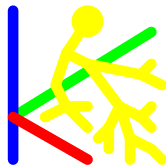


Ecosystem digital trade study DRAFT



Practical part of my Digital Commerce -studies
(<http://digitaalinenkauppa.fi/en/digital-commerce>)

Potkonen Ari

January 10, 2026

PREFACE

As part of my Digital Commerce[30] studies I decided to do vision document from electric-commerce, trading by collecting early 21st century ecosystem ideas together. Starting from traditional GSM barefoot data delivery network using charge stations as distribution centers on rural area, continuing to ideas from Debian ".dep" and Fedora ".rpm" package systems generalization with XML. Created XML blocks stored to EU digital preservation archive block store, and from there lifted to cloud services object store at cloud edge for tradesystem use. Services dynamically scaled at cloud edge on need bases. On cloud edge asset defining XML is holding or pointing to product official documentation, what to purchase, and other certificate defining XML how product or service is available at time of purchase for location of purchase. Then trade transaction support is created to sale these latter certificate documents. This is opened more in document if not clear now ;-). Latest ideas collected from digital commerce training, related books and from Nordic Retail and Wholesale Association (NRWA) Conference (NRWC) at Tampere UNiveresity (TUNI) 2022 November and from NRWC at Helsinborg by Lund University (LU) 2024 November. Extending, merging and combining those together here, and you are welcomed to expand our understanding. Please feel free to utilize, comment or improve these documents, this and appendixes included. I came to this openness and publicity decision because digital commerce ecosystem creation is community action which require wide cooperation to protect and optimize every party position in community while respect the others. So it's a compromise for all, but meant to be more economic and effective too than original situation at the beginning. National

governments usually participate more afterwards to work, but EU is active and there is risk that EU (Cyber Resilience Act (CRA)[2]) spoils possibility to have good ecosystem by demanding cryptography use without implementing open reference implementations first, nor needed legal framework either. There is need for open hardware and open software reference implementations before demanding it to be used. It is EU government's disease that it's so much easier to restrict and demand that actually do, finance and supervise practical implementation of something useful needed here. Just demanding and ruling leads to monopolistic solution, very significantly limiting citizens and small business rights and possibility innovate, build they business ahead. They do not understand that for every software they required or allowed to be encrypted for trade they has to have digital preservation archive instance for unencrypted originals, like for books have free copy right for national archives to get some originals saved for forthcoming generations. Same has to happen in this new digital ecosystem to be fair from generations to generations. That has to be done first, and lawmakers clearly don't understand it now[18]. Archives are created and used for documents, library and museum data, but not for pure trading. In future traded digital originals, the only originals, has to be archived before trading. Trading instances, encrypted or not, are lifted from archive services to cloud edge for trade on need bases. Asset – documentation is there all time, blobs are lifted based on archive servers load. That's it, more details on few next pages. Hopefully you get some ideas from here for your professional life!

Sincerely yours Ari Potkonen

Online: <http://github.com/apotkonen/ecosystem> [55]
<https://raw.githubusercontent.com/apotkonen/ecosystem/main/ecosystem.pdf>

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Contents

Preface	i
Rights	iii
Contents	iv
List of Figures	iv
I Monetary system	1
1 Monetary system	3
1.1 Traditional	4
1.2 Electric money	6
1.3 Quantitative Easing	7
1.4 Trust	10
1.5 Exchange	10

II	Tradesystem	13
2	Frame, framing	15
2.1	Platform strategy	17
2.2	Strategy creation	21
2.3	Minimum asset	30
2.4	Certificate	30
2.5	Product	32
2.6	Asset dependency	32
2.7	Agreement	34
2.8	Roles and terms	40
2.9	Technologies to be created	47
2.10	Technologies NOT to be created	55
2.11	Responsibility sustainability	56
III	Cooperation	67
3	Cooperation, competition	69
3.1	Global setup	70
3.2	Shipping logistics	70
3.3	Standardization	71
3.4	Digitalization	72
IV	Protect	81
4	Ecosystem	83
4.1	Customer	84

4.2	Influencer	84
4.3	Vendor	84
4.4	Bank	84
4.5	Trade operator	84
4.6	Ecosystem platform	84
V	Frame	85
5	Agreement explained	87
6	Legal text	89
	Abstract	90

List of Figures

2.1	Existing digital trade rule sets and need for EU wide public nondiscriminating rule set for platform based ecosystem	18
2.2	Digital Trade Market Value Growth (TMVG) strategy analysis and planning	20
2.3	Digital TMVG strategy analysis and planning model layers front view	20

2.4 Digital trade operative marketing activities on mRACEII
planning model 22

2.5 Iterative process 23

2.6 Digital tradesystem operative marketing activities on mRA-
CEIIQ planning model 25

2.7 Tradesystem spacetime layering 26

2.8 Resolution from assets and certificates in the spacetime
of tradesystem 28

2.9 Frame agreement terms for fluent frictionless trade . . . 29

2.10 Asset is item fulfilling consumer need requirements . . . 31

2.11 Marketing money sharing for members inclusion, incor-
poration and viral automarketing 54

Part I

Monetary system

Chapter 1

Monetary system

Monetary system development and extension need. Monetary system what national and union banks maintain is left behind from native digital citizens and market digital development needs. It's time to tackle digital trade problems by rising abstraction level of exchanged valuables and same time removing trust problems with the frame agreement defining standardized digitalized and supported business models on agreement and trade platform level. And maybe later on we have laws supporting frame agreement based market operation. To really to do frictionless trade we have to digitalize and standardize goods and services digital presence at least on ecosystem frame agreement level. What is product or service digital presence - asset - sold on digital market before any products or services are delivered? Or does the vendor delivery promise - certificate - be the thing to sell?

I would like to say that in digital trade, e-commerce, - asset - is product marketing documentation offering, customer need fulfilling solution, with customer value bigger than price value for customer, and sale is happening if products are available, meaning if vendor given - certificate - "promise" from availability is available and delivery terms are matching to customer's customer value idea customer has got from product documentation called asset. So in this document: Asset is the product or service description. Certificate is asset defined product or service delivery promise to certain place at certain time, at certain price. Certificate (vendor-promise) is what is actually sold! And we need to be able to do sales transactions electrically.

1.1 Traditional

Traditional monetary system. Legal system is set so that generally banks are only legal entities legitimized to produce state backed money, money which has legally supported status and known behaving model. Amount of money on market affects to its value on market. If amount of money is small compared to market size then money desirability rise because everyone on market want to change their goods and services. This limits trading and rise of product price, because most to offer for exchange medium wins medium and does exchange. If others still exchange their products against smaller amount of money then money value is grown and that is called to deflation. If there are lot of money on market then all can do exchange at the same time without limitations and then asked money amounts from same products grow because there is lot of money available and can be asked more. This is called inflation which

means change medium value decrease. To control market operation governments, national and unions central banks have some operations to manage total amount of money on market as well control inflation or deflation on market.

Increasing money amount on market:

- Release tangible money to circulation
- Release intangible money to circulation
- Negative Interest of loan
- Positive Interest of saving
- Loan of money
- Purchase of bonds by central banks

Decreasing money amount on market:

- Returned tangible money from circulation
- Returned intangible money from circulation
- Positive interest of loan
- Negative interest of saving
- Payment of loaned money and positive interest
- Non-returned worn or lost tangible money
- Non-returned corrupted or lost intangible money

1.2 Electric money

There are several intangible electric money activities ongoing.

Most of electric money systems are based to blockchains and cost of proof, which due distributed nature is high enough to protect authenticity of each transaction. Even this cost is not shown for the actual user, because there is inbuilt mechanism to finance cost by adding more money to circulation, it still has high cost. This is also reason why we should not use these methods, because cost will be taken from society and environment we live in form of high electricity consumption or in form of excessive storage media material consumption.

Blockchain based payment systems also try to keep anonymization by using account or wallet numbers instead of actual owner names. Therefore systems have been used a lot for the shadow transactions not tolerating full day light.

It might be nice to have nameless system for the device having credit used to purchase goods and services, but does it bring any significant benefits is open question.

It's hard to say do we really get any official legally supported electric money which removes possibility to have full payment chain visibility or possibility to do full payment chain resolution afterwards.

Payment chain visibility make possible to eliminate fraud from market by removing cheating player by allowing to detect cheating member.

There are setups which are called to e-money even those are actually electric transactions between service provider maintained bank accounts.

It's possible to automate old check system, by doing full signature and encryption chain where each owner does check signature and encryption with receiver public key. But then it's obvious who had participated into payment chain.

Pure electric bank note initiated and signed by your bank, or central bank, against money on your account is easily under threat if first receipt is not the last one too. Check note is encrypted with your public encrypting key for delivery. When used it's sent to receiver with public key encryption. During transfer everyone's store instance encryption is removed and new done by each holder. Final receiver is again a bank and it pays amount of money for sender against the note. Final receiver name is stored by bank to allow fraud detection, by backward tracing. With successful access chain all mid-holders are not known. Every owner knows and stores last and next legitimate owner, but not the whole chain.

Because these security problems direct bank transfers are preferred on electric trade.

1.3 Quantitative Easing

Era of Quantitative Easing (QE). It has been thought that peoples and organizations who did and do most from new productive investments finance those investments with loan and therefore giving them benefit with negative interest rates and junk bond purchases and acceptance to mortgage gives best boost to economy. But that is not true anymore, not even been when quantitative easing started at 2008 crisis. Those organizations had put easy money to living and unproductive investments without actually investing to sustainable

growth. More and more money goes to easy wins and protecting their position and status on earth, our market place. Protecting their own living standard without any even small willingness to change sustainable business models. Why? They think that it's easier to protect existing just now than create new business. And in short time it be so, allowing to transfer more money to consumption; cars, houses, cottages, jets, boats, second, third, fourth houses, villas with personnel and maintenance, even if not used at all. So most usable money went to consumption, not to sensible new business creation nor social investments like education etc. Even central bank has supported this old, mostly by fossil fuels driven economy, consumption style which is coming to dead end because our market place earth doesn't tolerate it. There isn't anymore need to blow up climate satellite with normal bolt set between rocket phases where you should have exploding one. Everyone here can notice change even without that satellite. Glaciers are melting and drought follows here and there. And those bosses used most of money to their own consumption are now coming to dead end, some even started wars to keep existing fossil backed business model and gain more for themselves. It does not work anymore, everyone will loose if continuing that way, we are not sure can we get this thing turned right even if we all work seamlessly together towards sustainable goal where economy expansion is on space and sustainable business models on earth. Extinction is on offer plate if we doesn't understand common good. Money wise – because money is only number, growth can continue on earth, but is more or less social services growth, recycling growth and technology improvement. So, we should be more on quality growth, than volume growth side, if we want to survive.

It's good to notice that all entrepreneurs do not belong to this

greedy group and have grown they business mostly with income financing and caring from sustainability. Still amount of outdated business and nonproductive play with financial market without actually producing any good is taking too big part from whole economy. Therefore artificial respiration of these dead businesses with QE is coming to end. These not-trustable, cheating, frightening and even violent organizations has to be let to stay on they own and concentrate to original producer or service creator possibility to do business straightly with the customer. Then environment aware peoples can vote with they wallet when system has been built right. Business natural tendency to renew and prune dead ends has to be restored by ending QE. QE successor (Sustainable Financing [65]) has to have long term sustainability or space utilization targets for expansion. Dead end public support financing has to end. Negative interest rate is normally taken from normal worker's back by reducing the value of his/her money, and giving it to those who has too much already, and whose are already underperforming by sticking to old world, grabbing only very short term local wins, and spoiling larger community possibilities to live good life. Risk is that autocratic chieftains drive they own very short term benefits and peoples resisting the change are supporting these chieftains against they own and they children benefit. Then the result is global repetition from what happened on Easter Island on earth last resort where we get clan chieftain mo'ai repetition when all key resources are used and system collapses.

1.4 Trust

Legal basement for monetary system requires definition of legal entities definitions, then actual law text could refer to these defined legal entities and define they roles, rules and consequences of non-compliance. Most used legal entity roles are; natural person, corporate body, commune, bank, nation, national property register, national bank, national tax, national toll, central bank, central tax, central toll, exchange and national archive. Operations these several legal entities can do are for example: exchange (sell & buy), tax, toll, loan, mortgage, refinance (national and central banks), rate (national and central banks), etc. Exchange of goods and services using money and money kind abstract valuables is based to peoples trust. Governments have based legal framework to maintain peoples trust to these valuables to make goods and services exchange easy and effective.

1.5 Exchange

When peoples do something they need others help to reach bigger advancements that they can do alone. To be fear there is need for reciprocity and it's hard to archive in bigger scale without some medium of exchange. Therefore some selected valuable easy to exchange commodities started to be used as medium of exchange. While economy grow more there were greater need to have more abstract medium of exchange and legal basement for that created to maintain peoples trust to it. Exchange valuables; coin, bank note, dept, bond, commodity, share, property, mortgage, derivative and certificate. This certificate and operations for it are the new things we are

interested to define for digital trade, e-commerce.

Part II

Tradesystem

Chapter 2

Frame, framing

Digital trading, e-commerce as frame agreement backed ecosystem service platform. Few ideas from digital trading, e-commerce platforms which traditionally has been thought too narrow minded way, concentrating to single customer usability questions, vendor viewpoint or service provider viewpoint and then drifted to existing setup. It has been enough because there is no serious competition from government or society driven frameworks. Actually this area is much, much broader what has to be covered for successful platform forming ecosystem services.

To be able to form ecosystem services for full delivery chain, from initial raw material producer to final consumer and recycling, you have to have strong value based idea from fair and sustainable way created ecosystem. Ecosystem which can be accepted globally by original producer, final customer, and society from socioeconomic

perspectives. Ecosystem which is enough aligned with legal framework and government, like with EU digital strategy, so it can be accepted to be used and supported by government, and which is financed by offering clear role for financing institutions, therefore having motivation to back up technology. Then banks have clear future role. When public setup is widely copied it can't be wiped away, instead current major players are encouraged to join the movement. To get to widely accepted and popular ecosystem services into place there has to be widely accepted rules how ecosystem services operate, how they improve every participants life. Therefore publicity especially for ecosystem own rules has to be clear, documents freely available and understandable for regular peoples. For legal framework there can be an another freely available public set of legal documents setting these clear explanations into practice. Now there is no other needed level agreements than some "free trade agreements" – and are those on needed level for acceptable ecosystem services? Those really are not adequate at all, or limited to too narrow niche.

Biggest risk here is that EU government really doesn't understand what they are doing. Legal body has demanding and denial legal rules mostly in mind when they do something. These both are mostly limiting and distracting ways to build anything new. They also have possibility to finance some new initiatives if they understand what they should do. Good example from EU activities is this new Cyber Resilience Act (CRA)[2]. EU should actually finance open hardware and open software reference implementations tested against major Open Source Hardware (OSH) and Open Source Software (OSS) releases and put to public repository usable with Fedora, Debian, Rasbian,.. etc. for semiautomatic and automatic deployments directly

from repositories to device having hardware implementation[1] done. Understanding, financing and execution of this kind of operations is not EU strength area. For example eIDAS (electronic IDentification, Authentication and trust Services) node implementation statistics [66] show that services are implemented, but countries have they own implementations still in use, like BeID, EstEID, FINEID, so even EU has some reference implementation available countries utilize they own and cooperation seem to be hard to get working. Belgium has had quite long time this open client implementation which is brought to be part of major OSS distributions, so even this kind of open implementations exists and freely available, it seems that EU is not capable to add some localization support and take good solution into wider use. Maybe hyped DC4EU (Digital Credentials For European Union) project[17] produce EUDI (EU Digital Identity) wallet [22] which will be the exception to this. Or does it?

2.1 Platform strategy

Platform strategy creation viewpoints. When we look existing digital trading platforms having some kind of ecosystem around, we notice that the terms of ecosystem for single vendor are proprietary and prohibitive, many ways limiting vendor possibilities to operate on market. There are few of those platforms available and clear sense says that there is need at least for EU wide ecosystem rules as public frame agreement created in way that it could be extended globally after a while. Figure 2.1 on page 18, opens situation and needed frame. To approach this frame agreement controlled digital trade platform idea from digital marketing strategy perspective to really be able to

DIGITAL TRADE PLATFORMS AND SEPARATE VENDORS TRADE TERMS ON EARTH

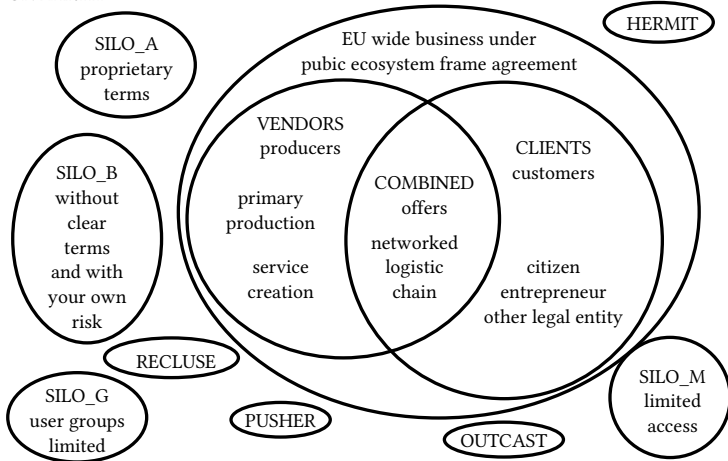


Figure 2.1: Existing digital trade rule sets and need for EU wide public nondiscriminating rule set for platform based ecosystem

go details we need some clarity for thinking. There is good model for strategic analysis and planning views of digital marketing from single vendor perspective at (Heikki Karjaluo et al. book [57], Figure 1: Book structure, Page 10). Inspired to extend this Vendor's Strategic analysis and planning of digital marketing – cake model to cover Digital Trade Platform Marketing Strategy -layer based to this idea of foundation or cooperation managed frame agreement

based platform setup having related technology selection, partnering, public relations and customer acquisition in own hand. On extended model kept that single vendor as customer, added platform layer underneath model and we got extended platform marketing cake model we can iteratively use to evaluate different players view-points to platform digital marketing strategy, figure 2.2 on page 20. Original model round MVG (Market Value Growth) cake model form changed to triangles to speed up work. While adding and taking new bottom Trade platform layer as major viewpoint for this TMVG (Trade Market Value Growth) cake model, where original vendor MVG model rotated half a round at the center of extended model. Side view from layers on figure 2.3 on page 20. While this cake model is now extended for Trade platform we have to extend it's operational part mRACE [51] (measured Reach Act Convert Engage) figure meant for Operational implementation of digital marketing as well (Heikki Karjaluo et al. book [57], Figure 1: Book structure, Page 11) what is already extended model from Chaffrey RACE [10] (Reach Act Convert Engage).

We have to sell our frame agreement defined way to do business for participants. It should be easier than pure technology implementation project sale because frame agreement can be defined long lasting, instead technology which changes after while, so everyone understands that investment is for longer period even technologies and process underneath could change. This mRACE model is extended with Involvement and Incorporate steps which are used on all levels for all players namely for customer, influencer and vendor. Created frame agreement and initial technical definition has to have enough benefits to roll up some business areas fully over platform services. This is platform selling for vendor. For vendor inclusion means that

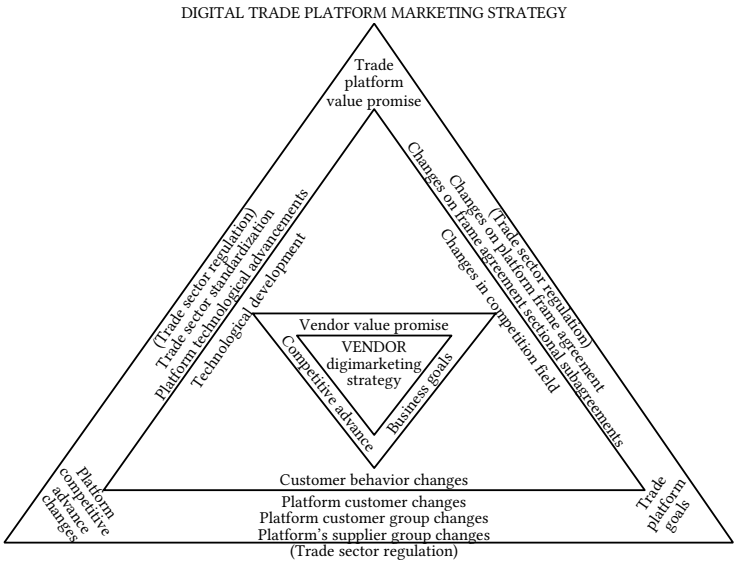


Figure 2.2: Digital Trade Market Value Growth (TMVG) strategy analysis and planning

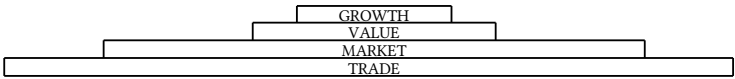


Figure 2.3: Digital TMVG strategy analysis and planning model layers front view

they invest their time and money to collaborate on frame agreement, business process and technical implementation level. Incorporation means that they select platform for their business and support platform operation and development with their turnover tied fees and perhaps be members of foundation or cooperative maintaining the platform. All these can be measured by using public code and documentation repositories having review and reporting capabilities for registered users and participating patrons representing their organization. This mRACEII (measured Reach Act Convert Engage Involve Incorporate) digital marketing operational implementation figure 2.4 on page 22. Customer and influencer cases are explained later on this document.

2.2 Strategy creation

Ecosystem frame agreement embedded strategy creation. As stated earlier most needed and valued participants on ecosystem are initial product or service creators and final customers who pay the bill. Everything else between there is for just business, and will participate anyway after these first two major groups are done decision to move on this platform. At the beginning we have to think big to get some idea from scalable future proof framework what is then implemented in legal agreements, clear text explanations and actual technical design, all step by step trying to implement most needed parts first, still keeping in mind wide perspective to maintain future proof implementation. It makes sense to listen original creator and final customer rights balance driving organizations like EDRI, NCUC, NPOC to get as high acceptance for platform and frame agreement as pos-

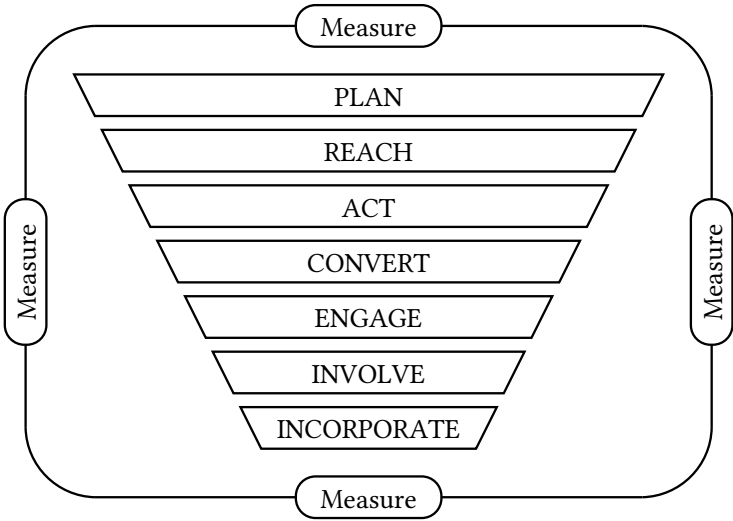


Figure 2.4: Digital trade operative marketing activities on mRACEII planning model

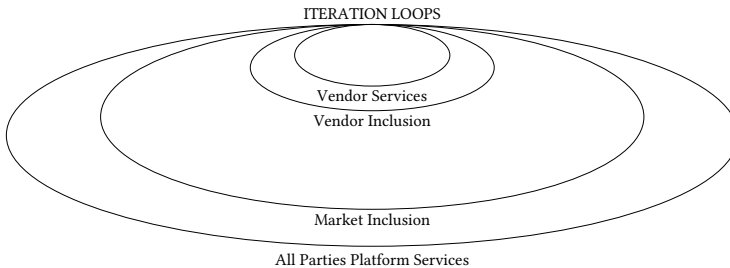


Figure 2.5: Iterative process

sible. This requires different viewpoints opinions regular iteration and improvements implementation to frame agreement and actual platform services as seen on figure 2.5 on page 23. Similar iterative strategy process introduced at NRWA Conference by N.N.[31], and there are also older documents explaining strategy loops.

These iterative loops has to be repeated regularly based to follow up need and need to be able to adjust strategy. frame agreement and platform implementation according to changes found from business environment; legal environment, technology sector, market area, social environment, trends, standardizations, and logistics services operating on market area.

Bottom layer holding platform trade technology services, and it's the most investment intensive layer because it's implementing and operating technical framework for all upper layer defined needs and services. This includes terminal software for producer, vendor, archival, logistics, toll, tax, vendor, trade, banking, sourcing, maintenance, re-

cycling services and service integrations.

Top of bottom layer sits market area, which holds all regions, countries business areas and customer groups platform supports are enabled for. Each region, technology area and customer group may have they own requirements, which you have to take in account when creation platform strategy. It may also include decision that certain business area or regions are left without support from platform side. And it may be wise to limit supported trading to traditionally widely accepted business modes without cheating and room for scalpers to operate.

Then comes vendor needs and services layer where are integrations to external system's like social media and vendor own systems.

At the top there are vendor own digimarketing strategy, which should be doable to do with the lower layers support and cooperations with vendor and platform support personnel. To support this cooperation work we have added additional query questioning layer to operative marketing, figure 2.6 on page 25, to collect data needed to support strategy iteration loops, figure 2.5 on page 23.

Figure 2.7 on page 26 shows global, even astronomic scale trade area information layering, mixing things purposefully in figure 2.7 on page 26, to create illustration from frame agreement controlled information space where agreed roles and agreed trading manner based transactions are driven over globally, or even astronomically, scalable technology services created for purpose. And here all official product defining documents; fulfillment statements, installation, maintenance, user and quick manuals, guarantee and service contact information are only on electric form, and customer should be able to do purchase decision based only to those documents information. This product and related documentation defining information we can

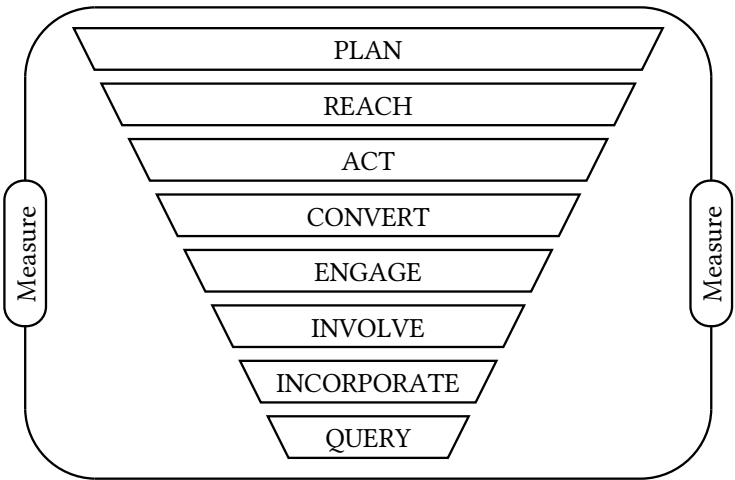


Figure 2.6: Digital tradesystem operative marketing activities on mRACEIIQ planning model

call as ASSET, seen in figure 2.7 on page 26. This heavy documentation called asset describes product items and relations between multipart product items, it usually is not actual product, but more a market definition from product, availability areas and dependencies to other area availability.

Below the visible layer vendors can have they own for customer invisible layer where they prepare they product availability on visible market space (S. Renken at al. [69]). When product is available ven-

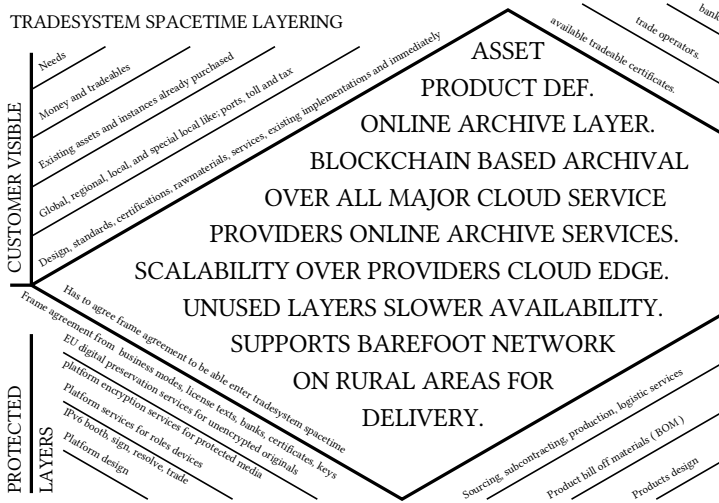


Figure 2.7: Tradesystem spacetime layering

dor gives CERTIFICATE for trade. Certificate is promise from product availability to deliver in certain area, place and time frame as vendor see to provide asset defined product to market using frame agreement agreed trade method, product definitions on asset and tradeable certificate from product or service availability on market. OSS licenses also form certificate from unlimited availability under certain terms without payment, having zero price.

If we have to illustrate trade transaction in tradesystem spacetime

it's like lightning stroke through global, even celestial space, when orbiters like airplanes, space stations, moon, mars, etc. have economic online transaction activities. From customer needs and money resources system does resolution to consumption place or storage space on existing infrastructure. If resolution finds non-broken chain of dependencies fulfilling the need in consumption, certificates from all needed components with correct availability are existing, and on time cumulated price is not exceeding available monetary resources then purchase, with from included certificate information known availability times and places is offered for customer to purchase as transaction approval decision.

How to deal with this scale setup that it doesn't collapse from the beginning? From agreement point of view is good to start from frame agreement and some business area subcontracts holding details for area. From technological perspective there are some technological basis which scales well and makes possible cumulate huge masses of information without fear to mixing it. Certainly we have to offer dedicated views for customer, but those can be just limitations on browsing asset covering all offers. We should not do silos until it is necessary, there is enough or those already.

Idea is to define fundamentally global service applicable asset structure, which is used to define offer. To get offer compelling easy to administrate and operate we has to have frame agreement for vendors participating to market. Besides offer we introduce certificates which are vendor given guarantees that they are ready deliver what they selected to be shown in asset. Then certificate is actually thing which is traded. Different sectors like local hospitality, or service stations etc. can be represented as limited views from whole asset. There are lot of artificial intelligence developed to be able to do easy

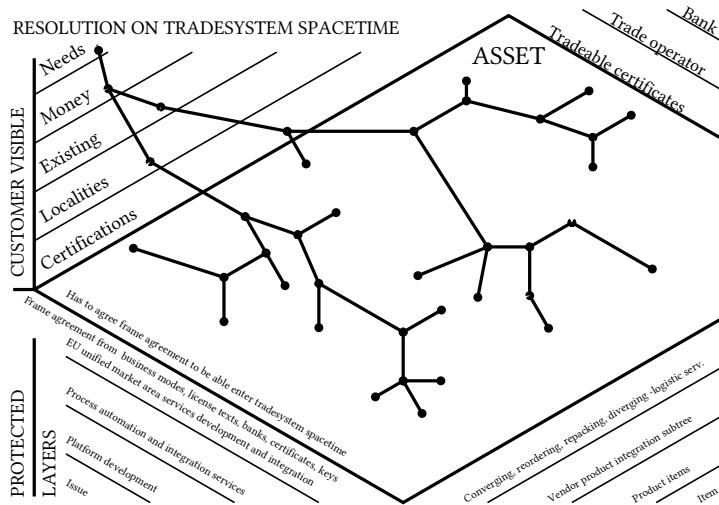


Figure 2.8: Resolution from assets and certificates in the spacetime of tradesystem

limitations to asset visibility for most needed and relevant ones at time. You could compare to google maps service, which you can quite easily to use to search cafe's etc. from local area.

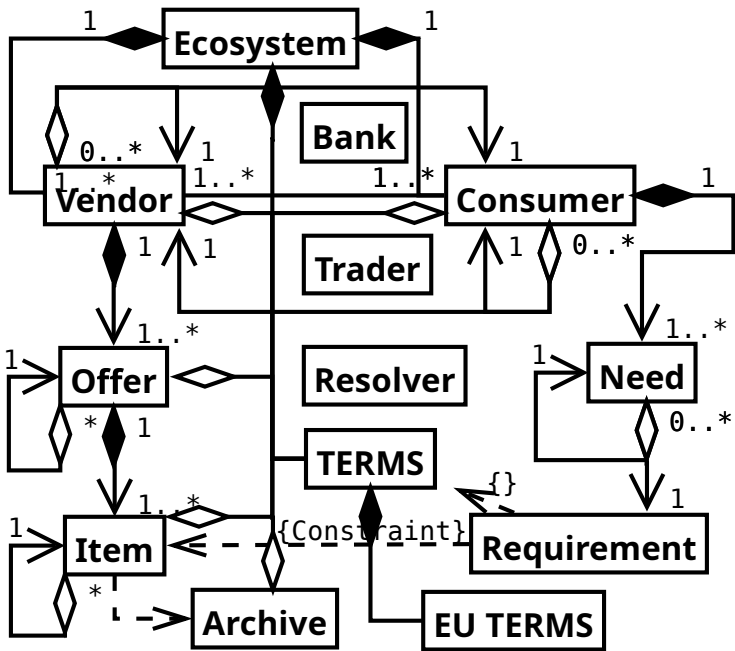


Figure 2.9: Frame agreement terms for fluent frictionless trade

2.3 Minimum asset

Single minimum asset. Asset in generally is something where customer user want to use hes own resources time, space and money. Asset in business is something what vendor can offer which has value and can be changed to money. Single minimum asset is seen as smallest configuration of items like "Minimum Viable Product" on vendor offer customer has seen to be ready to commit use hes own resources, like money, time and space. Asset configuration may hold one or more product items or services to reach for customer valuable asset configuration which is what is normally added to vendors offer. It may also hold free zero priced items customer is willing to consume using hes own resources. While we are defining fully digital asset, for physical products and services asset includes marketing material and technical documents defining actual physical or service item included in asset. Under the ecosystem services asset configuration need to be linked to all official documents product must have on that market. Besides mandatory documents there can be optional material, and linking from other mediums like social media to asset. Combined assets are forming vendors offer on market.

2.4 Certificate

Certificate as means of exchange. While creating fully digital ecosystem services there is need to separate product definition "asset" and product existence and availability promise "certificate", which is vendor promise from product availability against customer own resources money, time and space.

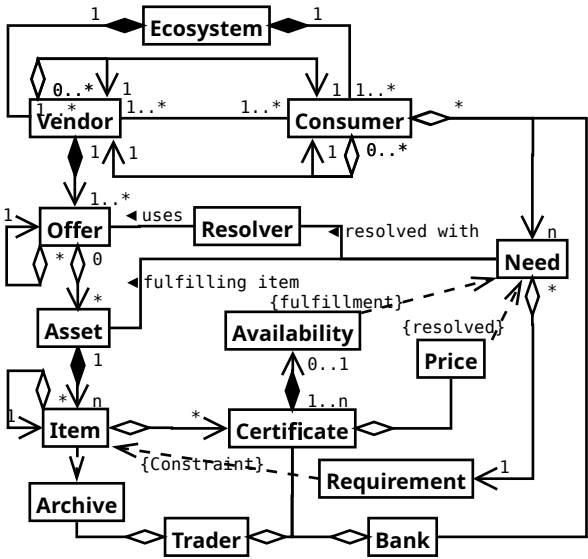


Figure 2.10: Asset is item fulfilling consumer need requirements

2.5 Product

Where the products are? Product is defined in asset and each product item is then available as certificate states. Availability place can be defined in both asset and certificate. Asset item describes general availability on market as product is meant to be offered on regions. Certificate refines particular product item availability details, license, business model, pricing mechanism and transferability or resellability.

2.6 Asset dependency

Asset as dependency tree. One product, service etc. in commerce is forming tree which branches form continuous non-broken chains from sources and requisites to combined offer, merchandise or service, called asset item which is one part of whole asset what is offered as vendor offer on market for market. On market asset trees form forest where trees could be build over others and then being dependent from others.

From vendor side this chain could include several farmers and logistic operators, or subcontractors, parts, bill of material lists, their assembly service and assembled product delivery. Products from assets could form bundles. Bundles which are treated as tree structure capable to forming new product asset item in asset item tree, and which is depending from availability of it's leaf component items, actual items in bundle. Asset subtree can include physical products, software, service, farmers environmental certificates, industry player sustainability certificates etc. For locally created products

there could be dependencies to taxation nodes, language packages and toll nodes which needed to applied when exported/imported to certain area or region.

What is really the hardest part of creating good asset for market?

Each vendor have they own ideas from they business, whom are they companions, competitors and in what terms they product is available and for whom. This holds even they ideas are stupid, hindering whole market growth and they own profitability too. They will keep they rules even it makes impossible to form compelling electric commerce asset for market. Who cares, "have been living like this for years" until today. So short term advantage and fear for competition is hindering some companies, until they are finding themselves be outsiders from market, really loosing they business.

Overall this type of thinking leads to repeative work when same or similar product and service design implementations are done. Many of these implementations without good utilization and maintenance period for investments done. As humas we should ask from ourselves can we afford this kind of stupidity in world with wery limited resources?

How we know when we have a good asset?

Resolution from customer needs to set of asset configuration candidates fulfilling customer needs should be like thunderstorm lightning strike, fast and comprehensive, all meaningful branches are gone trough and we have zero on more resulting branches from cus-

customer need requirements filling asset item findings as solutions for customer needs.

How to limit needed customer selections?

Asset structure has to support dependencies to standards, like product sustainability classification, production geolocation, what customer can use limit resolution target besides the normal; price, brand, place, size, availability. Customer should be able to define filter stack per product category. Or few filter stacks he could select when doing selections for certain purposes. Natural Language Processing (NLP) and Artificial Intelligence (AI) can be used to maintain these filter stacks besides manual creation and management.

How we can get this kind of clean asset?

Because of human opportunistic tendencies[62] we have to have strict and straight rules defining how different vendor assets can be combined to be offered for customer. To form this kind of rules we have to have agreements.

2.7 Agreement

Frame agreement. Ecosystem based to Electric Market Frame Agreement (EMFA) and independent legal entity to maintain it; limited company, foundation or cooperation! This is important to do now when forming new digital trading based market. It has to be created at the start when vendors are applying to market.

Why to setup frame agreement?

There are lot of software and media products etc. with owning business own opinions which may include idea to negotiate terms customer by customer. We really do not want to negotiate that for this your product; Can we sell, rent, combine it to other vendor products and which vendors, if any. IT IS WASTE OF TIME AND BUSINESS to discuss with these NO Sayers. There is lot of consumers who have stopped to use paid content, because services offer only some part from need, and to get wanted offer you have to purchase and utilize several services. Then they purchase none, or wait years price to go bargain to the bottom before purchase if even then. Therefore we setup an frame agreement. You agree that if you get money against your product then customer, or other vendor, even competitor can utilize you offer as whole or even only one component from your product as significant part of they own convenience or as part of created product offer if they wish to do so and get value from it. Major requirement from frame agreement is that "negotiation" is done only once against the platform.

Platform support for imported business models, supply and delivery chain details, can be extended in good cooperation to get most optimal process setup at operation point, but major requirement is actually "accept frame agreement or go somewhere else to sell your products" - Don't compromise platform promise from unified market even cooperation is big part of friction removal mentioned in Ojanperä Platform Strategy book[49], it should not allowed to steer platform to ending sidetrack. From platform operator perspective it's curical to select included business areas in right order at right time so that generic income financing is mostly enough for the plat-

form own installation growth. It's good to cooperate and leave new included economy sectors own friction removing and business enabling infrastructure investments for vendors interested to do they major business at that sector. From platform perspective it's enough to agree on frame level, create needed Application Programming Interfaces (API's), protocols to support integrated business process on platform level.

Certain business area support has to be done once and well for all vendors to keep cost down and business profitable. Can't and won't integrate every vendor own supply, delivery chain integrations into platform. Vendors can use they existing automations for they offer creation but offer on platform is tied to frame agreement. Asset structure itself has inbuilt possibility to create new combined assets based offer. Purchase triggers components delivery. For business scale and profitability platform will offer common possibilities for business automation under frame agreement. Frame agreement define and support these combined offers, new business creation and existence in long run.

Secondary targets on frame has reduction of artificial value chains created by discriminating certain customer classes. On highly educated areas is common trend that even customers are very well capable and eligible to do professional things the local stores and store chains do not sell products, tools and supplies at all for individual consumers. Same is for professional information, it's hided under marketing trash pushed through search engines and social media. Therefore platform is needed where detailed official product information is stored over very effective, economical and scalable way in asset structure, which allow more service oriented companies to automate sales, do lot of management, sales batch splitting effectively

by themselves or by using service provider from market and overcome this trend where individual customers assumed smaller purchases is assumed to have bigger information and service need is discriminated by default. Frame agreement is needed to get rid of customer class discrimination. If customer is capable to find vendor or service chain creating product or service on price customer is willing to pay then sale transaction should also happen.

Minor target is to empower regional players to proof and brand they own products for global market by bringing classification services to market so that vendor can improve they own asset information for other region by using regional classification services and then social marketing called automarketing to bring products on peoples awareness. Currently delivery chains from region to other include rebranding copy products and this rebranding may include classification service or just distributing vendor statement from fit to purpose. Anyhow rebranding copy product usually creates some unnecessary overhead which can be overcome by offering good visibility to standards and classification services to prove they products quality from start and avoid proofing several times from several distributors.

What to agree with the Frame Agreement?

Frame agreement purpose is to make safe non-discriminatory market having all normal standardized business models (sale - purchase - resale, maintain - serve - subscript - transfer, lease - rent, share, ..) and related pricing methods (cost-plus, time based, variable, dynamic) supported in way anyone in market can create combined product, collect ingredients, add own effort, use it as such or sell as new product. Everything can be mixed directly from market and

sold further with configuration created vendors liability as long as configuration component bills are paid.

Agreement define certificate what vendor brings to market. Defined certificate is the sold thing in market. Certificate promised and guaranteed quotation against the goods and services are delivered. Frame agreement also defines technical rules and methods implemented as platform library methods what used when digitally protected medias are used. EU Governmental Digital Preservation takes unprotected originals to protected archive and create protected version to trade operators public archive. Vendor has to deliver clear originals with documentation and tested scripts for protected version creation to Digital preservation[56], which then runs scripts to create protected version from originals to market. Originals are stamped to keep protected copyright time, and then released automatically to public space. Sold certificate is mortgaged at bank value account book entry[13][3][28] to deliver media or software keys to device to unlock software or media on they device.

Frame agreement include sections for the governmental players e.g. toll, taxation, tax is one automatically managed dependency in asset. Agreement also has to have clear rules from mechanisms used to protect from speculative players, in practice meaning limitation of bulk purchase for goods having much other customers too. Basically vendor could set bulk purchase limits suitable to they own product and production volatility tolerance, to maintain they product brands availability to wide audience without cream peelers caused shortage harming product brand and future profitability. Trade operator has to have automatic dynamic default bulk purchase limitations, like offering vendor widely distributed certificate serie or purchase redirection to vendor human manged bulk sales team and automatic

follow up so that badly behaving speculative players purchases are automatically limited, banned for period or even kicked out from market. Market is meant for fluent ecosystem creation not for speculator handy tools. For example football match tickets resale could be limited to average family size for customer or legal instance like limited company. So if company purchases more than 10 tickets it's not able to sell further those without separate agreement, only possibility is to return those back with original price on time limitations when they still are applicable to return and refund.

Frame agreement has also include mechanism to limit market damage when software or media or other company having delivered stock and certificates on market go bankruptcy or liquidation by hostile market operation. Sales are automatically continued to protect other vendors business build over these products. Tangible product sales stop when certificates are sold, intangible product certificates are generated automatically for sales as before bankruptcy or hostile takeover. Money from sales is delivered to estate or usurper. In short vendor can update software product on market and demand customers to use latest version, but it can not remove product or earlier versions from market others are already based they business. Hostile upgrade operation is also neglected by allowing older version use. Only product security reasons can be used to reason product ban from market, still others are allowed to use component under they own products if they can overcome security issues in they own configuration. For example by using snap packages for software to allow cherry pick used libraries and configurations more independently from host platform update cycle, and this way allows to prolong software component use, get time for business to adapt and mitigate possible financial risks from sudden change in ecosystem

asset.

2.8 Roles and terms

To be able to define how ecosystem really works we have to define roles and terms first before we can define actual ecosystem. When definition is clear for the reader then he could understand whole story how and where these role and terms are used.

Customer

Customer is actor willing to get something from offered asset items and might be willing to pay something to get what he is willing to get. It might be that offered assets hasn't have needed and wanted items configuration available. One simple example is customer needing one or two items from products sold only in boxes holding way too many peaces of items to be sensible for customer to buy.

Recycle fee

Most customers do not have persistence to care used goods to recycling without any incentive after they own use is ended. Per product defined recycle fee or recyclable item pawn guarantees that someone is interested to care from recycling if customer doesn't and used product value is negative without attached recycle fee. Recycle fee or pawn purpose is to make used product item value so positive for customer or similar player that recycle really happens.

Recycle services

Recycle services care professionally from recycling. Actual recycling depends on product and customer value left in it. Recycling services classify, maintain, renovate, reconfigure, reinstall, update, upgrade and resale or just recycle product to harmless from. If original use continue then recycle fee is still attached to product. When product original use ends then recycle fee is used to make possible to proceed negative value product further processing on recycle services so that there are no unnecessary environmental load left after product original use ends. Recycle services can have trade operator role for reusable product value and it's recycle fee. Or they can use original trade operator to do the used product resale under used, recycled category.

Influencer

Influencer is people doing commercial or semi commercial marketing, usually producing marketing material to social media environment. When this marketing material is not directly vendor created, creator is not directly legally responsible from any errors material may have. Still usually these social groups trust more to these reference group materials they feel to be as customer reviews for products, even it's not whole truth. Ecosystem should offer clear reference mechanism to reference products, product defining official vendor documents in asset from social media direction.

Vendor

Vendor is legal entity agreed ecosystem frame agreement, taking product responsibility and gets right to added asset items to offered product configurations sold against certificates. Asset forms the content defining the sold configuration content. Certificate defines the availability and trade system gives price for certificate depending the pricing modes vendor has selected for configuration items.

Vendor is also demanded to operate ecological way for example adding recycle fee into asset to be part of the product. As well all durable goods minimum support time is defined and demanded, in practice meaning that there is requirement from spare parts and software updates availability.

For example for the mobile phone minimum HW support time requirement 5 years, and for the software 8 years. For the computer and television hardware 6 years and for software 10 years. Hardware support requirement is concerning wearing parts battery, buttons, keyboard, display, connectors, hinges. Software support requirement means that there is maintained OS and applications available for the hardware with all the needed firmware and driver packages. For the cars HW support for the 15 years and SW support for the 25 years, in practice meaning that you have up to date maintained working secure software available, either maintained original, community offer or thirdparty, but tested to be working and fulfilling requirements. Minimum requirement for the SW availability SLA is 99 for new products and 95% for the models which HW support has ended. Meaning that service breaks can exist, but generally updates should work if few times try on separate days.

Bundle

Bundle is from vendor offered sold items created configuration which items legal responsibility stays on each vendor selling the item. Bundle is meant for several uses. Vendor can utilize it for marketing campaign he references from campaign. It can be used as customer purchase list when customer creates configuration he wants to buy. It can be used as influencer-customer created product combination he/she is referring from social media while he communicates for his reference group or followers.

Bank

Banks have to be extended from value-account perspective. Bank works as trade-operator doing trade transactions purchasing and selling certificates from trade-operator, bookkeeping is kept on value account. Groceries are kept on own folder, product having guarantee on own folder and resellable software licenses etc. on its own.

Besides the software etc. vendors license and locking management bank do certificate mortgage against for the device generated keys. Teleoperator can also play role of bank, and then should be legally treated as bank or relevant financial institution from local legal law perspective. In many developing countries teleoperators do have banking services.

Trade operator

Besides bank there has to be setup for trade operator services. Trade operator takes in asset trees and linked materials which all are checked

and archived at the beginning. Trading starts when operator lifts archived material visible to cloud edge. Customer can browse and do resolution, resolution for wanted good for certain target like area, device, delivery day, etc. other dependency needed to be met.

Actual trading can be made when vendors deliver certificates, which state asset defined product availability on market. Certificates are sold for value account and usually changed immediately for goods and services. Logistic operators can also define they asset and then sell certificates for delivery slots they have.

This makes possible to create and maintain local delivery chains for market on market. Trade operator is also market supervisor, makes sure that frame agreement and it's rules are understood and accepted before entering market. It's also remove and sanction players violating generally accepted market rules.

How to make sure that someone doesn't steal or copy certificate and claim products against it? Actual product delivery is done based to proven transactions, meaning that bank verifies who has certificate on his value account and deliver recipe including payer and delivery information to vendor.

Trade technology provider

Trade technology provider is key player while it provides technology services, consulting and cooperation for trade operators, mobile terminal vendors, banks, authorities, ecosystem vendors and finally for ecosystem customers. Vendors and customers trust for fair, non-discriminating, undisturbed, future proof, ecosystem is mandatory to achieve. Therefore fully open "copy left" software components has to be used. There is still enough money coming in because banks

want to stay relevant also in future, and are willing to finance non-profit organization like foundation or cooperation to do the work. Governments may also support political economy fluency and profitability improving technology creation and maintenance.

There are similar shared technologies already existing on human identification and healthcare areas where common technologies are developed and used on several vendors and service providers services. Digital- and cryptocurrencies are cutting corners, mobile terminal vendors enable mobile paying with terminals, network operators may offer banking services, retail store chains are supporting mobile payment and extra services, like electric receipts, bookkeeping from purchased certificates, especially from those still including some value like licenses and product guarantees under user account. When employer start to pay employee wage with mobile digital money then banks start to be irrelevant for some customers.

Banks are really left behind and it start to be questionable why they exists, are they relevant to customer anymore.

Banks has to think how to stay relevant.

Therefore there will high competition from the technology providers place, from winning technology stack, ownership and monetizing it with the governments support. It is too big money making machine to let some profit hungry corporation to have monopolistic applications stack as only available option. We have to have non-profit cooperative and open setup for this.

National Digital Preservation

National digital preservation legal deposit[68] takes unencrypted originals, sources, components and store those to protected national

archive. Because author death plus n years where n about 50-70 is hard to follow we can take fixed time as Copyright time which is nearly 109 years. After the end of copyright period unencrypted originals, sources, components are published besides the protected ones on market asset archive. Comparing to Walt Disneys Mickey Mouse: Protection time is about $1966-1928+70$ years = 108 years which is about 0xCCCCCCCC seconds being easy to remember "CC-CCCCCopyright" seconds time. Should be enough, no need to have own value for each country (Wikipedia[14]).

Archival services

At the begin of asset creation it will be archived on archival tier services because there are no more users for item than it's creator. Asset can be on protected services as under ecosystem services.

Protected asset could work as Bill Of Material (BOM) for company work products based to they own internal needs. Protected asset could refer, depend from other products as raw materials ordered for product creation. Important thing for the vendor is possibility to get raw materials availability and delivery times for the needed components. Vendors can also cooperate and do automation under the market hood.

Public asset is then created for the products meant to be sold for customers, and certificates can be published based from protected asset dependency resolution given delivery times and own work and own delivery time estimations at the time. It is also possible to operate with fully public internal asset.

Of course it gives some information for customer and competitors, but it might be first phase when some influencer marketing person

person creates bundle definition from assets he thinks fit together and marketing it for social reference group he belongs to. Commercial asset setup is still legally on official vendors responsibility.

2.9 Technologies to be created

Asset structure

Most important is the asset structure which allow vendors to decide which part is they internal bill of material, and from where starts they sellable product or do they offer everything as product and spare parts.

Well proven working models to look ideas for asset structure are Debian "dep" package repositories, RedHat Package Manager "rpm" repositories and Git version control, from where to do generalization to platform independent level, like using RFC 2119[7] keywords, additional keywords like "FULFILLS", "FOLLOWS", "OFFERS", "PROVIDES" and what already found from mentioned rpm and dep repository structures.

There is need for asset as repository generalization as repository holding possibility to run it as block chain where all is archived and then latest are brought to cloud edge services and multiplied on service load need bases. And still structure has to hold all information to show in human readable form as well. Cryptography based block chain is best for the asset, because you can save years and years over the old asset without problems, just move less accessed parts to archive servers.

For future needs all conformance, guarantee, manual and quick setup papers has to be part of asset even fruitlabels with possible variations

are stored in electrical form as part of asset. Then sold certificate tied to delivered lot refers to label document defined in asset. If new quality is introduced then asset is extended, top nodes recreated and written to asset repository.

Due to nature of asset as block chain stock, it is easy to offer "barefoot-network" -delivery for selected media bulk on rural areas where wireless network coverage and available bandwidth do not allow to transfer bulk over the air and wired connections do not exist. There usually electricity availability is also scarce resource and people go to charging stations or other places where electricity is available. Then selected parts of asset tree can be carried with the terminal and shared through USB, bluetooth, wlan while charged. Transfers can be two directional uploading some assets to charging station and downloading something else. For example software updates, e-books, music and movies can be transferred. Maybe existing charging stations can be upgraded with mobile managed physical mail box closures too then there is possibility two direction tangible products delivery too with application.

Resolution process

Resolution process does customer need based selection from assets. First it does asset view limitation to human understandable set based to predefined selections like non-lactose, ecologically cultivated food. These limitations can be searched as certifications or standards on asset the selected asset is stated to fulfill.

If we think customer device software asset resolution, then resolver checks which hardware and software it's running on and then do the resolution from wanted configuration to platform underneath.

If non-broken dependency chain is found and there are certificates available to purchase for components needing those, then resolution is done successfully and purchase, download and installation process can be done as final step of resolution.

Client application

Client application will be capable to do resolutions based to categories, classification, dependencies, price range. Most important capability is capability to follow dependencies from the wanted to platform, interface, standard, list, etc. Most simplest is to look food name, and got list of vendor made ready products and recipe with the dependent ingredients. One product or whole list can be purchased. With the rules you could limit what will be shown: cheapest, brand,.. most used.. available now. Artificial Intelligence (AI) and Natural Language Processing (NLP) can be used to collect reduction related rules. Client application can also utilize into terminal pre-loaded assets or from peer transferred assets without network coverage. For the protected content usage initiation, there is need to have at least some network coverage for key-delivery, but it's enough to have very low bandwidth, even GSM control channel capacity might be enough.

Customer terminal

Networked wireless customer terminal; PC, tablet, phone, iot-device,.. could and should be capable to use same dependency resolution and capability installation mechanism starting from government regulated wireless communication device e.g. cellular modem created

remote pre-execution-boot capability. Installation of whole software stack should be capable to do directly from the asset tree, including actual client application mentioned above has to be supported. Into cellular modem included key services are connected to user service provider, which is normally customers bank. Through bank customer get the financing and bookkeeping. Bookkeeping from purchases, purchase guarantees, certificates, certificate mortgage and protected content key generation services, so if he want to run digitally protected protected. Then with the client application you can add more abilities, or purchase something totally different than software, media and communication services. For example those grocery purchases can be done directly from client application. Some additional storage memory might be useful for users terminal to have, at least for locally stored assets.

Original vendor label and certificate creation service

Vendors need mobile device software used to read container, pallet, container codes, time and place (GPS) linked to electric labels on asset. Bulk delivery certificates are formed as pallet lists and container content lists which all signed by vendor to form certificate tree. Certificate tree which can be sold. If sold as exported goods we could have "tax, toll, environmental, and social payment products" in asset vendor can purchase for lots meant to be exported to form asset ready for export.

For certificate delivery to trading or banking services used care from actual trading there is need to have possibility to sign certificate on device and encrypt it with public key cryptography for transfer so

that receiving end can verify that certificate is coming directly from vendor.

On the shop we should have electric labels showing product lot information. Customers need software or web page what to use to check what is put in the cases of lot, who has filled it and from where. With this electric service set we should get rid off printed labels which are pain in ass in automated delivery chain. Printers do not work and labels do no hold on plastic cases, causing problems in automation, and it is just adding unnecessary cost.

Authority terminal services

Based to customer terminal setup additional software tools are offered for tolls to verify delivery and do they work, e.g. check that taxes and tolls required are paid and connected to asset. Authority can then sign electric delivery having tax and toll payments attached with they own signature forming an export ready asset. Same tools can be used to check imported goods that tolls, taxes, operating costs are paid for imported lot. And authority can sign created asset ready for import.

Value account service

Existing banking service has to be extended with the needed tools and services. Value account most needed capability is to maintain resellable certificates and offer certificate mortgage services against key generation. Resellable merchandise certificate mortgage and key services. To get software market to work there is need to take software media and key service under the third party, which guaran-

tee SW availability and key generation services instead vendor. This protects product value and offers key services for the software customer. Software unencrypted originals are archived under the digital preservation legal deposit[56] terms and spirit under national archive services, having copies on each country products are published. Protected copies are stored to asset archive and banks are running key management service for customer. Customer could select bank, but he need these services from some bank to use protected products. Actual trade is done by selling vendor certificates, which are then transferred to customer's value account. When used resellable certificate is mortgaged against the key generation, and key is delivered into customer terminal cellular modem included key services and used to enable capabilities on device. And when usage is ended same service can remove key from device and release certificate from value account for resale on market. Consumables certificates are fully used on delivery. Rentable related certificates are removed from value account after rent period end, etcetera. For the the key services is enough to have SMS connection, actually meaning GSM slow control channel connection, which is used for SMS. Trading service can be built under banking operations and services. It will show asset, against client needs resolution is done, and product availability information in form of certificates against the purchase is done. Trading service could also be purchased service from trade operator willing to invest this business area. Independent trading service operator is most preferred because then operation can be legally guided and optimized for purpose. There could be foundation based setup doing trading service setup and technology development. Optimization for grocery bulk. It might not be wise to take bulk groceries under trade actions, just deliver needed results, like

guarantee certificates etc. under value account. One possibility is that grocery store introduce sold products to trade system and bank bookkeeping after the sale. At least those product certificates which are resellable should be booked to trade system. This may need separate sub agreement to go through area in detail.

Automarketing is reimbursement capability for platform marketing money what each vendor has to pay for platform. Money is used for loyalty programs where customer created bundle definitions used as purchase lists so that he remembers to purchase all. We give customer his fair share of his semi-automated purchases as discount from price. Customer could also create bundle definition from his earlier purchase. While replaying purchase discount is calculated. Customer involvement to marketing is increased with possibility to get marketing money out from other users purchases by creating bundles and acting as influencer user. Same mechanism is used to pay influencer-customer from bundles he manages to market on social media or any other way. Bundle itself includes automatic statement that configuration is customer created and vendors are giving guarantees only for single items as stated on product official documentation on offered asset tree. Customer created bundle configuration itself has no guarantee from fit for purpose. Influencer-customer gains marketing money he/she may get out as services, products or money, depending from local laws, to support his activity. Influencer-customers are encouraged to incorporate their efforts into ecosystem as vendor having product responsibility and their configuration fit for purpose, which means that they have official configuration describing document in asset. Then they can get pure money for their account from their marketing work what they are done. Bundle definitions are directly stored to slow archival medium,

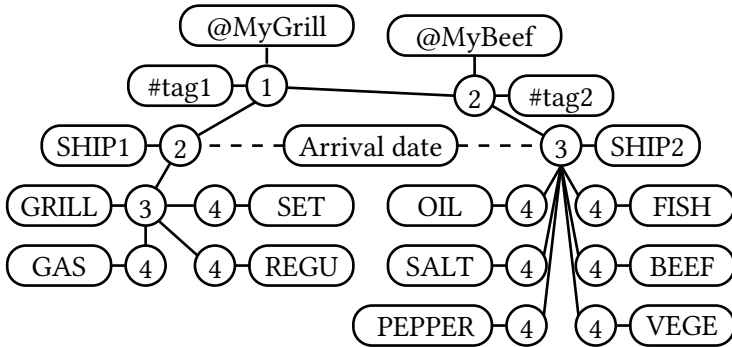


Figure 2.11: Marketing money sharing for members inclusion, incorporation and viral automarketing

and on cloud based systems those bundles which are significantly sold are lifted to cloud edge for fast service response times. See mRACEIIQ (measure Reach Act Convert Engage Involve Incorporate Query) figure 2.6 on page 25 forming closed feedback measurement and participant inclusion loop for ecosystem.

Automarketing algorithm

Each product in asset pay marketing money and will get refund comparing to it's significance in configuration. Significance is defined as inverse of node depth in configuration. Rest marketing money goes to each configuration root node as node's own marketing money.

When several configurations form new bigger configuration then algorithm counts leaf configurations first and then proceeds towards upper configurations setting and counts sub-configuration roots as upper configuration leaf, from counted marketing money inverse from node depth is returned to configuration creator, rest is going to upper configuration root.

2.10 Technologies NOT to be created

Now a days every possible mobile device suitable to run created platform services has geolocation possibility using any combination of available wireless systems, inertia measurement and finally asking from device user. For known location there is one or more applications capable to show known location on map and do routing for next aimed location. There is no need to create mapping service for user. It's enough to be able to show place for user and Open Street Maps (OSM) through web browser is enough for that, if device do not have suitable map application. OSM operations can be financially supported to maintain good service availability.

Because is ecosystem for all, it means that logistic service providers, distribution centers are part of the ecosystem with they own set of location, mapping and routing services with possible optimizations. Therefore there is no need to create or acquire any mapping and routing services.

2.11 Responsibility sustainability

While this digitization improves peoples capability to utilize all possible resources and consume more, we have to have mechanisms to maintain sustainability and fair trade? Or what you say?

Big trend is the customers environmental awareness rise which is lifting head even peoples are lazy and existing big players may try to hinder change due they own benefit dependency to some clearly outdated way to live here in this single earth we have. Or if you have some spare earths to consume, please tell that for others too, then they may be able to continue as nothing has happened.

Consumption redirection from pure material consumption towards more social services and different kind of development activities tweaking economy towards more sustainable technology use and life style fitting to existing sustainable capabilities we have. Old way living may require heavy investment to sea, solar, wind, geothermal, nuclear energy to create fuels from air and water without fossil fuel resources utilization. And new creative ways of farming food is also needed.

Risk is that autocratic chieftains drive they own very short term benefits, peoples resisting change are supporting these chieftains, against they own and they children's benefit. Then result is global repetition from what happened on Easter Island on earth last resort where we get clan chieftain mo'ai repetition when all key resources are used and system collapse.

Product tracking

Product tracking along delivery route is one way to make sure that product fulfills some socioeconomical and environmental compatibility with the standards and certificates. Product tracking from production site by utilizing worker and/or entrepreneurs own mobile device, logistic operator signature authorities signatures, distribution center signature from receiving. Distribution center splitted assets including reference to original incoming signed delivery. Work payments inclusion into asset as already paid components of product which price is cumulated to upper level by payer, or as direct payment requiring parts of delivery in asset where all sub parts are paid same time. Geolocation marks can be used to check original harvesting area.

Standards and certification

What ever standards or certifications vendor delivered products are following, there can be they own statement from fulfillment and reference to inspection body given digitally signed certificate and/or reference to inspection body service from where to check certificate validity. It would be interesting question to check what is cost to check if customer purchasing some standard fulfilling product could be deserved right to get standard text visible in electric form from asset when purchasing product. If this cost is possible to embedded into platform cost and make all standards available by default, most peoples do not want to download everything, which means it's more available for creation and quality check reasons. Anyhow all standards are brought to platform so that they can be referred and

standard texts are also available for purchase as any other product.

Quality tracking

All parties participating to product brand creation have to have balanced visibility to vendors products and should be able to comparing product reliability: how clear and accurate given information is to others. We have to avoid situation we can see from some current existing trade platforms, where product return rate is not told and user comments from returned product returning reasons are removed. Yep, it's somehow fair for vendor that if they return money from returned product then customer complains are not shown, but same time it allows to vendor continue to deliver shitty products, which do not fulfill even vendor own marketing specs, ahead to new unaware customers, expecting that some customers have lower requirements or they are too lazy or too busy to return product on time to get money back, even product doesn't fulfill customer needs. This is irresponsible use of everyone's resources, and has to forced to cease. Vendor has to have product/service matching to asset documentation and certificate's delivery promise.

To get products comparable with the each other we have to have measures:

- Product official asset documentation and certificate information fulfillment on delivery. Does product fulfill or exceed it's specs on unboxing event?
- Promised guarantee time and promised support time for sold product/service?

- Error tracking. Does product/service have single, occasional or repeating malfunction or operation outside of specs? Does error occur during first two weeks from purchase/unboxing, during guarantee time or during normal expected lifetime? What is error fixing rate for noted errors?
- Product return rate and reasons for return, possibly as link to error tracking having detailed product version information.
- Reputation in known customer responses, one +/- vote per response per customer.

From measures automatically created quality value could be used to comparison, comparing to known competing reference products quality values, and for products quality/price ratio evaluation.

Customer protection

There is lot of people who have used to use cash money and get control to they spending from physical money transfer during purchase. With this electric possibility to purchase they may loose control to they spending and to whole life. One possibility to guarantee some continuity is to have income account where is automatic sliding year daily taxation with the negative tax values for days peoples didn't have any income. When peoples get money, perhaps afterwards, then payment is distributed over the period time payment is cumulated and taxation has been repeated. Corrected tax is taken from payment during correction and rest is paid to account. This way we guarantee that peoples have some money on every day and even all

short jobs can increase total income without some governments favored stepwise rules which cause incentive traps here and there. See details Daily Tax booklet[54].

Integration to housing and logistics

Integration to housing, even it's new investment, may offer savings in long run if widely accepted and used. As block of flats may now have post box closures, those closures can be expanded to hold temperature and gas controlled closures for food delivery. This can reduce private car usage when one delivery car can bring several deliveries at once. Anyhow the whole delivery logistic: containers, trucks, pallets, cages, cases, temperature, moisture, humidity and gas zones and automatic handling machinery requirements has to be taken in account. Now there are lot of partly optimized solutions for different usages and zones and dimensions are also differing from hand carried imperial unit size cases to automation optimized metric cases. In generally there is lot of things to do which are lacking public discussion starting from different needs and how to bring whole delivery chain to fluent, mostly automated state. We could start to think requirements from initial producer and from end user perspective and then add requirements from automation and logistics. Because end user is paying then it's maybe best point to start. Most of customers purchase most often daily products. What are they requirements, how they think from new initiatives, for example from two door closure through detached house wall. Closure having five temperature zones from bottom to top; frozen, cold, chilly, room temperature, hot, about from -25°C to $+75^{\circ}\text{C}$, as producer and food control officials recommend for temperature controlled delivery

chain. Meaning that delivery service can bring standard size automation optimized recyclable boxes through outer wall door to closure. Whole closure and boxes has to be productized for both housing and logistics industry and if possible be compatible with freezer, fridge, oven, dishwasher and standard room closure. It is then more question from what is feasible. Current infrastructure installed base is huge. In this document we have to leave this integration discussion to this level and concentrate to actual frame agreement and tradesystem. Frame agreement could then define details later on when feasible requirements are noticed.

Producer - vendor integration

Original product or service creating vendor called producer is integrated by offering compelling distribution platform services capable to minimize vendor own investment need. Platform services are kept at bare minimum and that is mostly tied to created turnover. Some exception has to be left to bill from wrong use, in practice meaning using asset storage for material distribution without real product or even meaning to have product sold on platform. This kind of services are going under the platform protected layers having commercial separately billed services.

For vendor offered services include in practise all services vendor may need from separate accountant can offer from merchant managing same sale operation, but now mostly in extremely automated form. Because customer application is free for anyone, producer can market and offer freely whole sales channel, which makes easy to start business. New vendor offer is automatically visible to customers searching products from vendor offered product categories. New

categories are bolded on system and buffed to customers willing to receive information from new offers.

Wholesale integration

Wholesale is basically vendor, but now days usually integral part of retail chain. Integration willingness and timetable may vary significantly. Anyhow light integration where sold goods having guarantee or contain on market resellable items, should be listed on customer value account and trade operator sold items hash list on archive, so that if coming to resale, tradeoperator can trust item existence and authenticity. Deeper integration should be done as integrating customer and vendor roles for wholesale inbound and outbound, as well there is possibility to have invisible layers for business to business connections, see figure 2.7 on page 26.

Traditionally wholesales are concentrating to bigger lot sizes meant to delivered to retail, and do not sell anything for the end customers without corporate identity. With the automation wholesalers could sell bigger lots directly from distribution center (DC) automation to customers, even through integral retail chain. Usually there is additional darkstore or store picking and repacking between wholesaler and end user delivery. Some customers purchase quantities overcoming wholesalers minimum lot sizes usually tied to automation suitable cases, boxes, crates full load as single sales batch which could hold several end user usage meant packages.

EU started to demand recycled containers, crates, which leads to question should pawn to be added for DC automation used recyclables at wholesale and then deliver goods directly to customers us-

ing those recyclables, if not specially requested delivery using single use disposable packages.

Bigger families and heavy users could easily consume full milk or bottle crates, or some other items on half or even in full euroboxes, so why not think possible order delivery optimizations.

All inefficiencies and limitations open business possibilities for other logistic services, retails and web shops. One example comes from specialized ironmongers concentrating only to narrow product area and B2B sales creating limitation for the applicable customer groups. Use of product area optimized automation and logistic services makes possible for some existing or new player take significant market volume due clear inefficiencies in current setup.

I strongly propose to think possible process optimizations alone, with the partners and even with competitors to keep own channel offer reasonable complete for the most customers, this way maintain own customer base. Biggest threads come from external players keen to get local currency no matter what is the cost for it.

To maintain market in own hands it comes reasonable to lift most business over the common platform services, which means that ecosystem platform services offer integration layer for wholesalers at the beginning, and later on platform is extended to support wholesalers as such, and this way platform development and maintenance cost can be divided, distributed over the whole market. This way it's possible to get most optimized platform in use when own, customers, cooperators and competitor efforts and improvements are shared on common platform.

Retail integration

From customer side we can see that mobile device will be the bank, wallet, webshop and in near future shop too. Retail integration have already started with the mobile orders, payment and banking applications. Most obvious extension to this is retail collect and pay application productization [11] and move from retailers device to customers own device [61], and later on to use common ecosystem platform offered software [55].

Global competition and cost optimization will drive most retailers to use ecosystem platform technology offer directly for their retail business and customer terminal integrated services support. The whole delivery chain will go over the frame agreement and public standard based ecosystem platform. Why? Because platform is inclusive; everyone can build they private BOM's (Bill Of Material lists) under platform private services for they own public offer and have best integration to whole market. It comes up to market with minor or even with zero additional cost, which is needed for new startups – some future major players – bringing they business over the platform.

General inclusion, integration to society

We have already seen for example payment platforms to go global so that every player on market is using these regional or global players services integrated to they own platforms. Now we are doing this same with the wider and higher services stack than before.

Most of technology has to be standardized to and offered openly for all playres when service to get wider acceptance on society. Trade technology provider and operator is significant market player it is

good to prepare to offer created banking and trading technologies for the other players as technology services. Good to prepare before forced to do so due market position. Cooperation and support are given from integration possibilities. For end user visible application interfaces (API) etc. are strictly controlled, but invisible B2B connections can freely utilize existing or whatever connections as long as public asset offer promises can be met by using those.

Part III

Cooperation

Chapter 3

Cooperation, competition

Trade is the converging, diverging and store, material and related data delivery, where several forwarding – diverging – converging – store -slot selection for delivery phases may occur in row. Does the final customer delivery be converged delivery to certain time and address or in timespace diverged delivery around the globe depends from case; does it be groceries delivery to home or travel services delivery around the globe.

What is important to notice from trade platform perspective is that investment at the beginning for the map and routing services is irrelevant because there is mapping and routing services already integrated to all mobile devices, like mobile phones and cars. Therefore is more important to take all logistic service players in as partners, platform users, who have they offer available with they slot sizes storage sizes, response and delivery times and pricing.

Services integration to platform is done gradually keeping integrated services customer promise relevant so that less integrated service do not promise more than it can deliver, even if this slows trade transaction time. While proceeding we get more statistics and can do better integrations especially to logistic partners, supporting them to maintain they relevant service promise even better while the time passes.

Even we create and offer applications, integrations and service for the vendors and logistic service providers who agree the platform frame agreement we always keep platform components open so that platform can't be hijacked and blackmailed, instead dropping and excluding this way working partners always out of the business co-operation as stated in frame agreement all included ecosystem members has to agree and sign.

3.1 Global setup

Cooperation and competition. World Trade Union[73], multilateral [71] and bilateral[70] agreements concentrate politics, rules, certifications, mostly for trade over the border, between the countries.

3.2 Shipping logistics

There are long list of shipping companies caring practicalities for freight like Maersk[46], containers like MSC[47] and air cargo like DHL[45]. Some companies are concentrated to optimize port services, like AwakeAI[6] and some others like Relex[59] to whole sourc-

ing and delivery network operations optimization with cooperation and statistics based demand estimations.

3.3 Standardization

Standardization is community effort because producers have to change they communication according to new standard and whole delivery chain has to be able to read used communication. For example if barcode changes, barcode readers may need to be updated too. For this common effort some organization is needed to do coordination work so that everything works.

Global Standards 1 organization the GS1[35] concentrate daily consumable products business data architecture, they have they own architecture model as base for the published standardization documents from data and it's usage they published for use besides they services. This data cover mostly producer and vendor labels related data. Besides the public services they also support B2B connections by offereing private services where only business partners have access to data. Standards are done quite practical way supporting business and own service sales making possible development of model and these business standards. Standards leave implementation details for the producers, vendors, traders, wholesale, logistic, shops and local distribution. Current Serial Shipping Container Code (SSCC) [37] supports pallet, parcel or case identification as logistic unit.

For product item identification there are Global Trade Item Number (GTIN)[36]. That can be printed to one dimensional barcode or to two dimensional barcode where is possible to take more information with, as lot numer and case serial number. This kind two dimen-

sional more informatic barcodes are requested and already taken in use to fight against falsified medicines [44]. EMVO[26] and FiMVO [43] organizations represent arrangement in EU and Finland.

Good example from standardization efforts implementation in practice in Finland is Falsified Medicines Directive[27][44][26][43], driven two dimension "bar codes" our groceries have agreed to take in use at 2027[19][42]. These new methods make possible to have digital twin from product label information, and there can be lot, serial number and link to information. This make possible to have bookkeeping from deliveries and this way allow detection of duplicates and never created product items, most likely falsified products. Now same methods are taken into use more widely, for the groceries[29] at latest 2027.

3.4 Digitalization

There are commodities digitally traded globally in big quantities, and consumer goods delivered locally through digital services, but there are no any globally taught, community driven frame agreement, clearing each industry area separately and with due diligence driven integrations, merges, effective and for all participants fear rules under global frame.

What ever tangible or intangible services or goods we deliver, it starts from spacetime area around earth and is served and consumed in same or other spacetime area around earth. Because we as humans can't manage global deliveries on time without some electric device driven service allowing we as humans to manage our orders and offers. Most obvious is to use each diginitive persons own personal

mobile device to this.

To get more concrete picture we could say that you might be capable to agree with neighbour granny to go feed she's cat's and give some water for flowers. But when you want to order certain vine or grapes from small village farm from southern europe you perhaps need you mobile device or laptop to make order happen and get parcel track code to yourselves to be able to follow you order from farmer to your home using the track code given. Because you may know producer from your previous life, you may not need any fancy labels or boxes, it's enough that you know product based to experience or product defining documentation, which is the "asset" for farmer sales, and product just fullfills the expectation. No need for fancy packaging, only what is needed is unique package parcel number. Vendor can have web service pages like <https://CountryCode/BusinessID/CustomerID/OrderID/ParcelID/ProductID>, perhaps locked with Customer ID, Order ID -pair customer knows due order just made. Knowing those open possibility to view rest from tree-structure.

The GS1 (Global Standards 1) already does similar setup which is explained on Phil Archer's video GS1 Digital Link Layer Cake[5]. On the video mentioned resolver is different what resolver means in this document or what Alexander Neff presented [8] as solution on page 10 at NRW2024. The GS1 resolver redirects to one item asset materials. When looking figure 2.8 on page 28 the GS1 resolver manages only materials under the leaf node, single item related marketing material. This document defined resolver belongs to Phil's video mentioned applications that GS1 does not do. This document defined resolver does resolving from whole asset structure containing competing products too. Resolution is based to customer user needs, and can

bring up assets combining several products to one resolution result, sellable asset item, subtree from the whole asset. Another significant difference is between GS1 and this document mentioned asset is the ID's length, where GS1 ID's can be short due that GS1 manages those as they business, this document defined ID's are mostly coming from cryptographic hashing algorithms[12] and are by default longer. It might be possible to mix both on cooperative setup until GS1 run out they short ID's or recycle those, which leads to ID's having double meaning, at least in archive. The online archive which should respond and give information even after Copyright time [14] has gone after 110 years. Practical online archive answer should come before normal network timeout 30s has been gone. If frequently requesting very old and rarely used asset information, it might make sense to extend network timeout to one minute.

The GS1 Returnable Trade Item (RTI) (Pallet Tagging) Guideline[60] explains how to use Radio frequency Identification (RAIN (ISO/IEC 18000-63)) RFID[50], which now days can carry pallet SSCC and/or some digital link information besides pallet Global Returnable Asset Identifier (GRAI), number which is usually also visible as barcode printed to RFID-sticker or other sticker surface and glued to pallet by pallet vendor [24][63][40][64][52][41]. Sticker can carry data with pallet to make sure that information is received even if direct digital data delivery has been failed.

Current practice is still to use printed SSCC sticker on pallet even if pallet has RAIN RFID capable to carry SSCC information. There are also cases and boxes available with the 1D and 2D barcodes having unique GRAI and perhaps RAIN RFID capable to carry product information. Consumer law is requiring printed label which in practice is printed cardboard or sticker holding data which could be delivered,

referred with the RFID and those 1D, 2D barcodes can be as well used as references into delivery packed product information during delivery and sales time.

Improvement needs

Existing law demands physical product label information, normally this one time label, sticker is representing failure point, extra environmental load and cost.

We need legal change which states that is enough that label is readable for every humanbeing with mobile device and also without device from shop electric e-paper labels on shop shelves, displays.

Customer readable RFID

Because of this customer user readable RFID requirement and users mobile devices existing NFC (Near Field Communication) capability we should enable NFC compatible RFID's on each Returnable Trade Item (RTI); case, box, etc. Pure RAIN RFID is not enough. There are NFC and RAIN RFID compatible Integrated Circuit (IC)[58] stickers available[67] working with the both standards.

Trade Item ID's active usage

Good example from low utilization of digitalization created business process improvement possibilities is underutilization of Global Asset Identifiers (GAI): Global Returnable Asset Identifier (GRAI) [34][39] [25] available in crates, and Global Individual Asset Identifier (GIAI) [33][9] usable for non-returnable cardboard case. Note: Here Asset

means actual physical item, and in further text we use only abbreviations GIAI and GRAI to avoid mix to this document own asset definition.

Logistic related companies, services provide GRAI[34] identified, with the optional serial number, when well managed, globally uniquely numbered, identified returnable assets; cases, crates, totes, dolly's, roll cages, pallets and recycle services for reusable ones. And there isn't any problem for cardboard box producer to add laser to add GIAI[33][9] to unfolded box blanks so that cardboard boxes are also globally uniquely identifiable.

When boxes/cases are identifiable then vendors can add service which gives status from box creation time or crate last washing time. Producer can have service which shows what boxes/cases are holding after sent forward from farm. Or all these services are combined under tradeoperator who can identify accessing users and limit access according to users role on ecosystem. It's not really understood business process and customer value creation possibilities through using GIAI.

These uniquely numbered mediums opportunities are not really used in way and scale they should be used especially there at the beginning of sourcing path starting from producer. Producer can tie lot of information to sent box/case just using he's mobile device having ecosystem application used on producer role which allows to tie information to known GRAI/GIAI before any SSCC is created. Product value can be added by adding digital information to cloud services from origin of each product case from the origin place, original product variety, harvesting time conditions and from the profession who did the work. In some cases those are not meaningful, but along some products you could add customer value just by adding informa-

tion from product besides the product. As far as we know unit price for product attached A4 size text data max 4kB saving for example perishable products validity time is really small, and you do not need high customer value growth to be profitable, just by adding for consuming customer valid data digitally available besides the product case, returnable or not.

If we again look groceries and the Fast Moving Consumer Goods (FMCG) from there we can note that many fruits and vegetables are delivered using cases nubered with serial number including globally unique Global Returnable Asset Identifier (GRAI) and we could utilize it to hold details from cases under SSCC stored pallet information by mapping GRAI and new two dimensional product ID's and product label information together. Clear benefits arrive when cardboard/paper labels can be left out and detailed label information can be put to ePaper on store whitout printing.

Extra benefits are gained from small farmers, berry pickers, from possibility to add different products mixed to pallet layers and pallet extraction can map numbers again to actual product information. This mixed pallet configuration is common for small producers, vendors selling they products on market places. They know what products there are when they handpic cases from pallet on van backbox. Automated extration of multiproduct pallets can be done. At the beginning automated extraction only for pallets having same size cases through pallet, but this is doable for the pallets having different cases on different layers. Extractor has to read next layer case identities to get to know what it is picking next and then has to do layer picking according to that. And for next layer same, detect what you are lifting from ID's and with the pallet SSCC delivered information be avare from next layer picking parameters. Repeat this until pallet is

extracted and read case ID's from line after extraction to get those case ID's too which were nonvisible at the center of pallet and to get correct order before those are loaded over system carry medium if in use. Then this GRAI information is mapped to system ID representing case in the system. This make possible to increase transport fillrate because we do not need several pallets stacked, instead we have single pallet having mixed configuration and it's still possible to do automated extraction for it. Finnish tomato farmers have been requesting these capabilities [38]. The number of major volume variety available from local farmers is low about ten pieces. Globally there are much more varieties [23]. In Germany there is need to get small organic product lots [8] delivered effectively through standard high volume logistics. When working with identities as explained above distribution center can pinpoint, combine and forward deliver enough big lots for further processing which fits to existing customers needs to have preprocessed foods, as customers have been used to use, but now effectively done from favored local organic sources.

Competition

Besides these certain service orientated companies there are competitors who try to maintain whole trading system alone like Amazon[4], and bit different business model eBay[21]. We do not start to list whole global competitor field here. Instead purpose is to point out what wholesalers sourcing and delivery could learn from parcel delivery logistics and how capabilities could be added into existing delivery logistics environments. Main focus is kept around local players, even we can see global setup and global trends there is no need to replay, repeat all those.

Digitalization is in phase where ordered product receiving end consumers do not have facilities integrated in to their house. Possibility receive temperature controlled grocery deliveries require temperature controlled space. This significantly affects groceries home orders, and it's more common in areas and societies where someone is at home for example for childcare or doing remote work. This limits customers and pure digital delivery operators dark stores success in this kind areas, good example is Oda[48] tryout in Finland. Currently existing wholesalers shop chains try to figure out best digital home delivery method in they existing setup. Clearly there are hand picking from store, darkstore & handpicking combination and automated darkstore & handpicking combinations. Then deliveries to picking closures or stright to consumption point, usually private home. Courier services like DoorDash[20](Wolt[72], Deliveroo[15]) and Delivery Hero[16](Foodora[32]) offer possibilities to deliver groceries from retail to customers nearby.

Disruptive change

When we look towards future, there are two mega trends; namely climate change and overpopulation. These both lead to many problems due human natural behaviour. There is global need for cooperation to overcome these challenges.

Software trade

Standars can be built bit more opensourced way where cryptographic identities[12], electric signatures and blockchain model offer some

trust [53] and you aren't so much dependent from service provider...
To be written (TBW).

Part IV

Protect

Chapter 4

Ecosystem

General idea, vision, values... brand what frame agreement defined ecosystem represents is same for all members on all economic sectors.

To be able to set up viable ecosystem we have to be able protect all members; customer, influencer, vendor, bank, trade operator interest's and ecosystem platform itself to stay viable. Same time we should be able slowly take in new economic sectors trade in into ecosystem. To start we need to find industry sector which is relatively easy to include into ecosystem and they are willing to commit digitization what we propose.

Anyhow for all economic sectors which support is included into trade system has to have due diligence industry supported business model details defined under frame agreement subsections. Several business areas can be merged under same rules when those are ap-

plicable, but work has to be done well to guarantee all participants participation to ecosystem expansion.

4.1 Customer

4.2 Influencer

4.3 Vendor

4.4 Bank

4.5 Trade operator

4.6 Ecosystem platform

Technology

Ownership

Frame agreement

Part V

Frame

Chapter 5

Agreement explained

Chapter 6

Legal text

Index

abstract, 90
application, client, 49
archival services, 46
asset cleanliness, 34
asset goodness, 33
asset search, 34
asset structure, 47
authority terminal service, 51
automarketing, 54

bank, 43
bundle, 43

certificate, 30
client application, 49
competition, 79
cooperation, 69
cooperation competition, 69
customer, 40

customer protection, 59
customer terminal, 49

dependency, 32
digital preservation, 45
digitalization, 72
disruptive change, 80

exchange, 10

frame, 87
frame agreement, 34
frame agreement what, 37
frame agreement why, 35
frame explained, 87
frame framing, 15
frame legal text, 89

global setup, 70

- improvement 1D 2D RFID usage, 76
- improvement needs, 75
- improvement NFC RFID, 75
- inclusion, 64
- influencer, 41
- integration, housing, 60
- integration, logistics, 60
- label and certificate service, 50
- minimum asset, 30
- monetary system, 3
- platform strategy, 17
- preface, i
- producer, 61
- product, 32
- product tracking, 57
- protect, 83
- protect bank, 84
- protect customer, 84
- protect ecosystem, 83
- protect ecosystem platform, 84
- protect frame agreement, 84
- protect influencer, 84
- protect ownership, 84
- protect technology, 84
- protect trade operator, 84
- protect vendor, 84
- quality tracking, 58
- recycle fee, 40
- recycle services, 41
- resolution, 48
- responsibility sustainability, 56
- retail, 64
- roles and terms, 40
- selfishness obstacle, 33
- service, certificate, 50
- service, label, 50
- service, value account, 51
- shipping logistics, 70
- software trade, 80
- standardization, 71
- standards and certification, 57
- strategy creation, 21
- technologies created, 47
- technologies sourced, 55
- technology provider, 44
- terminal service, authority, 51
- terminal, customer, 49
- tracking, product, 57
- tracking, quality, 58
- trade operator, 43

tradesystem, 15

trust, 10

value account service, 51

vendor, 42

wholesale, 62

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ECOSYSTEM Back Cover Abstract

This book collects different ideas together to form frame agreement for digital trade system holding producers, vendors, service providers, authorities, financial institutions, companies and individual customer roles in the created ecosystem. Purpose is to create fair, nondiscriminating ecosystem over digital tradesystem and frame agreement, which supports traditional business models and maybe some new ones too, same time offering much much more frictionless trade and possibility to implement and import process improvements for further even more frictionless trading by standardizing, workarounds for developing countries. Bringing digital trading, electronic commerce to level it should be; having electric label services created as separate technology development project for farmers as way to note that what is they variety in the standard box, instead default assumption "bulk tasteless red water balls"-default delivery for tomato. It is unfair for those farmers producing good tasting bit slowly growing varieties. While created and successful operation is demonstrated then law change could be introduced to allow to have only electric label, which is then put to e-paper or printed out for normal paper or cardboard if someone needs it in physical from. After change this created service is the first one on market ready to serve automated delivery chains labeling without printing needs.

