openSAP

Enterprise Architecture in the Era of the Intelligent Enterprise

Week 1 Unit 1

00:00:05 Welcome to the first unit of the openSAP course, Enterprise Architecture in the Era of Intelligent Enterprise.
00:00:12 I am Robert Heidasch, the Global SAP Digital Innovation Leader at IBM.
00:00:17 Together with me in the room are Allan Coulter, our Global SAP Chief Technology Officer at IBM,
00:00:24 and Mark Dudgeon, European Technology Officer at IBM for Business Services. In this unit, we would like to talk
00:00:32 about the vision Intelligent Enterprise is and what is the experience with our new mega trends and IBM.
00:00:40 Allan, maybe first coming to you. We heard about Intelligent Enterprise and all the phases.
00:00:48 What does it mean to IBM and to the work you do for SAP? At IBM, we use the phrase Cognitive Enterprise,
00:01:00 I think the same principle is there. What we're really talking about is really
00:01:08 how we drive different types of experiences. How we go beyond the traditional process at the
00:01:17 transaction level using these new exponential technologies to drive new types of insights and experiences.
00:01:26 The foundation of that type of intelligent, or cognitive, experience is data.
00:01:35 We talk a lot about data-driven transformation. Again, we've had this phrase of data is the new oil,
00:01:43 and what that really means for us is the fact that we're seeing data moving from being this
00:01:49 byproduct of a transaction to actually being this foundation for these types of new intelligent process experience.
00:01:57 So, how we use data to drive and look for new opportunities regarding process efficiency
00:02:01 or new data models or new trading models, like data monetization strategies and such like.
00:02:08 So, really what we're doing is going beyond the core of the traditional digital core,
00:02:14 which has been the heart of SAP for many years, into this notion of using data with AI and automation,
00:02:22 to really make this transitional shift to intelligent capabilities
00:02:27 and what we call intelligent workflows. SAP are on the same space.
00:02:32 So, we've seen, obviously, with recent acquisitions that SAP have made with the likes of Contextor and Recast.AI and so on,
00:02:41 that they're also moving into this notion of AI and automation to redefine how SAP is really also used
00:02:48 for the consumers of SAP as well. And, if you look for your experience,
00:02:54 how does this play into the architectural thinking? So, really, at the heart of the kind of architecture,
00:03:01 what we're really talking about is how do we create this new type of target operating model?
00:03:09 So, how do we look at redefining the way that processes will be executed?
00:03:16 We need to look at the new technologies that are being applied.

00:03:19 And, we need to look at the new skills that are needed. And that's what's going to drive the kind of change management behavior.
00:03:27 So I mean, the influence of intelligence into how we drive these new target operating models,
00:03:34 is because we can see the effect of processes by adding this new exponential intelligence capability.
00:03:41 So we see processes going from transactional to AI-infused intelligent workflows.
00:03:49 We can see the impact on technology. So, technology from SAP is going beyond
00:03:53 this traditional transaction platform to this notion of these experiential technologies of data,
00:04:00 AI, automation, IoT, Blockchain, whatever. And fundamentally, we can see the impact on the human,
00:04:07 on the skills required. So, we can see skills moving beyond ABAP coding
00:04:13 and configuration knowledge to data science or automation skills and code-native-type developments.
00:04:20 But we can also see the impact on the consumer. So, traditionally we can see
00:04:25 that the people have been logging into SAP and feeding this big beast for many years.
00:04:31 Tomorrow we can see actually the process shifting from a human experience
00:04:36 to a machine experience. So, we talk about changing the experience
00:04:41 from a data-processing experience to a data-consuming experience,
00:04:45 and these are kind of the big shifts in the target operating model
00:04:48 and we use enterprise architecture and those types of techniques to actually drive
00:04:52 that operating model shift. Sounds very interesting.
00:04:58 Mark, maybe coming to you. When you look at your experience,
00:05:02 what is the difference now? Why are we seeing the Intelligent Enterprise,
00:05:06 as the mega trend of SAP and not only SAP, and what is influencing customers?
00:05:12 Okay, well every year at IBM, our Institute for Business Value
00:05:19 conducts global market studies across thousands of organizations,
00:05:23 what we call the C-suite studies. And we see two key trends
00:05:31 emerging from that. As Allan mentioned earlier, there are
00:05:34 the exponential technologies, such as IoT, Big Data, automation, artificial intelligence,
00:05:43 and the pace of technology disruption, is offering up massive
00:05:47 opportunities for our customers to offer new products and
00:05:51 services to their customers. For example, new business platforms,
00:05:58 how you monetize and provide the ability to monetize your data,
00:06:04 and when you apply these technologies at scale, the combined impact will
00:06:10 reshape standard business operating models and change the core of organizations.
00:06:16 And secondly, there's a shift to the new consumer app experience.
00:06:23 We need to help to provide new insights, new value, new experiences
00:06:27 for the consumers, for our customers, and for our employers. We need to massively simplify
00:06:35 the consumption of IT services, what they do, how they do it,
00:06:41 and we have lots of conversations using the IBM rapid discovery advisory tool
00:06:47 to provide the new capabilities for our customers. This takes into account, design thinking
00:06:53 and the re-engineering of processes from the traditional, manual,
00:06:58 step-by-step analog processes to the intelligent workflows
00:07:02 that we heard about earlier on. You'll hear IBM and SAP use the term intelligent workflows.
00:07:10 It is redefining how we shape SAP and the resultant consumer experience.
00:07:15 We move away from the traditional SAP user acting as a data processor
00:07:21 to the data intelligence consumer to drive more value for their organization,

00:07:28 turning the expertise using artificial intelligence. The other factor is, obviously, that we understood,
00:07:37 as classic industries are constantly being redefined, their clients experience competitors
00:07:44 from the new digital disruptors, Airbnb, Uber, fintechs,
00:07:51 the organizations need to respond to survive, and quickly, to the new types of market threats.
00:07:57 They need to be able to turn their knowledge into insight
00:08:01 and action into a response to this new challenge. Okay, as you can see, the
00:08:08 Intelligent Enterprise today is having a huge influence
00:08:11 on the daily life of each enterprise. Allan, maybe coming to you,
00:08:17 so, how does business and technology disruption influence the way IBM architects solutions for our clients today?
00:08:26 Yeah so again, if you look at the way that we designed
00:08:34 the SAP types of solutions in the past, a lot of that was engineered around
00:08:39 how we designed the actual core, underlying, transactional platform.
00:08:44 But, so the biggest shift really, in how we are designing and building solutions
00:08:51 is the fact that we've got to design with intelligence in mind.
00:08:57 We've got to design the, when we do that kind of traditional process,
00:09:00 design and discovery activities, you know, where do we actually take advantages
00:09:06 in finance on a procurement, or on supply chain, with the likes of this
00:09:10 data AI automation block chain IoT capabilities. So, it's kind of redefining how we
00:09:17 design the actual process. Now, that process has to be underpinned
00:09:21 by a set of architectural building blocks. So, how do I make sure of the fact that
00:09:28 we can realize that kind of intelligent ambition level?
00:09:31 So, what are the right technologies to use, how to make sure it's actually an open architecture,
00:09:36 so it's future and scalable and responsive, as Mark said earlier?
00:09:40 We need to make sure of the fact that the system responds in line with the actual
00:09:52 business threats as well. We cannot create the same types of SAP outcomes
00:09:58 we had in the past, where the system is kind of working at a different pace from
00:10:05 the wider business ambitions. That's why we ended up with things like
00:10:08 the two speed architectures in recent years. Very interesting.
00:10:14 And Mark, if you know, look on your experience. What you have today, how it's working,
00:10:21 how you are working with the clients to become an Intelligent Enterprise.
00:10:25 Are there some good examples that you can share with us today?
00:10:29 Yeah, there are multiple entry points in creating the new architecture.
00:10:36 A key point is organizations should be adopting a more enterprise architecture approach
00:10:42 to really understanding the business ambitions, the business vision target operative model,
00:10:50 and what the end state should be. And more importantly, what is the sequence
00:10:55 based on their ambitions, which could vary by organization, based on pain points,
00:11:01 based on priorities, based on how they want to get to the end state.
00:11:06 For example, we've seen organizations start the journey with an SAP transformational event,
00:11:12 with a move to S/4HANA as the foundation platform to start that digital journey
00:11:18 to the Intelligent Enterprise. And we've seen others who've started an
00:11:21 Intelligent Enterprise journey, integrating the new technologies and platforms
00:11:27 and data back into their core. For example, a manufacturing organization,
00:11:34 they're currently looking at a shift to what we call digital farming as part

00:11:39 of the sustainability agenda, and this started as a Big Data initiative,
00:11:44 using data and artificial intelligence to shift from a classic B2B distributor model
00:11:51 to a more B2C approach, to monetize data and provide insights directly to the farmers
00:11:58 to increase the yield on their crops. And one of the key enablers is cloud.
00:12:06 In IBM, using our cloud advisory expertise, bolstered by our Red Hat acquisition,
00:12:14 we need to understand how cloud capabilities beyond the typical view of cloud
00:12:19 is providing the new infrastructure. The new intelligent infrastructure.
00:12:24 Cloud native apps. How we use SaaS applications to simplify workloads,
00:12:33 PaaS platforms, where we define the new cloud native, cloud first application developments,
00:12:40 leveraging the new technologies and APIs. And if you look at what IBM
00:12:47 see as the core building block for the Intelligent Enterprise, it's based on a secure, hybrid, multi-cloud foundation,
00:12:55 as we evolve to the new application architecture that generates data and brings intelligence
00:13:01 to the organization. Sounds very interesting.
00:13:05 Mark, thank you very much for this insight. I think this was very interesting to you,
00:13:12 how the link between cloud data AI inside SAP, as the foundation for the new
00:13:18 Intelligent Enterprise is working. Allan, coming maybe to you,
00:13:23 you mentioned you want this kind of discussion about data, data foundation.
00:13:29 This is the new oil of the company. How are you architecting the solutions?
00:13:35 Where are you doing that? How do you know what data you need
00:13:40 in your project in your engagement? Yeah, so again, if we refer back to the target operating model.
00:13:50 Today, we see, with the pace of change in most organizations, that largely speaking,
00:14:00 a lot of these new intelligent ambitions are evolving.
00:14:08 And therefore, we need to have a more progressive or iterative journey
00:14:12 towards that particular end state. So the companies really are evolving,
00:14:18 reinventing, whatever phrase you want to use. So as we move into more,
00:14:25 these digital experiences, and as we start to use more agile practices as a way of, you know,
00:14:31 really designing, really what the solutions need to be. So similarly, when we look at what data
00:14:38 is required to drive the exploitation, we need to evolve and look at the different
00:14:43 types of data sources that will drive, or improve the actual decision-making recommendations
00:14:49 that we give to the actual end user. So data is very similar to other things.
00:14:56 So as we start to ingest more data from different data sources, we can translate that
00:15:03 into insight and intelligence, and then use that as a foundation for action.
00:15:07 The more that we learn about other ways in which we can improve that recommendation type insight,
00:15:14 and then we'll look for other data sources. Right, so again, it's this whole notion of
00:15:19 driving this iterative design process, so the fact that we can improve the recommendation,
00:15:26 we can improve the action that we want the user to actually take, ultimately, to actually make sure
00:15:31 that we go from a very traditional, analog type process to an intelligent process,
00:15:36 which is augmented or automated, which then drives the efficient behavior for the company.
00:15:43 Allan, very interesting. So in summary, maybe Mark,
00:15:49 if you look now at the takeaways, what would you find on IBM side?
00:15:55 What is for you now the Intelligent Enterprise, as a summary to give you the best impression of

00:16:01 what we should do? Okay, thanks Robert.

00:16:05 I'd say for the folks looking at this session, the key takeaways are
00:16:10 the Intelligent Enterprise is the next evolution of your SAP journey
00:16:15 as we evolve beyond the classic view of SAP as a digital core.
00:16:20 Secondly, the Intelligent Enterprise is a multi-layer set of exponential technologies
00:16:25 with data at the core, driving new insights powered by artificial intelligence and other technologies.
00:16:33 We're creating new experiences for employees, customers, and the ecosystems as we shift beyond
00:16:40 processes to value change. And in leveraging the enterprise architecture
00:16:46 capabilities to align the Intelligent Enterprise with business strategy using our rapid discovery advisory offering,
00:16:53 and making sure that business and IT are aligned, we ensure that we have business architecture
00:16:59 with a technical and processes architecture, to maximize the outcomes,
00:17:04 infusing the skills of the information architecture and data science skills to turn this architecture
00:17:11 approach into the potential value that will form the basis of this new intelligent workflow,
00:17:18 are the key areas I would say, for the audience to take away from this.
00:17:22 Excellent. Allan, Mark, many thanks from my side,
00:17:26 from the side of our users, for sharing the great experience.
00:17:32 In the next unit, we would like to hear about enterprise architecture and enterprise architecture management,
00:17:39 this is presented by our colleagues from University in St. Gellen. And this brings us to the end of the unit.
00:17:48 Many thanks for listening, and I hope to discuss this topic with you
00:17:53 in our discussion forum. Many thanks.

Week 1 Unit 2

00:00:05 Welcome to week one, unit two. My name is Rob Winter.
00:00:10 I'm a professor of information management at the University of St. Gallen.
00:00:13 And in this unit, I'm going to give you an introduction to our fundamental terms,
00:00:18 which are enterprise architecture and enterprise architecture management.
00:00:24 In the last unit, we learned about the Intelligent Enterprise and what the main components of the Intelligent Enterprise are.
00:00:31 These are, well, quite a number of different components already,
00:00:36 and if you imagine, it's a large, complex company, maybe in the dynamic context,
00:00:41 and maybe with a long history. You can imagine that we have quite a number,
00:00:46 maybe a huge number, maybe a number of several thousand of these components.
00:00:52 And so, talking about complexities, talking about the sheer number of things to care about,
00:00:59 it's basically something that comes very close to the idea of enterprise architecture
00:01:04 and the necessity of managing it. A specific problem is in this context,
00:01:08 that at the end it's not about basically, well, understanding the complexities that we have
00:01:13 and somehow dealing with it. What is of particular difficulty
00:01:18 is that we have more and more projects, and these projects all, basically, change this architecture,
00:01:25 check the things that we have in the enterprise. This is an example that we've learned from
00:01:31 the Swiss National Railways, which were a case study that we investigated.
00:01:36 And they basically made very nicely visible that with 200 projects per year,
00:01:42 that basically year after year after year, having 200 different projects,
00:01:47 changing many, many different components of the architecture that they have,
00:01:51 and that means that over the years, it's becoming more and more complex,
00:01:56 more and more need for understanding the dependencies, more and more difficulties
00:02:03 of having an idea about, well basically, how the things hang together
00:02:07 and what happens if we touch a certain thing, and whether it's dangerous or not dangerous,
00:02:12 and what the effects of these changes are. So at the end,
00:02:16 what we see is that even if the complexity seems to be manageable, the dynamics
00:02:22 and the changes that we apply lead to more and more problems in dealing with all that stuff that we have,
00:02:28 all the new stuff that we have, and the fact that usually in a project
00:02:31 no one cares too much about getting rid of stuff. So people like to build new things.
00:02:36 They don't like to somehow clean up after projects. And so we have more and more stuff to care about.
00:02:42 And over time in the large company, like in this case a big universal bank,
00:02:49 we're talking about 6,000 or even more IT applications that we have.
00:02:54 6,000 IT applications, and even one application consists of a number of components,
00:03:00 touches a lot of different data, involves a lot of different roles
00:03:04 and responsibilities and authorizations, and so having 6,000 of these,
00:03:08 and having a large number of projects means that we have basically not a real chance
00:03:14 to control redundancy, to control consistency, to basically stay on top of these dynamics
00:03:21 during the whole period of where we need to manage the architecture.
00:03:29 So, this is the problem that we have in enterprise architecture.

00:03:34 And the question is, well, will the Intelligent Enterprise be somehow safer from these problems?

00:03:39 Because now we are talking about traditional organizations. Not necessarily the ones that really comply

00:03:45 with our idea about the Intelligent Enterprise. If you remember in the last unit,

00:03:51 talking about the Intelligent Enterprise, is it really different in this regard?

00:03:56 We don't think so. We think it's even worse in the Intelligent Enterprise,

00:04:00 because we have more devices, we have more applications, much more data, much more data, many more things means

00:04:06 many more interdependencies, more variability because we have more customers,

00:04:12 we need to be involved more. Different shade between different customers,

00:04:16 understand the customer journeys, make individual offers,

00:04:20 and we have a higher speed of everything, of the project, of the change, of the dynamics.

00:04:25 So, if we have in traditional companies, a lot of complexity, a lot of problems with complexity,

00:04:31 in the Intelligent Enterprise it will not be different, it will be probably even worse.

00:04:36 So in the end, talking about, well, managing this complexity and somehow

00:04:43 treating the management systematically and understanding what we have

00:04:46 and what the dependencies are is a real problem, and that is basically what we try to address

00:04:54 with enterprise architecture management. And enterprise architecture management is based on

00:05:00 a definition of enterprise architecture, which you see here. It took quite a while, basically the enterprise architecture definition

00:05:06 was derived from a definition that comes from IT architecture, but it can be very nicely applied

00:05:13 and transferred to enterprise architecture. It is the fundamental organization

00:05:18 of a system, of a corporate system. It is basically carrying the organization,

00:05:25 as well as probably vendors and customers. It could be also a part of the organization,

00:05:32 but what is important are two words here in the definition. Fundamental and principles.

00:05:39 Fundamental means architecture means not, well, the full detail of all the models,

00:05:43 the full detail of things. If we have 6,000 applications,

00:05:46 these applications have probably several thousand parts and components, each of them,

00:05:50 which means we have millions of things and we cannot manage millions of things

00:05:55 all the time with all these projects. So it's about the fundamental organization

00:05:59 that is important, so an abstract view on what we have. And we shouldn't look only at the structures,

00:06:09 only at what we have, interdependencies, we also look at the principles,

00:06:12 and principles means, well, how do we deal with the structures?

00:06:16 How do we evolve the structures? What are the rules that we have to observe,

00:06:21 that we should observe that let us control complexity? For this enterprise architecture,

00:06:27 always remember fundamental and principles. What does enterprise architecture management mean?

00:06:32 Enterprise architecture management means it's the processes, it's the rules,

00:06:37 it's the methods, it's the tools that we use to control, to understand and control

00:06:44 enterprise architecture in a purposeful way. And purposeful means, well, we have goals.

00:06:51 We have to be very much aware of what we want to achieve,

00:06:54 what are our performance indicators, and we need to have processes,

00:06:59 processes to systematically arrive at these goals by interventions, by intervening.

00:07:05 And we need tools to support these processes. So these are the fundamental definitions
00:07:10 and we should always keep in mind that it's about the fundamental things.
00:07:14 It's not about the detail. What should be covered
00:07:20 by the enterprise architecture? Enterprise architecture is not IT architecture.
00:07:25 So enterprise architecture should cover also the business components.
00:07:29 And business components are all the things that somehow are related to strategy,
00:07:33 as well as the things that are related to organization, organizational structure,
00:07:37 as well as organizational processes. And then of course we have IT.
00:07:41 That's what people usually understand as IT architecture. So it's basically the fundamental structures
00:07:47 of the software and the fundamental structures of the IT infrastructure.
00:07:52 And what you see here is that, well, these things look quite different.
00:07:57 Some are very business-oriented. They are non-technical,
00:08:01 they have to do with customers, with strategy, with performance.
00:08:04 Some others are very technical. They have to do with traditional architectural things like
00:08:09 pieces of software and pieces of infrastructure. And these things, well, in the enterprise we have all of them,
00:08:16 and they are basically highly dependent on each other. In information systems, we talk about, well,
00:08:22 IT-reliant business systems or social technical systems, which means we have this business component
00:08:28 and we have the technical components, and we need to combine, to connect these components.
00:08:34 And that's the reason we also have something that we call an alignment architecture,
00:08:38 an alignment layer, and this means we have to understand, thoroughly understand, how the business things
00:08:44 and the IT things are interrelated. And interrelated means in both directions.
00:08:51 How do IT things support business artifacts? And how are the business goals, the business processes,
00:09:00 the business objects supported actually, or maybe in the planned state by IT components,
00:09:06 like software and infrastructure? So, a lot of different things,
00:09:11 and these things don't exist independently of each other. They are connected.
00:09:16 And these connections are somehow the little dotted lines that you see here
00:09:20 in that transparency, and these are very important because they show us how the things
00:09:26 are, basically, linked together. So, it's important that enterprise architecture
00:09:32 goes beyond business architecture, that it goes beyond IT architecture,
00:09:37 that it spans all this, kind of, business to IT stack, and, well, all the little dependencies
00:09:44 between very business-oriented things and very technical things.
00:09:48 But it's not only that, it's something more.
00:09:52 We shouldn't only understand within a solution how the things hang together.
00:09:56 We should also understand across solutions. What the fundamental processes,
00:10:01 the fundamental software pieces, the fundamental products, the fundamental infrastructure components
00:10:08 are that we have in the company? So we don't only have these kind of vertical dependencies
00:10:12 that we need to know, we also need to know the horizontal dependencies.
00:10:17 So we need to know all the important pieces and how they hang together,
00:10:21 the processes with other processes, the software with other software,

00:10:25 the products with other products, the KPIs with other KPIs. So that's a second dimension of enterprise architecture.

00:10:32 Not being only business to IT, but also being integrative

00:10:38 and understanding the dependencies within a level. Now is this enough?

00:10:42 No, it's not enough, because if we had only that, it would be, basically, a certain point in time

00:10:51 where we understand everything. But the thing evolves over time,

00:10:55 and so we also need to understand this evolution, we need to understand entire life cycles.

00:11:01 So we not only should know all the aspects and all the things, but also how it develops over time,

00:11:07 across the entire life cycle. And those are the three dimensions that are really important

00:11:12 always to have in mind about enterprise architecture. All aspects, all the things, all of our mental things,

00:11:19 and everything over time. So, enterprise architecture is quite a complex thing,

00:11:24 and I think now it's self-evident that as a consequence, we really have to deal with,

00:11:31 we can only deal with the most abstract things. We cannot deal with everything,

00:11:35 because to understand everything, all aspects of everything, all everythings, and even over time, that's not doable.

00:11:42 And so abstraction and aggregation is something that is very important in enterprise architecture

00:11:47 and enterprise architecture management. Structures, it's something that we have on all layers.

00:11:56 And if we want to differentiate between a business architecture, an organization architecture,

00:12:00 an IT architecture, of course on each of these layers we have architectures.

00:12:06 We should know the things that are important on the respective layers, and we should understand

00:12:10 how these things interrelate and how the layers interrelate.

00:12:15 But these are only the structures. This is like a photo.

00:12:18 But we also note a video, a video that goes back into the past and forwards into the future,

00:12:24 and that means that we should deal not only with the structures and how things are linked together,

00:12:29 but also what the changes are, like for example, in the upper right

00:12:33 you'll see something like a project portfolio. We should know what changes we basically are planning.

00:12:39 And we need, of course, to understand how the changes are interrelated.

00:12:42 So, we have not only these many different, many dependencies within the structures.

00:12:47 We also have the many dependencies across time within the projects.

00:12:51 And so that's basically the complexity that we have in the real world, and that we somehow

00:12:56 in an abstracted form need to understand in enterprise architecture management.

00:13:05 These were the basic definitions of enterprise architecture and enterprise architecture management.

00:13:10 They are not only, well, relevant in every organization, but especially also in the Intelligent Enterprise

00:13:17 for all the reasons we've looked at. And that brings me to the end of this unit,

00:13:21 and thank you for listening and I hope to connect with you on the discussion forum.

Week 1 Unit 3

00:00:05 Hello, welcome to week one, unit three. I'm Stephan Aier, I'm the assistant professor
00:00:11 of information management at the University of St. Gallen in Switzerland
00:00:16 and today I will talk about the management of enterprise architecture.
00:00:23 So, in the last unit we talked about the holistic perspective of architecture, that is we want to cover
00:00:29 all elements of an artifact type, we want to align business processes
00:00:33 with information systems, and we want to have a certain transparency
00:00:38 on how architecture will develope over time. We want to do that in order to, at the end of the day,
00:00:47 realize the synergies, the potential for synergies that we have in the architecture.
00:00:52 To do that, we need to manage the development of the architecture so that it
00:00:57 develops purposefully towards our goals. If we think about the ideas and goals
00:01:04 of architecture management I think there are some certain basic goals that we have,
00:01:10 like creating transparencies, having an idea of where we actually are
00:01:14 with all our components of the enterprise architecture, which is the foundation for, at the end of the day,
00:01:22 also simplifying architecture and consolidating architecture.
00:01:28 If we have a certain transparency and a certain simplification of our architecture,
00:01:33 then another goal would be to create consistency of the architecture and to maintain it.
00:01:38 Consistency means that we should have consistent data, ideally we have consistent implementation
00:01:44 of information systems, and we have information systems
00:01:48 that also fit the business requirements. From an architectural perspective,
00:01:53 that is already quite challenging, creating transparency, simplification, and consistency,
00:01:58 but we think that's necessary to also create and to also achieve goals
00:02:03 like flexibility and agility for the business. That means really being able to implement
00:02:10 business innovation that benefits the customer. So how to do that.
00:02:19 So, what are underlying services and the products, so to say, that architects produce?
00:02:25 I think it all starts with the first product, which is transparency.
00:02:28 So, what we want to do is we want to create models that document this state,
00:02:35 the current state of the architecture. That is which business processes do we have,
00:02:39 which information systems do we have, which data do we have,
00:02:42 and how do they fit together? That transparency documents the current state,
00:02:50 but, of course, we also want to go one step further, and that is to think about
00:02:55 so, what is the goal tomorrow? Where do we want to be a year from now?
00:03:00 So, what we want is to have a certain target model, we want to have a roadmap on how to get there,
00:03:05 and we want to have a certain transformation plan of how to implement it.
00:03:10 That's the second product, that's planning. The third product is rules.
00:03:15 Why do we need them? We need them basically because
00:03:20 with the target model, you know, today you try to define where you want to be in a year,
00:03:27 but at the end of the day, things could develop very differently.
00:03:31 So, these rules and principles that we have, they function like kind of guardrails
00:03:37 to find out which decisions really to avoid, you know. A classic example of that is you desperately

00:03:45 want to avoid something like copying master data, because copying master data often leads
00:03:51 to inconsistency of the data in the long run. So these first three products and services
00:04:01 of enterprise architecture management, they are very helpful for creating good architecture
00:04:09 and they're obvious for architects that they are needed, but at the end of the day, the rest of the organization
00:04:15 does not necessarily understand why this is good because these plans and rules at the end,
00:04:21 they restrict the design freedom of the local units. And so the fourth product is that kind of communication,
00:04:29 so explaining through the organization why it is actually helpful and useful
00:04:34 to have these plans and principles in place. Which brings me to the final product,
00:04:41 we call it implementation. And implementation actually tries to take care
00:04:46 that the plans, rules, principles that we developed actually take effect
00:04:52 in the implementation of the actual architecture. For example, we have two means
00:04:59 of how to support that implementation. The first is, of course, we can review projects,
00:05:05 review projects for their compliance to the architecture principles and rules
00:05:10 that we defined beforehand. And in case of non-compliance, potentially
00:05:15 also to stop projects and ask them to correct it. On the other hand, there is the much more supportive mode,
00:05:23 where architects could actually work in the projects to make sure that projects deliver better results.
00:05:32 Now if we think of how to actually make all these means effective,
00:05:39 so how to actually implement architecture management, we would say there are two flavors of how to do that.
00:05:45 The first flavor, we call it the very classical, like, enforcement-centric enterprise architecture management,
00:05:51 where it's basically about defining rules and also taking care of sanctions that we may need
00:05:59 if the projects do not comply to these rules. On the other hand, we see the second flavor
00:06:08 of enterprise architecture management, which we will call influence-centric EAM,
00:06:12 where the goal is not so much to check for compliance with rules,
00:06:17 but at the end of the day to employ the social system and the social pressure that can be present in such a system
00:06:26 to make people aware of, basically, the side effects or the collateral damage that they may create
00:06:34 with non-compliant projects. And by that kind of visibility of successful
00:06:40 and good behavior, but also the visibility of the non-compliant behavior and their consequences,
00:06:47 the idea is to make people aware of and understand the consequences of their design decisions
00:06:53 beyond the immediate area of responsibility. Now we think it's not so much either or,
00:07:02 so it's not enforcement-centric or influence- centric architecture management we think it probably needs
00:07:08 a well-balanced combination of these two. If we think about the first flavor,
00:07:16 so what does it look like? What do enforcement-centric enterprise architecture management processes look like?
00:07:23 We think it always starts with the description of the as-is situations,
00:07:27 so where are we today with our organization? And, of course, the as-is situation is subject to change.
00:07:33 There are certain change drivers out there, like technology innovation, new legal requirements

00:07:39 that come up that we somehow have to deal with. And based on the as-is situation and the change requirements,
00:07:46 we want to derive a to-be situation. And then the question is, of course, how to implement
00:07:52 that new to-be, and that usually happens through a potentially larger number of projects
00:07:59 that need to be somehow aligned in a project portfolio for their dependencies that they may have,
00:08:06 for the resources that are available, and, of course, also the business priorities
00:08:11 that are associated with these projects. If we decided and aligned on a certain project portfolio
00:08:20 then of course these projects before they are actually implemented,
00:08:23 they need to be reviewed by architects again for their compliance with rules and principles.
00:08:28 If we go to the build phase in large projects, what often is necessary is also to check
00:08:35 again the projects during the build phase, because many of the architecturally relevant decisions
00:08:41 may only be taken during the implementation phase. After implementation, we run the new systems
00:08:48 for example, and they then become part of the new as-is architecture.
00:08:57 Well, how to make sure that this process is actually carried out according to plan?
00:09:05 Or put differently, how are these rules and approvals actually enforced?
00:09:11 So, the basic means to do that is what we would call governance, or particularly
00:09:18 enterprise architecture governance. So here I brought you an example from Swiss Re,
00:09:24 and in Swiss Re they tried to implement architecture governance through a means of words,
00:09:29 from more operational boards like the business domain, process management network,
00:09:35 to more strategic boards like the Enterprise Architecture Steering board.
00:09:40 And the idea of these boards is, basically, to have the important stakeholders on board
00:09:44 and to discuss architectural issues, compliance and non-compliance to rules and principles,
00:09:50 and to take decisions. And the governance basically describes who is allowed
00:09:54 to take which decisions. From a more academic perspective,
00:09:59 we would say that governance is just one of the means that we have to actually enforce or enact control
00:10:08 in the enterprise architecture so that we have certain means of controlling individual behavior
00:10:14 to align it to organization rules and goals. And these means that we usually have
00:10:21 are something like we can control impulse, like which resources do we have,
00:10:25 how many resources do we have? We can control outputs, like what should be the results.
00:10:31 And we can control the processes in between, so how should a project be delivered, for example.
00:10:39 This is what we would call the formal means of controls. But if we come to the second flavor
00:10:47 of architecture management, when we think about really influencing behavior
00:10:52 through norms and values, we also have a normal of informal means.
00:10:56 So, what we try with the second flavor of EAM, which we often refer to as architectural thinking,
00:11:03 is to better fit the requirements that we basically see in agile processes
00:11:11 and agile ways to build and deliver software, where there's not actually a thing like projects anymore
00:11:17 but there are local teams that, in sprints, develop new functionality and new software,
00:11:23 and therefore it would probably not be very helpful to have all these compliance checks
00:11:28 again and again and again with all these project teams, but we somehow need to find ways
00:11:34 that these local development teams basically understand what the consequences

00:11:39 of their design decisions are, and we need to make it transparent,
00:11:43 not only to them but also to their peers, what is good and what is not so good
00:11:48 design from the architectural perspective. One way to implement that,
00:11:55 and we come to that in more detail in week two, is through implementing nudges.
00:12:02 So, nudge is basically like you try to push someone in what you think is the right direction.
00:12:10 So for example, if you want to nudge people for more healthy nutrition, for example,
00:12:17 then one way to do that would be, like in our case in the university restaurant,
00:12:21 to just put healthy food before the checkout, in order to, kind of, nudge people to take an apple

00:12:31 and not the chocolate, for example. Banning just junk food would not be a nudge,
00:12:36 because then you would basically not have all decision options available anymore,
00:12:41 but you would basically force people to behave in a certain way, but it's not nudging anymore.

00:12:47 And we think that this kind of nudging is also quite helpful in the architecture management context,
00:12:54 because then we can try to nudge people to think about well what is the impact of my decision

00:12:59 beyond the project that I'm currently in and we've done that with the example
00:13:05 that you see on the right-hand side here, with what we call an architecture efficiency label.
00:13:11 That label may look familiar to you because it's basically the same idea
00:13:16 that is implemented in some energy efficiency labels that you know from buying a refrigerator

00:13:21 or buying a TV set in an electronics market, where the label indicates
00:13:28 basically how energy efficient is the particular device.
00:13:31 And, of course, people want to nudge you to rather maybe spend a little bit more
00:13:36 to buy the device that is more, well, energy efficient, in that case.
00:13:40 And we try to achieve a very similar goal with making sure, in this case,
00:13:46 which of the organizational units are to what an extent compliant,
00:13:51 we would say architecturally efficient, to the rules and expectations that we defined beforehand.
00:13:59 And through this label it's very easy to understand, it's accessible, it's visible in the organization.
00:14:07 We want to raise awareness also beyond the architects for the issue of, in this case, architectural compliance
00:14:14 and the increasing complexity that results from non-compliance.
00:14:20 So together with that, what we talked about in this unit
00:14:24 is architectural management, so how to actually manage the evolution of architecture.
00:14:31 We talked about the products and services that are necessary for that.
00:14:35 And we talked about the two flavors, that is the enforcement-centric
00:14:39 and the influence-centric flavor of architecture management, which we will continue to discuss in the following
00:14:47 units that we have. That brings me to the end of this unit.
00:14:51 I thank you very much for listening, and I hope to discuss with you in forum.
00:14:55 Thank you.

Week 1 Unit 4

00:00:05 Welcome to week one, unit four. My name is Robert Winter
00:00:09 and I am a professor of information management at the University of St. Gallen.
00:00:14 In unit four, we will be covering modeling. Modeling, analyzing, and communicating
00:00:19 enterprise architecture. That fits quite nicely, because in the preceding units
00:00:24 we've talked about the definition and understanding of enterprise architecture and enterprise architecture management,
00:00:31 and then afterwards about managing enterprise architecture. And now we should talk about modeling,
00:00:37 because at the end managing requires that we have some representation in order to
00:00:42 understand enterprise architecture and also to communicate about
00:00:46 enterprise architecture with others. And I think it's a good idea to start first reflecting
00:00:53 a little bit on the scope we should have for modeling. And you already know from preceding units,
00:01:02 this general overview, let's call it this way, of enterprise architecture, in which someone visualizes
00:01:09 what kinds of things we should talk about, and we sometimes have to talk about
00:01:13 in enterprise architecture management. That starts on a very business-related level,
00:01:18 with business artifacts like business models and ecosystem models and business objectives and KPIs,
00:01:26 and goes all the way through the different layers, down to infrastructure component and network components.
00:01:31 And of course, we have to decide, well, do we need all of this?
00:01:36 And if we need all of this, how can we make sure that we, basically, understand
00:01:41 and are able to manage the connections between it? Now, why do we need all of this?
00:01:48 And what is special about the connection of these different things?
00:01:53 And therefore it's maybe a good idea to, well, talk a little bit about the life cycles
00:01:59 and the changes that we have on the different layers here of enterprise architecture.
00:02:04 So what we usually can observe, think again, or remember, we're talking about
00:02:09 fundamental structures here, not about the little things. Everywhere we have little things, constantly changing.
00:02:16 But the fundamental structures on the business layers, they change quite often and quite heavily.
00:02:21 So usually when we have a new CEO, it takes one, two, three,
00:02:26 a maximum of four years, hopefully, to somewhat fundamentally change
00:02:30 the way a business is positioned and business strategy. Processes, fundamental process changes,
00:02:37 they could be maybe even implemented within three months or six months.
00:02:41 So, business architecture is quite fast moving. What about IT?
00:02:47 Well, many people will blame me now for this view, the fundamental structures of IT,
00:02:55 they need many years to be changed. I'm not talking about IT projects in general,
00:03:00 or use-oriented or little changes in the IT systems. I'm talking about fundamental structures,
00:03:05 and fundamentally structuring the way integration systems work.
00:03:09 Fundamentally restructuring support systems on an enterprise-wide level.
00:03:14 That takes many years because we're talking about, well, enterprise-wide systems.
00:03:19 Many, many data that have to be updated, processes that have to be updated in IT.

00:03:25 So we have quite a long moving cadence here on the IT level.
00:03:31 And if you look at, basically, the way that these architectures are interconnected,
00:03:36 and the difference cadences of change, it becomes clear that we need something in between.

00:03:42 Enterprise architecture is not just a collection of business architecture and IT architecture,
00:03:47 but it needs something in the middle, a kind of stable core, in order somehow
00:03:51 to understand and to align all these difference changes. Align the fast-changing business architectures
00:03:58 with the slower changing IT architecture, and align IT changes and new IT potentials
00:04:04 with the business exploitation of them. So, basically the scope is always business to IT,
00:04:10 more or less, and that brings us to the question, well, if we need this big scope in enterprise architecture,
00:04:17 how much detail can we afford? And for that purpose, we have this visualization.
00:04:23 Here we have all the pyramids, some people see them as trees, but they're pyramids.
00:04:28 All these pyramids visualize a certain type of artifact, a certain type of structure, that can be viewed
00:04:35 on a very abstract level, then it's very few things we can talk about,
00:04:40 very few abstract things. Or that can be looked at, at a very detailed level
00:04:44 and then we have many, many, many things. So, at the bottom in the level of detail
00:04:48 we have many, many things. At the top, a high level of aggregation,
00:04:51 we have only very few things. In between we have all the different layers
00:04:55 of increasing detail and increasing number of things. And I think it becomes clearly visible
00:05:00 from this visualization. If you really want to understand business to IT,
00:05:06 the whole thing and all the interdependencies, we need to stay on the top.
00:05:10 We need to stay on the abstract level, why? We cannot be broad and deep at the same time.
00:05:17 It's just not capable for systems and not capable for humans.
00:05:22 So in enterprise architecture, if we want to understand business to IT,
00:05:26 the dependencies, if we understand how changes in the business, changes in processes,
00:05:31 changes in applications, changes in IT, how they interrelate, if we understand basically,
00:05:36 if we change something, where we have to look, then we need to stay on abstract level
00:05:41 and that means enterprise architecture needs to be much more aggregate, much more abstract
00:05:47 than the other architectures that we have in companies. So we cannot be, we must not be lost in details.
00:05:54 We have to dare to be aggregate, abstract, and manage enterprise architecture in addition
00:06:00 to all the other architecture management functions and roles that we already have.
00:06:07 Now, this could be possibly useful to many, many roles in the organization.
00:06:14 Who are the customers of enterprise architecture? Which types of models, which types of artifacts
00:06:21 should we look at? This brings us to the topic of,
00:06:24 well, how do we find the use cases for enterprise architecture management?
00:06:30 And how do we develop in which direction the concept of architecture management
00:06:34 depending on that analysis of, if you want to, the customers of EAM.
00:06:40 And this illustration somehow tries to sketch the broad range of potential customers
00:06:47 and potential users of enterprise architecture management that we have in a company.
00:06:52 And, of course, there are the obvious ones. The obvious one is IT.
00:06:56 Because IT needs to understand all these kinds of dependencies

00:06:59 in order to build systems according to business needs. So, they're basically the first and foremost customers
00:07:06 of enterprise architecture management. But there is much more beyond IT.
00:07:10 Like for example, compliance could be very interested in seeing whether the interplay
00:07:15 of all these IT pieces and all these business pieces is well managed and is well understood.
00:07:21 Business development has an interest in developing new solutions, innovative solutions,
00:07:26 business innovation, business transformation based on a thorough understanding on
00:07:30 how these bits and pieces fit together. Controlling should be very interested in understanding
00:07:37 how, for example, IT codes and business codes are linked together
00:07:42 and work together and have to be considered together, in order to better understand trade-offs

00:07:46 and better understand optimizations. So, we have quite a lot of potential customers
00:07:52 for enterprise architecture management. The question is always, well,
00:07:55 who is really supporting architecture management? Who really needs the outputs,
00:08:01 the products of enterprise architecture management? And these we should identify
00:08:07 and then create an EAM approach in a company according to that, if you like, market analysis.

00:08:15 So, the general way of developing an idea about what models we need
00:08:20 and what products we should deliver, that usually starts with understanding the stakeholders,
00:08:27 understanding their concerns, and deriving appropriate products and KPIs.
00:08:33 And then once we have understood whom to serve with EAM, then we can create the respective design of EAM,
00:08:41 which means, well, then we can decide which models we need, which frameworks we probably need,
00:08:47 which tools we need, and we can optimize and tailor our services and our value proposition
00:08:53 to these customers. So at the end, in summary, EAM is a service,
00:08:59 a support service like many support services in the business, and this can only be successfully developed
00:09:05 and successfully managed and operated by knowing your customer, understanding the customer,
00:09:10 and developing the value proposition based on that understanding.
00:09:14 So, we can have certain customers, many customers, depending on, basically, the marketing of EAM in the company.
00:09:25 The problem of that is that if we have different customers,
00:09:29 they may have a very different understanding of what we're talking about here in enterprise architecture.
00:09:34 Yes, we have a definition. The definition tells us, well, it's the fundamental things
00:09:39 and how they interrelate, and the principles, how they evolve. But if you think about a very business-oriented person
00:09:48 and a very technical person, if they look at the same thing,
00:09:51 at the same structures in the company, they might be interested in very different aspects.
00:09:56 They have a very different understanding. And this little cartoon on the right-hand side,
00:10:01 it illustrates this quite nicely. It's a classic.
00:10:04 It's from the early times of object orientation. It's a grandma and a physician or veterinarian
00:10:12 looking at a cat. And they look at the same cat and see totally different things.
00:10:17 The grandma has what we call the using view, so basically she sees the cat as something
00:10:22 that you have to feed and then you can pet it. And once you stop feeding the cat,
00:10:29 at a certain point in time, you cannot pet it anymore.

00:10:32 So that's the usage view, without really understanding why this happens.
00:10:35 That no food, no petting. The veterinarian on the other side,
00:10:41 she, basically, understands very well why the cat cannot be petted anymore if we don't feed it.

00:10:48 But on the other hand, she isn't really interested in petting the cat, and also not in feeding the cat.
00:10:54 She's interested in, basically, understanding how the cat works.
00:10:58 Feeding it basically, it's function, it's functioning, and if it's broken how to fix it.
00:11:05 And so they basically have very, very different understandings of the same thing.
00:11:09 And the same is true for enterprise architecture and enterprise architecture management.
00:11:12 We have business stakeholders, like controllers or business developers,
00:11:17 and we have IT people, we have project managers, they're all looking at enterprise architecture
00:11:22 and seeing very different things. And that's basically the core of modeling.
00:11:27 Because modeling means abstracting from the complexity of the real things
00:11:33 and reducing the representation to the things that are important
00:11:39 for the respective stakeholder and for his or her concerns.
00:11:43 So it's a process of extraction. It's a process of reduction of complexity,
00:11:50 and making things visible to a certain stakeholder, which, basically, is of interest to that stakeholder group.
00:11:57 As a consequence, models can never be right or true, they cannot be wrong or true,
00:12:02 they cannot be false, they can only be more or less valid, more or less useful
00:12:11 for the concerns that you have. And different stakeholders use different models,
00:12:16 they have different perceptions. They probably prefer different notations, and that means
00:12:21 there is not the way to model enterprise architecture, there is not the set of models
00:12:27 that basically communicate and visualize everything to everyone, there's just basically a lot
00:12:33 of different models, a lot of different viewpoints. And so they're all mappings, they're all representations,
00:12:39 they're all reductionist, but at the end we have to deal with a huge variety of models and notations,
00:12:45 because we have many stakeholders, we have many concerns, and the concerns differ.
00:12:51 What is a key characteristic of enterprise architecture is that we have models of the IT side,
00:12:59 models of the business side, and models of how these two interrelate.
00:13:03 So at the end, the scope should be more or less always the same.
00:13:07 Maybe some stakeholders are a little bit more technically motivated,
00:13:12 some other stakeholders may be more motivated in terms of changing things, like project managers.
00:13:17 Some others may be more interested in dependencies like controllers or compliance managers.
00:13:23 But at the end, overall enterprise architecture management should provide a scope of models
00:13:35 that capture the three dimensions that we've talked about in earlier units,
00:13:39 business to IT, all the relevant artifacts for a certain concern, and the entire life cycle,
00:13:45 to understand how things emerge and develop. Important is that all these models
00:13:52 don't exist separately from each other, but they are interlinked, they are interconnected.
00:13:57 And so, if we really want to do serious modeling and talk about serious modeling
00:14:02 in enterprise architecture management, we have to base our models on a,
00:14:07 well, we call it a meta-model, on an overarching foundational model,

00:14:12 that links together all these different models. So, what we need is a kind of understanding
00:14:17 that tells us and that defines how business positioning, how products, how services, how business objectives,
00:14:29 business objects, processes, structures, IT applications, IT infrastructures, software components,
00:14:36 how this is linked together. So we need a comprehensive meta-model.
00:14:40 That was a discussion in the earlier times of enterprise architecture, what is the appropriate,
00:14:45 what is the right meta-model. But in the end, no meta-model is always right
00:14:49 and always appropriate. It depends on, basically, whom you want
00:14:52 to deliver which results. But what the meta-model should provide
00:14:59 is a clear and sound basis for connecting the different partial models
00:15:06 and supporting this kind of dependency analysis and visualizations that we need for managing enterprise architecture.
00:15:15 We have the core model that is basically very holistic, very comprehensive, and then we have the concerns.
00:15:21 And all the concerns, we have here four concerns that we look at, like IT consolidation,
00:15:26 business IT alignment, component reuse, or compliance. All these concerns are basically then a subset
00:15:34 of that meta-model, but they are all based on the comprehensive meta-model
00:15:38 so that we basically can understand how they, basically, are connected.
00:15:43 But for every stakeholder, he or she only sees a certain subset
00:15:49 that is corresponding to his or her concerns. Thinking of models and talking of models,
00:15:56 these models are, well, not necessarily these maps with hundreds and thousands of boxes and arches
00:16:04 that you probably have in mind when you're thinking about architecture models.
00:16:08 There are many, many different models that we deal with. It could be simple lists of things.
00:16:15 Like the lists of KPIs you will observe, or the lists of business objectives,
00:16:19 or a list of applications, or a list of processes. A list is a model.
00:16:24 Because it abstracts for a certain artifact type what things we have.
00:16:28 It's a kind of repository. It could be maps, and maps not only list the things
00:16:33 but only show by the positioning of things what their character is and what their position is
00:16:38 and how much they are more peripheral or more central to our enterprise.
00:16:44 It could be calculations, it could be profile models, it could be structure models,
00:16:51 it could be flow charts, it could be configurators, it could be segmentation.
00:16:55 So, what the models basically represent is very different because we have these many different stakeholders
00:17:03 and different concerns. As a consequence, and you see it here on this visualization,
00:17:08 we have a huge variety of different models, some look like the ones that you expect
00:17:13 with a lot of boxes and arches. Some look totally different because
00:17:17 it's a different content that they represent. It's a different concern that they support,
00:17:23 and so at the end I would say a key performance indicator for successful enterprise architecture management
00:17:29 is to be able to adapt the modeling style, the notation, the color coding, to the stakeholders
00:17:36 and provide the model that the stakeholders like, the stakeholders are used to working with,
00:17:42 and these often look more like technical models, maybe for the IT stakeholders.
00:17:48 And sometimes these look like, basically, PowerPoint presentations
00:17:52 more to the business stakeholders. And we need support to support all of these,

00:17:55 all their complete range in enterprise architecture management.
00:18:01 One model I want, towards the end of this unit, to put a little bit more emphasis on,
00:18:07 and that's a model of capabilities. Why are capabilities so important?
00:18:12 Well, think about capability. Is it an IT thing or is it a business thing?
00:18:19 Well, we could differentiate between IT capabilities and business capabilities.
00:18:23 But we also could think, remember that alignment level,
00:18:27 we could also think about the capability to be something that links the business perspective
00:18:33 and the IT perspective. And that's the understanding that I want to propose here,
00:18:39 capability models are nice representations of what a business does.
00:18:44 They are not representing IT capabilities, pure IT capabilities,
00:18:48 they're not also representing business capabilities, they are basically a kind of common language
00:18:54 that is very useful to align business mappings and business designs to IT functionalities
00:19:03 and IT capabilities. So, it's a kind of common language
00:19:05 that is neither too much IT nor too much business, but that basically is able to link
00:19:12 and to map these different viewpoints. So capability models have been becoming very prominent
00:19:19 and very frequently used during the last decades, and especially in enterprise architecture management, why?
00:19:27 Because they are perfect examples for models and mechanisms that link the business perspective to the IT perspective.
00:19:35 And that's exactly what we need in these complex architectures.
00:19:39 And the Credit Suisse has quite nicely tried to visualize it. It visualized, basically, this kind of capability model
00:19:46 that they have as a way to map, like the map of Manhattan Island here in New York,
00:19:54 as a kind of abstract way of reducing the reality of a very complex thing,
00:19:59 like a very busy part of a very big and complex city, reducing it to a certain level
00:20:06 where it provides a kind of orientation for very different stakeholders.
00:20:11 Like a subway map provides an orientation for very different people that basically need
00:20:18 to move from A to B, the capability map might provide a very good orientation both for the business side
00:20:24 and for the IT side, what are we talking about? What kind of functionality are we talking about here?
00:20:29 Is it an IT functionality? Is it a business kind of functionality?
00:20:32 Or is this capability a common language for mapping these two?
00:20:38 And as a final slide of this unit, this is a real-life capability map.
00:20:44 It's not the most recent one, but it's basically on the highest level
00:20:47 and the second highest level, a map of the capabilities of a large universal bank.
00:20:54 You see the logo in the upper left, if you want to. And, of course, there is a third level
00:20:59 and a fourth level of capabilities if you look in more detail.
00:21:03 That's a very useful Esperanto, so to speak, a common language
00:21:09 where business and IT, where even also different business units,
00:21:14 different IT units, can match and map what they do, what impacts they have,
00:21:20 and you can, for example, also analyze which capabilities are supported by only one application,
00:21:26 which capabilities are supported by three or four applications different ways.
00:21:31 And so you can use this common language not only to talk, but also to identify where you have redundancies,

00:21:37 where you have gaps, and where you should probably direct the next housekeeping projects
00:21:43 or innovation projects towards. That brings me to the end of this unit.
00:21:48 Thank you for watching, and I hope to see you back in the discussion forum
00:21:53 for following up.

Week 1 Unit 5

00:00:06 Hello, and welcome to unit five of week one on this
00:00:12 openSAP course. I think it has been very interesting
00:00:16 to hear from our St. Gallen colleagues about the use of enterprise architecture
00:00:22 and the relevant management approaches. Again, my name is Allan Coulter,
00:00:27 I'm the CTO for our SAP services in IBM.
00:00:34 So again, just following up from our first session, we've heard a lot about the Intelligent Enterprise,
00:00:41 and also indeed about IBM's own strategy around cognition
00:00:46 using artificial intelligence. So, how do we apply enterprise architecture approaches
00:00:53 in our engagements? One of the more common questions that we are hearing today,
00:01:02 especially from our SAP clients who have been using SAP for many years, and who invested very heavily in ECC,
00:01:09 is the previous transaction core platform. So the questions are really more about
00:01:16 why they should make the conversion to SAP S/4HANA, versus more around the how.
00:01:24 In this backdrop we developed our IBM advisory offering, what we call rapid discovery.
00:01:29 This was engineered to address these specific questions about how we help our customers make this shift to S/4.
00:01:38 At the heart of this offering is enterprise architecture practices.
00:01:43 It's aligning fundamentally the business strategy to the necessary capabilities that will be required,
00:01:52 The enterprise architecting approaches and frameworks we use today
00:01:56 need to evolve however with the realities around how we design and build for the future.
00:02:04 Again, for example, in IBM, we have invested heavily in our architecture education programs,
00:02:11 what we call agile EA, because we need to recognize the fact that as architects,
00:02:17 we can't spend months now defining concepts and standards, but we have to evolve with the realities of
00:02:24 how we apply architecture and methods into this new business environment.
00:02:31 However, the core of what we are still doing is going from this business strategy
00:02:35 to showing how this is fundamentally realized with the offerings from the new S/4HANA capabilities,
00:02:43 and the application of intelligent technologies. So, they go from how we drive business architectures,
00:02:52 to process architectures, technology architectures, and as we've said earlier, there's an increasing importance
00:02:59 in this use of information architecture. So, business architecture
00:03:04 is defining the new capability ambitions that will fundamentally underpin the strategy.
00:03:11 Again, for us as IBM, we have some amazing assets using our component business models.
00:03:17 We do this by process, by industry, by key functions. It helps us to understand
00:03:22 and define what's really important for our customers, what drives differentiation, what drives cost efficiencies
00:03:30 and what drives revenue opportunities. The capabilities are required,
00:03:37 and they need to be enabled by technology, by the new processes, by new skills.
00:03:43 All these are engineered to actually start to define the new target operating models
00:03:48 that we've also discussed in unit one. The skills are interesting as well.
00:03:57 The skills are largely how we go beyond the traditional change management approaches

00:04:03 when looking at the organization impact of this new shift to the Intelligent Enterprise.
00:04:10 And it's not just simply the user's skills. We also need to consider the skills of the IT organization.
00:04:17 We need IT to be ready to act as that transformation vehicle to support the business ambition.

00:04:25 And again, this is what we define as the business of IT assessment.
00:04:30 Once we understand the new target operating model, and once we understand the use of the digital core,
00:04:36 and the intelligent technologies, we can start to define the business case,
00:04:41 and the implementation plan. It is really important that we baseline these things
00:04:48 with the executives, aligning the ambition and also the reality
00:04:53 about how we align S/4HANA and these intelligent technologies
00:04:59 with the overall business strategy. So, let's take a deeper dive
00:05:05 around the technology architecture, specifically how we use the emerging adoption
00:05:10 of business platforms. There are many intelligent technologies involved
00:05:18 in this capability. We need to choose the right technologies,
00:05:23 define the right use of existing and new technical solutions.
00:05:27 We need to define how we are able to optimize not just SAP solutions,
00:05:32 but also integrate this with other capabilities. Essentially, how we fit SAP into today's
00:05:40 API economy. Ultimately, we are looking
00:05:45 at how we exploit the capabilities provided by these business platforms,
00:05:50 and how it's engineered to actually create fundamentally new consumer experiences.
00:05:56 This is not about look and feel. It's not about mobile applications.
00:06:01 It's about the whole persona experience. The relationship between the employee and the organization.
00:06:08 So fundamentally, what is their role now in the new target operating model?
00:06:13 How do they evolve from a data processor to someone who's using their extensive knowledge
00:06:19 to actually drive value? It's about the customer experiences,
00:06:24 so using the likes of conversational AI and shift-left approaches.
00:06:29 How we drive interactions via AI to understand what to buy, what to pay,
00:06:34 issue resolution, and such like. It's about the ecosystem, the connected ecosystem,
00:06:39 as we evolve our clients beyond the traditional boundaries of the enterprise.
00:06:46 In the context of SAP however, the predominant experience is the interaction
00:06:50 with the core back office operational processes, like finance, like procurement, sales supply chain,
00:06:57 and such like. So, by moving from transaction-driven processes
00:07:03 to intelligent workflows, we are in effect rendering the experience
00:07:08 of the traditional end user and their interaction with SAP
00:07:13 in completely new and different ways. So, when using the new cloud-native development capabilities,
00:07:22 for example on SAP Cloud Platform or on other cognitive business platforms from IBM,
00:07:28 we are providing the foundation for new intelligent solutions.
00:07:34 We could obviously interact with these through things like SAP Fiori,
00:07:37 or indeed through the likes of conversational AI, or indeed the interaction has shifted from human interaction
00:07:44 to just simply machine-driven automation. It's in all these things that we see the use
00:07:52 of SAP moving fundamentally beyond the digital core as a real foundation for driving the shift

00:07:59 to this thing we call the Intelligent Enterprise. If you look a bit deeper now,
00:08:07 around the use of business platforms and the key integration points between the digital core
00:08:12 and the business platform itself, ultimately, to create
00:08:16 these new cognitive AI-based experiences, we need this done on a solid data foundation.
00:08:24 The insights needed to be informed by data. So, we know that SAP's an amazing data source, right?
00:08:31 It's the foundation of our transactional core processing capabilities.
00:08:37 However, by augmenting SAP with external sources, and managing to ingest all this data
00:08:45 from ingested publish, via Data Hub, then we have the baseline data capability
00:08:51 for driving towards the intelligent outcomes. The word data lake is also very widely used.
00:08:58 We've kind of evolved really from this, moving to a more data foundation nomenclature.
00:09:06 However, from an architecture perspective, there are a number of principles here
00:09:09 that we need to design for, in order to optimize use of these data platforms.
00:09:16 So things, for example, like aligning the data storage with the right use case,
00:09:20 defining polyglot storage approaches. We often use this analogy of a car.
00:09:26 So, we have a Porsche, we have a 4X4, and we have a Mini. If you have access to all three,
00:09:32 you would choose the right one for the right use case. So, we use the Mini for in town driving,

00:09:37 the 4X4 for in the country and off-road, and the Porsche for driving like a madman
00:09:42 between Frankfurt and Walldorf. We need to use the right APIs
00:09:48 that can drive the highest level of intelligent insight and precision.
00:09:54 APIs understand the sentiment, the natural language processing,
00:09:57 visual recognition, and much more. In unit two in week two,
00:10:02 we will explore more about this in the use of, for example, IBM Watson APIs with SAP,
00:10:08 to drive these AI-based insights, integrating with the core SAP processes.
00:10:16 So, in summary, I think it's important that we see this shift
00:10:19 to business platforms in the right context. In this era of platformification,
00:10:25 these business platforms give us the key ingredients, the exponential technologies,
00:10:32 to help us evolve from back office processing to these new experiences,
00:10:37 for our employees, for our customers, and for our ecosystem partners alike.
00:10:44 Certainly, from an IBM perspective, we are placing significant emphasis
00:10:50 on the creation of these new experiences that redefine how we use SAP.
00:10:58 We see the evolution from these core manual processing activities
00:11:02 to intelligent workflows. And we are building these into our core SAP templates,
00:11:07 what we as IBM call our impact offerings. The reality is that
00:11:13 without these business platform capabilities, then the shift to intelligence
00:11:17 will be far harder to engineer. Ultimately, the platforms give us
00:11:21 a technical architectural framework for enabling this shift. So again, business platforms, like SAP Cloud Platform
00:11:29 or IBM cognitive platforms, are not just simply a new innovation.
00:11:35 They're not just simply nice to have. They are absolutely fundamental
00:11:40 as we evolve into this next generation of our client experience in the use of SAP.
00:11:47 And with that, thank you and goodbye.

Week 1 Unit 6

00:00:05 Hello. Welcome to the last unit of this week.
00:00:10 In this unit, we will talk about how EA management can actually support the large-scale transformation
00:00:17 towards the Intelligent Enterprise. So, what we've looked at so far
00:00:25 is kind of the characteristics of the Intelligent Enterprise, and we've seen that basically data becomes
00:00:32 a very important asset in the Intelligent Enterprise that we more and more think
00:00:38 about platform and platform business models within the organization and beyond the organization
00:00:46 and we think about how we in the organizations become part of business ecosystems.
00:00:53 And so this transformation, which is necessary, typically goes far beyond an individual project
00:01:01 or even number of projects or even beyond programs and so we think it's important on this journey
00:01:10 towards the Intelligent Enterprise to kind of deal with all the overlaps
00:01:16 and conflicts of projects that we will have along the way
00:01:20 and to somehow manage all the dependencies between these projects
00:01:28 and in these projects that basically will be of very heterogenous nature.
00:01:33 So, some projects may be dealing with IT renewal. It will be about new organizational structures
00:01:41 that we need to find. It will be also about new products,
00:01:45 processes, new partners and at the end of the day, it may be also about different cultures and mindsets
00:01:52 that we will need to kind of implement or institutionalize in the organization.
00:01:58 And inevitably, these kind of rather fundamental changes that go across the organization
00:02:05 will also have the need to involve quite diverse stakeholders
00:02:11 from the organization and to develop a kind of holistic perspective
00:02:17 on here we are and where we want to be. So, if we talk about this kind of transformation,
00:02:23 then we refer to it as enterprise transformation. So in summary, an enterprise transformation
00:02:32 is something that is rather revolutionary, as opposed to just being evolutionary
00:02:37 or being just some kind of routine change. So we change things fundamentally.
00:02:43 And this change is not, basically, a result of emerging change that just happens over the years,
00:02:51 but it's actually well planned and well managed change towards a vision
00:02:57 that we have of the Intelligent Enterprise. And this change is fundamental
00:03:02 in a way that it is not incremental, so there are not small changes here or there
00:03:08 or just small optimizations, but it's really a fundamental change
00:03:13 within the foundations of the organization, the way we work, the products we create,
00:03:19 the way we work with customers or partners, and kind of the organizational goals
00:03:25 that may be related to it. So, what are examples of these kind
00:03:33 of enterprise transformations that we talked about?
00:03:35 And basically they may all happen in our journey towards the Intelligent Enterprise.
00:03:40 It may be something like mergers and acquisitions, so where we think about which capabilities
00:03:44 may not be needed anymore, or which other capabilities

00:03:47 or technologies we may acquire from partners or even competitors.
00:03:54 It is the adaptation to the kind of fundamentally changing environment
00:03:58 so if we're talking about digitalization, if we talk about new technologies
00:04:02 and maybe new regulatory requirements, they are also part of that kind of enterprise transformation.
00:04:10 We're talking about fundamental reorganizations for improving efficiency
00:04:15 and basically very different ways of how we work with customers or partners.
00:04:20 So, some simple examples are self-service, which we now see everywhere,
00:04:24 where basically customers or partners take care of their own data of their orders
00:04:29 of their changing metadata that they may have. But we're also involved in kind of co-creation activities.
00:04:36 So, where we basically try to leverage the knowledge and experience of customers also
00:04:41 for the improvement of our own products and services. And at the end of the day,
00:04:49 to implement that kind of journey towards the Intelligent Enterprise,
00:04:53 it will be necessary to fundamentally change our business software
00:04:57 that all our business is built upon. So to summarize,
00:05:03 it is not just some large-scale improvement program like you would see in quality management initiatives,
00:05:08 for example, or it's not just a, although fundamental, project
00:05:13 in a single business unit, but it's enterprise wide
00:05:16 and it's fundamental throughout the organization. Just to give you a few, or two actually, real-world examples
00:05:23 of what could be enterprise transformation, let me briefly mention two cases.
00:05:29 One could be the case of SAP. So a few years back,
00:05:33 SAP was thinking about how to develop the service portfolio
00:05:38 that they offer to their customers. And they did a complete redefinition of which kind
00:05:45 of services they offer, so it was not just consulting services anymore
00:05:50 but they were thinking about different levels of service basically that they have.
00:05:53 So, they're thinking about classic engineering services where they, basically, try to implement the best solution
00:05:59 for the customers, or some high-value services that actually have business transformation components in there already,
00:06:07 or really innovation services, where we want to try new things that have not been tried before,
00:06:11 and certainly require very different skillsets from the people involved in it.
00:06:17 And with that redefinition, of course, all the products, all the offerings,
00:06:23 all the organizational structures in that part of SAP were changed and transformed.
00:06:31 The second example may be that of DHL. So it's basically a large, international,
00:06:37 grown logistics company, and they have a very classic business model
00:06:42 that is transporting goods from A to B and maybe to C and back to A.
00:06:49 And that business model basically will somewhat remain the same,
00:06:54 but with the opportunities and the technologies that we now have available globally,
00:07:04 of course, we need to implement that business model differently,
00:07:07 or DHL needed to implement it differently. So, what they were thinking about
00:07:11 is how they can really kind of harmonize and standardize their products globally,
00:07:18 their processes globally that are needed to basically produce these products
00:07:23 and of course, also their IT platforms, where everything is running.

00:07:29 And that was necessary to also meet the expectations that customers nowadays typically have

00:07:36 if they want to deal with DHL. So, if they're really doing global business
00:07:41 with global customers, then it needs a certain level of integration.
00:07:45 And again, as for SAP, for DHL, that changed, basically, many things
00:07:51 in the organization, so it was a fundamental transformation and it was enterprise wide.
00:07:59 So a few years ago, we did a study on these kind
00:08:03 of large-scale transformation initiatives, on these large-scale enterprise transformations,
00:08:09 and we were thinking about, so basically, what are very important capabilities
00:08:16 that you need to have as an organization to deliver these kinds of transformations?
00:08:21 And among these very important ones, which are the ones
00:08:24 that are basically not yet sufficiently mature, or we would say, the least mature ones?
00:08:31 And what we found out first was that, basically, identifying
00:08:36 and also dealing with all the interdependencies that you have among all these change projects

00:08:42 and maybe even programs that are part of such a journey,
00:08:46 how to manage these interdependencies is one of the big challenges that companies face.
00:08:52 A second one is although probably many of them are very good in classic project
00:08:57 or program management, what they deal with and what they're challenged with
00:09:02 is, at the end of the day, also to deliver the business value that was initially intended
00:09:07 with that kind of transformation so making sure that the stakeholders
00:09:11 and the intended benefits actually arrive at the stakeholders.
00:09:17 The third one, which seems to be like a classic challenge but it's still not sufficiently solved,
00:09:24 is thinking about process optimization and also innovation that needs to happen
00:09:31 in these kinds of transformation programs. We think that from an architectural perspective,
00:09:38 actually at least the first and the second challenge are some kind of home turf for enterprise architects,
00:09:46 so actually architects with their architectural perspective, they should have this global perspective,
00:09:51 and they should be able to identify and deal with the dependencies and interdependencies
00:09:57 of all of these change programs taking place. And with a business-to-IT view,
00:10:03 they should also be able to kind of make sure or at least support the program
00:10:09 in making sure that the program value is actually delivered. So with that starting point,
00:10:17 we were thinking about which kind of capabilities would be needed
00:10:23 to actually deliver enterprise transformation? And the result of that exercise
00:10:31 was what we call the Transformation Intelligence Capability Catalogue,
00:10:36 which you see here. The catalog has, basically, five dimensions
00:10:44 and these are basically five dimensions that you can have, five perspectives
00:10:48 that you can have while looking at a large-scale transformation program.
00:10:53 So, we start at the very left. It's called the Strategy Perspective.
00:10:57 So, here the idea is to actually define and make people aware of the basic reason
00:11:05 for running this huge transformation initiative. And that's not only important at the beginning
00:11:11 but it's also important during the project to also justify certain design decisions
00:11:16 that you take along the way. The second perspective we refer to as the
00:11:20 Value and Risk Perspective, which is very much related
00:11:24 to delivering the tenant business value I just talked about, and here again, it's making sure
00:11:30 that we really understand, what are the intended benefits of all the involved stakeholders?

00:11:35 Because a benefit is always stakeholder dependent, so different stakeholders
00:11:39 will have very different expectations for this kind of transformation program.
00:11:46 And of course, it's not only important to be clear about these benefits in the beginning
00:11:51 when we plan a transformation, but it's also very important while actually executing
00:11:56 and running the transformation to make sure that we really implement the things
00:12:01 that are necessary to deliver the intended benefits. The Risk Perspective, of course,
00:12:06 is then so making sure that we understand the risks towards not delivering these kinds of intended values
00:12:17 and benefits that we have and making sure we find out
00:12:20 when a risk actually materializes and find out or be prepared,
00:12:25 so what to do in that case. The third perspective is what we call the Design Perspective,
00:12:32 and that's actually quite similar to traditional enterprise engineering
00:12:39 and enterprise architecture perspectives, so it's basically making sure
00:12:43 that the requirements that we now have well understood actually then are taken into account
00:12:53 when designing the to-be solution that we have. And then finally, there is this Implementation Perspective
00:13:01 where we make sure that it's not just the programs, the individual projects and programs,
00:13:07 that are managed accordingly, but that also the entire transformation initiative
00:13:14 will be successful. And then on the bottom, we have the fifth
00:13:19 and last perspective, and that's the perspective of change management,
00:13:23 and when we say change management, what we mean is that for such fundamental transformations,
00:13:31 it's so important, basically, to take all the people with you, so the employees in the organization,
00:13:38 because for them, it will be also a tough journey because things they got used to
00:13:44 will not exist anymore and it's along the journey quite unclear
00:13:49 what things will look like in the future. And to make the old transformation a success,
00:13:54 that's the fifth important perspective. Now, from an architecture perspective,
00:14:04 we now have these, kind of, five perspectives and although that may look a little bit like a face model
00:14:10 or something, from strategy to implementation, it's actually not.
00:14:13 It's five perspectives on the same thing, that is the transformation,
00:14:17 that are relevant, basically, at all times of this transformation endeavor
00:14:22 and what architects are good at, of course, they can support one
00:14:27 or the other of these perspectives but in particular, they should make sure
00:14:31 that these different perspectives, at the end of the day, fit together,
00:14:35 and by that they can actually then support transformation management.
00:14:39 So, architects are not the ones necessarily leading this transformation or even steering it,
00:14:44 but delivering a kind of steering support, management support for successfully
00:14:51 running the transformation. Now, in putting these two concepts next to each other,
00:14:56 enterprise transformation and the capabilities that are required for doing that,
00:15:00 and enterprise architecture management on the other hand, it hopefully becomes clear
00:15:05 why, as architects, we are in the particular and the special situation
00:15:08 of supporting these kinds of transformations. While transformations are fundamental,
00:15:13 they basically cover many aspects, many things with many different stakeholders, architecture
00:15:19 and architecture management particularly deliver this kind of architectural perspective,

00:15:24 not only on the organization but also therefore on the transformation taking place

00:15:29 in that organization. And architects should be that kind of supporter,

00:15:35 with their own global perspective of making sure this transformation, at the end of the day, reaches its goals.

00:15:45 So in summary, what we have here is we have enterprise transformation

00:15:50 is a fundamental change. All aspects on all levels

00:15:55 with certain long-term goals and effects. And then we have architectural coordination

00:16:02 of that transformation where it really is about supporting the decision makers

00:16:09 with the relevant information to take the best decisions for making the transformation a success.

00:16:15 And we do that through integrating and aggregating all these local perspectives,

00:16:20 all these local details and kind of building the big picture

00:16:25 for doing that from many perspectives, such as financial perspectives, structural perspectives,

00:16:29 skill perspectives, but also cultural perspectives. And again, at the end,

00:16:35 it's not architecture management steering these kind of transformation programs

00:16:40 but it really is about supporting the better decision making.

00:16:47 And with that, we're basically at the end of this week. We wish you great success with this week's assignment

00:16:56 and hope to see you in the next week.

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