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Total Portfolio for Public Services

How to Prepare Existing Public Services for a Turna-round to a Life-events Triggered Proactive Ecosystem

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Public services have primarily been managed with the same principles as first described in the 18th century by a French economist, Jacques de Gournay, the inventor of bureaucracy. These principles originally introduced better efficiency in public operations, creating structure through professional operating and use of fixed rules. However, digitalization has changed the rules and forced many business sectors to react constantly and be driven by customer demand and delight. It has recently placed the same challenge to the bureaucracy based public service operations. Hence, the purpose of this Master's thesis was to identify and describe a required portfolio management setup for driving a public service turnaround towards the digital era.

The study was conducted as a mixed method developmental research comprising a desktop study, literature review, qualitative interviews and benchmarks. Interviews and benchmarks comprised the interviewees from the city of Helsinki, cities of Espoo and Turku, as well as Ministry of Finance, Finland and National Population Register. In addition, Estonian digital services were benchmarked.

The current state analysis revealed that there is substantial potential in improving the case organization's service recognition and in focusing them on customer situations where they deliver most of their value. The analysis also identified the improvement areas related to developing the service base by outlined strategies as well as in sourcing assets.

As the outcome, the author has created a recommended business wheel concept describing the related operational business dynamics. The recommendation includes a set of required portfolios and a necessary organizing proposal. The author has demonstrated the pivotal role of an offering-based service management, when turning around disparate public services to a life-events triggered coherent service ecosystem. The author has also outlined the ways of focusing the public service offering to customer demand and harnessing Artificial Intelligence. In addition, the author has outlined the ways to set up necessary innovation capability using customer oriented and lean practices. Finally, the author has outlined the related ways of improving the operational process performance.

Keywords	Strategy, public, service, digitalization, portfolio, customer, life-event, artificial intelligence, lean, design, development

Contents

Appendices:

1 Introduction

1.1 Overview of the Thesis

Public services management principles base on practices first described in 18th century by a French economist, Jacques de Gournay, the inventor of bureaucracy. The word means political power through desk offices. It originally introduced better efficiency in public operations creating structure to a myriad of operations. Bureaucracy evolved by the 20th century to comprise any system of administration conducted by trained professionals according to fixed rules.

Fixed rules based management practices have served well for centuries. However, digitalization introduces such a profound change to operating any form of activity that more dynamic and responsive management cannot be avoided. This is why Stiglitz-Sen-Fitoussi commission (2009) presented a model for citizens' public service core drivers and many nations are pursuing preemptive capabilities to focus right public services to the right citizens and businesses at a right time.

This thesis examines this public service management problem from a portfolio management perspective. Although the problem comprises a large number of domains to take into account, the actual problem being examined is compact. The problem is about challenges in bringing adequate unbiased information for decision making and operating in a usable format.

The areas of scrutiny in this thesis are:

- Strategic management
- Customership and demand management
- Service channels
- Service management and operations
- Development operations
- Compliance and conformance

The conducted current state analysis on the above topics leads to a framework of following areas:

- Strategic targeting and execution
- Harnessing customer insight and grouping it to offerings
- Innovation to value capturing
- Lean business processes efficiency

Then this thesis builds a proposal, which outlines a set of portfolios, structures and practices for efficient strategic targeting, fast and smooth reaction to business environmental changes as well as internal agility. The thesis proposes structures and practices in managing customer insight and how to build adequate public service offerings. The customer insight and service offering proposals outline, what is needed to enable a turnaround from static service production to dynamic service provisioning by continuously analyzed life-events. This thesis also outlines, how to harness artificial intelligence in this context.

Customer insight and leading with services is, however, not enough alone. In order to enable overall value add improvements, certain elements in driving innovation and value capturing must be in place too. Hence, this thesis outlines key portfolios, structures and practices for innovation management and development and how to improve business process efficiency underneath. This thesis does not outline service channel management as a separate topic. This thesis touches service channels as a key ingredient of business process management. In addition, this thesis leaves related financial management and data capability for further research topics.

1.2 Business Problem and Outcome

The overall business problem behind this thesis is an ability to transform and evolve existing public operations and underlying technology fast enough and economically enough as digitalization profoundly changes public services provisioning. This thesis also deals with business problems in harnessing digital possibilities to enhance productivity and efficiency and creating focus in operating public services. They encapsulate a portfolio managerial business problem.

Managing evolution towards ever more digital service channels and services as well as enabling use of customer behavior and customer journey based preemptive service offering introduces such a profound change in the operational and developmental culture that a compact digital portfolio management framework proposal is needed.

1.3 Case Organization

City of Helsinki is the biggest municipality and the capital of Finland with 4.5 BEUR annual budget. City of Helsinki employs around 38 000 people and hosts over 430 000 jobs. City of Helsinki used to consist of 35 offices, but the organization revamped its structure into four divisions and central administration during the past three years. Central administration and the Urban Environment division also govern five public utilities, which operate similar to private enterprises. In addition, the City of Helsinki Group comprises 38 partially owned companies, 6 inter-municipal consortia, and 97 daughter companies and foundations. (City of Helsinki, 2019d; City of Helsinki, 2019e)

This thesis' organizational scope handles the internal Group of Helsinki i.e. the central administration, the four divisions and the five public utilities. Hence, this thesis does not handle the mentioned over 100 external ownerships of the total external group of Helsinki.

Current organizational entities of the City of Helsinki internal group:

Table 1. City of Helsinki Organizational Entities (City of Helsinki, 2019d)

Divisions:	***Subsidiarized public utilities:***
Central Administration	Stara – construction services Financial Management – financial services Service Centre – catering, telco and wellbeing services Occupational Health Helsinki – occupational health services
Urban Environment	Helsinki City Transport – metro, tram and other transport services
Education	
Culture and Leisure division	
Social Services and Health Care division	

The current divisional structure above reflects the top hierarchy of municipal obligation categories depicted in the service scope below.

1.4 Service Scope

Finnish municipalities have around 500 tasks and obligations assigned in Finnish legislation. These tasks and obligations cover following fields:

Table 2. Areas of Municipal obligations (Ministry of Finance. Local government's duties and activities.)

Education and day care services
Cultural, youth and library services
Urban planning and land use
Water energy and supply
Waste management
Environmental services
Health and social services
Fire and rescue services

An obligation to provide the latter two has been under legislative preparation since 2015, pursuing a new governmental county level between national and municipal levels and shifting these obligations to that new county level. (Hiironniemi, 2015; Hiironniemi, 2013; Ministry of Finance, 2015). These services, however, are currently a profound part of the municipal scope and the current national government is pursuing a separate solution for the capital area, deviating from other local governments in Finland. (Government of Finland, 2019.)

On the top of these 500 tasks, City of Helsinki has established additional 300 non-legal tasks totaling roughly 750 tasks. Their fulfillment requires a massive and a much wider web of service points than just the amount of the tasks and obligations. The total count of city service points with a distinct and unique physical position on a map exceeds

10 000. (Service Map, no date). The profound reason for all of the existing operations and functions of the city is about fulfilling these 750 tasks and make the existing vast network of service points work effectively.

The service scope of this thesis assumes the above tasks and obligations and the underlying web of service points as a relevant service scope.

1.5 Research Scope, Objective and Outcome

The objective of this thesis is to produce a portfolio management framework to serve digitalization and modernization efforts of existing and new services as well as internal capabilities. This thesis combines all relevant domains needed for a successful operation of a digital portfolio. The key domains covered are:

Table 3. Research Key Domains

Strategic management
Customership and customer knowledge and demand management
Product and service management
Operational and process quality
Innovation and development and service design
Compliance and regulation such as security and accessibility

First outcome of this thesis is an operational business wheel concept describing the proposed business dynamics from strategic management to execution and a continuous loop of steering. This outcome is then further opened to a set of proposed portfolios and needed around them. These outcomes are represented as enablers for preemptive and proactive public service delivery as well as for a use of artificial intelligence in identifying and predicting public service demand per customer segment. This thesis also argues that the proposed portfolios and organizing have a substantial effect on organizational long term success and capability to react to environmental changes.

The nature of the individual outcomes of this thesis is highly integrated. In order to add value, they have to be addressed together. Separate improvements are not likely to capture overall value.

2 Research Methods

2.1 Research Approach

The research approach of this thesis is applied developmental research. This thesis has a strong fundament from a previously built developmental framework for the city of Helsinki (Kehmet).

The research was conducted comprising qualitative semi-structured interviews, desktop studying and benchmarks. The research conducts first an analysis of the current state within the case organization. This analysis is then strengthened by utilizing a recent external study on Finnish public sector services' state (Maunula, 2019) and by benchmarking cities of Espoo and Turku portfolio management setup as well as State of Estonia's digital service efforts. Due to the large amount of potential focus areas, several iteration rounds between interviewing and desktop studying were a necessity to narrow down the scope. The current state analysis had to be built iteratively in order to ensure a strict focus and to avoid building an excessive or irrelevant framework.

After having constructed the current state within the remaining focus areas, the thesis builds a framework from these focus areas using relevant literature and articles. The framework is then used for constructing a concept describing an operational business dynamics model, a set of required portfolios and a necessary organizing proposal.

2.2 Research Design and Validity

The research design introduces the data collection used for the current state analysis. It describes the areas of the relevant framework as well as which outcomes construct the proposal.

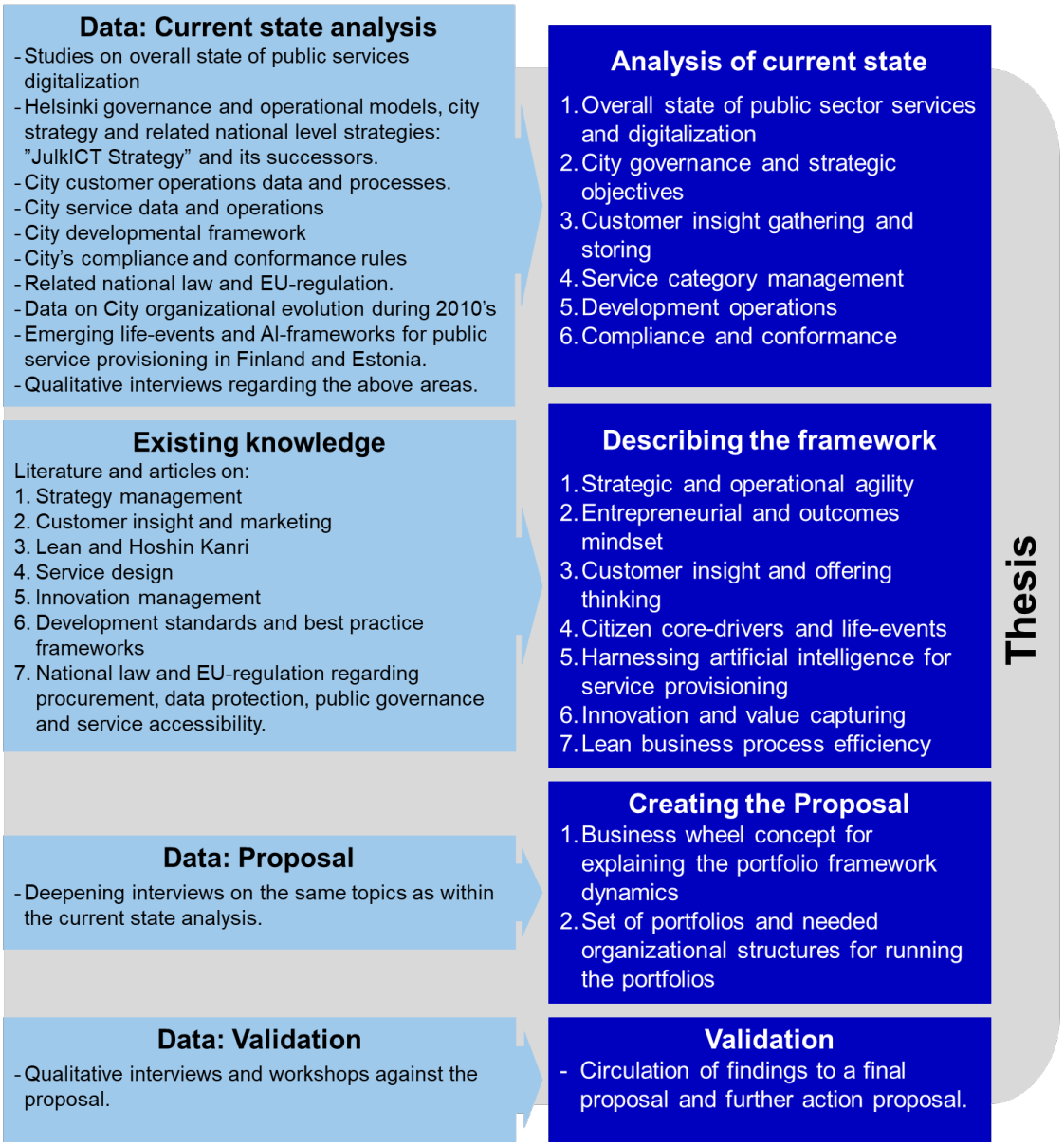

Figure 1. Research Design.

The first part of the thesis is the current state analysis. Constructing it started with identifying potential focus areas that can be critical to the pursued portfolio management framework and operational setup. Since the topic is about triggering public services by life events, the focus area domain space was practically all business functions. Narrowing down the scope required extensive desktop studying of existing business functions and several law and regulation areas, added with handpicked interviews. These iterations resulted a total focus area package of six focus areas, which needed attention.

Studying the areas made it clear that the business problem touches strategic management from several angles. Such a profound paradigmatic change as a turnaround towards life events triggered services, places demands for strategic environmental analysis and an agility to turn vision to targets and action. Since, it is about hundreds of services, capabilities to drive customer insight and services were evident fields of studying. The digital turnaround also requires substantial development and innovation capabilities, which state had to be researched. Public services are also strictly regulated by the EU and national law. Hence, several compliancy and conformance areas had to be taken into account.

Before finishing the total scope and current state analysis, it became evident that the narrowed down focus areas had to be investigated as a whole. They would not generate total value independently. It also became clear early on that this thesis will have to construct its outcomes from differing disciplines – mainly from strategic management, customer insight, sales and marketing theories, innovation management and certain development and quality management frameworks. It became clear during the proposal creation that financial management and data management can be excluded from the scope of this thesis. However, a key corner stone of this thesis is use of artificial intelligence, and it is related to data management. This thesis restricts its scrutiny, however, to building a customer insight setup and leaves data management issues for further research.

The current state analysis summarizes its findings per each area first and then summarizes them to total summary of findings. The findings outline, what areas require most attention when pursuing life events triggered public services. Hence, they work as a listing of topics to be covered in the second part of the thesis, the framework. The biggest finding is the pivotal role of service offering management capability and that all the other areas' interplay flows through this capability.

Creating the framework of this thesis required constructing a relevant strategy management framework from classical strategy management theories. Because, the focus of the thesis is in driving change, the emphasis of the strategy management framework is in agility. This led to adding lean compass management and certain military stemming strategic agility principles to the strategy part of the framework. The framework moves from there towards summarizing customer insight theories and what has been previously studied from citizen's core needs behind the public services. This leads to opening how customer insight and own service understanding can be altered from bureaucracy based

operational model to customer centricity, and what the related artificial intelligence opportunities are. The next step of the framework is value capturing theories and how to harness innovation within. Finally, the thesis framework addresses operational efficiency with lean and quality management principles. All these areas put together form a basis for the proposal, which the author has named the business wheel. The business wheel outlines operational business dynamics and constructs a set of required portfolios and a necessary organizing proposal. During the creation of the proposal, deepening workshops and interviews were conducted to add case organization applicability.

Reliability of the proposal bases primarily on applying peer reviewed academic concepts and globally recognized best practices. Applicability to the business context of the city was validated in two stages. First, the results were presented for relevant management and senior experts following with interviews and gathering feedback. The second part of the applicability validation was conducted through a separately launched project. A consultancy firm was used to facilitate a larger set of management and key expert interviews and workshops on portfolio management needs within the city of Helsinki. Comparison with the consultancy firm's results was used for validation purposes of this thesis' proposal.

2.3 Data Collection and Analysis

Data of this research was collected for an evidence for the current state analysis, building the proposal and validating it. In total, the core data collection consists of 32 interviews and eleven internal documentation sources. On the top of internal documentation, also external regulatory documentation was collected, comprising 10 national laws and EU-regulations, and 9 national and international public service related guidelines. They are regarded as important data, because the case problem is restricted by those regulations and guidelines.

The first wave of data gathering started in spring 2019 with a coarse overall desktop study on the case organization's governance and operational models, following with documentation about city strategy and objectives as well as related national level strategies (JulkICT Strategy and its successors). This led to the first interviews of strategy and

digitalization management, opening up strategic objectives and their relation to case organization's services, and giving the overall direction for further data gathering needs.

The next wave of data gathering began in fall 2019 concentrating first on key-expert level deep dive on managing city services. In total five rounds of interview and desktop study iterations were needed to cover the current state of service management. During these iterations, also the current state of service related feedback and demand management documentation was studied following with key expert interviews. This also included interviewing key experts regarding the current state of customer knowledge management.

These internal documentation studies and interviews followed with a third wave concentrating on external interviews to gather relevant data that influences the case organization's strategic, service offering and customer management. The third wave also extended internal data gathering of the second wave with further interviews related to city functions and services. In addition, the current state of operating developmental activities was added through a desktop study. The author himself governs the topic and there was no need for gathering deeper data through interviews. This led to interviewing and benchmarking a service portfolio and development portfolio setup of a peer organizations, city of Espoo and Turku. At this stage, the interim results were presented to strategy management and digitalization management for further feedback.

In the fourth and final wave, the emphasis moved to the current state of key compliancy areas: procurement and sourcing, data privacy and data security, and enterprise architecture. Each area was interviewed separately. During the fourth wave, also the earlier mentioned external study on public services in Finland (Maunula, 2019) was studied following with an interview. The fourth wave also included a data gathering trip to the PrivSec 2020 conference in London for gathering data on Estonia's digital service efforts.

Analysis of the current state data collection was done by formulating structured findings and then reviewing related literature and articles for comparison against academic and peer reviewed knowledge. This lead to building a framework and a proposal basing on relevant literature and articles. Deepening short interviews and questions were utilized during the framework and proposal building, especially related to the customer insight and compliancy areas of the data collection.

Table 4 shows the details of data collection.

Table 4. Data Collection.

Data round	Data type	Data source	Date	Rec	Focus
Wave 1 Governance and strategy	F2F	CDO	15.4.2019	notes	Digital strategy
	F2F	CDO	23.4.2019	notes	Digital strategy
	F2F	Strategy manager	24.4.2019	notes	City strategy and services
	Int & ext docs	Governance rules, operational models, city strategy, strategic objectives and measures, digitalization program, JulkICT strategy	Spring 2019		For desktop study before interviews and for further scrutiny after interviews.
Wave 2 Services, customer knowledge and development	F2F	Strategy consultant	2.8.2019	notes	Service portfolio
	F2F	Strategy consultant	9.8.2019	notes	Service portfolio
	F2F	Strategy consultant	9.8.2019	notes	Strategic measurability
	F2F	Product owner	16.8.2019	notes	Service categories
	F2F	Product owner	20.8.2019	notes	Service categories
	F2F	Product owner	23.8.2019	notes	Service categories
	F2F	Product owner	28.8.2019	notes	Citizen feedback
	F2F	Strategy consultant	29.8.2019	notes	Strategic measurability
	F2F	Strategy consultant	30.8.2019	notes	Service portfolio
	Virtual	Special planner	3.9.2019	notes	Citizen feedback
	F2F	Program manager	4.9.2019	notes	Customer information management
	Virtual	Product owner	27.9.2019	notes	Service classification
	Int & ext docs	Customer operations, service operations, development framework, life event and public AI frameworks.	Fall 2019		For desktop study before interviews and for further scrutiny after interviews.
Wave 3 National influence and peer organizations	Virtual	Senior specialist, national population register	30.9.2019	notes	National influence on service management
	Virtual	Enterprise architect, city of Turku	30.9.2019	notes	Segments and categories by peers
	F2F	Ministerial adviser, Ministry of Finance	2.10.2019	notes	National influence on service management
	Virtual	Enterprise architect, city of Espoo	23.10.2019	notes	Segments and categories by peers
	F2F	Enterprise architect, city of Turku	15.11.2019	notes	Segments and categories by peers
Further scrutiny of services	F2F	Product owner	4.10.2019	notes	Service categories
	Virtual	Directing chief specialist	11.10.2019	notes	City functions map
	Virtual	Directing chief specialist	14.10.2019	notes	City functions map
Further management feedback	F2F	Strategy manager	21.10.2019	notes	Strategic service portfolio
	F2F	CDO	28.10.2019	notes	Digital strategy portfolio
Wave 4 Compliancy and regulation	F2F	Solution architect	7.1.2020	notes	Customer knowledge architecture
	F2F	Chief specialist	14.1.2020	notes	Security
	F2F	Directing chief specialist	15.1.2020	notes	Procurement-sourcing
	F2F	Digital strat consultant	16.1.2020	notes	Public digiservices state
	Virtual	Head of IT-solutions	23.1.2020	notes	IT service management
	Int & ext docs	Conformance rules, EU and national law and regulations.	Fall 2019 & Spring 2020		For desktop study before interviews and for further scrutiny after interviews.
Supplemental development angle	F2F	Program manager	27.1.2020	notes	Design driven developm.
Supplemental digital service angle	F2F	Digital transform adviser, Estonia	4.2.2020	notes	Digital public services

3 Current State Analysis of Public Sector Services Digitalization and Related Operations in the City of Helsinki

The examined areas of the current state analysis are: overall national state of public sector services digitalization, governance and strategic management, customership and demand management, service channels, service management and service operations, development operations, compliance and conformance.

3.1 Current Strategic Objectives and Measures

This chapter examines how City of Helsinki's strategic objectives and measures are defined, how coherently they are derived from mission and vision statements, how well they support practical targeting of City of Helsinki's services' operation and development and which key pain points were found.

3.1.1 City Strategic Objectives

City of Helsinki has approved strategy execution objectives and metrics in the City Government's decision KH 12/18.3.2019 §200 and their progress is being reported quarterly. The key theme of the current strategy and related metrics is best functioning city in the world. Hence, all metrics pursue better operation or effectivity or at least measure existing effectivity. The metrics are split in three domains. In total, those domains comprise 50 metrics, which is a high number for being a set of top group level metrics.

Table 5. City Strategy Metric Domains Metric count. (City of Helsinki, 2019b)

City Strategy Metrics' domains:	Sustainable growth	27
	Renewing services	16
	Responsible economy	7
	Total:	50

Analyzing the actual targets and their metrics underneath, these domains reveal following similarities per domain:

Table 6. City Strategy Metric Domains' Nature.

Sustainable growth	General effects in citizens' lives or environment
Renewing services	Services' perceived quality
	Efficiency of delivery / delivery lead-time
	Market penetration / usage rate
	Customer participation / democratic investment decisions
	Digital 3rd party ecosystem
	Services' end-effect such as PISA results.
Responsible economy	Productivity, ROI, liquidity, loan stock, corporate income tax share, service unit cost, employment rate

Hence, city strategic targets are not grouped this way, but further analysis finds these similarities within actual targets and enables an improved clustering of what is being targeted.

3.1.2 Sustainable Growth

Roughly a half of the metrics measure general effects in citizens' lives or effects to the environment (e.g. self-perceived health or inhabitant satisfaction). These metrics are mostly specific to certain municipal obligation domains, which also reflect the Helsinki divisional structure described in chapter 1.3 Case Organization. However, some targets sustainable growth targets address multiple divisions. E.g. targets considering youth apply to social & healthcare, education, and sports related services as well.

The sustainable growth targets and their metrics are defined on a general level, not being specific. Due to the sustainable growth targets general nature, it will be hard to re-engineer afterwards which city services and which city functions have affected how much to the defined growth targets.

3.1.3 Renewing Services

Sixteen of the targets and their metrics are service renewal related. Most of them measure municipal services' status quo or how much they improve. They comprise such generic targeting as

- service usage rate,
- service satisfaction and
- service delivery lead-time.

During 2019, the target to reduce lead-times of services' deliveries has been topical. Hence lean improvement principles are being introduced as means of achieving lead-time performance.

Some service renewal metrics also set targets to specific service areas (e.g. PISA results). Some metrics measure citizen's participation activity in decision making. These targets are related to a form of budgeting, where citizens are asked directly where some investments should be addressed. Typically citizens are given a few options to vote from and the most popular option gets financed. (Ebdon and Franklin, 2006). City of Helsinki allocates roughly 4.5 MEUR/a out of 4.5 BEUR/a total annual spend to citizen participation in budgeting. (City of Helsinki, 2019c)

Some metrics measure digital third party ecosystem performance. Namely, the ongoing service digitalization trend enhances services' production-to-delivery models towards platform economy models. For this reason, it is important for a large municipality to open possibilities for third party provided services at least on the digital service arena.

The service improvement related metrics are, however, lacking measurable targets and baselining to compare with. Hence, they are hard to cascade to individual service categories and services in a way that the services could report their improvement performance.

3.1.4 Responsible Economy

Seven of the targets and their metrics are financial related such as productivity, corporate liquidity (DCOH), return on investment (ROI), loan stock per citizen, corporate income tax share, service-unit cost, and employment rate. The financial metrics have clear calculable baselines and improvement targets. As a highlight, it is invigorating to notice the COGS-type financial metric for service unit costs as one or the metrics. However, the defined metrics might not cascade well from the high-level service areas to specific services. However, they seem to function on divisional and service area levels.

3.1.5 Vision Cascade to Objectives

The three above objective and metric domains stem from five distinct strategic vision statements.

Table 7. City of Helsinki Strategy Domains 2017-2021. (City of Helsinki, 2017).

Vision statements:	1. The most functional city in the world
	2. Securing sustainable growth
	3. Developing services
	4. Responsible management of finances
	5. Helsinki strengthens and diversifies its promotion of interests

Hence, the structure of the strategic vision statements resembles the structuring of the strategic objectives and metrics, but it is not exactly the same. Also, the structure of the strategy resembles Kaplan and Norton (2001) strategy map thinking. It has a financial section and internal resembling sections, but it is missing sections equivalent to customer and learning.

3.1.6 Divisional Targets and Action Plans

Each division of the City of Helsinki has created their own divisional strategy and/or action plan to answer to the city strategy's vision and underlying objectives. As an exception, Social and health care division does not have refined strategic objectives and action plans, assumedly due to former 2015-19 national government's intent to shift social and health care from municipalities to counties.

The divisional targeting does not follow exactly the same unified pattern and documentation format across the organization. Hence, it varies per division, how group level strategic vision and objectives are refined to divisional targets. All divisions have more granular objectives, but there is substantial variation in how the measures and metrics and accountability allocations are defined. There is also variation in how well divisional targets are mapped with group level objectives. Generally, divisional targets could have clearer annual phasing, which would enable coherent strategy roadmaps so that each year would build upon the former one. The targets could also use Kaplan and Norton

(2001) style strategy mapping to the basic universal themes: financial, customer, internal and learning and growth.

3.1.7 Digitalization Program

In addition, city of Helsinki has a separate CDO's digitalization program, which addresses especially the 'best functioning city in the world' strategic vision as well as the business disruptive trend of public services being digitalized all over the world.

Digitalization program consists of five distinct target areas, which all are pursuing strategic digital capability.

- A – Digital city services
- B – Customer centered agile culture
- C – Data, AI and robotization
- D – Digital foundation
- E – Digital capabilities management. (Rusama et al. 2019).

In short, city of Helsinki aims to renew its basic IT-capability i.e. the digital foundation, streamline and harness Helsinki's massive data collections and introduce use of artificial intelligence and robotic automation in digital processes. One key cultural change being pursued is a shift from production oriented way of working to customer oriented. What actual citizens, tourists and businesses in Helsinki will see are new and revamped digital city services, which would be more reachable with faster delivery-times and would be partially proactively offered basing on customer behavioral and demographic data. All this requires establishing new ways of leading and managing, which is addressed in the E-track.

The B-track – Customer centered agile culture also includes strategic learning targets to improve staff competencies, not only customer related themes. Hence, the digitalization program's B-track enhances the city strategy with both customer and learning elements. I.e. The digitalization program covers certain parts of Kaplan and Norton (2001) style strategy map. However, since digitalization program covers just the digital field it cannot cover the whole city strategy.

3.1.8 Summary

Both the financial metrics and the service improvement targeting metrics work as relevant guidelines to be taken into account when establishing a service portfolio and its development targets. The more general sustainable growth metrics, however, are harder to implement. They would require very good quality trend data and sophisticated data analysis such as applying regression or neural networks to measure achievements. Today, these capabilities are yet pending implementation.

The general nature of most metrics and the organizational maturity level suggests that substantial effort should be addressed to establishing more granular measurability. Today's strategic measurability capabilities reach division level and service area levels, but cascading strategic targets measurably to actual services will require ground work. There is also improvement potential in coherency of cascading strategic objectives and simplicity of accountability allocation.

3.2 Overall State of Public Sector Services in Digitalization

Ever larger share of public sector services must provide digital twins of the service and utilize digital channels. Therefore, it is justifiable to assume that digitalization is one of the key drivers when considering impacts to public services themselves and to their management.

BearingPoint Finland (Maunula, 2019) conducted their first survey on Finnish public sector services' state regarding digitalization in 2019. City of Helsinki won the survey with a good overall performance in all categories. The survey investigated digital services capabilities in five categories:

- findability of digital services
- support in consideration and decision phases
- digital user experience
- digital customer service
- harnessed social media

In short, findability of digital services means how easy and smooth it is to find and land on the digital channel or service. Consideration and decision support means that whenever a user lands on the service, how well the user is assisted along his journey towards actually selecting and using the service. Digital user experience means roughly how smooth and easy use of the service is and how well the progress of the service functions. Digital customer service means performance in digital customer channels i.e. how well the channel gave what it was supposed to. Social media performance in this context means how widely typical social media channels create awareness of the services and channel the user to them.

3.2.1 Digital Findability

Most usual way of finding services online today is through a web search engine, mostly Google. Public sector services generally excel in this over private sector products and services. The reason for this is that when a user is searching for a public service, (s)he already searches a certain city and a certain type of a service. Comparably, private sector products must attract and build customer awareness through competition. I.e. when a user searches public services in Helsinki, (s)he already has decided to look for a city service exactly in city of Helsinki offering. However, when a user is searching for example a dining possibility, (s)he does not google a specific restaurant. (Maunula, 2019) Although this being the most typical case, yet some conducted interviews also did reveal that also some city of Helsinki services existence has come as a surprise to the citizens. Hence, there is room for improvement.

3.2.2 Consideration and Decision of Service

This is today mostly an emerging area in public sector. There are few good examples such as the chatbot of Migri – the migration service of Finland, where modern digital means guide the user quite effectively towards the actual decision and choice of a service. In general, there is however a lot to improve in management of user journeys and service paths. This is the area where public sector clearly lags behind the private sector businesses. There is today little statistical follow-up of different physical and digital channels performance such as drop-off rates and conversion rates. Digital businesses follow these metrics at least weekly and at best continuously. Among the best, all decision making on channels bases on statistical facts about the channels' performance and this cascades also automatically to the service performance too. I.e. which services are how much needed and where it is feasible to invest in. This field is lacking progress in public

sector for a reason. Namely, these practices were created for digital marketing mostly in 2000's and quite clearly pursuing higher conversion, sales and profit. Hence, it has taken time to realize that the same logic can be applied to non-profit making public sector too. (Maunula, 2019)

3.2.3 Digital User Experience

Although a public image of public services may be compromised, the study shows that digital user experience is in fact the strongpoint of public digital services. Public digital user experience exceeds general private counterpart's levels. There is, however, high volatility between different public services' digital user experiences. Best public digital services provide very clear progress flows, once you are using the service. (Maunula, 2019)

3.2.4 Harnessed Social Media

Use of social media is in a good level and a clear strongpoint in public organizations. This is somewhat obvious, as public sector works publicly and is obliged to present its functions, decisions and use of tax payers' money openly. However, the use of social media channels tends to be public relations and communications oriented in the expense of channeling customer potential towards services. (Maunula, 2019)

3.2.5 Citizen Insight and Artificial Intelligence in Steering Public Services

The Stiglitz-Sen-Fitoussi commission (2009) published a large report on improvements to nations' economic performance and citizens' welfare. The commission introduced eight key elements which drive citizens' welfare:

- health
- education i.e. access to educating oneself and quality of education
- personal activities and work life i.e. how much is actually so called quality time
- political voice i.e. possibilities to influence in political environment
- social connections i.e. possibilities to be active socially
- environmental conditions i.e. air, water, pollution etc.
- personal security i.e. crime, accidents, domestic violence, etc.
- economic security i.e. secure continuous jobs and income, adequate pay, etc.

(Stiglitz et al. 2009)

These elements define how effectively public services provide overall value to citizens. This model is widely used as a basis for the EU and Finnish national public services' reforming activities.

The Stiglitz model introduces an opportunity for continuously reacting to changes in the public service demand. It opens up possibilities to analyze much more accurately, which services are needed in different life situations of citizens. Completely new types of triggers for public services can be found. In addition, Stiglitz model and life events break fixed connections of services to public office structures and enable true cross-organizational public service offering. (Stiglitz et al. 2009)

Interviews and conducted benchmarks gave an indication that Estonian national level public services might be the current world leading public entity in harnessing public service offering with customer life situations and the key elements of citizens' public service demand. Today, Estonian national public services are widely online accessible. They are also being used primarily through digital channels, because of their smoothness. This has not been forced by the government. The same services are physically accessible too. Citizens only prefer digital channels due to their ease and accessibility. By the interview, this applies to all demographic groups from younger to the elderly. Hence, there is no significant technology reluctance by the aged demographic groups. Estonia calculates that their digital public services save roughly 2% of the entire national budget. (Marcus, 2020)

Finnish national Aurora AI program is driving similar artificial intelligence driven capabilities to identify citizens' public service needs basing on their behavioral, demographic and other gathered data. Estonia has a KrattAI program pursuing these capabilities (Ministry of Finance, 2020; Sikkut et al. 2020).

3.2.6 Summary

BearingPoint's recent survey testifies that public services use digital channels widely. A recent count of all digital channels in Helsinki exceeds 1000 channels. Bearing points survey argues that digital findability of public services is in fact above private sector average. However, it seems that there are issues in using digital channels through managed customer journeys. There seems to be substantial improvement potential in managing those hundreds of city services as lined-up portfolios where customer journeys are

measured constantly and their performance would guide balancing of assets and investments.

Digital capabilities introduce an improvement potential in service accessibility, speed, better flow of service processes and cost efficiency. Moreover, digital capabilities also introduce possibilities for proactive public service provisioning. Harnessing this potential requires, however, solid customer understanding throughout all city services. Unless it all works together as a full service portfolio, it works separately – not harnessing value properly.

There is a solid background and a benchmark for a move towards life events triggered public service portfolios in local governments. Stiglitz-Sen-Fitoussi commission's (2009) model for citizen's core drivers to public service need is already a basis in many EU countries' public service reforms. The Finnish AuroraAI and Estonian KrattAI programs are pursuing artificial intelligence enhanced public service ecosystem, which would enable triggering public service provisioning proactively. Local governments have a good opportunity to grasp their service portfolios and utilize their unique position being nearest to the citizens.

3.3 Current Governance and Operational Models

The local government act FINLEX 410/2015 (2015) obligates all local governments (municipalities) in Finland to have just and only one administrative regulation i.e. governance rules. The act defines how municipalities must establish their decision making and administrative procedures. Each of the four divisions and the city executive office have their own operational models which define more precisely how those organizations are built, what duties and authority they comprise and how the authority is delegated. Also the subsidiarized public utilities have their own operational models. (City of Helsinki, 2019a).

Highest authority is executed by the democratically elected city council and its city board. The highest-level-process of city's decision making process is depicted below.

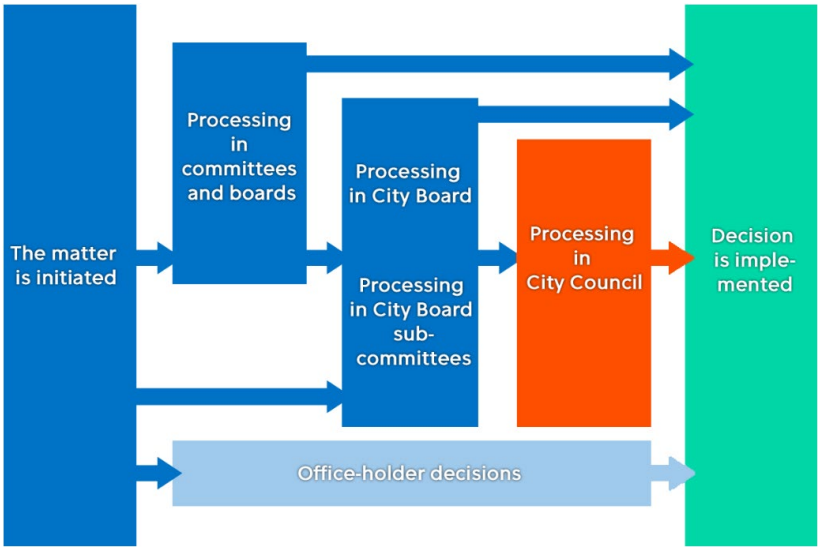

Figure 2. The City Decision Making process. (City of Helsinki, no date a).

Each division has their own committees and sub-committees and boards, which also are political bodies elected by the city council. A part of decision making is, however, not subject to the political decision process. In such cases, an office-holder is entitled to commit the decisions directly. (City Council Decision Making, no date)

3.4 Current State of Customer Feedback and Demand Management

3.4.1 Customer Feedback Benchmark

City of Helsinki has a dedicated team for coordinating external feedback as well as an information system for gathering feedback (citizen reporting system). Information and summaries of the feedback are continuously updated on the City of Helsinki main online channel. (City of Helsinki, no date b)

Conducted interviews evidenced that City of Helsinki's feedback processes are much wider than generally in European cities. Most cities in Europe regard city reporting only as a channel to inform of problems in the city infrastructure such as streets and buildings. Most European cities also have less obligations than Finnish municipalities and Helsinki do. City of Helsinki takes a much wider approach and involves all city activities including education, culture and social and health care to the citizen feedback loop.

3.4.2 Digital Customer Service

Digital customer service is the weakest point of public sector digital services today and clearly lags behind private sector counterparts. The interview with BearingPoint revealed that challenges in customer service might stem from the production oriented perception of public services. I.e. it is not fully perceived that the customer servicing interface is crucial to service performance especially in digital services. (Maunula, 2019)

3.4.3 Reactive Feedback

Majority of the current Helsinki feedback operations, however, is traditional reactive feedback. By far the biggest set of feedback is about defects or outages. This feedback identifies immediate issues in city services and initiates corrective actions to fix identified problems. Although the citizen reporting covers all activity, roughly 55% of current feedback addresses traditional city environment topics.

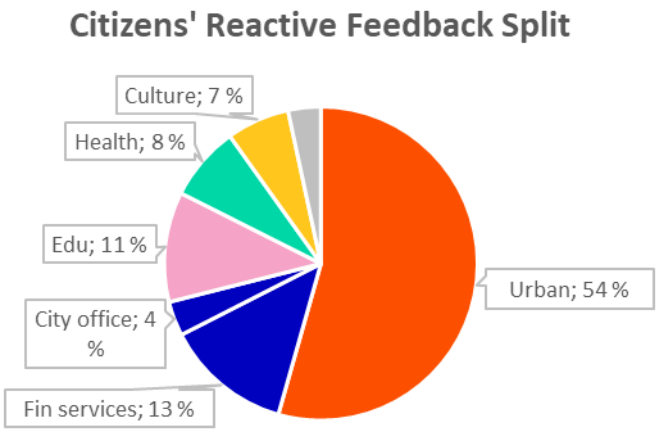

Figure 3. Split of Citizens' Reactive Feedback in 2018. (City of Helsinki, 2018).

Around 25% of all feedback is directed to the other three divisions. Less than 8% of this is about social and health care, although financially and personnel wise, social and health care division accounts for a half of the city. Reason for the low share is that majority of social and health care feedback is patient information, which is managed separately due to patient information safety. Around 13% of the feedback is directed to financial services, mostly regarding issues in various financial support services for citizens. (City of Helsinki, 2018)

3.4.4 Feedback in Health Care

Apotti – the new social and healthcare backbone system will widen citizen feedback loop with a social and health care specific detailed feedback channel. Apotti's feedback features are practically a special area for medical professions and they handle extra sensitive data about individuals' social and health issues. They must be processed with strict rigor and obeying rules about patient information anonymity and access obligated by law (Finlex 159/2007). Hence, there will remain a separate need for a more general and anonymous feedback system regarding social and health topics, which purposes are not directly medical.

3.4.5 Summary

The conducted interviews revealed that the top most worry and challenge regarding digital customer feedback relies deep in the democratic systems' core. The law already stresses that all citizens must have equal rights and means to make motions and question public decision making. Direct digital channels are not equally available for everyone. Hence, they can distort democracy itself and in fact break the law. Digital feedback channels are not allowed to override the official democratic motion path, which obligation is to bring the motions to the municipal council for decision making. This is crucial in any municipal democracy to ensure that democratic elections are the way to ultimately decide who makes the decisions about spending municipal tax payers' money on what.

One measure being taken to reduce this risk of citizens' inequality before deliberative democracy channels is "Stadiluotsi" i.e. borough liaisons personnel, which task is to promote citizen participation and with which tools and how it can be done.

> 'We are bridge-builders between the citizen and the city, we establish connections to the city organisation with others who engage in participation work… [and] The borough liaisons work together with other city players to ensure that the preparation of area-specific projects is carried out in a multi-voiced and equal manner' (Borough liaisons)

Interviews also revealed a need to improve demand management capabilities i.e. cascading customer demand coherently to service management and their development activities. Today, demand management focuses mainly on customer feedback gathering

and then channeling it to operative fixes. Demand management potential could be harnessed further to feed service offering development.

3.4.6 Proactive and Instant Feedback

Gathering more developmental proactive feedback is an emerging field. A new feedback system (Decidim) for deliberative democratic processes was recently taken in use. It provides four important digital functions for proactive demand and feedback management:

- direct citizen involvement in some investment decisions (participatory budgeting as deliberative democracy)
- internal development ideas
- city management's direct citizen idea gathering channel
- experiments acceleration

Hence, Helsinki involves citizens directly in some investment decisions through participatory budgeting (deliberative democracy), where citizens can directly vote for preferred investment options such as a new children's playfield or a dog park. Decidim system provides the digital channel for this. The system also channels internal ideas towards further screening in divisions. Thirdly, Decidim system works as top management's direct idea gathering channel. It serves the most topical strategic themes such as screening most valuable development areas to turn Helsinki into the best functioning city in the world (key theme in city strategy). The latest addition is an experiments accelerator function, which channels financial resources and expert skills to prioritized digital experiments.

The Decidim system is open source and originates from the City of Barcelona. Today it is further co-developed by dozens of European Cities. City of Helsinki uses Decidim for four distinct processes.

Numerous immediate feedback experiments are being conducted all over the network of city service points using "How happy are you with the service you received" -apparatuses as well as online forms. The city's strategic metrics include also customer perception score deployment onto suitable digital services (either NPS or CES).

Table 8. Developmental Feedback Processes in the City of Helsinki.

Proactive citizen feedback Web channel	Participatory budgeting
	Internal ideation
	Top management's strategic ideation
	Experiment acceleration – resource catalyst
Digital service embedded feedback	NPS or CES feedback in digital services
Physical feedback equipment	Direct customer feedback apparatuses

3.5 Current State of Customer Knowledge Management

3.5.1 State of Customer Information and Channel Capability

Today, city of Helsinki does not possess a central customer knowledge and information source, which would connect the city's hundreds of services' usage with customer accounts. Instead, many of the hudreds of city services have their own sub-optimized customer knowledge capabilities. Some of the point-solutions, however, have implemented even detailed level features.

E.g., certain social and health care related services as well as education related services utilize comprehensive population prognosis information together with demographic data as a basis of the service need and service provisioning planning. Yet, a citywide holistic service management, which would base on segmented and individual customer knowledge, is pending development. Coherent customer journey driven channel operations are also pending development.

3.5.2 Developmental State

Helsinki digitalization program's A-track, digital city services, is addressing this topic. It comprises a key effort, aiming establishment of customer knowledge capability for citizen services and a so called myData wallet i.e. individual customer's capability to manage own data related to Helsinki services. The effort pursues core functionality covering digital identity and access management, customer profile and roles as well as tracking used

services. It also pursues inbound-outbound messaging capability and a capability to act on behalf of another person.

Preliminary, high-level data model sketch includes:

- Basic identity information
- Opt-in / Opt-out
- Service access management
- Service access on behalf of
- Storing customer's personal interests
- Service accessibility
- Contact and communication channels and their access management
- Tracking own "myData" use
- Tracking service use and other related digital activity
- Tracking contact history
- Centralized identification service

So far, preliminary plans do not include customer journey management, but a basic functionality to back up customer journey management thinking.

3.5.3 Summary

Principles of customer knowledge management and customer segmentation are in place since 2016 in Helsinki developmental framework, Kehmet. The ongoing Helsinki digitalization program is pursuing implementation. I.e. one of its key targets is to create a citywide customer account, which would work as a general CRM to Helsinki citizen services. This would create a foundation for a customer segmentation capability described in Kehmet. This in turn could feed service portfolio management.

3.6 Current State of Service Category Management and Operations

3.6.1 City Wide Service Register and Service Points Catalogue

City of Helsinki possesses an open digital interface to a centralized service catalogue and service point catalogue (Service Register Rest API, no date).

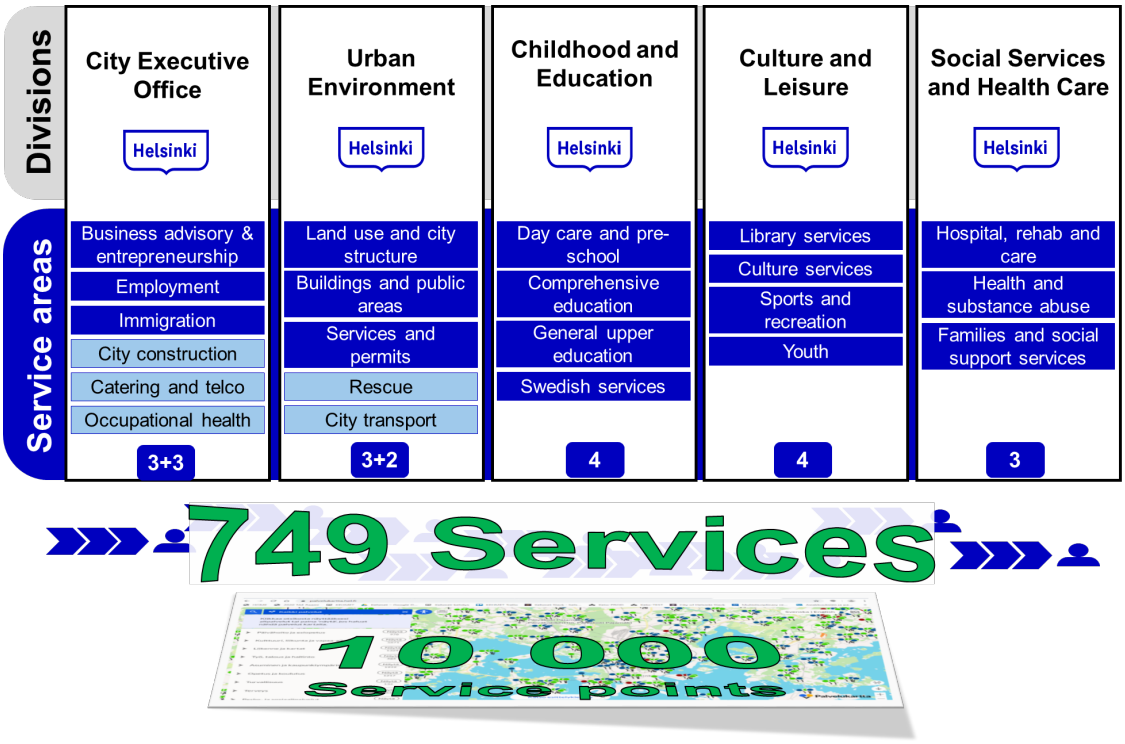

Figure 4. City of Helsinki Service Scope.

Service data can be retrieved in JSON and XML -formats and it can be used under CC-BY-4.0 license by anyone. The service catalogue includes 749 published services and they are interconnected with a service point register that holds over 10 000 service points in the city of Helsinki. In addition, other capital area cities are using the same service point solution totaling over 16 000 service points. (Service Register Rest API, no date).

3.6.2 Service Register Content Structure

The service catalogue is categorized in nine main categories. Almost all of the services are further categorized from 1 up to 5 sub-categories. In total, the nine service categories comprise those 749 published Helsinki services.

Table 9. City of Helsinki Service Catalogue – Interpreted in English. (Service Register Rest API, no date).

Main category:	**# Sub-categories**					**# Services**
	C1	C2	C3	C4	C5	
Living and urban environment	5	23	41	20	9	185

Culture, sport and leisure	4	18	20	17	1	54
Traffic and maps	2	7	20	9	1	40
Education	13	22	8	1	1	84
Family and social services	11	52	1	1	1	228
Day care and preschooling	2	6	9	3	1	33
Health	21	28	1	1	1	84
Security	3	2	1	1	1	19
Employment, economy and governance	3	9	7	11	1	22
Total:	64	167	108	64	17	749

Almost all services have a division-level ownership assigned. Roughly a half of the services are assigned to social services and health care. Urban environment and education account for 40%. Culture and leisure and public utilities together with central administration account roughly for the rest, 15% of the services.

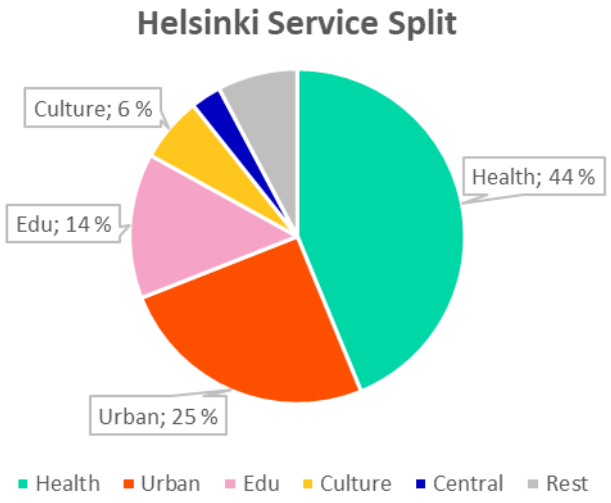

Figure 5. City of Helsinki Service's Split to Divisions and Other Top Units. (Service Register Rest API, no date).

3.6.3 Service Register Connections

The current service categorization follows nationally given municipal tasks and obligations structure coherently enough to enable mapping. However, they are not exactly

mapped with the obligations stated by Ministry of Finance. 'Local government's statutory duties cover the following:

- education and day care services
- cultural, youth and library services
- urban planning and use
- water and energy supply
- waste management
- environmental services
- health and social services (will be transferred to the counties of the regional government, health and social services)
- fire and rescue services' (will be transferred to the counties as part of the regional government, health and social services)

(Ministry of Finance, no date).

Nor are they mapped with JUHTA (advisory committee on information management in public administration) latest JHS 200 recommendation, which defines 137 municipal and county obligations. (JHS 200, 2019) They are, however, mapped with national Public Services Ontology by Finto (Finnish Thesaurus and Ontology Service), which is further mapped with JHS 183 data model and classification for the web services in the public administration by JUHTA.

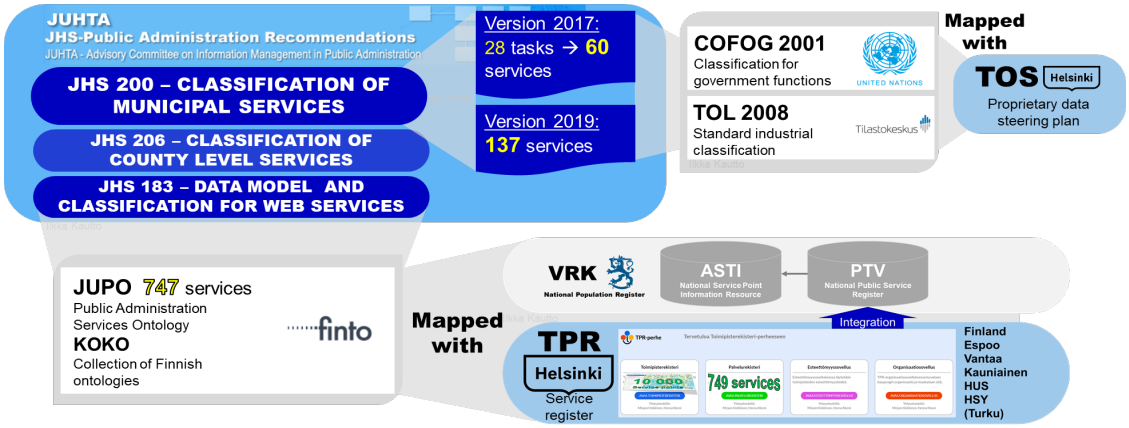

Figure 6. Helsinki Service Register Mapping to Guidelines and Obligations and Related Systems. (JHS 200, 2019; JHS 200, 2017; JHS 206, 2018; JHS 183, 2015; JUPO, no date; COFOG. 2001, no date; TOL, 2008).

The JHS 200 is further mapped with the UN's classification for government functions (COFOG 2001, no date) as well as the national standard industrial classification (TOL,

2008). Since Helsinki's service catalogue is not mapped with JHS 200 it also lacks mapping with EU-level classifications.

However, Helsinki's own data steering plan (TOS) is mapped with the UN-classification COFOG 2001 and JHS 200. TOS is practically a separate terminology library for storing city functions' and personnel roles' meta-data. TOS does not cover service management needs today. Conducted interviews, however, revealed that there are intents to enhance TOS scope to service management purposes. Yet, the lacking piece in between seems to be service portfolio management for business operational purposes.

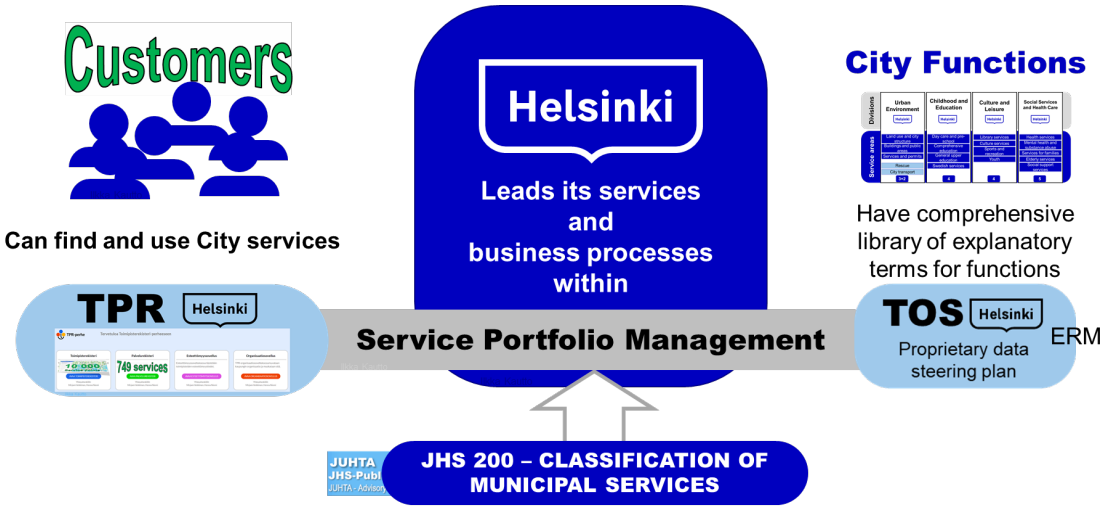

Figure 7. Existing Service Register and Data Steering Plan and Identified Need for Service Portfolio Management.

Also, both interviews and scrutiny of Helsinki administrative regulation i.e. group governance rules revealed that there is no single service portfolio accountability defined. The governance model bases from service driven perspective on a holding company type of a loose governance with autonomous divisions. Hence, also the current state of Helsinki service catalogue content and structure bases on a networked practice, which is governed on a senior specialist level.

The total current state of Helsinki service catalogue involves also an integration to national population register's service catalogue. Thus, the catalogue fulfills an obligation to provide city service information for the national population register.

3.6.4 Service Register Data Elements

Current services data elements in TPR service register are:

- Service title and its synonyms
- Service description and sub descriptions
- Service availability information
- Prerequisites for using the service
- Service related web-page links
- Supported languages by the service
- Targeted customer groups for the service
- Related customer/citizen life events which trigger service need
- Service provider types
- Errand services which fulfill the actual service
- Service points where the actual service can be fulfilled (both physical and digital)
- Service point location on a map

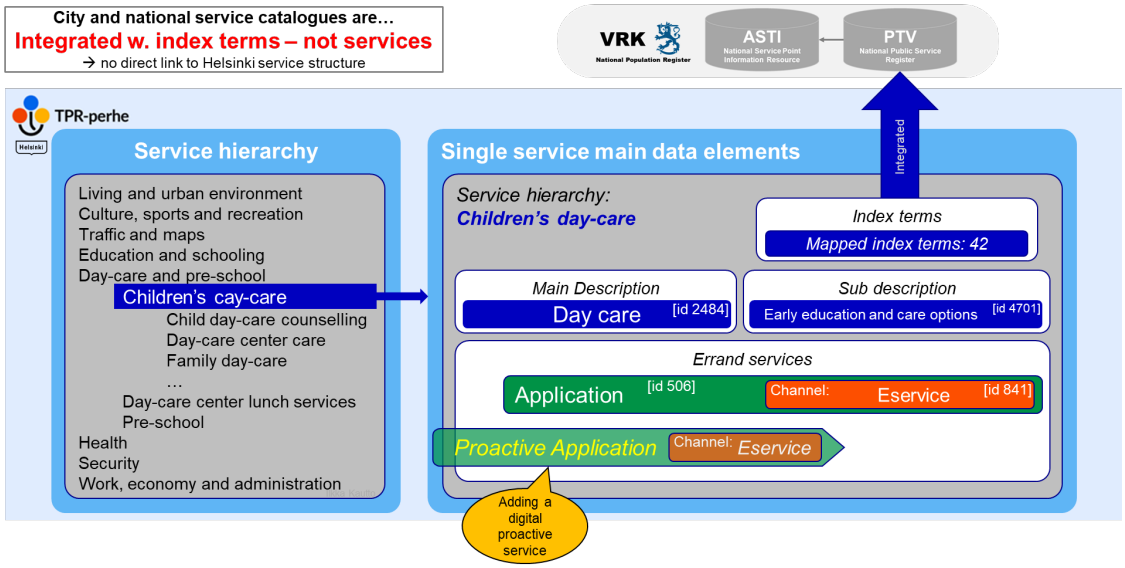

Figure 8. Helsinki Service Register Main Data Elements and Hierarchy Example – Case Children's Day-care.

The service information content can be stored in Finnish, Swedish and English. The catalogue even takes into account limited lingual capabilities and includes simple language versions of the above languages. However, the above language options are not fully deployed into the services.

3.6.5 Service Register Applications and Integrations

The storage of service information is handled by four distinct applications. There is the actual Service Register with 749 published services in Helsinki. A separate Service Point Register (TPR) manages Helsinki's over 10 000 service points' information attached to those 749 services. It enhances service data with location and other service point specific data. An Organization Application manages the service linkage to the organizational structure. In addition, by law, public services' accessibility must be taken care of in such a way that they are accessible for people with physical limitations (Finlex 241/2017). Law and EU regulation obliges also non-physical services accessibility (Finlex 306/2019 & Eur-Lex 2016/2102). This information is managed in the fourth application for accessibility. Together, these four applications form a service catalogue solution family.

Figure 9. The Whole Service Register Solution Family and Its Users.

The service catalogue solutions are not used only by the city of Helsinki. They are used by all of the municipalities in the capital region and a few other public entities.

Users of Helsinki Service Register solutions:

- National Population Register
- City of Espoo
- City of Vantaa
- City of Kauniainen
- HUS – Helsinki University Hospital
- HSY – Helsinki Region Environmental Services Authority

In addition, the so-called KAPA law, in Finnish laki hallinnon yhteisistä sähköisen asioinnin tukipalveluista meaning governmental e-services act (Finlex 571/2016), obliges all municipalities to provide their service information into national service information resource (PTV) and service point information resource (ASTI). These two solutions are governed by VRK – the Population Register Centre of Finland. Practically, the national

solutions' system and business architectural structures stem from Helsinki's Service Register and Service Point Register (TPR). The national PTV is equivalent to the Helsinki Service Register that covers the 749 Helsinki services.

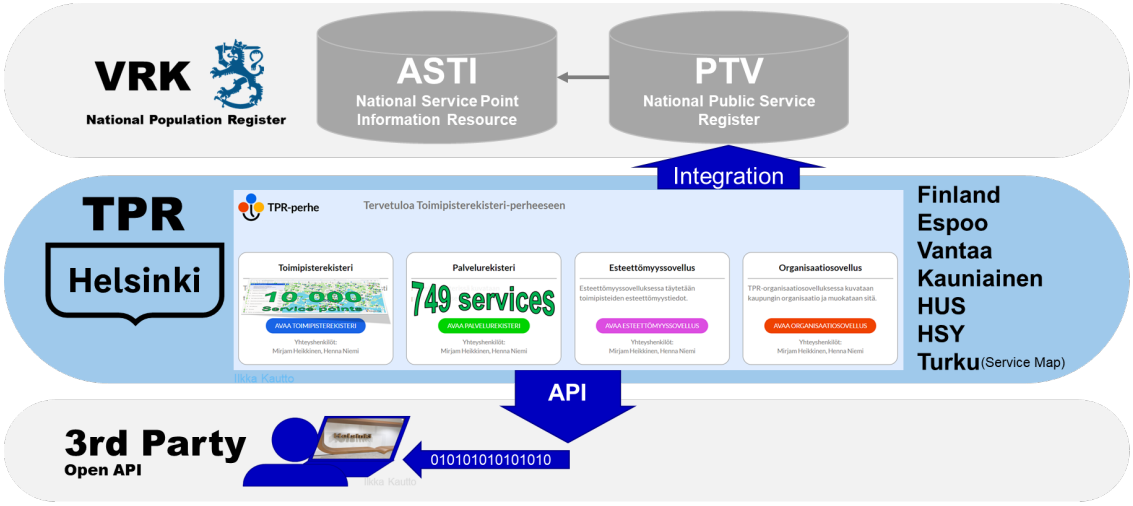

Figure 10. TPR – PTV Integration and Open API for Third Parties.

The national ASTI is equivalent to the Helsinki TPR, which stores the detailed information on the roughly 10 000 service locations in Helsinki. Summarizing, Helsinki's Service Register and TPR Service Point Registers are executing the legal obligation to provide service information to the databases governed by the Population Register Centre of Finland. TPR family ensures that national service register has up-to-date information on City of Helsinki's service catalogue.

3.6.6 Current State of National Public Service Category Guidelines

Introduction of county level government requires a completely new classification of county services, JHS 206. County services potentially shift certain municipal services to counties. JHS 206 county service classification was published in October 23rd 2018 (JHS 206, 2018). The final state concerning capital area is yet to be formed as the current national government is pursuing a separate solution for the capital area, potentially deviating from other local governments in Finland (Government of Finland, 2019).

The former JHS 200 (2017) recommended municipalities with 28 distinct tasks, under which there were 60 distinct services. The new JHS 200 (2019) has a different service structure. It comprises 137 services without the summarizing level of 28 municipal tasks

as before. Practically the new JHS 200 included the JHS 206 county level back in JHS 200. Hence, the change in number of obligations.

In addition, borderlines between legal obligations and autonomously definable tasks in special legislation is not fully consistent as stated by Ministry of Finance (2015). However, the mapping can be derived, but it requires interpretation. (JHS 200, 2017; JHS 200, 2019; Ministry of Finance, 2015)

3.6.7 Current State of Service Operations

As described above, there are hundreds city services, which are mainly physical services and delivered in service points. They are operated fairly autonomously in corresponding divisions and public entities. The same applies to internal services such as HR, finance, legal, sourcing and IT. However, City executive office's internal service counterparts take care of their city level coordination insofar as what is perceived as common. Certain common internal services such as occupational health, catering and telco services and bookkeeping, accounts receivable and accounts payable are outsourced to public entities.

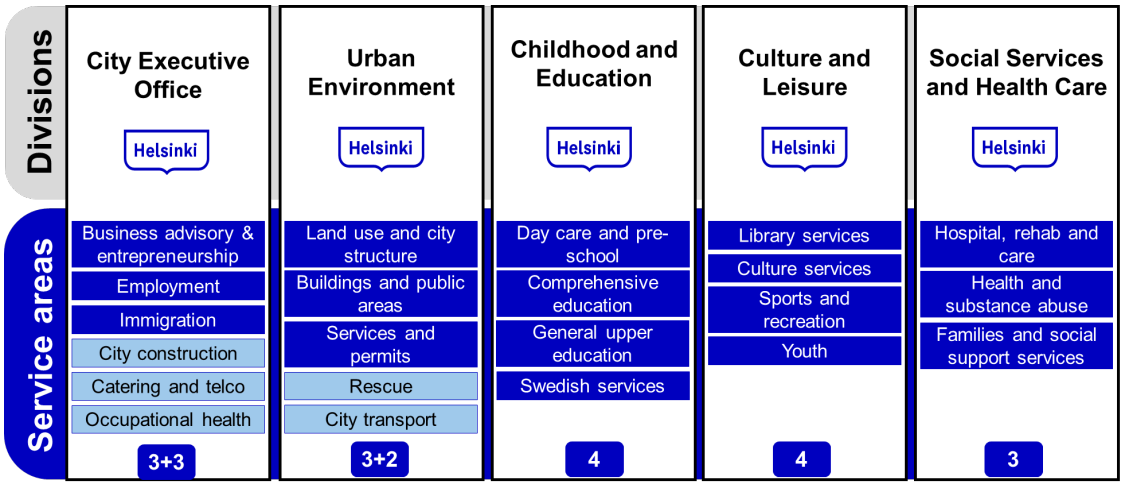

Figure 11. Organizational Business Service Lines. (City of Helsinki, no date c).

Operating services is a networked mode of operation introduces service portfolio challenges such as inter-visibility and capability to balance assets allocation across services.

3.6.8 Summary

Helsinki has two separate service related catalogue sources, which are not interconnected and which serve different purposes. The service register (TPR) purpose is to enable customers finding relevant services. The data steering plan primarily aims to store structural data of Helsinki's functions and underlying roles. The lacking piece in between seems to be service portfolio management for business operational purposes.

The Helsinki service catalogue content and structure are operated by a network of senior specialists directly and without a reporting line to group level. Improving service structures and data quality would require addressing holistic group level accountability and introducing a group level service portfolio management layer.

3.7 Current State of Development

3.7.1 Renewed Development Guidelines

City of Helsinki renewed its city level IT/digital development guidelines in 2016-2017. Former guidelines were considered excessive and hard to approach. They also were built without coherent coordination thus resulting ambiguity and redundancy. In addition, the old guidelines were addressing strictly IT-projects, not addressing continuous and agile development.

In order to ensure clarity and unambiguity, the new guidelines were developed as a whole. The design premise was to address all development, not only IT. However, the starting point had to be IT and digital capability. New guidelines were named Kehmet – an easy to refer acronym. To ensure a large feedback base and engagement, the whole solution was implemented as an open web site on the Internet. Search engine optimization was immediately deployed to maximize visibility around all stakeholders inside and outside of the city of Helsinki. An instant response channel was a part of the implementation right from the start. Each page on the web site included a big "Give us feedback" box and feedback could be traced automatically to the actual issue. The given feedback went directly to the developers. At best, the given feedback generated implemented results in minutes.

In order to ignite awareness, roadshows within Helsinki were arranged. Relevant leadership in the city office structure was involved in workshopping the scope and angle of the work. Special care was taken to optimizing steering group so that right influential people would advocate implementation and deployment of results. In addition, marketing activities towards other public administrations as well as participation to suitable innovation and digitalization related events were used with an intent to gain larger momentum. This also resulted an honorary award by Ministry of Finance, Digital Finland's Digital Vanguard contest in 2017.

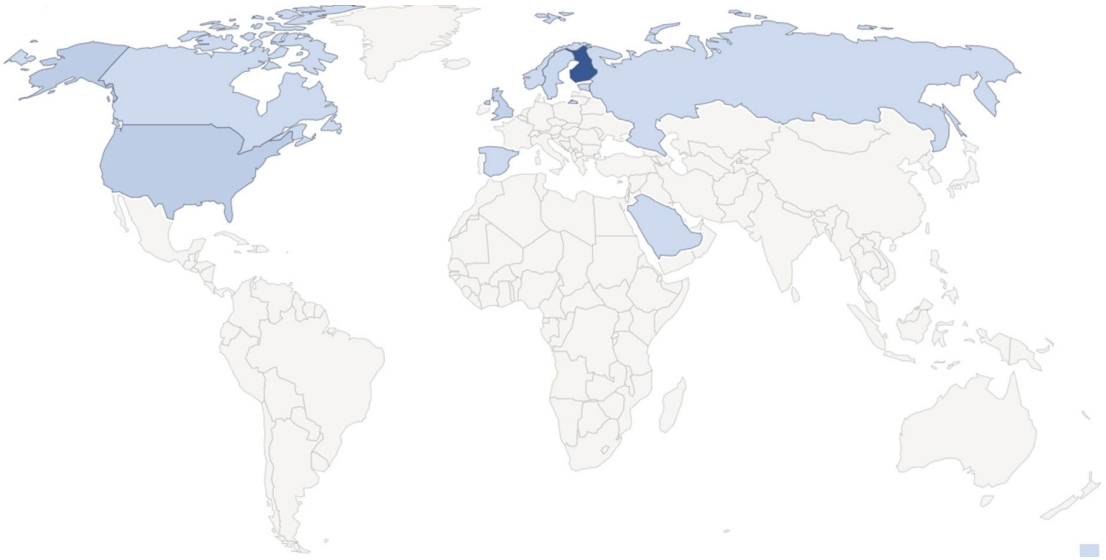

Figure 12. Global Kehmet Site Visits. (Kehmet web analytics tool, no date).

Today, Kehmet-site gets search hits and visits worldwide. Over 50% of annual visits to Digital Helsinki content is addressing Kehmet site. Kehmet framework does not restrict to IT and digital capabilities development. It is constantly developed towards helping development of business processes and services.

3.7.2 Development Guideline Concept

The Helsinki development framework concept (Kehmet) is a simplistic portfolio cascade logic from customer down to development activities. Its idea is to identify customer segments, then cascade that information into defined service categories and drive services and development life cycles accordingly.

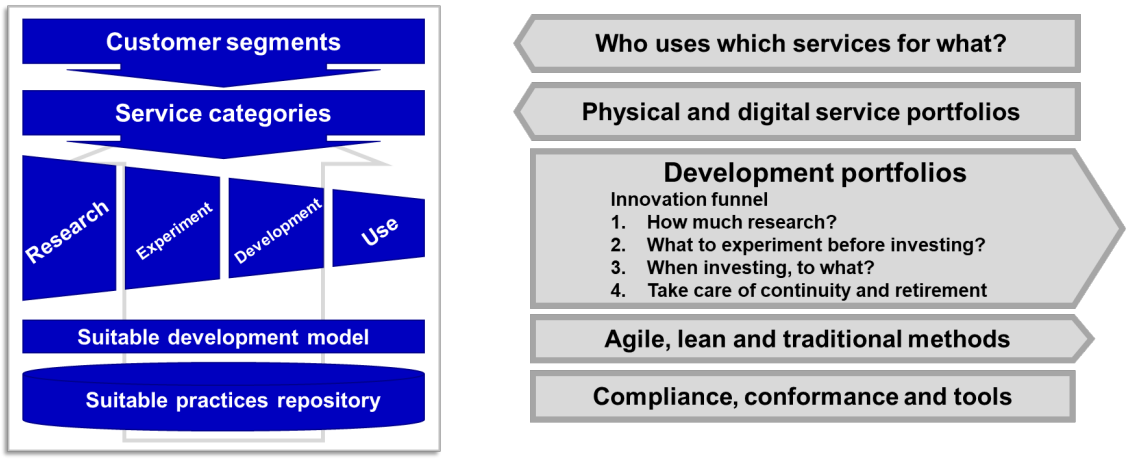

Figure 13. Kehmet – City of Helsinki Total Development Framework. Honorary award by Ministry of Finance Finland Suomidigi in 2017. (Kautto et al. 2017).

Development activities themselves are supported with all relevant development styles:

- traditional project management
- agile development
- lean development.

Most tools are used in all of the above development styles. Some are, however, development style specific.

A very important part of the framework is legal and organizational compliancy content:

- procurement and sourcing
- data and information security
- enterprise architecture

Public services development in obliged to conform to the act on public procurement and sourcing, whenever a national monetary limit is exceeded. Hence, sourcing determines what can be developed in which way. Similarly, the act of public administration information management obliges public services to conform with certain data and information security measures and enterprise architecture topics. (FINLEX 1397/2016; FINLEX 906/2019). A fourth compliancy area of accessibility is yet pending inclusion.

Finally, the concept includes necessary steering practices such as how to organize service portfolios and their product ownership as well as how to organize development activities' steering.

A. The customer segmentation logic

Kehmet framework suggests that customer segmentation should base on existing demographic and behavioral knowledge of city's end-customers. Basic segments for a municipality should follow a logic similar to the list below:

- Individuals: Municipal citizens
- Individuals: Employees within municipal boundaries
- Individuals: Tourists and visitors
- Enterprises: Large
- Enterprises: SMEs and startups
- Non-profit organizations

Further detailed segmentation principles are currently on the Kehmet framework's next wave roadmap.

B. The service portfolio logic

Service portfolio's basic structure by Kehmet should cover local government's duties defined in Finnish legislation. The amount of mandatory duties varies as legislation evolves. However, last count by Ministry of Finance's study in 2012 was 535 duties. (Hiironniemi, 2013)

The service structure also should be interlinked with the organizational structure. That way customer knowledge can be attached to actual service lines and it can realistically drive both service operational need and developmental demand of the services. Basic principles of organizing service portfolio exist in Kehmet and further guidelining is on the roadmap.

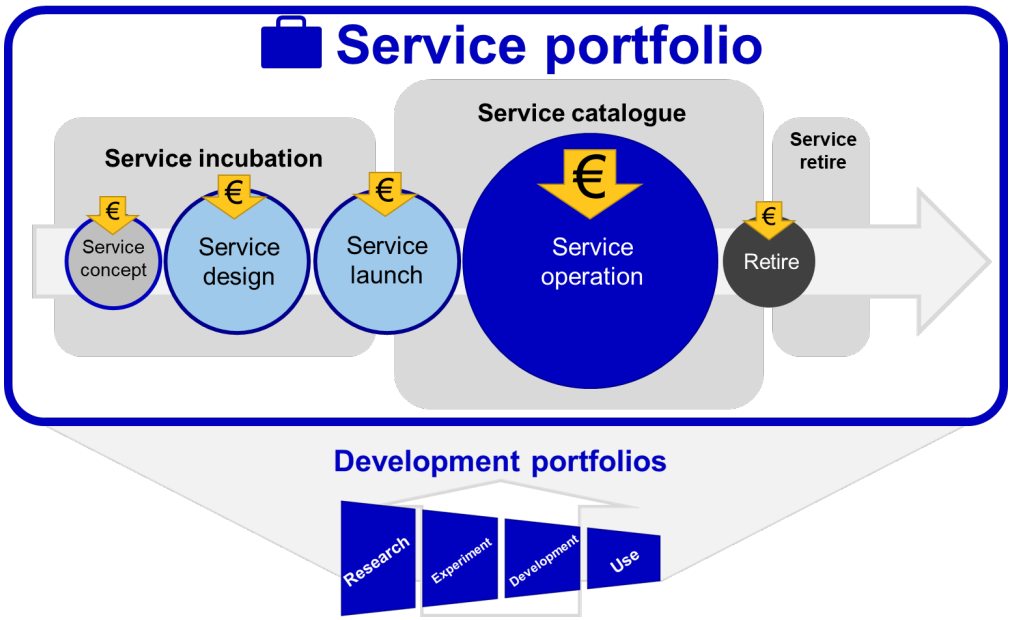

Figure 14. Service Portfolio Life Cycles Derived from. (Lyytinen, 2019).

Driving the service portfolio and development within should take place in life cycles. The included basic idea for a service portfolio's life cycle consists of service incubation, service launch, service operation and service retirement.

C. Development portfolio logic

Kehmet comprises four developmental portfolios, which aim for different types of results depending on life cycle phase of development.

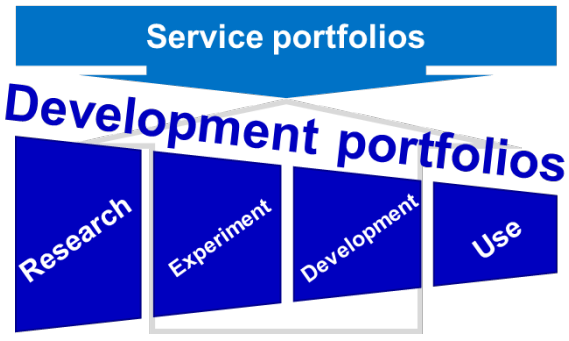

Figure 15. Life Cycle Based Development Portfolios. (Kautto et al. 2017).

The first portfolio is for ideation and research. Its purpose is to produce enough ideas and innovation potential, which might create new types of services with new technologies and approaches. Research portfolio should have a large base of different development activities, which may not even have a connection to city services. (Kautto et al. 2017)

Consequently, research portfolio feeds an experimentation portfolio. Its purpose is to screen, which ideas and research results are worth investing in. Experiment portfolio is already connected with the city service structure. Experimenting should result prototypes before full investment. Experiment portfolio's task is to focus actual investments better. I.e. less wasted effort, time and money. (Kautto et al. 2017)

Enabling continuous experimentation without one off investment decisions, requires addressing financial experimentation assets to service lines, not projects. That way public procurement does not have to happen in each individual experiment. Experiments are meant to be fast and affordable. Therefore, it is not feasible to run each of them through a long lasting public procurement process. This is why experimentation portfolio must have a connection to the service portfolio – to address the financial assets viably on service level. (See FINLEX 1397/2016).

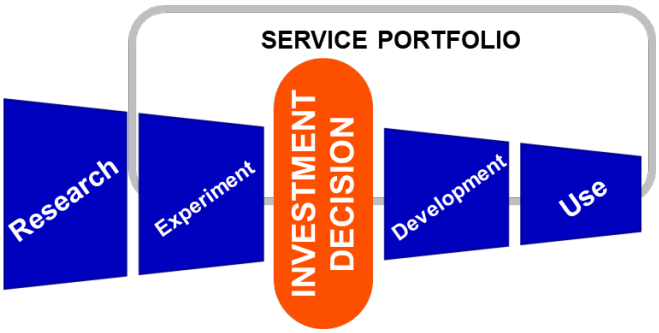

Figure 16. Enabling Procurement Agility for Experiments. (Kautto et al. 2017).

In turn, experiment portfolio feeds a development portfolio with the screened prototypes. Investment decision is needed for entering a screened prototype to the development portfolio. This is necessary to legally conform to the act of public procurement and sourcing, whenever there is real unique investment taking place, which exceeds a national monetary limit (Kautto et al. 2017; FINLEX 1397/2016).

Development portfolio contains full-scale implementation and deployment. It has the highest developmental burn rate and a lower count of development activities. Its purpose

is to implement and deploy full scale solutions to the city of Helsinki service lines and functions. This is where most traditional projects are placed and this is where agile development factories produce their new full scale results. (Kautto et al. 2017)

Finally, use portfolio is needed to maintain existing services' continuity. This portfolio contains all such development activities, which do not create new full scale features or services, but maintain the old ones. Use portfolio typically comprises two different types of activities: upgrades and maintenance development. Upgrades do not result new capability or feature, but renew the existing. These development activities are occasional and often very expensive, e.g. SAP upgrade. Continuous maintenance has a larger backlog of activities, but with a low unit cost. This portfolio is also responsible of retiring services and systems. Hence, replacing services in development portfolio should always have a ramp down counterpart in use portfolio. (Kautto et al. 2017)

Use-portfolio also has an important connection to the service portfolio's value capturing. All other developmental portfolios only enable potential value, but use-portfolio maintains the actual value capturing. (Kautto et al. 2017; Tidd and Bessant, 2013.)

The above explained development life cycle model of Kehmet is based on following life cycle frameworks

- McKinsey's three-horizon model (McKinsey, 2009)
- Tidd & Bessant's innovation funnel (Tidd and Bessant, 2013.)
- Gartner's bi-modal IT model. (Gartner, 2014)
- General R&D-to-value capturing logic, typical of many large scale businesses

A well-known framework that uses McKinsey's three-horizon thinking is the scaled agile software development framework SAFe (SAFe, no date). However, Kehmet derives directly from above original sources.

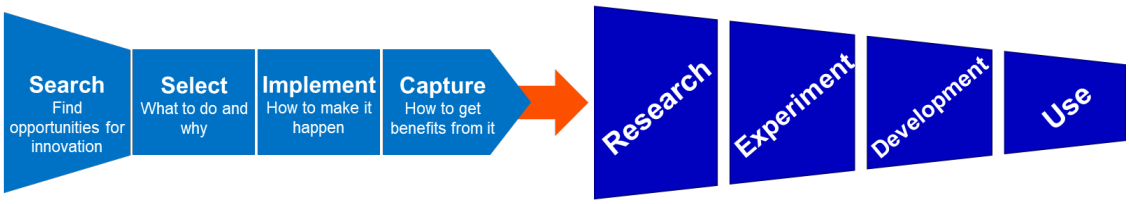

Figure 17. Kehmet Developmental Life Cycles Basing on (Tidd and Bessant, 2013).

Kehmet development life cycle does not express value capturing similar to Tidd and Bessant (2013) model for a reason. I.e. public service cannot measure captured value in profit & loss manner, but through delivered service and its perceived quality. Hence the "Use".

D. Development styles and tools

As stated above, guidelines for helping actual development activities comprise the most common development styles: traditional projects, agile and lean. Kehmet model suggests a suitable style basing on the development activity's and service's nature and the development life cycle at hand.

In short, if there is high predictability and no possibility for short iterations, a traditional project may be suitable. Also, a project is a typical selection, if there is no continuity in sight, but it is a one off effort. If predictability is blurry, agile development may be suitable. Agile development just prefers continuous teams and service line budgeting instead of project budgets and one off project organizations. Furthermore, agile is a continuous development model and it easily faces problems with one off efforts. When development focuses on processes and operations, lean development may be suitable. Lean is a pure continuous development philosophy. (Cooper, 1993; GDS, no date, Womack et al. 2007)

All of the development styles in Kehmet are phased so that just the needed guidance and tools can be found fast per phase. Kehmet provides guidance and related tools for decision making, steering and operative management (planning, sourcing, design, execution, deployment). The models are modified from best practices so that they fit the corporate leading and decision making culture. E.g. the below traditional project model in Kehmet bases on standard Cooper and Prince2 models, but takes Helsinki governance practices into account.

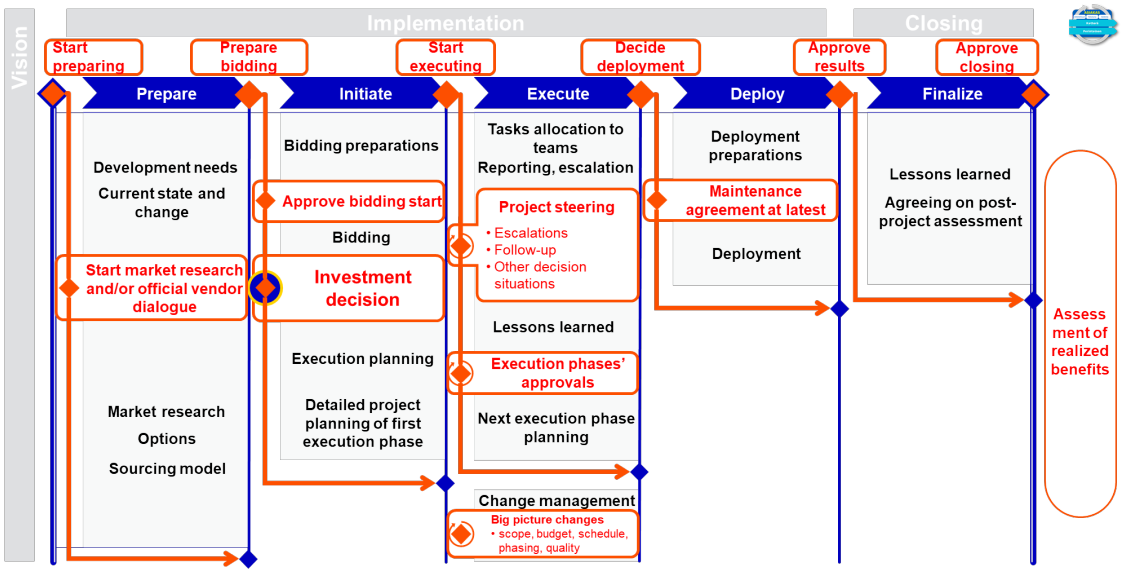

Figure 18. Example of Development Phases and Their Deliverables and Decisions. (Kautto et al. 2017).

Traditional project tools guide through a project. Kehmet derives most of its project tools from Prince2. Agile and lean styles have more common ground in their tools, both being continuous development styles. Most common agile tools originate from lean tool palette anyway. Nevertheless, lean-agile tool palette in Kehmet is derived from common Scrum, SAFe and lean tools.

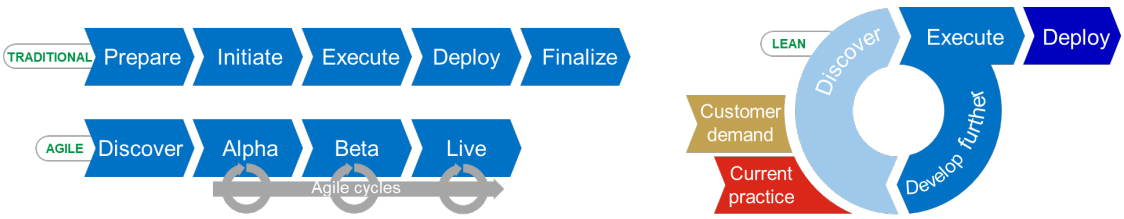

Figure 19. Traditional, Agile and Lean Development Phases in Kehmet Derived from (Cooper, 1993; GDS, no date; Hinde, 2012; Womack et al. 2007); Kuha, 2019).

As the nature of the development styles differ, they also have different phasing logics. Traditional project phases are built from the assumption that it is a one off effort with a highly predictable outcome, timeline and budget. Agile phases emphasize involving customer throughout, establishing agile operations and then running continuous fast cycles of development and delivering continually, not at the end only. Outline for outcomes, timeline and budget exist. No detailed plans exist, but a backlog, which prioritizes within

the outline continually. Lean development uses same logic as agile, but is slightly simpler, because it does not include digital technology related content with the same emphasis.

3.7.3 Identified Pitfalls of McKinsey Three-Horizon and Gartner Bimodal

Kehmet corrects a known pitfall in implementing McKinsey's developmental horizon-model. I.e. the three-horizon thinking is said to slow down development in today's business environment.

E.g. Blank (2019) explains that traditional three-horizon thinking can stifle innovation and development and even kill a business, because the original three-horizon model inherently suggests that it takes years to incubate disruptions. Today, "third horizon" disruptions realize much faster and a business is too late if it waits for the third horizon. There are several high visibility cases today, which resonate with Blank (2019) article. E.g., traditional automotive industry positioned a shift to electric vehicles (EV) in the third horizon. Toyota Motor Corporation admitted that they miscalculated the pace of EV disruption to happen much slower and recently sped up their EV investments (Buckland and Tajitsu, 2019). This is why Kehmet framework prefers short development cycles and fast experimentation with early fails and fast correction – no matter, if it is a traditional project or agile or lean development.

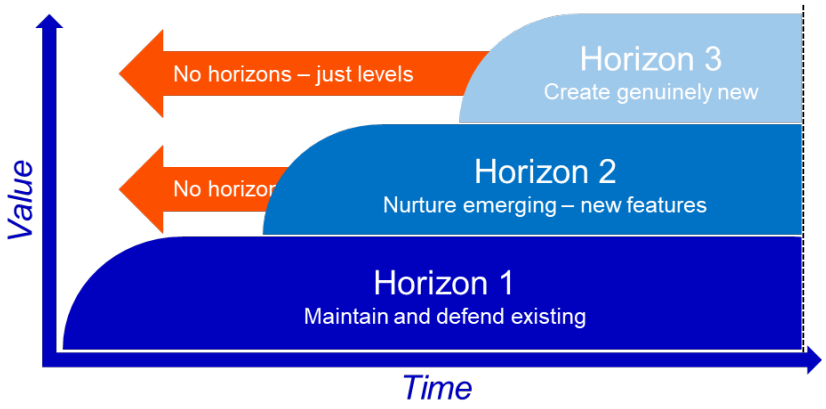

Figure 20. From McKinsey Horizons to Portfolio Layers – Further Derived from (Blank, 2019; McKinsey, 2009).

Always pursuing value capturing end-results in the shortest feasible cycle hinders an organizational misconception that there would be time to plan and wait for years.

Similarly, Gartner's bimodal framework has been criticized for stifling innovation potential by introducing unnecessary organizational barriers. Gartner's bimodal thinking is said to base on a thinking where deploying new information technology based on migrating off old technology or isolating legacy technology with APIs. Then the legacy technology would be managed in a slower pace organization and innovation in a separate fast pace organization. (Bloomberg, 2015; Donnelly, 2016.)

Critics argue that today's legacy technology would be agile in itself and there would be no need to create organizational barriers to work in different speeds. The problem with having separate slow-motion and fast-motion organizations would be that they would not be truly separate anyway. Two different clock speeds would only create friction and dysfunctionality, waste, excess cost and quality problems. (Bloomberg, 2015; Johansson and Osterman, 2017) In addition, customers do not care about internal speeds, but the ultimate speed of delivery and tact time of deliveries, resulting from well-managed flow, pull, and drive for zero defects (Helmold, 2011). In addition, conducted interviews revealed that Gartner has indicated in some of their presentations in their fall 2019 IT symposium in Barcelona that their bi-modal concept would not be as topical as five years earlier.

Nevertheless, Kehmet addresses this issue in Gartner's bimodal theory with lean management principles. Kehmet suggests continuous development with suitable development cycles even for traditional projects. It also suggests that all development would always consider the full business process value stream, not separating traditional and fast modes into own silos.

Lean thinking recognizes asymmetric modes of operation as a source of unevenness ("mura"), which means that the slowest link in the chain determines the total performance (Smith, 2014). Too fast sub-process is waste too. Hence, instead of asymmetric organizations, Kehmet suggests a flow and pull based total development organizing. Kehmet explains the basics of establishing flow and pull in its lean management section.

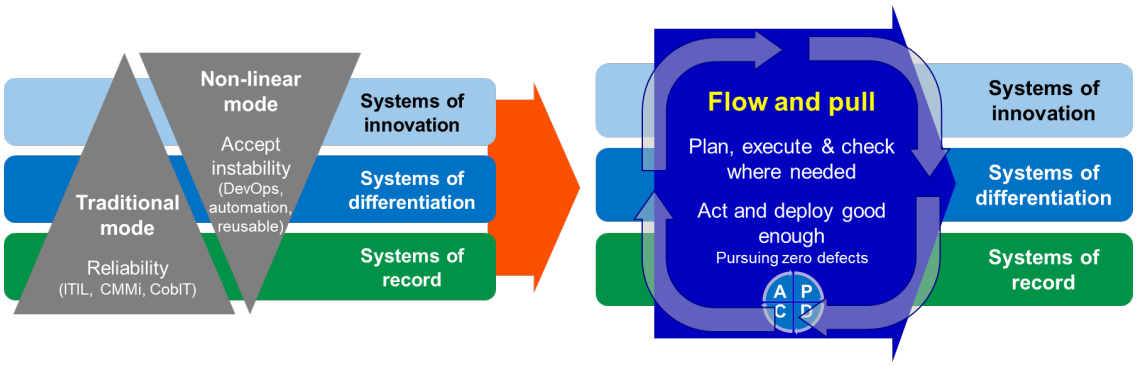

Figure 21. From Gartner's Bimodal and Lean Flow Derived from (Gartner, 2014; Womack et al. 2007).

Deriving from Womack et al. (2007) lean thinking, addressing the above Gartner's bimodal with lean flow means that the different systems' natural speeds are not managed in encapsulated modes or organizations (i.e. bimodal). Instead, the same thing is managed by identifying differing operation and development processes and factually timing how long relevant process parts generally take. Instead of forcing a digital system or business process to be in a preliminarily defined cast, the timed facts define what is fast and what is slow. Then the interlinked processes are harmonized. Wherever there is a bottleneck, more assets will be appointed (personnel, equipment and money). In addition, excessive assets are also smoothed. This creates a steady overall flow between different teams and systems and no system or team needs to be stigmatized with a specific cast to create barriers.

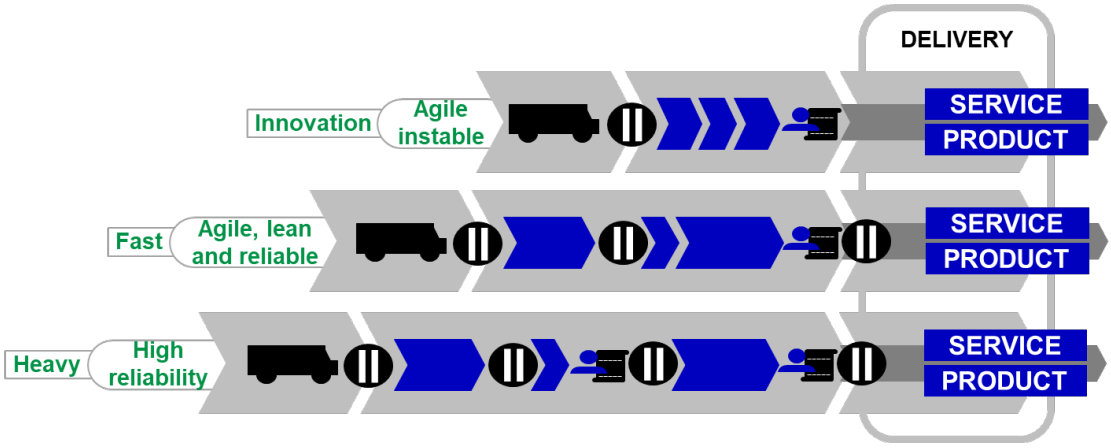

Figure 22. Lean Flow and Pull Substituting Bimodal Layers in Systems' Developmental Interplay – Applying (Womack et al. 2007).

Pull in this context means that the harmonizing of different “modes” bases on timing by delivery i.e. pull. Nothing is initiated without a delivery need. Teams must have adequate understanding of their typical lead times. Applying this requires adequate understanding of lean philosophy too. In development, where lead times vary a lot, this interplay requires joint backlogging of development activities.

3.7.4 Development Portfolio and Way of Developing

Helsinki renewed its citywide development portfolio system during 2018-2019 and named it Silta. The earlier system was perceived complex and it needed to be simplified. New tool was needed to ease the user experience and boost up coverage. It also needed to be interlinked with the newly defined Kehmet development framework.

Silta was integrated with costs invoicing system for automated handling of actuals and it was configured to work as a high-level workflow tool. Hence, it carries each development activity through most important stages and decisions, thus forcing coherence and rigor to development activities. Three different workflows were implemented to conform to the development styles defined in Kehmet. Silta was then equipped with development health rules, which assess automatically, whether a development activity is ok or needs attention. The rules generate an automatic progress report and alert whenever financial or progress borderlines are not met. A manager can then drill down to those highlighted development activities and ignite corrective actions.

Silta system has been the citywide master for development activities and it has played a role in consolidating development related financial plans for city budgeting. In 2019, the system was utilized for bundling roughly 200 development activities under program umbrellas, to create a more strategic visibility to independent projects. At the same time, it served establishment of CDO’s digitalization program’s renewal tracks.

However, Silta system was originally built to handle development projects. It does not yet cover continuous development style activities fully. The system is lacking continuous development streams support (release trains) and it has not been designed for handling product or service portfolios. In addition, due to distributed working culture, divisions and public entities have redundant development portfolio solutions.

The culture of developing services bases on a long lasting history of having up to 35 quite autonomous offices and public entities. Customers have traditionally been near

individual businesses (offices) and offices have traditionally had strong sub-cultures. Therefore, it is evident that also service management and their development is fundamentally sub-optimized in office level. It means that ways of organizing, managing and executing services and their development varies a lot. After the organizational shift from offices to a few divisions (2017–2019), a more process focused and coherent framework for managing services and their development has become possible.

3.7.5 Design Driven Development

City of Helsinki was the world design capital in 2012. This boosted up the efforts on approaching city services through service design principles. A service design lab was initiated among many other major European cities. Its task was both promoting design driven development and providing design driven internal consulting. The idea of helping both information technological and service lines to grasp their operations from customer experience point of view has been a rising topic since UK Design Council introduced their double diamond model in 2005. E.g. today UK's Government Digital services, GDS (2020) embeds the service design practices into its digital service guidelines. Helsinki initiated a DigiHub, which pursued to establish ultimately a 30-person internal consultancy team and hired the first city chief design officer in 2016. (Design Council, 2005; GDS, 2020; Meloni, 2016)

The DigiHub's objective was to provide software developer and city participation expert capability for city's service lines. The concept included a 3-4-person Helsinki Lab, which provided internal service design consultancy. In 2018, city of Helsinki employed its first chief digital officer, who created the first city digital transformation program in 1Q2019. The service design driven city lab establishment effort merged into the digital transformation program and today it accounts for the cultural transformation stream within the program. Program streams are still on a planning phase and approaching implementation during 2020. Design driven development is yet continually approaching digital development activities more tightly. (Meloni, 2016; Rusama et al. 2019)

Design driven software development for creating digital experiences to city services has taken solid steps already. Yet, there has been challenges in scaling up due to lacks in systematic product and software development portfolio governance. The newly established strategy department, under which digitalization program and central information

technology reside, suggests an opportunity to scale up design driven product development's portfolio capabilities. This can be seen as a step towards service driven central administration.

3.7.6 Lean Development

Applying lean practices in public sector has a long history in public health care. The Hospital District of Helsinki and Uusimaa (HUS) has its own lean development unit, which provides lean training for special and primary healthcare and social services and drive lean improvements. Some of the greatest process improvements have substantially improved quality and efficiencies in hospital processes such as imaging and surgery. Lean improvements have improved e.g. patient flow and load balancing between ward departments as well as related information flows and used practices. Typical results have been significant reductions in patient and other unnecessary transfers. Although volumes stay the same, leaned operations have much less queues and require much less excess personnel in peak periods. This reduces unnecessary patient risks and peak personnel costs. (HUS, 2020; Mäkijärvi, 2013; Väyrynen, 2019) As HUS is partially owned by city of Helsinki Group the same lean culture is trickling down to the division of social and health care too. The division has a cooperation with HUS lean unit and provides an own lean development support team. (City of Helsinki, no date d)

Lean practices have also been occasionally used in other divisions. E.g. designing library flows and automation for the new central library building of Helsinki, Oodi, utilized lean and robotics. Citywide lean development started taking further steps through stating a first common strategic objective to reduce lead times in 2019. This strategic objective is, however, not defined accurately i.e. what areas in business are to be addressed: such as digital processes, customer-facing service processes, supporting processes etc. Nevertheless, this objective resulted initiation of addressing competence development. Kehmet development framework got its lean update and new non-health sector lean process improvements were conducted e.g. in culture and leisure division. Establishment of citywide lean organizing is under way.

3.7.7 Development Styles Status

The autonomous nature of the group means that there is ambiguity in interpreting what is developed in projects and what is developed within line organizations and how continuous teams are deployed to do agile development. Studying the group development portfolio revealed that there is a tendency to describe line work as projects i.e. without establishing a project organization, but executing projects among other line duties without timelined and resourced project work packages or backlogs. Overall schedules and budgets are defined with a good coverage though. City office has had one continuous software development team for a half a decade and an increasing number of continuous development teams are today being established in divisions. Lean improvement efforts such as gemba walks and kaizen events are emerging.

3.7.8 Summary

Typical of large businesses with holding company or cooperative style management processes, also Helsinki has redundancy in managing development portfolios. Conducted research and interviews revealed that although there is a citywide portfolio, the related management processes underneath are division specific. Therefore redundant development portfolios are a necessity. I.e.divisions must have their own ways to run their portfolios to conform to their individual management styles. Interviews and study also witnessed labor intensive and time consuming harmonization processes between local and citywide portfolios, as well as data quality issues, which are statistically evident with manual mappings between portfolios.

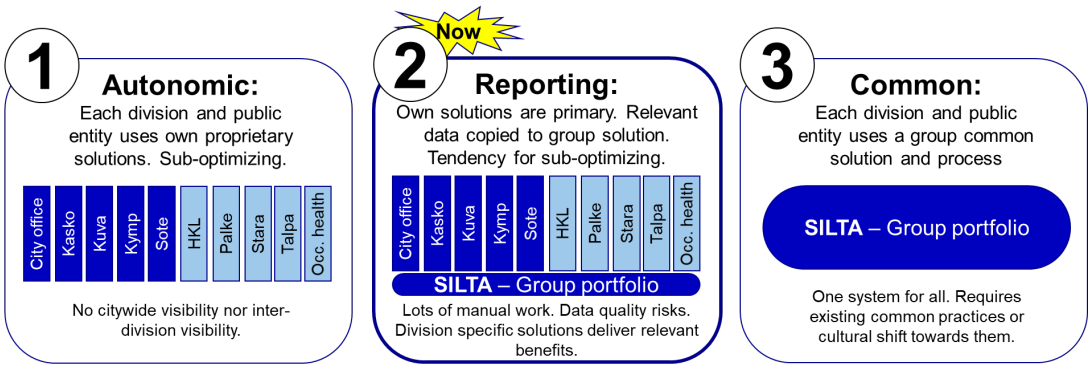

Figure 23. Fundamental Choices for Portfolio Management.

Current state analysis also revealed that other portfolio layers described in the citywide development framework are largely managed locally: customership and service management. Hence, there is room for strenghening citywide customer segmentation management and service portfolio management. Current citywide development portfolio management processes can be improved too and all these areas can be improved to work better together. There is good potential for changing scattered style of development from individual projects towards a service portfolio based operational model. This would substantially improve group level visibility. Strategic planning and management would significantly benefit from it. I.e. strategic vision and its objectives' could be cascaded more coherently and faster to actions along with improved total portfolio capabilities.

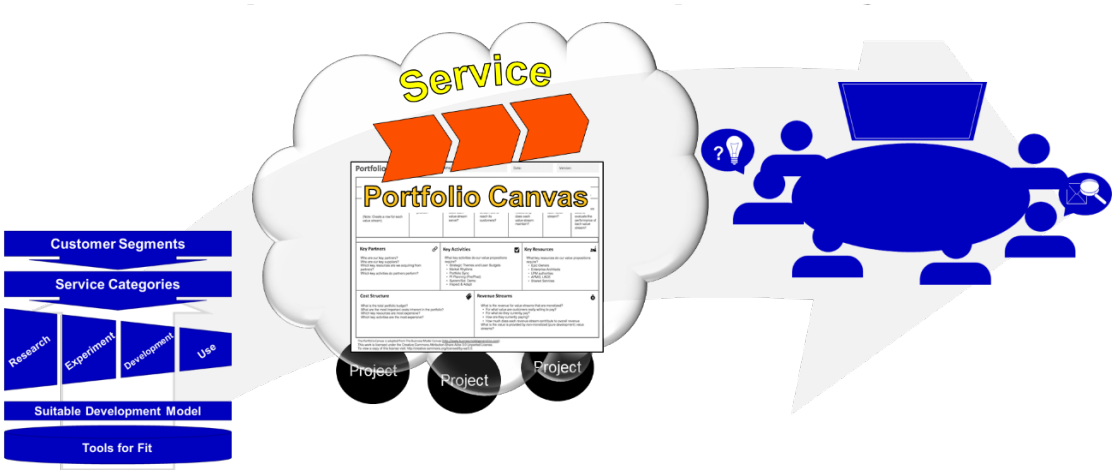

Figure 24. Kehmet – From Projects to Value Driven Service Portfolios. (Kautto et al. 2017).

Design driven development has been taking continual steps since Helsinki became the world design capital in 2012. The newly established strategy department, under which digitalization program and central information technology reside, suggests an opportunity to scale up design driven product development's portfolio capabilities. City of Helsinki has roughly 750 services. If only a fraction of it is a subject to digital transformation, the sheer size of the portfolio will require rigorous portfolio practices to focus design efforts purposefully. Digital means will require substantial investments in service design – much more than running current physical services.

Advocating lean management principles has a potential for improving process management skills and capabilities in the city. This in turn would serve practical development of those hundreds of city services. Lean development skills are also the key in executing city strategy's objective to reduce service lead times. Kehmet includes an applied lean

development core since end of 2019. It works as a good starting guidance for implementing lean in different scales.

Typical of non-project businesses, there is a tendency to describe line work as projects i.e. without establishing a project organization, but executing projects among other line duties without timelined and resourced project work packages or agile backlogs. Hence, there seems to be a need for strengthening project and agile development capabilities as well.

3.8 Current State of Compliance and Conformance

This thesis touches four compliance and conformance areas, which are important in managing public services:

- Privacy and security
- Sourcing and supplier management
- Enterprise architecture

3.8.1 Privacy and Security

Today, information security in Helsinki information systems realizes, but heterogeneously. Information security has always been a topical theme in public sector services, but there has been no driving force to manage information security through coherent processes. The new act on public administration information management is the first driver to enforce a systematic management on information security issues. Starting 1 january 2020 all public administrations must show that information security is and shall be implemented systematically into information systems. (FINLEX 906/2019)

Similar obligations were set a few years earlier for data privacy in EU's general data protection regulation (GDPR) and then nationally in the act on data privacy. GDPR and the additions in national law set a unified compliancy obligation to good and adequate management of any information, from where it is possible to identify individual persons either directly or through combining data from several sources (FINLEX 1050/2018; EUR-LEX 2016/679).

City of Helsinki has been developing both data privacy and information security capabilities for years. It is essential for such a big organization as city of Helsinki that all divisions and public entities have named information security responsibles. Managing data privacy is organized even more comprehensively. I.e. there is a good deal of privacy officers both on group level and in divisions and public entities. Legal is well harnessed to the privacy topic.

Interviews denoted that currently city's information systems privacy and security efforts do not apply certifications. There is no legal obligation for certifiying privacy or security. However, certification might simplify internal ways of expressing compliance with the corresponding laws and regulations. Certifications could potentially work as deployable standards. Interviews also emerged a potential need for deploying privacy and security skills from topic experts to any one who thinks of initiating development activities or executes them.

3.8.2 Procurement, Sourcing and Vendor Management

Finnish act on public procurement and sourcing determines how to proceed with any public procurement or sourcing activity, which total cost exceeds related monetary limit. City of Helsinki also has an own procurement and sourcing guide, which explains how to apply the act in Helsinki. It also defines internal compliancy rules to such procurement and sourcing that does not exceed related monetary limits defined in the act. (FINLEX 1397/2016)

Before moving from roughly 35 offices to four divisions, procurement and sourcing capability was highly distributed in all of the entities. The same organizing principle still applies, but the move from offices to a few divisions reduced distribution to much larger entities. Yet multiple entities are a potential source of redundancies and hence complicate citywide coordination of both procurement and sourcing as well as vendor management. However, procurement and sourcing is evolving more and more towards citywide strategic key capability where citywide operational effectivity is the primary measure. Sourcing is changing from just procurement process management towards, strategic and tactical steering and guidance services. The conducted city of Espoo benchmark witnessed that today an increasing number of peer organizations perceive procurement and sourcing as a function, which steers and guides what to source and when and how to tactically apply related law most suitably.

Interviews also stated that digitalization and cost awareness raises procurement and sourcing skills importance in an accelerating pace. Digitalization requires more and more external competence, which must be procured. Also cloud computing is right now topical in public sector, a bit later than in private sector. Turning more and more towards externally sourced cloud and mega platforms means that ever bigger share of city's technology related work must be sourcing related.

Usually vendor management is perceived as a part of procurement and sourcing. It is, however, a common practice in public sector to focus procurement and sourcing on the bidding process being conducted according to the act on on public procurement and sourcing. Public organizations' vendor management typically happens distributedly in vertical functions, instead. The above trend, however, shifts the current procurement and sourcing functions more and more towards holistic vendor management too. Reasons to this shift are such as adequate visibility not just to the contracts, but to root causes for escalations and also needs for termination or renegotiation and new bidding. One key reason is also clarification of roles and who is responsible of which vendor relation.

Interviews revealed that especially service life cycle management can be tricky, because the act on public procurement and sourcing has a stifling effect on solution vendor relations compared to private sector. Today's fast moving business environment expects an agile capability to enter vendor discussions whenever a life cycle need emerges, not when a vendor agreement is about to seize. This is not fully possible for the public sector as the byer is always bound to the existing contract period. A strict interpretation of the law limits vendor relations to the exact scope of the existing agreement, thus giving limited leeway in reacting to changing needs, which might not be exactly in the scope of the agreement. From lean perspective this an in law inbuilt form of waste, which is causing unnecessary wait and unresponsive procurement and sourcing compared to private sector. Hence, from service operations' life cycle perspective, public sector suffers from inequality before the law.

Summarizing, in order to reduce the stifling effect of the act on public procurement and sourcing, a well performing and predictive sourcing portfolio is even more important to public service operations than to its private sector counterparts.

A citywide portfolio to handle all bids as a bidding project portfolio, which is directly connected to a vendor portfolio would automatically create a citywide holistic process of

a harmonic bidding backlog. Disparate development projects would not have a reason to establish individual and unique bidding processes, which always are a potential source of redundancies, excess work and excess time consumption. Some local governments have implemented this already with significant cost and process flow benefits. A typical bidding process can involve a half a dozen persons for 6-12 months. Without a lined up portfolio, the personnel will waste time and effort in waiting and coordinating.

A traditional reason for implementing a bidding porfolio is economies of scale. By buying the same thing once, instead of distributedly, the overall spend should stay lower due to better bargaining power and higher discounts. Today, a bidding portfolio rather pursues better quality bidding. Many bids fail because of overly excessive documentation and too complex requirements. Predefined document templates without strategic procurement and sourcing consultation through a lined up portfolio tend to cause overprocessing of bidding materials. As a consequence vendors may not be able to understand what is being asked for and may even get encouraged to step aside and concentrate their sales to other customers.

3.8.3 Enterprise Architecture

Enterprise architecture is a crucial part in managing digitalizing city services. However, this thesis addresses enterpricre architecture only on a general level as its current state and target state plans are mostly confidential.

City of Helsinki has a large system and technology portfolio. Its content is gathered by central administration, but the systems are operated heterogenously in divisions and public entities. The system and technology portfolios' sizes are typical of an organization of this size. Helsinki utilizes an architecture management system for storing process descriptions. Due to the wide range of municipal responsibilities and distributed operative model, it is a constant challenge to keep up with process descriptions as well as system, technology and data portfolios. However, the ongoing city strategy and related digitalization program pursue substantial digital foundation improvements, which are going to be addressing enterprise architecture capability in all of its aspects: process management, systems and technology as well as data assets. Also, the new act on public administration information management (Finlex 906/209) redetermines enterprise architecture driven obligations, which municipalities must comply with. There must be information management model, data source interoperability related operations which

influence largely how enterprise architecture needs to be lead. JUHTA (advisory committee on information management in public administration) provides national guideline JHS 179, which guide Togaf based practices for conforming to enterprise architecture.

Similarly to sourcing and procurement, the current state analysis evidenced good potential in strenghening systems and technology portfolio. The conducted city of Espoo benchmark witnessed a successful implementation where development sourcing and system portfolios estabish a coherent portfolio combination in one portfolio system.

3.8.4 Summary

Compliance and conformance to certain important topics when operating and developing services is crucial for cost efficiency, quality, reliability of services and ultimately legality of them. Public services are largely regulated by law and so topics around privacy and security as well as sourcing and procurement comprize substantial compliancy obligations. Least concequences around compliancy breaches are cost and performance effects in forms of redoing, compensations and unnecessary management work. Harder concequences can be such as privacy and patient information breaches which can have serious legal consequences to the city and personnel. Hence, there is a clear need for managing most important compliance and conformance topics within the service portfolios and the related development portfolios. Simplistic service portfolio, which identifies compliance and conformance checks and guides to the necessary compliancy processes directly reduces these risks dramatically compared to trying to manage them separately in each individual service or development activity.

3.9 Key Findings of the Current State

3.9.1 Overall

There seems to be good improvement potential in managing those hundreds of city services as lined-up portfolios where customer journeys are measured constantly and their performance would guide balancing of assets and investments.

Table 10. Summary of Key-Findings.

Overall	Pivotal role and good potential for managing offerings and services as portfolios. All the other examined areas' interplay flows through this capability.
Strategic steering	Strategic measurability and target setting cascade can benefit from a total portfolio concept (improved accuracy, measurability and speed of targeting)
Customerships, customer demand and service offering	Substantial improvement potential in managing customer channels and customer demand. Huge opportunity for preemptive AI-powered capability to identify and focus customer demand.
Service management and operations	Substantial enhancement potential in managing municipal service offering through a coherent service portfolio. Today's service register and business function library needs a business management glue by an offering and service portfolio.
Managing development	Potential in reducing development redundancy as well as in focusing right amount of assets to research, development and continuity maintenance. Potential in shifting from individual projects towards service offering and customer demand oriented development – better innovation capability.
Compliance and conformance	Potential in reducing procurement and sourcing redundancies as well as better identification of related needs and vendor performance. Potential in streamlining enterprise architecture management.

Digital capabilities introduce an improvement potential in service accessibility, speed, better flow of service processes and cost efficiency. Moreover, digital capabilities also introduce possibilities for proactive public service provisioning. Harnessing this potential requires, however, solid customer understanding throughout city's services. Unless it all works together as a full service portfolio, it works separately – not harnessing overall value properly.

3.9.2 Strategic Steering

Today's strategic measurability capabilities reach division level and service area levels, but cascading strategic targets measurably to actual services will require ground work.

There is also improvement potential in coherency of cascading strategic objectives and accountability. Abilities to execute the ambitious city strategy could be helped through improvements in KPIs, their measurement and reporting.

There are also possibilities in strategy management processes. There is improvement potential in enhancing collaboration in strategy definition process as well as in target setting process.

3.9.3 Customerships, Demand Management and Service Offering

Managing customer facing channels could be improved with customer journey management and continuous customer flywheel management. Improvements in this area would enable much more focused service provisioning. It would also improve possibilities to provide services proactively.

Today, demand management focuses mainly on customer feedback gathering and then channeling it to operative improvements. Demand management potential could be harnessed further to steer service offering. Those hundreds of city services could be proactively triggered by citizens' life events. There is a solid background and a benchmark for a move towards life events triggered public service portfolios in local governments. Stiglitz-Sen-Fitoussi commission's (2009) model for citizen's core drivers to public service need is already a basis in many EU countries' public service reforms. The Finnish AuroraAI and Estonian KrattAI programs are pursuing artificial intelligence enhanced public service ecosystem, which would enable triggering public service provisioning proactively. Local governments have a good opportunity to grasp their service portfolios and utilize their unique position being nearest to the citizens.

Principles of customer knowledge management and customer segmentation are in place since 2016 in Helsinki developmental framework, Kehmet. One of the ongoing Helsinki digitalization program's key targets is to create a citywide customer account, which would work as a general CRM to Helsinki citizen services. This will create one key cornerstone for a customer segmentation capability described in Kehmet. Yet, there is a need remaining for a segmented service portfolio.

3.9.4 Service Management and Service Operations

Helsinki has two separate service related catalogue sources already. The service register (TPR) purpose is to enable customers finding relevant services. The data steering plan primarily aims to store structural data of Helsinki's functions and underlying roles. The lacking piece in between seems to be service portfolio management for business operational and business development purposes.

Introducing a service portfolio would add capabilities to maintain clustered life events and customer demand. This clustering would enable dynamically updatable customer segmentation per clustered service demand group. Those hundreds of services, which city of Helsinki provides, could then form service offerings, just as we are used to seeing in ecommerce and retail chains. Cross-sales and up-sales enabling offering structures would be possible. In public sector, it means an enhanced capability to provide totally new service combinations disregarding divisional structures. Helsinki would be able to combine life event triggers to the dynamically evolving offering packages, thus enabling proactive service provisioning on a large scale, instead of a few point solutions.

3.9.5 Managing Development

City of Helsinki's distributed management processes also result a level of redundancy in managing development portfolios. Redundant development portfolios are a necessity for divisions so that they can conform to their individual management styles. Current state analysis witnessed labor intensive and time consuming harmonization processes between local and citywide portfolios, as well as data quality issues. Hence, improving group level development portfolio management introduces significant operational efficiency benefits.

There are also improvement areas in managing development activities themselves as well as in development skills. Although there is a good city wide set of development practices and training in place covering traditional projects, lean and agile development styles, there is room for improving learning paths and common ways of developing.

Shifting from managing individual projects towards a service portfolio based developing would substantially improve group level visibility. Strategic planning and management would significantly benefit from it. I.e. strategic vision and its objectives' could be cascaded more coherently and faster to development activities.

3.9.6 Compliance and Conformance

City of Helsinki could benefit from a centralized public procurement and sourcing portfolio. A citywide portfolio to handle all bids as a bidding project portfolio, which is directly connected to a vendor portfolio would create a citywide holistic process of a harmonic bidding backlog. Disparate development projects would not have reasons to establish individual and unique bidding processes, which are always a potential source of redundancies, excess work and excess time consumption.

Any public organization of the size of Helsinki has a substantial set of information technology, information systems and information sources. The distributed nature of Helsinki leads to excess redundancy and labor intensive practices in coordinating the enterprise architecture. Hence, a systems/solutions portfolio, which would be directly interconnected to a service portfolio, development portfolio and procurement portfolio, would substantially speed up enterprise architecture's management processes and reduce data quality issues.

4 Conceptual Framework for Preparing Existing Public Services for a Turnaround to a Life-events Triggered Proactive Ecosystem

The conducted current state analysis introduced several areas to be addressed together, not separately. Separate improvements would not enable potential business outcomes well enough. The total portfolio business problem is related to an unbroken chain of cascading strategic objectives to action and value capturing. Hence, this thesis' framework addresses following layers: Strategic targeting and execution, harnessing customer insight and grouping it to offerings, innovation to value capturing, lean business processes efficiency.

4.1 Strategy Targeting and Execution

4.1.1 Defining Strategy

As Johnson et al. (2017) comprise from classical strategy theories, defining strategy comprises a definition of the organization's mission, vision, values and strategic objectives.

- **Mission:** I.e. sole purpose. What is the organization for?
- **Vision:** I.e. aspiration. Where the organization strives to progress from here?
- **Values:** I.e. way of doing business. What is the behavioral and action culture?
- **Strategic objectives:** I.e. concrete. What specific outcomes are to be achieved?
- **Strategic measures and metrics:** What is measured in order to assess how well strategic objectives are met?

Leading with strategy means analyzing macro environment, related industries and sectors and thus identified competition and business environment. Then progressing to identifying strategic capabilities that exist today and what must be acquired. From there leading with strategy crystallizes own strategic purpose which is then stated in the mission and vision and objectives. (Johnson et al. 2017)

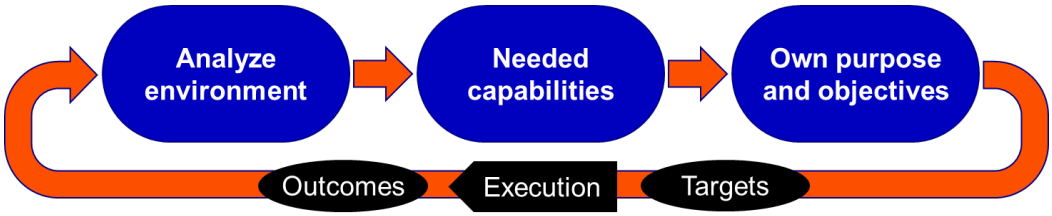

Figure 25. Strategy Management Loop Basing on (Johnson et al. 2017).

Hence, a good municipal strategy bases on a solid environmental understanding of city's current position within international macro environment, EU-level and national level as well as inter-municipal and local levels. It requires understanding of

- **P** – political situation (e.g. trade wars, sanctions, privatization…)
- **E** – economical realities (e.g. EU & domestic funding, interest rates…)
- **S** – social constraints (e.g. immigration, employment…)
- **T** – technological and digital disruptions (e.g. digital substitutive offerings)
- **L** – legal constraints (e.g. GDPR, changes in local government duties…)
- **E** – environmental disruptions (e.g. climate change impacts)

on all of the above levels. PESTLE is a well known business analysis mnemonic. Its origin is not known as it evolved from many sources in the end of 20th century.

Especially in today's digitalizing world local governments must pay attention to adequate competitor analysis. Many of the municipal services perceived as incumbent are facing entry threat and substitute threat competition from various private sector players both nationally and internationally.

- **Entry threat** – new competitor that did not compete earlier
- **Substitute threat** – totally new product or service or component making old one obsolete

  (Porter, 2004; Porter, 2008).

Summarizing, a good strategy clearly identifies own strategic position and makes educated choices basing on fact-based environmental analysis and scenarios. I.e. it derives the business and corporate strategies from the positioning and engineers strategy actions accordingly. This enables a move from gut feeling based choices to educated data-driven choices and coherently defined strategic actions. (Johnson et al. 2017)

Figure 26. Strategy Framework. (Johnson et al. 2017).

Kaplan and Norton (2001) suggest a generally perceived best practice to map the strategy in four universal areas: financial, customer, internal and learning and growth.

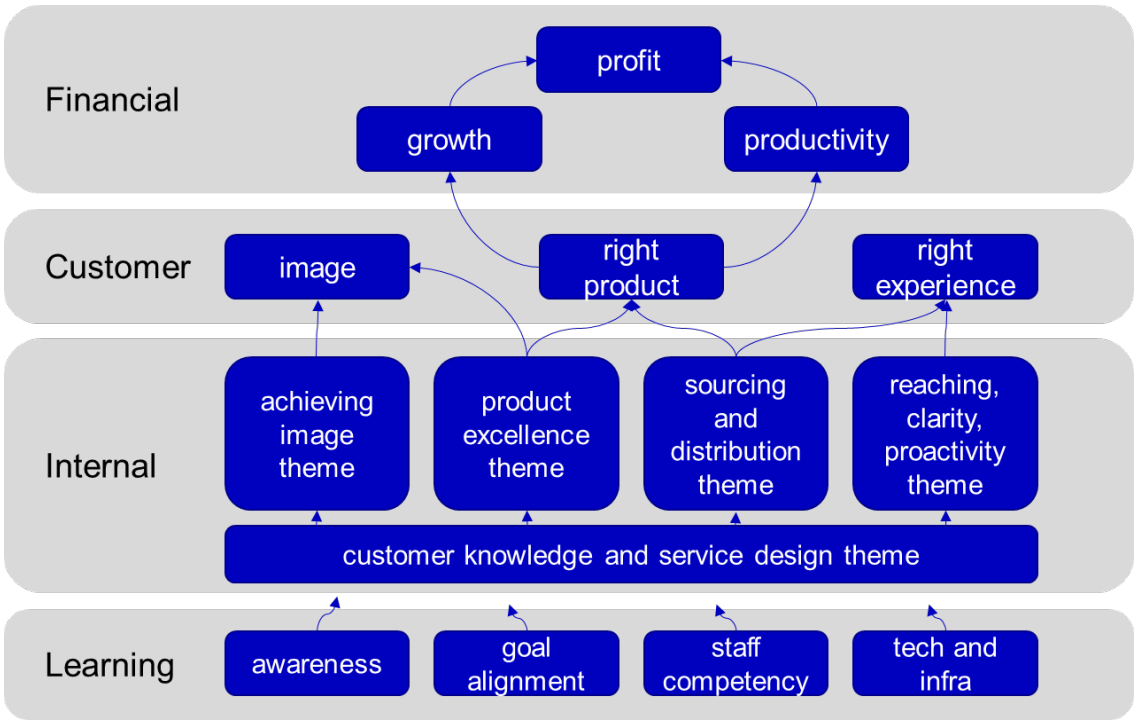

Figure 27. Strategy Map Principle Derived from (Kaplan and Norton, 2001).

By identifying strategic objectives in the above categories and mapping their relevant connections, the organization can quantify strategic objectives more coherently per area of impact. In order to deploy the strategy, those objectives must be measurably targeted. The initiatives that are set to deliver also have to be visible against those measurable targets. (Kaplan and Norton, 2001)

4.1.2 The Hedgehog Simplicity Concept

> 'The key is to understand what your organization can be the best in the world at, and equally important what it cannot be the best at – not what it "wants" to be the best at…The "best in the world" understanding is much more severe standard than a core competence. You might have a competence but not necessarily have the capacity to be truly the best in the world at that competence. Conversely, there may be activities at which you could become the best in the world, but at which you have no current competence.' (Collins, 2001. p. 118)

There is no sense in being a cunning fox scattering efforts all over the place.

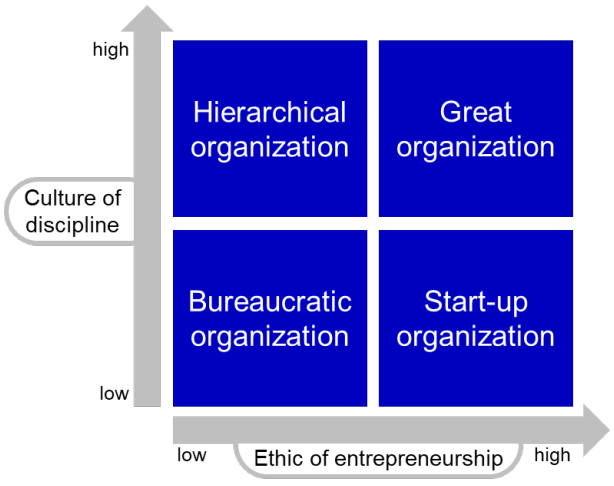

Figure 28. Good to Great Matrix of Creative Discipline. (Collins, 2001. p. 122).

'It doesn't matter how complex the world, a hedgehog reduces all challenges and dilemmas to simple… ideas.' This is why detached current state analyzes, investigations and projects may not add value without a strong enough business cultural discipline and entrepreneurship attitude. The Collins hedgehog concept outlines how discipline and entrepreneurial attitude simplify strategic targeting and amplify their deployment throughout the organization. The Collins hedgehog concept bases on studying long-term-successful organizations and how they managed to become the best. (Collins, 2001)

4.1.3 What and Why

Kaplan and Norton (2008) enlist nine areas that belong to executing strategy:

1. Clear articulation of the corporate strategy and its measures
2. Limited number of coherently managed strategic initiatives
3. Clear alignment of business and support units to strategy
4. Clear communications about the strategy
5. Regular followup and actioning to manage strategy execution
6. Regular update of strategy when conditions change
7. Organization development executing skills improvements by the strategy
8. Strategic initiatives clearly budgeted
9. Service level agreemets to all strategic initiatives

Managing these with rigor requires so much coordination that it needs an execution capable office to run the three strategy management accountabilities in below figure. (Kaplan and Norton, 2008)

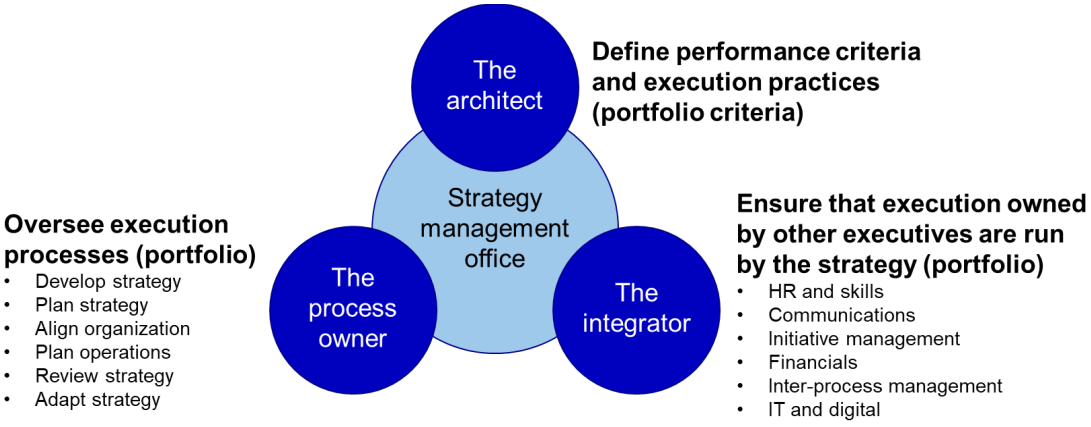

Figure 29. Strategy Office's Three Important Roles. (Kaplan and Norton, 2008).

Killing et al. (2005) explain why rigorous strategy leadership is so important. I.e. best value is captured, when the organization can anticipate and react before a crisis is at hand. This is what strategy execution pursues. Crisis execution takes place when strategy has failed or reactions to already happened environmental changes have been too slow. (Killing et al. 2005)

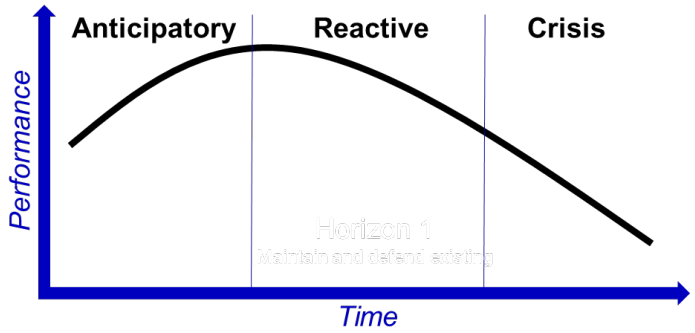

Figure 30. Strategy Performance Curve. (Killing et al. 2005).

Kaplan and Norton (2001) also state that senior leadership must make strategy everyone's everyday job. It means that the strategy becomes alive when it is cascaded to all levels of the organization within limits of each level's skills and understanding. Hence, the strategy must be opened up to tangible execution plans. Each execution that supports the strategy must have clear success criteria, which are feeding the defined strategic KPI's. This is also why there should not be too many corporate KPI's. They become inexecutable as the number rises.

4.1.4 What to Cascade

In order to cascade the strategy down to measurable actions, some form of a target matrix is needed. No matter, which business sector, corporate strategy typically needs to cascade targets at least in these areas:

- Financial targets (costs and benefits)
- Customer targets (customer value, customer experience, volume and loyalty)
- Internal (value stream, assets usage, etc.)
- Learning (right set of capabilities). (Kaplan and Norton, 2001)

These are the traditional balanced scorecard areas, which also work well together with Porter's value chain. They also resonate with Osterwalder's business model canvas and hoshin kanri i.e. "compass management". Exact translation for hoshin kanri is direction and administration. (Akao, 1991; Porter, 1985; Osterwalder et al. 2010)

Sourcing and Distribution Theme	Measurement	Target	Initiative
Financial	E.g. operating income	Year 1 (establish) Year 2 (% / value) Year 3 (% / value)	Program, initiative, plan
Customer	E.g. Return rate, customer loyalty	Year 1 (establish) Year 2 (% / value) Year 3 (% / value)	Program, initiative, plan
Internal	E.g. lead-time, tact time, process flow, stock items	Year 1 (establish) Year 2 (% / value) Year 3 (% / value)	Program, initiative, plan
Learning	E.g. capabilities and skills, strategic systems	Year 1 (establish) Year 2 (% / value) Year 3 (% / value)	Program, initiative, plan

Figure 31. Strategy Map to Targets Example Derived from (Kaplan and Norton, 2001).

However, balanced scorecard (BSC) provides only a concept and no tangible implementation practices. Hence, the BSC implementations without help from other methods can cause business operational models failing in deploying strategy. (Kanji and Sa, 2002; Malina and Selto, 2001; Serdar and Tanyas, 2007.)

4.1.5 Focus, Attitude and Change

Killing et al. (2005) explain how important it is to select only few strategic initiatives with the right attitude. They describe these initiatives as must win battles. Introducing major changes to an organization have scarce success opportunities, if they are too many. It easily results a cognitive overload in people and stagnation in the organization. (Killing et al. 2005; Monaghan et al. 2020).

Key success factor by Killing & Malnight is that there must be no discrepancy within senior leadership of what those must win battles are, who is leading them, what results are expected and why they must be delivered and roughly when. In essence, they suggest that senior leadership always chooses where they focus the most important development efforts, then prioritize that above any other development, and directly drive them until the result or failure and redirection. They stress the importance of an ability to make difficult choices i.e. not doing everything that is strategically important, but what is most critical and must succeed first. (Killing et al. 2005)

The must-win-battle style of strategy execution is in essence the strongest possible form of program management.

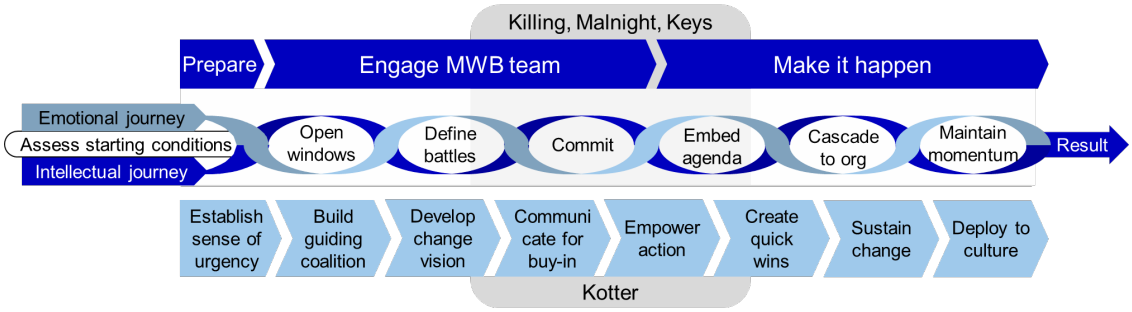

Figure 32. Must-Win-Battle and Change Steps. (Killing et al. 2005; Kotter, 1996).

Well-analyzed strategic targets are forced into most important programs, which are lead and executed by top skills and their success is monitored directly in group executive board or whatever is the highest board of the organization. The must-win-battle journey is in fact described like a project model. It only stresses organizational change steps and thus resonates with the Kotter 8-steps of change ideology. Underneath, the point of must-win-battles is a clear goal, then commitment, then action and finally the outcomes – like a project. (Killing et al. 2005; Kotter, 1996)

4.1.6 External Strategic and Tactical Agility

John Boyd presented his ground braking strategic agility concept, the ooda loop, in his five-slide presentation in 1995. It originates from Korean war he participated as a fighter pilot. American troops constantly lost too many fighter planes although having overwhelming superiority. John Boyd presented simple strategy and tactical changes, which turned over the air dominance. Later he described them as the ooda loop. It has been a classic since then, providing a simple process pattern for any strategic leadership. (Boyd, 1975; Boyd, 1995.)

Ooda loop introduces a straightforward process which should circulate as fast as the organization and individuals in it naturally can. Organizations and individuals in it should be constantly observing and never be happy with just observing. An observation should result orientation to decide upon action or start observing immediately again. If the decision seems right, it should immediately result an action. Action is never done in a silo, but constantly absorbing the environment. This is supposed to loop back to

observing as smoothly as possible. Hence, a working ooda loop requires smooth, fast and continous strategy creation-to-action process. The personnel also needs to be empowered for rigorous constant adjustments of the strategic actions. I.e. it is the agility of manouvering by the personnel that brings strategic agility of an organization alive. (Boyd, 1995; McManus, 2000)

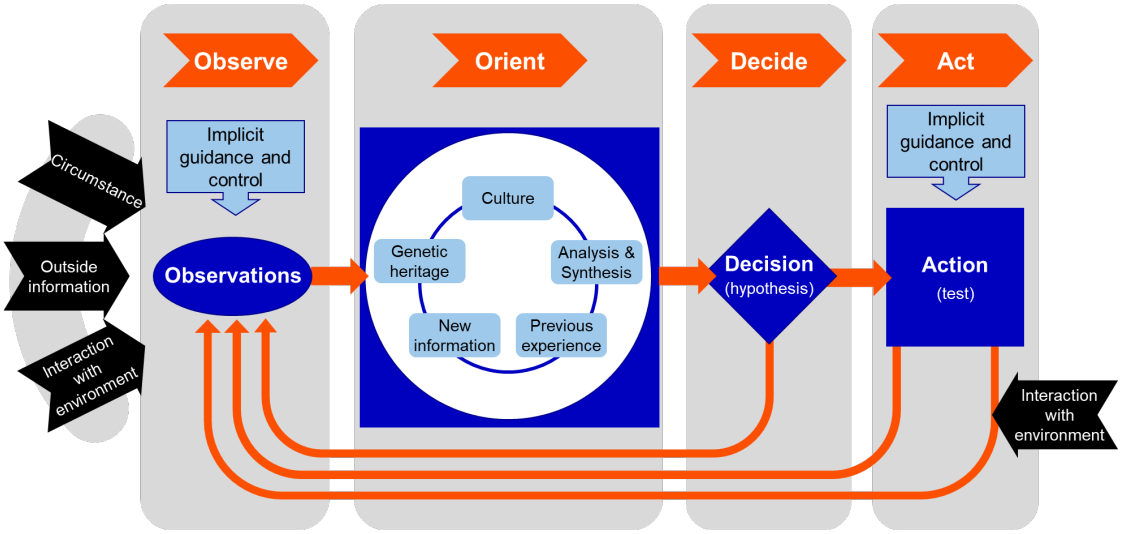

Figure 33. The Ooda Loop of Strategic Agility. (Boyd, 1995).

When comparing the ooda loop with the classical McKinsey's 7S model of strategy domains, we notice that the ooda loop introduces a practical key activity process, which should take place in a continuous and agile strategy management. The 7S introduces a slightly larger set of domains to orient with. (Boyd, 1995; Waterman et al. 1980.)

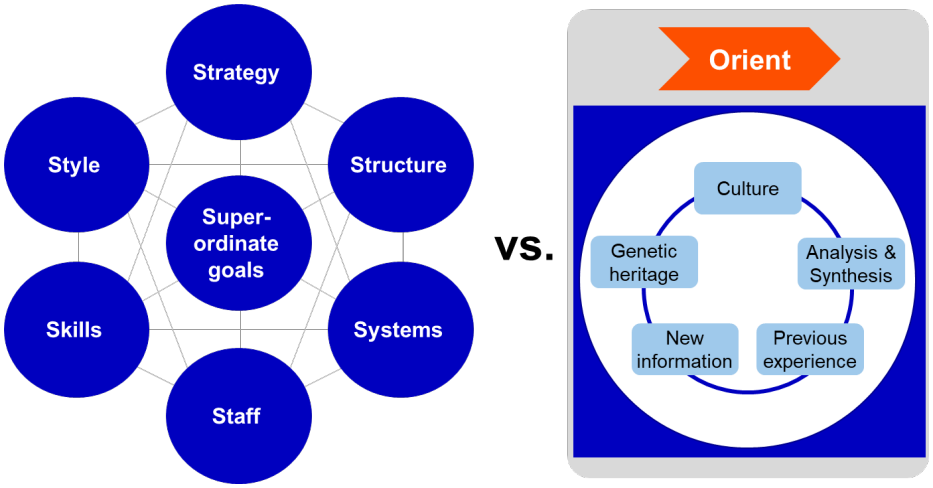

Figure 34. McKinsey 7S vs. the Ooda Loop. (Boyd, 1995; Waterman et al. 1980).

The 7S also dismisses a controversial emphasis of genetics in the Boyd ooda loop and practically substitutes it with skills, staff and systems. Concluding, the ooda loop is more practical and with 7S it is easier to get lost in domains and forget about the implementation. Hence, a combination of these two classical frameworks incorporates adequate domains and an agile observation-to-action process of strategic management. (Boyd, 1995; Waterman et al. 1980)

4.1.7 Internal Strategic and Tactical Agility

The ooda loop is about observing the external environment continuously and react fast. Another strategic agility framework, which is behind Toyota's superb agility and quality, provides an overwhelming framework for internal agility. Hoshin kanri (policy deployment), often referred as compass management, provides methods for a fast and agile cascade of determined goals as well as a fast loop back to the management. A key to hoshin kanri is a "catch ball" philosophy, which could be explained as the opposite of an "ivory" control tower giving orders without touching day-to-day business. (Akao, 1991; Boyd, 1995)

Tennant and Roberts (2001) state that particulardly western companies have struggled with relating top management goals to the daily work of employees. This is why there has been a constant interest in hoshin kanri since Akao's book on the management style. Catchball methods force the business to conduct fast but rigorous collaboration between top management and all layers of the organization, when setting yearly targets. Hoshin style strategic leadership never tells, but establishes a process, where all strategic ideation and strategic targeting flows fast through the entire organization until it results a fair enough consensus. This practice requires lots of top management courage and trust on own staff. Applying rigorous and fast decision making process is a must in compass management. Otherwise the catchball loop will not be fast enough to cycle around the entire organization several times during developing and deploying annual objectives. (Akao, 1991; Tennant and Roberts, 2001; Su and Yang, 2015)

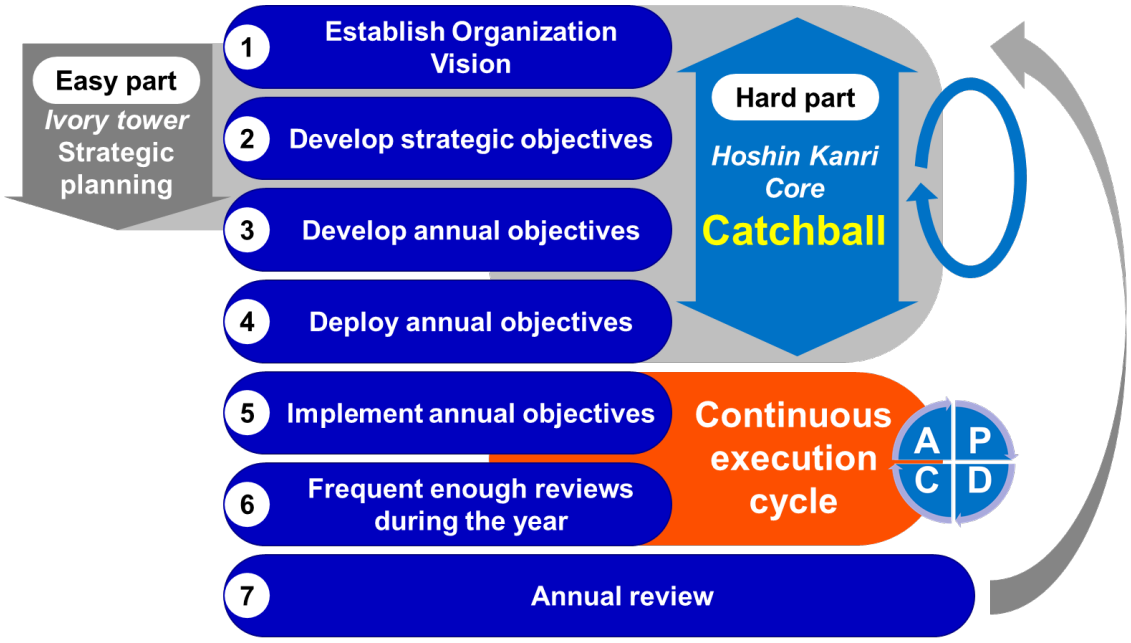

Figure 35. Hoshin Kanri Seven Steps and Catchball Philosophy. (Akao, 1991; Jolayemi, 2008; Tennant and Roberts, 2001).

The catchball implementation process is fairly simple, if just resourced and deployed properly. The first step is about identifying a dozen key stakeholders for each key business process. Since city of Helsinki has hundreds of services, which are very versatile, implementing catchball with success requires an effective service portfolio to catch the right processes. Otherwise those key stakeholders will be hard to identify. Then initial milestones are set, which triggers surveying and analyzing survey results. The catchball culminates in review workshops which finally result targeted proposals. This loops until a proposal is agreed. (Tennant and Roberts, 2001)

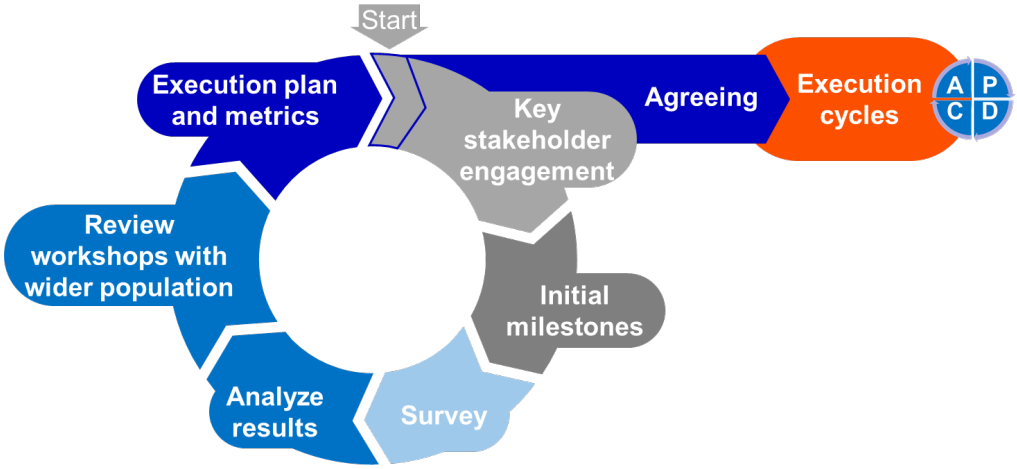

Figure 36. Catchball Process Derived from (Tennant and Roberts, 2001).

> ‘Before considering the design of a process to implement catchball, it is necessary to have an appropriate framework which aligns the Hoshin targets with the business plan and organisation. The design of the catchball process must enable this alignment to be robustly deployed into business plans and management action plans across the business. The review phase is a separate stage to catchball, and must involve corporate staff who can use the information in the annual corporate planning cycle.’ (Tennant and Roberts, 2001)

Hoshin kanri is very clear about measurable accountability. All targeting in hoshin kanri is always appointed to a named activity owner. Targets always have achievement milestones and actualized achievements are always assessed against set targets. This is conducted in a continuous P-D-C-A loop. (Akao, 1991)

Strategy statement	Activities to be executed	Activity owner	Milestones				Performance	
			Q1	Q2	Q3	Q4	Target	Actual
		Name *Name* *Name*						

Figure 37. Hoshin Action Plan. (Akao, 1991).

In essence, introducing hoshin kanri catchball means introducing much more value adding internal communication about strategy vision and its targets. Kotter (1996) reported that an average business communicates its vision and related targets poorly. Only 0.58% of all internal communications addresses business targeting. Although the study is old, the overall logic still applies today. In fact, general magnitude of “other communication” has exploded since then.

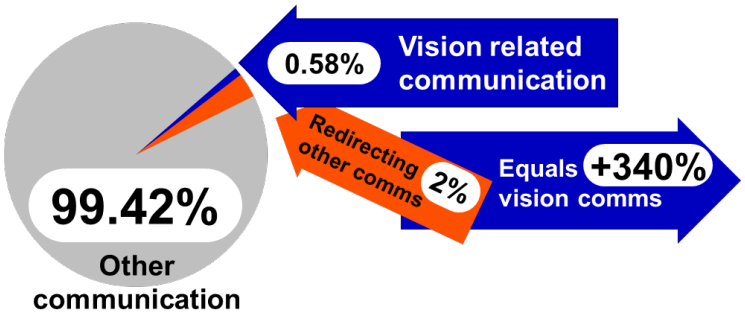

Figure 38. Share of Business Targeting Communications. (Kotter, 1996).

If only 2% of other communication would be redirected to serve strategy vision, targets cascading and follow-up, the effect would be whopping +340%. This is still scarcely done, because it requires establishing fast strategic cascade capability first. That often requires fundamental changes to top business governance and operational practices.

4.1.8 Summary

Combining these four classic strategy management frameworks results

- a solid strategy cascade logic,
- capability to select key strategic actions,
- better focused assets,
- an organizational agility to agree with accountability what to target
- and see where the compass is pointing at all times.

Hoshin kanri combined with the ooda loop thinking covers both internal and external agility of strategy management. Ooda loop defines the idea of constantly observing and reacting to the environment. Hoshin kanri provides agile ways of analysing and then cascading and executing the strategy. (Akao, 1991; Boyd, 1995.)

4.2 Harnessing Customer Insight and Grouping it to Offerings

4.2.1 What Public Customers Want

As Anthony Ulwick (2005 pp 17-19), CEO of Strategyn inc. states in his famous book, What Customers Want, the way customer driven requirements cascade to development of services or products needs more attention in most businesses. There is no reason to think this would not apply to public organizations too. In fact, Ulwick (2017) applies his jobs-to-be-done theory on government quite recently, arguing that public organizations could substantially improve consistency, coherent long-term policies and common language as well as cross-understanding of customer needs.

Ulwick (2005) explains that most businesses perceive customer inputs as direct specifications and direct requirements. Both Ulwick (2005) and Christensen et al. (2005) indicate this would be one major source behind development and marketing failures. They

practically argue that a customer demand approach is profoundly wrong when it is about innovating something new. Customers are typically willing to share their thoughts, but customers no not know what types of information the business actually needs to create a new service or product. Hence, simply accepting the customer thoughts as requirements and features directly would be off the mark. (Christensen et al. 2005; Christensen et al. 2016; Ulwick, 2005; Ulwick, 2017)

> 'Customers don't buy products or services; they pull them into their lives to make progress. We call this progress the "job".' (Christensen et. al. 2016)

The "jobs-to-be-done"-approach replacing customer demand means that when designing or improving a service, the right features should be basing on what the customer wants to get done with the service – not what customer demands (Ulwick, 2005). As an example of the difference: A customer might demand more frequent tram traffic. When asking the customer: "What do you use the tram for?", the answer could be instead: "I am using this tram line to get to work and important meetings. I cannot be late from them and I have to trust the tram being at the destination on time." The correct solution for this might not be more frequent tram traffic, but more punctual and reliable tram traffic, which is completely another thing.

4.2.2 Life Events by Finto and National AI Programs

Identifying public service needs per certain events in a course of citizens' lives is about introducing predictability to those services demand, i.e. how much of those services will be needed. In addition, digitalization has brought a second reason for deploying life events into public services' management. Namely, life events can be harnessed for triggering proactive service proposals and even for triggering actual service actions automatically. E.g. Finnish national Aurora AI program is driving artificial intelligence driven capabilities to identify citizens' public service needs basing on their behavioral, demographic and other gathered data. Estonia has a KrattAI program pursuing similar capabilities (Ministry of Finance, 2020; Sikkut et al. 2020).

Finto, the Finnish Thesaurus and Ontology Service, enlists fifteen basic life events for public services:

- KE1 – Having a child
- KE1.1 – Adoption
- KE8 – Losing a job
- KE9 – Burdened by debt

- KE2 – Conscription
- KE3 – Beginning full-time studies
- KE4 – Moving
- KE5 – Immigrating to Finland
- KE6 – Building a home
- KE7 – Divorce
- KE10 – Retirement
- KE11 – Falling seriously ill
- KE12 – Rehabilitation
- KE3 – Giving informal care
- KE14 – Death of close family member

(Finto, no date)

It is without saying quite clear that citizens' life events are much more plentiful than these fifteen events in the Finnish Ontology service. Programs like the national AuroraAI and KrattAI, propose an opportunity to harness artificial intelligence for automatically identifying countless amounts of life events that trigger public service needs. Artificial intelligence then has a theoretical capability to connect a citizen with relevant public services, predict individual service need and propose most suitable service options.

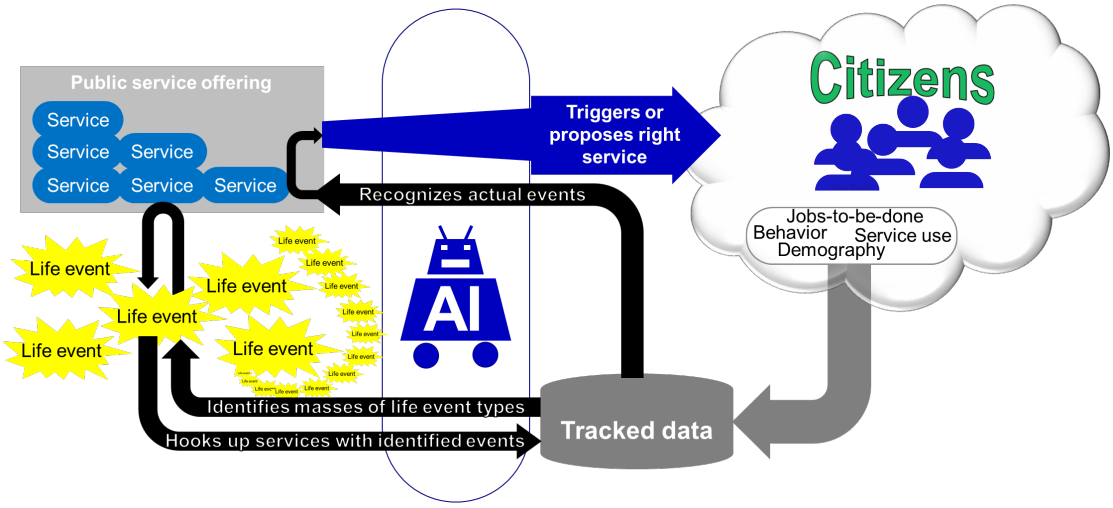

Figure 39. Artificial Intelligence Identifying Service Demand Through Life-Events Analysis.

Combining the above jobs-to-be done theory, the concept of life events and use of artificial intelligence constructs an AI powered service ecosystem. This ecosystem idea also stresses a need for a managed service offering and customer segmentation capabilities. They are discussed in following chapters.

4.2.3 Continuous Flywheel of Services and Value

There is a 120-year-long history of managing customer potential with a funnel from awareness through interest and desire to customer action. More recently, marketing research realized that the funnel approach has a flaw. It does not attract and engage customers through delightful experiences. Today, it has become increasingly clear that the biggest single driver for growth and value is the delighted customers. Before internet era, it was easier to settle with a service delivered and not care about customers' delight. A word did not spread too far. Today, the digital services have simply exploded the tempo customers can and will shift their consumer behavior. They also recommend or discourage others within minutes reaching thousands of potential customers just with a few clicks. Few consider any services today without checking experiences online first. (Halligan, 2018; HubSpot Academy, no date; Nizami, 2019)

Today, the same phenomenon seems to be catching up public services. Digital era behavior expects the same delight from public services and word of mouth distributes both good and bad reputation just as quickly about public services. I.e. undelightful public services get judged useless in a pace never experienced before and substitute (delightful) ways of fulfilling the same needs are much easier found today than ever before. This problem and opportunity is today described as a customer flywheel and it has parts of its origins in Collins (2001) classic 'Good to great as well as in the Deming/Imai PDCA-cycle. (See Collins, 2001; Moen and Norman 2006).

Customer flywheel is a continuous cycle of attracting and engaging customers and reusing their delight. The idea of the flywheel is to put continuous effort on each area of the wheel. Otherwise, the flywheel stops spinning. Putting energy in all of the flywheel parts all the time also tends to increase its speed. Speed practically means smoother operations and faster served customers with less effort.

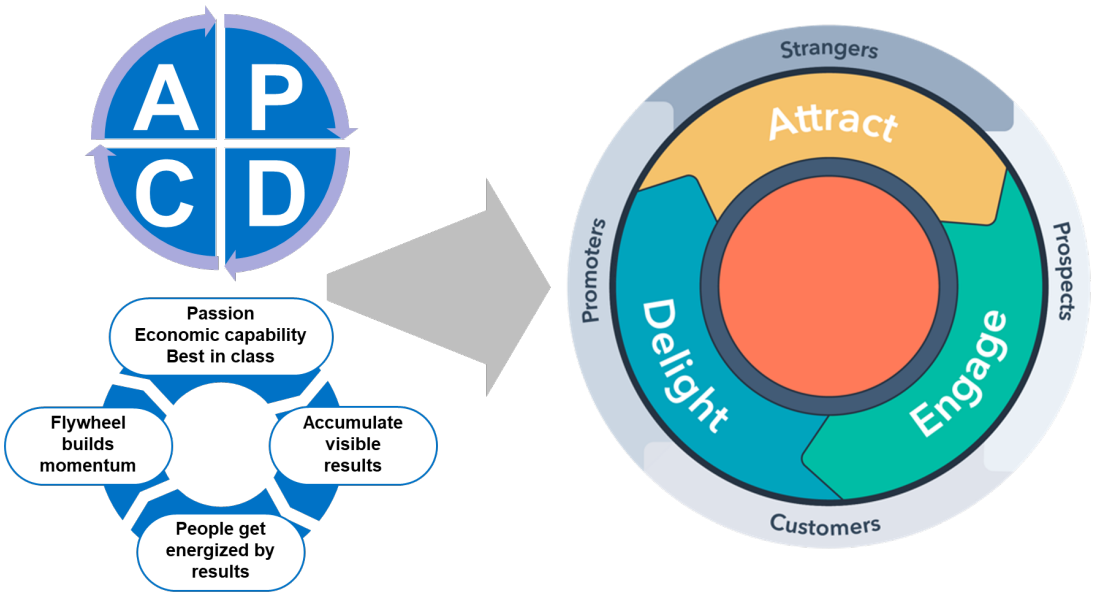

Figure 40. PDCA, Collins-Wheel and Customer Flywheel. (Collins, 2001; HubSpot Academy, no date; Moen and Norman, 2006).

In a flywheel, all service related actions are engineered to maximize attraction, engagement and delight. It means that no service is just delivered. There are continuously ongoing activities tracking already realized customer delight and turning that into attractive messages and customer facing. Hence, customers are continually engaged and nurtured instead of just delivering the service. All this requires a continual customer loop, which harnesses customer data (CRM) and all used customer channels and service delivery network to work together. (HubSpot Academy, no date)

The flywheel is easier said than built. It requires all the mentioned processes' cooperation with as little friction as possible. Not just the service production should be leaned, but the related marketing and communications, customer channels and demand management. It requires addressing employee skills throughout the whole wheel. It also affects significantly where to invest digital assets. The flywheel model drives those assets for making smoother customer experience with better customer value, instead of making a better product. The better product is just one prerequisite for a smooth and maximum value adding customer experience. (Halligan, 2018)

Continuity and drive by delight is what makes flywheel based customer management different from disparate campaigning and customer funnel. Funnel-like actions in bursts are today known to be ineffective in comparison to a leaned and continuously spinning flywheel.

4.2.4 Customer Journeys and Channels

> ‘Customers now interact with firms through myriad touch points in multiple channels and media, and customer experiences are more social in nature. These changes require firms to integrate multiple business functions, and even external partners, in creating and delivering positive customer experiences.’ (Lemon and Verhoef, 2016)

Customer journeys are defined as a sequence of events which a customer walks through until deciding to acquire a product or a service. There are as many variants as there are authors on the subject. However, the basic idea in most of them is the same. E.g. Rirchardson (2010) describes a customer journey as a path from becoming aware, then researching options and finally acquiring. After these three basic steps he adds a first impression stage, which has become increasingly important. This ‘unboxing’ experience triggers namely either a good or a bad word of mouth and that spreads digitally fast. Recommendations and word of mouth define today, as already stated in the chapter above, an ever increasing share of service’s ultimate value and competitiveness. (Richardson, 2010)

A well engineered service utilizes customer journey for managing key quality elements of the service in each individual stage of a customer.

- Each stage should be mapped with known impediments, hindering a customer from moving forward.
- Questions a customer typically phases in each stage should be stored and answered.
- A customer has different motivations in each stage. Those have to be identified and answered with spot-on messages.
- Most importantly, a customer does different things in different stages. They must be identified and answered. Reflecting to those customer’s activities defines how well the whole journey works.

(Richardson, 2010)

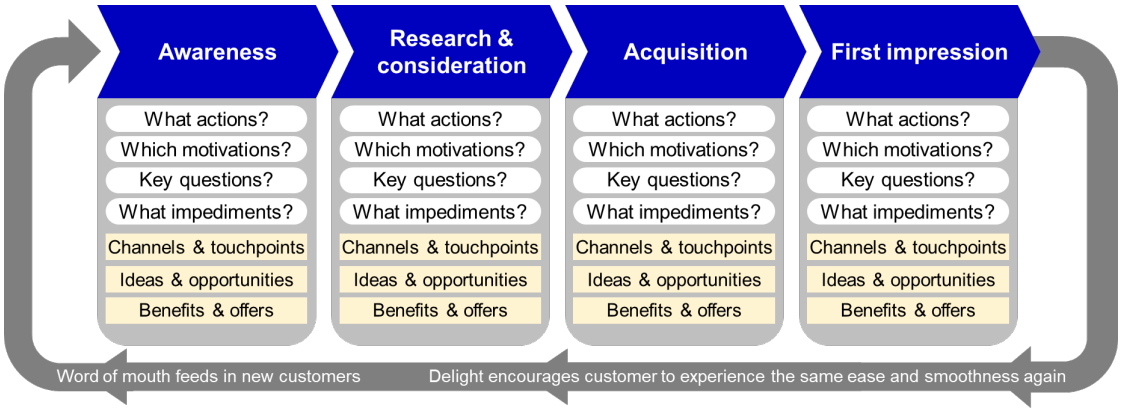

Figure 41. Customer Journey and Key Elements Derived from (Hubspot Academy, no date; Richardson, 2010).

McKinsey recently published a large study for customer experience in governments around the world. It reveals numeric data on how much customer experience affects public service outcomes. By the study, customers are nine times more likely to trust an agency delivering its mission after a good experience. Dissatisfied customers will consume two times more service facing because of corrective actions. I.e. dissatisfaction becomes expensive immediately. Dissatisfied customers will also express their opinion publicly two times more likely than satisfied customers. Finally, the study claims that 50% of long term success of a public service stems from customer experience. (D'Emilio et. al. 2019)

Customer journeys drive the touchpoints and channels through which customers become aware of the offering, look for solutions, decide to acquire and finally get the service. Hence, channel management must comprise the whole value stream from awareness to delivery. (Maechler et al. 2016; Nagornov, 2019)

4.2.5 Customer Segments

Customers are segmented in order to focus service offering and underlying operations to those customers that have relevance. All services are not meant for all customers. Many services are used by different types of customers, but they are used in completely differing ways and in different life situations. Segmenting customers is a core element for designing and improving services in a way that they are meaningful to the customers. 'Jack of all trades and master of nothing' types of unfit services are becoming increasingly obsolete. (Ulwick, 2005)

Customers have been segmented using demographic and psychographic and purchase behavior information since the 1970's. Demand based segmentation stems already from the 80's. The early information technology made it possible to cluster customers and services more effectively and hook up customers and services though different service demand patterns. This approach gave some new insight to managers about their services fit to different types of customers. The approach often failed, because the identified demand patterns turned out to be statistically more often false than true. Today, customer segmentation still uses demographics and psychographics and demand as a basis, but drives segmentation with identifying customer outcomes, i.e. what jobs the acquired service does on behalf of the customer. (Ulwick, 2005; Christensen et al. 2016)

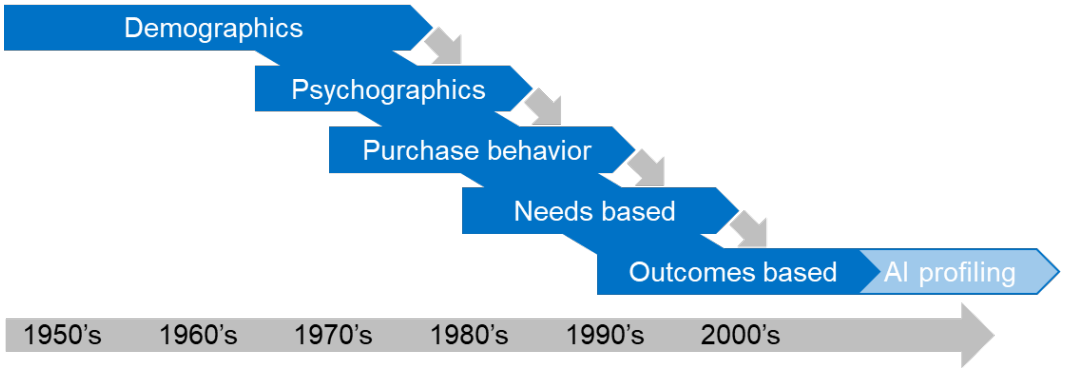

Figure 42. Evolution of Segmentation Added with Digital Revolution. (See Ulwick, 2005).

Christensen et al. (2016) explain that the basic idea of an outcomes based customer segmentation is to think what is the exact job a customer needs to get done and how the service will get it done.

> 'Customers don't buy products or services; they pull them into their lives to make progress … Customers "hire" products or services to solve these jobs.' (Christensen et. al. 2016)

Outcomes based customer segmentation identifies customers' desired outcome attributes and segments customers with similar outcome desires in groups. Those segment attributes can then be targeted with services that conduct the jobs (outcomes) a customer wants them to do. (Ulwick, 2005)

4.2.6 Public Service Core Drivers – the Stiglitz Model

As already mentioned in the current state analysis, the Stiglitz-Sen-Fitoussi commission (2009) introduced eight key elements, which drive citizens' welfare. These elements define how effectively public services provide overall value to citizens:

- health
- education i.e. access to educating oneself and quality of education
- personal activities and work life i.e. how much is actually so called quality time
- political voice i.e. possibilities to influence in political environment
- social connections i.e. possibilities to be active socially
- environmental conditions i.e. air, water, pollution etc.
- personal security i.e. crime, accidents, domestic violence, etc.
- economic security i.e. secure continuous jobs and income, adequate pay, etc.

(Stiglitz et al. 2009).

The basic idea of the Stiglitz model is that one must first identify the core citizen needs and how and when they need to be addressed. This turns around the whole thinking of delivering public services. By Stiglitz model, just delivering individual public services in silos of public offices cannot be effective. Earlier, without today's digital capabilities, there were no means to analyze real-time what services are needed and when. Public service organizations still base their operations mainly on delivering existing services without a demand and outcome-based offering structure. Public organizations typically cannot identify cross-demand between offices and divisions very well and they are not very agile in preempting individual service demands. Reacting to changes in demand bases on coarse statistics, which is analyzed in occasional and manually conducted studies. Corrective actions are then taken in larger reactive investments instead of proactive demand and outcomes management. (See Stiglitz et al. 2009)

Figure 43. Stiglitz Model and Life-Events Driven Public Services – Derived from (Stiglitz et al. 2009).

The Stiglitz model introduces an opportunity for continuously reacting to changes in the public service demand. It opens up possibilities to analyze much more accurately, which services are needed in different life situations of citizens. Completely new types of triggers for public services can be found. In addition, Stiglitz model and life events break fixed connections of services to public office structures and enable true cross-organizational public service offering. (Stiglitz et al. 2009)

However, this requires mapping of the services with the eight core needs mentioned above and then mapping them further with relevant life events that trigger those needs. In addition, there needs to be an adequate digital capability in place, which tracks and analyzes all the time.

4.2.7 Service Portfolio

Without an existing service portfolio there is no source to hook up customer journeys, channels, touchpoints and customers' life events with anything. Hence, a service

portfolio is the core element in turning disparate service production to a coherent life events triggered total service offering.

> ‘Corporate resources are scarce, and they need to be allocated effectively to achieve new product objectives. Portfolio management allows the company to allocate these resources and optimize its new investments by defining the right new product strategy, selecting the most promising new product ideas and achieving the ideal balance of new product goals.’ (Avlonitis and Papastathopoulou, 2006)

Fulfilling the general idea of a service portfolio requires identifying and enlisting all the products and services of the organization first. These services form bundles of services, which can be named as service offering. I.e. an offering is a set of service products, which are of interest to a particular customer segment. At least offerings but rather also the services should have value propositions i.e. reasons why a customer shoud hire the service to do something for the customer. (See Osterwalder et al. 2010; SAFe, no date)

Listing service products, their related offerings and value propositions does not yet make a service portfolio. A service portfolio also comprises structural components of services, related operational processes (value streams) and cost and revenue structures of the services. Services are delivered through channels so they are a vital part of a service portfolio too. A full service portfolio is also integrated with supply and partner network data as well as own key resources. Customer and customer relationship data is always a vital part of any service portfolio. Adding internal quality measures to the services provides the upper and lower control limits (UCL & LCL) to ensure that services are delivered in a stable manner (Lyytinen, 2019; Osterwalder et al. 2010; SAFe, no date)

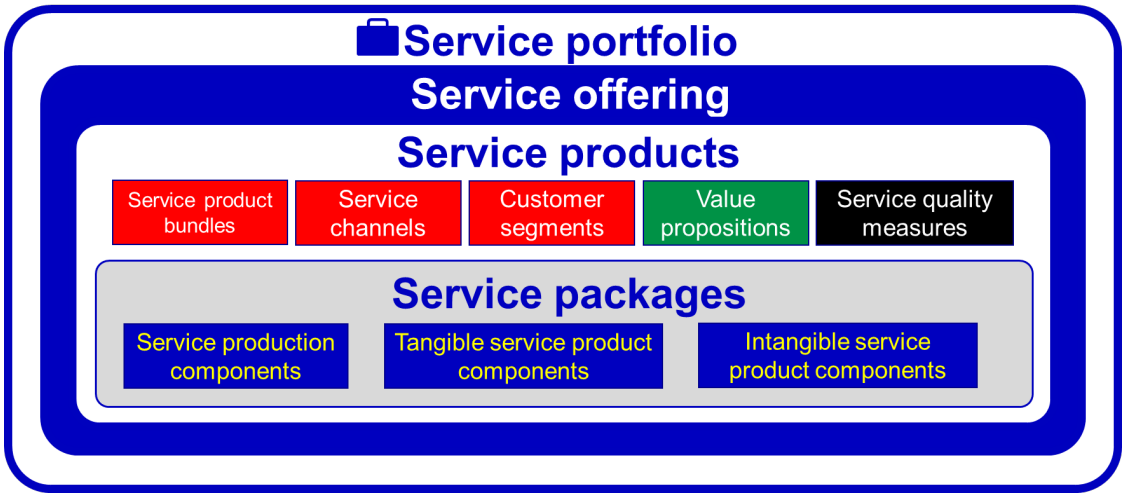

Figure 44. Simple Key Elements of a Service Portfolio – Derived from (Lyytinen, 2019).

The existing Kehmet development framework of city of Helsinki already includes basics of a service portfolio framework.

4.2.8 Summary

The jobs-to-be-done -approach replacing customer demand means that when designing or improving a service, the right services and their features should be basing on what the customer wants to get done with the service – not what customer demands.

Identifying public service needs per certain events in a course of citizens' lives is about introducing predictability to those services, i.e. how much of those services will be needed.

Using citizens' and businesses' life events in identifying situations, where public services are needed, introduces a substantial potential in focusing public service costs optimally. Life events can also be harnessed for triggering actual service actions proactively. Artificial intelligence can identify countless amounts of life events automatically for triggering public service needs.

Modern customer facing bases on a continuously spinning wheel of customer engagement, instead of one-sided bursts of activities. Customer facing is managed as customer journeys, which a customer goes through from awareness through consideration until deciding to acquire a product or a service. A well engineered service utilizes customer journey for managing key quality elements of the service in each individual stage of the

customer journey. Core reasons for managing customer journeys are faster and more accurate reaction and especially harnessing customer delight.

Customers are segmented in order to focus service offering and underlying operations to those customers that have relevance. Segmenting customers is a core element for designing and improving services in a way that they are meaningful to the customers.

The Stiglitz-Sen-Fitoussi commission introduced eight key elements that drive citizens' welfare. These elements define how effectively public services provide overall value to citizens. By the Stiglitz model, just delivering individual public services in silos of public offices cannot be effective. The Stiglitz model introduces an opportunity for continuously reacting to changes in the public service demand. It opens up possibilities to analyze much more accurately, which services are needed in different life situations of citizens.

Without an existing service portfolio there is no source to hook up customer journeys, channels, touchpoints and customers' life events with anything. Hence, a service portfolio is the core element in turning disparate service production to a coherent life events triggered total service offering.

4.3 From Innovation to Value Capturing

What if strategy fails? After all, the nature of the future is unpredictable and strategy is about anticipating the future. Strategy is almost destined to fail and be redirected. This is why continually successful organizations nurture research and experimentation and harness it tightly to business value creation. It is of course important to anticipate the future and strategically lead towards what is believed to happen. It is, however, at least as important to simply research and experiment. The more organization experiments the more likely it finds out potential innovations. Without strategic mindset, however, it is very hard to recognize, what is a potential future golden gem.

4.3.1 Customer Outcome Driven Innovation Process

Ulwick (2005) introduces an outcomes based innovation process for replacing demand/needs based service development.

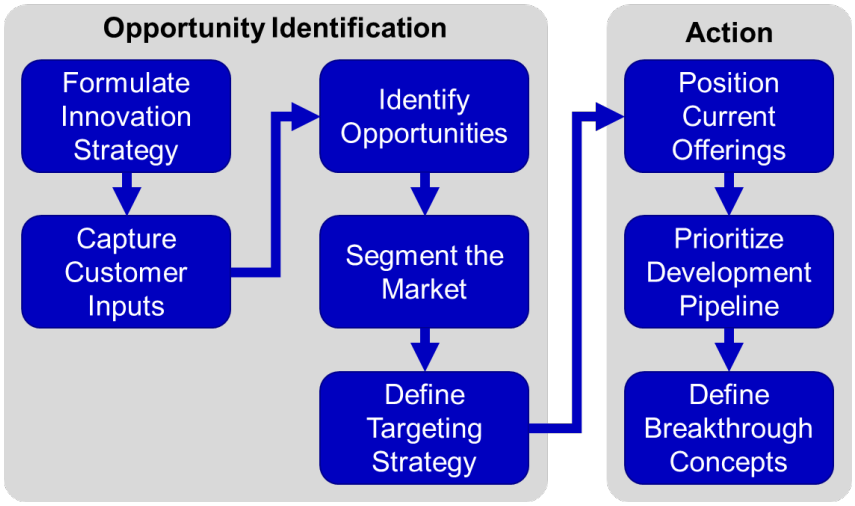

Figure 45. Outcome-Driven Innovation Process. (Ulwick, 2005 p. xxiii).

The basic idea compared to a traditional demand based process is not to ask for customer needs, but capturing what customers pursue to solve with potential services and products as explained earlier in this thesis' framework. Ulwick introduces a generic innovation process to apply this thinking.

A. Innovation strategy and customer input capturing

The process itself starts from formulating an innovation strategy and then continues to capturing customer input. Customer inputs are traditionally gathered in surveys, but digital possibilities enable automatic tracking. (Ulwick, 2005) The national AuroraAI and KrattAI programs and Stiglitz model described earlier pursue to harness artificial intelligence for capturing customer inputs and life events so that they could connect with citizens' desired outcome areas of the Stiglitz model. (Ministry of Finance, 2020; Sikkut et al. 2020; Stiglitz et al. 2009)

B. Opportunity identification, prioritizing and turning it to segments

Then the process triggers identification of potential opportunities. The opportunities are derived from customers' desired outcomes by scoring their importance and how much satisfaction they potentially bring. First, opportunity in this context needs to be defined. (Ulwick, 2005)

‘Opportunity, like requirements, has been defined and redefined in so many ways that it does not have a clear meaning… In the outcome driven paradigm, an opportunity for growth is defined as a, job, or constraint that is underserved’ (Ulwick, 2005. p. 40)

Outcome, job, and constraint statements as opportunity descriptions provide quantifiable measures to create products or services. Then it is about prioritizing the opportunities. Simple prioritizing bases on excluding such identified opportunities that

- are already satisfied, or
- satisfy unimportant outcomes, or
- improve something, but harm the actual outcomes.

(Ulwick, 2005)

Prioritizing the remaining opportunities requires scoring by importance and satisfaction. The basic idea is that if there is already a high satisfaction, there is less opportunity to improve than what the importance suggests. Ulwick (2005) proposes a simple scoring method described in below figure.

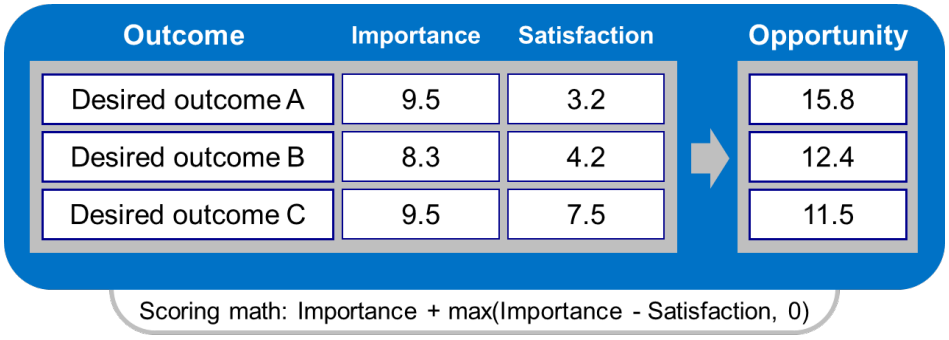

Figure 46. Opportunity Scoring. (Ulwick, 2005, p. 45-46).

The opportunity scoring should be used not only for identifying own innovation potential, but for comparing with external benchmarks too. Different types of customers score desired outcomes differently. This leads to segmenting the customers into groups that want similar desired outcomes i.e. have similar opportunity scorings. (Ulwick, 2005)

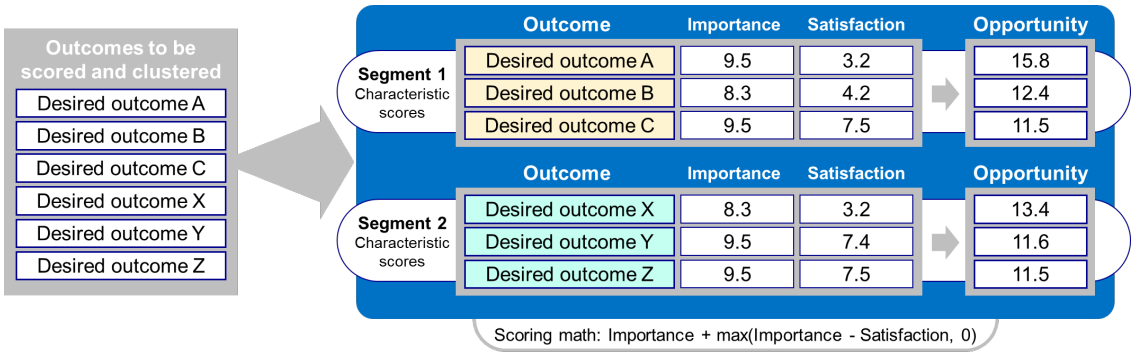

Figure 47. Segmented Opportunity Scoring Basing on (see Ulwick, 2005).

This is done by identifying a large enough set of outcomes, which seem to be most characteristic – not all of them. Then using simple cluster analysis to find those groups with similar priorities. (Ulwick, 2005) All business process software and even spreadsheet software provide sufficient cluster analysis capability.

C. Deciding segment strategies and cascading to offerings

Now it is possible to target innovation actions and position new solutions in the current offerings, prioritize development and finally enjoy captured value i.e. new innovation being in use.

There should always be both a cross-segment offering strategy and segments specific strategies. There are always areas where different segments have common grounds, but answering just to those would be a jack-of-all trades and master-of-nothing offering. Applying Ulwick's (2005) segmentation logic to public services, it means for instance cross offerings between culture and leisure and education. They are different divisions with their own offerings, but certain areas are from a citizen perspective related to the same life events. Same cross offering can be seen also between social and healthcare and culture and leisure. Certain culture services trigger social services and vice versa. Another example would be cross offerings between urban environment and social and health care. Health centers are urban environment and hence the cross offering. (See Ulwick, 2005)

Figure 48. Opportunities Ecosystem. (Ulwick, 2005).

D. Checklist for public organizations

Recently, Ulwick applied his innovation process to government pinpointing a list of eleven point checklist of questions:

1. Who is the customer?
2. What job is the customer trying to get done?
3. What are the customers' desired outcomes?
4. Do segments of customers exist that have different unmet outcomes?
5. What unmet outcomes exist in each segment?
6. How well do our services address the unmet outcomes?
7. What segments and unmet outcomes should we target for improvement?
8. How should we define our value proposition?
9. How should we position our existing and future services?
10. What new services must we create?
11. How to measure success?

(Ulwick, 2017)

4.3.2 Innovation Funnel

Tidd and Bessant (2013) describe in their book a simplistic innovation management framework, which is also used as a basis of the city of Helsinki development framework, Kehmet. They first identify four different types of innovation to be managed:

- Incremental innovation – similar to continuous lean development
- Platform innovation – i.e. creating ecosystems or platforms, which can be reused for a wider set of services or products
- Discontinuous innovation – similar to transformation and disruptive new service and product concepts, which substitute old ones.

- Component/architecture innovation – i.e. smaller innovations within larger systems, still profoundly changing the structure of a service or a product.
  (Tidd and Bessant, 2013)

Then they introduce a simple funnel of innovation, which resembles a R&D-time-to-market funnel typically found in larger technology firms. Tidd and Bessant also argue that public organizations for sure can benefit from managing innovation, but there are extra hurdles to be tackled in the fields of political and regulatory influences. (Tidd and Bessant, 2013.)

Tidd & Bessant argue that there is no difference in process innovations between public and private sector. In fact, public sector often has even more external pressure to innovate process efficiencies to cut costs. However, public sector has a much more diverse set of stakeholders, not just simply other competing firms and buyers. Hence, deriving, other types of innovations and value to be captured than cost and process efficiencies are much harder to grasp and measure (Tidd and Bessant, 2013.)

Nevertheless, the basic idea of the innovation funnel itself is following. There must be enough research of new opportunities to feed potential innovations. However, if the organization does not have a rigorous screening practice to select new innovation potential for further implementation, the best golden gems might not get a chance. There are many examples especially in high-tech business clusters, where the original innovator did not realize the opportunity and another organization implemented the success instead. (Tidd and Bessant, 2013.)

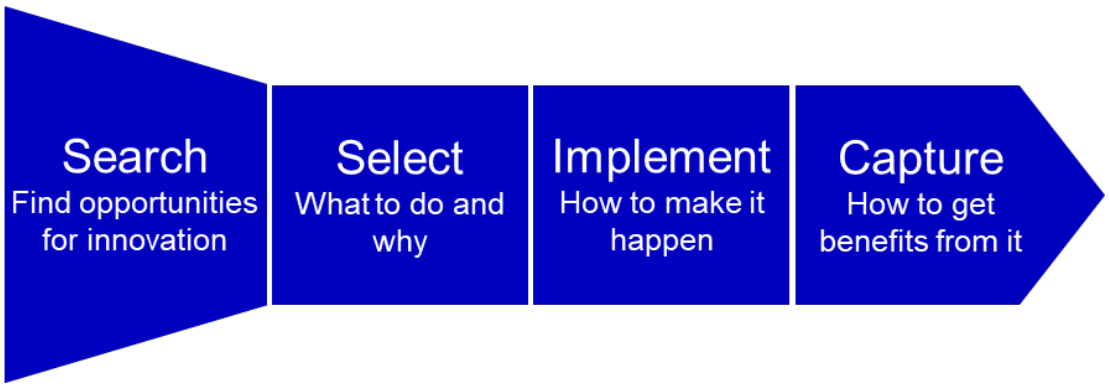

Figure 49. Innovation Process. (Tidd and Bessant, 2013).

The key differentiation factor between successfully innovating organizations and others seems to be a capability to select innovation potential for implementation. Lot's of R&D

seems to run unattached and not feeding business as it should. The reason, by Tidd & Bessant is in capabilities to cope with uncertainty. Key to coping with uncertainty is knowledge. There must be rigorous processes in place providing good data driven analysis fast on researched opportunities. There should always be up-to-date analyzed data on new technologies and market as well as on a continuous flow of customer knowledge giving insight. This is why digital customer interfaces of today are so powerful. If they are set with modern tracking, they automatically provide customer insight of usage and experience and even desires. Another key factor is a capability to split the risk into smaller continual steps and building a portfolio of innovation activities. A portfolio brings an understandable total visibility to innovation activities and this makes it possible to see the big picture instead of disparate projects. This way it is possible to progress in steps with a larger amount of lower cost innovation activities, fail fast where there is no success and immediately redirect those resources to the successful activities. Additionally, since a P&L statement does not work as an ultimate measure for value capturing in the public sector, an extra effort is needed in setting up other value capturing measurements. They could be basing e.g. on customer usage and delight measures already described above. (Tidd and Bessant, 2013.)

4.3.3 Design Driven Development

Developing services through design thinking started to gain ground around 2004, when UK Design council created a today well-established design driven framework for innovating and developing. Design council named it a double diamond. The concept creation involved a large base of businesses from very different business clusters, which success was highly dependent on a good design (e.g. Alessi, Lego, Sony, and British Telecom). Hence, the double diamond framework became universal and easy to deploy despite the business. In this thesis' conceptual framework, design management is the third crucial angle in harnessing innovation and value capturing. (Hands, 2018).

Just as most development frameworks, also double diamond borrows from earlier development frameworks. The core idea that forms the two diamond shapes is similar to a V-model ('80's) and especially its dual V-model extension. Double diamond, however, emphasizes discovering customer's job-to-be-done (and need) much more understandably. It also crystallizes the importance of having options to choose from. V-model is more straightforward engineering. (see Clark 2009; Hands, 2018)

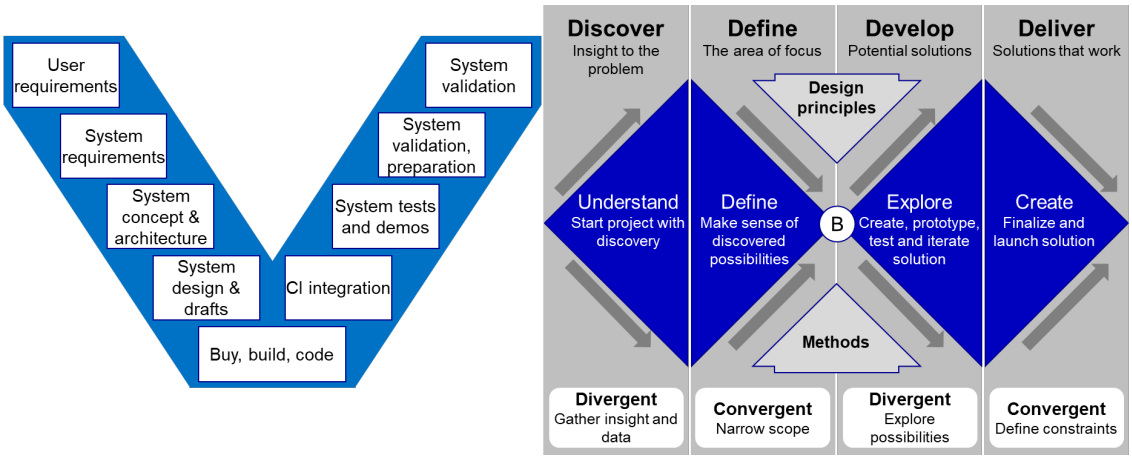

Figure 50. Dual V-Model and Double Diamond Comparison. (See Clark, 2009; Design Council, 2015; Design Council, 2019; Hands, 2018).

The stages from discovery to delivery on also hand have similar logic as the Shewhart cycle (1939) and the Deming/Imai PDCA-cycle (1951-1994). Even before these, many known scientists such as Galilei, Bacon and ancient Greeks described similar ideas as a basis of science. Nevertheless, these ideas are packaged in the double diamond in a way, which is easy to grasp as a universal design framework. It is also worthwhile noting that the double diamond model is not a waterfall from left to right, although it looks like that. Discovering is supposed to happen throughout all stages. It only gives a sequence to follow with all discovery. Whenever a new thing is discovered, it will trigger some form of narrowing the scope and then exploring and implementing iteratively. (See Clark, 2009; Hands, 2018; Moen and Norman, 2006.)

It is the design tools, which make the difference, not the model:

Discovery tools:

- Storyboard – highly visualized narrative journey of an end-user
- Shadowing – i.e. observing everyday doings. Lean equivalent is gemba walk i.e. go and see on the site yourself.
- Moodboard – visually rich and elegant representation of how a user experiences a service or a product.
- User diary – i.e. a diary with photos and snapshots of real user interactions.
- Futures workshop – i.e. a group based activity to define an ‘ideal future’

Define phase tools:

- User personas – similar to storyboard, but a further developed narrative of a user – always described as a person with a name so that the related customer group is truly perceived as living human beings with all related habits, desires etc.
- Brainstorming – i.e. the good old widely used and group based method to storm ideas – often very similar to workshops.
- Six thinking hats – practically a way to workshop or brainstorm with six different roles. I.e. group members focus on different angles: 1) data and information 2) subjective viewpoint 3) critical viewpoint 4) optimistic viewpoint 5) no limitations blue sky viewpoint 6) facilitating
- Venn diagram – a visualization technique simplify complex information
- Empathy mapping – i.e. simply, when designing customer personas, one deliberately tries to be in the customer's shoes.

Develop phase tools:

- Business model canvas – i.e. the very same Osterwalder's method already referred to earlier: simple way of summarizing partnerships, key activities, value proposition, customer relationships, customer segments, key resources, channels, cost structure and revenue structure.
- Prototyping – i.e. what any new product development always does even several times before the final product or service – and what is often forgotten in IT-projects.
- Experience mapping – i.e. capturing customer experiences further during development.
- Navigation map – used especially in developing digital services. It depicts how users navigate their way through the service. Lean value stream is a similar tool for production engineers.
- Through other eyes – quick tool for assessing different design concepts. Practically it is about presenting a series of questions to customers for comparison purposes.

Deliver phase tools:

- Design scenarios – i.e. creating fictional usage settings for understanding deployment. The tool fits for other phases too.

- Scaling plan – i.e. planning which ways the service will appeal and fit larger audiences.
- Gamification – used originally in military processes to gain insight of potential enemy reactions and counteractions. Today used more and more in designing more pacifistic products and services. Playing with features so that the game involves the “customers” is a very powerful way to notice what would work and what would not work in real life.

Designer tools are simple non-engineering like tools and simple enough to enlist a few within this thesis framework. (See Hands, 2018)

4.3.4 Summary

Harnessing the jobs-to-be-done practice for innovation leads to a generic innovation process, where needs and requirements identification is replaced with customer insight to actual customer outcomes. Those are then prioritized and segmented using cluster analysis, leading to truly customer centric segments of service offering improvements.

Introducing an innovation funnel, enhances organization’s capability to harness often disparate research for targeted innovation. Innovation funnel introduces a way of screening innovation potential and driving it towards value capturing. Innovation is born once a new service or feature is in use and capturing value. Value is captured when a customer is using the service and both service provider and the customer are benefiting from it.

Value capturing can be tricky to define in public sector services. It cannot base on profit & loss statement. Instead, captured value could be basing e.g. on customer usage and delight measures.

Design driven development practices introduce sets of simple tools, which ease understanding of the customer outcomes and how customer experiences a service. It is utmost important for true innovation to get under the customer’s skin and understand, what customers truly value and benefit from. Tools that personalize the customer and use narratives to explain how the service flows and is experienced gives such an insight, which no engineering design can reveal. Design driven development also harnesses gamification to revealing innovation potential.

4.4 Lean Business Processes Efficiency and Relation to Renewing

Smooth flow of existing service operations and development is just as important as capabilities to preempt (strategy) and innovate. Smooth flow creates immediate costs efficiency, better quality and faster service. It speeds up development and accelerates innovation. Pursuing a smooth flow requires addressing the whole value stream as one and make it work smoothly. No part creates value for itself, but for the whole package. (See Womack et al. 2007)

4.4.1 Idea of Value Stream

Lean operations efficiency is about smoothing the whole value stream from customer demand through supply to feeding production and dealing with the customer. (See Womack et al. 2007)

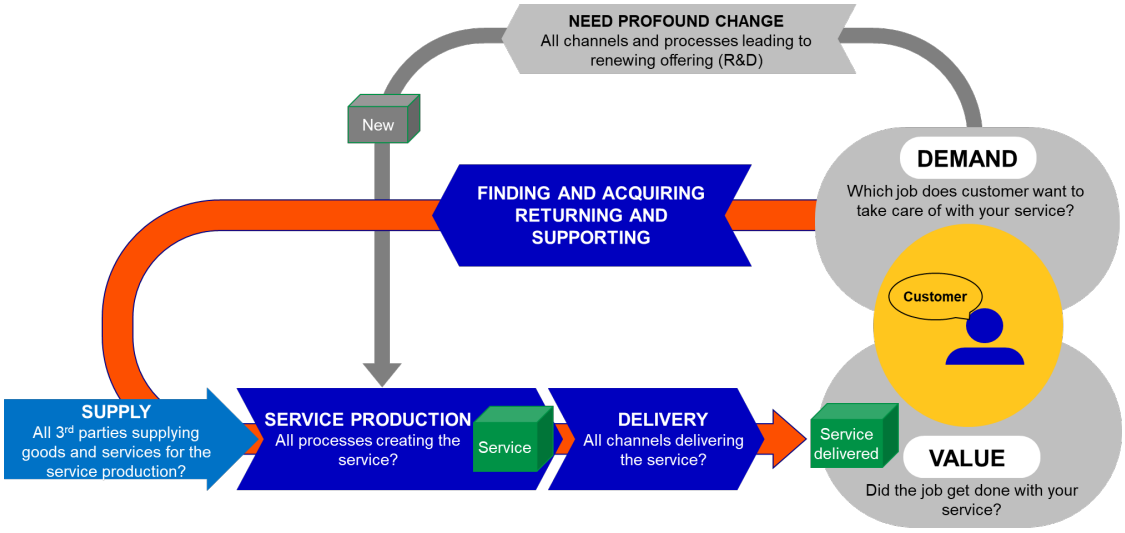

Figure 51. The Fundamental Idea of a Value Stream – Derived from (Christensen, C. et al. 2016; Shostack, 1984; Ulwick, 2005; Womack et al. 2007).

Lean value stream is a much bigger concept than just a production process. It is a common misconception to think it is mostly about production process.

Instead, lean value stream starts with the customer. This is very evident in the original lean concept, although the application was car production. Womack, Jones and Roos take extra care in explaining how a lean process covers dealing with the customer and hooking up research and development and supply chain. Producing the goods and services is just one part of the value stream. (Womack et al. 2007)

Value stream map (VSM) is a measured process-map, which visualizes information and material flows. Its task is to identify underlying process inefficiencies for elimination. (Nash and Poling, 2011). VSM is one main pillar of lean management as it brings the measurability to the flow of all operations. (Andreadis et al. 2017.)

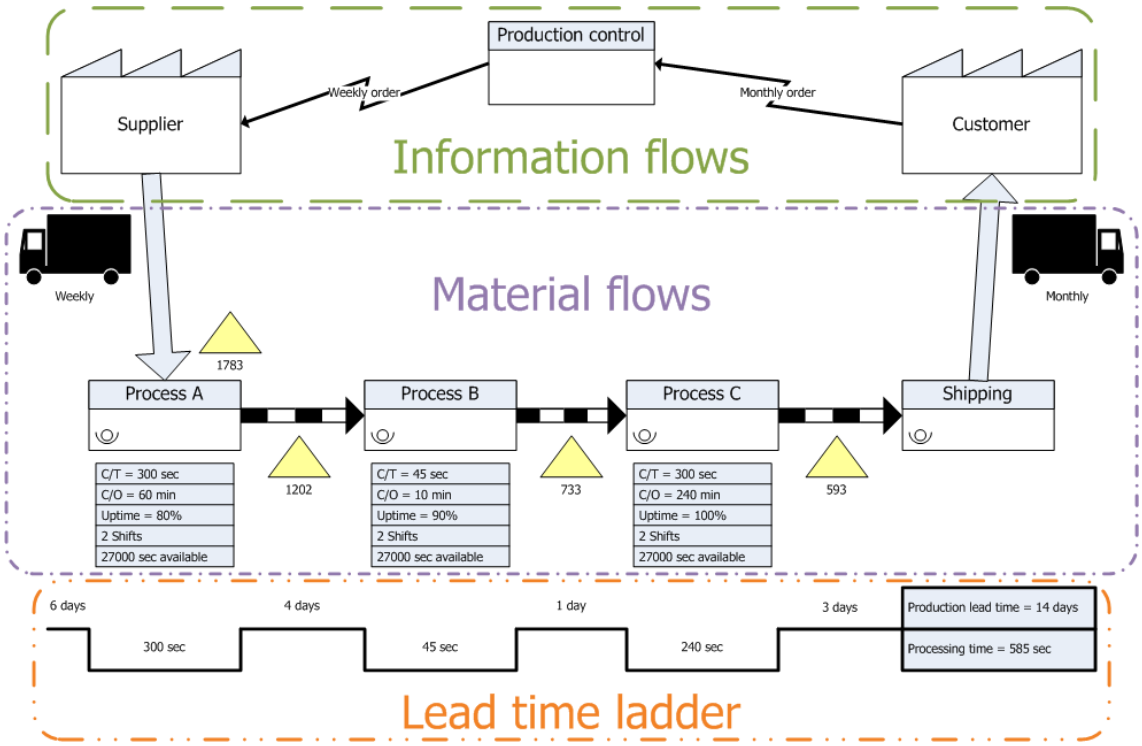

Figure 52. Value Stream Map Example with Original Engineering Notation. (Penfield, 2013).

Without tangible measures, a VSM would be just a process description. Most common way of measuring a value stream is timing the flows in all of the sub-processes. This leads to describing the process flows differently. VSM includes all execution, all inventories, all waiting, movement and transfers, etc. Then they are timed to reveal inefficiencies, which cause long lead-times and bad quality. Then the process can be improved and measured again. (Chen et al. 2010.)

Value stream mapping pursues reduction of lead-time, improved productivity and speed of operations. The method fits for any type of an operation: R&D, supply, production, customer care, etc. Other VSM benefits are a smoother flow and calmness in operations and ultimately less defects and better quality. (Andreadis et al. 2017.)

4.4.2 Service Blueprint, Value Stream and Customer Journeys

Shostack (1984) introduced the original service blueprint concept, which idea is to visualize relationships between different service components. The original purpose of the service blueprint was to reveal root causes for poor service causing dissatisfaction. The basic idea is similar to value stream map. Their original application areas just differ.

Value stream map's original purpose was to improve production to deliver more smoothly agaist customer demand. VSM dealt originally with tangible products and had less emphasis on customer interaction. Service blueprint deals originally with non-physical services and emphasizes the customer relationship more. (Chen et al. 2010; Nash and Poling, 2011; Penfield, 2013; Shostack, 1984)

'Service is not a physical object and cannot be possessed.' (Shostack, 1984)

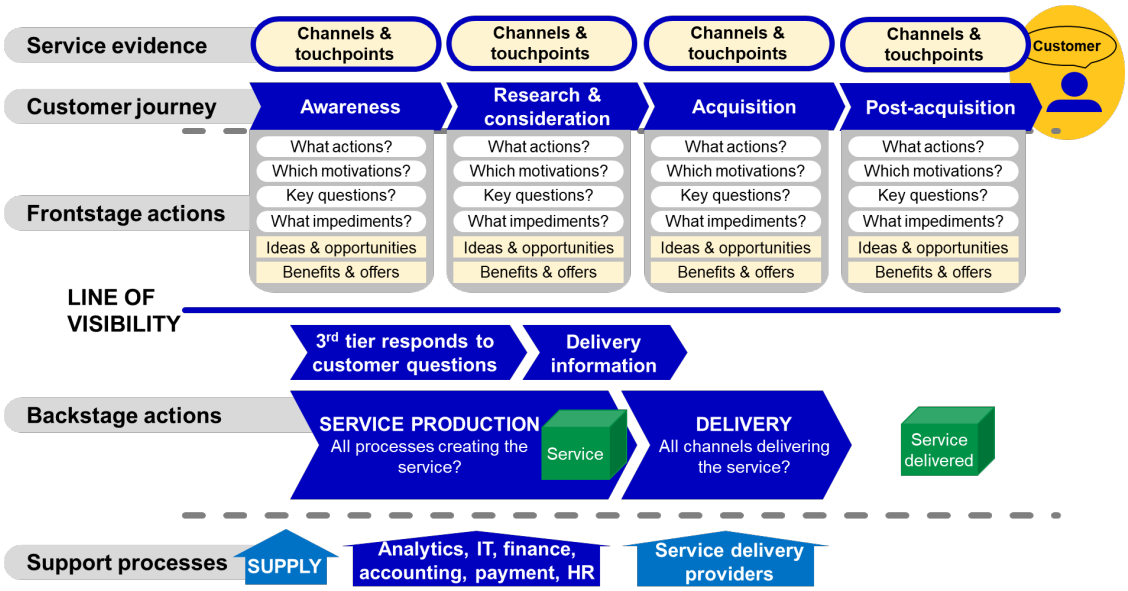

Figure 53. Service Blueprint Derived from (Curedale, 2016; Hubspot Academy, no date; Richardson, 2010; Shostack, 1984).

Service blueprint emphasizes a line of visibility, because enterprises tend to think of their internal processes and underestimate customer engaging processes and channels. By making clear what customer sees, the service blueprint forces to design also that part, not just the backstage business processes. Service blueprint concept has been later refined to cover customer journeys and touchpoint thinking from marketing theories. (Curedale, 2016; Shostack, 1984)

Today's service blueprint version consists of following layers:

- Service evidence layer for channel management
- Customer journey layer, which outlines the customer engaging process
- Frontstage actions, where customer engaging activities happen
- Backstage actions, which equals service production
- Support processes, i.e. all supporting functions needed to run above layers

(Curedale, 2016; Shostack, 1984.)

4.4.3 Lean Way of Working

Womack et al. (2007) explain in the original lean concept how lean management bases on long lasting teams. Lean teams are highly structured to work together with strong mandates. This is why lean teams also mobilize fast. They do not need long lead-times to get established, financed and decided upon. They typically have worked together before. Hence, lean teams start delivering fast and multiple teams can work simultaneously with all relevant areas, because they already know each other and coordinate automatically. Non-lean teams must often work in waterfalls finishing one thing first while the next team is waiting for those results. Womack, Jones and Roos learnings from leaned Japanese organizations doing development was that they were able to involve a large set of people right in the beginning. As the development moved forward, the headcount started dropping along with results finishing. A typical western development organization had an opposite headcount-time curve. Traditional development projects' headcount curves were at highest in the end. Results took longer and cost more. Hence, the power of lean in creating new things, not just producing existing products, was proven already in 1990. (Womack et al. 2007)

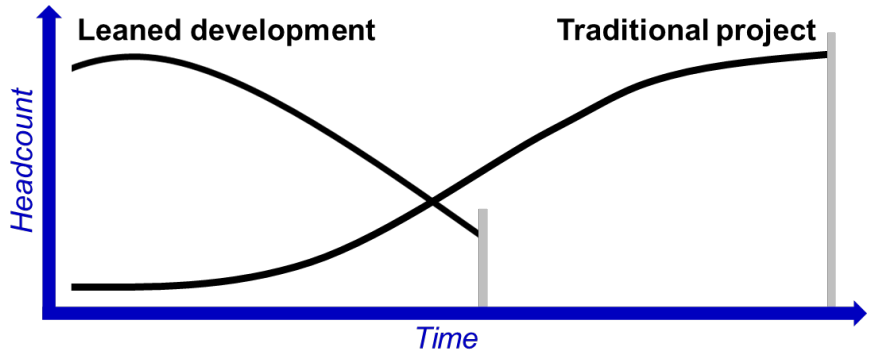

Figure 54. Headcount and Time Usage of Lean Team and Traditional Project – Derived from (Womack et al. 2007).

Lean teams have a strong focus and sense of an end-result. Because of strong team mandates, leaned organizations do not have management's bypass channels to disrupt team work. That makes true changes of direction much faster, because whenever a direction needs to be changed, it simply ends the current work completely, instead of putting it on hold. It is the bypasses that often cause inefficiency. I.e. starting the same thing all over again after a disruption causes excess of errors, skyrockets non-value adding administrative work and risks morale. In lean style, bypasses are time stealers that brake the flow of value adding work. In an office environment, the biggest form of bypasses is unstructured meetings without clear connections to the target at hand. Team leadership in lean is described as a 'supercraftsman' with highest practical skills and knowledge in the team. The person does not know everything, but understands the team's work against organizational aspects from practice. I.e. the boss can relate to team work under the skin and evolve a good social ecosystem through that. This tight correlation with leadership and practical skills also establishes good career progression. Starting from the bottom in a lean environment enhances the career, instead of stopping it. (See Womack et al. 2007)

4.4.4 Customer Demand and Dealing with Customer

The effect of leaned production to customer demand is not only better quality service faster, but flexibility. Leaned service operations make it easier to deliver more precisely tailored service to the customer. I.e. the service can be easier varied and customized without much of an extra cost. This applies to physical goods, but even more with digital services. Today's digital processes have namely brought marginal costs near to zero. I.e. making variation in digital services is practically free. This is why production processes actually have to be leaned today and today's customers expect individual service, because it is so common. Without leaned processes this type of variation capability is not economically possible. (See Womack et al. 2007)

Dealing with the customer in a lean way is in essence about building a long-lasting relation between own supplier network, own service production and the customer. It means that the customer's service interface and all customer communications are directly interlinked with the service production and all supply behind it. Hence, whenever the customer moves, the whole value stream from supply to customer interface moves. (Womack et al. 2007)

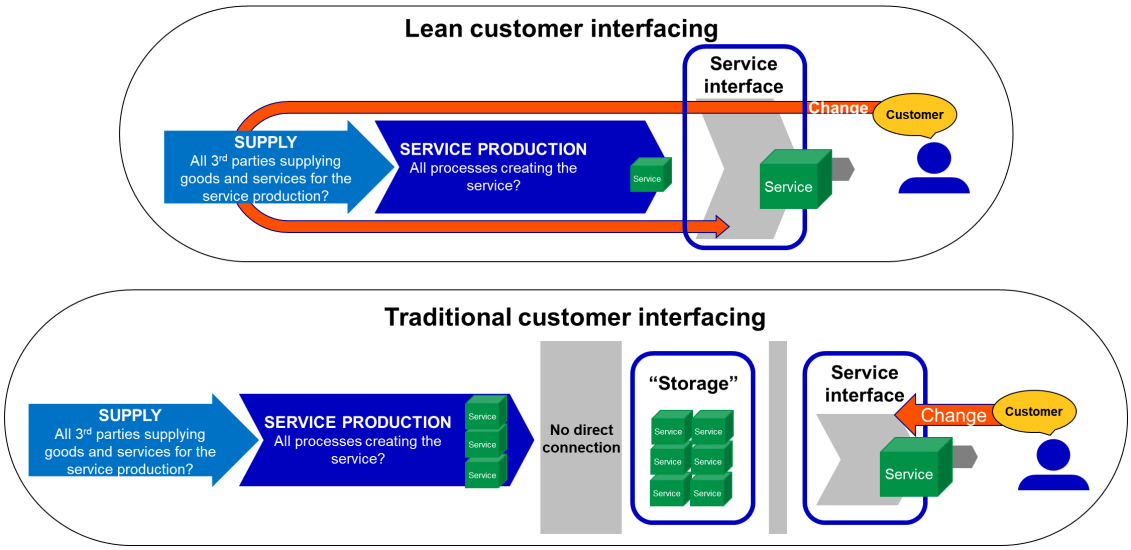

Figure 55. Lean (and Digital) vs. Traditional Customer Interfacing – Derived from (Womack et al. 2007).

It means that the customer does not need to wait to be serviced, or drive around from one office to another. The service response is immediate. The service agent does not have to put the case on hold for days to check what is going on and then get back to the customer after having found out. Finally, there is no need to have extensive storages for different service items and goods to serve customer timely. The above lean customer interfacing is fed with a first-in-first-out principle (FIFO). (Womack et al. 2007) E.g. successful digital ecommerce of today works like this.

4.4.5 Reducing Friction for a Smooth Flow

Lean management pursues to eliminate wasteful activities, unevenness and overburden in processes. (Frindt, 2014).

A. Waste i.e. "muda"

The classic lean categories of process waste are:

- T – unnecessary transfers
- I – unnecessary inventory
- M – unnecessary motion
- W – unnecessary waiting
- O – overproduction

- O – overprocessing
- D – defects

(Goel and Kleiner, 2015)

Reducing or eliminating these wastes in dealing with the customer, development, supply and production is what improves the flow of operation. (Womack et al. 2007)

An example of unnecessary transfer could be moving an application form from one approver to another. Unless there is a real and tangible reason to re-check the approval, it is only wasted time and effort, which slows down the overall lead-time. Inventory means for instance, that an approver of applications gathers a pile of applications, before starting the job. That is a common and expensive form of waste. Eliminating these types of inventories can speed up processes significantly. Unnecessary motion is for instance printing out a digital application, walking to the printer and then handling the application. Unnecessary waiting happens for sure, if an approver gathers a pile of applications (inventory). Someone in the process is waiting, until the approver has gone through those applications. Often organizations produce more goods or service capacity, just in case. That is also waste, because those overproduced products have no customer. Overprocessing is a typical waste in development. No such features that are not really needed should be developed. All development should fulfill customer demand or lead to customer delight. All of the above forms of waste cause uneven flow of operation. Uneven flow in turn causes quality problems and defects. (Goel and Kleiner, 2015)

In addition, lean management pursues perfection (zero defects) as an attitude. It is not the same thing as being a perfectionist. That would be overprocessing. It is an attitude of doing the thing right the first time – not within the limits. An eighth additional form of waste is unutilized talent or skills. If HR is not pointing right talent to right tasks, that is also waste. (Goel and Kleiner, 2015)

B. Unevenness i.e. “mura” and overburden i.e. “muri”

Pursuing a smooth flow also involves removing variation in work scheduling and volumes. If the process frequently runs hot and then cold, it creates the same phenomenon as in traffic on a crowded motorway. A few speeding cars can cause a total traffic jam. The next thing that happens is hard breaking and collisions i.e. increased number of accidents. That is what unevenness in business processes cause: “traffic jams” i.e. nothing moving, “accidents” i.e. defective goods, and angry customers. (Frindt, 2014)

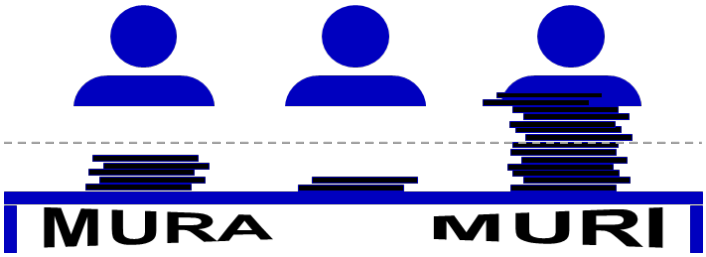

Figure 56. Unevenness “Mura” and Overburden “Muri”. (Kautto, et al. 2019).

Overburden means an unreasonable workload for some individuals or parts of processes due to poor organizing. This type of friction is one root cause for burnouts, problems in morale and frequently changing staff. Many times lean projects end up focusing on lean tools rather than the idea behind lean. Overburden (“muri”) tells quite quickly, if lean projects are being implemented against lean principles. Employee satisfaction survey shows it fastest. Then volumes of re-recruiting and sick leaves start raising. Finally, productivity KPI’s may begin falling. (Frindt, 2014)

4.4.6 Why Leaned Processes Accelerate Development and Innovation

Japanese automakers were able to double their rate of innovation just by leaning their development in the eighties. At that time Japanese car manufacturers had half a lead-time from changes in customer demand to a new product out in the market compared to western automakers. It meant superior cost efficiency in development with half a cost compared to western rivals. At the same time, Japanese development resulted superior engineering quality and precisely for what customers wanted, because a leaned development process took in customer demand much more directly. (Womack et al. 2007)

Western automakers at that time were not leaning processes. Not in production, nor in development. Westerners sought competitiveness in economies of scale. Western automakers pursued to keep their existing products in production as long as possible with as high volumes as possible – i.e. not developing a new product that often. They had to, because quitting that twice-higher development cost meant that a car had to be in production twice as long as Japanese cars. (Womack et al. 2007)

Because also western production processes were uncompetitive at that time, western carmakers had to produce much higher volumes to compensate high fixed costs in production too, making them much more dependent on market share. In order to get to the similar profitability, westerners had to price their products more expensive and rely on a

high-end image. That did not pay off in the end, because the Japanese actually were able to do even marketing better. Customer understanding is so deep in the lean process thinking that Japanese automakers were able to focus their marketing much more efficiently and exploit their superior quality to the full. (Womack et al. 2007) Today, all surviving car manufactures have their innovation and product renewal speeds on similar levels and utilize some form of lean management.

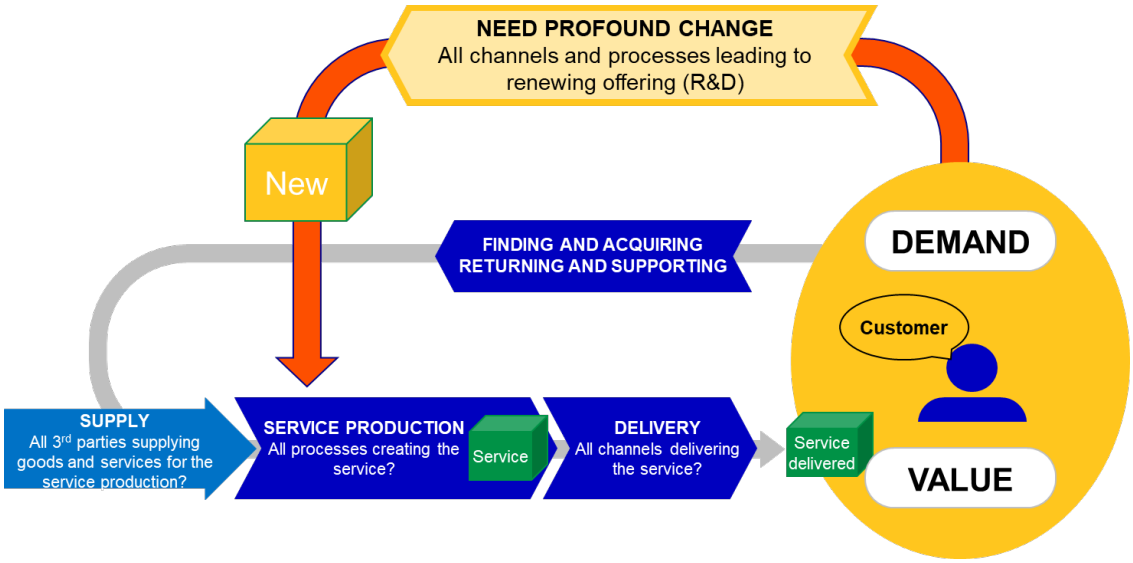

Figure 57. Development and Innovation are a Part of Value Stream – Derived from (Womack et al. 2007).

Leaned processes streamline the flow from customer demand (jobs-to-be-done) to research and development. It leads to shorter development lead-times, faster time-to-markets, more innovation and finally faster and improved value capturing. (Womack et al. 2007)

4.4.7 Summary

Lean management does not only deliver production cost efficiency and improved quality. The results do not end with reduced service lead-times either. Applying lean management also speeds up development and rate of innovation.

The practice, however, requires a cultural change away from working in bursts and disparate projects as well as replacing uneven ways of working with continuous teams with empowerment. In this context, empowering means adequate delegation of decision making to the teams and reducing a need for seeking higher management approvals for

individual topics. In public sector, this also addresses approaching public decision making. Higher management decision making should happen on a higher level resulting clear and tangible yearly targets and boundaries per service offering, service area or a service. That can only happen, if the organization knows its own product structures and their value streams well enough. It is a necessity for establishing the required measurability and harnessing use of data. This is why lean management requires adequate service and service blueprint portfolios.

5 Building the Proposal for the Life-Events Triggered Proactive Public Service Ecosystem

This section merges the results of the current state analysis and the conceptual framework towards the building of the Proposal.

5.1 Business Wheel Concept – Metaphoric Explanation and Proposal

5.1.1 Think Big – Act Gradually – Throughout

Preparing existing public services for a turnaround to life-events triggered proactive ecosystem is a huge paradigmatic change. Changes of this magnitude and diversity rarely succeed through a few projects. The old saying “think big – act small” encapsulates the approach of this thesis’ proposal. This proposal suggests that true paradigmatic changes require rigorous big picture leadership and abilities to cascade the big picture to smaller gradual actions. Agility in reacting to changes while driving the big picture is a necessity. Gradual end-results are the ones that ultimately capture the value. Hence, execution steps should be conducted throughout, until they capture value – not to inventory for later value capturing.

5.1.2 Simple Idea of a Spinning Business Wheel

A wheel is a perfect metaphor for an organization. A wheel keeps on turning as long as power is assigned to it (assets). If power is cut, the wheel slows down, until it halts. It does not stop immediately. Kinetic energy keeps the wheel turning until friction kills the movement. Hence, constant applying of assets is a necessity.

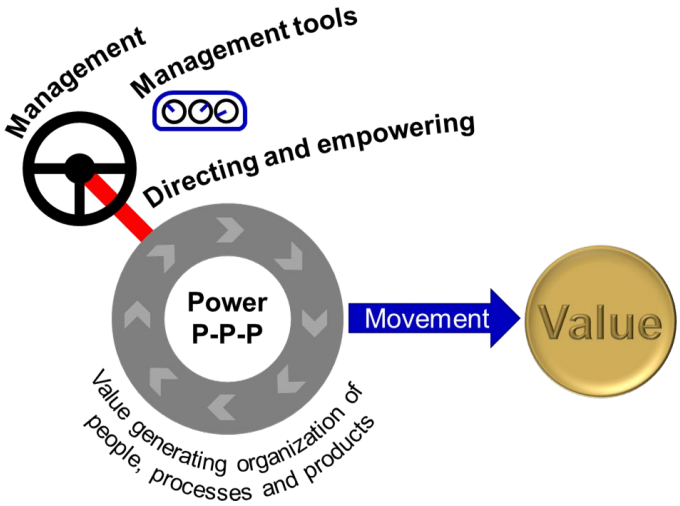

Figure 58. Simple Concept of a Business Wheel.

In addition, it matters, what direction the wheel is steered to (targets). It also matters how well the power is conveyed (accountability, responsibility, decisions, communication) – like a transmission. A broken transmission creates enormous friction and the applied power cannot spin the wheel. Without direction, the power heads to all directions, but the destination (captured value).

The proposed business flywheel applies customer flywheel, ooda-loop, lean compass management, value stream and service blueprinting, Kotter's change steps, Porter's value chain and innovation funnel for business transformation. The idea is explained through widely understandable metaphors.

5.1.3 Business Change Requires Lean Steering

The wheel metaphor is easy to apply to in daily business as usual. Just supply financing, people and equipment for rolling the organization and existing processes. But, what if a disruption happens or a great opportunity is in sight? An organization cannot answer to a profound need for a change just by spinning the same wheel the same way as always.

With a very steady and straight road, steering is needed only occasionally. It does not have to be smooth or fast either, because there is no corner in sight. Once, true paradigmatic change begins to emerge, suddenly an organization has to begin serious steering. If the steering is slow or inaccurate, each movement is also inaccurate. Everyone, who has driven a car on a slippery road, has experienced it. When a car starts sliding and you steer a correction too slowly, it only makes the car swing back even harder, until the

car either halts or drifts to a ditch. This is why the connection from the steering wheel to the tires must be timely and accurate. The same applies to steering profound changes in organizations. Same management practices that are enough for business as usual do not cope well with change.

Governance and operational practices do not run anything, but people do. However, governance and operational practices convey accountability and direction and then empower the people to act. Hence, it matters, how lean the governance and operational practices are and how capable equipment is used to apply steering.

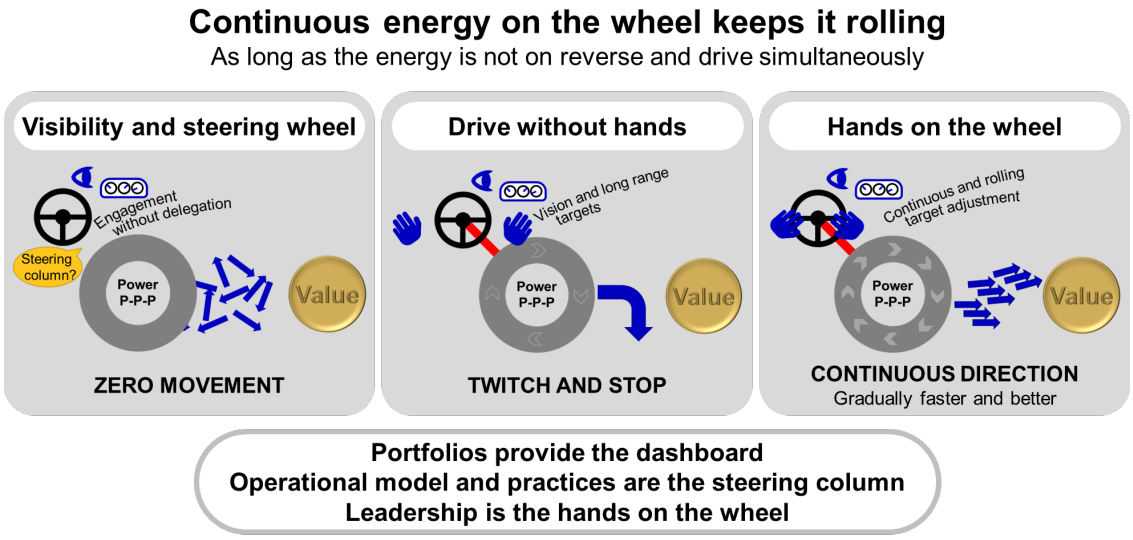

Figure 59. Simple Application Steps of the Business Wheel Concept.

Plain visibility is not enough for applying timely steering (dashboards). The business dashboard information has to be up-to-date and correct at all times, effortlessly. Delegation and empowerment has to be just as effortless and timely. I.e. the steering wheel has to be attached and that steering column has to be timely and accurate in order to enable hands on the steering wheel. Empowerment frictions typically lead to leadership bursts basing on mainly budgetary practices and scarce corrective projects.

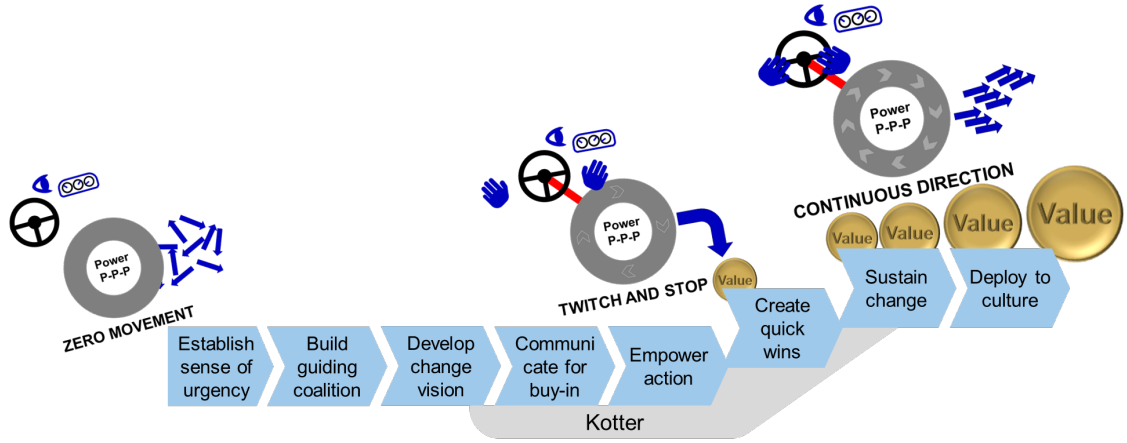

Figure 60. Paradigmatic Change Ladder and Steering Resilience.

Scarce corrective actions do not generate the continuous spin but a twitch and stop. Fragmented projects that do not build up long-term roadmaps, have no critical mass to penetrate large organizational ways of working. This is particularly problematic with paradigmatic changes, which can take a decade to cascade into a corporate culture for gradually building the total value.

5.1.4 Daily Business Operations Benefit from Lean Steering

In addition, yet importantly, the same management agility that is a necessity within paradigmatic changes, also improves business as usual operations. A well and continuously directed organization tends to know better, where it is heading. Those organizations have the best opportunity to lean their existing processes and make the organization reduce lead times and operational cost per service event. Smoothness in steering and operations create evenness, which in turn results quality. Quality means less justified complaints. That means less repetition. For example, a complaint often means that the same service has to be delivered again. Each time a service process is repeated, it also doubles the cost and lead-time. Often these corrective actions are in fact expedited, which means that the repeated unit cost is actually higher than the initial one.

5.1.5 The Environment Favors the Sizable Leader

The environment around an organization does not care about the organization's internal difficulty to steer. The environment evolves by the fastest sizable players within the environment.

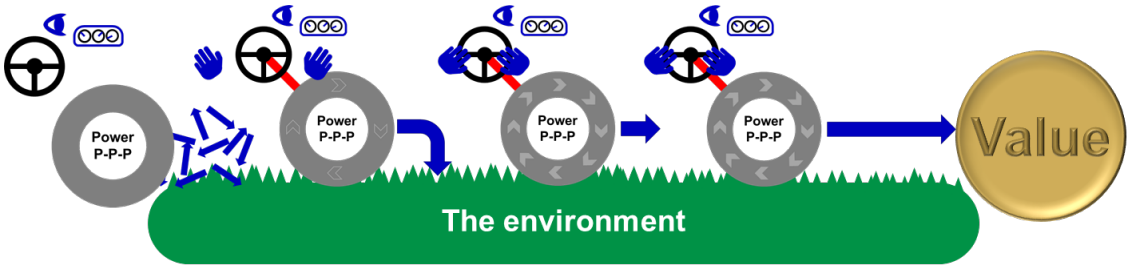

Figure 61. Environment Evolves by the Fastest Sizable Players.

Digital evolution changes the public service ecosystem's behavior. It is not self-evident that a certain service must be produced and delivered by the same incumbent authority in the same time and place any more. There are choices. One early example of this is the country of Estonia's e-citizenship, which practically means that an individual can place the same business digitally to Estonia, instead of the local government that person is living in. It is not hard to imagine similar evolution paths to paid work.

These types of evolution paths can have a significant impact on physical public service volumes in general, but moreover, they effect substantially, in which physical locations they are required and in which locations the corresponding GNP realizes. These evolution paths propose an opportunity for businesses and jobs to seek for a smoothest business environment, i.e. a location with best functioning services. Those service ecosystems must be, of course, sizable and economical. However, digital evolution means that it is not any more just about economics and size as with traditional globalization. Digital introduces a demand for ease and smoothness of services. This is where Helsinki's strategic vision for becoming the best functioning city in the world draws its justification.

5.1.6 Scaling Up the Business Wheel with Portfolios

The bigger the organization is, the harder it gets to steer fast enough to coherent directions. Needs for professional equipment and leaned management operations become more evident.

Anyone can turn bike's handlebars with an ease. A bike weighs next to nothing. Early cars were quite light too and the driver could turn the steering wheel easily. Today, all cars are heavy, though much safer, and they all have power steering. Without power steering, it would be excessively heavy to turn the steering wheel of a car. Large organizations are, however, like large ships or huge road trains in Australia. With that size, turning without power steering is already impossible.

An Australian road train is a super huge truck. It depicts well, what happens in an organization as it becomes big. Longest road trains can have nine sets of wheels and each set comprises three sets of bogies. One bogie has four wheels on it. Then there is the steering bogie in the front with two wheels to top that. That totals 110 wheels. What if the business is actually 110 different business wheels?

Figure 62. Large Businesses Spin Many Sets of Wheels.

As long as the destination is clear, it is okay to run a well planned trip with a rig like this. What happens, when the destination begins to change? What happens when the destinations start to split in various directions? Do you split the road train into a fleet of smaller trucks for different destinations? If the destinations are different, then what is the common ground anyway?

This is what portfolios are for. They describe the common grounds i.e. group level common functions and services. Most importantly, they describe sets of offerings (like destinations), which can be run effectively in smaller units. In order to do so, the portfolios also describe customer behaviors and group them into customer segments. The difference between a portfolio and a divisional structure is that the portfolio evolves all the time. Hence, a portfolio's mission is to find benefits and then capture them without excessive organizational changes. Portfolios describe which value streams and operations create value for which distinctive customer segments. This enables a much smoother way of offering those services to the right customers even proactively. Portfolios also drive much more accurately, where development should be focused. Portfolios enable targeted short term and long-term roadmaps, thus reducing fragmented development efforts without adequate critical mass for pulling through the changes.

5.1.7 The Business Wheel Proposal

The business wheel proposal outlines how customer centricity can be implemented throughout. It is a holistic depiction of, how customer value potential is researched continuously and how it is shaped into targets as a continuously self-correcting cycle. Then the business wheel outlines continuity of execution. Key to the business wheel is continuous and fast enough management loops.

The business wheel consists of:

Structural elements:

1. Offering based service portfolio structure
2. Customer behavior based segments portfolio
3. Customer facing channel portfolio
4. Value stream based stack of common and service specific operations
5. Yearly targets portfolio directly driven from strategic targets
    - Group targets, division targets, department targets, unit targets
6. Total development and solution portfolios

Management loop elements:

7. Continuous strategic insight and observations to proposals loop
    - Environment, capabilities, offering, efficiency
8. Fast orienting and target setting catchball loop through all organization layers
    - Group-division-department-unit -loop
9. Continuous steering loop of decision-to-action through all organization layers
10. Holistic observation–orientation–decision–action loop (ooda)

Execution elements

11. Simultaneous action management in all value stream layers
    - customer journey, supply, service production, service supporting operations, service delivery, support and warranty, development
12. Simultaneous action management in four maturity dimensions of action
    - research, experiments, investments, value capture.

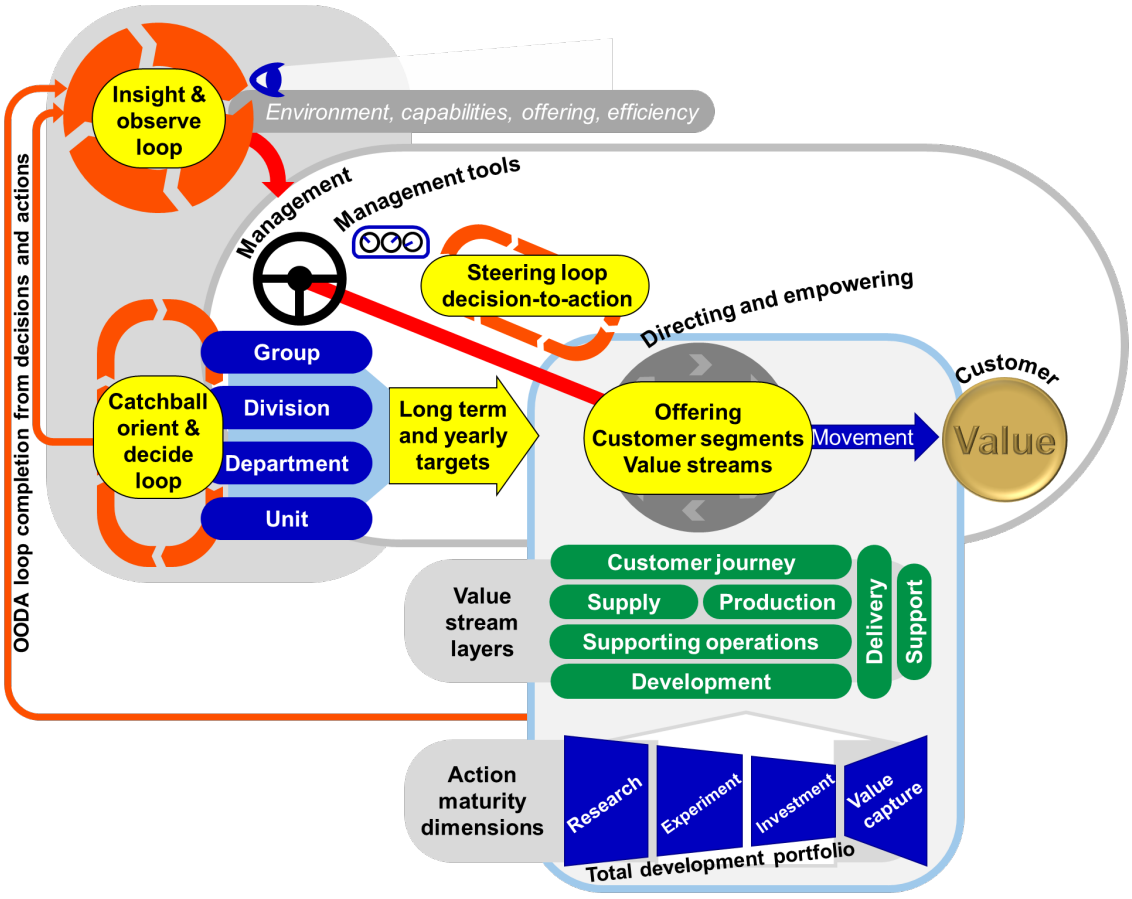

Figure 63. Business Wheel Elements for Portfolios and Activities.

The business wheel proposal is agnostic to a general management style of running a business (matrix, divisional or autonomic). However, the described management loops have to be at least quarterly, in order to create a continuous management flow. Three-year-strategy terms and yearly budgeting schedules cannot provide such a continuity.

In order to run quarterly business wheel operations on a continuous basis, this proposal suggests establishing certain operative group level teams e.g. in a strategy department.

5.2 Organizing Around the Business Wheel

The business wheel concept proposes two sets of operational team responsibilities. If the amount of required work is high enough, these responsibilities can also construct individual teams.

Management loop team

1. Continuous strategic insight & analysis and observation
2. Continuous catchball decision loop
3. Continuous steering-to-action loop
4. Ooda closure loop

Group portfolio team

5. Channel management team for customer journeys, delivery and warranty/support
6. Service portfolio
7. Total development portfolio
8. Operational portfolios.

5.2.1 Management Loop Teams

The management loop teams' jobs are to facilitate the above-described four management cycles. Their main ultimate responsibility is to ensure that cross-organizational collaboration can spin at least with a quarterly speed. The teams also provide continuous visibility, issue flagging, options and proposals to management for their continuous steering.

The catchball and steering-to-action teams prepare and facilitate continuous, quarterly and yearly targeting cascade as well as progress and issue reporting and management. These teams are the most collaborative ones with high expectations for speed. In order to enable the catchball effect in target setting, both targets alignment and progress facilitation between all organizational layers should cycle several times per quarter.

The catchball and steering-to-action teams also make sure that they provide visibility and flagged issues smoothly to overall observation (ooda closure). This is important for reducing reaction time to large-scale changes. When large-scale changes are properly identified and escalated, smaller scale decision making can happen locally. Thus, there is less need for micro management. Adequate personnel is needed for running these

loops, but much more important is lean enough and standardized management loop processes.

5.2.2 Group Portfolio Teams

The group portfolio teams' jobs are to run key portfolios that make up the group. Most of the portfolio activities should reside locally in divisions, departments and units i.e. near customers. However, the group level should possess the total customer facing channel portfolio, group services portfolio, total development portfolio and a group operational portfolios.

These group level portfolio areas tackle following themes:

Channel portfolios

1. Customer journeys – awareness-consideration-acquisition
2. Delivery related customer actions
3. Warranty and complaint actions
4. Post-acquisition support and delight

Service portfolios

5. Life events portfolio
6. Customer segments portfolio
7. Service offering portfolio

Development portfolios

8. Idea and research portfolio
9. Experimentation portfolio
10. Investment portfolio

Operational portfolios (covered in this thesis)

11. Procurement and sourcing portfolio
12. Operational value capturing portfolio
13. Group solution portfolio.

Channel management team is the one that drives proactive awareness and consideration communications capability for customers, as well as channeling conversions to service acquisitions. The team also drives fulfillment channel capability and ensures customer delight loop. Channel management also takes care of group's capabilities related to supporting customer with the delivered service and how post-delivery problems are

managed and communicated. The group level channel team's core job is to provide standardized means of conducting channel management in divisions, departments and units i.e. near customers.

A group service management team's job is to provide a standardized service offering structure to divisions, departments and units. In order to compose the offering structure, also the related life-events and customer segment structures must be managed in this team. The discussed artificial intelligence capability for life events identification and customer segmentation would be used here.

Development portfolio team takes care of a standardized development activity portfolio. The team's job is to ensure that all identified development is attached to the service offering. It also ensures development life cycle management so that the group always has enough research and experimentation and developmental investments take place in a timely manner.

The named operational portfolios' jobs are to ensure that any sourcing and procurement related to operating and developing services is conducted timely and non-redundantly, all solutions built underneath the services are intact and documented and the offering can report value against cost. Managing these portfolios requires portfolio capabilities in sourcing department as well as an enterprise architecture team keeping solution maps up-to-date. Value capturing portfolio can be managed as a part of offering management.

5.3 Building the Management Loops

5.3.1 Catchball Targeting, Steering and Ooda Closure Loops

Catchball loop

Catchball means a fast loop between top management and all organizational layers when setting targets. It is a rigorous target collaboration practice and an opposite to an "ivory tower" target setting. In order to make it work, simplicity and fast action are necessary. Business target setting includes, however, lots of complex back-office work. Catchball practice encapsulates that groundwork and ensures right amount of resources to it so that the expert work can be smooth and timely for the catchball loop. Thereby, the

catchball loop itself can be kept simple and fast. This is why the catchball loop requires standardized target setting tools, templates and practices. There is no time for such impediments as re-inventing them from scratch each time.

Establishing this rigor can require interim resourcing to build the needed capabilities. A set of simple tools and practices must be selected and created. Then management and personnel have to be educated for running the practices and using the management tools.

Originally, implementing a catchball loop meant also departing from yearly budgeting for rolling forecasting (Akao, 1991). This is, however, no option for local governments. Therefore, the catchball loop should be harmonized with the city's yearly budgeting cycle so that it gives the right input to the budgeting process, but is not restricted by it. The catchball loop should be cycling at least faster than the annual budgeting process.

The first proposed first two simplistic target setting and follow-up tools are:

1. An applied balanced scorecard stack
2. An applied catchball status matrix

A simple collaboration organizing is proposed to be built from the compass management elements in the picture:

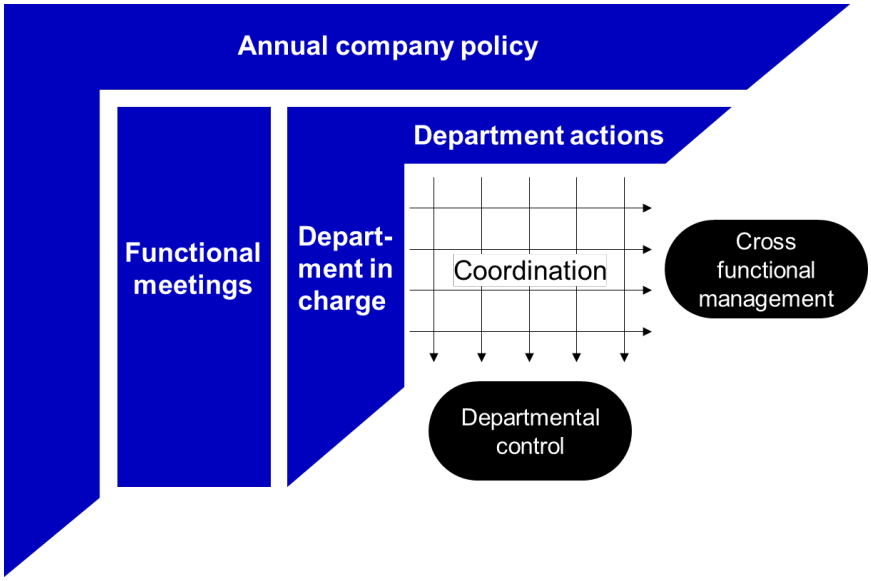

Figure 64. Compass Management and Catchball Organizing. (Akao, 1991).

Hence, the catchball loop would facilitate a series of key stakeholder workshops cascading from annual group policies to divisional and departmental levels. Also use of digital Delphi technique in collaborating target setting is proposed. In short, a digital Delphi technique bases on questionnaires and automated analysis and summary of answers (see Tennant and Roberts, 2001). Then a wider personnel reviews and potentially re-loops back to second digital survey.

The required speed for catchball execution comes from iteration cycles. In order to make a depart from an “ivory tower” effect, the targets must be reviewed and revisited by repeating the catchball cycle. E.g. three iterations within the city budgeting process requires at least three times faster catchball loop. This leads to a requirement of quarterly catchball cycles.

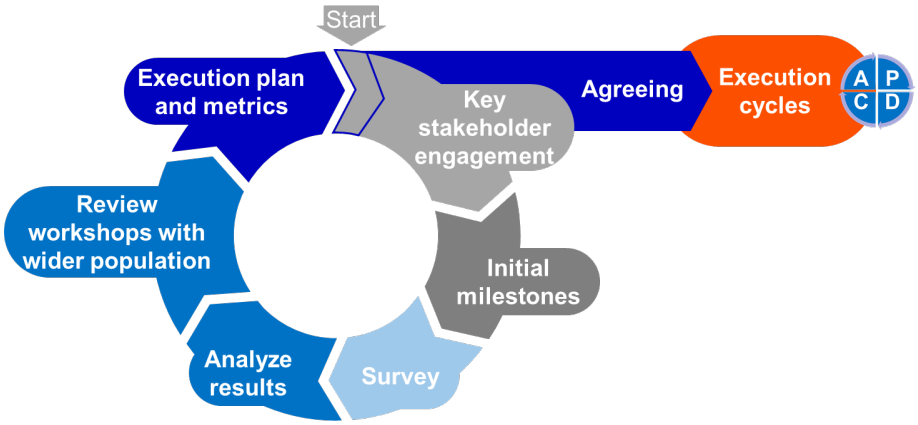

Figure 65. Catchball Process – Derived from (Tennant and Roberts, 2001).

It is important to concentrate to the key processes first and identify a dozen key stakeholders for each of them. Otherwise, workshops cannot be fast and focused enough. Catchball survey does not seek for individual opinions either. It seeks for unit and team level consensus. (Tennant and Roberts, 2001) Hence, Delphi questionnaires appointed to individuals would miss the mark. This also requires an effective service and offering portfolio. Otherwise, it is not possible to identify the key stakeholders in a customer centric manner. Finally, the catchball cycles should culminate to a large employee base empowerment. Here, the digital Delphi technique fits perfectly.

A. Steering loop

Normal steering practices with normal reporting cycles needs no special attention in the context of this thesis. It is about quarterly, monthly and weekly reporting against the set targets and triggering corrective action needs. What is different from organization centricity is that the steering should base on the service and offering structure, instead of a business function and disparate projects. I.e. what is reported is not the organizational unit, but the service or service offering within that unit.

B. Ooda closure loop

The ooda closure should be implemented so that the catchball and steering loops report automatically to the continous strategic observation and re-orientation process. Hence, ooda closure loop is a simple set of triggers and escalation practices from catchball and day-to-day steering. Ooda closure loop should also have a direct linkage to the top management's must-win-battle portfolio.

5.3.2 Balanced Scorecard Stack

Because Helsinki has hundreds of services, there also must be an excessive set of targets. However, they should not be a huge flat matrix. Instead, those hundreds of targets should construct interconnected baskets of manageable sizes. Enabling smooth interconnections requires standardized target structures, which are easily deployable.

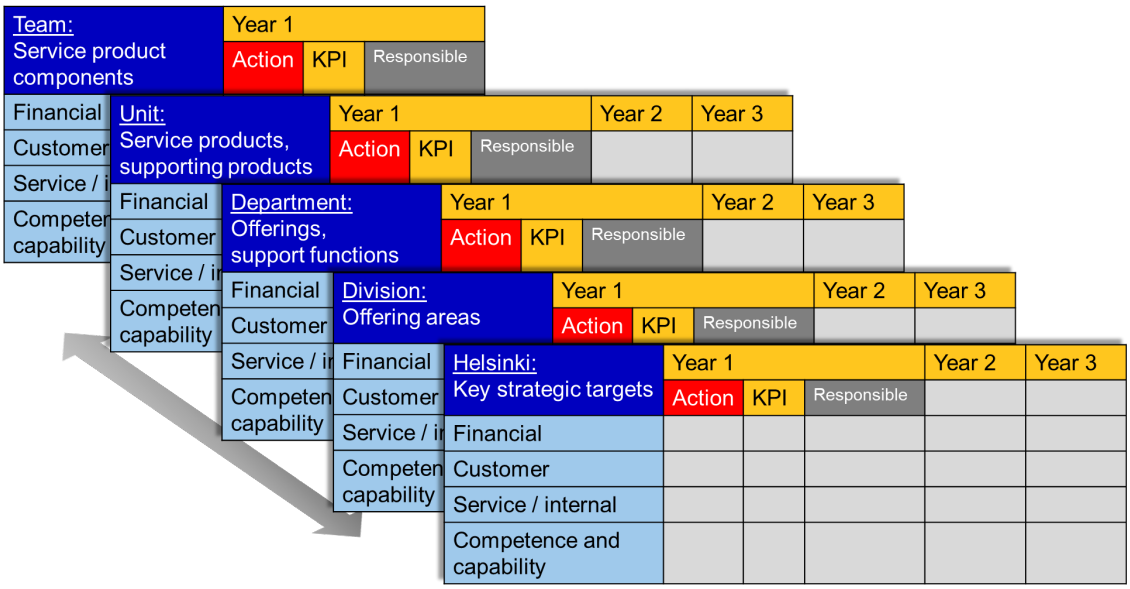

Figure 66. Offering Based Strategy Map Cascade Derived from (Kaplan and Norton, 2001).

There is no exact number, how many targets per basket is appropriate. However, the amount of targets should never exceed the number, which can be measured, reported, observed and acted upon at least on a quarterly basis. The drill-down from group level to deeper organizational levels should be automatic without manual mappings afterwards. Therefore, applying a standard BSC-style target setting should construct a BSC stack with the same structural and interconnected elements on all levels.

The biggest challenge lies in turning target setting from organization centricity to customer centric. It requires the discussed offering structures. Hence, the targets should not be organization specific, but offering specific. It means that divisions should set targets for offering areas and departments should refine those targets to individual offerings. Unit and team levels should have targets for service products and their components.

Additionally, many department, unit and team levels run supporting functions, which are used by most of the actual value capturing services. Those functions' targets should be also interconnected with the same customer centric offering based targets. Doing this often means using an allocation key, which distributes horizontal functions' targets to the offerings.

5.3.3 Catchball Status Matrix

The catchball status should consist of a matrix describing progress on relevant key areas. Applying it to offering based targeting means that these matrices should be attached to named sets of offerings and related customer segments. Driving proactive services would additionally require attaching the matrix with the related life events. Cascading the catchball down to unit and team levels would add service-products and service-components.

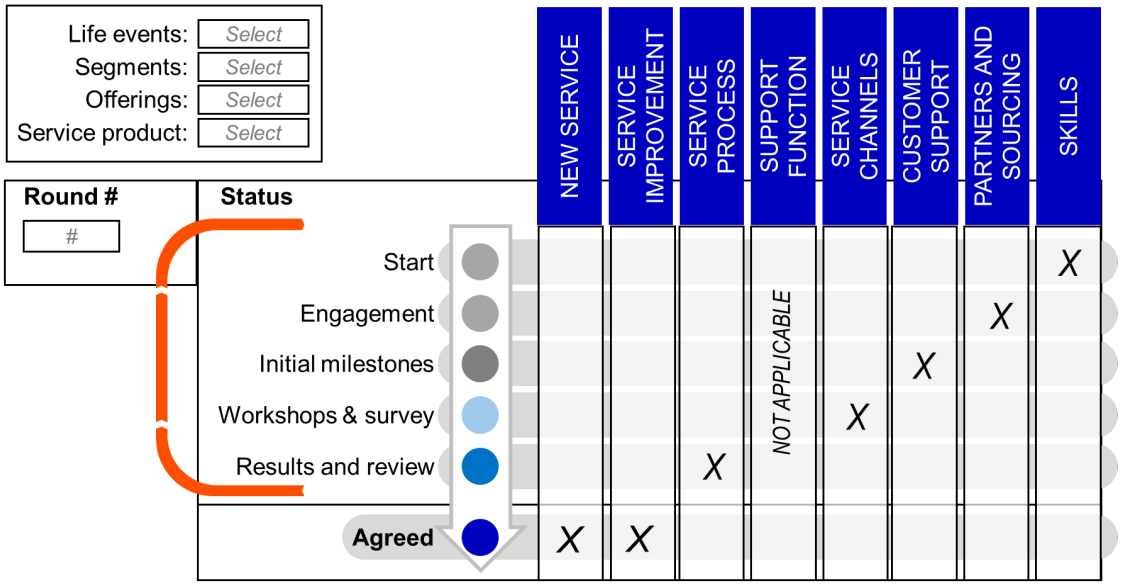

Figure 67. Catchball Process Status Derived from (Tennant and Roberts, 2001).

The actual columns of the matrix should be adjusted to meet currently topical themes. However, the proposed columns provide a starting point, which includes service creation and service improvement as well as supporting process improvements and management of skills and capabilities.

5.3.4 Customer Centric Targeting Requires Service Data

In order to apply this customer centric target setting, an adequate service data master is needed. It tells the services' structural elements where financial, customer service and capability targets should be focused.

Hence, customer centric target setting is much more complex than a mere organizational target setting. This is one of the reasons, why large businesses may split their operations onto autonomic divisions with a limited number of services. However, its downside is

limited group level customer insight and consequently limitations in executing one city strategy. This thesis assumes that the current city strategy means customer centricity as one city. Therefore, the proposal for customer centric targets cascade from group level down to team level.

Compensating the added complexity requires management rigor and encapsulation of the complex back-office work with adequate expert skills and resources. True customer centricity requires a full-blown back office capability, which is running the group level offering management. A set of continuous management loops are needed to encapsulate the management back office work and providing necessary facilitation.

5.3.5 Strategic Insight and Observation Loop

The proposed simple strategic insight and observation loop bases on a continuous environment analysis process, which identifies needed capabilities and turns them to proposed strategic objectives as described in the thesis framework.

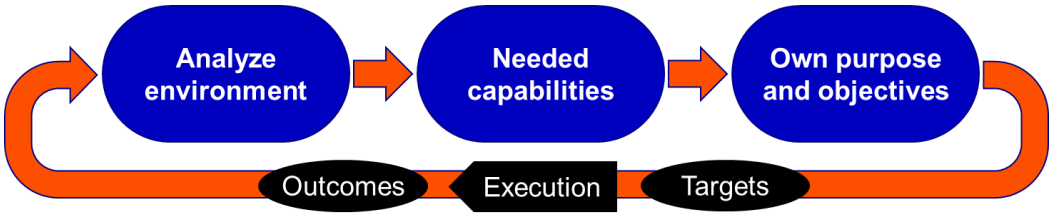

Figure 68. Strategy Management Loop Basing on (Johnson et al. 2017).

A proposal for a first continuous practice is introduction of a yearly PESTLE analysis on city's current position within international macro environment, EU-level and national level as well as inter-municipal and local levels.

- **P** – political situation (e.g. trade wars, sanctions, privatization…)
- **E** – economical realities (e.g. EU & domestic funding, interest rates…)
- **S** – social constraints (e.g. immigration, employment…)
- **T** – technological and digital disruptions (e.g. digital substitutive offerings)
- **L** – legal constraints (e.g. GDPR, changes in local government duties…)
- **E** – environmental disruptions (e.g. climate change impacts).

Additionally, a simplified form of a continuous five-force analysis would focus digitalization efforts towards life events triggered services outside the box. Many of the municipal services perceived as incumbent are facing entry threat and substitute threat competition from various private sector players both nationally and internationally.

- **Entry threat** – new competitor that did not compete earlier
- **Substitute threat** – totally new product or service or component making old one obsolete (Porter, 2004; Porter, 2008)

Both the PESTLE and five-force analyses should be conducted against existing high-level offering structures. Identified key improvement points should trigger further analysis for top management's must-win-battles. In addition, when the described ooda-closure loop should feed the strategic insight and observation. Ooda closure should launch re-visits of top management must-win-battles and strategic direction as well. The ooda closure should utilize value capture trend data from value capturing portfolio as well as development execution trend data from development portfolio. These portfolio proposals are opened up in later chapters.

5.4 Building the Key Portfolios

5.4.1 Strategic Must-Win-Battle Portfolio

A strategic must-win-battle portfolio is a set of most important key programs.

As the Pareto's principle argues, 20% accounts for 80% of the effect. This is why top management's must-win-battles (MWBs) exist. A strategic key program portfolio sets up those most important must-win-battles, which the group executive board prioritize directly.

Another rule of thumb claims, 100% of half-done accounts for 0% effect. Therefore, at least those 20% must be lead throughout and until value capturing. This is why the must-win-battles should always have strict targets with named accountabilities and they should always cover everything needed to deliver the value.

Consequently, the key MWB programs should be lead through a BSC-like target setting and follow-up. A single disparate project can deliver partial things like a new IT system or survey or a purchase, which do not deliver independent value. For a must-win-battle, this is not enough.

Must-win-battles should include

- financial targets (growth and volumes, productivity)
- targeted customer actions (what customer segments want, image, experience)
- internal actions (within value stream, sourcing, technology, compliance)
- what capabilities and competencies need to be established

This is, unsurprisingly, similar to the definition of a balanced scorecard. In order to grasp value creation and value capture, the MWB-programs should also deploy business-model-canvas-like visualizations or map their activities against Porter's corporate value chain. When crystallizing overall process flows, use of SIPOC charts from lean practices provides the necessary simplicity in contrast to enterprise architecture depictions.

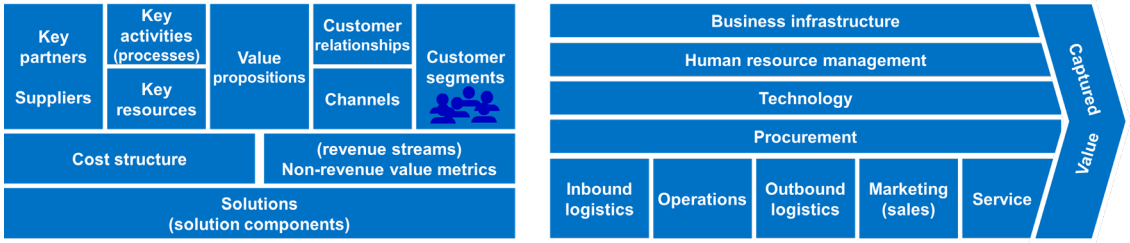

Figure 69. Business Model Canvas and Value Chain Comparison. (Osterwalder et al. 2010; Porter, 1985).

The above tools within the MWB portfolio should feed total service blueprints. I.e. each MWB should create or update the corresponding service blueprint, whenever measurable customer value is expected. These visualizations construct a much more graspable business case than traditionally written business case documents in disparate projects. In addition, when pursuing serious productivity improvements, use of value stream maps reveals productivity improvements accurately and numerically.

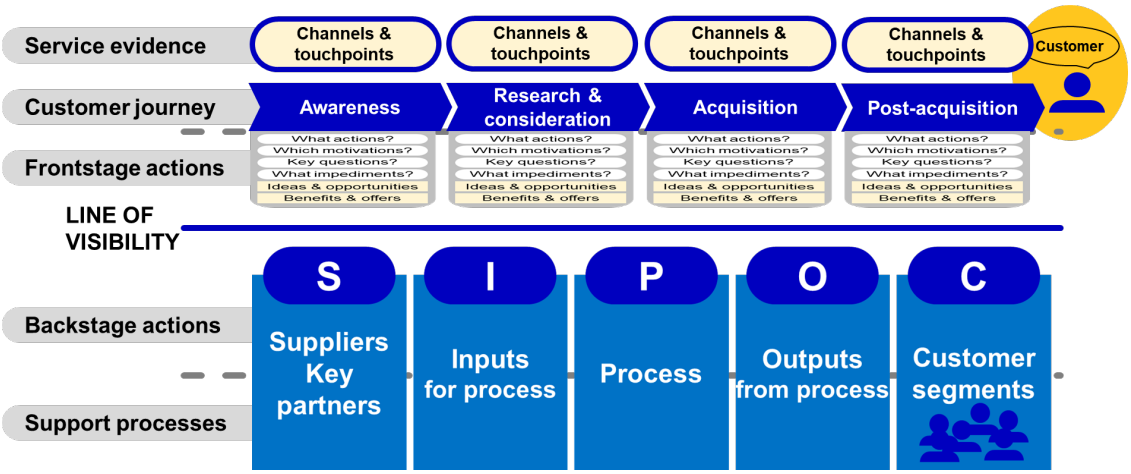

Figure 70. Service Blueprint with SIPOC. (See Curedale, 2016; Hubspot Academy, no date; Richardson, 2010; Shostack, 1984; Tennant, 2001).

Most importantly, each MWB should include deployment and capability creation roadmaps and they should be conducted throughout before fininshing the MWB. It is the deployment into day-to-day processes and customer facing, as well as HR-activities such as required trainings and new competence and capability acquisitions, which finally release the value capture potential.

MWB portfolio also includes the traditional projet triangle content and execution follow-up content. However, they do not affect value creation nor value capturing. Thus they do not drive MWBs throughout, but only tell when the MWB is done.

Deploying service blueprints and all the above high-level tools through a must-bin-battle portfolio can potentially change corporate culture towards rigorously engineered business process leadership. A well-managed MWB portfolio can build up an increasing base of development activities, which draw their justifications from outlined strategies and value capturing measurably. The must-win-battle style of strategy execution is in essence the strongest possible form of program management. MWB portfolio forces well-analyzed strategic targets into most important programs, which are lead and executed by top skills and their success is monitored directly in the group executive board.

5.4.2 General Portfolio Structure

A portfolio is a set of attributes and their interconnections and hierarchies. A portfolio can also include rich data such as depictions and documents, which are attached to the relevant attribute data and hierarchies.

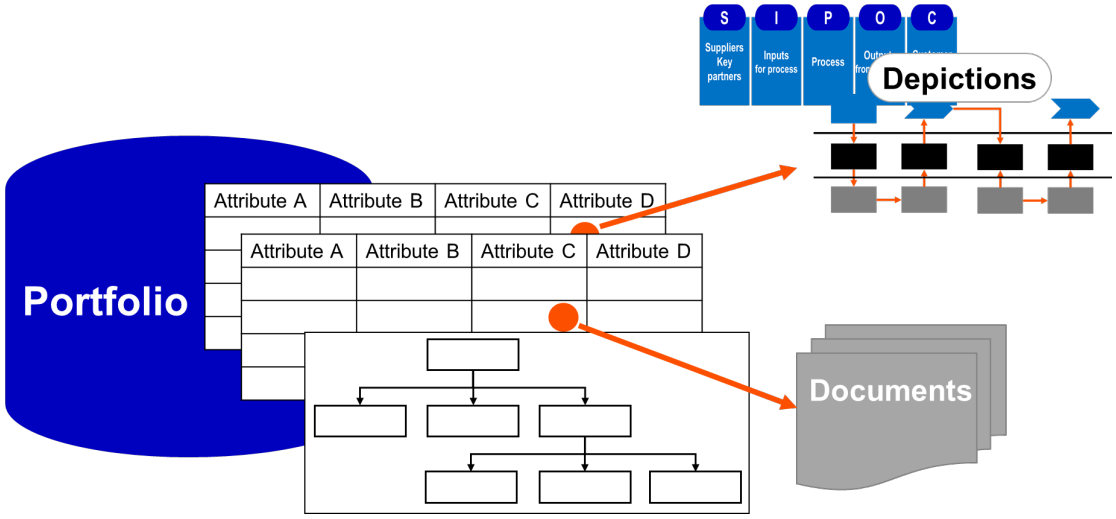

Figure 71. General Portfolio Structure.

Portfolio structures feed management and operational dashboards, giving measurable situational knowledge and triggers for business planning, reaction and escalating.

5.4.3 The Offering and Service Portfolio

A service and offering portfolio is used for operating a large set of services so that the right service combos will be offered to the right customer segments at the right time.

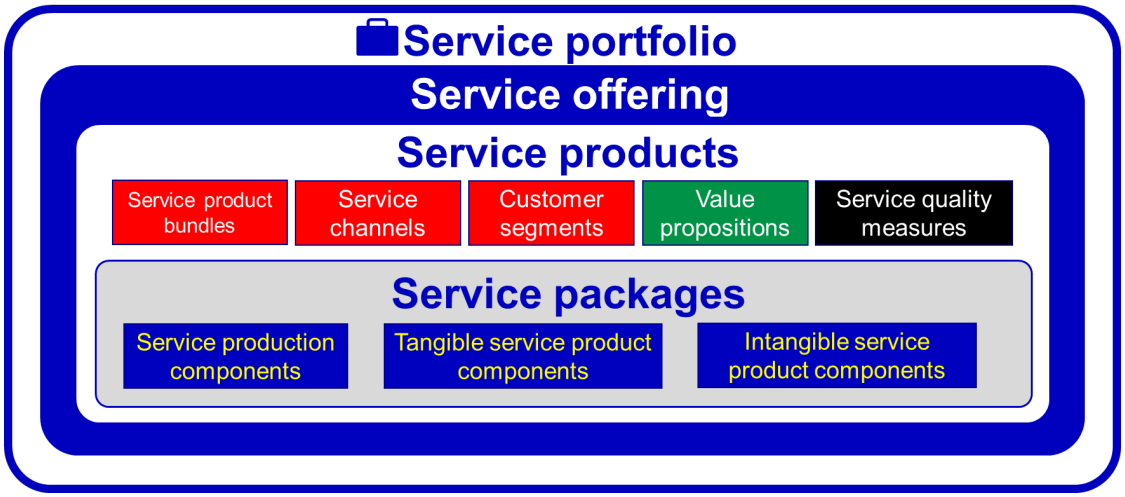

Figure 72. Elements of Service and Offering Portfolio – Derived from (Lyytinen, 2019).

Service and offering portfolio also combines service operational volumes and costs as well as value creation data into the service offering structure. Thus, it delivers the business operational performance per offering. It tells which service elements are effective and where there is improvement, replacement or retirement need.

A. Service hierarchies, linkages and structural components

Fulfilling the general idea of an offering and service portfolio requires identifying and enlisting all the products and services of the organization first. These services form bundles of services, which can be named as service offerings.

Hence, the service portfolio maintains service hierarchies, i.e. those sets of services that are relevant just for the customer segments in question (offerings). These service sets attach to life-events, which tell what services are typically needed in which situations. They also include causal paths between individual services (equivalent to cross- and up-sales). For example, using a certain social service may trigger another one and then a health or culture or education service.

The service portfolio also includes high-level structural components of the services i.e. which high-level service production components and tangible and intangible service product components are needed to create the service. These structural components define service packages out of which different service products can be constructed. This is important, because there should be as many re-usable service product components as economically feasible. Hence, services should be built from re-usable components, like Lego pieces, in order to enable flexibility in service creation. Service products yet add value propositions and service quality measures to the service packages.

B. Service value streams

A service portfolio also enlists related operational processes and links to cost and revenue structures of the services. Services are delivered through channels so listing them is a vital part of a service value stream.

The whole service value stream consists of:

1. awareness-to-acquisition channels and processes

2. supply processes
3. production processes
4. delivery channels and processes
5. return and warranty channels and processes
6. support channels and processes
7. effectivity and value capturing
8. development need capturing (not development processes).

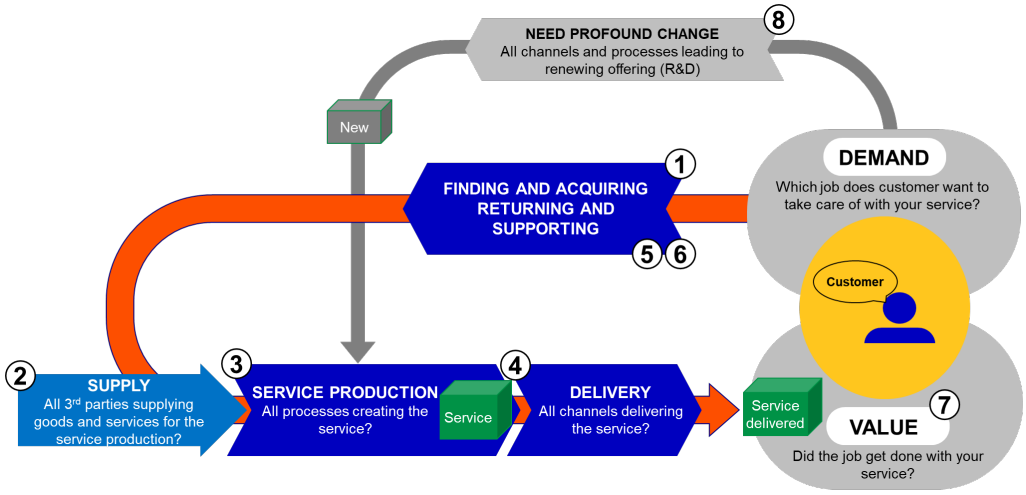

Figure 73. The Fundamental Idea of a Value Stream – Derived from (Christensen et al. 2016; Womack et al. 2007; Ulwick, 2005).

Service portfolio should also be integrated with supply and partner network data as well as own key resources. Customer and customer relationship data is always a vital part of any service portfolio. Adding internal quality measures to the services provides the upper and lower control limits (UCL & LCL) to ensure that services are delivered in a stable manner.

C. Exclusions

A service and offering portfolio does not include detailed and technical service component descriptions or engineering level process descriptions. The service portfolio is a business management tool with business management content. It does not contain actual value stream descriptions, but enlists them. Nor does it contain detailed workflows such as detailed customer touchpoint reactions like standard customer facing discussion patterns or standard email and chat answers, which are used by customer facing personnel.

5.4.4 Customer Segment and Customer Portfolios

In order to attach the offerings to work for customers, the customers and their “needs” must be identified first.

A. Customer segment portfolio

Customer segment portfolio stores customers’ life events and clusters them into groups of similar customers i.e. customer segments. Key task behind the customer segment portfolio is to run the life events analysis activities, which reshape customer segments continually and connect right services for those segments. These reshaped segment–offering combinations loop back to the offering portfolio.

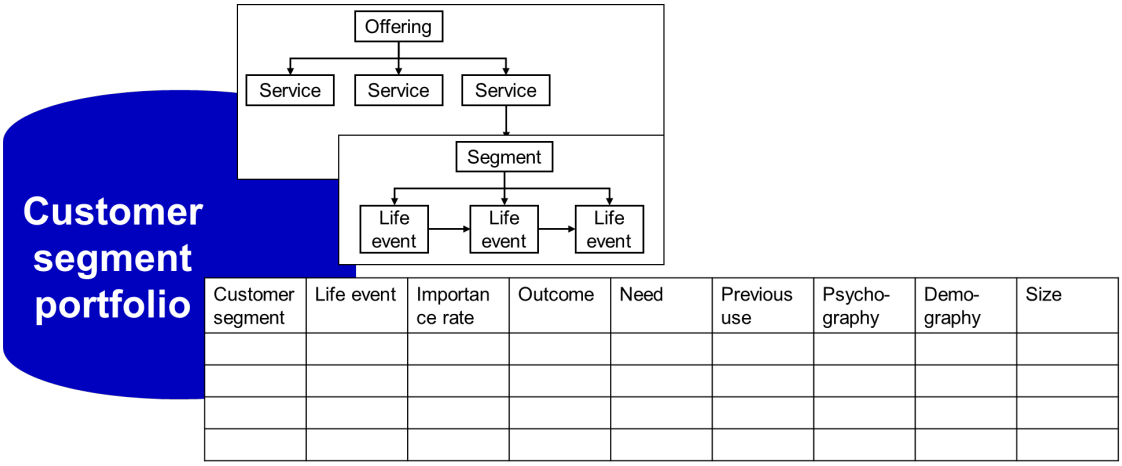

Figure 74. Customer Segment Portfolio.

Life-events based segmentation also enables utilizing artificial intelligence in identifying triggers for public service use. Hence, the proposed life-events based segment portfolio prepares local government operations for the national AuroraAI program.

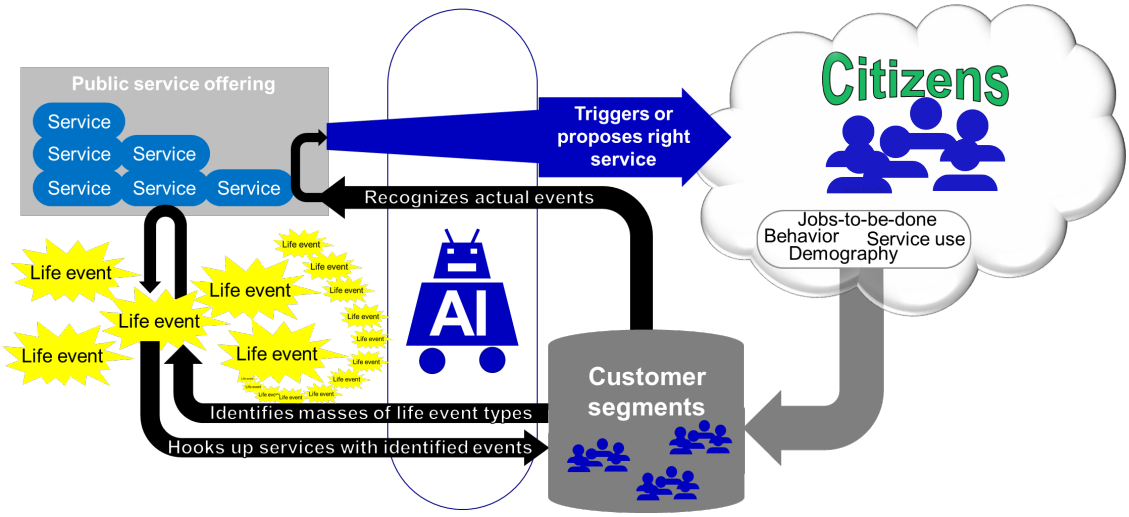

Figure 75. AI Harnessed Customer Segments' Interaction with Offering and Customer.

In addition, life-events tell more precisely, what customers want and when. Thus, they enable much more accurate service provisioning with better timing – also proactively. Life-events' interconnections also enable cross- and up-offering.

B. Customer portfolio

Customers need to be identified, before their life-event patterns can be identified and finally turned into customer segments. Therefore, a centralized customer database for storing individual customer data is a necessity for commencing customer segmentation.

The ongoing myData wallet project is already addressing the customer database issue. Hence, this thesis only proposes extending the myData wallet for managing all types of city customer's for all customer segments – not only Helsinki inhabitants, but also tourists, businesses and non-profit organizations.

Ultimately, the Helsinki myData wallet could pursue eCitizenship type of a functionality as in Estonia. eCitizenship would extend the Helsinki service palette outside the physical city borders and exploit the digital entry opportunity in a much larger public service market. There is some indication that businesses may select their locations basing on eCitizenship types of ecosystems. This introduces both an opportunity and a threat to imposing corporate taxes.

5.4.5 Service Blueprint and Channel Portfolios

Service blueprint portfolio stores coarse service depictions in a form of service blueprints.

A. Service blueprint portfolio

Service blueprints describe, which channels are used for what purposes in particular services. They contain information, how a particular service reacts to different customer journey stages and how customer delight is taken care of. They also contain coarse-level backstage processes and their productivity measures. Hence, service blueprints describe how the business works.

However, they not describe, how technical details work. Service blueprints are high-level tools for business managers. Detailed solution depictions are stored in a solution portfolio for technical personnel.

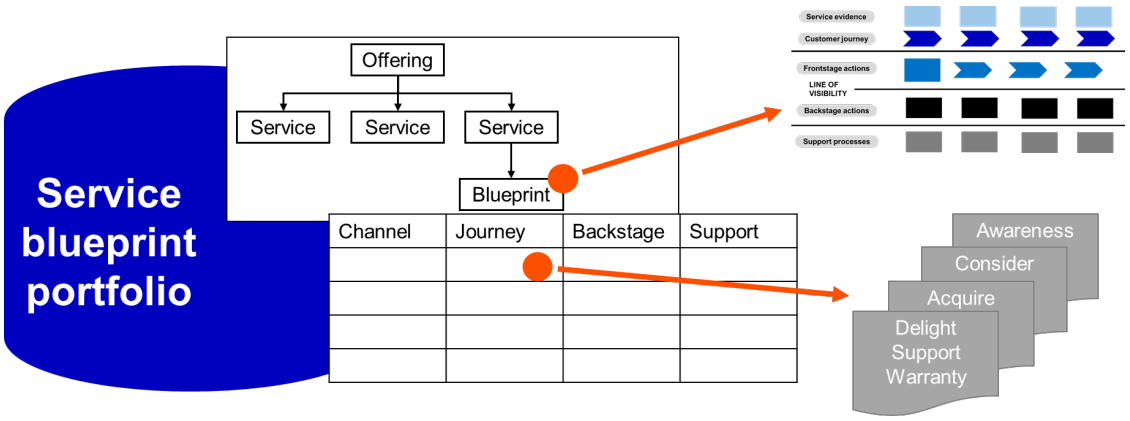

Figure 76. Service Blueprint Portfolio.

Service blueprint portfolio is connected to the offering and service portfolio for business operational drill-down. The drill-down is used for identifying problem and improvement areas within a service so that development activities can focus to the right sweet spots.

B. Channel portfolio

Channel portfolio stores all customer facing channels, their processes and workflows. The channel portfolio should tell a service, which particular channels are used for which purposes in which situations.

5.4.6 Solution Portfolios

Solution portfolios describe in technical detail how the backstage processes and related assets work, how they are built and how they are interconnected. The solution portfolio consists of enterprise architecture depictions e.g. with Zachmann notation, typically conforming to TOGAF framework. Notably, the new national act on public administration's information management obliges public organizations to establish and operate this portfolio (Finlex 906/2019).

The solution portfolio is an enterprise architectural composition of engineering level depictions and their interconnections:

1. Detailed solution process descriptions
2. Detailed system and system component depictions
3. Detailed data and information structure diagrams
4. Detailed listings technologies and their versions.

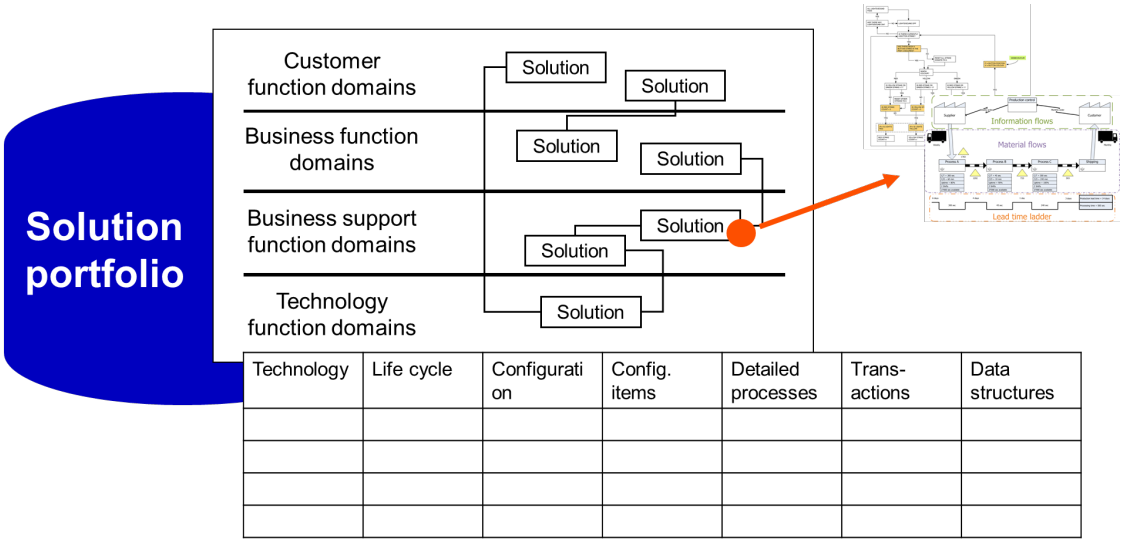

Figure 77. Solution Portfolio.

Technical lean six sigma depictions such as value stream maps with exact notation can also be a part of solution portfolio content. They describe accurate process flows and performance of the solutions. Solution portfolio connects to the service blueprint portfolio, thus providing technical detail on how the services work and at what state they are.

5.4.7 Offering Based Development and Innovation Portfolio

Development portfolio contains all development activities related to the offerings and supporting functions. It also includes ideation and research, which may not link to the offering or supporting functions. In addition, a development portfolio comprises a development life cycle model to foster innovation. The life cycle model already exists in the city development framework, Kehmet, as well as in the corresponding group development portfolio. However, the current development portfolio is configured only for project-based development. Hence, it does not fully support the proposed service offering based development setup.

An offering based development portfolio connects development activities with the offering structure. Development assets are allocated through service offering guardrails, instead of projects. Development results are also reviewed through offerings rather than in individual projects.

Guardrails are practically annual upper and lower control limits for a service or an offering. I.e. a service can allocate money and other assets freely within given limits throughout the year. This practice speeds up operations and reduces volume of decision making without compromising visibility and steering.

Offering based development portfolio includes three ways of delivering development outcomes:

- Projects
- Agile development methods
- Line work.

A benefit of this type of a development portfolio is a direct linkage to value capturing. In comparison, a project portfolio delivers project outcomes rather than captured value and it has a hard time in identifying non-projected and agile development activities.

Hence, the service offering based development portfolio inherits the service structure and adds following developmental attributes:

- investment guardrails
- internal personnel guardrails
- external personnel guardrails
- development operational assets such as equipment, licenses and premises.

These guardrails substitute project budgeting, scheduling and resourcing (project triangle) in business management and leaves them for managing only projected execution. Agile and line work rely entirely on guardrails and allocate their resource usage continuously within those guardrails.

Because development targets and their measures are appointed to the services instead of projects, they enable a more coherent application of business outcome targets for development activities:

- Customer satisfaction
- Customer journey efficiency
- Service production efficiency
- Supply efficiency

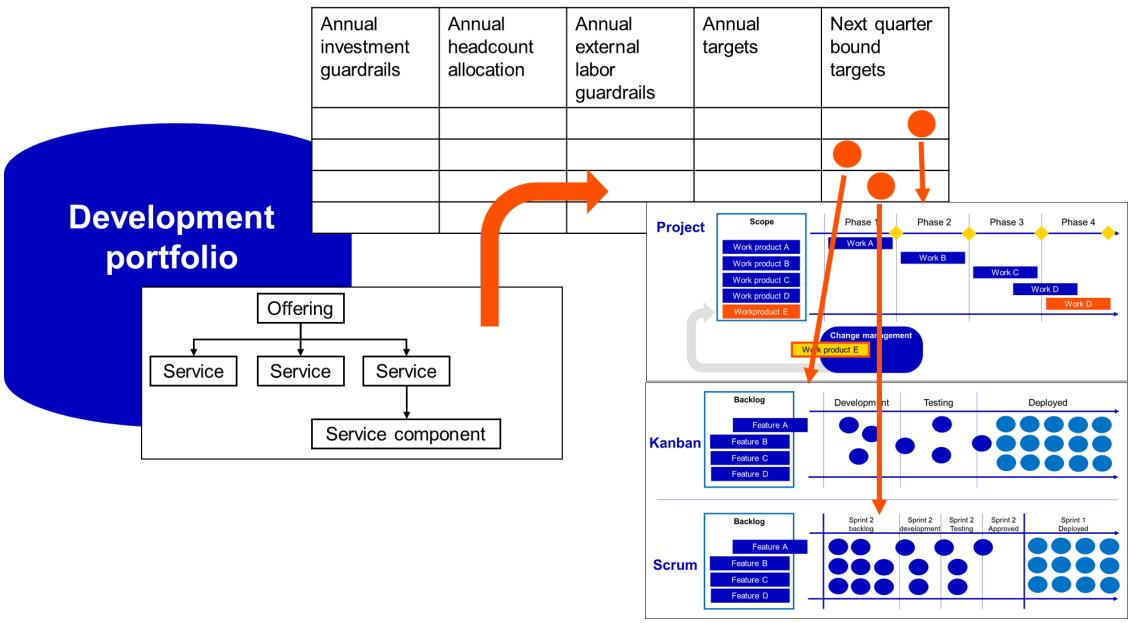

Figure 78. Development Portfolio.

Offering based development portfolio also enables extending annual guardrail steering to a strategic level. The development portfolio consists of the whole innovation funnel from research to value capture. Therefore, it should also allocate right amount of assets to different stages of the innovation funnel.

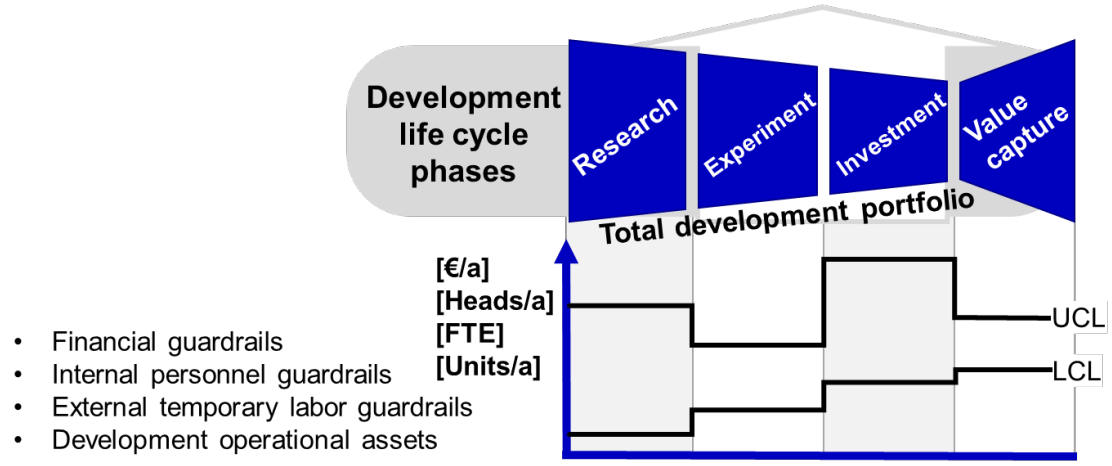

Figure 79. Guardrail Balancing per Development Life Cycle Phase – Derived from (SAFe, no date; Tidd and Bessant, 2013).

This assets balancing per innovation funnel is crucial for ensuring that services do not erode and the business is ready for disruptions. Strategic insight and statistical trend data from captured value give indications, how much effort on research, experimenting, new investment and continuity should be allocated. (See SAFe, no date.)

5.4.8 Procurement and Sourcing Portfolio

The proposed procurement and sourcing portfolio is a citywide portfolio, which handles all bids and includes a vendor portfolio for vendor management. It is not a contract management system, but rather linked to it.

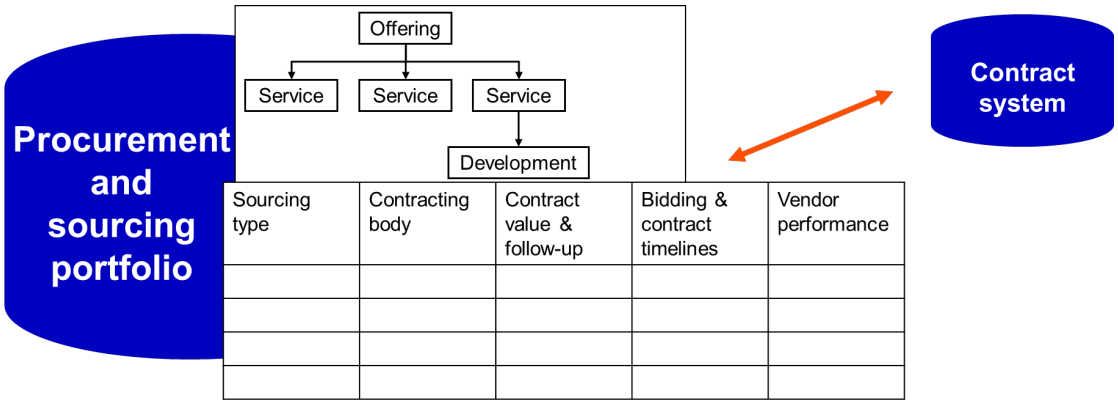

Figure 80. Procurement and Sourcing Portfolio.

Procurement and sourcing portfolio's purpose is to remove redundant bidding processes as well as excess bidding related preparation work. It should integrate with the development and offering portfolios so that all ongoing bids and contracts are connected to the city's service offering and development activities.

Hence, minimum attributes for a procurement and sourcing portfolio are the sourcing type, who is sourcing, what are the related offerings and services and application areas, what is the value, when bidding takes place and when contracts seize. In addition, vendor relation measures should be a part of the portfolio.

5.4.9 Value Capture Portfolio

The proposed value capture portfolio is essential for strategic insight and innovation capability. Namely, the earlier proposed strategic insight and observation team uses captured value data for trend analysis. Value capture trends together with strategic environment analysis are the basis for strategy direction proposals. They also give input to must-win-battle prioritization.

In addition, value capture data is important for innovation capability, because it predicts when current offering is nearing end-of-life. Innovation capability linkage makes the value capture portfolio also a crucial part of managing the development portfolio. The development portfolio comprises the whole innovation funnel from research through experimentation and investments until value capturing. Development portfolio should use value capture data for development activity prioritizing as well as for focusing activities to the right innovation funnel phases.

The value capture portfolio is tightly interlinked with the service and offering portfolio too. The service offerings aggregate operational volumes and costs as well as value creation data into the service offering structure. Thus, the service and offering portfolio delivers the business operational performance visibility per offering.

Value capturing portfolio consists elements such as:

Volume

1. Volumes of awareness, consideration, service delivery and usage
2. Volumes of cross and up-sales types of service delivery

Speed of captured value

3. Customers' acquisition-to-final-delivery lead time
4. Proactive vs. reactive service delivery

Quality of captured value

5. Defect information through complaints, cancellations and re-deliveries
6. Repetition vs. successful first time delivery

Captured value

7. Customer delight and satisfaction data
8. Net value i.e. comparison against cost of delivered service
9. Statistical trend data on services impacts in citizens lives, businesses, non-profit organizations and tourism.

Proposed first customer delight and satisfaction measures to be applied for services are:

- CES – customer effort score
- CSAT - customer satisfaction score.

CES can reveal bottlenecks in the service's value stream. Hence, it provides information on smoothness of a service offering. CES bases on these simple questions:

- "How much effort did you do to get the service? [1– 5]"
- "Was the service made easy and accessible? [yes–no]"

CSAT gives a flag that something should be done to correct a bad experience. Hence, CSAT should be connected to return, warranty and support processes for commencing immediate reactions. CSAT bases on a question:

- “How satisfied were you with the received service? [1–5]”

CES and CSAT do not give insight to what features should be improved or how the servide should be replaced. Jobs-to-be-done -based surveys can be used for gathering this type of customer demand insight.

Often used NPS (net promoter score) does not add primary value for measuring captured value. NPS measures a snapshot pulse of customer experience, but does not tell why the experience is what it is.

5.5 Development Execution Proposals

5.5.1 Using Continuous Development for Long-Term Success

A large study in the United Kingdom investigated top 500 companies during 20-year span. Only 2% of them were able to avoid falling in a disruptive transformation within the 20 years of studied timeline. Those 2% long-term continually successful businesses were able to develop their operations and services continually. (Yip et al. 2009) This thesis proposes the development style of those 2%.

Public sector services are today facing an emerging digital disruption. This thesis argues that it depends on capabilities to develop continuously, whether the digital change will be evolution or less controllable transformation.

This leads to a proposal of shifting development style from projects-only to a hybrid model of:

- continuous development,
- larger projects,
- line work and
- must-win-battles.

As argued earlier, an offering based development portfolio enables this shift. Instead of separate one-time project organizations, service owners can start leading their services' development activities directly. In addition, decision makers can delegate development needs much faster to a service backlogs for a more straightforward execution.

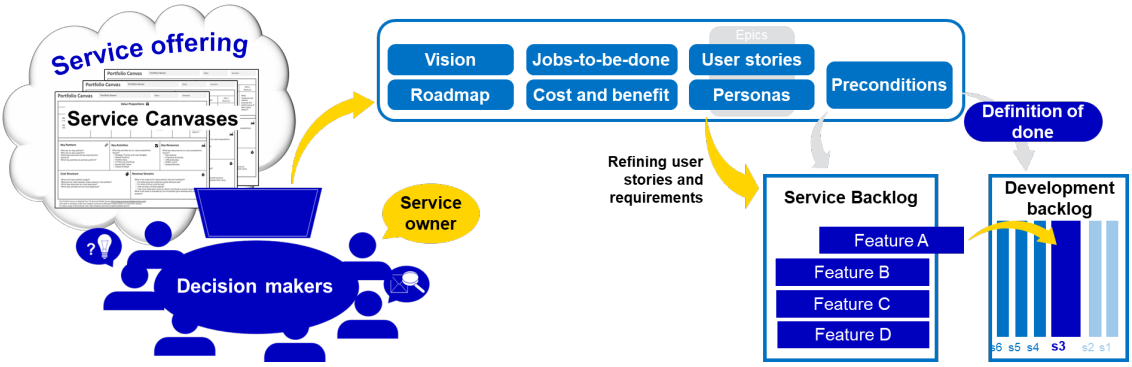

Figure 81. Steering Through Offering to Service Backlogs – Derived from (Kautto et al. 2017; SAFe, no date).

As a result, less one-time projects are needed. That reduces overall fixed development costs, because each one-time project establishment introduces initiation and management costs, which are not deeded with direct development backlog steering. Also risk, change and issue management become simpler and more straightforward.

However, continuous offering based development does not erase a need for projects completely. It only focuses them, where they are most beneficial. Most importantly, continuous development reduces a need for big transformative projects, thus creating stability and predictability.

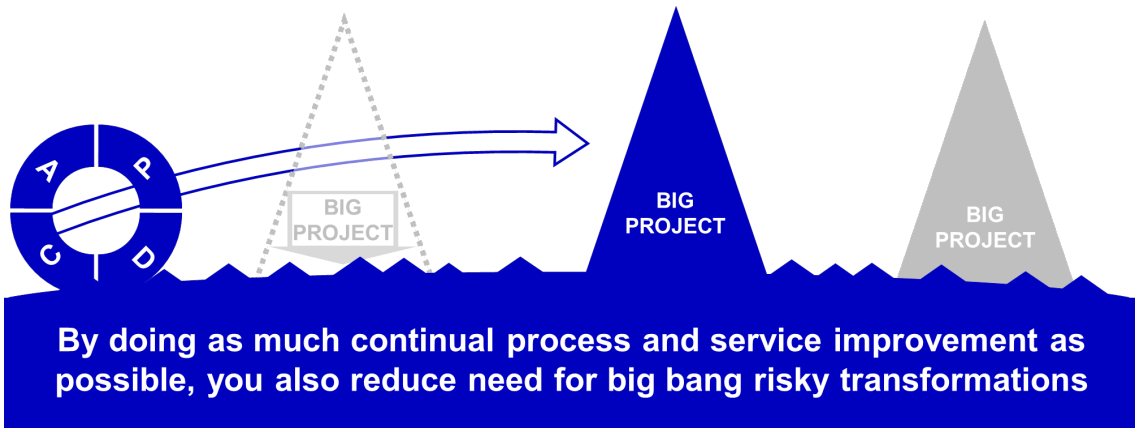

Figure 82. Way of Keeping Competitiveness and Reducing Number of High-Risk Transformative Projects. (Kautto, 2019).

In addition, fostering continuous development through offering and services improves management visibility. That in turn eases top management's must-win-battle identification and prioritization.

This change towards continuous development requires, however, changes in organizing teams and in ways of empowering personnel. Team structures should map with the offering structures. Duties' delegation and empowerment should stem from service management just much as line organization. This service organization – line organization matrix is only possible through a rigorous offering portfolio.

5.5.2 Addressing Ambiguous Development Practices

Improving development activities' quality in short term requires cleaning non-projects from the development portfolio. All development activities should clearly land in one of the following categories:

- traditional projects
- continuous (agile) development
- line work (non-project).

In order to enable quality in projects, they should comply with a universal definition of a project. By ISO 21500 the following characteristics:

1. It is unique – i.e. it is not line work or continuous development
2. It has start and end – i.e. it delivers its final outcome by the end

3. It consists of coordinated and controlled activities – i.e. Work or outcome packages and their causal orders, timelines, costs, resources, critical success factors, stakeholder and communications
4. It has a clear objective to be delivered – i.e. business case accepted by sponsor/owner
5. It has a set of coordinative processes – i.e. project management, product and support processes. (SFS, 2012)

ISO 21500 being slightly theoretical, a simpler compliancy rule to be applied could be:

1. It is unique – i.e. it is not line work or continuous development
2. It has start and end
3. There is a clear end-objective to be reached by the end of the project
4. It consists of work or outcome packages
5. Each package has executing skills and personnel identified
6. Each package has budget and material resources reserved
7. It has steering group lead by the sponsor/owner and project manager and their steering practices.

A continuous agile development should comply to following characteristics:

1. It is not unique – instead, it is a continuous flow from a backlog to execution
2. It has no start or end – instead, it has time windows for releasing next business values. Time window consists of several fast and short development cycles.
3. There is no clear end-objective – instead, there is a clear vision of the next business value. End-objective evolves within the vision during development cycles.
4. There are no orderly work or outcome packages – instead, there is a prioritized backlog of outcomes to be implemented.
5. There is no skill and personnel reservation for outcome packages – instead, there is a skillset and personnel in continuous development teams.
6. There is no budget for outcome packages – instead, there are continuous teams' budgets (similar to line organization budgets). Same applies to material resources.
7. It has a sponsor/owner and a product owner who prioritizes the backlog to be developed – i.e. nobody is stealing development teams' time and effort with anything that comes outside the backlog.
   (Derived from Fryer et al. 2007; Womack et al. 2007).

If these criteria are not met, the development activity is not a project nor continuous agile development. Instead, it is line work without clearly set overall development objectives and measures. There is nothing wrong with continual development as line duties. However, addressing them as projects or continuous agile development blurs management visibility and results a messy portfolio, where strategic objectives do not land to execution well enough. Yet those development activities will tie up personnel and costs. Hence, a messy portfolio means high levels of wasted skills and money.

5.5.3 Enhancing Customer Insight in Development Activities

As outlined in the framework, the customer focused development style through service design practices fosters continual service improvement and innovation.

A. Making service design a compliancy requirement

A hub of service design experts is already in place and it gives service design consultation and facilitation to development activities. I.e. the hub facilitates the double-diamond model into selected development activities and brings along the related design principles and methods.

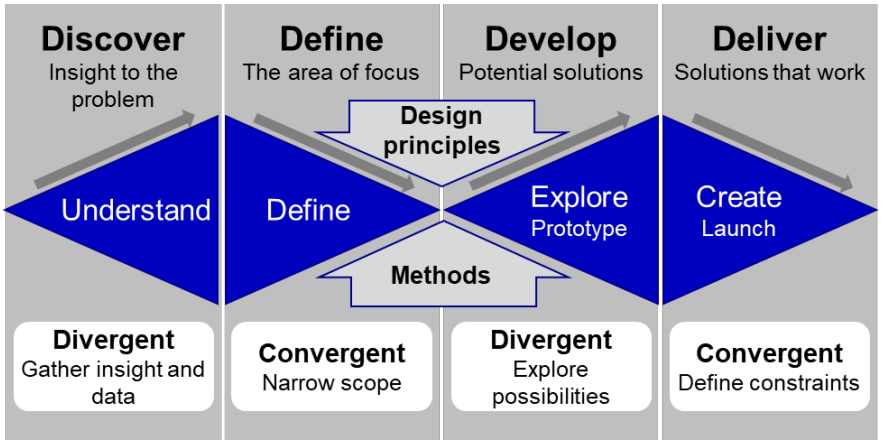

Figure 83. UK Design Council's Double Diamond Model – Reconstructed from Several Versions. (Design Council, 2015; Design Council, 2019; Hands, 2018).

However, design driven development practices can be scaled up through making them a compliancy requirement for all applicable development activities in the development portfolio. Benefit potential is clear. Investing in service design makes development outcomes much more focused to what customers want and what they will experience

through developed solutions. Service design results should also be used for prioritizing development activities.

B. Using jobs-to-be-done surveys in must-win-battles

Service design leads to another proposal of harnessing the jobs-to-be-done practice for innovation. This thesis proposes a must-win-battle approach to applying the explained jobs-to-be-done practice, because it involves high-skill customer survey practices. Deep dive customer surveying can be costly too. Hence, wider deployment would be unlikely to succeed and therefore the focus should be on the most relevant cases with a substantial business improvement potential. Substantial improvement can be for instance a low service utilization rate in a major service with high volumes and the root cause needs to be investigated.

As explained in the framework, the jobs-to-be-done generated customer insight results sets of scored customer outcomes. These scores tell much more precisely than a direct customer needs survey, what the reasons behind e.g. a low utilization rate are. Then the scores tell which improvements bring most benefit to which types of customers.

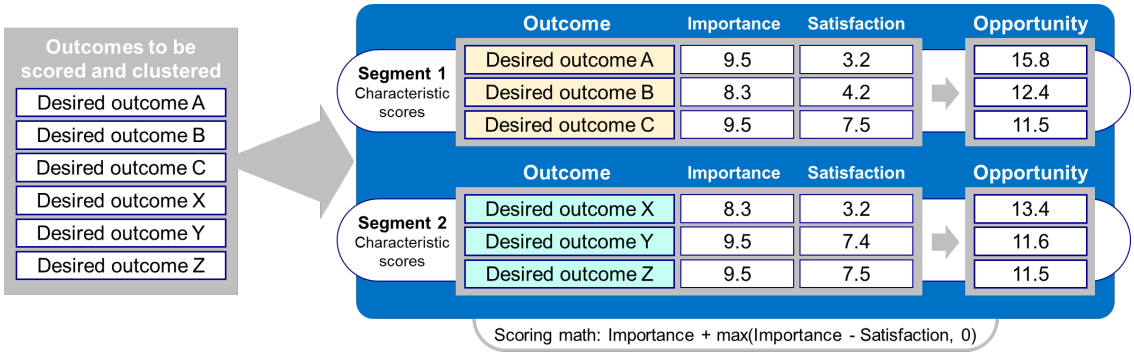

Figure 84. Segmented Opportunity Scoring Basing on (Ulwick, 2005).

Hence, the must-win-battles can focus their business improvement targets more accurately. In addition, the job-to-be-done opportunity scoring leads to identifying new customer segments. This information should connect to the proposed customer segment portfolio.

5.5.4 Addressing Team Dynamics and Sensing Process Improvement

The proposed business wheel concept addressed operational flow and smoothness. Smooth flow creates costs efficiency, better quality and faster service. It also speeds up development and accelerates innovation. This leads to addressing team dynamics and how to constantly sense process improvement potential in teams.

A. Lean teams

Lean management bases on long lasting teams. Lean teams are highly structured to work together with strong mandates. This is why lean teams also mobilize fast.

This thesis proposes organizing longer lasting developer and service operational teams around particular services and service areas. Lean teams must have a strong focus and sense of an end-result and customer value. Lean teams also must have solid backlogs without management bypass channels to disrupt team work. The whole lean team efficiency and fast result delivery bases on doing things right the first time.

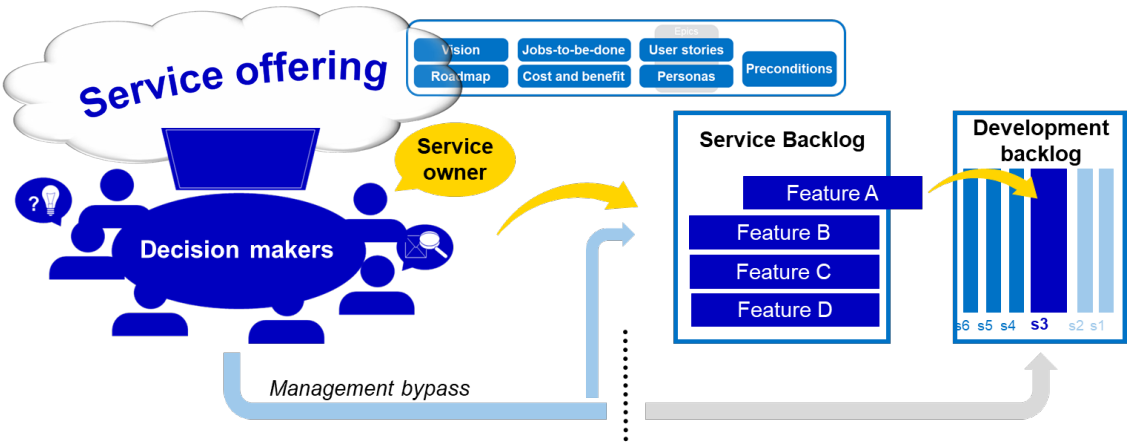

Figure 85. Lean Teams Have no Management Bypasses.

In order to reduce management bypasses, the service backlogs must work fast enough. This is possible through a rigorous offering and service portfolio. Bypasses are not needed when management and decision making bases on streamlined service canvases. Prioritization to service backlogs is then immediate and teams can coordinate their execution in an orderly manner straight from the backlog without disrupting ongoing activities.

B. Lean external resourcing

It is rarely possible to resource all team personnel in-house. Therefore, lean teams require addressing external resourcing practices too. Project based external usage happens in bursts and external personnel tends to change constantly. It hinders learning by doing within teams. This should be addressed with longer-term contracts, which tie up external individuals to the same offering and service portfolio for a long enough time. All external skill contracts should include an additional cost of core knowledge transfer to internal personnel. The new act on public procurement and sourcing (2017) includes a new dynamic purchasing system (DPS) method, which fits to longer term contracting of external teams.

C. Sensing flow and process improvement potential in teams

Teams and service owners should be educated to identify unevenness and overburden in their daily work. Management bypasses are a typical symptom of unevenness. They overload few team individuals and leave many without enough work.

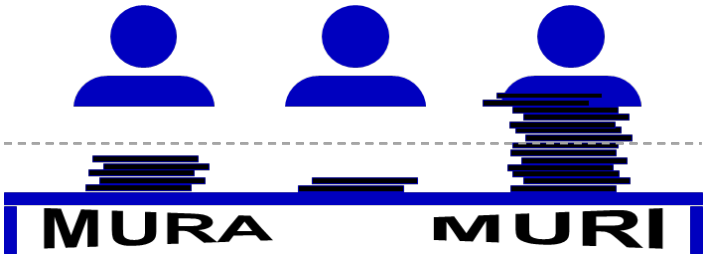

Figure 86. Unevenness “Mura” and Overburden “Muri”. (Kautto et al. 2019).

Management bypasses emerge from a sense of an uncontrollable situation, instead of urgency. Urgent requests are easy to prioritize through a well-established service backlog. The lack of control is often caused by unclear backlogs and unclarified duties of the teams. If team duties are not clearly assigned by a rigorous offering and service portfolio, the management has to assign the tasks in bursts and through bypassing the non-functioning backlogs. Unstructured bypasses hinder team learning and tasks have to be assigned to the same team members each time. Teams’ skills start splitting in cliques that do not discuss with each other, finally causing both unevenness and overload and ultimately compromised team spirit. This spiral of “mura” and “muri” can be avoided in daily work by making service and team backlog processes clean and fast.

Once the team level flow is intact, the teams can concentrate to process improvement of the services even without distinct projects and in their daily work.

Classic lean process improvement areas are:

- T – unnecessary transfers
- I – unnecessary inventory
- M – unnecessary motion
- W – unnecessary waiting
- O – overproduction
- O – overprocessing
- D – defects. (Goel and Kleiner, 2015)

5.6 Summary of Proposal Building Blocks

The key building blocks of the proposal consist of an operational concept named as the business wheel, a set of portfolios required to provide needed information and an organizational setup i.e. required expert teams to run the operational concept and the portfolios.

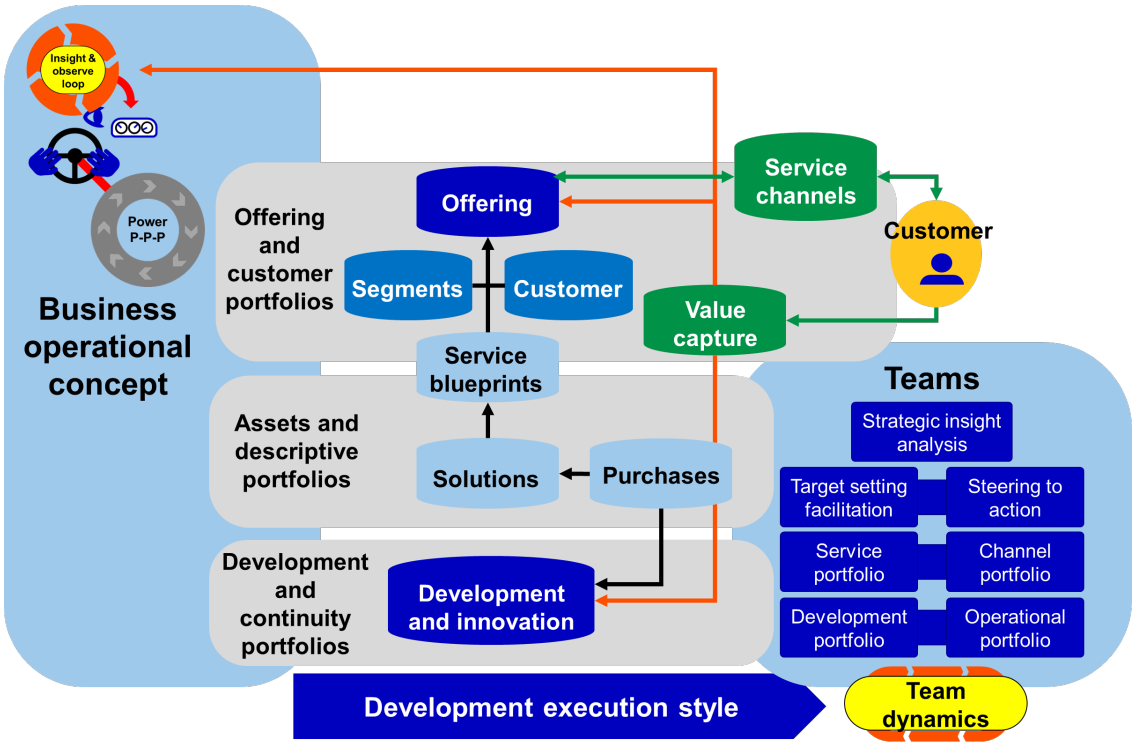

Figure 87. Proposal Building Blocks.

In addition, the proposal addresses a few significant practices how to execute development. The proposal discusses how to turn management of disparate projects towards continuous development and why. The proposal addresses the importance of clarity about the development style being used and proposes establishment of a service design rigor for adding more customer focus in development. Finally, the proposal completes the whole proposal with important building blocks of team dynamics.

6 Validation of the Proposal

Validation of the proposal comprised two phases and an acquisition of an independent consulting firm to facilitate the validation as well as for providing a third party opinion. First, the proposal's topics and the city environment was summarized and inducted to the consulting firm. This led to a series of interviews of selected experts and management. Qualitative feedback about the proposal topics was gathered in rich text, giving insight for larger validation workshops. The next validation phase comprised two organization-wide workshops.

Table 11. Data Validation Events.

Validation round	Data type	Data source	Org.	Date	Rec
Interviews	Virtual	Program manager	central	7.4.2020	notes
	Virtual	Development manager	urban div	7.4.2020	notes
	Virtual	Program manager	central	8.4.2020	notes
	Virtual	IT-manager	social div	8.4.2020	notes
	Virtual	Purchase advisor	social div	9.4.2020	notes
	Virtual	Project manager	central	9.4.2020	notes
	Virtual	Project manager	edu div	15.4.2020	notes
	Virtual	CDO	central	15.4.2020	notes
	Virtual	Strategy director and manager	central	16.4.2020	notes
	Virtual	Program manager	culture div	17.4.2020	notes
	Virtual	Solution architect	central	11.5.2020	notes
Workshops	virtual	18 attendees throughout org.	group	6.5.2020	workshop tool
	virtual	20 attendees throughout org.	group	14.5.2020	workshop tool

All involved roles within interviews and workshops:

Chief digital officer, chief governance officer, city design lead, development manager, development specialist, directing chief specialist, financial manager, head of unit, HR manager, IT architect, IT manager, IT systems manager, IT-development manager, IT-specialist, procurement and logistics manager, procurement manager, procurement advisor, program manager, project manager, quality specialist, security manager, service manager, software developer, special planner, strategy director, strategy manager

Due to the ongoing Covid-19 pandemic situation, all validation interviews and workshops were held virtually. Workshops used a digital collaboration and design tool to present the topic first and then for workshopping the corresponding themes. Workshops started with identifying actors within an organization and then working the vision and actual content needs of portfolios. From there, the workshops moved forward to identifying related benefits and usage scenarios. After the workshops, the findings were summarized, analyzed and circulated back to the thesis proposal.

Key findings by the validation were, that the portfolio management overall topic indeed needs to be addressed as a whole and the addressed areas are relevant. Addressing portfolios and their operations separately would reduce value potential. The validation

rounds confirmed the pivotal role of a service and offering portfolio as well as the capability to identify and operate customer insight. There is substantial potential within the proposal through reduction of ambiguous practices and redundant usage of related tools, which are typical of an organization of this size. Validation rounds also revealed additional needs regarding data management and digital interfaces management. Hence, the validation rounds gave an indication for a further study need.

7 Conclusions and Further Actions

This thesis constructs a portfolio management proposal for handling the emerging public services' digital transformation. The proposal aggregates following concepts and principles:

- sales and marketing customer journey and customer flywheel concepts
- classical strategy analysis and strategy targeting principles
- strategic hedgehog simplicity and tactical ooda-loop agility
- strategic and operational compass management agility
- Kotter's cultural change principles
- lean and blueprint based business process understanding, including channels
- strategic must-win battle execution principles
- service design, lean and project driven execution principles
- jobs-to-be-done customer insight and segmentation principles
- Stiglitz-Sen-Fitoussi citizen welfare key elements and life event trigger models
- innovation funnel and outcomes driven innovation management principles
- harnessing artificial intelligence for triggering public service delivery.

As a result, the thesis presents a set of portfolios, related organizational setup and their necessary management processes. The thesis argues their necessities through constructing a business wheel concept, first explaining how business agility and continuous organizational movement affect businesses' value creation and how continuity feeds the necessary cultural evolution. The business wheel concept outlines how not only agility but also size of a business matters and why the size inevitably leads to managing with portfolios. Then each proposed portfolio and organizational setup is opened up and explained.

The entire thesis from current state analysis to the proposal consistently concludes the pivotal role of managing offerings and services as portfolios. All other described portfolio needs either add to the service portfolio or require it as a prerequisite. In essence, this thesis argues that a large public sector organization with hundreds of services can turnaround their operations towards a digital proactive ecosystem only if those services are well organized as a whole. Isolated singular digitalization efforts within an offering myriad without solid organizing is unlikely to succeed in the big picture. Even if it would, the total

cost of turnaround investments would be uneconomical and excessive to build. Redundancy could not be avoided leading to interoperability problems and compromised service functionality.

The whole idea of proactive service ecosystem starts with an assumption that public customers use large sets of interconnected services in different life situations. Those hundreds of services form causal chains of service usage and they span far beyond divisional structures of a city. Hence, organizational structures alone could not enable a proactive service ecosystem. A holistic offering and service portfolio is the centric element, which enables connecting those usage chains and life events to the actual services.

Furthermore, the thesis argues that being able to provide the services proactively is not enough. Services erode over time and disruptions occur with certainty. The key winning factor is an ability to develop continually. Therefore, the proposed innovation funnel from research up to constant value capturing should be continually resourced with correctly balanced development capabilities. This requires an innovation funnel based development portfolio. Both the proactive service ecosystem and the related development framework should be interconnected to strategic steering. This strategic steering should be continual instead of periodical, thus constantly giving direction to both the proactive service operations and development functions, similarly to the referenced ooda-loop and compass management concepts.

In addition, the style of development matters a lot when developing the service offering for the digital proactive ecosystem. It requires a much more robust connection to the customers' jobs-to-be-done insight than running status quo services. Hence, the proposed service design principles and methods should be fundamental preconditions for both end-customer services' development and in developing their supporting capabilities and technologies. Customer satisfaction measurement should be inbuilt to all value streams from the beginning. Development should not lean entirely on projects, but on a well-orchestrated combination of continuous development, line work development and larger projects. Most important development should be steered directly by top management as a prioritized must-win-battle portfolio.

The thesis culminates its conclusions with addressing team dynamics. Introducing lean and continuous developer attitude in teams improves structured ways of working and this

accelerates team productivity. Long lasting team dynamics advance self-organizing and reduce need for disruptive management bypasses. Today's business environment, however, relies on external temporary labor. Therefore, external labor sourcing should be addressed too. It should not base on individual projects, but on longer lasting needs stemming from the offering and service structures.

Consequently, this thesis proposes a series of further actions as a portfolio capability creation roadmap. Creating a full portfolio capability should start with establishing an end-to-end package of proposed portfolios. Horizontal service coverage is not as important. First selected services should just be covered throughout from demand to delivery and including all supporting capabilities. Also, the selected services should construct whole chains of service usage and the related life events should be covered fully. This introduces a simultaneous need the first segment portfolio. Once the selected service offerings are selected, they have to be developed. Therefore the next step is to establish must-win-battle roadmap for them and establish a development portfolio for them. Commencing with development requires external resourcing of both personnel and technology, which leads to establishing the related procurement and sourcing portfolio. Along with developing solutions so that customer satisfaction measurement is inbuilt, also the value capture portfolio needs to be implemented early on. Concluding, the capability creation roadmap itself is rather about extending horizontal coverage to new areas of services.

However, more technical and descriptive service blueprint and solution portfolios can be addressed somewhat later. Their content is more detailed and they can deliver value once the customer driven and development driven portfolios are functioning. In addition, this thesis does not address financial assets management, data capabilities and management of digital interfaces. These areas should be investigated as next research steps. Creating the proposed portfolio capabilities will ultimately enable a well organized establishment of an artificial intelligence capability in running public services' proactive offering. This concludes the thesis' proposal on the total portfolio package that is needed to connect local government services with the national AuroraAI program's anticipated future results – national AI capability to anticipate and deliver public services by constantly analyzed life events.

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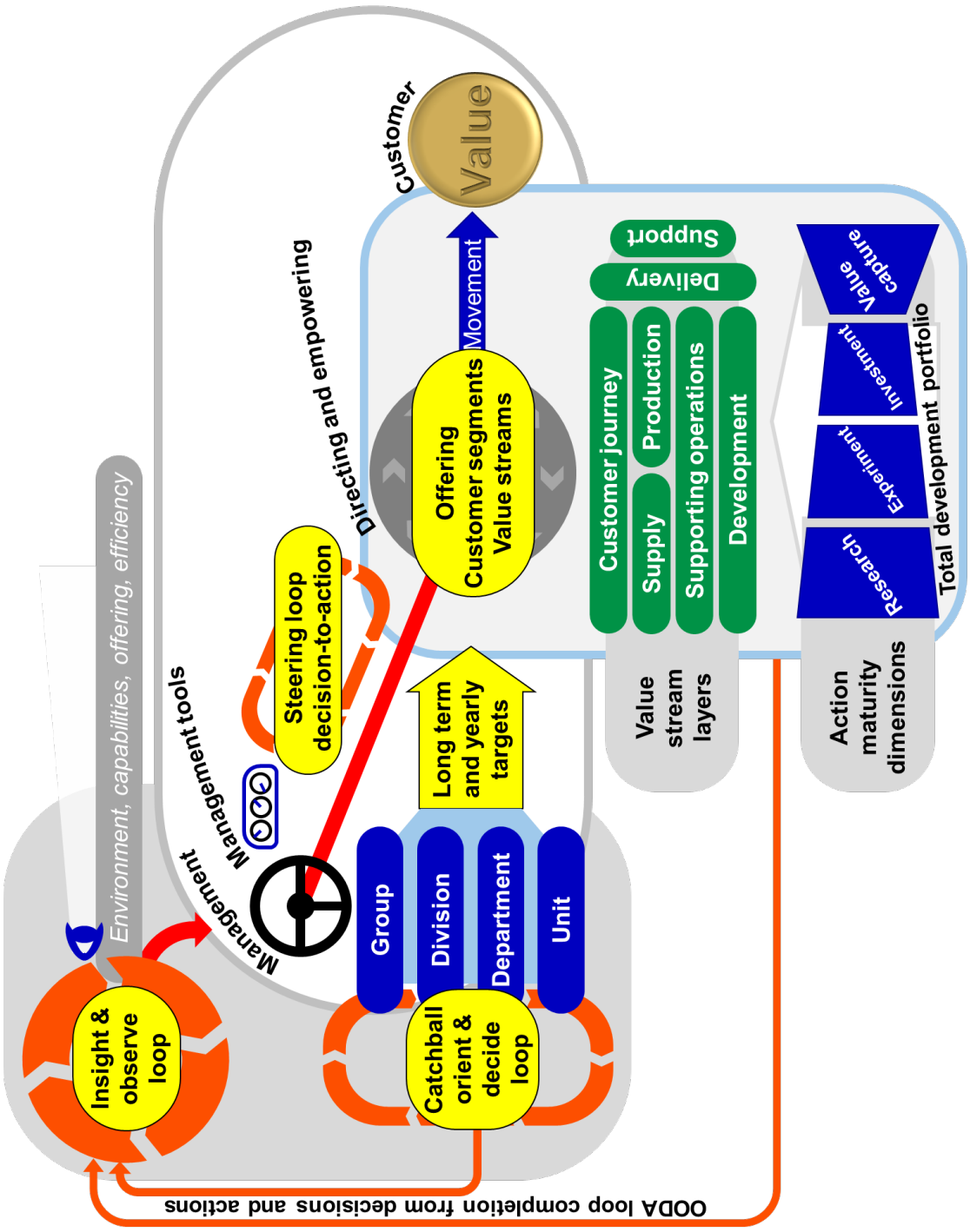
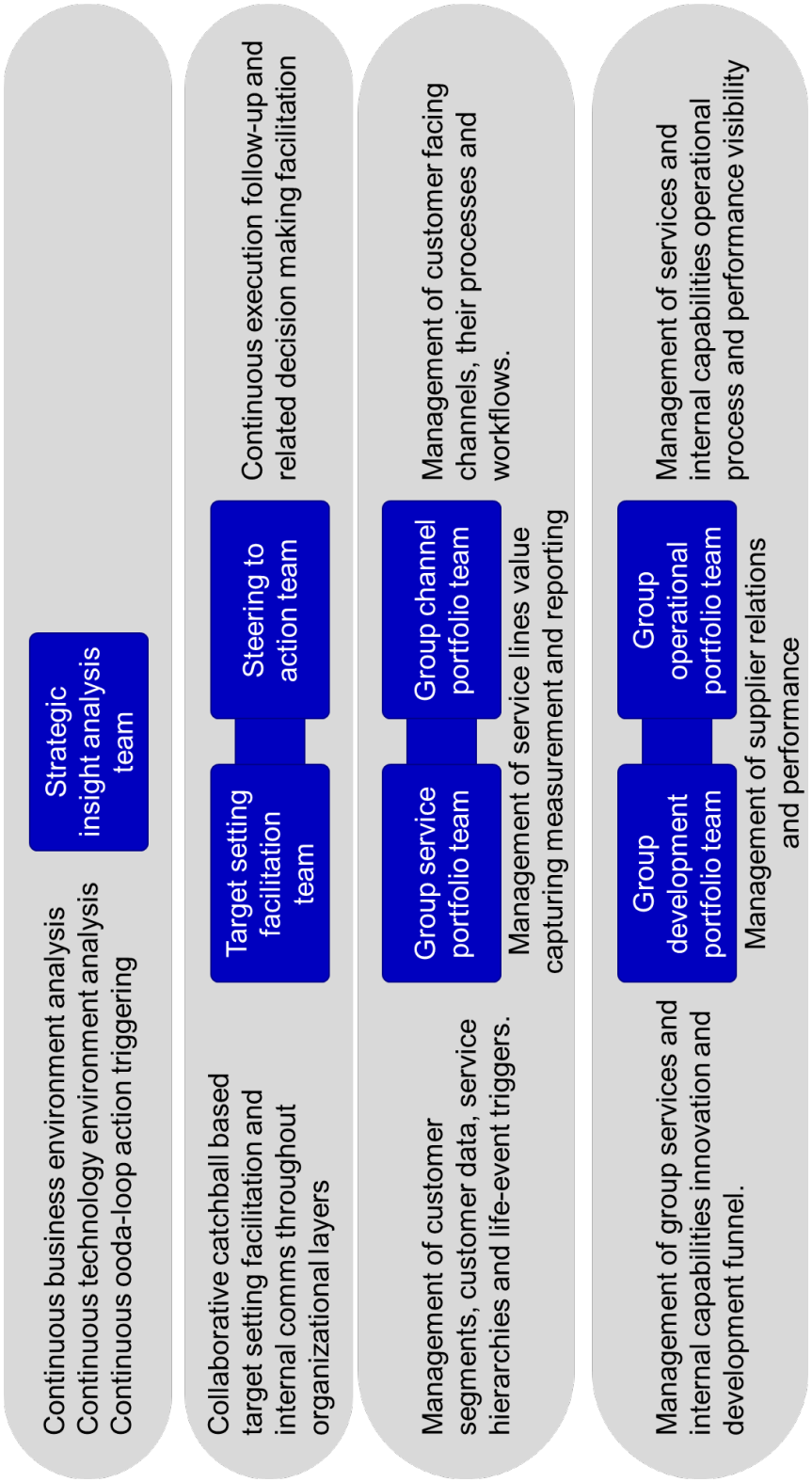
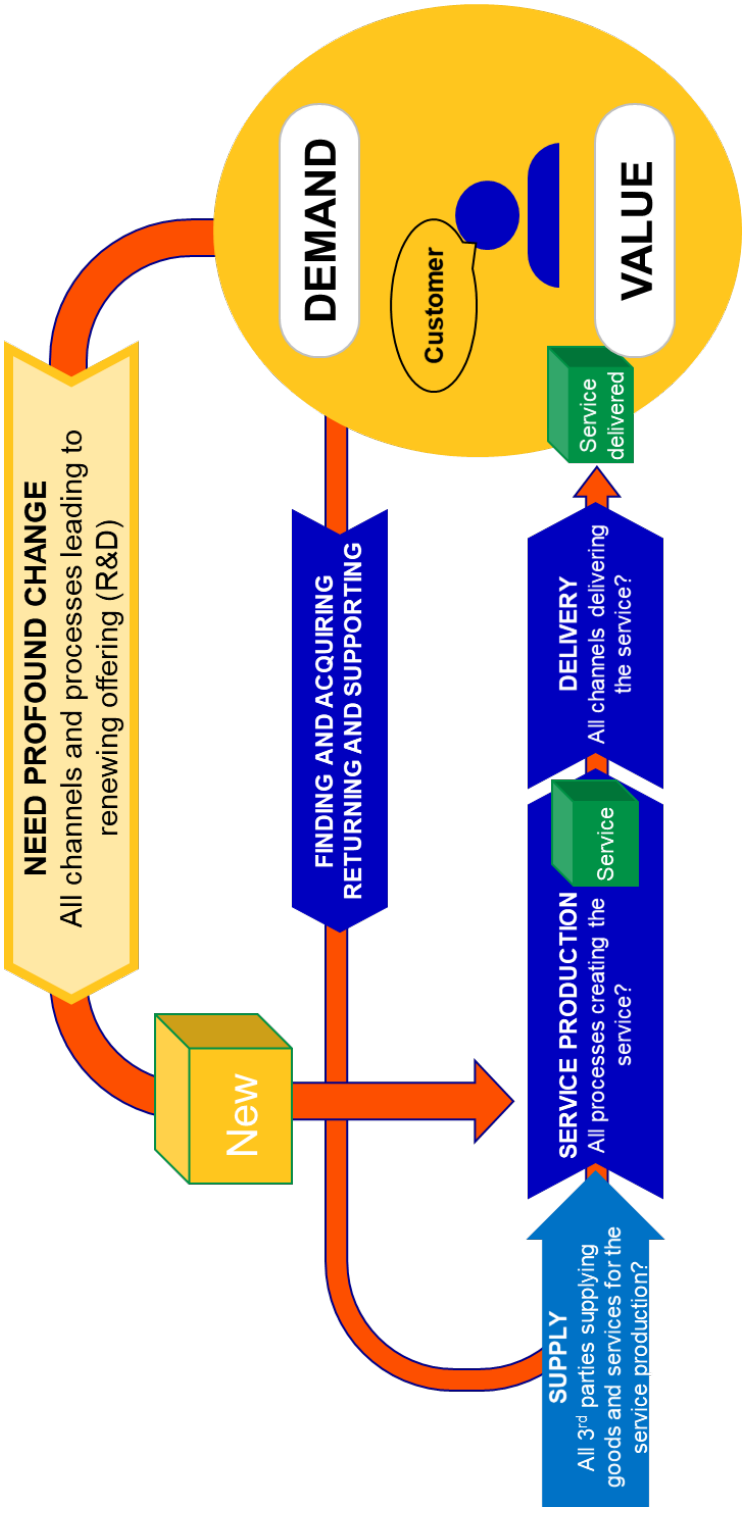
Business Wheel Concept



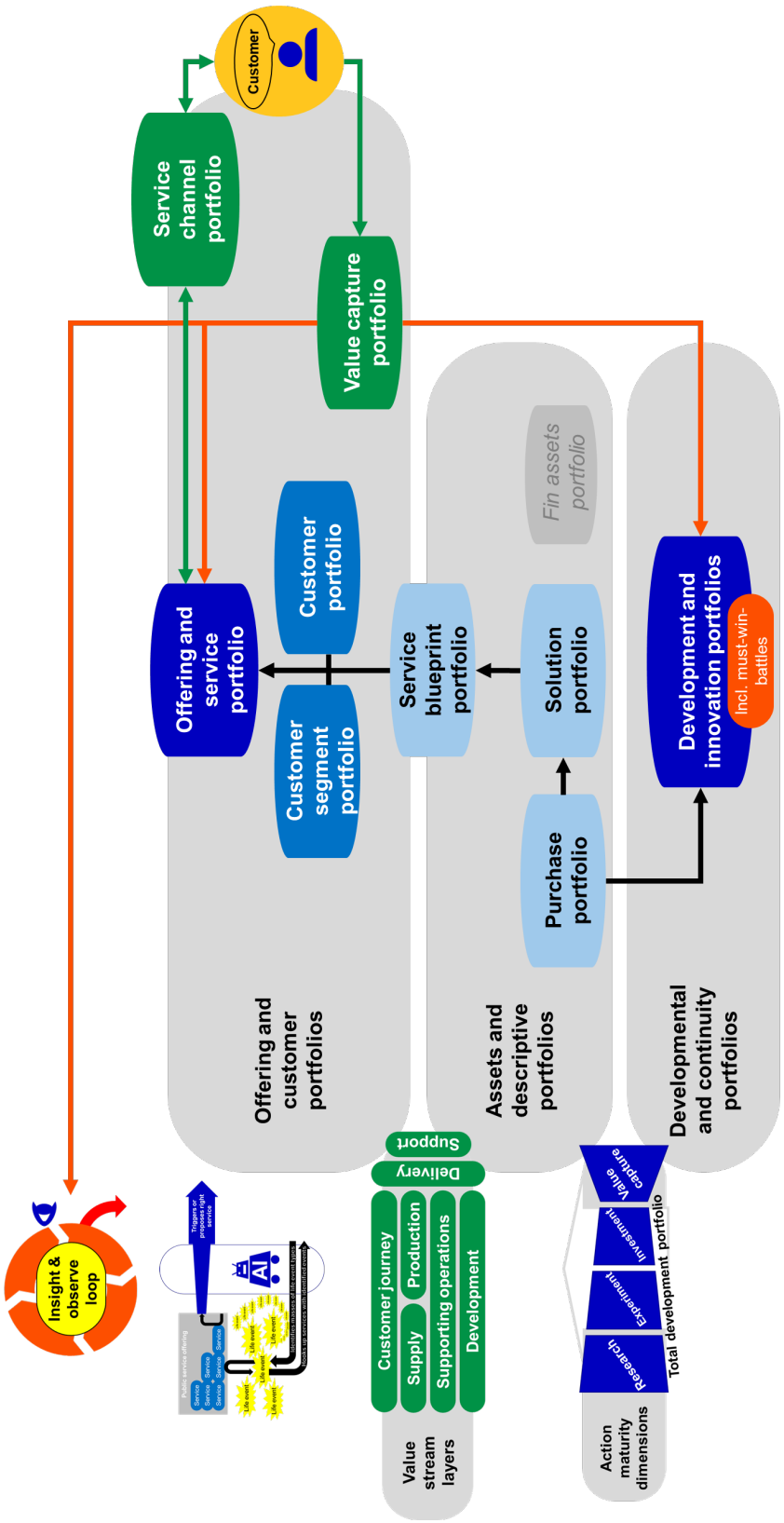
Expert Team Structure



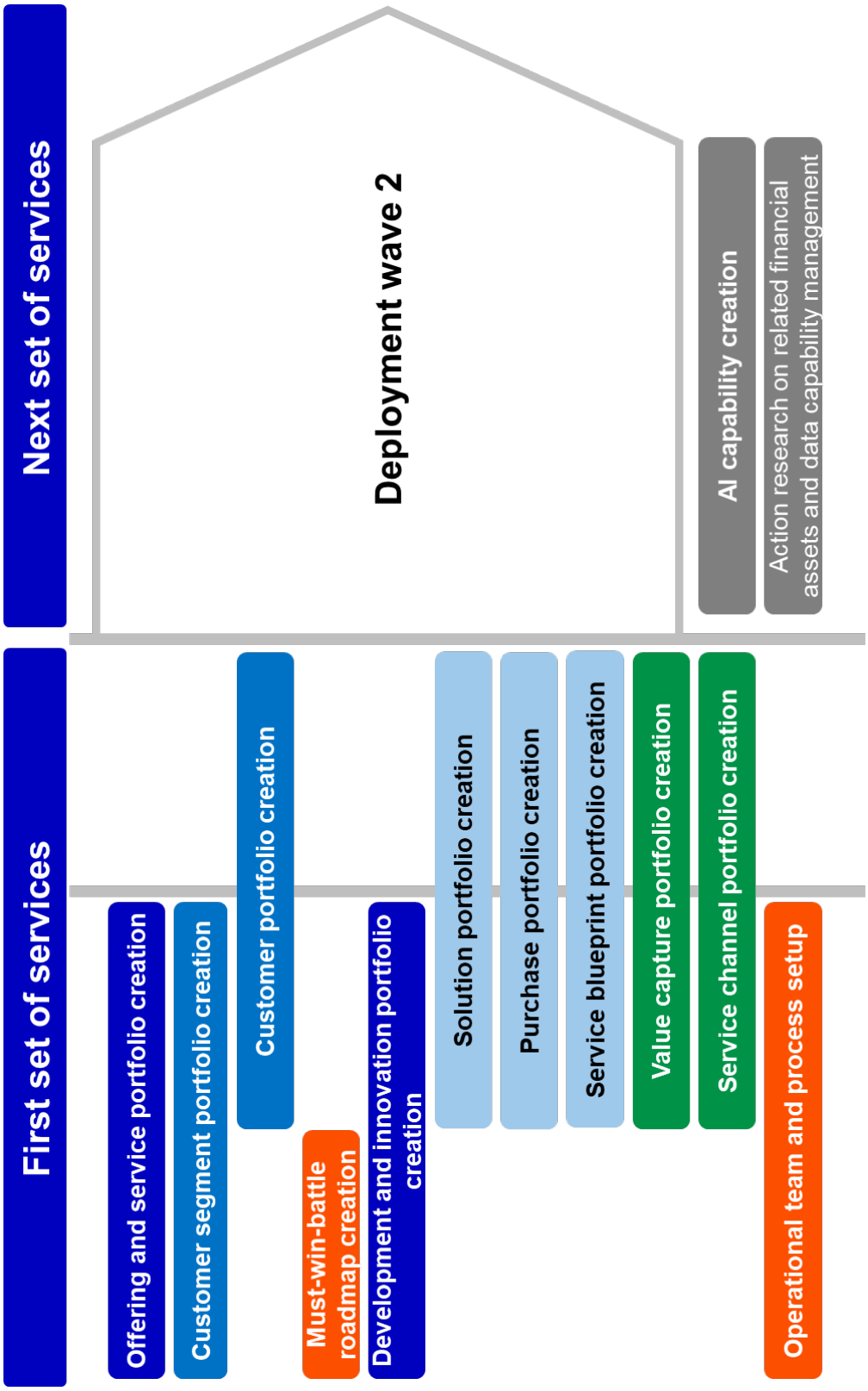
Lean Development – Operations Framework



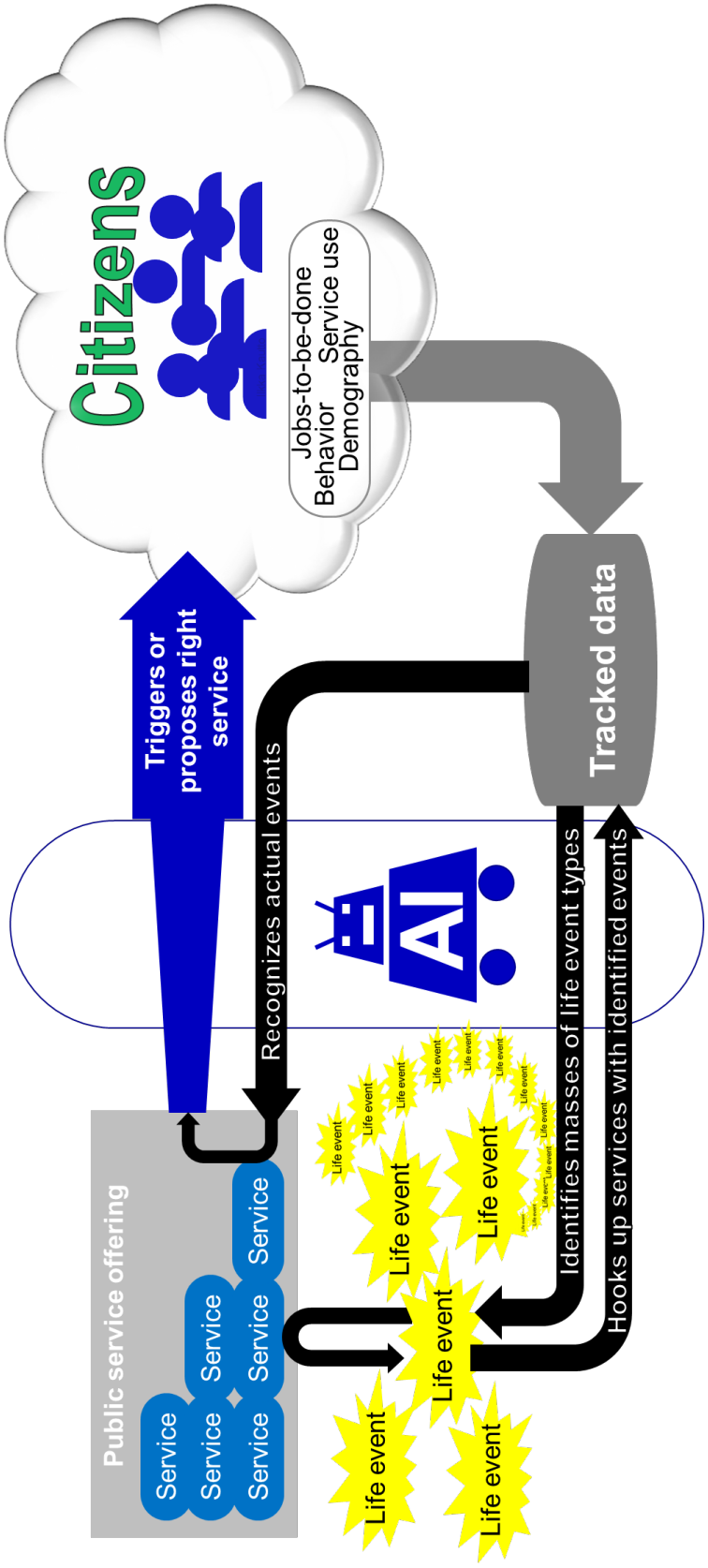
Map of Portfolios



Portfolio Creation Phases



AI Powered Public Service Ecosystem



Conducted Interviews, Benchmarks and Workshops

Manuscript for Semi-Structured Interviews

1. Short brief of the thesis topic and pursued research outcomes.

2. Short explanation of the interview's sub-topic, why this interview is conducted and what type of information is looked for.

3. Summary of conducted desktop study results: What is found so far and which preliminary conclusions have been made. Orientation shift from introduction to interviewee responses and gathering new data.

4. Set of general starting questions to orient the discussion
    1. Could you explain what…
    2. Can you explain how…
    3. Can you explain why…
    4. What do you think about the findings so far?

5. Five-why/coaching style question arsenal for catalyzing deepening information during the course of the interview:
    1. why
    2. what is it about
    3. what does it mean
    4. what is it purpose
    5. what prevents
    6. what should be stopped
    7. what should be started
    8. what should be done differently
    9. what are the options
    10. compared to what
    11. am I asking right questions!

Interview Statistics

Organization	Topic	Interviews
		32

City of Helsinki	Strategic management	2
	Digitalization leadership	3
	Citizen digital services program and customer information management	1
	Digital Helsinki program and cultural change program and design driven development	1
	Service register and service point register and service categorization	5
	City data steering plan and service categorization	2
	Customer feedback management	2
	Data security	1
	Sourcing and procurement	1
	Critical IT services' operation and vendor management	1
		19

City of Turku	Segments and category management. Relations between JUPO, PTV, JHS.	2
City of Espoo	Segments and category management. Holistic portfolio management, procurement and sourcing	3
Ministry of Finance, Finland	JHS and JUPO-classifications and the big picture of service classification in Finland.	1
Population Register Centre of Finland	Relations between JUPO, PTV and JHS200	1
BearingPoint, Finland	Public sector service trends. Strengths and development areas – Insights from Bearing-Point's Public Sector Digital Achievers 2020.	1
Gofore	Strategic measurability and portfolio management.	2
Konsulttiverkko	Service portfolio and citizen services.	3
		13

Benchmark statistics

City of Espoo	Portfolio management framework and tools.	1
City of Turku	Portfolio management framework and tools.	1
Estonia National	National offering and life-events and AI based public service setup and proceedings.	1
		3

Data Collection Plan

Data round	Data type	Data source	Date	Rec	Focus
Wave 1 Governance and strategy	F2F	CDO	15.4.2019	notes	Digital strategy
	F2F	CDO	23.4.2019	notes	Digital strategy
	F2F	Strategy manager	24.4.2019	notes	City strategy and services
	Int & ext docs	Governance rules, operational models, city strategy, strategic objectives and measures, digitalization program, JulkICT strategy	Spring 2019		For desktop study before interviews and for further scrutiny after interviews.
Wave 2 Services, customer knowledge and development	F2F	Strategy consultant	2.8.2019	notes	Service portfolio
	F2F	Strategy consultant	9.8.2019	notes	Service portfolio
	F2F	Strategy consultant	9.8.2019	notes	Strategic measurability
	F2F	Product owner	16.8.2019	notes	Service categories
	F2F	Product owner	20.8.2019	notes	Service categories
	F2F	Product owner	23.8.2019	notes	Service categories
	F2F	Product owner	28.8.2019	notes	Citizen feedback
	F2F	Strategy consultant	29.8.2019	notes	Strategic measurability
	F2F	Strategy consultant	30.8.2019	notes	Service portfolio
	Virtual	Special planner	3.9.2019	notes	Citizen feedback
	F2F	Program manager	4.9.2019	notes	Customer information management
	Virtual	Product owner	27.9.2019	notes	Service classification
	Int & ext docs	Customer operations, service operations, development framework, life event and public AI frameworks.	Fall 2019		For desktop study before interviews and for further scrutiny after interviews.
Wave 3 National influence and peer organizations	Virtual	Senior specialist, national population register	30.9.2019	notes	National influence on service management
	Virtual	Enterprise architect, city of Turku	30.9.2019	notes	Segments and categories by peers
	F2F	Ministerial adviser, Ministry of Finance	2.10.2019	notes	National influence on service management
	Virtual	Enterprise architect, city of Espoo	23.10.2019	notes	Segments and categories by peers
	F2F	Enterprise architect, city of Turku	15.11.2019	notes	Segments and categories by peers
Further scrutiny of services	F2F	Product owner	4.10.2019	notes	Service categories
	Virtual	Directing chief specialist	11.10.2019	notes	City functions map
	Virtual	Directing chief specialist	14.10.2019	notes	City functions map
Further management feedback	F2F	Strategy manager	21.10.2019	notes	Strategic service portfolio
	F2F	CDO	28.10.2019	notes	Digital strategy portfolio
Wave 4 Compliancy and regulation	F2F	Solution architect	7.1.2020	notes	Customer knowledge architecture
	F2F	Chief specialist	14.1.2020	notes	Security
	F2F	Directing chief specialist	15.1.2020	notes	Procurement-sourcing
	F2F	Digital strat consultant	16.1.2020	notes	Public digiservices state
	Virtual	Head of IT-solutions	23.1.2020	notes	IT service management
	Int & ext docs	Conformance rules, EU and national law and regulations.	Fall 2019 & Spring 2020		For desktop study before interviews and for further scrutiny after interviews.
Supplemental development angle	F2F	Program manager	27.1.2020	notes	Design driven developm.
Supplemental digital service angle	F2F	Digital transform adviser, Estonia	4.2.2020	notes	Digital public services

Validation Plan

Validation round	Data type	Data source	Org.	Date	Rec
Interviews	Virtual	Program manager	central	7.4.2020	notes
	Virtual	Development manager	urban div	7.4.2020	notes
	Virtual	Program manager	central	8.4.2020	notes
	Virtual	IT-manager	social div	8.4.2020	notes
	Virtual	Purchase advisor	social div	9.4.2020	notes
	Virtual	Project manager	central	9.4.2020	notes
	Virtual	Project manager	edu div	15.4.2020	notes
	Virtual	CDO	central	15.4.2020	notes
	Virtual	Strategy director and manager	central	16.4.2020	notes
	Virtual	Program manager	culture div	17.4.2020	notes
	Virtual	Solution architect	central	11.5.2020	notes
Workshops	virtual	18 attendees throughout org.	group	6.5.2020	workshop tool
	virtual	20 attendees throughout org.	group	14.5.2020	workshop tool

All involved roles within interviews and workshops:

Chief digital officer, chief governance officer, city design lead, development manager, development specialist, directing chief specialist, financial manager, head of unit, HR manager, IT architect, IT manager, IT systems manager, IT-development manager, IT-specialist, procurement and logistics manager, procurement manager, procurement advisor, program manager, project manager, quality specialist, security manager, service manager, software developer, special planner, strategy director, strategy manager

Key Terms and Acronyms

7S	Seven business cultural drivers: strategy, structure, systems, staff, style, skills, superordinate goals – by McKinsey.
AI	Artificial intelligence.
Bi-modal	Gartner's concept for driving IT and tech operations in two modes.
BSC	Balanced scorecard by Kaplan & Norton.
Catchball	Collaborative lean compass management practice when setting business targets.
CES	Customer effort score.
Cross-offering	Unconnected or laterally connected services that tend to be acquired together.
CSAT	Customer satisfaction measure.
COGS	Cost of goods sold.
Conversion	Customer's decision to start acquiring a service.
CRM	Customer relationship management.
Customer	Citizens, tourists, businesses and non-profit organizations, which acquire and use local government services.
Customer channel	Building block through which a company interfaces with its customers.
Customer delight	Listening customer satisfaction and smoothly commencing corrective actions and looping an experienced customer delight back to new awareness and consideration of service and word of mouth.
Customer journey	Natural steps a customer takes from becoming aware of a service until acquiring.
Customer segment	Group of customer with similar needs about services or products.
DCOH	Days cash on hand.
Deliberative democracy	A procedure where citizens vote for a single topic directly.
EV	Electric powered vehicle (car).
FIFO	First-in-first-out practice in operational process.
Finto	Finnish thesaurus and ontology service.
Five force	Strategic competition analysis areas: entry, substitute, buyer power, supplier power feeding competitive rivalry.
Flow	Business operational smoothness.
Gamification	Originally military war game practice to give insight for enemy reactions in a potential combat. Today used e.g. for understanding customer.
GDS	Government digital services of the United Kingdom including an agile digital service development model.
GDPR	General data protection regulation by European Union.
Guardrail	Guiding limit which may not be crossed (financial or other).
Hedgehog concept	Strategy management idea of simplicity.
Hoshin kanri	Lean strategy-to-execution practice (compass management).
Jobs-to-be-done	Principles for understanding what motivates customers to acquire a product or a service.
JHS	National public administration recommendations by Juhta.
Juhta	Advisory committee on information management in public administration.
Jupo	Finnish ontology for public administration services.
Kehmet	Helsinki development framework and guide.
Koko	Collection of Finnish core ontologies.
LCL	Lower control limit.
Lean	Business operational and quality improvement philosophy.
Life event	Citizen's life situations that trigger public service use.

Muda	Seven types of operational waste: transfer, inventory, motion, wait, overproduction, overprocessing, defects.
Mura	Unevenness in business operations.
Muri	Overburden of business operational assets.
MWB	Must win battle – top management's key project.
NPS	Net promoter score.
Offering	Set of interconnected services for a specific customer group.
Ooda-loop	Strategic agility principle: Observe-orient-decide-act.
PESTLE	Acronym for strategic analysis areas: political, economic, social, technological, legal, environmental.
Platform economy	A business setup where individual businesses and customers meet in a platform.
Public service core drivers	Elements that define why citizens need and use public services. public services provide described by Stiglitz-Sen-Fitoussi commission.
Pull	Lean term for a business flow where the business process moves by customer pulling the outcome, instead of pushing outcomes without tangible need.
ROI	Return on investment.
SAFe	Scaled agile framework.
Service	Service is what the end customer acquires or uses. Internal services are not regarded as services in the context of this thesis.
Service blueprint	Diagram that visualizes the relationships between different service components.
Service design	Service innovation and design principles using design methods.
SIPOC	Simple process description including actors: supply, input, process, output, customer
Three-horizon	McKinsey's strategic horizon model: existing, emerging, future.
TOL	City of Helsinki's library of city functions and personnel roles.
TPR	City of Helsinki's register of services and their offices.
UCL	Upper control limit.
Up-offering	Hierarchically interconnected services.
Value chain	General elements of a business.
VSM	Value stream map – a measured way of describing business process.