWS business eventually.

So all of their cloud business is based on that they said where the infrastructure and build the solutions is coming from the internal learnings, what they actually drive their own organization.

But Amazon, in fact, is basically looking at the lens of what happens when Amazon moves to another industry, because all the global investors understand what really runs the Amazon efficiency in that sense.

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So this is the Amazon Effect when they bought Whole Foods. They bought it was the healthy national consumer or grocery store chain in US, one of the biggest one and healthy food. So Amazon bought the Whole Foods and this is what happened to all of the big other grocery chains in their stock market.

So you have Costco, you have Walmart, you have Kroger, you have Target. This was when Amazon announced, so there was immediate market fix on what does that mean in the value of those other companies when a digitally native organization enters to their business. They haven't even done anything yet. It's just that they bought Whole Foods and they are entering to that industry now.

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So when they announced the Whole Foods, it was $13.7 billion all-cash deal, shares of grocery store chain Kroger slid 9.2%, Costco 7.2%, Target 5.2%, Walmart 4.6%. Actually what then did happen was that Amazon's stock price raised more than what they paid for the Whole Foods

chain. So practically they got that for free. And actually, I think even Jeff Bezos' whole portion grew more than it was.

There are more facts out there but the point is to what is the impact of digitally native organization moving to another industry that is not digitally disruptive yet at scale.

Lesson 4 - Ecosystem Users Account

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So we've looked at the Digital Commons. On the technology side and inside the applications and inside of the digital economy what are the commons part, what are the shareable things that we can share and work together within an ecosystem and between ecosystems globally.

So we have the data model. The data model itself is not the database where you put the information. It's just the model how to structure that data. And it brings benefits by having that as a commons to build data sharing, exchange interfaces and converters to convert existing data between common data structure and vice versa.

So if I have Database A and another actor Database B, we both have uncommon structure, the question shouldn't be do I change for your structure or do you change for my structure. But the approach should be that let's both communicate through an open standard model. I'll convert it to that and then you can read it from that format into your own system.

Or if building a new system is like, okay, now I don't want to even think of how my data model in my system should look like. If there's a standard model, I can apply that and I don't need any converters after that.

If I'm doing research data, so if I'm collecting secondary data, into what format should I share that if I want that resource data to be available to others. Again, when there's a standard, an open standard, that makes sense to use that. Even if then using also other formats it doesn't change.

The business logic. The business logic is specifically the framework, the development phases, shared best practices, KPIs, benchmarking. So looking at those that are mainly on the measure side and proven models that work. Those make sense to spread and work together to improve those.

And of course there will always be new that will later develop into new best practices and so forth, but that's something that will evolve but the understanding of working that business logic.

APIs and documentation, so APIs is the interface. Where to access data and features. With shared data model and business logic, more and more APIs can be shared as well. So efficient and cost effective documentation and translation. So if we have shared APIs, we can have it's like those electric outlets, the sockets. So that the more they are the same, the less we need to

have different instructions and different ways of how you can use, so less of adapters are needed.

The more they are the same, the more cost effective it is to use them, the more cost effective is to document them. And again, it doesn't say what is specifically the data that is available or in what terms I can access that. It just says how can I connect to it and then that's a big part.

Then when we can go deeper in the software features, we can have functions as a service. Let's say there's a register a new account or analyze this data for that output or do this or do that, those individual software pieces can be separated from the application itself and made shareable.

So typical things that you can find, like the big Amazons and Googles are sharing like image recognition, reading images and recognizing text or people or places. And you can access that feature through an API or face recognition. So whether it's good or not, whether it's scary or not, doesn't matter. Anyone, any developer can access face recognition software through an API. Doesn't need to build their own.

So those are functions that can be shared and developed in an ecosystem context the same way.

Users and user data. So ecosystem already different support process includes shared users, shared customers. And talent is taking part of multiple events by multiple different organizers of the event, sharing their customer. A customer can be in the lawyer's shop, in an incubator and in the funding instrument at the same time, and if everyone calculates I have 300, I have 500, I have 700, and then you count those numbers together that's not representing the actual number of the customers.

That's the measuring problem but also how to share customer base so that if I have an event for business model canvas, it would be really great to be able to just know and share information about related events for the same audience. So that would be the shared users.

Of course everything of these needs separate rights and permissions and access, but that's the thinking of what is commons. And of course then the data that is also with the users.

And then ecosystem applications. So then they complete applications for creating a business plan or doing an online business model canvas exercise. Or an event system, or an education system, or a scoring system. So entire application can of course be made open source, build as a global or common standard and distribute that, and that's a choice of anyone who already have existing applications to just take that type of strategic position and start planning that way.

And all of these digital commons is something that we of course want to contribute for, what we want to help develop, what we want to support, what we want to help spread information of any of these and help bring this digital side commons into life as well. When enough ecosystems mature and start doing this, when there is enough ecosystem operators who can actually handle these types of activities in a more permanent ongoing fashion with proper resources in place.

But it doesn't require again to start that. Everything starts from somewhere. The first step, the smallest step, the key is to understand what is the big picture and how to get there.

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So if we look at more of the structure of the ecosystem operator's team, like what types of people there should be in that team, for sure we have established that it shouldn't be a team that is only technical, or it shouldn't be a team that is only non-technical business operations that uses one developer or an outsourced IT company to help bring them and install them some applications, what they use. Or that they just use whatever SaaS applications are available in the cloud. It requires more of a team that has both sides represented.

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So having operative/ecosystem management type of roles. Having communication coordinators, so this is more like a customer side communication. It can be customer support. It can be marketing side.

Having product managers, so those who understand business perspective of what the products actually should look like, products being the applications, processes, data sharing products, and so forth from a business perspective. And having technical project manager that understands technical perspective of ecosystem development from non-technical side, but ecosystem development itself without the software can get pretty technical. But the point being understanding that.

And then on the other side, having more from the software website, like user experience designer. They are the least technical people on the software world. They really empathize with the actual users and non-business, non-technical users.

And then you have the software front-end developers, those who create the visible part of how the application works for the normal users.

And then you have the software back-end developers, those who create the actual functions to make the processes and the business logic work, and also the data models, the application programming interfaces, the APIs, the documentation is then built collectively between all of

the different actors making sure that the documentation is capable of communicating all of the different aspects.

And then you have system administrators who look after the entire architecture. Where does the software run? Is it running safely? Is it secure? Is it operational? Is it functional? How well is it running? Is there issues? How does the new software functions get applied and input in place and so forth?

So the key really is if here would be good to have those that brain picture in the background to communicate really the balance of the team.

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And then moving to the ecosystem architecture with the team and applying our learnings. So giving some rational and background information to all of the topics that we are covering and giving more of a timeline perspective into the digital transformation and technology world.

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So this is very much— this is from Linux Foundation. They are very much on top of global developments when it comes to technology side information and trends in the application development side. We have the timeline there. We have some known brands there, just to give some idea of sense of time and the types of applications.

Ebay is web-only, 2008, iPhone was introduced. You have Twitters and Facebooks. 2010, iPad, Android, kind of a next level. 2012, corporate platforms, Best Buy, AT&T moving. 2014, Tesla, Nest coming to understanding and so forth.

And then the type of language focusing only on the key language here. Again, doesn't need to go deeper. So monolithic applications, mainly server side. So monolithic applications installed in a server typically, not in the cloud but in a physical closet of an organization. iPhone _____ [**00:13:14**] still monolithic application, but for web and mobile.

And then 2010 is really where the API started to really emerge more in the online space in the more kind of mainstream. But it's still connecting these monolithic applications together. And then 2014, the new term microservices, basically means that this big one software in the package started to separate into multiple, more modular pieces. That means they can be more independently running, more independently developed, more shareable, and then increasing the number of APIs, of course. Connecting those microservices with each other, and so forth.

The key really being that the monolithic applications started to disappear when it comes to developing new things in 2018, so no more monolithic applications. It's a passing trend. And then introducing microservices as a main thing, and a new thing emerging called serverless.

All the time, like starting from some mobile APIs to many APIs to test APIs and unlimited number of APIs is how to look at this. The trend there shows the volume of Google trends, so basically meaning how much of those are searched. So it's really communicating the trend of where the volume significantly increased in level and where that volume, how it accelerated forward.

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And a useful exercise on top of this is to show the timeline for how long we have been looking at this space period, from ecosystem development perspective. So looking the digital aspect of startup ecosystem development so far. And we started to develop ecosystem applications in monolithic applications on top of ecosystem development support activities in 2011.

And we worked with the technologies that were available then and we built a big monolithic ecosystem application until 2015-2016 where we realized that that whole technology, basically the monolithic application approach, is outdated and it never can work in an ecosystem. Basically meaning the same way as those applications don't work in big organizations as well.

And we started basically to all of the business operation or non-technical learnings of the application and digital side and started from scratch, built on top of the growing trends of microservices, serverless and APIs. So everything that we have worked since 2016 has been based on this future oriented models and trends. That's also what we are covering here.

But it's valuable to share where that has come from so that we can also, when we work with ecosystem development, we can easily identify what are the outdated models and whether the actors, specifically technology people and software guys and those who create the technology solutions, whether they are on top of their own game. Whether they know where the actual digital economy is heading and what are the relevant technologies so that we can help to improve and communicate and avoid painting yourself in the corner type of challenges or, on the other hand, to help bridge whatever the current setup and situation is to make this adapter-based moves in between while making transitions to the technologies that can be more future lasting.

And as a side project also with this, we realized that it's not sensible for us to work on building a lot of the different softwares, that we only focus on the key elements and rather support those who develop the softwares that are future oriented and help bring more of the ecosystem

commons sharing and the tools that are needed to enable that sharing and working with shared commons by others and contributing to those. Because that makes us even more neutral actor to be able to do more scalable approach to support as many ecosystems as possible.

So we have went through that learning and also applied that learning into the ecosystem development on the digital economy side. And we still are able and we want to support anything that needs to get off the ground, but we don't want to be operationally responsible for those in long term because it doesn't belong to us. It's not what we want to do. It's not what ecosystems should want us to do, because these capabilities need to be built in their own ecosystem.

And we look at them, the roaming in between the ecosystems and comparability and compatibility and the knowledge sharing between the ecosystem from our perspective so that the silo problem doesn't emerge.

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So one perspective into combining a software development kind of key terminology from the operational side and giving some time perspective here, so when we look at the earlier part of the timeline from the previous picture, the traditional used to be this waterfall approach. Like design everything that the application does in from end to end before you build anything. And then you would build a big monolithic application that basically does all the business logic that was thought by some design team a long time ago and then build the whole thing.

And then it used to— the software was run in a physical server, typically in the company facilities. Then the outdating model already is like this Agile software development. So it was more instead of we designed it once and then we built, it was like we designed a piece of it. We built this piece of it, would design more. We'll build more, we'll design more. We'll build more, we'll design more, and so forth. So that's the Agile approach to software development.

So applying the learnings of the application actually used to influence what are the next features and functionalities to be developed.

And then where these softwares were run were typically in private clouds, so more of in-facility but multiple private server setups.

Current, this could already be seen also updating is that instead of that software development team just working on their own, now, the DevOps became broader, including taking into account also where the software is run into the development cycle. So now it became relevant that, okay, to improve the software development efficiency we need to modularize the

software. So instead of building these big applications, because any update into that big application was going to be a big upgrade process in the server side. So to be able to be more flexible, let's break that into microservices so that we can then build and more actively develop this.

That meant to include the server administration side, so the operations side. Those who operate the software when it's running.

And then NoOps. What's the next phase is this notion that we should no longer separate the developers and where the software is running, or the business side for that matter. What kind of software we should build, but we should all understand and just look at it as same as everyone knows how to write and everyone knows how to read type of mindset.

In the architectural perspective, it was even to continue, put those— used to be one big application to modular application, and even further piecing that out into functions as a service.

And then also removing the whole concept of server to restrict from thinking of, okay, how do we run the software? Where does the software run? And instead, introduce this concept of serverless computing, which is the current, and of course a lot coming from Amazon and Google and so forth where you don't need to think about the servers in any context anymore. You just deploy the software directly as you would deploy anything that you want to work. You don't need to have a server in a conceptual mind anymore.

Of course servers are still there but you don't need to worry about server softwares and things like that. You just deploy the software functions individually and they keep running, and the cloud side is taking care of the whole maintenance of all of that running. So then that becomes more cloud network of operating systems, so a totally different aspect.

This is the timeline from different perspectives on the architectural side or the whole software side.

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And when we look at this ecosystem now from the perspective of these different segments, we have the business creators in the middle building both ideas into products, into businesses. And new talent becoming co-founders and a growing organization. Then we have the segment of support providers supporting each of these different functions through different services with different events, with different support processes and having the ecosystem operators strategically developing the whole ecosystem and then looking at the digital here.

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And now we look at the architecture of an ecosystem from the perspective that each of these service side applications are one that includes data from two sides, the service itself and then the customer that they are serving and their data. So each of the applications always have these two sides if they are serving the customers.

So we have applications like event systems, evaluating tools, project management tools, online forums, matchmaking tools, mentoring applications, funding platforms, accounting, and so forth.

And on all of these we have two sides to collect and build the data infrastructure. One is for the data that goes from the service side information, from the service side data to connect with other services. And then we have the customers' data, individual's data coming from one service to be portable to another service and to build more holistic perspective of from the mentoring perspective of how many shared customers do we have, but also from the perspective of how does the customer look like from various different data points combined.

And again, everything is permissionless or open. That's a separate decision. This is more for the technical architecture.

And on top of that, then on the ecosystem orchestration and operational level, totally different new types of applications or rather interfaces into that data can be built as well.

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One connection per application to connect to any number of other connected applications. That's the infrastructure part so that we focus on designing, enabling and building these types of solutions. Again, building means helping others to build or helping your local organization, so your local developers or your local software companies, whoever you want to build that, but the key is how to design them, how to make sure their interoperability works. What are the standard models between other ecosystems? What are the standard KPIs and so forth, but the key is that having a system that takes away the heavy lifting so that everyone just can focus on we only need to make our application open for business. That's it.

Whatever that is we need to make our application open for business, that's our responsibility. And everyone who wants to connect that's what they need to do and someone can help and support them on that locally or globally. It's just a decision on how that wants to be made.

And then an ecosystem digital level, someone needs to look after as an ecosystem operator the entire how does that infrastructure then helps them to connect. So that's how the responsibilities basically divide.

The key is that everyone has the same shared holistic picture of the whole thing to understand what is the rationale and logic and how everything works and makes sense to be able to do their own job effectively so that it makes sense. And that they can feel comfortable doing that knowing that their data will not magically leave if they connect. Or making a separate decision that we are not going to make ourselves open for business because we don't want to share data.

It's a separate decision to decide whether you do, what data you do share, when do you share it from the decision of do we want to have that connectivity in place in case we want to share or in case we want to receive data.

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And the same on the user side. So here, the solution, the concept that we have is the Circle Pass. You have ecosystem level user account to help make the user's data portable between the applications, so that application in the early development side phase, like research organization or university can know what happens in the scaling phase. Or when a customer enters from another service can see where did they come from. What have been worked so far? What knowledge have been accumulated? Again, depending on what that data is that is being tracked for.

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And when we combine this, now we have the perspective into each of the application basically, being able to make any data flow between any application who wants to send or receive data. Whether it's open or permissionless, open or permission.

The key is, again, to understand the whole infrastructure and how to make it functional. And based on that knowledge then it's possible to actually make it. And those who can make it as more and more people, but the challenge is to be able to imagine it from that invisible ecosystem as how everything should be done and with what means.

So that's what we're breaking down as a shared commons with all of those who want to move into the digital transformation in their ecosystems.

Lesson 5 - Data Models and Ecosystem Applications Concepts

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So, going deeper into the ecosystem software, the evolution. So introducing these terms and concepts from the perspective of timeline, from the perspective of ecosystem a little bit, but let's take a bit deeper dive again with the help of some visualization. And the key really for us is to try to make this as technical as we dare or think that makes sense for them to be valuable but not any deeper than that.

And on the other side, connect as much of that non-technical business logic around these conversations as possible to make sure that if we have an ecosystem operator team from non-technical and technical side listening to this together, repeat it as being a digital format as many times as needed, as often as needed.

And whenever there's a question on that specific topic, to try to find it from the content and research further, or ask for deeper details, that's the function of this content that we are providing.

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So how does that transition to serverless architecture from the timeline of having the monolithic to mobile APIs to microservices into serverless? How does it look like in a visual sense?

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So really to enable that efficient, collaborative, secure and flexible development that the ecosystem needs and how to get it there.

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So this is to show again a bit more information including a monolithic application. We have the database so we can all understand it's a packet of where all the information goes simplified sense. We have the web user interface. We have the user interface. It doesn't need to be web, but we have the interface that we use to interact as a normal user.

We have the business logic. It can be hardcoded into the system or it can be like spreadsheet. There isn't much business— there are some, but there isn't much business logic you can use spreadsheets in many different ways. It's a very flexible tool, or something like Trello. You can use that many different ways so you need to kind of design your own rules, how you agree to

use things. Or you can have software that it only does what it's supposed to do and that's it. Its very business logic is tight and it can be taken into the database level as well.

Then you have the software features that actually makes all of those things work. This is the business logic and these are functions that make it work.

And then you have that layer between like the software communicating with the database. You know, data in, data out, data changed, and that's it. Those commands come from the user interface, enter this, save, report, pull this, calculate me something, and that is like one big application.

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For these applications to run, so the monolithic, what this means that you need your own server where you create your server setup. Whether it's physical or virtual doesn't really matter, but if you need to have a server, you create it or you put it in place. You set up. You install server operating system the same way as you put Linux on Microsoft or Apple where then this application runs.

You put other server softwares, whatever, depending on what the software needs to run, supporting softwares for the main software.

You need to manage updates. So not only updates for the software if you introduce new features, but actually you need to update the server's software as well the same way as you need to— you know, in your phone you need to have an operating system. In the server, you need to update the operating system as well which is separate from the actual application that the server is running.

And we need to make sure that if there's a lot of users that the server has enough processing capacity and that it can serve all those users. So if you get 1000 users looking at it the same time— and that still happens.

It was from the comedy series *Friends* just recently, is Rachel, the actor who has the character Rachel there, she joined Instagram just recently and posted a photo of the *Friends* actors together, the cast of *Friends* together and it's been like supposedly decades. The Instagram crashed because so many people wanted to see that picture.

So it does still happen but it means that the software server setup was not capable of balancing that that load. But the point being that it's not only the software that runs there but also where the software runs. This is the monolithic application setup.

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And then where the change started to happen, basically it was one of the big forces that forced the application programming interface, the API development to really get into high gear was when mobile apps were introduced.

As normal users, we don't really think about much what does it mean when we have our own app on the phone versus if we use the browser to go to mobile website of the same service. So we can see that the other one maybe works better, faster. It's more convenient. It can do a bit more. The other one I have to go through a browser and I need to type the URL, and I can use. It kind of loads weird or it's not fully as convenient.

But what it meant from architecture perspective is that that mobile app is a entirely separate application that needs to interact with the main server, not through a browser, not through a web user interface, but it needs this application interface to interact and move data and information between the mobile application and the server side application.

And because of that, the API development started to grow significantly because now there was more and more apps and you could win your business by developing these apps. But now you need to have APIs pretty much in there.

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The only really common thing here was the data model. [00:08:02] **Page 88 of 180**

The data model is basically the information structure how and what data is and can be stored into database regardless of whether it's MySQL, MongoDB or whatnot, but the data model. So basically, everything is built around processing information, putting information in, taking information out.

But the data model is the key piece that is relevant. Regardless of how old the applications are, the data model is relevant. It's a potentially common thing. And that's why we are focusing so much to start and promote the open standard around data model is because it's most relevant to everyone and at the same time it's the simplest and the lightest and the most logically understandable piece of every software, because data is information, data is KPIs and so forth.

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But now, because the APIs started to emerge, it was a business decision to open those APIs for other use and all-mobile application use as well. So the likes of Twitters, Facebooks, Googles, of course they may have had APIs earlier as well but it really started to become a norm amongst

other developers, among startups as well to utilize the APIs of others to build totally new softwares.

Of course, when there was limited APIs available, it was limited innovation potential of what type of data and software can be built. But as more and more of software came out, more and more applications came out, the faster it was for any new company to develop a new software that doesn't have to have those features in their own software. They don't have to build it. They borrow or use under business terms, functions and features and data of another application. So a mobile app was a big change in introducing this.

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Another change was that it started to make sense to separate the database from the application, because more flexibility, not tying that into a business logic and everything into one software. So really separating the database out of being like a business logic level tied into the actual software.

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One big piece of the complexity of the software was then that everything was bundled in. Even before the database was separated, and this picture actually should also include the web interface, it's all kind of software code that would have a significant amount of dependencies.

So you can think of like a business process chart that's had a lot of overlapping, you know, this goes there and this goes there, and if I remove this then the whole software breaks. It's this kind of challenge of a Spaghetti Code, meaning that everything is dependent on everything. That made the software development a very accurate and very delicate process and that's why the bugs exist so heavily. Why software is like you improve the user logging system and then the mails don't work anymore, like totally feeling that how does this worked here but something else right here? So it's because the software dependencies are very complex.

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The next level was to bring that Spaghetti Code into smaller pieces of spaghetti, and separate the data also into different types of data storage formats, into having databases or databases as a service, having more structured data, more unstructured data formats. And now, the application programming interface actually became more also its own thing to develop, because it's no longer just serving the mobile apps, it's serving all other apps. So a more application level standard needed to start develop and improve on on its own as being able to do the application

programming interface activities efficiently. So it became more of its own application as well to cater just disconnectivities.

The key piece adding to the common side was that now, also, the business logic was more separated. Because now, the business logic was no longer hardcoded into one, big, giant application, but it was actually distributed. And because of the APIs, now you could create other new business logic if you could run it just using the API, so that you could use software features from other applications or data from other applications. And now you can think of new business logic and you are no longer limited to just for your monolithic software service or monolithic software.

So now, these were called microservices. I would say maturity of existing applications out there if they are not SaaS software, if they are like local, involving local custom software, and even some of the new software still being built are not even at microservices level.

So this is what happens in technology development will eventually deploy into the kind of real world with a delay. But these are no longer— like, these are good practices. They are no longer best practices anymore. But the ones before are no longer even good practices. They are like old practices. So the whole point if building anything new is that also need to think of even further than this and definitely don't look at building monolithic applications.

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So still spaghetti, but now less, so it's more manageable, the software, because it's separated into more manageable pieces.

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Then the serverless is then what on the timeline you had there now relevant now 2018, 2019 going forward is more and more on serverless. That's all what Microsoft is doing, IBM is doing, Google is doing. Amazon is leading on the technology. And what that takes into account, here [00:16:03] Page **2** of 180 you still have servers. So basically here [00:16:07] Page **2** of 180 you have the server. Here [00:16:09] Page **2** of 180 you still have servers running those microservices.

When you move here [00:16:15] Page **2** of 180 the server is gone. So the point being that you no longer, as an application developer, application operator, the one who runs the software, you no longer need to worry about the operating system, updating the operating system, the capacity of the server. You only have to think of the actual application functions and the overall architecture.

So now, what has happened in the commons side, what has come more possible is in addition to data model and in addition to business logic, now, with more standards, you can build API documentation as a commons for shared business logic use. You can share individual software functions instead of full, complete softwares.

And you can also share users and data by sharing them through your application to other. The most normal uses used all the time is Facebook login, Google login, LinkedIn login and so forth. So that's sharing users. So there are applications out there that they don't even have a way to register in any which way than through Facebook or Google.

Now, that's a case example of where that is applied massively but that's not the recommended model for ecosystems because that keeps feeding them more information only. It's not to say don't include it. It's to say don't make that the only option, because they're also people who opt out from those services. So you need to build something more neutral but globally scalable and shared, and an architecture to support that.

That's where we start that support, it's to build the right options and the right privacy controls that are decided locally, understood locally, and supported locally. So this locally can be in a city, in a country level. Those are all local decisions to be made. We just communicate what makes logical sense and how they should be considered so that the technical stuff doesn't get in the way of understanding what makes business logic and what is logic for economic development perspective.

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So serverless. No Spaghetti Code anymore. And the point is because you can basically make them a simple or as big as you want. So it can include a simple thing. You know, submit and it just does that. It does nothing else. Submit. So one click and it does like two lines of code. That’s it.

Or it can be ten lines of code. It can be more. But the point is that it’s so much smaller, so much more simpler, and there is also no need to run through APIs to connect these functions so it has much more simpler interfaces for these to connect. But the interface is nevertheless, they are not direct dependencies. They all go through a logical connection.

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And with this setup now, we can create all the new types of ecosystem applications, basically meaning that on top of that architecture that can be put in place, it doesn't need this thinking that we need to create an application. But we just need to create a new interface into this

existing architecture and data and features. That's also the opportunity that all the startups have.

So the startups don't need to think of application development based on that we need to build a full monolithic application. They can just build an interface application that pulls all the features and does everything on top of someone else's APIs. Of course there's business reasons why you want to do something of your own and why do you want to build layers, why do you also want to have your own data. But the point again is to go through from the technical perspective what's possible and what's logical and what is fitting and what is the current, most mature and most applicable solutions that also really make the ecosystem infrastructures possible in a whole different way.

So if we go and look at where we started 2011, 2012 with the ecosystem application, these were not available. So building a monolithic application to cater for entire ecosystem need was not a working model.

But still, in many ecosystems, because there is not enough understanding of the digital transformation, digital economy and the technologies that run them, still, in many places people are starting to build a monolithic application for ecosystem needs unknowingly. Because those who order the software, the business side, don't know really what the technology is and what is suitable.

And if the software providers are not on top of their game, meaning that they are being lazy to learn new softwares or new architectures, because it's a significant learning curve to move into this, but those who have just started with the new, like anything in the world, some don't have to unlearn to learn. They just start from whatever is the current.

Then the whole outcome can be that there's millions spent in a structure unknowingly that is going to be outdated and just pulled to the trash, just because not having enough of the understanding of the digital economy and digital transformation in practical level to connect enough different pieces to make sense in a way that both business, non-technical can look at this information together and have a mutual understanding, building conversations around that, with or without our support.

The key for us is to make this available, to make it scalable, to make it digital, to make it repeatable to have this information.

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And really, it's no more Spaghetti Code. So do not build this monolithic solutions.

If you have them, that's not a problem. They keep running for sure as long as the servers are updated and so forth. But if you need to do significant development efforts to improve them, you should definitely consider replacing and starting fresh. We did this after having spent a few millions of euros in the software over, not through just startup commons but also through other companies.

You can read our history from our website if you're interested to learn more about that, just to decide that it's no longer functional. And we cannot, even if we know it works, even if there were people who wanted to buy from us, we said we cannot sell this anymore. We cannot introduce this as a concept. It simply doesn't work. It's a bad move to do that.

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So here is kind of the summary of this transition from monolithic architecture, what are the commons to be shared starting from data model. And then introducing more and more of shareable elements and through microservices architecture, through serverless architecture. And this goes looking of these details in the timeline of the global application development.

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So it's all about unbundling. If we look at this, it's kind of unbundling it into more logical pieces that work more independently instead of spaghetti. So initially starting from mobile app requiring that API connection.

User interface where they're separated from the backend to support growing number of different types of user interfaces, not only mobile apps, smart TVs, Smart Watches, Voices. So now we're starting to have more and more applications that needed to communicate with the same service. You can look at Netflix from multiple different devices with your same account.

Then you started to separate content from the specific user interfaces. So content and data models.

Backend functionalities. So dividing one big, giant piece of spaghetti into functional divided into smaller modules, to microservices and, ultimately, serverless that remove the whole need to maintain a server at all. Not even a physical— first, physical server to virtual server, to serverless. No server more is needed.

Unlimited scanning of capacity to any number of users. So doesn't need to have big server running all the time. If no users, only use that capacity. If more users, automatic scaling. So serverless brings all of these options. Those are the rationale and logic why they have developed these technologies.

Serverless on its own is not owned by anyone. It's open source. So Serverless.com if you want to read more. You can watch YouTube videos about these topics, and so forth. The serverless itself is a concept and an open source development of the core functionalities and everything around it. So it's the way the technologies work, develop at best.

Business logic separated from databases. So no need to think of SQL, single query language. No need to have NoSQL databases. Just data as a service and separate structured around how that data goes in and out without tying business logic around it at a database level.

Dynamic, multi-stakeholder and multi-developer friendly service, with single digit millisecond latency at any scale. This is the serverless capacity. So, quick response. I ask and I get response. Globally available, like in any time zone you have serverless setups. Clouds that you can use, there's multiple cloud providers. The serverless itself is open source structure so it's not someone's proprietary architectural technology.

And unlimited scaling. It doesn't matter if suddenly you have no super exciting startup that fixes the climate change issue and two billion people, boom, come there to watch what it is. I don't know if it scales that far, in fact, anyway.

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So the business and data logic design at front-end level, not deep in the system with complex dependency. That is very much aligned with that no bugs perspective. That it's no longer about thinking the business side with the software developer side to the server side, but because these pieces can really be separated and they can be changed, I think it's really important that everyone gets those mindsets.

So that's the digital transformation. More and more people understanding enough. Not all the details. Don't need to know how to code. Don't need to know how to program, but need to understand how this works. What are the benefits?

So obviously, this is if you're supporting startups, you should know this. If you are building your own support services, you should know this. If you are actually building those softwares ,you definitely should know this. If you are buying, spending public money budgets, building architectures and systems, you should know this. So there isn't really where this level of understanding would not be relevant going forward understanding how digital economy works, what's behind the user interface.

Disruptively lower cost. So cloud resources, server maintenance, development coordination, QA, standardization visibility. We should, like in many places when things get better, they cost

more. But the technology is the weird place where things get better and they cost less. That's probably the only one thing where that actually works. Probably there are others as well,.

But it's the Moore's Law but it's not only the power of processor. It's all of the technologies combined. It's that things get better, they get faster, they scale better. Ways to produce gets cheaper, faster, and all of these create more and more opportunities of course for new innovations, for new startups. But the worrying part really is that the world around them, the ecosystem that supports them in case of startup ecosystems is extremely analog.

Like I said, sports way more digital. Factories, way more digital. You can look at Siemens Digital Twins concepts are way more. You take gambling, extremely, extremely tech. The Las Vegas Casino system, extremely connected. The one place where we should solve the climate problem, where we should solve you know the jobs, economic stability, improve citizen services, bring innovation, grow our economy, fight the digital development outside of our economy, monetizing our economies, we really need to get on board with the technology developments and apply the types of infrastructures that make sense to really genuinely develop our ecosystems.

All of this information is available. We know that the key challenge why we exist, also why we do this is that it's not packaged in a format that connects enough different aspects and put it in the framework. So it makes sense end-to-end from how to build a startup to development phases of a startup, to what services cater for what, to what measure from that process, what systems to use. What information is valuable? How to run that technology? What is technology development? That's why we want to bring this information available.

So faster time to market, single digit millisecond latency, high availability and scalability.

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Now, when we have gone through the rationale, the key terminologies, and just as a reminder, we have of course this all recorded so you can replay them as many times as needed. I recommend _____ [**00:33:45**] to take any piece, any term out of the context, if you feel you don't have enough knowledge in our presentation, put it in YouTube. Watch any videos that come on the top list. That's an algorithm catering you, the best ones anyway.

Look a couple of those videos. Over time, more and more understanding will piece out. That's how we built the knowledge as well through our experience and learning from multiple perspectives.

Another good way is put the term in the Google Alert System. So Google Alert is where you can put any search term and have it feed you information whenever new content comes available that Google recognizes or registers important enough. Put digital transformation there into quotes and have that feed you new articles every week automatically to your inbox.

You don't have to read one month, two months. Every week you read two or three articles. You build enough understanding about digital transformation means in practice. What are the challenges?

You put API economy. Same thing. You put data in economy, you put platform economy. It keeps feeding the information. So, revisit as often as needed, put forever any term that you want to improve your perspective, just one term. You will get articles that are written around that term from multiple perspectives over the weeks. You can get daily alerts if you want, but you need to let your brain to consume the knowledge as well.

Okay. So having established this space, now, how to transform into Open for Business from your current position.

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Again a little bit of different perspective but we start from this is the normal view for us in a normal user's business, non-technical use, is that we see the interface. We know what we can do with it. If we want to learn, we can use instructions and so forth, but we don't see what's behind.

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The software really looks like this. It's like that package that we used to go to the store to buy Microsoft Office new version. It was intentionally packed in the box to make it tangible, to make the software like physical element. But that mindset has transferred for the most of the people how we think of software. It's a piece of package.

And how, for example, organizations have gone through, okay, this software is not good enough anymore. How do we do that? It used to be that…

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Well, we replace with another software. And again, the box we remove the old and we install the new. And it didn't matter whether it's a CRM system running on a cloud, it was the same thing. We changed the provider, and the big problem is that everything changed, like this on our LinkedIn and Facebook, just because it's I want to put something there.

But this _____ [**00:37:10**] this CRM one and now some software guy kind of said, _____ to CRM2. It's better. You go through that, now you have to relearn everything, and this is where the friction for the change comes from. People don't want that you have to learn new things just because you changed software.

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So this is the good thing that no longer do you need to think of this, like if you think when you use Google services, how often have you ever have to change the whole interface. Right? It's iterative. Facebook, Amazon, LinkedIn, Google, they intentionally don't change because they don't have— because it's open for everyone they can't change the whole user interface.

Like Skype is wild now. They've constantly changed almost the entire interface. It's crazy. But in general, that's the whole point because then you don't have to educate people. But you still bring new features, you still improve it, but it happens behind the user interface.

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So the application again. User interface, software. So if this is your starting point then the question is what do you need to do to move forward from this?

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Now, you introduce the API that doesn't yet require you to redo the whole software. You just bring the API into the picture and you decide what data you want to make open to others, and so forth. This is just no API, API.

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But of course what are the remaining problems after that? When you introduce an API, you have to create documentation. You have to create the business terms. You have to create a developer website basically where that information resides so that they know that your API exists, that they know how they can use it. What business terms do they have to accept? Do they have to pay to use it?

That's part of the sustainability, which is the Module 4 topic, is that this can bring you revenues to help sustain ecosystem development support functions, or start contributing for sustaining them or more.

But you still have the problem of the software is spaghetti code. You still have the server to maintain. And it doesn't matter whether this software is physically in your use or whether it's a software that comes from your provider. Wherever that is, it needs to be fixed.

And if it's cloud software it's like Meetup, Facebook, Yelp, Eventbrite. Those already have these and they work, but the thing is that they are not in the control to introduce new features if needed. So that's the balance of like building the puzzle for the ecosystem level.

But anyway, if the starting point is the monolithic application, you start from here [00:40:29], you introduce the API [00:40:31], you need to build documentation support, okay. Now, it seems like a lot but it's basically introducing yourself open to business and digital economy or your service.

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To fix this, next phase would be to move into the serverless. And of course you would still have to have also the documentation part in this setup if you serve outside. It's serverless and open, so now you have moved from here, step by step into this setup, but you don't have to change your user interface. So you can keep that the same. You just change the things on the background.

And you can introduce software features from outside to enhance your software, but the key is that you don't have to go through retraining all the people if you have like ten people, 100 people, 10,000 people organization regardless.

The big cost factor comes if you actually change the application, the user interface. Retrain everything, train people from new processes, how the software works. Motivate them to accept the new software. Have a big change management, you know, operations. No. There is no need for that anymore. Make it iterative on the user's side, step by step, like the whole internet applications work these days for consumers. And then understand how to work on the backend.

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Now, this is the change flow, and what we can introduce to help in between is to bring a solution, like ecosystem OS that doesn't require that the connection has to be at API level. It can be sending Excel sheets. It can be submitting an event information, much simpler systems. And APIs can be built to connect to data sharing infrastructure, and then that other connection to connect your own application even. You can pull the information through API to feed into your software in different ways or then when other applications are connecting with your data.

So, this is not the optimal solution also. This is the type of bridging solution to get faster moving forward while you then take your time or your developers take time to update your application in a natural evolution way, when just all the software pieces get so old that it just needs to be redone anyway.

The key part here is that don't need to have API, don't need to support API, don't need to build documentation for that because that's part of the commons part available with the same data model, but only if you make that data available and only on the terms that you make it available. But how to access it, how to use it is standardized on the other side and therefore we can build common documentation, common APIs together collaboratively with all of the different ecosystem actors in different ecosystems globally.

So this is a shortcut way to approach and it's not meant to replace but give a faster step forward and give time to make changes on the more legacy applications.

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Then finally on the ecosystem user account side, this is the part then making the shared users possible and making the data portable on the customer's side.

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And here, a big factor, enabling factor is the regulatory development. This is one of the most latest significant technology impacting regulation that has hit the world in decades. It's significant because it is a regulation that takes into account the bad developments that has happened with the platform business models and network effects run by Facebooks and Googles and so forth, creating excellent services with this iterative user interface improvements while doing the connectivity and connecting different applications and improving everything.

As a side product, shared user base has given them enormous amounts of data about individuals, and we have discussed that in I think Module One or Module Two [Ref Module 1and2].

But the regulation around data privacy and protecting individuals' right to their own data, specifically GDPR, most known globally. Initiated from Europe. But similar regulations are developing everywhere in the world.

CCPA is a consumer—California Consumer Protection Act. It really is very similar to GDPR. It's moving forward, coming to effect in California next year 2020. Basically meaning that individuals should have right to their own data and they should be able to get it. They should have control

of how it's used much more than now, not only tick box but every time data is used they should ask permission again.

Various other things why California is significant, of course, because Silicon Valley is there. So all of the big companies around technology innovation are running basically from California. Even if they're Delaware registered, they are operating mainly from California, under California state law, so it's significant.

Of course GDPR is already in effect in all Europe since last year, 2018, more than a year now. And that is more than 500 million users and similar are happening in Japan, in Brazil, in Canada, and so forth. So this is really taking into control of how users can be shared, how users data can be shared, what controls the individuals have and so forth. This is really positive regulation. It's really important and it's really future oriented and it affects private companies and public sector equally alike, so it's really significant.

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One of the key points is exactly what we want in the ecosystem when we think of the ecosystem support functions. We want to know about the individuals. We want to know about the startups. We want them to be able to— because I can't say if I support Organization A and he supports Organization B, it's very hard for me to share customer data with that other organization. But if we give it to the individual and the individual takes it to another service, that's their full right, and now regulation is bringing it, that right under regulation so that the companies no longer can say no.

They even have to make it technically available, possible. So the data cannot be a PDF print. It has to be in a technical, readable format. That's what the regulation in Europe says. So it's really to enable this data portability. And the data is not only what the individual gives themselves but it's also information about them.

Of course there are then limitations, for example, like criminal records or certain private— certain information doesn't include in that. But those are like exceptions. So the key point is really to enable this.

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And if you want to really understand more of this topic, there's this concept of MyData. It's then a more architectural and conceptual, very long— I think it's already like five years of overall development. This is an open standard concept. So from all around the world, different actors contribute for this development. So this really looks at this user data not only from technical

perspective but also from ethical perspective, legal perspective, individual's benefits perspective, design perspective and so forth. So there's a lot to explore from that.

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And the concept for the ecosystem data, we have ecosystem OS. And then for user site we have the concept Circle Pass and the applications around that.

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The Circle Pass is a global user account. And again, global means that it's not tied to any one application but it's a user account that is meant to work independently. But it's also another user account that we operate. This service can be set up to operate by any operator in any country in any ecosystem, and this global user account from one operator can be moved under another operator. Like an individual moving from country to country, they need to be able to bring their data and identity with them and then be served by another operator. Because the key here around is also the data model that makes that possible and the connectivities that are structured around that.

So that account holds users aggregated and most complete data about them, and whether it's individual or an entity like a startup, in account where users are in full control of their access, connections, portability, privacy levels, and so forth.

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So it includes designing possibility for identity to secure and protect users data ownership so that they can make decisions about their data. And really, several different key aspects enable users to centrally manage, enable users to collect their own personal data, enable users to manage, synchronize, analyze, attach and connect relevant KPIs to KPI Dashboard.

So basically, of course, Circle Pass being an application itself, can then feed the ecosystem OS for statistical data and so forth. But there needs to be an application that shared users and shared users data, but other users on control regardless of the application. So not an extension like Facebook login or Google login. It's just an extension of their own one application to harvest even more data, what the user does outside of their own application.

They are not the same from the perspective of having a neutral local operator operating a user account for a citizen. That they can take that account into another country if they move and they can use it in multiple applications. How and who is operating that account is a local decision. Public-private partnership operating on the mandate at local regulations and so forth.

Again, separating the technology, separating the responsibilities from the technical solutions and concepts that we create. But communicating how these are done, how they can be put in place.

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So the Circle Pass Global User Account is a service to enable managing users data and enable users control and use of their data by their terms, not a central data storage.

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Then looking at the data model, so coming back and connecting this into the most core piece regardless of being historical, monolithic application or whether being future oriented, whether it's user side, whether it's the infrastructure side, the data model is the most flexible yet most powerful commons that we can have to help bring the connectivity.

Because it doesn't take into account whether APIs exist or doesn't exist. It doesn't take into account what software languages I use. It doesn't take into account what database models or databases are used. It just looks at the structure of information.

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So it has also other terms like database model is then more specific to database. And content model is just a different word for data. But basically, here's a good way to say a content model documents all the different types of content you will have for a given project. It contains detailed definitions of its content type elements and their relationship to each other.

So it's what the information is, how it's structured, how it connects with different pieces of that information.

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And that data model then goes into the systems. So system integration, simple interfaces, minimum redundancy of data, compatible data, and then eventually to orchestrations, value creation, increased efficiencies, increased effectiveness, reduced risks, reduced costs. This is how the data model contributes step by step. And there's many other cases around as well.

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This basically gives a view into ecosystem application types and key information in a visualized format. This is very extensive so I'm not going to go into detail, but the key point here is to open up a little bit, categorize the different types of applications. So we have like portals are typically

having public information. Where they have the data is people profiles, organization profiles, service information and development initiatives. So very much public information.

Then we have member based. So we have communities. We have Meetup groups, we have Facebook groups, we have membership applications where, again, people profiles, organization profiles but they are no longer public per se. They are public among the members, or not.

We have private entries. So these are again places where we have people profiles but now it's CRM. So it's people profiles but actually from a perspective that we have information about people, but those people whose profiles they are, they don't have access to that information. It's on the service side. And again, we have people and organization.

Then we have private use tools. So we have tools, apps like our own email or some planning tool. And there also are the user accounts in minimum and the organization user accounts, but those are private on the user side not on the service side where CRM is private on the service side including users information, but the user themselves don't have access to that.

These are the application categories. Then there's data connections in different ways. You have user account application and then you have key information that you can pull from this. So you have Circle Pass, you have access rights, and then people use your profiles with notifications, what's happening and so forth.

Then on the application side, you have application specific data. So this is looking at what type of information there is about users in what types of applications. And then application itself have the service side specific data that is recorded like the KPIs and so forth.

Then who is maintaining that information. In the portal, typically it's a portal host, so ecosystem organization always hosting that portal. In a membership, it's the community organization. If it's a Meetup group then who is the admin of that Meetup group. If it's a CRM, it's the service organization. And if it's a private use, it's the user themselves who maintain that information.

But now, when you think about that user information in different systems and connecting them into one user account, it's very clear that you cannot— without having a separate account to connect to, that you can't really connect these profiles together because they serve a different purpose. Every one of them include information, for example, about me, so my tools, CRM record of the service I went to, a membership site and a portal, but they are not the same. So information about me but from a different perspective for different use.

And then there are other ways of how the data entry can come. It can be automated, crowdsourced, open suggestions, like Wikipedia is something that someone contributes for it,

someone approves it, but it's not necessarily— or like Crunchbase includes information about common companies and startups but they can also be added by others that are owners of those, just like similar to Wikipedia approach.

And then the key information to look at in those who host the system, they look at KPIs, statuses and the content is more posts activities. And then on the top there are access rights.

All of this information is of course dynamic, and on the Circle Plus side, it's meant to be private, like tool-like accept separately when decided to share permission.

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And when we look at the data model, we have data model categories. So in ecosystem context we have people and entities. We have support services and activities. We have development initiatives and projects. We have KPIs and reporting.

Then we have content model groups, so we have listed data and we have owned data. So we have profile things, like CRM type of info, and then something where I created that.

And then function focus segments is building companies. So these are business builders, providing support functions, so these are the support providers. And then we have ecosystem management and development. That's ecosystem development and orchestration. And then we have the digital side, the tools. Basically, those who need to collaborate to find, to contribute for the open standard data model from business perspective or non-technical perspective.

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And then main data contents to model. Again, users and entities, KPIs. So these are from the data model categories. Ecosystem management purposes, automated portal, like building a portal out of the aggregated data from multiple systems and just some examples here.

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And other data content types to model. Activity feeds, notifications, scores, projects, events, and so forth.

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And the types of tools to use can be like business plan tools, project management tools, blogs, content management system, design tools, Google Drives and so forth.

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So here's the visualization about the data model. It really is the common nominator, whether it's a monolithic application, whatever the application is serverless, it all requires to have data model and data modeling, a common nominator in all types of ways of handling and sharing data. Whether it's for designing new applications and databases for collecting and storing research data, for API design, development and use, for sharing data manually in spreadsheet or in any other format for that matter.

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And here is just to give a context of totally different types of use case. So this is a data model actually with attributes for paintings on loan. So just to give a totally different analogy just to understand the logic and function of a data model. So this is done more. It's not the complete. This is just a tiny piece of the data model to visualize it. And here's a kind of specific use case outside of ecosystem for analogy to help build an understanding of how to structure data model.

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And if you want to play around with an application to build a data model, or you can look at how to do that, you can use tool, you can register free account. We are not associated with Contentful. It's just a good tool to learn and design content models from a user interface perspective. It's a SaaS tool meant for various different use cases, but it is fitting looking at how designing a data model can be.

And of course because of that, they have extensive educational content and material available there. Also, that solution can work for smaller scale data sharing needs between different applications without connecting directly into one application.

Of course we are happy to discuss in more detail as well, but we want to share this in part of this context so that you can also consume yourself, you can test yourself, you can practice yourself, you can look related to _____ [**01:05:27**] and so forth to get conceptual understanding at more practical level even if it's not necessarily applicable into a ecosystem level or production person shows.

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So the key thing we need to understand about digital transformation, because we talk about big things, we talk about co-working, ecosystem level, multiple applications and so forth, but we talk about in a way with the common language, with the common approach, with common understanding we can solve these things together. As long as there's commitment doing so and

if organizing the ecosystem until it is on the right governance model and doing that with the long-term commitment.

So all is not lost for the digital world, for the five leading global companies. There is things that can be done and can be done from bottom-up actions combined with top-down actions at national level with existing technologies and solutions, as long as getting the right people with right motivations, existing budget use now in different ways. We apply insane budgets to do more digitally related ways with the same cost or similar cost level just with the improved knowledge and more cost-effective latest solutions. It's all doable.

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But it's an iterative process. So it's really to get back and look from a data perspective and really looking at what data do we want to capture and then how many applications are we capturing that from. So what information and from what sources.

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And taking certain data at a time and really moving that progress systematically over the years in the ecosystem to capture more and more, to cover more and more of the ecosystem with the shared open standard models.

Of course with step by step and with accumulated learning, this process can be accelerated, but the key is to understand the key technologies, the holistic big picture, what you need to complete. Get moving and keep moving.

Module 4: Sustainability in Ecosystem Development and Orchestration

Lesson 1 - Intro and Sustainability

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So, welcome, again, for the final Module Four. I'm Valto Loikkanen from Starup Commons. I'm again joined with Oscar also on the other line so he can help to voice out any questions along the way.

As usual, we have quite a bit of material to go through so we'll just get started on those.

Once more, welcome from my side. And the Module Four we are focusing on the sustainability in the ecosystem development and orchestration. So considering that from multiple different aspects and looking at how can we achieve a sustainable operations for the ecosystem key function.

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And quickly, again, for my own introduction, you have the background there. And really motivated and focused on the innovation, scaling innovation entrepreneurship, as had been for quite a bit of time. That's mainly the background so everything kind of contributing towards the topics that we are covering.

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Let's just dive directly into the whole topic. And like with many other things, we like to break down things a bit further so that we can get a better essence of the topics, what we're discussing about.

When we talk about sustainability in the context of ecosystem development and operate sustaining the operations of the orchestration activities and so forth, of course we are talking about the financial sustainability. So the ability and increasing ability to sustain the type of functions that we have been discussing so far.

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But before we start talking about orchestrating ecosystem and ecosystem operations and those functions, the key is really we need to understand the big picture for what we're building. A lot

of the previous modules, of course, contribute for that, but it all starts from having the bigger picture in mind from multiple different perspectives. That really is the starting point for achieving what we want to achieve.

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And because ecosystem is not something that is owned by anyone, otherwise it would be called an organization or a government or something else, but because it's called an ecosystem that's the whole invisible infrastructure that we're discussing. It really requires working at multiple levels. That's also where this challenge comes from and that's why it's also so difficult to kind of find the easy answers or obvious solutions from kind of the past, more siloed, more linear world and instead of how things should look like in a more interconnected, non-linear world around ecosystems and digital world and so forth. But it really the best sense is that we're talking about multi-stakeholder activities.

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And when we talk about the ecosystem more broadly, we also have to understand the topics that we covered earlier that the ecosystem itself is not something where you have a clear line of here's where our ecosystem starts and here's where it ends. And ecosystems can be considered at multiple geographical levels from local to national to regional to global as well as then business vertical ecosystems that are then typically cross-cutting multiple geographical ecosystems.

But then also to understand the separation between I would say smaller, similar structures and ecosystems that typically are more cult-like communities, specifically like communities around events or communities around a specific topic and so forth. But typically, the communities and ecosystems also are kind of casually used as we're talking about the same thing but the difference mainly is that communities are smaller and they are also more controlled as such, or they are more manageable because typically they are smaller size.

And one of the key places where the concept of communities and ecosystems get mixed is actually on one of the best books about the ecosystem concept from early on by Brad Feld where the communities— because Boulder is a very small city where kind of that concept has emerged, the concept of community and ecosystem gets easily mixed.

But nevertheless, it's also in the same concept that the ecosystems also are in different levels and different sizes and, as such, they have different types of functionalities. But the key thing with this is that they are not meant to be considered as organizations that are more structures that are clearly owned by someone.

And then there are of course the function verticals. But this is just to kind of bring the topic back into everyone's mind, again, around what we're discussing more now.

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And we discussed also about the relationship between the ecosystem forum and ecosystem operator and the governance model [Ref Module2], and here we are then looking at taking a deeper look into an operator's own kind of resourcing. So how does the ecosystem operator then would look like in a structural way. What type of structure it would be inside of the ecosystem operator, governance by the ecosystem forum key stakeholders.

So the advisory group here is representing the ecosystem forum stakeholders. This would be typically the topical owners from business essential network or entrepreneurship representation or support function representation, accelerators and so forth. And the owners for the ecosystem operators should be public-private partnership type of ownership structure that includes private and public or finance, as well as mandate from the public side to really try this key orchestration role as an ecosystem operator for the economic development in the context of innovation entrepreneurship by startups.

So in this team, there should be of course communication is a very core function. So a key point of keeping everyone aware what's going on in the ecosystem and what's being done by the ecosystem orchestration activities and ecosystem forum and so forth, there needs to be an operative ecosystem manager type of role. Someone who takes on as a key contact point and a key knowledge source, not meaning that it should be attached to a person but one who knows where and how the knowledge gets into the search systems.

Then from the technical perspective because of including that the digital aspect there should be technical project management. And when we talk about ecosystem level user experience, so improving the experience, how people and companies and mentors and investors and startups navigate the ecosystem, this is a specific skill by user experience designers more broadly, not only in the context of individual application but really mobilistic view of across services and so forth.

And then system administrator type of function for someone who understands the technology, and specifically the system infrastructures in a deeper level to look at and really understand the digital economy side of functions in the context of ecosystem operator.

And then for the applications, whether they are own applications or collaborative applications or whether they are new applications or existing applications, there should be technical capabilities to not only use but to improve and develop applications from their front-end

functionalities, so user interfaces, creating new user interfaces to existing data sources and so forth. And of course back-end developers who are able to work more directly with data application interfaces and so forth.

And then all of this development activity that happened, whether it's on technical side, whether it's ecosystem level, whether it's application level. It's to have product management capability to see what can be— what should and what is being created as a product or a service in a way. Whether that's a data product, whether that's an application product, whether that's a service product, so that it can be properly seen as one. And, most importantly, when looking from the ecosystem perspective, having how these products exist in the ecosystem in the most similar sense as you would imagine any product use.

And then expanding this with external resources that are more specifically resources coming from contributing organizations and those who are active participants in the ecosystem forum activities.

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So here's just a little bit of the type of more clarity into description of these types of resources. But these are relatively general in their nature, but the point is how to really look at this in the context of ecosystem development.

And in the previous module [Ref Module3] we discussed a lot about the need to have in the same team, and even better, the more it can exist in the same individuals, the business operational capabilities combined with technical operational capabilities and, again, not meaning that one needs to be technically capable of doing actual programming level or system administrative things, but really understand how digital business and digital services actually are designed, built and function.

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And because we know this is a very similar situation like you would have in building a startup, so this is a challenge that every entrepreneur face as well. It's like how do you build something from nothing? How do you approach something that doesn't exist there? The more unknown, untested, the more new it is, the more challenging it is to acquire these types of resources easily.

So it both can and should be able to build step by step over time. The point should not be to try to get things ready and put it in place as such, but really understand the notion of building things over time, step by step.

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So the starting point is of course for these activities is to get to the place where the ecosystem forum is— I mean in many ecosystems there are these types of ecosystem forums in their different shapes or sizes kind of working already or they are being established or they are in the random shape, random periodical presence or they are happening that same people are coming together under different events. So the group is kind of there and they are meeting in different occasions but it's not really put into a structural format.

And that's a lot what we discussed on the previous module [Ref Module3] in much more detail, how to organize the ecosystem forum and these types of activities. But it all starts from the key stakeholders to taking a more serious commitment and more serious look in how do we actually get to this ecosystem orchestration and ecosystem operations work step by step in a very meaningful way.

So the key is to identify and really get the key stakeholders to come and sit together around this topic with the serious target of starting to solve that together. So including the higher education and research side where the new talent is always emerging. It comes from elsewhere as well but that is a big source. The big companies, those who are big on size or big on influence or in impact or because of leadership.

And then those who are always going to be there in the longer term anywhere, the finance organizations. So these are the banks and the funding organizations, the public-private funding organizations that provide loans and risk capitals and so forth. And the local and national governments of the public sector side in different states and shapes. Because these are kind of the key stakeholders in such sense that they don't really change with that size similar rapid pace as many other things in the ecosystem. Smaller stakeholders, support functions, entrepreneurs, for sure startups, even accelerators, smaller investors, angels. A lot of that is very dynamic in the center but this kind of cornerstone actors are more long-term by design.

Having said that, none of them by default have or should have ecosystem operator as their role or not even as their new primary role, because it would easily become such an extension of their existing operations.

Lesson 2 - Sustainability by Design

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So, how do we build sustainability by design? This is really like nothing more different than actually learning more from the startups and learning more how startups are built.

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And when we look at this more closely, it becomes more about an exercise of reallocation of existing resources. And when we look at startups and we think about how is it possible even that something that didn't exist before without having any resources in the beginning, zero resources, just nothing else but people and ideas can actually grow to compete and even win big existing companies in the marketplace.

So any logic would apply to say that that's just not even possible, but of course it is and that's the whole point of why we see that innovation is— we see but when it's true that innovation is best built by these type of models.

So how does it then happen in practice is also a lot that where we can learn to do that in the context of new building new functions like ecosystem operator, and it starts from the reallocation of existing resources. And that's in simple terms for an individual, a new talent or a potential entrepreneur basically starting to do something as a side hustle or a side project, working on their free time or reducing their other things to find more time to work on what they truly want to be building. And using the existing position, whether it's a current job or doing consultation as a business to acquire finance to actually build something that is not financially sustainable.

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And what we can also look from how we don't see and don't want to see startups being built specifically with loaned money is the traditional approach, the schoolbook approach about how do you start a business. That you just plan, you do a business plan. You plan a project, you create a financial plan and forecast for that.

You acquire initial funding to start and operate so you need your initial startup capital and then you need operational capital to the point until you find the sustainability.

Then you do the business plan, you acquire the loan or other funding and then you set up the operations. You spend the budget you have for setup. You run the operations on fixed budget in ongoing fixed costs. And along the way you try to find revenues or funding, additional funding

to achieve the financial sustainability along the way based on unvalidated assumptions at the time of planning and budgeting. Or models trying to find along the way while the clock is ticking.

And the clock is ticking, that's like the time bomb that is built into the funding mechanism. This is a traditional way and this is the most common way that even the startups long time ago had to start to find new ways of building. But this same model is very much enforced and used in creating, for example, ecosystem projects, ecosystem support functions, typically with public funding. So there isn't much difference in how these types of things are built for ecosystem functions, but this model, for sure, does not work for the ecosystem operator setup.

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When we look at where and why these things are the way they are, when we look at from the startups, when they are building a validated business model, so you starting an accounting business or you're starting a restaurant. You're starting another burger joint or you're now starting another coffee shop. You're starting another haircutting place, basically the whole business model is validated in the markets. It works. All the financials can be easily researched. What type of money/ What type of pricing? What type of location you need? What type of operation cost you can have, and so forth.

And you can expect all of those to be true. You can expect them to be very close to true. As such, you can apply traditional approach to start a business and you can start—you can even do that with loan money. So you can even get bank loan, business loan to start that. You don't need to really justify that this will work in a similar level that you would have to do for something that is not validated.

So we're talking about manageable risk. And for that type of operations, it's totally okay to use the traditional approaches to set up these operations. Because most of the things are known and most of the things can be calculated. Most of the things can be assumed. Most of the things can be assumed to work.

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So what we know then from the startups specifically, when they are building an idea, a new business model that is unvalidated in the marketplace, totally something that doesn't exist and we put traditional approach on that, we can clearly see that we are talking about unmanageable risk. This is something that if the more there is unknown things in there, the less it can be managed the risk and the less applicable any traditional funding or traditional approach is.

That's why of course there are the whole risk finance, VC funding where it's built into the finance model of a VC fund that it's more of a model that can sustain x number of failed ones as long as one of the ten or two out of ten succeed. So it's built in the finance instrument.

At the same time that doesn't change anything on the startup side itself. The startup is still doing the unmanageable risk approach and buying a runaway. But it works from the financial side.

Then of course on public sector there is other risk finance for startups, but we could say that maturity of ecosystem development finance is also risk finance. It has the means to try something on the marketplace and see if that works. And if it can find sustainability for its own operation along the way, and if it doesn't it's gone. But it's built into the finance instrument model.

But again, that doesn't mean even getting that funding that it would be somehow of a validation that the model that was presented it’s actually proven and tested in the marketplace. So regardless of that, we're talking about unmanageable risk.

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Again, we need to look more for less traditional approach to find again more manageable risk. The more it's unknown, the more we have to rely on less traditional and more entrepreneurial approaches to find more manageable levels of risks where we can find success by design.

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A less traditional approach thinking of sustainability by design starts from we use the term “commit” here, is to actually design a model that brought from the design itself, like not even looking at anything on the things inside the design or the plan. Just looking at the design itself is it designed to potentially fail or not?

And when we look at the traditional model, it is actually designed to fail by design, meaning that the model itself that is being applied has limited timeline to find success or it will automatically fail. It's like a time bomb. So the sustainability by design is to avoid that model and instead design a model that is not just by simply looking at the design itself not designed to fail. It doesn't have a time bomb, meaning that when you run out of money it's the end of the day.

So it's rather built around vision, mission and strategy. So building the big picture, seeing the big picture. What we want to build? What do we want to get?

And then acquiring initial people resources via partial time allocation model to start and operate.

Set up operations one by one, in a way where each become sustainable on their own before moving forward. So I'm not trying to have ten things we need to get working in the same time in a synchronized way before it can be sustainable. But just having one working on that, it can't make that work doing another one. But doing it with people resources that have partial time allocation model. So basically, in a startup that means working part-time somewhere else to build your financial that you need to be able to operate and use the time elsewhere.

In the ecosystem context that would mean that the ecosystem support organization, whether they're the public sector or the existing actors does the same. Either they give their free time or the organization accepts that they can use 10% of their time, 20% of time or they can— two people can use 50% of their time or ten people can use 10% of their time for these ecosystem activities and something that is permanently allocated. It's in the calendar.

Then working with limited or shared fixed operating costs. Meaning that really avoiding or outsourcing fixed operating costs. This means not only the people but also if there's servers to run. Can we run some of the things on someone else's server? Can we use the spaces and this type of sharing of resources that is very easy to see but then going further and seeing what are the other things where we can, the things that we don't actually need to buy but we can use someone else's.

And then grow these resources, specifically new revenues to build financial sustainability along the way. So it's really starting from nothing and growing those resources along the way instead of finding a budget, doing a plan, allocating all of those resources, putting it in motion and expecting it to work. That's where a lot of the failed startups come from but that's also where a lot of other failures come from is trying to predict the future, building a model around that and then failing in practice.

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So the sustainability by design in the context of ecosystem operation activities is built on having a clear mission that is ecosystem level, as together achieved through the ecosystem works of _____ [**00:13:22**] having a strategy, like a strategy that we just covered for financial side but also strategy for the other activities. And a vision of where do we want to actually develop our ecosystem towards. How that vision looks like so that we can find alignment between all of the actors.

And then not to start by thinking of where is new resources. There is no new pockets of money somewhere that there's just unallocated money waiting that is seeking to be put in the ecosystem development. All the budgets that are in operational use are used somewhere. They are in use somewhere.

In addition, there are then funding instruments like the support funds, economic development funds, and so forth that are given. But the way the operations are not designed to be sustainable and they act and work very much the same way as using it through the wrong type of instrument to build something that needs to be sustainable.

So the thing here is to look at the new activities and needed budget allocations, but looking those from where we can reallocate existing resources and existing budgets, step by step, in small pieces by multiple actors contributing little into these new activities and allocations, and clearly separating the financial from the human resources and really using the human resource reallocation of people's time towards these new activities, and then separately money to do things that are new activities actually need money for. But not money for paying people's salaries.

So that's the basic model of a less traditional model, but it's based on exactly the same ways how other things can be built and what how startups get started in the beginning before they are able to acquire additional financing.

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Just a basic model of how this could look. In the ecosystem, we of course have the ecosystem existing organizations and we have the new entity, new functions that we want to be built. But the new function and the ecosystem operations are built there to contribute for the existing organization's efficiency and to start improving those problems that cannot be improved by the organizations themselves because they separate ecosystem operating and orchestration function is needed.

There are of course many other ways but here's just a design model to show that, for example, each organization could put 5% or more, 10%, 15%. But 5% reallocation of all ecosystem related operations' budget per each year, so every year increasing five more percent of giving that to someone else to find a better model that will help us.

Direct financial budgets on ecosystem operations side only for variable and unavoidable fixed costs. So only to be used to those types of things that are not fixed and specifically personal costs. This is to rent a venue, get experts to help educate, buy a license into something, or whatever that may be that this is an unavoidable or variable cost.

And then linear reallocation of people resources. So really contributing organization. This is what we did also in Helsinki a long time ago when we needed to activate these ecosystem activities simply to say how many hours per week I can do, I can use for these ecosystem development activities. Is it like five hours per week? 10 hours per week? 20 hours per week? Then what that should contribute for.

Or is it something that it's starts five hours a week for three months. If there's good success on that side then we increase that and so forth, or we give the same for another person and another person.

On the ecosystem operations side to avoid so that no core people resource costs, so no fixed salaries, until new reoccurring revenues are secured. So that having a clear model that we don't kill our own baby by design. So that it only can carry as much that it can carry but the plan all the time is to increase that.

And then having logical KPIs in place. So the contributing organization should benefit from the ecosystem operators activities in reduced operative and variable cost due to use of certain assets. So the more assets are allocated for the ecosystem operators, whether those are software under open source software, whether those are planning resources or tools under creative commons and open source and so forth, the less there should be fixed cost.

Or if we want to build something together, because the orchestrator is there to look at, if we build that together it costs us— if we do it alone it costs us a hundred. If we do it together with someone, it can be 50/50. If we do it for three, with five, and some more that reduces the cost. But if nobody is looking at these activities, it's hard to impossible to find.

Ecosystem operators KPIs is validated value built for contributing organizations. So really, finding KPIs that are logically matched based on the model itself. So this is how to establish the foundation for sustainability, for long term. And on top of that, when the foundation is there for operational sustainability, the size doesn't matter. However small that is, wherever that can be started depending on the size of the ecosystem, the commitment level of the contributing organizations and so forth that is the starting point. But it should be built in such a way that it's not a ticking time bomb that will end just because it was never designed to be sustainable.

Then on top of that other funding and revenues are there to accelerate not for the core costs, not for the base sustainability. So the overall ability to execute and do will grow and it can periodically get higher with other funding but the base model should be based on sustainable approach. And the more there are new revenues from new services beyond those values built for contributing organizations then that is totally new operational capacity that can also sustain new monthly fixed cost even in the form of salaries of people.

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So that's the base model. And in the operations, it's simply to start increasing the number of committed ecosystem organizations. The more organizations commit to provide people's time, five hours a week or ten hours a week or whatever hours a week, and whatever 5% of their own budget that is going into the ecosystem operations to be reallocated and used by the organizations or the operation to find cost reduction for the same, for the year and for further, the more resources the ecosystem operations will have.

Any use of project funding money is only for variable costs. If failures, no term without failures, meaning that the core functions are not dependent on project funding. So if the core functions and the sustainability is put on top of risk funding, project funding, it will fail if it doesn't exceed the necessary revenue targets.

And then to increase the overall capacity use only part of the reoccurring revenue to fix costs like 50% or less, to build a buffer and increase budget for bigger variable costs.

And bigger funding contributions, so this is something like if there is an ecosystem where key stakeholders say but yeah we understand this, but that's too slow for us. So we really want to establish that much faster. We want to do something big and we see this also happening, then the model there doesn't change even if it's 1 million, 10 million, 50 million, whatever the money would be to establish that that should be then put in a sustainable by design type of approach, like a foundation model that we have seen successful very well. For example, here in Finland. Startup Foundation, or in US California Foundation, or many other foundations where the initial capital that was given to establish the operations is rather put in an investment fund where only the returns of investment can be used.

So the operational fixed cost cannot be more than what the capital return of investments are on average. So by design, the fixed costs are covered by the capital return of investments. And this capital is not to be invested into startups, at least not all of it. So it should be invested in the more or less risky financial markets. But that is a proven model as well.

And of course also from the new revenues that come from new functions, specifically outside of own ecosystem and outside of contributing organizations, also that can be put further in times where there are not clear action plans to spend that wisely into the capital pool where it increases the return of investment gains for the operators in the future. So it's a good place to put it.

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So that is really how to build things sustainable by design to avoid the failure that is there by design. And to get this, to get people to commit, to get the organizations, it's all about building an attractive vision for the whole ecosystem level that is also realistic, meaning that it has the elements of sustainability by design. And then it's all about proving it step by step.

So instead of doing big things by announcing that we will do this but with the model that is sustained to fail, that is designed to fail, that doesn't include sustainability by design. The size doesn't matter. It will fail if it doesn't have a logical approach, unless it's lucky. Because the nature of building unvalidated things and the nature of building things that are not proven in the specific market when there's too many unknown things, it is designed to fail.

And luck is not a good strategy. Hope is not a good strategy. There are needed things. You can increase the luck by being more active. You can't really do much with hope, other than make you feel better. But what you can do is to get logical things where you can evaluate the design itself and see will this work? Is it theoretically, logically going to have an opportunity to work or is it designed to fail?

So to get to that, there needs to be enough reason. So the mission and vision needs to be strong and motivating and understandable and clear where both people and organizations actually want to commit. So it's not only has to be something that we have to do. That's the time when having like really too far behind of others or like really being in a very troubled situation where things are done just because there's no other choice anymore.

But if working on normal situations there really needs to be an attractive vision. Otherwise, people don't really see need or hard to find the motivation to go and commit to it at organization level, individual level and so forth.

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Once it's operational, over time, iterating business model based on the value you are able to create. At the same time, iterating and growing based on things getting to work one by one. And any additional things, additional budget funds, additional brands, additional things can help to try more to do the next thing, but it should not be used for the core.

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Then specifically moving towards data-driven approach to leverage ecosystem data business models. So the digital world sometimes tends to be forgotten, but at the same time it's always there. It's always accelerating and it's the area that brings new opportunities, new efficiencies, but those cannot be used and benefited from if there is nobody doing it for real.

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So of course a good starting point for the whole exercise is to do the business model canvas and iterate the business model canvas model for the whole ecosystem level as well. This is an exercise that should be a permanent function of the ecosystem forum and ecosystem operators collaboration in a periodical manner.

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The other tool, the platform canvas. This is more when looking at the platform business models is then to having another type canvas, and we share these tools of course with everyone with more details on how they work and how they can be used to build that role between where the contributing organizations fit: customers side, users side.

For example even if we consider of course entrepreneurs and talent as the main customers but on the customer side also investors, mentors, advisors, because they are more attached to the companies. And then on creators, producers, we have the supports of providers, functions, partners are more from the perspective of the key stakeholders, the public-private bigger actors as well as the platform owners.

Partners can also be the international collaborations with other ecosystems and so forth, but it really helps to look at it from the perspective of what are our key elements that we operate as an operator? And what are the key functions that we do? What is the value proposition that we give as an ecosystem operator for each of these directions? And what is the value creation that we actually create the value for? That is the place to put the KPIs in place and look at from each of the different perspectives.

Of course, this is something that is an exercise as well that should not only be done as a foundational element for ecosystem operators role but then also as a periodical ongoing exercise to be repeated in the part of the ecosystem overall orchestration activities.

Lesson 3 - Shares Solutions - Ecosystem Application Concepts

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So, moving to shared solutions, so taking a step back or step forward, continuing on the base that now we have these activities planned. And it's okay to build similar brand plans and things as you would do for a bigger budget, the key is how do you design the financial sustainability. So the budgeting logic doesn't make sense.

There is nobody who can predict the future. It doesn't matter how much excellent numbers you use, the future will be unknown always. So the only way to navigate the future, unknown future. Specifically the more unknown it is is to design a model how you actually navigate that correctly.

So having the base logic for designing for sustainability in place and now assuming we have the base level in place, we can then look at some of the application concepts where there is additional benefits and existing models to use.

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First, we have to look at different things that can be made shareable between similar support functions and ecosystems. We already discussed how to make the funding shareable, so reallocation of existing budgets. So something that is already meant to be used for operational things. Reallocating small parts of that but from multiple actors and then using that to create new value and benefits at least for the same value that it reduces the cost of those operations.

Ownership. So the ownership can be shared to increase mutual commitment. Responsibilities need to be specifically defined. So this is specifically for things that can be easily shared, digital content, data, applications. So wherever if I have software, one copy of that, it doesn't cost anything more if there's 10 or 100 copies of that software. But of course operating those have costs, but the software itself doesn't.

So anywhere where ownership can be shared, whether it's software, whether it's content, whether it's knowledge under creative commons, tools, presentations, other assets that are unused. So circular economy thinking there. So if I have a drill but I use it like three times a year to drill a hole, what point does it make for me to have a drill and not have a shared drill between everyone who needs a drill.

But the responsibilities need to be specifically defined on this ownership.

Operations levels, so services can be shared. If there is already a service but you are targeting it to a certain audience, can that be broadened and serve more customers with the same existing resources? Or if not, the whole service can it be extended? Like if we are doing in-person webinar, in-person workshops, can we just open it openly and make that a workshop that is open to internet and can be recorded, and those recordings could be shared?

Functions need to be targeted to who, where and how so that they are clear by definition. So then when they are, they can be looked, well, okay if this is a target could it also include this and this because these are similar. And then there will be a need or a use to use that service somewhere else in a different way.

Applications, so software. Those are dedicated need tied to service function but can be shared use or shared software, but data is separate. So it's not meaning that data and applications go hand in hand. They can be separately considered. So a software can be used for many different functions even if it's designed for a certain function. But there can be similar functions where someone would recreate a software where an existing software was already existing.

This goes specifically when it's more custom, so not something like a generic tool that is already SaaS business elsewhere. But if there's ecosystem-specific tools and ecosystem function-specific tools being created, and specifically if it's done with public funding, it should be made more freely available for others to use because only one who knows IPs benefit no one. At least it should be done by those who belong to the same tax system.

So if it's built by public money, it should be public good between that public that pays the taxes. That's where the open data models can come from. But the same should apply also to software. It doesn't mean that someone should maintain that software or someone should maintain it for others as a separate question. Just the software itself then, okay, we have a software. Yeah, you can have that software. If you can make it work or if there's useful pieces.

But what the operator can do there is to really dedicate it. Start building inventory of these things. Maybe support productizing those into more meaningful ways so that those applications can be first known that they even exist or to understand what they can be used for.

And if there are multiple actors who say, yeah, we would use that as well. Then reorganize it in such a way that maybe the operator takes care of running it and all of the organizations can just use it and contribute ideas how they would like to improve it instead of operating a software themselves just for themselves.

Dedicated data. So database primarily location or data infrastructure, need, use and responsibility. Again, data can be copied, shared, reduced, reshaped with zero cost to copy, zero

cost to share, reused zero cost. What costs is to make that happen in a more productized way so that there's considerations who can use it, where it can be used, how often it can be used, for what purpose? Is it free? Is it paid? How reliable it is and so forth. But the asset itself, replicating and sharing, doesn't cost anything.

So multiple types with access and ownership considerations. These are all the types of things that there's a lot of things that the ecosystem operator can find value to contribute for— to reduce the costs for the source that reallocated some of their existing funding to the operation or operator activities.

And the server side, shared resource use, typically cloud. Dedicated allocation, own reserve capacity. Defined maintain responsibilities. So specifically we think about servers, clouds. We can use Amazon or whatever. It's getting more and more cost effective so the hardware and the digital side that is being used is not really the cost factor. It's more of those server admin resources that maintain the software and maintain that it's running securely, that it’s running as planned and so forth.

But typically, there's a lot that, let's say, a good combination of two server admins. Doesn't need to have many. Two server admins can, in the modern architectures, support significant amount of softwares and infrastructure compared to past, but it's very difficult to run your own setup without having a dedicated system admin, someone who looks after your software.

So typically that is a place where there can be relatively high cost for relatively long use of that resource, where instead having a combination of shared expertise on the ecosystem operator side, multiple different applications can be run and the cost can be trimmed down by reallocating of—starting from reallocating the time use of those server admin people.

So this is for you to look at from the perspective of what types of things and what level things can be shared [00:10:09] **Page 28 of 133** and then looking at some use cases. Removing inefficiencies at ecosystem level.

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So this is there's a time, this was from June this year. Startup Digest, Helsinki. So many places in the world have their startup digest that comes from Silicon Valley, and there's curators locally trying to aggregate events, _____ [**00:10:39**] information from multiple sources and curate that into newsletter format and feeds. So it's a manual effort.

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This is an example of what is happening there. That doesn't make any sense. This is directly from just a random bit. All those things happening, so probably someone has figured that Tuesday afternoons it's a very good time to organize an event either from organizer's perspective or it's a good day to have a good audience.

But when more people find out the same, which the outcome is this. Now, these are actually all events targeted for the same audience. So the user experience now from the participant side is like, okay, interesting events. Would like to go, but which one of these should I go, because I can't go to them, all of them.

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So a lot of empty space during the same week to allocate. How does that problem occur? Of course because those who organize those events are unaware of the others organizing the events.

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So the solution for that on the digital side is of course that the information, if it comes after the fact because of the model, how it's collected, so it's an aggregation of already published events. But if doing that in a digital sense, we could get the information earlier, faster and we could put, in the aggregated system we can put some smart analyzing in place that takes into account the multi-stakeholders overlapping events and starts doing, informing them about when actually how does the typical week look like the past weeks as well as being informed early when someone is planning events to see where it doesn't make sense, and at the level not only whether there's any overlapping event or not but at the level whether it's for the same target audience. Because of course it doesn't matter if it's overlapping event if the other event is for a formation phase and the other one is for scaling phase or the other one is for specifically targeted for looking for co-founders versus looking for talent to join as an employee.

So bringing this type of connectivity from existing systems where most of those events are published anyway: Meetup system, Eventbrite, Facebook events, or then having all custom applications where those are posted. A simple copy of, for example, when it's saved on a database then submit that information into another system that can read it. And based on this, even a simple shared spreadsheet can be either created or updated automatically.

The Google spreadsheets, for example, include APIs on the background, so anything can be read or written into existing spreadsheets through application interface. So that would be a digital exercise.

And when we think about— we know that a lot of the Startup Digest effort is a voluntary effort. So it's someone, actual person doing it in an organization or as just really committed individual wanting to contribute for the ecosystem as ecosystem builder, and they manually repeat this process globally everywhere, all the time and with varying levels of accuracy, various levels of commitment.

These curators change. People come, people go. So it's very rare actually that many ecosystems have this permanently taken care of. It's something that sometimes is taken care of, sometimes it's not. It's not really reliable. But regardless, it's a person doing it all the time, manually collecting from different sources and putting it manually into another system.

Instead of putting a system in place that would take away that manual effort and that many levels, could be that time could be reallocated to other things.

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Ecosystem portals. So ecosystem portal softwares you can see that is something that every ecosystem pretty much should have in some sort. It should not be a separate silo, a database that gets updated manually and then read from that database. It should be a dynamic portal that is built on top of shared data sharing infrastructure to showcase the data from the ecosystem.

But this front-end application is of course something that could be made open source and organized as an open source development and then among the operators. And we are happy to do that when the operators are there to contribute for that, to share our existing designs and softwares.

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And one more module, the distribution of knowledge. So a combination of Growth Academy. So innovation, entrepreneurship curriculum combined with Circle Pass, the ecosystem level user account.

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So that's divides the knowledge into different modules. So we have the overall module for general knowledge for everyone. We have the Module B for startup advisory and ecosystem training. And then we have specific knowledge for different development phases of a startup.

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So based on that, we have of course e-learning content. And it doesn't matter whether it's us or someone else doing the same. The whole curriculum is open sourced by us, so it's an open standard that anyone can take, use, recreate the e-learning experience on different applications or different systems. But the key is that it can be made or it can be licensed from the existing format as a 24/7, 365 in-learning knowledge.

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But with that, it can be then tracked with Circle Pass. So it can be connected to an ecosystem global user account and see what knowledge is being consumed, by who, where, how often, and so forth. So really seeing what is the level of people wanting to become entrepreneurs in the founding formation phase or how many are consuming, in what development phases and so forth.

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So really collecting that information from knowledge and then being able to inform also the existing support organizations of specific talent or specific knowledge being consumed and better targeted to services for those individuals. And again, key here is to understand that it doesn't require much from the organizations itself. The technologies here are not complicated. As long as there's resources who can start looking after this and there's allocated capabilities in a form of an operator who starts to look this for the benefit of the contributing organizations.

And none of the data flows, none of the details flow without the permission of an individual wanting to share and it doesn't need to be knowledge at the level of one support organization's support person or mentor knowing exactly who the person— like a name, Bob, from this old company actually consumed data. It's not at that level. The knowledge about the event can be targeted for Bob without anyone in between needing to know who is Bob.

So those are simple requests and then if someone wants to share their data, or their identity-based data per request or not, for what reason, for what they sent. But if you look at any of the existing applications, Mark Zuckerberg knows everyone by name and what we do, what we like, who are our friends. So is the level that is happening now.

And you take any CRM, in any application you take any event system, everyone is there with their true identity all the time, unless they put a fake name but majority of people don't put fake names.

And there is no layer of creating any type of anonymity or level or levels of anonymity. Or if in between, because there's no ecosystem operators who will build that, there's no one who looks it from that perspective.

The good thing is that the regulations starts to look from that perspective, GDPR and the ones that we discussed in one of our modules [Ref Module4 Lesson5] more about what the regulation thinks about how this should work.

Another challenge is that many of the organizations in the ecosystem support functions they are kind of small with very limited resources to be able to cope. Or they are spending significant amounts because they don't have knowledge of how else to organize that. They don't have their own operator who would help them or they are part of big organization and they are running with extremely heavy systems, like government system that has no flexibility or it's very outdated legacy systems again because no other options really.

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So the combining the e-learning content knowledge and passing that to a model that collects the information about different behavior and activities and then create systems to distribute that information, so possible statistics for insights, who is consuming. So gender, age, profile.

From where, so which part of the city. So from university, from this part of the city there's more entrepreneurial people so maybe we should take some of our offline events there.

What modules and topics? So most likely if they are consuming a lot of the formation phase repeatedly then most likely they are most interested and relevant at their current development phase.

How often? So what topics are most challenging for them because they keep repeating that. And so forth.

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Then ultimately the connection with the other services to use information to promote ecosystem services. Business registration, event specific, hackathons, startup weekends, things to really target for that audience, and much, much more. But these are just examples.

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Another example business plan tool as an online service. So the business plan as a tool, very fitting when we discussed about the sustainable finance models. So the business plan tool is

relevant for either those who are building SME type of businesses, so known business models or known markets. Or they are past validation, so on the scaling phase.

So the business plan becomes very relevant on the scaling phase for companies to design their finances because now they have existing revenues to actually calculate that forecast. They have ability to forecast their sustainable reoccurring revenues and so forth.

And most importantly, to communicate all of these key information to help scale their organization. But as a tool, an online application in a business plan [00:24:45] **Page 47 of 133** will help to bring possible statistics and insights of multi, very many perspectives, because it includes the financial planning, the financial facts and also many other factors. So basically the whole essence of a company, not only the information as how you think individual business plan as such but aggregated view of data from multiple with different business plans.

So examples like total number of users planning systems, total durations of time in creating plans, time spent in specific segments/topics, number of iterations per segment. So what are the key areas that keep reiterating more? What are less? And so forth and so forth.

On the organizational structure side you can have products, profitability, funding, average funding needs, planned entity types, number of founders, foundership allocations between founders, locations of users. And of course some of this information can be considered like that's very valuable information. That's very private information.

But then you have to think that all of these applications already exist and some people have no limitations to access this information that users are putting in there now. So they could— the system admins, those who have access to software, they can just go there and see. There's always someone who has full access to this but it's just not something that people think about.

This is exactly the things that need to be thought about. they need to be built in a way and operated in a way where people have no problem of exposing all of these things so that more people see what's possible as long as they can trust how it's taken care of. But how can that trust exist if none of the softwares operated globally are not operated globally?

But this gives an idea of the type of information and it gives also the information of why those organizations that have digital DNA, those who operate digitally what type of unfair advantages they have because of the access of the type of information they can use.

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Ecosystem mapping, another simple application example. Having a simple tool to do ecosystem mapping in a more dynamic way in a very simple way. Add a new service, design, put it in the

canvas, give a name, where the service starts from, like ecosystem level relevancy, where it ends for. And then by clicking that open, you can get more details of what that service actually holds when it's run, and so forth.

But really an ecosystem mapping app for more for those who look from that perspective, but it can also be shared, the data in there can be shared in many different ways in different interfaces and so forth.

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The same for business vertical ecosystem. Having a portal view, what's happening in AgriTech. And if the ecosystem infrastructure is properly planned then it's the same data like startups in a geographical ecosystem, but because they are AgriTech startups they are also part of the vertical from Brazil at national level, even if they are in the local ecosystem in a city in a different portal. Because these are only windows to that data infrastructure and the data that exists in a shareable format.

But in the same perspective that a lot of similar software can be created and collaboratively developed and shared across different verticals, just need to change visuals, graphics, domains and so forth. But the information, what is interesting is very much the same, with some exceptions to what is more specific to the industry.

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Ecosystem dashboard. So looking from the KPIs perspective. So a shared dashboard depending on what type of information is relevant to who, but designing a modular experience where different types of metrics can be viewed in a commonly understandable way or visualized in such way.

And not only the applications themselves can be reusable. Individual user interface components and pieces can be made shareable as well. That's something that is happening a lot, for example, in React JS. It's all about recycling and making components universally reusable when the big organizations, like Googles and Facebooks they are big in this. They are big contributors, so that's great.

So you can see material user interface, open source, react, and so forth. And you can find a library of existing components to use. But access to those is not there in the level of ecosystem efficiency because, typically, it's by the software company. That basically takes three components, builds a user interface and sells that as a maintained software. But these type of

capabilities don't exist just because they have not been designed to build this type of resources for ecosystem level.

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Some examples of the ecosystem dashboard items we have ecosystem size and the top ones. Number of people per role, number of companies, number of support organizations. The top ones, like top five, top 10 startups with these criterias, top support organizations based on these KPIs, and so forth.

Budgets. Total support budgets, average budget per support service, average budget per supported company, like when really putting those shared KPIs into use. There can be more accuracy to how to reallocate the resources.

And of course everything here, everything that we cover are just individual pieces to look at where do we start? How do we do step by step? So it's not to say that everything needs to be done and that's the wrong approach. That's the designed-to-fail approach. But it should be started step by step.

So if we look at shared KPIs, well, the logic of shared KPIs is the contributing organization and the beginning foundational establishing of ecosystem operation activities. We allocate money and resources. We measure what value do we get. And you contribute value. You measure what value you contribute back. That's a shared KPI. That's the first item in your KPI dashboard, if nothing else.

The point is to show a vast variety of inventory of topics and ideas, how to consider. Where to then find actual, like real pieces into that reallocation of resources and then utilizing that shared approach to support.

Ecosystem results. So these are the kind of aggregated measures of multiple different actors.

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More items, examples, like people. Who are the most active networkers or high service use? Who are the ones who accumulated a lot of knowledge? Who are the latest people who have joined the ecosystem, whether they are new talent, local or whether they are foreign? Who are the most followed people. And of course all again apply, people decide what is the visibility of their data and profiles.

But we know of course all of this exists. You don't have to look further than Instagram where people just want to make sure they are very visible, very followed. But again, taking that concept and context into the business oriented world and with what actually makes sense.

Team. Team structures, average founder team size, founder age, total team size, growth, team quality. Momentum, low momentum. Are they stuck somewhere?

Companies. Of course different rankings. But the point here is that not only looking the traditional ones because they don't really apply around innovation and building startups. So really like measures that are progress-based, measures that are based on what makes sense. And we covered a lot of these KPIs in the earlier modules, but this is then looking at those outcomes of those KPIs in an aggregated way.

Lesson 4 - Application Example

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Example around unused IPs. So a big part of ecosystem source of knowledge is of course universities, research organizations, big companies' research efforts, even the Startup Weekends unused ideas and so forth. So there's a lot of unused knowledge and potential innovation material in Europe and also beyond, _____ [**00:00:45**] I would say the numbers are very similar. More than 90%.

More than 90% of existing IP created by universities is unused. So that number is crazy. Many of the organization, universities specifically in Europe are public funded, so basically paid by taxes citizens pay. So that unused IP, intellectual property, is paid by the citizens, the companies. And then universities try to sell that in a function called technology transfer. And, in most cases, they either don't have that function at all or the function is outdated, targeted for that where we started why the innovation is moving for startup ecosystems. So it's trying to sell to big companies these findings.

So the model here, the application example is around that to look at solving that [00:02:05] **Page 57 of 133** and the current modules, whether they— whatever the terms are, and this is a typical technology transfer model for university to free, or other resource organizations to free the IPs. So typically, there's a big company on the other side with their R&D department and business development function, where they negotiate a release of an IP as a custom term.

And then they take that unvalidated business model that is built around that research IP and they try to validate that in the market to make it work to get the return of an investment that they paid for the university.

And they get the knowledge feedback of whether it's working or how they have to pivot or iterate to get it to work, or whether they ever get it to work. If they get it to work, typically, the big company when they pay, they don't want to have like a franchise type process but a license-type model because if they have money to pay enough, then if it really flies, they can get all the benefits as well, but these terms vary.

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In some level, universities have spin-outs, so trying to build companies, like homegrown companies in the universities. These are usually also very low numbers because it's a combination of there's usually a lot of restrictions how that IP can be used by those spin-outs or the terms are very bad, like taking 50% of equity from the company. And only 50% for the team

for something that is totally unvalidated. So typically then private investors, VCs cannot invest into those because of the poor structure that was created.

There are exceptions, of course. Something like the most famous universities that are very business oriented, like Stanford or MIT or Michigan. Or they're in Canada, like some universities that don't take any IPs. Every— like all the IPs are free.

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But an open ipr model is to look how that same would work on the context of startup and then building an application around that. So here is instead of that custom negotiation to use similar approach that accelerators came to fix business initial funding model or to bring a parallel model there where instead of everything was custom negotiated. Now, the model is actually fixed terms. And you can then pick and choose to use those with those terms but there is no negotiation.

At the same time, the model is more based on licensing and revenue share models, so no upfront payments, but rather that take it. Use it. If it works then you pay, and making that whole inventory from the dusted back room files nobody ever even know is there, making that available. Just pick and choose in a technical sense.

And if you use it, you can take it on these terms. You pay with this model if it starts to work, and that's it. That's a digital economy approach. You have the same spin-outs that can of course get the same terms, or even better if university so decides. Startups now can have access to that, not only to one. Typically in this scenario when the big company buys, they want full rights that nobody else can use that IP for anything. That they have all the rights.

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Here, it can be shared rights so that anyone can take and that can be reused, that same to multiple companies and multiple tries. Or the same way a company can, instead of taking one IP, they can take three or five and merge and come up with an innovation around human behavior research combined with technology research, combined with something else. And that's how innovation works anyway.

But the more it's based on solid ground real research, the stronger the potential of success as well or protectability for the deeper knowledge, maybe hire the researcher later. But also the market is more than competed in other factors, making it scalable, making the business models work, making it scalable, getting the network effect, being the first in the market and so forth.

So now, the negotiation is not between a hypothetical value, but the negotiation is between the market, whether the market actually responds to models built based on that IP.

And then there's a normal market dynamics there. So now, with a big company, they have already moved themselves to outsource innovation, meaning that they don't want to do— they understand the disruption is very difficult for them to kill and kill their own business, so if they see success raising or new potential innovation competing to their market, they try to buy it either successfully or unsuccessfully. Or they partner with them, with the new companies. So the models have already worked. So this is to bring the model into today.

Also, the terms of the licensing of the IP can include a feedback cycle or feedback requirements so that the researchers actually get real market feedback to improve and do better research instead of being blocked by the agreement that they made with the big company who doesn't want to share any of their learnings from the market to avoid competition to emerge.

And the validation happens in the markets by one or multiple startups _____ [**00:09:09**] same IPs. And the further scaling can be either the startup become a big company themselves for the bigger market or the startup gets acquired by a big existing company that has channels to scale that, if they are already a company like a Google or Apple or Amazon to really scale their digital or non-digital innovations markets.

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So a big difference on how to reorganize open ipr model is a free concept, but this is the type of things where things can be improved significantly, unlocking more potential from existing ecosystem as a part of building that sustainability. But again, the universities will not do this by themselves. They would have done this many times over. It is not something easy for them. It requires the types of operators that starts to build them, test them step by step with some limited IP, with some learnings and with an ongoing capability of improving and integrating it not with designed-to-fail traditional approach.

Okay, let's put it in place. Let's have funds for two, three years and, oh, we didn't achieve results from the markets, because that's typically too sort of a time for something like this.

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The company’s R&D department can also be there now more closer to the market, sniffing and exploring the opportunities without needing to do the negotiation start. And again, these two models [00:10:55] **Page 58, 59, and 60 of 133** can co-exist. It's not to jump from one to another

but to start putting some of the IP to a new channel and continuing the old model, old problem with that.

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So this can also be aggregated from multiple universities in the city level, in the national level, in the global level into a pool of IPs that is accessible from multiple different sources with efficient search tools. And the whole thing is based on, and currently limited by the IP release models, because they are outdated based on the old ones and the new ones don't really exist and they are not the ones that don't exist who should be looking at improving these types of things.

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So open release agreement, open use agreement for the IPs released, place to manage open IPRs, documents and contact details. This is again for the operators to work.

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Comparing these models: traditional model, open ipr model. So the old was long stable history. The stable world doesn't exist anymore. The open is new and innovative.

The traditional one is custom/flexible. So every agreement can be agreed, pretty much anything. The negotiation is complex and still the fundamental things of the price and the levels are fixed in the models of them. Open ipr models have fixed release and use terms. No negotiations needed .Just click, agree on terms and go.

Low volume, slow, closed. High volume, fast, open. And so forth.

So this is just looking at the models from their design perspective. But again, to to validate this is a separate exercise but these are sources for the types of things to build new types of values because of the new approaches and the new structural approach to operate.

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And the measurability aspect as well. So a lot of different types of new data and information can be found simply by the pooling the system in place. That can be giving information for new researchers to research topics that are more search are interested, or not depending on if they are economic minded or not. Or seeing how different things are evolving. So really, a lot of different types of data and information that can be pooled in a system like that.

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Now, we have only covered like few example applications but when you think about all those different applications, whatever applications you are using yourself in your support function, whatever applications are most used in your own system, and you can think of what type of data and statistics and information can be pulled from that, you can start to see the sources of value to build ecosystem operations, not only sustainability but also potential— I wouldn't say profitability because the profits most likely will be just spent on accelerating the development of the own ecosystem and therefore own economy and society for the large as well.

And the counterpoint here is that you can also understand that all of that available data is actually available to someone else now anyway. The good thing is that most likely LinkedIn is not competing with your ecosystem on the same dimensions, or AngeList already is probably competing in certain dimensions locally, so they have that knowledge and most of the ecosystems don't. They only have the knowledge for scale or through user interface or the APIs provided by them, which they control and they limit depending on how they see the value that they want to cater out versus the value they want to keep in, and so forth.

So if you think just Stripe, Stripe knows statistically every subscription service that is using their model, what new startups or new services, how much revenue they are making. Not that they can use that information that way. Not that saying that they look at that information that way. Just saying what type of data is available if the person or the company wants to share that data. And without identity, with identity for investors, or not, but really the information is not that it doesn't exist. It's that nobody is orchestrating and looking at this from the perspective.

So I said earlier in other modules also that we know more about any sport in any country about all of the different things that happens within the context of standpoint in a data perspective. Majority of economies have no clue of what's happening really around their competitiveness in their economic factor, which is very important for the well-being of the societies.

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So from all of those applications, you can think of KPIs like financial transactions and payments, invoicing, cash flows, market revenues, Google Analytics, so all the visitors, conversions of product, where those customers are coming from, aggregated view of multiple startups, where most of the markets, product development cycles, iterations, pitching competition, scoring.

So a lot of data to build new value, to extract new value, to mix and match differently, to build new innovation, to build new digital services. And if not, who? If not the ecosystem operator, then who. The question is then who does this? And the point is that even the local companies would be building innovations, they most likely are building as a business, as a normal business, not as something to look at I'm busy building this business for benefit of my economy from the

private side. So you can't just expect private side to fix this. Or the private side is fixing it in the ways of Amazons and Googles and Facebooks.

Lesson 5 - Operations and Sharing Best Practices

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So, looking at your operations to kick off the operations, first, having the resources: operator's guide, operator's toolkit, operator's checklist, operator's training course, ecosystem tools, startup ecosystem developers Facebook group. So some of the resources sharing the highlight of what we can then collaboratively develop together under creative commons between different ecosystem operators and what we are already doing as well.

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So in the operator's guide we have things like ecosystem development workshop planning. That is something that typically we have conducted and we have the full format of how we do ecosystem development workshop where we set, we do the ecosystem current assessment, the vision, mission class and so forth, plans and strategies for implementing certain applications, initiating operator functions and so forth.

Sponsorships, so startup commons global partners, specifically like development financiers. Like depending on which country and what are their regions, like Asian development funds, world banks, European Commission, of course, and you name it, there's a lot of those who can provide, but those are not to build, to accelerate things but the foundational things need to be established otherwise.

Fundraising help. Who to approach, how to approach in a global context. And then also in the local ecosystem context.

Attendees. Who to invite, how to invite. Finances and budgeting of these. So these are the types of things that we have available and we can put it as resources for the ecosystem operator's guide for creating some of the actions.

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Workshop marketing. How to work— market that workshop to get the right audience in place. How to brand it. So how to make it multi-stakeholder clear, how to combine the ecosystem forum thinking, and so forth.

Communication around that. So how to do the messaging.

Getting attendees to join. Promoting and outreach. How to work with existing ecosystem organizations on this.

Managing the workshop. Role of the facilitator, workshop schedules, and so forth.

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Further, after the workshop, wrap-up emails, templates of those emails, thank you notes. Close out the workshop finances. Social media, reporting documents. We have the templates around significant knowledge of typical ecosystem development initiatives with the context to explain the whole ecosystem development in detail. It's like while each of the ecosystems are unique, there are certain patterns depending on their maturity, the size and their commitment levels, and their available budgets where those development initiatives, what should be done and how it should be done typically varies.

But having done all with more than 30 ecosystems, we have a library of different initiatives and development activities, how to consider based on the findings and the commitments found in the workshops. And of course, the vision, mission and so forth.

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Other toolkit, so ecosystem build resource. Forms to submit resource for other workshops to help operators facilitate workshop sessions.

Organizing team management. Master planning document, first team meeting sample agendas, talking points and so forth.

Global and local sponsors we discussed about those as well. Communication for them and benefits from them and so forth.

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Operators toolkit. More attendees communication. Outreach email template, sending expectations email, downloads for workshop one day before, and so forth.

How to put a website together for these activities. Key messages, blog posts. We helped build this more than a few times, and the core for us is always make things shareable. So we always think of the IPs at the time when we start doing something. And if there is no reason for something to be non-shareable IP, we always encourage it to be shareable IP, and therefore we can build these assets to be shared with other ecosystem operators.

So promotional pieces, and so forth.

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And again, more of the templates. Like you can think of canvas tools with instructions for different things. How to put things together because, while ecosystems are unique, the problem for ecosystem orchestration, regardless of what the activities that are prioritized, is the same. The ecosystem forum dynamics is similar. They vary between the cultures and others, but when we look at the logical real actions to be done, very much the same.

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So checklist, and these go both for initial, like doing the kickoff workshop and then the workshops for establishing the ecosystem forum functions and also how to run the ecosystem forums and related activities in the task force meeting for different topics and so forth.

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And of course a key piece for all of this is the operator's training course, and these videos cover the startup ecosystem development concepts and so forth. So pretty much the whole setup, what we are doing in form of webinars now as a reusable asset for anyone who is taking part in the ecosystem development effort either as an ecosystem operator function with further details, like we shared on those guys and tools. Or they are being ecosystem builders or ecosystem developers in their independent capacity as an individual, which there are great, really committed people out there. Or they are taking that type of role as part of their extended role in support function.

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And really, it's to put the process out and then put all the communication there and find the people resources in the _____ [**00:08:21**] time allocation from committed organization and start encoding the operations.

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And the support crew of course from our side to help ecosystem developers and operators to come together and find the resources, have peer support, knowledge share, is our Startup Ecosystem Developers Facebook Group that is we are constantly building as a growing resource to having dialogue and separately building additional resources for this knowledge.

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And really optimizing everything for the sake of trust and belonging.

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The key element for that is the ecosystem forum concept that we already covered in more detail in the previous module [Reference], and of course the point is we can't cover all of the individual tools and templates and documents and so forth in context of this webinar. So those are the types of resources that we will combine and build into the knowledge library where we are further developing these resources to be more scalable.

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But if we look at some of the activities for the ecosystem forum task force and/or topic functions, so here [00:10:00] **Page 82 of 133** we have the task force and we have the topic teams. And the point is that some of these activities are cross-cutting, like KPIs, education or data infrastructure. Some of these go regardless of the topic, and as such, they need to be considered in a matrix way.

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But here it's about ecosystem communication. For example is internal communications and external marketing. The best-informed group of people where members should be representing one coordinator from each task force, plus communication person.

Ecosystem services. So portfolio mapping and design, and ecosystem working model and services.

Funding instruments focus on funding topics, including money and human capital.

KPIs and metrics to measure the performance of the ecosystem and individual segments and services to help bring focus, and then communicating those for everyone.

Digital and data. What digital tools and solutions do we use and share the needed information, and so forth. So it all starts to come together in a more structured way.

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Then looking at also sharing practices, and this is specifically between the ecosystems really to help find— working together across borders and organizations to find the best solutions for regional startup ecosystems.

So in the context of your own ecosystem when developing and improving the connectivity within and effective resource use, then of course the same applies across ecosystems. So whether that's a national effort, like we're doing in Brazil where there's multiple states. And of course in each state, multiple cities. Is how to think of all the design of the operators activities in

such a way where the sharing, cross-use is also affected between different states and cities and what should be orchestrated at national level.

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So when we look at the challenge, what is the same, very much it could happen inside your ecosystem. You have support services that have challenges. So when we look at the national level or global level there's a challenge of how to then collaborate between— to even know who wants to collaborate, in what parts and what elements do they want to collaborate on, and so forth.

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So the solution really is when doing things locally, collectively documenting and maintaining a public online master list, the same should be then extended to be shared at national level or global level.

And having support functions and development actions are the two key things. So documenting the support functions and their function and role and structures and mindsets and things the similar way as the startup weekend is probably the most known in the context and most spread around, how everything is included with that. We are doing the same for the ecosystem operator and some of the tools where we work, and we are going to do more and more of that going forward.

But we only do that for the limitations of where specifically where we feel our knowledge contribution is beneficial. And we don't do local level activities too much. We do some and we have some because of our history, but we don't do those in volumes. But we do ecosystem level across between ecosystems.

And the other one is the development actions. So what development actions, whether they do policy, new service, a new funding instrument, a new type of event format was initiated. So there was a need to improve something and we did a development action and then there was an outcome. So that project is shareable, documentable and so forth.

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So the solution is really have like a centralized, open source, project type of shared online model. So the same very much that for the shared IPs or shared applications as open source or our innovation and entrepreneurship curriculum as an educational sharing asset. The key is to also build this type of library as a shared format.

And this can be as simple as, again, like a well-coordinated Google spreadsheet in the beginning, but of course because some restrictions are needed to make sure that the information doesn't get— someone breaks it or so forth, and probably a tool over time around that will help.

And the key here is that each practice needs to be documented in a logical way, in a structured way, in the most productized way, useful way.

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So an example of documentation template structure. The key is that it needs to have all the relevant, like umbrella structure for all the people who need to be involved with that. So whether it's the strategy side, whether it's the finance side, whether it's the operative management or it's the operative teams executing it, each of them have different perspectives to evaluate whether the shared practice is good or not or whether it includes useful information or not, whether it's applicable or not, whether it's modifiable or not.

And then if it has a cost associated to the best practice beyond just the operational cost, so meaning like a license to use someone else's IP of a good practice. It needs to be evaluated. What is the financial benefit and the strategy perspective, the things that this practice will contribute towards? Are they part of our ecosystem development practice or economic development practice as such or if we modify something in it?

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So we have an example of a fully documented sample best practice for organizing a shareholder workshop. So that's for formation phase or towards the end of formation phase or the beginning of validation phase to validate that there actually is a team existing and help to startup co-founders to actually make a well-structured shareholders agreement.

And this is not a legal workshop, but this is looking the whole shareholder agreement from a business perspective, from startup's view, founder's view and intellectual property view, and so forth. But everything is looked through the lens of building a business. So it includes things like ownership allocation, how to build commitment between your team members, and so forth.

So we have a sample of documentation of this. And this is of course also available as a creative commons curriculum as well as e-learning licensable content. If you want to have pre-made or then you can create your own based on the documents and create open source creative commons knowledge to get the assets for free.

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Then when there's a proper documentation then they consider how the collaboration and transferability will work. So the key is to have that open thinking. Create and iterate standard models for sharing the documented things. And support models and development initiatives and documented concepts should be built up to include all the things as discussed.

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So a lot of the benefits as everything we work is based on shared knowledge, shared tools to reduce the spending of money by doing repeating or copying, repeating things over and over again. Rather joining and collaborating and combining budgets to reduce everyone's costs within and between ecosystems.

So for different ecosystem development projects, to get faster starts. Continue spreading value faster. Benefits for ecosystems in different regions, increased collaboration and growing global networks, accelerated learnings inside and between ecosystems, lower operating costs, more efficient resource use, and so forth. And really help bring, develop those standards as well.

So the standards in KPIs and data and applications and practices will help improve measurability, comparability, and better viewing to Returns of Investment of investments in different areas of support boxes and so forth.

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And then how to really apply that, so some of the basics. So making it openly available if it's not available. If it's per request, if it's only internally inside of organization it's not effective. Share of the library where committed parties agree to iterate model and related processes.

Minimize operative fixed cost to guarantee sustainability. So really, again, not to hire people with project money but to use resources that allocate the time from somewhere where there is already sustainability in place or if the ecosystem operator is far enough to sustain that.

And use softwares and applications that have minimal cost. Of course a starting point can be something like Google spreadsheets, folders, documents and linking between sheets and documents. But over time, that will start— when it starts to grow, it gets hard to manage so it's better to design and build a custom tool for that. Also to keep the data and all systems with all controls and so forth.

But that when there's a system in place then there should be enough users to also say that, okay, let's create that system ourselves between us, our own operator resources and software developers with reusable assets and then co-maintain that, and that's the way to go. But it needs to be again step by step to get there.

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Here's an example then to look at, like new developments, suggestions. So in the context of ecosystem forum there should be the information always somewhere available. Existing development, like initiatives, progress, what's happening with those.

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But when someone wants to submit a new then a simple submit form that has a template model, because of the form itself. So if someone has an idea and they see, oh, this development initiative doesn't exist so now I will submit a new.

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And then it goes to a separate list for suggestions that can be gone through in the ecosystem forum, looked at and led specifically by the team that is responsible for the topic. A task force that is responsible for the topic.

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And then it's a prioritization exercise to see where does it sit among the existing development objectives. And this is again something to have in the context of like workshops in the ecosystem forum event by the relevant people. It can be led by the task force and open for anyone who is taking part of the forum event to go and showing which several topics they want to go contribute for and doing the privatization.

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Of course there's always the governance as well to get an additional perspective. So this is what forum at large voted it and this is what the government funding will probably have more longer-term view. That's how they voted and the combination and the outcome of where it would sit as the next item that should be taken under development.

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So the support function template is like a standard format of the standard to iterate and improve the template itself, but really this is for if we want to create a new service function, what things we should document about, how that service would look like [00:25:00] **Page 105 of 133**, how does the service KPIs would look like.

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Then the development initiative in a form of a project, for example, to establish that service, or something else if it's not a service, how to develop any other initiative.

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So again, a template for like what is the objective, priority, initial priority. Is it to improve something existing or is it totally to create something new? What the kind of level of easiness? Like how easy is it to create? What is the expected impact if we get this created? Who's the owner looking after this? What item are we improving? Entrepreneurship funding, investors' ideas? What value do we want to improve? So that's we want to get 10% increase or we want to get from 1000 to 2000. What is the starting value? The target value? What other outputs and deliverables this will have? Is this targeted for formation phase, validation phase or growth phase? Actionable line and what do we actually are going to do? How are we going to do it? How do we measure any other side impacts this will have? If it's existing, where is it happening now? If we create it, where it should happen. How is it being measured now? What are the key challenges?

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And this is really like a description to help open this up. That's the type of forms to capture the information and get them into the list. And these are the key, two of the key information that is to be _____ [**00:27:01**], the services and the development initiatives are, the key elements to be orchestrated as an ecosystem operator. And then of course into these attached applications, into these attached data from those applications, and so forth.

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So when we develop, the question is objectives, prioritization, items, so forth. And some suggestions is also to what the current services, activities are contributing for this, and so forth.

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Then that is the same whether it's existing activity or incoming new improvement idea. So if it's something, whatever it comes check from the list if it's already there. What other activities already exist? Because, unfortunately, what happens is that there's so much in the ecosystem context that nobody knows what's happening. Development initiatives is one of those that are very highly un-visible, like really opaque. Not knowing who's doing what for what, who has done something. That's why many things actually are redone, recreated, reinvented that, if nothing else, is the worst kind of wasted effort, is that something was already done with full

budget, full outcomes. Whether it was successful or not, someone actually comes and re-does the whole thing. So that's not very efficient.

So there's a lot of places to dive in and find the values and the outputs to justify the financial sustainability of an ecosystem operator function. And to get there is a step-by-step combination of getting a sustainable by design strategy in place and then starting to do that, starting some of these different applications, ideas, concepts. Doing more of that accelerating with additional funding donations, project funding applications to different things, but having the big picture in mind. What picture are we completing with all of these efforts instead of like random, let's do this, let's do that, and no holistic perspective kept in an ongoing way.

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So using the types of help tools like this development framework. Are we trying to improve the innovation and its volume? Or are we trying to improve the innovation quality? Or are we trying to improve the quality of our support functions? Or are we trying to improve the velocity of money, and so forth.

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So this is the ecosystem orchestration development initiative, kind of key simplification. What values are we trying to improve and what items we are looking to improve. And then having a simple way to communicate these things in a templated way. So template-driven document, a template-driven development and documentation driven development

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Lesson 6 - Open Standard for Growth Declarations

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So, one more item in regards of the— before we close the whole session for Module Four and, as such, the whole session for the webinar. So one of the areas where everything kind of leads to something and everything can be summarized in some index, one of the core parts for the ecosystem collaborative development is the separate effort that we are very much looking for to pursue and push forward, is an open standard for growth declaration.

So we're looking how to open standards and more. We work based on the open standard logic and thinking in everything that we do. We know it resonates well and we know people use a lot of our creative commons released knowledge in extensive ways, even in areas where we have never visited and we have never been. That's why we also wanted to do the whole— the deeper knowledge of ecosystem development into digitally scalable format.

But key part of making all of this work comes down to the standards and developing open standards together.

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So the key part of that is to understand what it is. Have something like a declaration to join where anyone can say I'm on board with that. I support that. I will use that. I will start to work based on that. So that's the declaration.

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So an open standard. And in general, what it means is a free and open standard that is immune from vendor capture at all stages in its life cycle. So whatever the open standards is so we can— anything that is shared, IP-free, so under creative commons or open source, those can be kind of check the box from vendor capture.

The ongoing development occurs as basis of open decision-making procedure available to all interested parties. So we have, for example, in our innovation curriculum, anyone can come and comment and improve different things. We evaluate whether that's correct. We circulate that in our Facebook forums if needed, and so forth. And we would like to get more participation for others to help to do this kind of ecosystem forum at global level.

The standard has been published and the standard specification document is available freely. So those are as much we can put and have time and resources to put those we do.

Permission to all to copy, distribute and use it freely. The best, say, the furthest we have pushed that so far with including the volume and availabilities, innovation, entrepreneurship curriculum, or in a similar form, the startup development phases documents, just as an example. That doesn't mean this is not limited to what we have done but we're just showing you examples.

There are no constraints on the reuse of the standard.

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Standards that are publicly available so the benefits has various rights to use associated with it. Developed through open and transparent processes that aim to draw the consensus from the stakeholders. So these are also for the approaches, like key points to communicate with those collaborating in the local ecosystem to ecosystem forum to rely on this type of open standard thinking.

Ensure the compatibility and interoperability between the stakeholders that is important for the continued growth and evolution of various solutions utilizing the open standard.

The economic outcome of free and open standard, which can be measured, is that it enables both collaboration and competition between suppliers of products based on the standards. So that's all of those things is what all of us want with helping to develop ecosystems.

Again, separate from developing organizations or private businesses. But even those private businesses they have elements. Not their whole business but they have huge amounts of elements that they can put under open standards. But they're not doing it because they're not thinking that nobody cares or that it's a separate effort for them to maintain something to be available for the world, so therefore they are just “aah” [**00:05:18**] without doing it.

But if there's an operator who actively asks for these contributions, actively asks and helps to productize those for others then it starts to make sense.

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So what do open standards enable? Examples like translations to other languages. Many variations, styles, languages, design, video formats, without losing the main structure. A clear example, the innovation entrepreneurship curriculum, all these startup development phases.

These are examples from outside. Everyone's voice is heard and there is a process and structure on how to implement, improvements happen. Ecosystem forum, to establish that, having that in place. Having the understanding about open standards related processes.

Anyone can contribute. Majority of the contributions we get, for example, in our How to Build a Startup booklet is fixing the language. Fixing, like, oh, you should have here and here. And we have as people are coming, there are openly available people fixing, making improvements in our curriculum, there's different languages being translated in the curriculums, and so forth.

No vendor lock. We don't control. Anyone can copy any of those files from us, create their own copy and do whatever they want with that as long as they don't say that they modified first. It's based— that is done by us. The essay is based on what we have created and explain what modifications they have done, but they can do that.

Shared KPIs. So if there is no standards then there is no standards for KPIs either. And standards for KPIs will help bring the comparability and measurability.

Ongoing development, develops also without own efforts. So that's the whole point. So it reduces effort to create something from those who use it, and those who have it, it reduces the effort of improving and making changes to it, but it needs to be put available in that way.

And then of course it's a framework to connect other things. So that's if there wouldn't be standards in the world then it would be a very complicated world. And there's a great video, *World Without Standards*, around this.

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As a process, how does an open standard work? So there needs to be publicly available, the current person. Then learnings and data proven improvement suggestions. So someone has knowledge, data, facts, statistics, whatever to say here's an improvement or it's just plain wrong. Like its word is wrong written. Sentence doesn't make sense. So that kind of improvement.

Then someone to evaluate those collectively. If it's something debatable that it's not obvious, then voting if needed. And having a logic how to vote.

Then a new version published. And anyone can always make own versions, so no need to be stuck with the standard with one track. So the software is caused to fork. So if someone is using official software, they don't like the direction it's going. They would like to do something else but the standard doesn't accept it, they just copy their own. Create a new standard for that if they can or want.

But it doesn't need to be part of the standard. Just use it for something else. Maybe they improve it. Maybe it becomes a new thing. They say, hey, we now made it. It's no longer used

where it was supposed to be used, but it's not useful for this whole other thing because we changed it so much. And it can be introduced as a new standard.

So a lot of different ways then to bring also structure around the IPs and around the different things.

So the more it's used, the better it gets for everyone. Smaller effort by any one party compared to doing it ourself. It's more visible reducing the reinventing-the-wheel approach. Collective credibility, measurability, trackability.

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So in context of that declaration of joining the open standard movement that we're pushing as the open standard for growth, there can be compliance levels for applications, processes, procedures, services, policies, systems, support services, many of those things that we showed earlier.

And this is not open standard by startup commons. That's not what we're saying. We are pushing the open standard to hopefully have its own identity and own governance model at the global level. But what you can do is to drive that open standard thinking and development in your own ecosystems and local level. But how we need to work together between global actors and local actors is to avoid making national standards or these types of standards that then become competitive instead of collaborative.

Like the example of the mobile and phone networks. The standard between GSM and some other standards. Or, the worst case, without the electric outlets is the worst example. That nobody's going to change. Also that we still— like we have cars driving in different lanes. So we have an opportunity to avoid that if we work together to really help make a global open standard.

So that's the declaration what we are pushing forward. But we are just one of the contributors that really care and understand this topic's importance, but we want others to join to that so that we can get global momentum for that and, therefore, the global benefits for everyone

And then everyone can choose how much they want to comply with that, in what level and what parts. In both cases, it's no way restricting. It's only an enabling effort.

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And here's an example of we get sometimes the question of, well, but there's a competition and then there's a collaboration between the ecosystems. And this is within the ecosystem and between the ecosystems.

So we collected this where innovation happens the most in the term “coompetition”, so merging the competition and cooperation. This was in one of our other presentations. And the source here is highlighted, so this is just to share for this question that we have asked also earlier.

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So it's really to find the right combination of real demand coming from ecosystems around the world. Data as the key resource of the digital revolution or the digital economy development.

Technology as an enabler. Technology always keeps moving forward. Now, it's serverless, it's APIs but more so the API economy blockchains, AI, 5G. You name it. The technologies they will keep changing. There's always new technologies. So that's why it's important to understand the things that easily are put on the technology basket and then thought, well, I don't need to know about that. But not missing the understanding of what is the business functions or business models around those technologies, that those technologies enable or what is the economic impacts or what are the other things, for example, that we are now suffering because of, I would say, the Facebook effect. That it's not only the social network, it's everything that it does. It does, I think, still more good than bad, but some of those things that it can do bad can be really, really bad. That's something that we just need to have things proper considerations in place at local and national levels.

Adaptations coming from different ecosystem needs and maturity levels, and so forth and so forth. So these are all part of the benefits of the standards.

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So really, a global joint movement: open standards framework principles. So from isolation to openness. From silos to interoperability. From doing your own to collaborative development. From product to ecosystem users and output focused. Fully scalable regardless of the geographics and/or business verticals.

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So these are all the types of things that really contribute for that frictionless ecosystem in the local level and that directly contributes to startup commons vision to connect all, to digitally connect all the ecosystems within and between globally to help scale innovation

entrepreneurship wherever that is happening, in any shape or form. Because these really are the tools that we really think the world needs to solve the biggest challenges that we are facing is through innovation but in a way that is not centralized around a couple of countries or big corporations only.

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So we have two tracks. “Bigger projects”-based approach. Wanting to lead or need to catch up fast with other ones. So from our side we support this type of logic. It’s majority of the work we have done so far, this ecosystem development projects.

But what we want to start— want to support more going forward, and we are doing from this webinar as well, “independently initiated”, so support more of the iterative approach. No need to wait for others or ask for big budgets or permissions but having the knowledge, the tools, the ideas available and strategies sustainable by design, how to approach and get things started and where to find the value that is justifying the further acceleration and more budgets.

And it can fall back or jump on the next year depending on how the ecosystems develop, and these are what we support.

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So in context of the standards we support, we provide the coordination and contributions now and we are hoping that someone else will take over where we can then be one of the contributors and not need to push all of these different agendas too far ourselves. But we have made sure that we have the long-term sustainability not running on anyone, any individual's money but the value that we create to be able to push this long term until others, enough more join.

So we're doing this very much the same strategies as we recommend others to do for their own sustainability of their ecosystem operators. So to really help connect the community of other ecosystem developers, operators.

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So the types of things we focus on, specifically data infrastructures, APIs, best practices, application concepts, marketplace for these assets. Coordinating and contributing our standards, helping to create data monetization models and sharing global development and learnings.

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And the key piece is the open standard data model. So when we think that a lot of the ecosystem development kind of aggregates around open standard. When we take the digital things, it even concentrates more around that open standard data model. So while we do many things, there's almost like a core thing we will contribute the most and make sure it gets done right and data model is one of the things. It's also a great starting point.

So this is just we covered this already earlier but I wanted to connect here that it's part of the open standard, new things that we are putting into table to continue the things that we have done so far, and the core piece on the digital side.

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And there's a separate canvas to use also for exercise to build the open standards for data. This is a tool not created by us but a great tool that we have found. And a good thing it's published as a shared tool, and there's instructions also to support that. So these are one of the things that we'll put into our knowledge library that will help to look at open standards for data developments, both locally, nationally and globally.

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And here's an example of data modeling logic that we have put to communicate in context of this strategy that we have the business vertical ecosystems and then we have the cross-cutting innovation data model. So these are the geographical ecosystems cross-cutting with the vertical ones and then just indicating the types of data items that we can have.

So all of these have people. They have events. They have organizations, and so forth. But then in the industry there is more of the data that is more industry specific while still relevant in the ecosystem context.

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So how to join the data— not data but the general open standard that is open standard for everything, is to join the declaration. Sign that. That's how we are collecting.

Identify your own shareable assets, whether it's data, application, values, documents, whatever you feel as value, best practices to others. And we will help to promote that shared goals with the world.

And hopefully, we will get this model to grow a more collaborative effort but we are then one of the contributors for that, specifically the standards part.

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So that is now the end of the Module Four.