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Developing future skills to stay competitive as an entrepreneur within the information technology industry

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In the past couple of years, the work life has changed faster than ever before. One reason has been the pandemic, that has forced us all to learn new ways to work and collaborate, and companies to speedily digitalise the work and the workplaces. The second reason is said to be the fourth revolution that we are already experiencing, and which is estimated to change our lives and work in ways that we are not completely able to foresee, and change faster than ever before, and faster than we can maybe understand.

As an entrepreneur within information technology industry, learning new skills has always been important, but if it was before a citation in a sentence now it has become a neon light on the wall of a building – If you do not learn and keep up with the changing world, you will not be competitive within the work market in the future. It is this need to develop oneself and stay competitive, that has been main driver also for this research.

The research objectives are to understand what the future skills in general are potentially growing in value, and further narrow down to those skills that are relevant for my self-development within information technology industry, and finally to learn through diary process how to develop the selected skills as a part of everyday life.

To answer the research questions, I chose the diary thesis process as a research methodology, which follows the autoethnography thinking. This methodology gave me the opportunity to follow the process of my self-development journey subjectively through weekly diary notes, self-reflections, and analysis.

For the self-development, I selected three future skills in which I personally found most need for development. These were Problem Solving and Adaptability, Technology and Future, and Well-being and Self-knowledge. In addition to these development items, I had weekly journal notes on my current assignment to give background and deeper context to my learning.

As a conclusion, the development of future skills as a part of demanding work assignments is not easy, but it is possible. The key learnings for myself were that the only way to pursue lifelong learning is to change. This means that I need to take ownership of the future learning and plan ahead, but also remove the strong border between work and study and become consistent by making small changes every day.

Keywords
Entrepreneur, Information Technology, Future Skills, Lifelong Learning, Self-development, Diary Thesis Process, Ethnography

Contents

Abbreviations

AI = Artificial intelligence

E2E = End-to-End

IT = Information Technology

ML = Machine Learning

PBI = Product Backlog Item

RAID = Risks, Assumptions, Issues, Dependencies

SME = Subject Matter Expert

WEF = World Economic Forum

WoW = Ways of Working

1 Introduction

1.1 Background

While writing this thesis, our daily lives in Finland have been restricted for the past two years because of global pandemic caused by virus called Covid-19 (Duodecim, 2022). As if this was not enough, we have also faced warfare in Europe which has quite fast impacted our views of the near future and the way we see world whilst Russia started its invasion to Ukraine on 24th February 2022.

In these past years of pandemic, the work life has changed faster and more than ever before. The speed of change is described by Microsoft CEO, Satya Nadella: "We have seen two years' worth of digital transformation in two months" (DCD, 2022). As a result, almost everybody has had to learn new ways to collaborate and communicate and new ways to learn and study using digital equipment. The pandemic has brought it to surface that we are already living the fourth revolution, which is believed to make the world change faster than ever before and “make a fundamental change in the ways that we live and work” (World Economic Forum, 2022). It is the speed of change that makes our past skills and lessons learned useless. Therefore, we need to learn new ways to develop new skills faster to stay relevant while the speed of development increases.

As an entrepreneur and self-employed professional within the information technology domain, I have always felt that I should know more and study more and to be more valuable to each of my customers. In the past years even more than ever. However, every agreed customer assignment and ongoing work has always seemed to be more important than setting time aside for self-development and learning. There just has not been enough time for everything. This type of priorities in future, will no longer play for my advantage, so I need to change.

Couple of years ago whilst observing the customer’s employees being enrolled into companywide rigorous training program, I decided to start doing something for my own skills development. This led me to apply to MBA program at Haaga-Helia and start studying the curriculum created by its professors. The driver for my studies and this final thesis is originating from the same objective, that is the need to keep learning to stay competitive within the information technology work market. Overall, this is a closure for my journey as a student of the master’s degree program as I concentrate on developing the future skills and creating the plan for my future studies.

This thesis is dived into four clearly different parts. In the first part of this thesis, in Chapter 1, I concentrate on describing the methodology with the research questions and objectives as well as providing the plan with timelines for my research. The methodology used is Diary Process that follows Ethnography research tradition and thinking (Mäki et. al 2017). The research plan and its execution are loosely based on scrum and agile principles.

In the second part of this thesis, in Chapter 2, I describe through literature sources what is the predicted future work and what are the future skills that estimated to be increasing in value in future. After describing the future skills from more general perspective I continue by defining the skills more valued within the information technology domain and evaluate my own skills maturity against the future skills and furthermore select prioritised skills for as a scope of my self-development.

The Chapter 3 concentrates on describing my current state of work. The analysis of current work gives a baseline for the development work for the selected future skills followed in later chapters.

The Chapter 4 consists of the future skills development that is divided into three development sprints each being three weeks long. The last week of each sprint there consists of an analysis and a retrospective of the sprint. The final conclusive analysis is done in fourth sprint and includes the analysis of all development sprints with their objectives and conclusions. The overall conclusions of the research are described in final chapter, Chapter 5.

1.2 Research and Development Methodology

My chosen research and development methodology for this thesis is Diary Thesis Process that follow the Autoethnography research methodology (Mäki, et al., 2017).

Autoethnography is a methodology that “uses researcher’s personal experience to describe and critique cultural beliefs, experiences, and practices. It also acknowledges and values a researcher’s relationships with others and uses self-reflection” The research method is subjective and qualitative and helps describing the process of a change or development from an individual’s perspective. (Adams, et al., 2015).

The Diary Thesis Process gives more specific requirements and outline on how the ethnography is used as a research and development process. The diary process model is based subjective observation that covers minimum of 50 working days during which the research progress is documented in the format of a daily and/or weekly diary notes. The purpose of the diary thesis is to follow the autoethnographic thinking and make visible how

one applies own experience in understanding the field of phenomena better. (Mäki, et al., 2017).

1.3 Research Question and Objectives

The objective of this research is to understand how I need to develop my skills to stay competitive as an entrepreneur within Information technology domain. The key questions that I will try to answer through my research are described below.

In order to develop my skills to stay competitive, I need to first understand what are the potential future skills that are needed and valued within not only in the technology domain, but in general. Therefore, I am researching the subject of future work and future skills from a general perspective first.

1. Research Question: What future skills are relevant for future work?

After understanding more clearly what the future skills in general are, I will narrow down the list of future skills to those within the information technology domain. Furthermore, I might already have some skill already, and will select my self-development from those future skills that are valued most, but I lack most knowledge and competences.

2. Research Question: What future skills are most relevant for my future development within information technology domain?

As an entrepreneur I rarely have free time, and every day off from work is non-billable, so I rarely prioritise taking time off for example to study unless is a priority for the ongoing assignment. However, I also recognise that if I do not block time from my busy schedules to develop my skills, I will never learn new skills. Therefore, the daily habits of developing my skills are important for gaining the competences to stay relevant in the work market. The diary journal is an attempt to gain evidence on how the learning can be pursued as part of daily life.

3. Research Question: How to develop future skills as a part of everyday work life?

1.4 Research Plan

The development research plan is based very loosely on Agile (Agile Alliance, 2022) and Scrum (Scrum.org, 2022) principles, which means that the selected development items form the basis of the backlog for the research plan and these development items are further sliced to smaller workable and incremental development items like user stories, that can be completed within a sprint.

In addition to this, the self-development work is performed within predefined development cycles i.e., sprints with selected agile ceremonies, such as sprint planning and analysis & retrospective. The high-level sprints objectives are defined in the beginning of the process, but they can be adjusted as the diary work proceeds depending on the findings from ongoing sprint.

The development work is divided into 5 sprints. The first sprint is Sprint 0 that consists of the work required to define the theoretical part of this thesis. The self-development is done in the following three sprints, Sprint 1 – Sprint 3, that include the diary process notes. The final sprint, sprint 4, will contain the final discussion and conclusions of this thesis (see Figure 1).

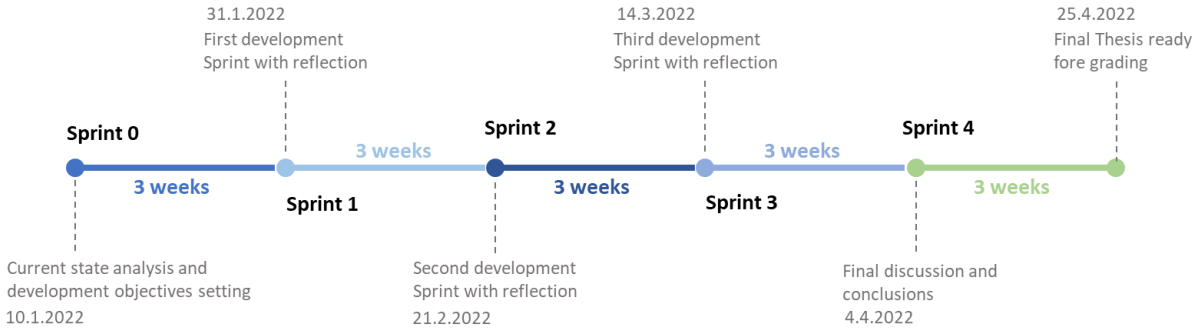


Figure 1. Thesis research plan timeline.

2 Future Work and Future Skills

2.1 Future Work

Currently, it is believed that we are in brink of the fourth industrial revolution that is once again, like previous industrial revolutions, changing our world and the way work is defined. While the first industrial revolution brough us energy and power (coal & steam), the second electricity and third new technological invention based on automation and computers brining the digitalisation, the fourth industrial revolution is believed to “herald new energy technologies, societal and workforce shifts, and further melding of the digital and physical world” (Baffour 2022) (See, figure 2).

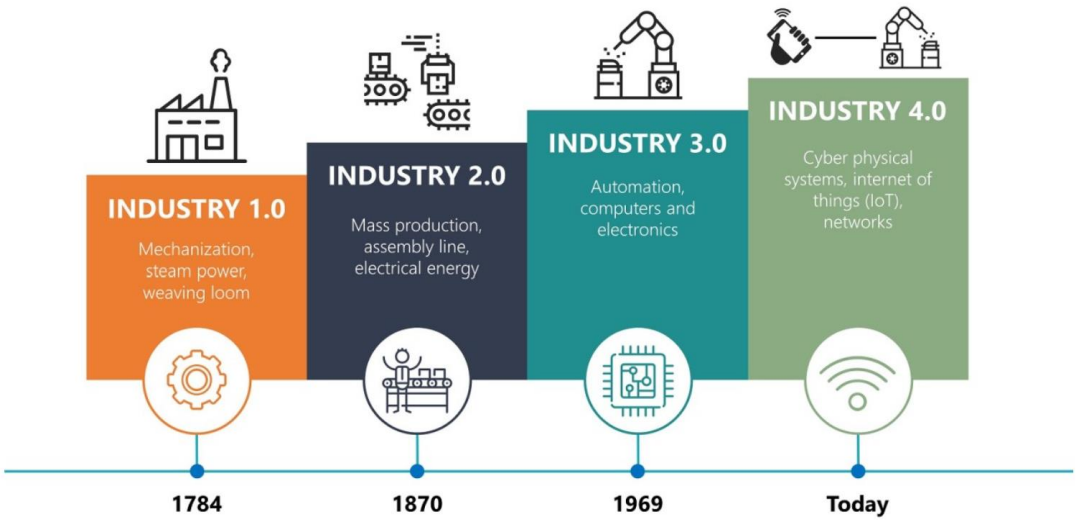


Figure 2. Stages of Industrial Revolutions (Selvaraj 2019).

As its predecessors, the fourth revolution is believed to make the world and our work transform in ways that we might not even be able to fully predict or even comprehend. According to World Economic Forum (2022) “The Fourth Industrial Revolution represents a fundamental change in the ways that we live and work. It is a new chapter in human development, enabled by advances that are commensurate with those of the first, second and third industrial revolutions - merging the physical, digital, and biological worlds and fusing technologies in ways that create both promise and peril.” (See Appendix 1)

The view of World Economic Forum is shared by other researchers. Schwab (2016) describes the fourth revolution as “a revolution that is blurring the lines between the physical, digital, and biological spheres” and Pölönen (2021) who says that it is “a transformation from skills of head to skills of heart, where our human processors are beaten by machines, and we need enforce the skills that the machines lack of”.

So according to researchers, the change during fourth revolution will be faster than ever, and the changes will impact our lives more than we can understand and therefore the work and the needed skills will change. At the moment with the global pandemic and the ongoing digitalisation we are already experiences these changes that Schwab, K. (2016) says are creating a ‘double-disruption’ scenario for workers. This means that old skills become useless faster, jobs disappear, and new skills are needed faster than anticipated.

The Future of Jobs Report 2020 by World Economic Forum (2020) gives an insight of both the current and the future jobs and the future skills that are estimated to increase in demand. The report is based on research data obtained through public and private sources covering 15 industry sectors and 26 countries (World Economic Forum 2020). It lists the top 20 job roles in increasing demand, from which roughly half are jobs within the information technology industry, such as Data Analysts and Data Scientists, AI and Machine Learning Specialists, and Big Data Specialists and so forth (See, Table 1). Overall, the technology seems to be embedded to most future jobs that are increasing in demand in the near future.

Table 1: Top 20 job roles in increasing and decreasing demand across industries (World Economic Forum 2020).

↗ Increasing demand		↘ Decreasing demand	
1	Data Analysts and Scientists	1	Data Entry Clerks
2	AI and Machine Learning Specialists	2	Administrative and Executive Secretaries
3	Big Data Specialists	3	Accounting, Bookkeeping and Payroll Clerks
4	Digital Marketing and Strategy Specialists	4	Accountants and Auditors
5	Process Automation Specialists	5	Assembly and Factory Workers
6	Business Development Professionals	6	Business Services and Administration Managers
7	Digital Transformation Specialists	7	Client Information and Customer Service Workers
8	Information Security Analysts	8	General and Operations Managers
9	Software and Applications Developers	9	Mechanics and Machinery Repairers
10	Internet of Things Specialists	10	Material-Recording and Stock-Keeping Clerks
11	Project Managers	11	Financial Analysts
12	Business Services and Administration Managers	12	Postal Service Clerks
13	Database and Network Professionals	13	Sales Rep., Wholesale and Manuf., Tech. and Sci.Products
14	Robotics Engineers	14	Relationship Managers
15	Strategic Advisors	15	Bank Tellers and Related Clerks
16	Management and Organization Analysts	16	Door-To-Door Sales, News and Street Vendors
17	FinTech Engineers	17	Electronics and Telecoms Installers and Repairers
18	Mechanics and Machinery Repairers	18	Human Resources Specialists
19	Organizational Development Specialists	19	Training and Development Specialists
20	Risk Management Specialists	20	Construction Laborers

Source
Future of Jobs Survey 2020, World Economic Forum.

As each industrial revolution before the ongoing fourth industrial revolution, they have all transformed the work and the needed skills of the workforces. However, what makes this one different from the preceding revolutions, is the fast speed of change. And it is the speed of change that makes the continuous learning one of the key elements to each person to stay relevant within the work market (Mäkelä, et al. 2021).

2.2 Future Skills

As described in previous chapter, we need to develop new skills to stay be relevant in the work market and keep up within the faster than ever changing world. Researchers also emphasise that it is not only the job or the technology specific “hard” skills that one should learn, but also those skills that are complexly human and enable the lifelong learning.

So, we need to change to be able to continuously develop our skills. To succeed in this, we need to also change our understanding or work and study, as Mäkelä et al. (2021) explains it: “In a world of continuous learning, work and study overlap. The post-industrial work will be learning. We are moving from a linear career development model to an agile and wavy multidisciplinary way of working. Work and learning are part of everyday life, and career changes are the rule rather than the exception.”

Furthermore, we need to continue developing those skills and skillsets that are uniquely human and support the lifelong learning. As Pölönen (2021) outlines it, we need lifelong learning that is started with the development of lifelong skills, and especially those skills that are uniquely human. The future skills to be developed by World Economic Forum (2020) and Pölönen (2021) are presented in Table 2.

Table 2: Top Future Skills in Increasing Demand (World Economic Forum 2020) (Pölönen 2021).

Top 15 Future Skills by WEF (2020)	Top 12 Future Skills by Pölönen (2021)
Analytical thinking and innovation	Technology and the future
Active learning and learning strategies	Curiosity and experimentation
Complex problem-solving	Creativity and improvisation
Critical thinking and analysis	Problem Solving and Adaptability
Creativity, originality and initiative	Passion and character
Leadership and social influence	Communication and storytelling
Technology use, monitoring and control	Critical thinking and interpretation
Technology design and programming	Entrepreneurship and Teamwork
Resilience, stress tolerance and flexibility	Perseverance and patience
Reasoning, problem-solving and ideation	Well-being and self-knowledge
Emotional intelligence	Compassion and honesty
Troubleshooting and user experience	Moral courage and ethics
Service orientation	
Systems analysis and evaluation	
Persuasion and negotiation	

The skills listed by The World Economic Forum (2020) and Pölönen (2021) has multiple similarities. For example, the skills defined are not related to any job or area of expertise, but are more cross-functional skills, such as critical thinking and analysis, as well as problem solving, and well-being or self-management such as active learning, resilience, stress tolerance and flexibility.

In order to be competent within the work market, we need to change the way we see work and study to enable the lifelong learning and especially improve the cross-functional and more uniquely human skills.

2.3 Evaluation of Own Skills

To understand my personal strengths and weaknesses in the domain of future skills and emerging technologies, I first evaluated my level of skills against of the pragmatic and actionable tasks that Pölönen (2021) has listed as the ways to upskill one's future skills. The highest possible score being 5 and the lowest five. The evaluation is based on my own subjective view on my own knowledge and behaviour (See, Appendix 3).

The self-assessment results of my future skills are presented with blue colour in the Figure 3, below with the average scores of each area, 1 being lowest and 5 highest score. To give and additional weight I used the details of relative importance of the different skills described by World Economic Forum (2020) (see Appendix 2) and gave them value by order of importance (5 most important – 1 lease important). These are presented in below, in Figure 3 in pink colour.

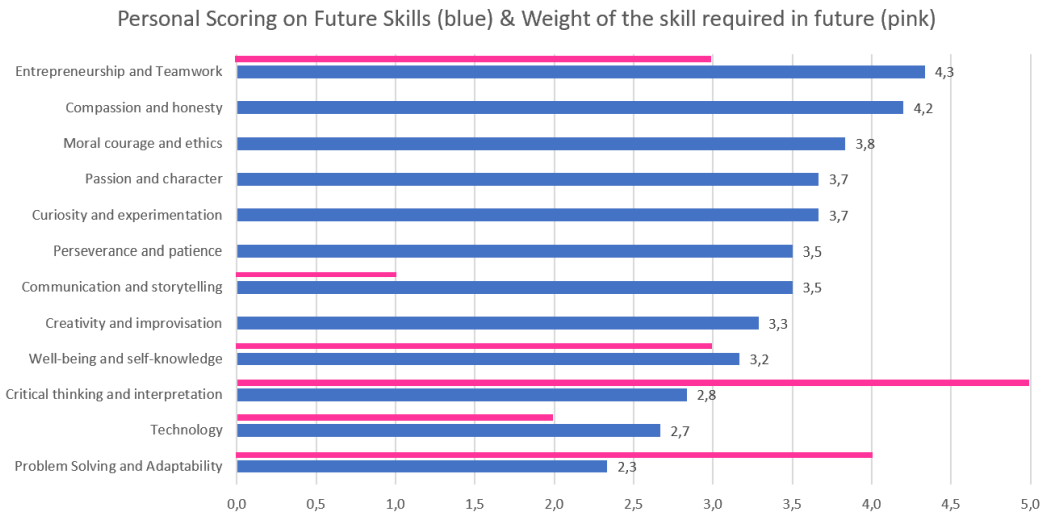


Figure 3. The self-assessment results of future skills with the weight of relative importance.

As the results show in Figure 3, I have already a set of strong skills, that I need to maintain, and these are within the areas of Entrepreneurship and teamwork, Compassion and honesty, Moral courage and ethics, and Passion and character. The key areas of skillsets that I need to improve are in the areas of Problem Solving and Adaptability, Technology, Critical thinking and interpretation, and Well-being and self-knowledge.

The areas where I had lowest scores are Problem Solving and Adaptability, Technology, Critical thinking and interpretation, and Well-being and self-knowledge. For selecting the skills to be developed, I used the both the lowest scores of my personal skills and the relative importance defined by World Economic Forum (2020). With the combination of these two perspectives, there were three skills selected with lowest scores and the highest relative importance which are: 1) Problem Solving and Adaptability & Critical Thinking and Interpretation, 2) Technology, and 3) Well-being and self-knowledge. These three skills are selected for my self-development skills within this thesis.

3 Current State

3.1 Current Work Analysis

The professional identity that I have opted within the past 19 years for myself can be described as an entrepreneur and a freelancer within the information technology domain. I founded my company in 2003 and have been self-employed ever since. The work I do is contract and assignment based and usually limited to a certain timeframe from couple of months to few years with specific deliverables and or outcomes. The contract-based titles I have obtained have varied from Consultant to Program / Project Manager. For the past ten years, I have been working only for one customer at a time, as the assignments have been more demanding and required full commitment.

As an entrepreneur, I have more responsibilities than a normal employee. There are legal responsibilities that I must take care of like accounting, social insurances, and taxes of the company. Also, I need to ensure any given time that I have work and continuous flow of billable assignments by maintaining the social networks to previous customers, potential customer and to the broker agencies that manage the contractor assignments to larger companies and corporations. And while doing this, I also need to perform my utter best in the ongoing assignment as the last assignment is always the calling card for the upcoming assignments.

The nature of the assignments has been changing gradually. Lately, the assignments have been related to transformations driven by e.g., technology (such as cloudification), or business strategy (outsourcing services outside of core business), or organisational change (insourcing development and moving from traditional waterfall towards agile and lean organisation). In most assignments, I get to act somewhere between technology and business and set the objectives against the business strategy goals.

In the past years, I have held contract-based work titles as ICT Outsourcing Program Manager, Cloud Transformation Program Manager, Senior Consultant / Manger for Continuous Services Development, Senior Consultant for Service Design and Services Productization, Project Manager for Application and Development Services Ramp-up in nearshore, and so on.

In my assignments I need to be able to adapt myself quickly to the organisation and understand their ways of working and show excellent leadership skills and people management skills with clear communication skills. In especially larger programs or projects, it is important to organize the way of working to support the set goals. The

program and project management skills are also very important. As an entrepreneur, I must be a bit fearless and be ready to jump into different types of situations and trust to the toolsets and learnings I have gained from previous assignments. However, every assignment and every customer are different from previous, and require study and learning.

As an entrepreneur, I have recognized that keeping up with the changing world is becoming more and more challenging. As it is a one-woman company, there is no other persons than me defining what studies or learnings need to happen. This is one of the reasons that I applied and was luckily accepted to MBA program within Haaga-Helia, so that I could upgrade my knowledge by studying and meeting and networking with people of similar goals.

It is fair to say that the work life is far more demanding today than it was a couple of years ago and it is impacting both physical and mental strength. This is also the key in this development subject and to succeed in self-development and changing the habits – personal sustainable change in habits is done by small but regularly repetitive steps that do not seem impossible.

3.1 Current Assignment Analysis

Currently I am working in a customer assignment as a contracting Program Manager on supplier side for a Cloud Transformation Program. This assignment and role I took over from my predecessor after program had already started. My role is to lead and govern the supplier side multinational and multilocation European based Project Teams to deliver the agreed scope of work to a European based financial corporation (see Figure 4). The program cost and scope are fixed.

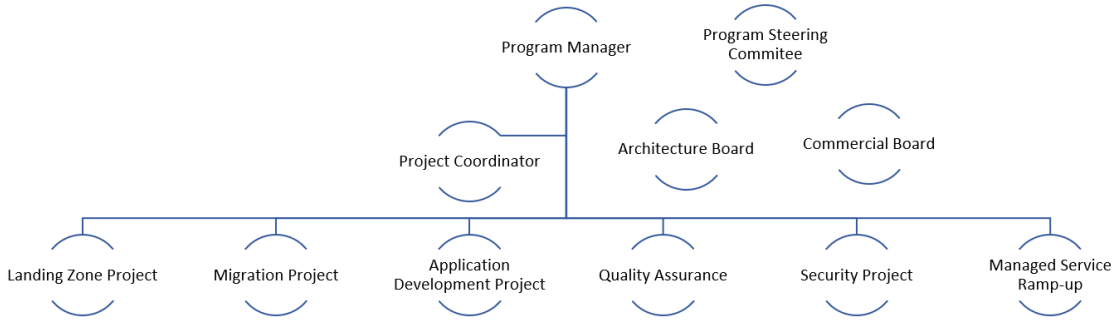


Figure 4. Internal, supplier side Program organisation.

The end customer is a financial organisation which business is in a decline and this cloud transformation program is to bring savings in cost to enable the services to continue

through technology driven transformation. Currently, the end customer organization is working on waterfall fashion and has little experience on modern cloud technologies and tools and almost no experience on agile ways of working. Characteristics for this end customer as a financial organisation is that they have a strong culture of risk driven project approach and a multi layered hierarchical governance that creates additional administrative work to all parties.

As a Program Manager I am responsible of assignment based high-level planning, resourcing, financial management, risk management, communications, commercial change controls, executive level reporting and escalations. In addition, the key responsibilities are to ensure overall collaboration across the internal projects/workstreams, ensure that the key people are coping with their workload and customer demands and driving problem solving to ensure program progress.

All members of the Program, both customer and internal, are working mostly from home from different locations in Europe. The working language is English. It is also characteristics to this time that most of us have never met physically due to the ongoing Pandemic (Covid-19), but the working culture and relationships are built through digital meetings and digital communications, such as email and instant messaging.

Internal daily communications are based on instant messaging and digital meetings. Program and Project level documentation is maintained mainly in Confluence, that is the hub for all information. Customer communication is mainly driven by emails and meeting based communication. Due to strict access rights the joint working documentation is limited.

3.2 Daily Work and Collaboration

The daily work with collaboration has changed a lot due to Covid-19 pandemic. The work is done in one place, i.e., home and all contacts to colleagues are digital. Calendars are filled in without any consideration of breaks of any kind and the days are longer than before (approximately 10-12 hours), and there is a consensus that everybody is available around the clock as we all work within different time zones.

The line between workday / work time and free time has almost disappeared.

Also, there are no social meetings outside of the meetings, no coffee machine discussions, no work lunches, nothing soft during that workday.

There is no more rhythm for starting the day or completing the day, that was previously driven by daily commutes from home to work and from work to home. The workdays have been transformed radically by making a week an endless pipeline of meetings and work-related communications and material creation.

3.3 Selected Development

The selected development includes those skills that are developed during this thesis diary research. However, as a result of this research there will be a study plan, that will be one part of the lifelong learning.

The development items are selected from the self-assessment of the future skills, which I selected from those skills where I got the lowest scores (see Figure 4). I received the lowest scores on problems solving, technology, and well-being. The self-development plan will be based on selected skills and performed within sprints. The objective for the self-development is to improve my skills on the areas where I had lowest scores.

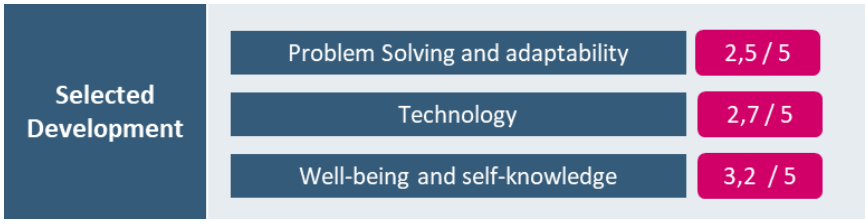


Figure 5. Selected development subjects.

4 Development

The self-development will be driven by learning the skills where I have the biggest gap and emphasising the change iterative daily / weekly, instead of a one big leap. So, attempt is to make learning part of daily life, in small steps, and create a consistent basis for a life-long learning. These skills are listed in the table below, within the high-level deliverables for each sprint (Table 3).

Table 3. Preliminary plan for the self-development during three sprints.

Skill to be developed	Sprint 1	Sprint 2	Sprint 3
Problem Solving and Adaptability	Study different concepts of complex problem learning	Find a models that are useful in everyday work life and adapt it if needed	Apply the complex problem model to something that is in hand at the work life Study one useful skill of critical thinking and apply it to something concrete within your life
Technology, focus on information technology	Learn through casual conversation from peer, colleagues and acquaintances how do they keep up with the new technology.	Take one learning into practice and test it out	Create a plan on future learning / studies within the technology domain
Well-being and self-knowledge	Keep the length of workday under 10 hours by prioritizing the task, Reserve 30 mins per day for study Reserve 20 mins per day for exercise	Have every week at least one meeting while walking, Reserve 30 mins per day for study Reserve 30 mins per day for exercise	Reserve 30 mins per day for study Reserve 30 mins per day for exercise

The aim has been to write the learning objectives and deliverables for each skill and its sprint on high enough level, so that as I learn more, I am able to adjust the goals and activities towards the most value brining activities.

The objective for learning Problem Solving and Adaptability skill is to first study concepts and then apply them to the everyday work life and capture these learnings within the diary. In addition to problem solving, the aim is to learn a basic skill of critical thinking and to apply it to something concrete.

The objective for Technology skills development is divided into two, the first one is related to the task with lowest score in this skill area, that is “Talk to your friends regularly about future technologies for example artificial intelligence with people of divers backgrounds to gain perspective” (Pölönen 2021, and Appendix 3). So, adjusting the task a bit, and will practice this skill by talking about technology with selected people and documenting these. The second part of learning Technology as a future skill is to make a study plan for technology related skills.

The objective of Well-being and self-knowledge is about changing current habits, and improving the well-being, so that the learning on other areas can happen.

The development will be done in three sprints each being three weeks long. The structure of each sprint is similar from one to another, so that each sprint begins with planning, and is followed by two weeks of learning, and completed by analysis done during the last week of sprint (Figure 6).

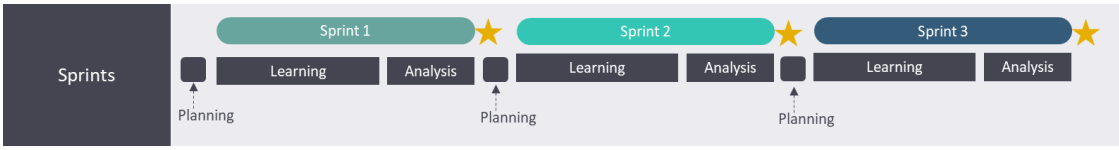


Figure 6. Work plan within the sprints.

The progress of learning will be recorded in diary format and weekly basis, as the progress on daily basis would not in my opinion bring comprehensive enough updates. Within the following chapters the learning diary will be documented into weekly basis sub-chapters that are the following:

1) Weekly update on Program Delivery. This is my current work assignment and gives a background and a context to my learning.
2) Problem Solving and Adaptability and the weekly activities against the set objectives.
3) Technology and the weekly activities against the set objectives.
4) Well-being and self-knowledge and the weekly activities against the set objectives.

4.1 Sprint 1

4.1.1 Planning

The activities for the first sprint are to study available literature on the different techniques and skillsets required for problem solving, learn through own network of people how they keep up with the new technology, and finally to enable the learning activities by reserving time for these activities (Table 4).

Table 4. Sprint plan for Sprint 1.

Skill to be developed	Sprint 1 - Activities	Sprint 1 - Objectives
Problem Solving and Adaptability	Study different concepts of complex problem learning	Understanding of the different methods that can be used for problem solving.
Technology (focus on IT)	Learn through casual conversation from peer, colleagues and acquaintances how do they keep up with the new technology.	Understanding of the different sources of learning the new technologies.
Well-being and self-knowledge	Keep the length of workday under 10 hours by prioritizing the task Reserve 30 mins per day for study Reserve 20 mins per day for exercise	Calendar kept in order by blocking invites after working day.

The objective for this sprint is to have good understanding of different practical problem-solving methods, create an understanding of the sources people use to learn of new technologies and making learning a part of everyday life by planning it as a part of workday.

4.1.2 Week 1

Week 1 - Program Delivery

This work week has been driven by customer escalation and different executive level meetings highlighted by an extensive amount of investigation, refinement, internal reviews, and joint executive level reviews before final decision-making rounds to begin.

Working days have been even longer than normally in this assignment. It is fair to say that I have spent approximately 12 hours a day in different meetings, ad-hoc calls, and material preparation meetings. For reasons that have been outside of my control, I have not been able to meet the daily well-being goals.

The key driver for this week has been the escalation addressed to be responded on executive level for late and uncertain delivery of re-engineering deliverables.

The program deliverables are agreed to be completed by the end of Release 6. The transition and transformation of applications were divided into 3 different projects for having the right skillset and treatment for each application.

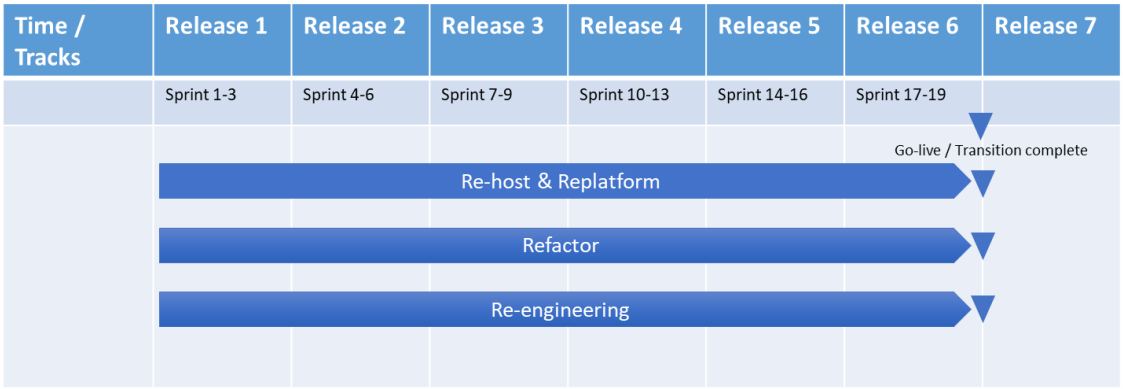


Figure 7. Project structure for cloud transition and transformation.

Due to slow progress on re-engineering project, where the legacy applications are developed based on cloud native components, there has been additional governance and executive meeting to monitor the progress. Even though constant improvements have been put in place by improving the ways of working (both customer and supplier side) and

removal of the impediments, the progress is still moderate compared to the estimated amount of work items still to be developed.

The re-engineering project approach has been from the beginning based on agile principles, which in this case is challenging as the customer does not understand agile and they want the governance of progress to be a waterfall approach.

Customer escalation was raised due to late delivery from re-engineering team with the request to provide options (scenarios) from the discovery and due diligence (pre-contracting) phase to investigate different options against the agreed estimated savings.

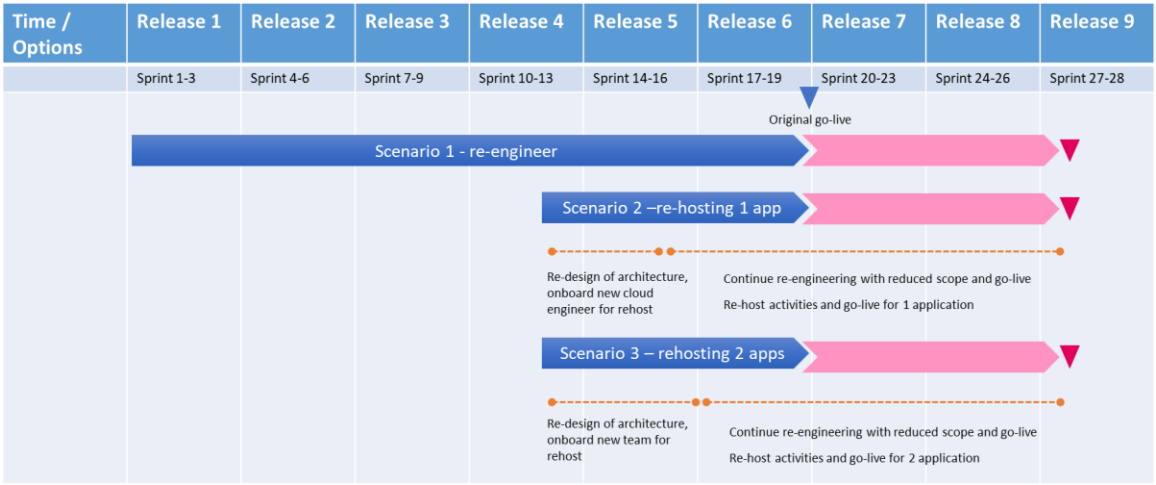


Figure 8. Evaluation of the different scenarios for delivery of the current re-engineering scope.

The different scenarios were evaluated with a high level of assumptions as there was no time to do deep dive into details, nor interrupt the re-engineering team with high pressure delivery. The key item in the assumptions where that if there was a change in approach, we would need time to re-plan and re-design the solution. Also, we would need additional members to join the team, which is slow due to the security constraints with this customer and the complexity of the environment. Therefore, with the information at hand at that time, we concluded that no option would speed up the delivery for us to meet the go-live date end of release 6. The customer decided to go with the whole scope of re-engineering and negotiate internally the new dates for delivery. However, as a key activity to back up the decision further governance meetings on executive level to monitor the progress were agreed (every second day) and the more detailed and fact-based planning to be executed with update risk log and mitigation activities.

Week 1 - Problem Solving and Adaptability

To learn more about complex problem solving and required skillset, I studied through different literature sources, recommendations, and evaluations. Because I prefer an instant access to the literature, I have been lately favouring online digital services. This time the book I wanted to have as a basis of my study was found from Amazon and called "Bulletproof Problem Solving – The One Skill That Changes Everything" and written by Charles Conn and Robert McLean. They have collected the concrete real life tested models and examples while working in McKinsey, Management Consulting Company and afterwards as independent consultants and entrepreneurs (Conn et. al., 2018). The second source of information that I am using in my studies is an audiobook – Your Deceptive Mind: A Scientific Guid to Critical Thinking Skills by Steven Novella and available in Audible (Novella 2012).

Conn & McLean define Problem solving as follows: "Problem solving decision making when there is complexity and uncertainty that rules out obvious answer, and where there are consequences that make the work to get good answers worth it." (Conn et al., 2018, page xiii of 290)

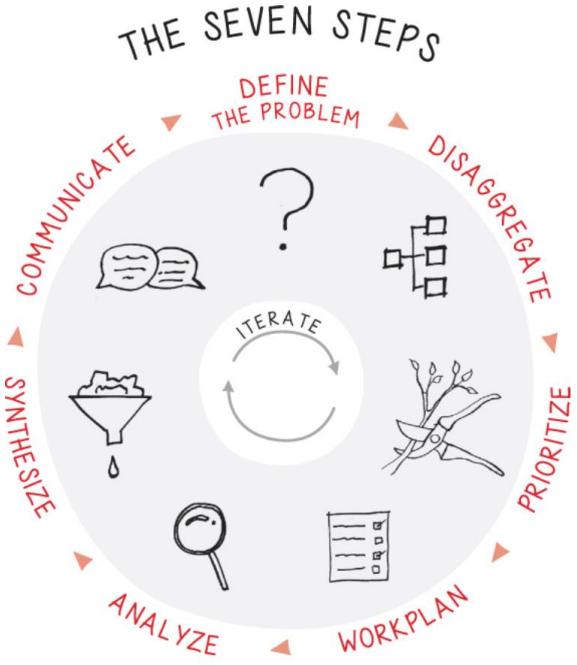


Figure 9. Bullet Proof Problem Solving the Seven Steps Approach (Conn et al., 2018, xviii of 290)

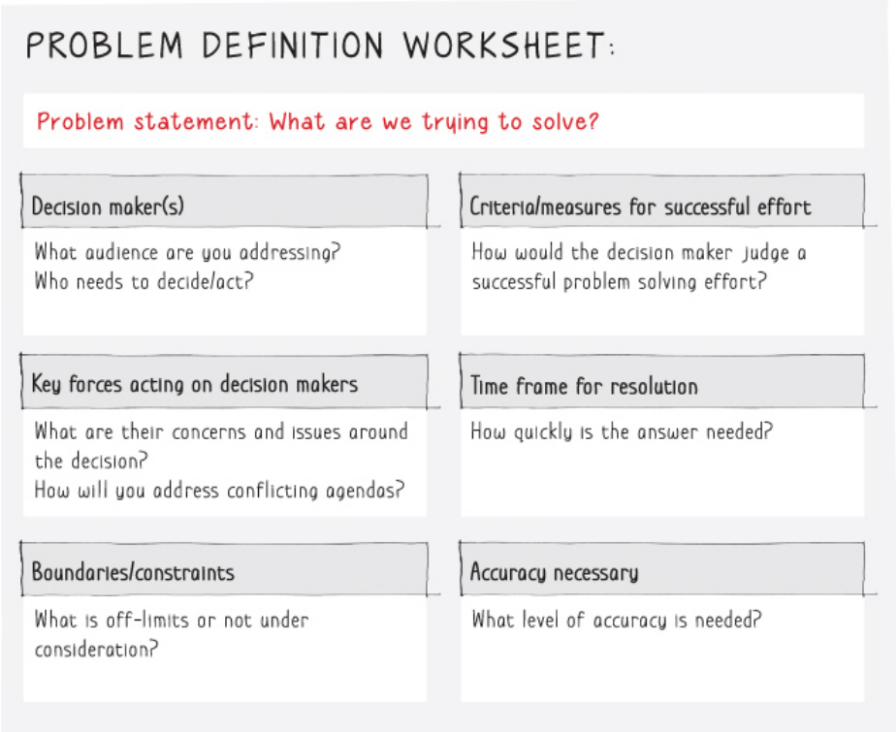
Conn and McLean (2018) state that the problem-solving skills are to be one of the key requirements for the future work. They describe it being a part of the mental muscle that we need to train to make it work together with the machine muscle, which they use to

describe the machines capabilities such as machine learning. To help one to develop the problem-solving skills they (Conn et al., 2018) have created a seven steps model called the Bulletproof Problem Solving approach (Figure 9), which is a systematic approach that in their opinion can be used to solving almost any type of problem.

According to Conn and McLean, the key in complex problem solving is to understand that it is an iterative process that requires one to go through the cycle multiple times. The first and most important step is to ensure that the problem definition is crisp and meaningful, so that the next steps can be taken.

In order to understand better how to create a good and crisp problem statement, I am testing the model for a current customer case where we are facing a challenging problem. The problem definition worksheet created by Conn et al. (2018) is presented in Table 5, below.

Table 5. Problem definition worksheet (Conn et al., 2018, page 34).



To learn how to use the problem definition worksheet, I applied it to the complex problem that we are trying to solve in the current work assignment. The outcome of applying the worksheet can be seen in Table 6, below.

Table 6. Applying the problem definition worksheet to current customer case.

PROBLEM DEFINITION WORKSHEET

Problem statement: *How to ensure agreed level of business case savings to customer during the contractual period even though delays in transformation program delivery*

Decision maker(s)	Criteria/measures for successful effort
- *COO (delivery organization)* - *Head of services (delivery organization)*	- *Delivering the agreed scope: moving all services to cloud* - *Creating savings on capacity cost including managed services*
Key forces acting on decision makers	**Time frame for resolution**
- *Keeping program delivery costs in control* - *Ensuring successful delivery within the financial industry to open doors for other customers*	- *Up to 48 months to fully realize* - *Fortnightly reviews of progress during program delivery*
Boundaries/constraints	**Accuracy necessary**
- *Fixed price delivery* - *Contractual commitment to an agreed level of savings*	*- Need to demonstrate that the program can delivery the agreed cost savings when moving from traditional data center to cloud*

Week 1 - Technology and Future

The first two interviews that were conducted in casual format, not fixed to any specific questions, but trying to keep the subject on technology and how we learn about technology. The analysis of the interviews is in the end of each sprint.

Interviewing a Freshman in Aalto University

The first discussion on technology and future was with a University Student, a freshman. So, had my first casual discussion about technology and future with my oldest son who is a freshman in university and specialising in electrical engineering. I though in advance some discussion points but thought that he should have a lot of ideas about technology as he is studying in Aalto University and has been coding since young age and is into all kind of new things. However, what I found out is that the discussion was not so fluent and easy. He was looking into technology close to him such as new screen technology while I my focus was maybe too broad, high level and too far in the future. Talking about technology in this way between different interest groups and without joint context, such as same workplace, is not easy. Something that seemed to me as an easy task that I personally feel enthusiastic about, is definitely not easy. I have to think about my approach before my next conversation.

Interviewing a Sales Executive in Technology Domain

Next discussion was with a Sales Executive at the Information Technology domain. He started talking about the Fiskars as a brand and sees that sometimes technology is prohibiting the brand to keep its value if they start to do bulk business.

“It is not about the volume but rather value. Currently we are still doing the digitalisation. The data we see within the large international companies is scattered but its value is not utilised. There is no intelligence yet used to utilise the data in a way that would make the business grow.

It is interesting to see what the next step after the company or corporation data has been organized into digital tools with enhanced processes. After this the data starts to be valuable and it can be used for improving sales & marketing with customised customer proposals. This is what we are trying to do at this moment.

When we have had the digitalisation in place, then we can really have the first phase of the machines to do some of the simplified tasks that we humans are currently doing by e.g., digging out the data from the mass and doing the analysis and simple decision making within the process.

So, I would see that for example in the future the chain of grocery shopping could be completely automized, without no human interfering. I believe that these changes should bring people more time to do something else when automation helps the daily life. What should we do with the time we get? I think we have a new problem with all the time we will have for spending. What is it that we will do with the time we save/gain when not spending time in the daily tasks we have at this moment?”

Week 1 - Well-being and Self-knowledge

Trying to keep the breaks during days has not worked out. There is no time for lunch, nor toilet breaks, and the days are very long. Even though I have tried to block time for breaks during the day, there are ad-hoc meetings and escalation responses that are timeboxed and prepared jointly with the executive delivery team.

Overall, the exercise has been limited to walking the dog once or twice per day and longer walks during weekends. What comes to studying every day, that has not happened either due to couple 12-14 hour working days.

4.1.3 Week 2

Week 2 - Program Delivery

This week at work has been driven by the ongoing escalation that already started a week ago. The work on refining the re-engineering plan with more fact-based assumptions has continued. Customer has initially agreed to continue with updated, late delivery, of re-engineering. However, a further planning is to take place to mitigate the foreseen risks of further delays.

The root cause for the challenge is the unclarity of agreement made before the delivery started. The paperwork and contractual agreement were done in too high-level which gives room for different type of interpretations. The issue is that we know the scope in high-level, but we do not know how much work is required to fulfil / complete the scope.

Some key changes to highlighted below (figure 10) to given understanding of the changes that has taken place before today. There has been upscaling of the teams prior to this escalation round. However, still at that point the teams had a high confidence to complete the work on time. Now with the new details and work items the confidence has changed dramatically.

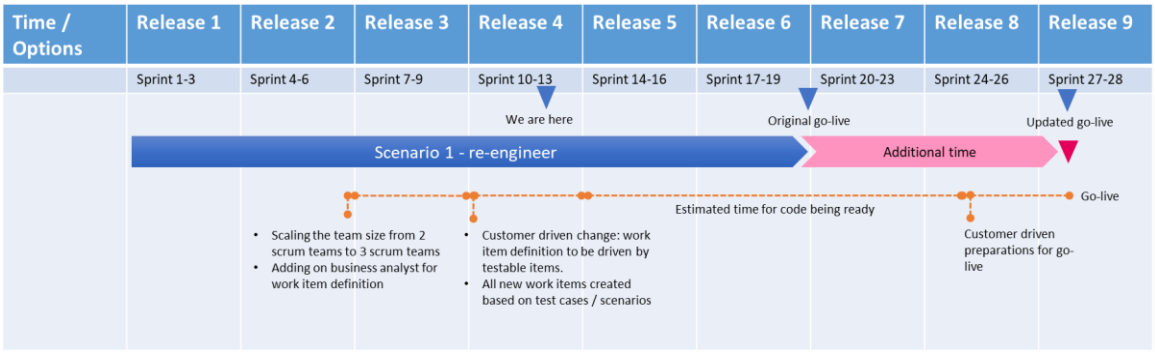


Figure 10. Re-engineering approach changes made on supplier side.

So, what has really changed since the previous rounds of planning: there are more architecture level skills, there is better understanding of the scope in technical level, the whole scope has been described through test case scenarios, but not translated yet to the new to-be environment design, there is designated joint team creating the (business) requirements based on the test cases, first two sprints have been completed with the new ways of working that gives some understanding of the possible velocity.

Second week analysis and results on the schedule (Figure 11) made it clear that there has not been a realistic understanding of the full scope and the amount of work needed to complete the re-engineering work of the whole scope. On the 2nd round of investigation,

the team gave the details of work items that increased the whole scope by 240 work items. Also, the team was not certain whether these work items would be the final figure and it would cover the whole scope. They commented that the scope of work is more complex than it was initially estimated.

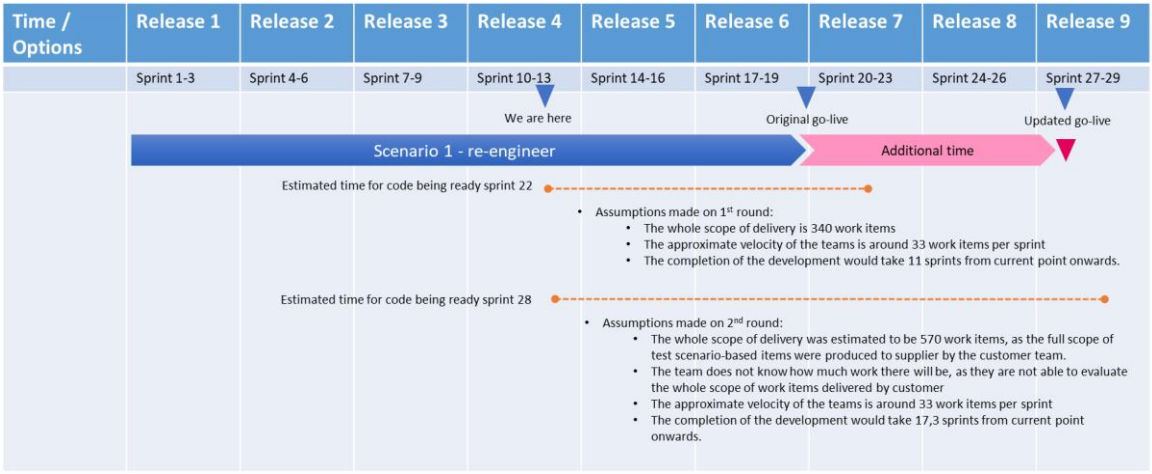


Figure 11. Re-engineering re-planning activities.

Week 2 - Problem Solving and Adaptability

After last week's problem definition, which was create on too high-level, I recapped the description and updated the problem statement to fit more appropriately on the current situation (Table 7).

It became clear on this week's problem analysis, that the whole amount of re-engineering (development) work cannot be fully evaluated. The team concluded that it can be less, or it can be more – they cannot evaluate the whole scope until the end of the project, unless they stop doing what they are doing at this moment. This is a challenge, as the team cannot prioritise the planning over the development unless we agree to have the impact of further delay. Also, we cannot know whether we have sized the development teams accurately until we know more about the whole workload.

Table 7. Re-engineering issue reflected against problem definition worksheet

PROBLEM DEFINITION WORKSHEET

Problem statement: *How can we re-engineer the agreed scope of applications by agreed date when we do not know how much work the product requires*

Decision maker(s)	Criteria/measures for successful effort
- *COO (delivery organization)* - *Head of services (delivery organization)*	- *Ensuring there is a well-prepared plan to meet the agreed deliver data* - *There is well defined metrics in place to monitor and measure the progress*
Key forces acting on decision makers	**Time frame for resolution**
- *Reputation over cost* - *Keeping the agreed scope* - *Delivering on the agreed new date*	- *Within 1-2 sprints* - *Weekly reviews of progress during program delivery*
Boundaries/constraints	**Accuracy necessary**
- *Fixed price, fixed scope delivery* - *Fixed delivery date* - *Onboarding new team members is slow*	*- Need to demonstrate weekly basis that the delivery can be met (velocity vs full scope)*

To gain an understanding of the problems anatomy, I studied the methodology for problem disaggregation and prioritization that create the step 2 and step 3 of the problem solving cycle (Conn et. al., 2018). Also decided to apply the prioritization model created by Conn and McLean (2018, page 71) to prioritise activities that have the most impact with the current details gathered about the problem. The applied model highlights the focus and priority of the activities we should have in the upcoming weeks (Figure 12).

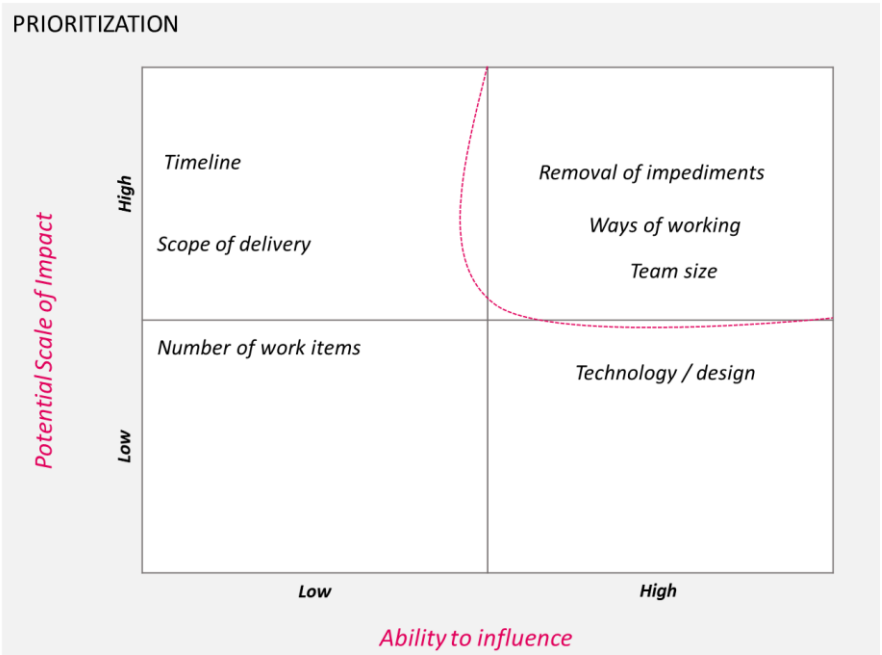


Figure 12. Applying Prioritization Matrix to Re-engineering Problem (Conn et al. 2018).

The prioritisation of activities should focus on the quadrant of high ability to influence and hi potential scale of impact. The activities that should be in the focus of the re-engineering project work are the removal of impediments, ways of working (improvement/change), team size (increasing the team size).

Week 2 - Technology and Future

Interview with Kinder Garden Teacher

The week 2 conversations around the technology and future I had with a kinder garden teacher (age 39). The conversation was not based on specific questions but was flowing freely around the subject of technology and future. Meeting was held via Teams video meeting. For the introduction, I explained the high-level scope of the conversations, i.e., to hear thoughts of technology and future within the context of kinder garden, school, and personal life and to understand how they learn about technology.

The teacher explained that there has been a discussion to improve the forecast of teachers needed in the shifts by using IT tools and software collecting data to forecast trends. This is seen in the future to help in adequate staffing, by collecting details on how many children are in kinder garden at a certain time, by estimating volumes and trends. Unfortunately, at this moment I learned that there is rarely the adequate number of teachers per group (even though required by law) because the substitute teachers are scarce and not easy to get in case of illness or unplanned absences. So, it seems that in the end the forecasting would not be enough to solve the problem but the availability of teachers on a given time requires solving.

In general, she is in the opinion that there are quite a few teachers and employees in the kinder garden that are somewhat scared of technology and people do not feel easy to learn new things around the computers, technology and so on. Also, as most kinder gardens are run by the city and are not privately owned, the technology is being updated very slowly and we do not get the newest and best tools and applications available on the market, or at least that was her opinion.

Overall, she sees that depending on one’s profession, there is a very different level of understanding of the technology. She sees herself as the consumer and has a difficult time to understand what those people within the technology industry really do as the context and details are not clear. The industry seems mysterious to those that lack the basic concepts and details, she clarifies.

Most of the details on technology and development she learns from newspapers and news that are followed closely on daily basis. There are stories about Pizza robots and

autonomous busses (HSL, 2021). However, in news the technology can be seen quite often also from negative point and bringing possible crisis. She brings one recent example regarding undersee data cables that vulnerable and felt threatened due to Russian war rehearsal close to Irish and Norwegian seas (Halminen L., 2022). She further wonders that what happens if we lose the connections, do we still function as a society while we are so hooked up to the technology and daily entertainment it brings to us?

There are other places where she learns about new technology, such places like Oodi which is the new Helsinki central library and citizen space that lowers the barrier for all to learn more about 3D printing, computer aid sowing machines that can be used for designing and embroidering of complex figures. There are robotics workshops, coding workshops and movie creation possibilities. Oodi is a place for families to spend time and jointly learn and get entertained.

In future she would love to have the use of autonomous cars, that could take the family to holiday destinations with some relaxation time while travelling. What is left as a question mark is – what kind of basic citizen skills do we need to develop when the technology changes the world? In her opinion the skills for everybody to learn is most likely led by technologies adapted by masses.

Week 2 - Well-being and Self-knowledge

This week has been very much the repetition of previous week. Serious attempt to change the habit or working too long hours but have not succeeded. Also, I have not succeeded to have enough breaks during working days. There seems to be always something urgent coming up that requires my attention. The key challenge I have recognised is also working every day from home. This does not give the necessary interruptions during the working day.

4.1.4 Week 3 – Sprint 1 Analysis and Retrospective

Sprint 1 - Program Delivery

The past weeks including the ongoing week, have been a heavy workwise as the customer escalation responses have not been satisfactory. The customer organisation has decided that they cannot work on agile methodology as they are not equipped with the skills and understanding. The customer Program Director stated that he is unable to report to their board further to get approval unless we change the approach. For this reason, there was a decision made that an additional effort to be put in re-planning on

program level to create a more traditional (waterfall) plan for the program and all sub-projects.

As this is creates an additional amount of work on delivery side – we decided on the supplier side that additional hands are assigned for us to achieve this in a very short time with a local Program Director assigned monitor the progress. The planning is to happen on upcoming weeks with the focus that time and quality is fixed and are not flexible, but cost can be increased.

Sprint 1 - Problem Solving and Adaptability

During the sprint I studied and applied first three steps of the practical 7 step problem solving cycle tool by Conn and McLean (2018). I applied the first steps to a real-life case from current assignment of their 7 step model by creating a problem statement and identifying the levers and prioritising them for attempting to solve the problem. However, I also recognize that the attempts were not perfect and the key, as Conn and McLean also point out, is to revisit the steps as it should be an iterative process and sometimes one needs to go through the cycle many times before the problem statement is finalised. Therefore, I will continue visiting the complex problem-solving models.

What comes to the sprint objective of “Understanding of the different methods that can be used for problem solving”, I personally feel that I have a good start on understanding some of the methods available but have also only scratched the surface and this requires more studying.

Sprint 1 - Technology and Future

Learning about technology and understanding of the different sources of learning about the new technologies, it is clear that workplace is one of the key sources when it comes to adapting technology, but other sources of learning about technology is interestingly also the public library in Finland. The library is a place where there is a low barrier and opportunity for all to learn about new technology and it is not connected to once wealth.

None of the persons I interviewed, had real plans on what technology related subjects to study. It is something that is embedded in our daily work and life and seems to happen by accident or driven by an institute or a workplace, not by personal, self-driven plans.

The sprint objective was to get “Understanding of the different sources of learning the new technologies”. At this moment I did get a partial answer to this question, as it seems that most learning happens at work and in education that aims for a degree. However, I feel

that I would like to continue the technology related discussion as the few interviews gave a perspective toward technology that cannot be obtained within the technology-oriented professionals.

Sprint 1 - Well-being and self-knowledge

Every working day has been minimum of 12 hours, so no time has been left for any kind of well-being activities. Overall, this assignment has been driven by constant urgency of customer demands. The objective of having the “Calendar kept in order by blocking invites after working day”, I did not achieve, as many meeting overrun to late evening.

Sprint 1 - Retro

- Keep doing: Continue studying the literature around the problem solving and apply the models to actual work related cases. Continue the interviews with the objective to get new information and perspective outside of technology domain
- Stop doing: Overestimate available time during working days as it will not happen during this customer assignment
- Start doing: Define more clearly the acctivities and objectives against what is realistic and achievable

4.2 Sprint 2

4.2.1 Planning

The activities for the second sprint are to continue studying the techniques and skillsets required for complex problem solving and applying learnings to current work related cases, continue learning through own network of people how they understand technology and learn about new technology, and finally to enable the learning activities by reserving time for these activities through well-being. The sprint objectives defined for the skills learning are listed in below table (Table 8).

Table 8. Sprint 2 objectives

Skill to be developed	Sprint 2 - Activities	Sprint 2- Objectives
Problem Solving and Adaptability	Continue studying different concepts of complex problem learning and applying learning to real cases	Understanding of the different methods that can be used for problem solving.
Technology, focus on information technology	Continue learning through casual conversation from peer, colleagues and acquaintances how do they keep up with the new technology.	Understanding the different perspectives to technology and sources of learning the new technologies.
Well-being and self-knowledge	Reserve 30 mins per day for study Reserve 30 mins per day for exercise	Calendar kept in order by blocking invites after working day.

The Sprint 2 Problem Solving and Adaptability objectives were adjusted and do not respond to that document earlier. The reason is that the problem solving cycle was

already applied in sprint 1, as it is not practical to divide the tasks in a way that I first study the whole model and just then apply, but rather study a piece of it and apply it immediately and learn the model iteratively in small cycles.

Also, the Technology related sprint objectives were adapted, as I felt that those three interviews that I conducted were not enough and I have a feeling that I there is still something that I can learn and find out by continuing the conversations. Also, there was no concrete learnings as such that I felt that could be tested out. The analysis of the interviews is done in analysis chapter of each sprint.

Furthermore, the Well-being objectives were also reduced, as I do not think that having a meeting while walking if achievable.

4.2.2 Week 4

Week 4 - Program Delivery

During the week 4, the program delivery plan and its re-alignment workshops have been driven in three-day workshops. The workweek has been very heavy with normal daily governance with full day track specific re-planning workshops. As there has been an additional layer added to the program, the workshops have been also learning platform for these new colleagues, and in some cases the progress on detailed planning has been slower than anticipated.

The solving of the key item that is getting confidence on re-engineering delivery date was not solved during the planned workshops, therefore additional workshops were agreed for the following week with the technology architects to drive the solutioning through technical solution design.

In general, the different tracks are continuing the delivery while the program level planning is ongoing, but there are some signs of tension that is arising due to non-satisfactory communication on the changes.

It is important to record that during this week, on 24th February 2022, Russia started its invasion to Ukraine. As the program is multinational and all program members are located scattered in Europe, this has impacted our delivery team deeply.

Furthermore, it is important to record and remember that were we think the invasion to Ukraine as an act of war, Russian media describes the activities as special operations. “Feb. 24: Putin authorizes "special military operations" in Ukraine. Russian forces begin missile and artillery attacks, striking major Ukrainian cities including Kiev.” (Reuters, 2022)

Week 4 - Problem Solving and Adaptability

After the customer executive board decision was received, I revisited the Prioritization Matrix created in the earlier sprints. While my approach was that the number of work items is something that does not potentially have a strong impact on either solving the problem nor something that we can influence as the scope has all the time remained the same while the presentation of the scope changes.

However, now the customer executive board has stated that the number and complexity of the work items is to be the key focus for our re-planning and re-design work that is to be performed within the upcoming weeks. I personally do have a different opinion than customer but do also understand the complexity on their end and will attempt to show the change of priority within the problem solving model.

Following the customer's request, it is clear that the positioning of the number of the work items was incorrect and should have been seen having a high impact on the prioritization. However, it is also important to notice that as we proceed with the program delivery, we are discovering the "known unknowns" and "unknown unknows" which gives us learnings and data as we go forward with the program activities (Rumsfeld 2016).

Once again, I took the practical prioritization matrix model (Conn et al. 2018). and updated it with the latest details and updates and to present the decision making within the ongoing assignment (Figure 13).

The positioning of the number of work items was previously in the low potential impact sector while being also low as the ability to impact. This is the view seen from agile development perspective and the thinking had been driven by the idea that the scope is fixed and reveals itself only sprint by sprint as we go forward, and therefore the estimate of the work items is somewhat fixed and cannot be impacted (Figure 13, number 1).

However, due to the executive board decision, the approach towards the re-engineering and development work problem solving priorities has changed. The driving decision is that the re-engineering of the current systems must have fixed scope with fixed timeline, date of delivery and go-live. Now the addition is that the number of work items is seen as presenting the fixed amount of estimated work or effort and must be understood in good enough level. The board sees the number of work items to be in the high impact and high influence quadrant (Figure 13, number 2).

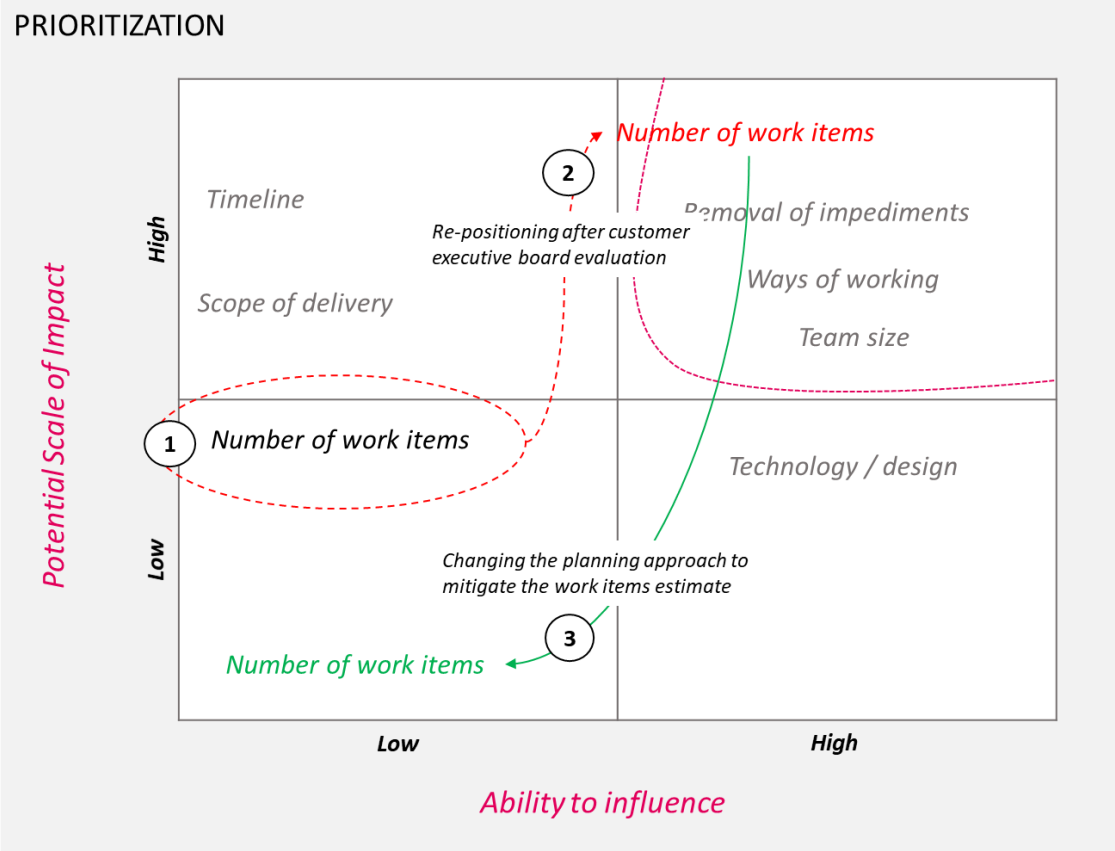


Figure 13. Applying Prioritization Matrix to Re-engineering Problem after Executive Board Decision.

The objective of defining the work items on good enough level, is to have a better estimate on the timelines and therefore the position of the number of work items in the prioritisation matrix should drop to the low impact and low ability to influence quadrant (Figure 13, number 3).

Within the current knowledge gathered around the problem statement, this work does not seem to be the best way forward, as it requires us to change the development approach from agile (Agile Alliance, 2022) towards waterfall (Hughey, 2009).

Week 4 - Technology and Future

Interviewing Case Manager for Guidance for Senior Citizens working for Espoo city.

“My work mostly consists of customer home visits, phone calls, internal face-to-face or digital meetings, and writing official service agreement decisions based on customer home visits. There is not that much technology or innovation in my daily work.

In my opinion technology or machines cannot take over the human presence and evaluation work that I do when visiting the customers. The evaluation done by a human

cannot be put into algorithm, but it is based on inspection of the home and its suitability, with conversations with customers and reading the subtle signs when the evaluation of the home nursing qualification is evaluated. The evaluation needs to be done in the home nursing location and in my opinion cannot be done by digital meetings and requires the presence of a human.

Though the technology and innovations can be visible in supporting the home nursing. The remote home nursing is something that is being developed using technology to replace some physical visits done by nursed. Also, in some cases the medication and food service are aided by technology to ensure availability and accuracy. Machines are better in ensuring the medication dosage calculation than humans and this is something already used. In food service there is this Finnish invention called “Menumat” that contains the freezer with ready cooked meals that the customer can prepare easy with the small size oven provided with the meals (Menumat Oy, 2022).

Remote home nursing could be a possibility to some customers in the future. However, at this moment we still need humans to deliver the home nursing services, such as changing diapers or supporting the customers with bathroom tasks and showering and washing.

However, the machines or technology cannot replace a human presence. During the pandemic there has been a growing issue of loneliness that we have faced in our work. People have not been able to visit one and other and this has impacted especially the elderly people.

The automated, technology assisted, medicine measuring, and sorting has improved the accuracy of customer medicine dosage accuracy. It is safer while the possibility of the human error in medizing dosages and sorting has been reduced. Though, we still need in home nursing in many cases a nurse to ensure that customers take the medicine and assist in taking the medicine.

My personal work has become with remote meetings a bit less stressful as we can have more frequent, but shorter meetings. Also, as there is no need travel to these meetings, I have more time to travel time to meet the home nursing customers. This has created efficiency to my work.

Another supporting information technology development is the joint patient information databases (potilastietojärjestelmä) that are available for those working in government healthcare sector. These shared and centralised patient databases make the work a lot easier as we do not need to ask separately details from doctors etc. but can work with the up-to-date data already documented to the patient database.

Another item that I can think of supporting from the technology point of view, is the electronic signatures, which has enabled us to create the home nursing decisions completely digitally. One step has been completely removed from the decision-making process that is that we do not have to anymore digitalize work related documents as everything is already in digital format (print – sign – digitalize – archive). This has helped especially in archiving related tasks.

Though, I can see a lot of good things in technology and development, I cannot help thinking that we are very dependent on the information systems (potilastietojärjestelmä). I am wondering what happens if the system is down – are we able to do our work at all if this type of situation occurs and fixing takes a long time.

Even though, all the necessary data is available in the databases for decision making, I personally think that the work I do requires the human interaction. In order to make a good and accurate decision based on the facts, I need to have the discussions, have the physical presence, and evaluate the customer's current situation in their home and reflect the details from database against what I see and hear. The basis for the work I do is trust and the trust between humans in my work can only be built through face-to-face interaction.

In my personal life, the digital banking with digital identification have made online shopping a lot easier and more secure. Though, I do keep thinking that how will our society function if all systems are down, as we are more and more dependent on the digital services. "

Week 4 - Well-being and self-knowledge

This week I have been able to do a bit longer morning walk than in previous sprint but have not succeeded to block enough breaks during the working days. The evenings have been long as the 3-day workshops are driven by customer time zone and spans over the evening time and shortens my free time. I am slowly starting to think that as long as I work remotely and within this customer assignment, I will never succeed to achieve the well-being objectives set.

4.2.3 Week 5

Week 5 - Program Delivery

The week 5 has been mainly driven by 3-day workshops on the re-engineering re-planning. Due to catching Covid and being too ill to work, I missed two of the workshop days.

In the background of the re-planning activities, the normal program governance has been driven with the focus of working on the prioritization matrix items that the program team can impact.

Week 5 - Problem Solving and Adaptability

As the program and re-engineering re-planning is ongoing, the focus on the background is on the improvements and the prioritized items that were identified into the prioritization matrix's quadrant of high impact and high ability to influence (Figure 14). These three items that we are focusing on are: removal of impediments, continuous improvement in ways of working, and increasing the team size to increase the velocity.

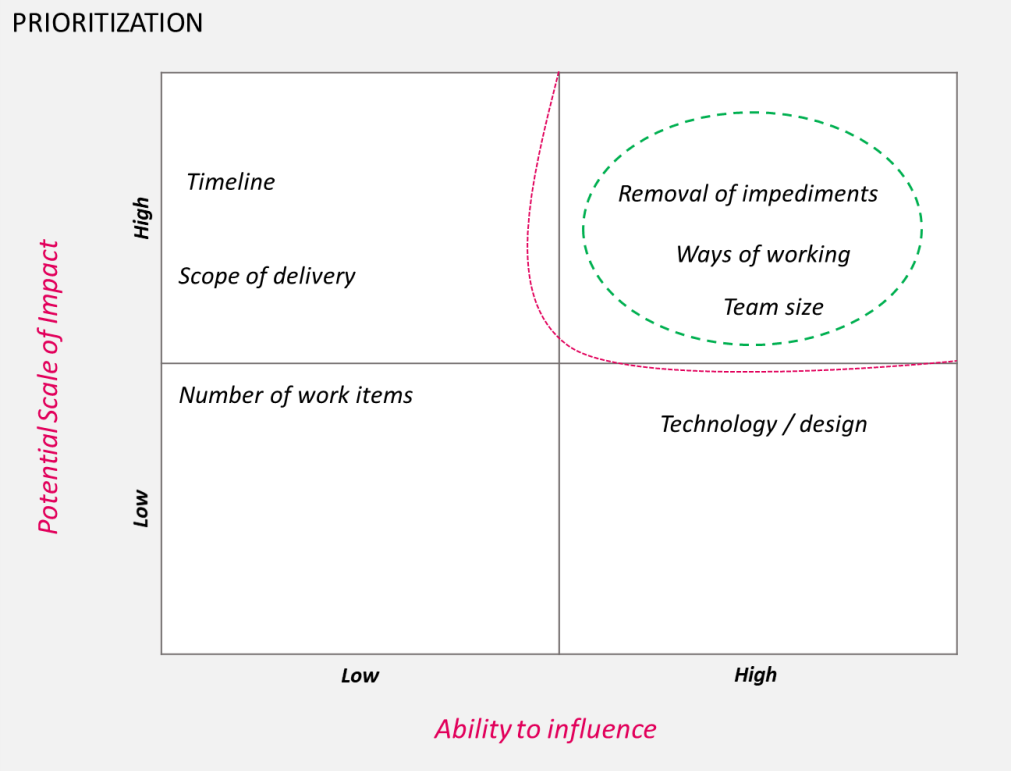


Figure 14. Scope of the working plan on prioritized items.

Furthermore, we placed these three prioritized items and planned next activities that need to take place on to a Gan plan (Figure 15).

The improvement items that can be influenced and have a potential high impact were noted as the removal of impediments, ways of working and team size. It was already recognized during week 2 that the estimated amount of work that is the number of work items, is not a fixed, but seems to be growing every time we start working of the next set of work items and begin refining the work item content. Due to uncertainty on the estimate of the work items, the decision was made immediately to recruit and/or onboard 6-8 new members to the re-engineering project was already made at that point. This is in line with the Executive decision on accepting costs to increase if the agreed timeline can be kept. The estimated time to get new skilled developers onboarded to the scrum teams varies from 3-6 weeks.

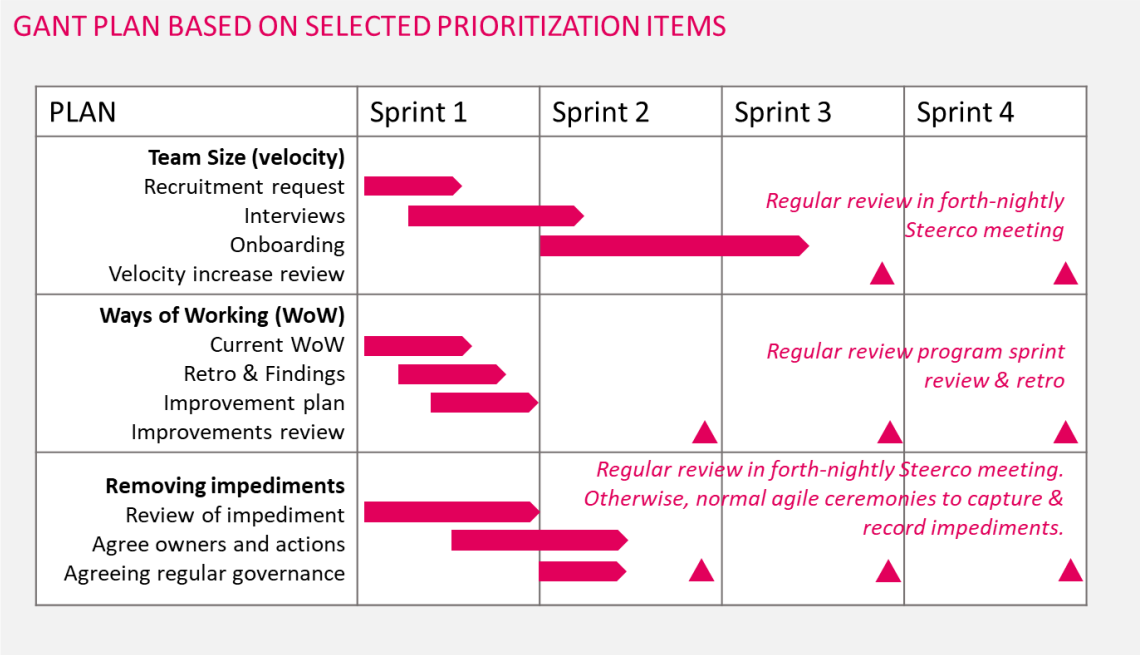


Figure 15. Gant plan based on selected prioritized items.

Another improvement item that the teams are continuously working on is the joint teams' (supplier and customer) ways of working and continuous improvements. In a more agile world and working culture the teams could be self-driven, but in this customer environment it is required to have a strong leadership on program level to drive and enable the changes on customer side. Current enablement that was agreed, was to have the customer testers to be added as members to scrum teams, so that the testing is a seamless part of the development and does not create waste by unnecessary waiting of test activities to be completed with the recorded bugs. In the upcoming weeks we will continue recording the lifecycle of the working items with ways of working, in order to ensure that the improvement items are recorded, and the results monitored and recorded.

Table 9. Example on the monetisation of the impediments/blockers.

Blocker/Impediment	Impact
PIM role activation for contributor access rights (development environment): Used on a daily basis to be able to create resources or read data. Takes around 10 minutes to fill out the form and get activated for a single subscription. In many cases we need to work with two or three different ones.	on average: ~20 min a day/ subscription / developer Minimum impact 3,5 days / sprint = 1 PBI per sprint (lost velocity)

The third improvement item is the removal of impediments. The discussion of blockers and impediments has not been taken seriously enough by the customer. Therefore, we have been "monetising" the impediments and blockers in a way that it creates the urgency for both parties to work on these impediments (see example below, Table 9).

In general, the scrum teams have been working in an agile way and notifying the blockers and impediments and documenting them into Jira (the tool used for the daily work), but these details have not been getting the attention and/or urgency from the leadership team. So, the aim is to make it more transparent what is the impact of impediment, if not removed and assigning the ownership high enough to get the required activities to remove impediments started as soon as possible.

Week 5 - Technology and Future

During week 5 I conducted two interviews which are documented into the weekly diary and analysed later within the sprint analysis.

Interview with Service Coordinator at Helsinki City.

"Currently I work full time as a Service Coordinator at Helsinki City and study on my free time in to become a vocational schoolteacher

In my studies as becoming a teacher we have just been learning on future skills and what should we teach to the students regarding the future skills. In my group of students, we have both those wanting to become teachers in vocational schools and university or applied science. We have been going through the studies of future and how can we as teachers be always a step ahead and teach the most current skills to our future students and how to ensure that the skills we teach are relevant on the work market.

One of the subjects regarding future and future skills has been robotics and how the robotics will be taking over simple tasks that humans are performing. For example, in my current job I can see that the robots (software) will be taking over some of the tasks that

we are still currently performing, but I see this as a good improvement as then we have more time to concentrate on the tasks that require more expertise and knowledge.

At my workplace, in Helsinki City payroll administration there are people from 20 – 60 years old. Some of the older persons know only the minimum what has been taught to them, but not much outside of that. Younger people have been born to the age of computer and seem to be more natural with technology and computers. In near future we are starting to use a new payroll system and I am worried that the change of the technology will be a stretch to some of the older members within our team. The challenge is that they are excellent subject matter experts, but not all of them are comfortable with technology. However, the change is inevitable.

The future will, for sure, change the work. I would personally love to have more free time and less work.

I do not follow technology as a subject and am not so interested in being an expert on technology. Though, I do study when it is relevant to my job and needed to be learnt to be able to execute my tasks, like in this moment when we are having a change of a payroll system. Otherwise, I do not follow actively on technology innovation nor follow the news or articles on the subject.

My studies of vocational teacher are based on online and hybrid learning. This is strange to me as I am used to going to classes and meeting other people and networking.

About the citizen and technology skills that we should all master. For example, my mother has moved from Eastern Finland to the capital city, and she has had to learn how to use the HSL public transport application, in order to be able to move within the city. Online shopping is not for me, as I feel that I need to fit them separately. I personally believe that the smaller shops and restaurants will remain as we people want to spend money on small adventures and experiences."

Interview with Program Coordinator at Finnish Customs

"I am using technology and tools I have learned to use at work also in private life. In the past years the changes in technology seem to be really fast. It was not long ago when when my daughter asked for me to use an app called Mobile Pay (Paytrail, 2022) and first it was really scary, as it was new to me, but after a while when I had used it couple of times, it felt good and easy to use. I personally feel that there should be more courage to do new things and take new apps into use such as digital card wallets. I have not taken them to use, at least not yet.

As I grow older, I have recognised that I take all new things into use a lot slower than before. I have a bit of this “Do I really need to learn this new thing” – attitude and am slow to change old habits. It makes me wonder - Why are we scared to try new technology items.

In Finnish Customs we have launched a service to make one to perform the customs clearance more easily. During this process I have recognised that it requires a lot of work and understanding of the complicated logic to make the user interface easy to use. The logic of processing the data and is based on EU and local law which is not always the simplest basis for simple services and this also makes it difficult to automate the customs clearance process.

While technology and progress are good in the other hand I am concerned about the digitalisation and wondering how vulnerable we are if we face (as a nation) a coordinated cyber attack. How would this impact on our daily activities and ability to continue within normal life?

Also, what kind of threats might me face of a misuse of the data that is gathered of me and all of us using the digital tools. For example, there is potentially someone who knows exactly where I am at a given time and what I am doing, as I am using the Google Timeline which gathers the data of how many countries and cities I have travelled and sends me a yearly summary with details who I have visited and when. This is something that I personally find interesting, but someone could is having access misuse the data. Or maybe it could be used for good and in case of a crime the data could provide helpful details in solving the crime.

If still thinking further of the data being gathered and stored of the citizens of Finland, then what if a hostile party or non-friendly country would get the data – how could they use the data in their advantage and in our disadvantage as nation. I am concerned about the activities of authoritarian nations like China and Russia, who are gathering digital data of their citizens, and using this data into their citizen’s disadvantage (to controlling them) and not in their advantage. How would we act differently, if we were living in a country where a one wrong word could have consequences? Luckily, we live in a country (Finland) where different opinions are allowed. We can trust into our legal system and democracy.

Mostly I am concerned within the technology and future development about the misuse of the technology. It seems to be a constant balancing between good and bad and beneficial improvements and misconduct.

I do not regularly follow the technological development but do follow news and at work I learn about new tools in a regular cadence and attend trainings organized. Also, I do study something constantly, but not everything is related to technology or IT. Sometimes learning to use new technical / digital tools, one needs to go through a very steep learning curve before the tool comes familiar and easy to use. Changes should not come with such a fast pace.

The age, in my opinion, is not only negative thing but there is the other side of the coin (when thinking about continuous learning), as the older we get the more information and data we have also gathered and can use that information in positioning the new into larger context. Also, it makes it easier to connect the meaning between old and new and create deeper understanding. However, one of the key things for learning is also the well-being. It is important to take care of oneself, this is the key for learning. Personal larger crisis, which I have experienced also myself, can impact negatively to one's memory and capability to cope. This has been also visible during the pandemic as many have suffered of tiredness and lack of human collaboration at work life and found it difficult to cope. It is important to take care of well-being that enables the continuous learning. "

Week 5 - Well-being and Self-knowledge

During the busy workshop driven week, I fell ill. I still tried my best to keep up with the work schedules, but finally had to take a day off and rest. I was not able to meet the well-being objectives for this week.

4.2.4 Week 6 and Week 7

During week 6 and week 7 I was recovering from Covid. Unfortunately, my recovery took longer as I did not take enough time out from work and rest in early phase of the infection.

4.2.5 Week 8 – Sprint 2 Analysis and Retrospective

Sprint 2 - Program Delivery

The week 8 has consisted of the work assigned to prior weeks due to the Covid infection that impacted my ability to work and study and delayed some work approximately two weeks. The program delivery organisation changed during these past weeks as an additional governance layer was added to remove additional work regarding the heavy governance work required from customer. This enables more hands-on leadership to help all sub-projects work.

Sprint 2 - Problem Solving and Adaptability

During the sprint I learned practical tools that can be used for problem solving and applied them to the current problems recognized within the customer assignment. However, the key is that it should be an iterative process and revisiting the different phases is important to get the problem statement and following phases right. Also, there needs to be more spaces during the working days to do analytical work.

The objective for Problem Solving and Adaptability for sprint 2 was to get an "Understanding of the different methods that can be used for problem solving". The objective was partially met, as I did study and apply the methodology, but could have maybe gained a different perspective if had an opportunity to collaborate with someone on the subject.

Sprint 2 - Technology and Future

The interviews conducted in Sprint 2 did reveal that people are not planning their studies within technology, but it is rather driven by someone else, i.e. we learn what work place us offers. Also, there is positive attitude towards technology, though concern as well, as the changes happen fast, can we keep up with the changes. Also, who is using our data and can the data be used against us. It is also evident that the pandemic and current war in Europe impacts our thinking.

However, after these interviews I do not feel that any further information through interviews would assist me in the finding the learning patterns. Also, I do somewhat find the technology as a subject for conversation a less difficult after conducting these interviews, especially with people who are not working within the technology industry or domain. Talking with people have given me a more comprehensive perspective and context to have these discussions in the future as well.

It is evident that technology is to many an unknown or not interesting area, especially if you are not working within the technology domain, but it seems to be just something within what we do and one does not seem think that they could have an impact on how technology is introduced to their daily life, should be developed/improved and or should be used.

The objective for Technology and Future for Sprint 2 was to get an "Understanding the different perspectives to technology and sources of learning the new technologies". I feel

that I achieve the objective but if something could be done better, is to have had maybe a bit more versatile group of people to be interviewed

Sprint 2 - Well-being and Self-knowledge

Second sprint in a row, that I am not able to achieve even partially the objectives set. This part is obviously something that I have to work on more carefully. Before Covid I use to go to gym and group exercise multiple times a week and also belonged to a women's running club that did 8-10 km runs twice a week. Now, I am in a situation that I cannot even get myself to a proper walk, due to working mad hours. The key recognition is with the change of habits – I used to go to the sports centre always after work. Now, when I do not move anywhere from home office, this habit has been broken.

The objective for Well-being and self-knowledge for Sprint 2 was same as in previous sprint as "Calendar kept in order by blocking invites after working day". The objective was somewhat met, but there is a place for a lot of improvement.

Sprint 2 - Retro:

- Keep doing: Find more about what technology study goals people have, but in larger scale. Continue applying the complex problem solving models to the daily problems
- Stop doing: Do not create overoptimistic sprint objectives, as they are not achievable.
- Start doing: Start planning holidays or times when one could take some days off to rest, as the work is taking a toll on energy levels.

4.3 Sprint 3

4.3.1 Planning

Due to having the unfortunate Covid infection, the start of sprint 3 was delayed by 2 weeks. The updated research plan timeline has an additional two weeks as the learning diary activities had to be stopped during recovery (see Figure 16).

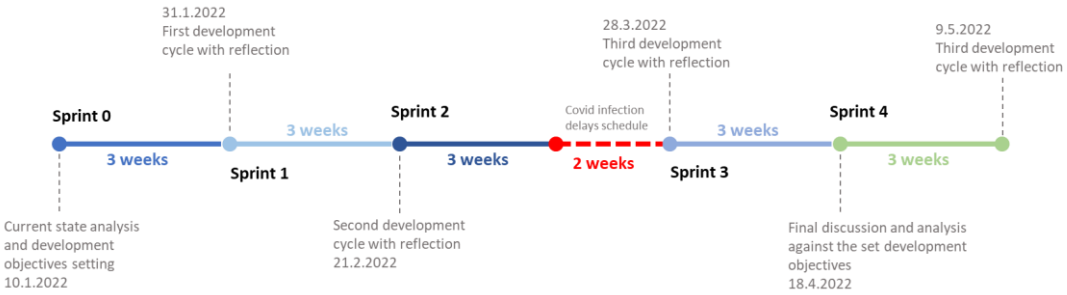


Figure 16. Updated Research Plan Timeline.

The sprint 3 plan is described in Table 10. The plan is somewhat different from the original plan provided before beginning of the Sprint 1. The Problem Solving and Adaptability objectives were adjusted as already stated in Sprint 2 planning that it is not practical to divide the tasks in the way that assumptions were made, but rather study model by cycles and apply immediately to practice and learn the whole model iteratively in small cycles. Also, the critical thinking has been removed, as there are enough tasks during the sprint, and it was not seen realistic to achieve the originally set goal.

Also, Well-being objectives were adjusted, as previous objectives have not been met, so there is an attempt to make these objectives more achievable.

Table 10. Sprint 3 objectives.

Skill to be developed	Sprint 3 - activities	Sprint 3 - objectives
Problem Solving and Adaptability	Continue studying different concepts of complex problem learning and applying learning to real cases Apply the complex problem model to something that is in hand at the work life	Understanding of the different methods that can be used for problem solving.
Technology, focus on information technology	Create a survey on technology study elements among the persons having similar background	Create a plan on future learning / studies within the technology domain
Well-being and self-knowledge	Reserve 30 mins per day for exercise	Wake up early / finish workday early enough / have breaks in the middle of the workday to enable exercise

4.3.2 Week 9

Program Delivery

The new program plan has been created and taken into use. The agreed latest go-live date for all applications to be transitioned and transformed is agreed to be 23rd September 2022. Commercial alignment and contractual change management is in place.

The program governance is aligned with the new plan and organisation and currently the work is progressing according. Even though the plan is in place, not all challenges were completely solved within the areas recognised earlier. These are such as quantifying the remaining development work with evidencable confident level for delivering the whole scope within the agreed date and mitigating the recognised risk. This is still the key problem we are resolving jointly with customer.

The week with normal governance activities has been highlighted with onboarding new team members and implementing the new governance model Program Plan reviews and maintenance and RAID log reviews and maintenance. The aim has been to enable the

tracks to do most of the heavy lifting while only the key items are reviewed and managed on the Program level. It has become evident that the customer organisation requires waterfall approach to all changes, which means that everything needs to plan completely before implementation and no gradual changes can be implemented, or at least not very easily nor often.

Problem Solving and Adaptability

The previously drawn plan for the improvements was adjusted in the beginning of the sprint 3. Due to ongoing activities within re-planning and some unfortunate absences as there has been a growing number of Covid infections around the program team. The updated Gant plan on improvement items can be seen in below (Figure 17).

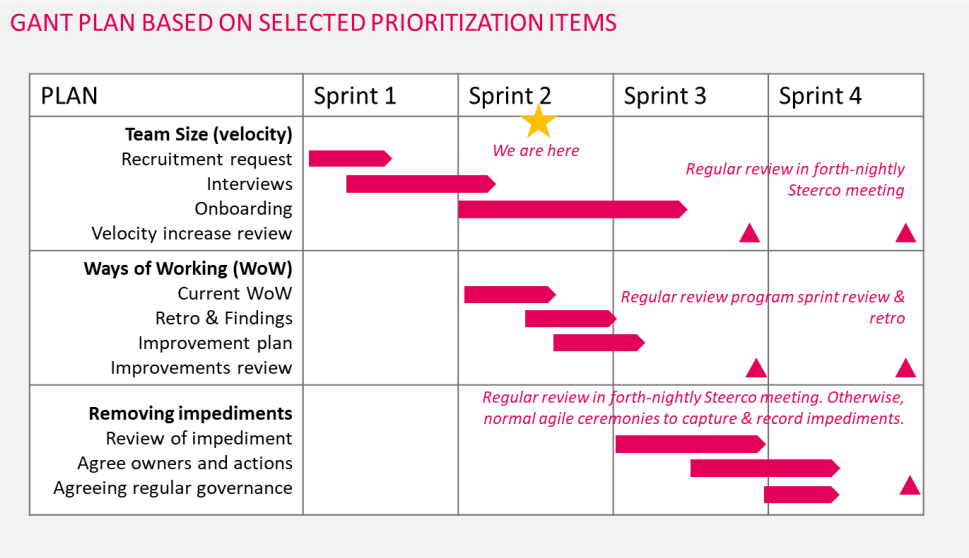


Figure 17. The revised Gant plan based on selected prioritized items.

The first item on the Gant plan is the Re-engineering team sizes increase activities, which were started immediately in sprint 2 when the improvement item was recognized. Currently, half of the new members have been joining the teams during the last couple of weeks and the remaining half of the team members will be joining the Program within the next weeks (Figure 18). The only slowing impediment recognised is the slow access management granting to customer systems, which is one of the key enablers for the team members to become productive.

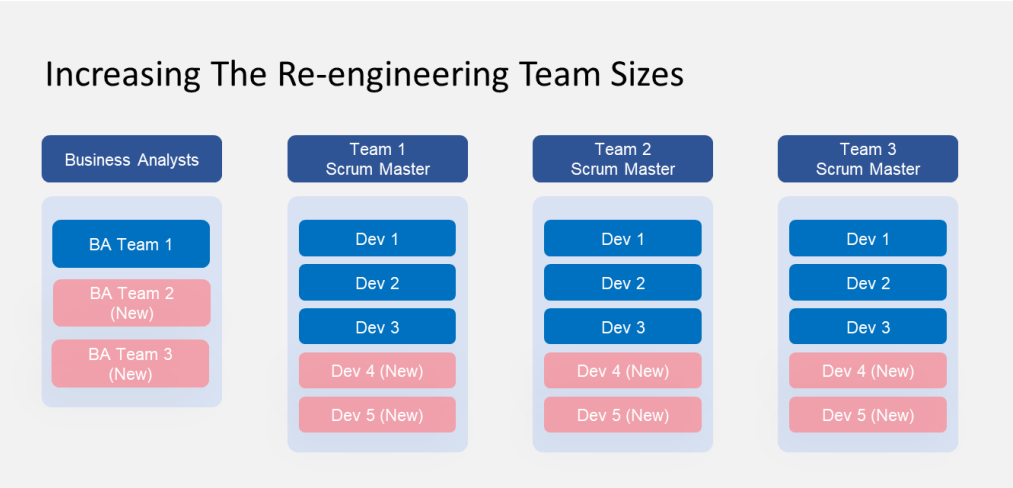


Figure 18. The Re-engineering Team Size Increase Structure.

The objective for increasing the team sizes by 8 new re-engineering members, is to improve the velocity by 40% within the following 3 sprints (6 weeks) of the onboarding of new team members. Based on assumptions it is estimated that this velocity increase of 40% is enough to mitigate the risk of program not meeting the agreed timelines.

The second item agreed to be on priority of the improvement list, was to ensure that the developers have enough development work assigned to their backlog, so that the velocity can truly increase after growing the team sizes. It was jointly recognised that there is a slowness in the process that requires joint analysis and corrective actions into the Ways of Working.

The re-engineering project started the overall process improvement by first analysing and documenting the current process of identifying the features and creating the backlog items (Figure 19). One of the first items recognized within the process, was that almost all bugs were related to poor quality of development items accepted to the developer's backlog, i.e. the wanted outcome or requirement had not been described on a good enough level. The second consistent impediment was detected to be the slow creation of the backlog items, which has resulted that there is not enough development work, or the flow of the work is not consistent, which results that the potential velocity of the development teams cannot be reached.

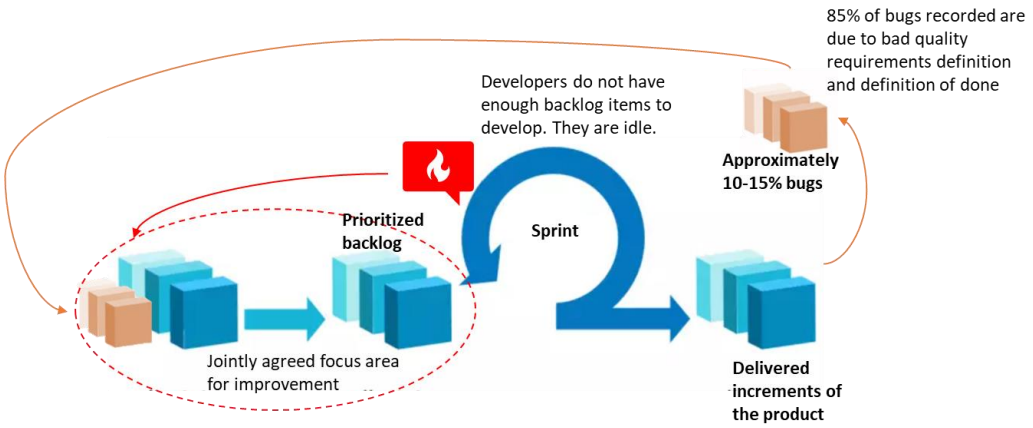


Figure 19. Key focus area for improvement in the re-engineering development process.

Due to these finding (Figure 19), it was agreed that the key focus area for the next weeks improvement activities was to be the improvement of the process and the ways of working, and specifically the improvement on the process flow and roles and responsibilities prior the items are approved to the development/scrum teams' backlog.

Technology and Future

To have more details for planning the technology related study plan and not only literature, I decided to ask details from my professional network in LinkedIn and friends from Facebook. This week's diary note includes the planning, while the summary and analysis of the replies with quantitative details will be presented in the next week's diary notes.

After thinking about the different questions and what is really the outcome I want from the questionnaire, I decided to just have one question: What are the technology skills you will develop 2022-2023 (Figure 20). The questionnaire was created with Survey Monkey online tool.

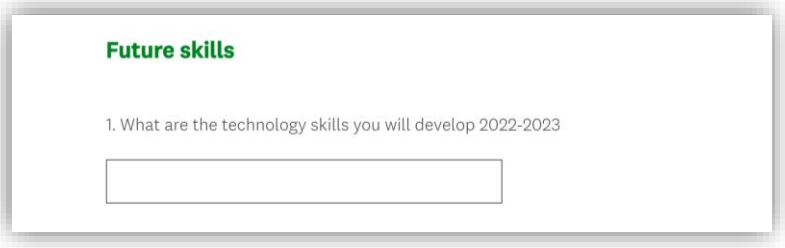


Figure 20. Question on Future Skills.

Below is the text I posted in LinkedIn and Facebook to all my connections (close to 1 000 persons in total):

“This spring I have been writing my final thesis during weekends and holidays. The only thing that has kept me going is the phrase from Finnish TV show where they play the game “ykösellä sisään”. Which does not really translate to English, but what it means to me is that I do not need to be perfect, just need to pass.

In my thesis I study what future skills one needs to develop to stay competitive as a freelancer within the technology industry. I have studied and applied softer skills, such as complex problem learning and critical thinking, and discussed about future and technology with people of different backgrounds, ages, and skills. It has been an interesting journey.

Though, I still need your help. There is one question that I would like you to answer. If you have the time, please give your answer by 17th April. Thanking you all for your help in advance.

Well-being and Self-knowledge

First time since I can remember, the working days were reasonable, under 10 hours per day, and I was able to make long walks almost every day. Also, 3/5 days I had time to eat my lunch peacefully, not during a meeting. Waking up early was not as successful, as the change towards summertime including with some international travel messed up my rhythm.

4.3.3 Week 10

Program Delivery

Within the program delivery I have personally got more peace to concentrate on daily program management, as the Program Director has taken more ownership on responding the executive level escalations. We have by now understood that is will be the normal way that this customer wants to drive the progress of the delivery. Luckily, we have skilled leaders on our side to enable these types of changes to ensure we can deliver while we constantly respond to the escalations.

The reason for these escalations is consistently the same and keeps driving from the same risk i.e., are we able to deliver within the agreed date. And if we answer yes, then how do we given the fact-based evidence to back this up on exec level. All activities on the re-engineering side are impacted by the additional work that is driven by our capability to answer to this question. However, we have tried to create for the developers a safe area without interruptions to work, as this is the key to us keep up delivering within a good velocity.

There is one new complex problem recorded that needs to be resolved on all project tracks, that is “How to keep the current skilled people till the end of the program”. This is raising from the result of re-engineering delivery being late and as a result the whole program delivery is delayed for an additional 5 months. Some of the program members have whispered that the only thing that has kept them going was the knowledge that this would end soon, but now with the delays it is getting harder every day.

It is also clear and understood, that this customer assignment has been found challenging for couple of key reasons: 1) the unclarities in the contractual agreement are creating complexity for delivery, 2) the initial program delivery team was under resourced (by 50%), 3) the complexity of existing environment had not been understood during the Discovery & Due Diligence, 4) continuous need for solutioning during delivery is creating more work than the delivery team can handle, and finally 5) the customer organisation and their ways of working are so hierarchical that decision making and any improvement takes too long to happen.

Problem Solving and Adaptability

At this moment we have onboarded all new developers that were in the recruitment pipeline. The current estimate is that one new developer is fully productive around 4 weeks after the start date (Figure 21). The onboarding activities and velocity are monitored closely, and any impediments recognised are removed as fast as possible.

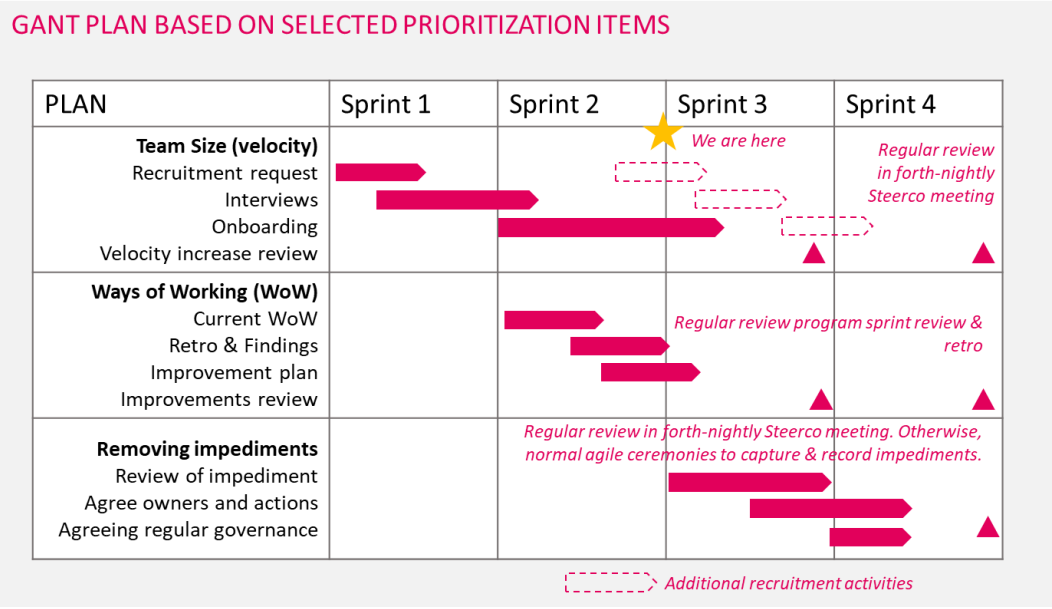


Figure 21. The status of selected prioritization items.

In addition to the positive recruitment news, there has also been also negative progress as couple of our more senior developers have decided to leave the program due to

different reasons, but some of the reasons have been clearly related to customer incapability to change their ways of working towards more agile. This has created frustration in the most senior developers as we have not been able to address this with customer in a productive manner.

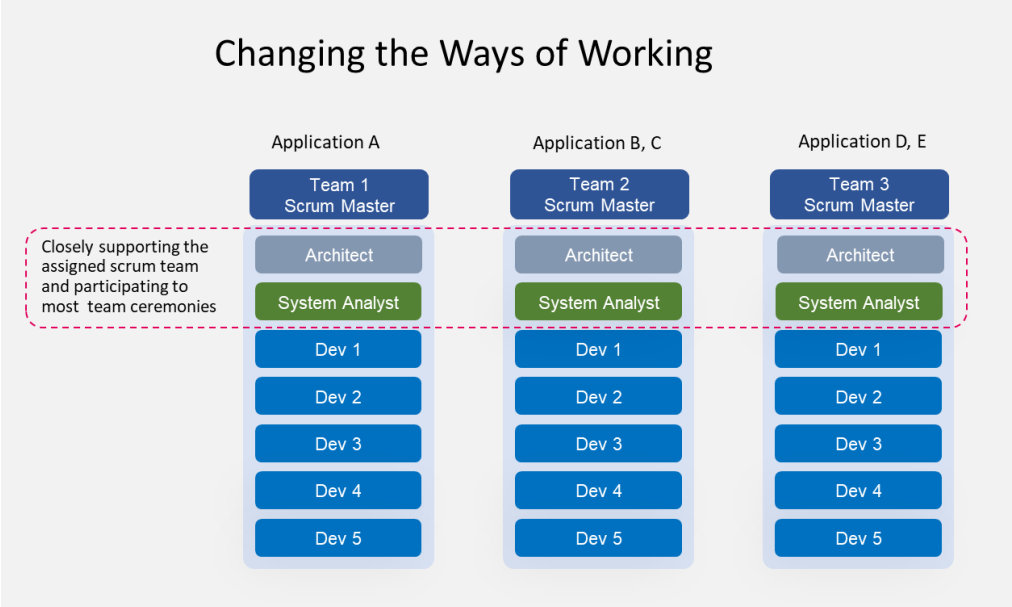


Figure 22. The re-engineering team structure against the new WoW.

After 2 sprints, we are still far from achieving the objective for increasing the velocity by 40% within the following 3 sprints (6 weeks) of the onboarding of new team members. Key blocker is the backlog items being too slowly created to the developers. So, the developers are almost out of work. One reason for this has been also the decision to assign the teams by applications, which changed the priority of their work and also the priority of the Business Analysts and Architects. Now the teams are working on design, so that they could provide the required backlog items for the developers (Figure 22). There is a clear issue of us not getting work to the developers and creating more delays. The change of priority and the lack of customer side business value driven development is creating unnecessary pressure. This is something that we are jointly with customer trying to resolve in the upcoming weeks.

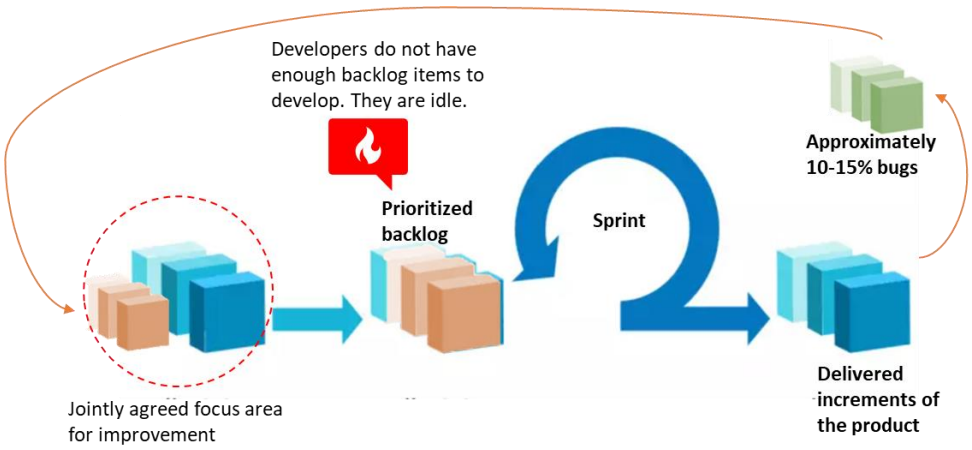


Figure 23. Key focus area for improvement in the re-engineering development process.

The improvements to the ways of working have been agreed and are being implemented. The key has been in the process of creating the backlog items (Figure 23). The customer has assigned the key SMEs (developers and testers) to help our Architect and System Analysts with the “to be” design finalisation and backlog item creating. There are agreed meetings and ceremonies in place for the new team structure to improve the lead time. Also, the new, added roles in our end are to mitigate the issue that customer does not have the ability to create business driven requirements and backlog items. The application solutioning is driven by our Architects and System Analysts.

The third improvement item is removing impediments, and this has begun even more important now, as we see some senior developers not willing to continue with this customer assignment. We have couple of activities being planned: 1) learning the key reasons developers want to leave and create a plan how to fix these issues, if possible, 2) have a facilitated workshop to collect all issues recognised but not maybe clearly articulated and recorded, and 3) arrange co-location for the whole team to work together and bond internally but also with customer.

I held the facilitated workshop by utilising the Stinky Fish method (Figure 24). The method created by Hyper Island (2022) to reveal and record those issues that we know but do not like to advertise or talk about, and make things actually worse, stinky by holding to the issues and not talking or passing them others.

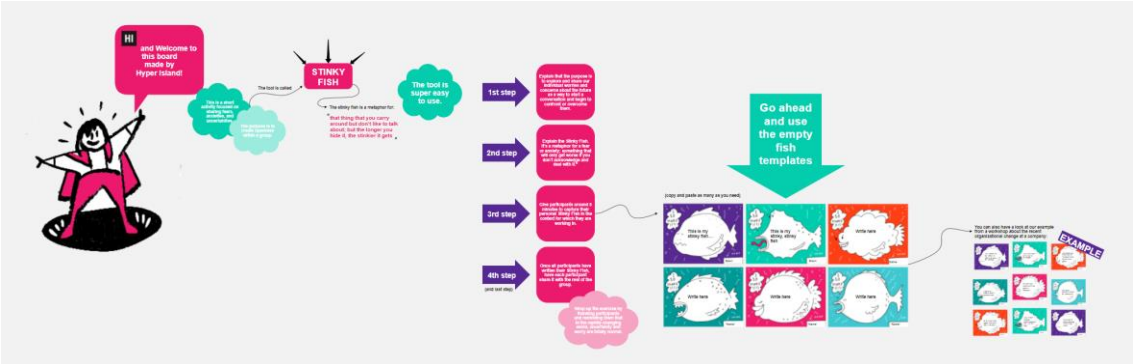


Figure 24. Stinky Fish facilitation board by Hyper Island (2022)

For the session I had only reserved 1 hour, which was not enough. However, we managed to collect all stinky items and agreed next steps. The teams will try to agree actionable items to fix the issues and then we will gather together to ensure that the improvements are agreed, prioritised and put into a timeline.

Technology and Future

The analysis of the answers for the questionnaire is presented below.

The questionnaire was sent to my network through Facebook and LinkedIn. The audience was given one week to respond to the one question questionnaire. The questionnaire was published to roughly 900 + persons through my network. Most of the answers came in during the first couple of days, but also after some reminders and reposts, I managed to get additional replies. In total I received 55 responses by 17th April and 1 test response (see, Figure 25). The reply percentage was roughly 5-6%.

The one question asked was “What are the technology skills you will develop 2022-2023?”

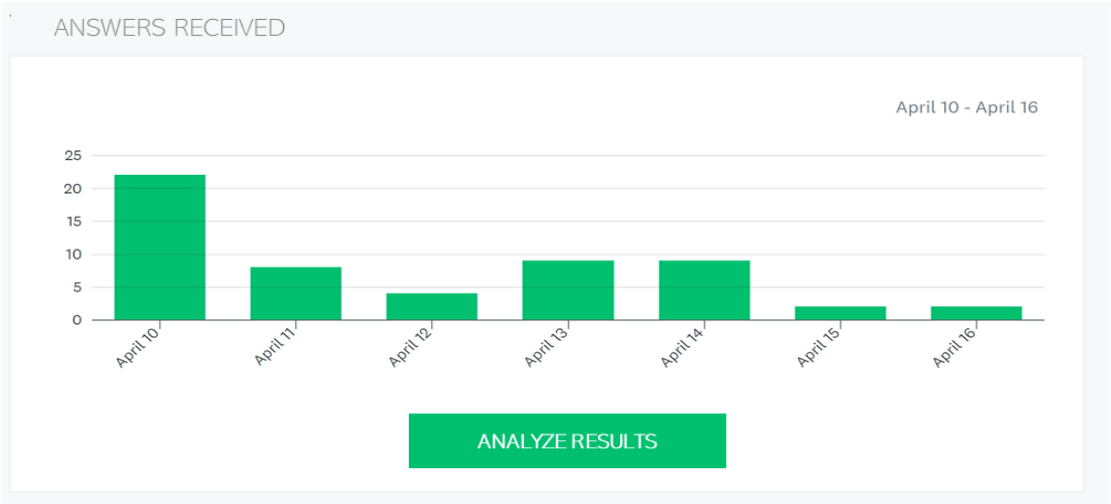


Figure 25. The number of received responses.

Out of these 55 responses, there were some clear areas of interest for future skills development, which are Cloud Technology, Data & AI and AI & Machine Learning. The top 10 technology skills that my network will develop during 2022-2023 are described in the below figure (Figure 26). There was one person out of 55 informed to have no plans on technology skills development area. All answers without categorisation presented in Figure 27.

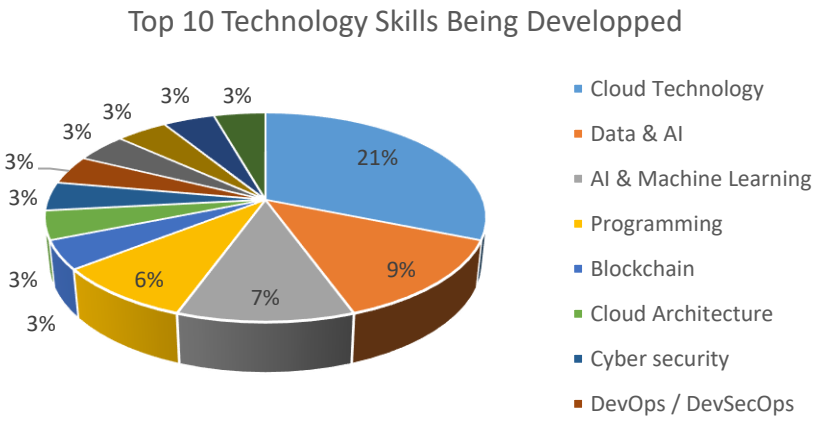


Figure 26. Top 10 study subjects in my professional network within the next year.

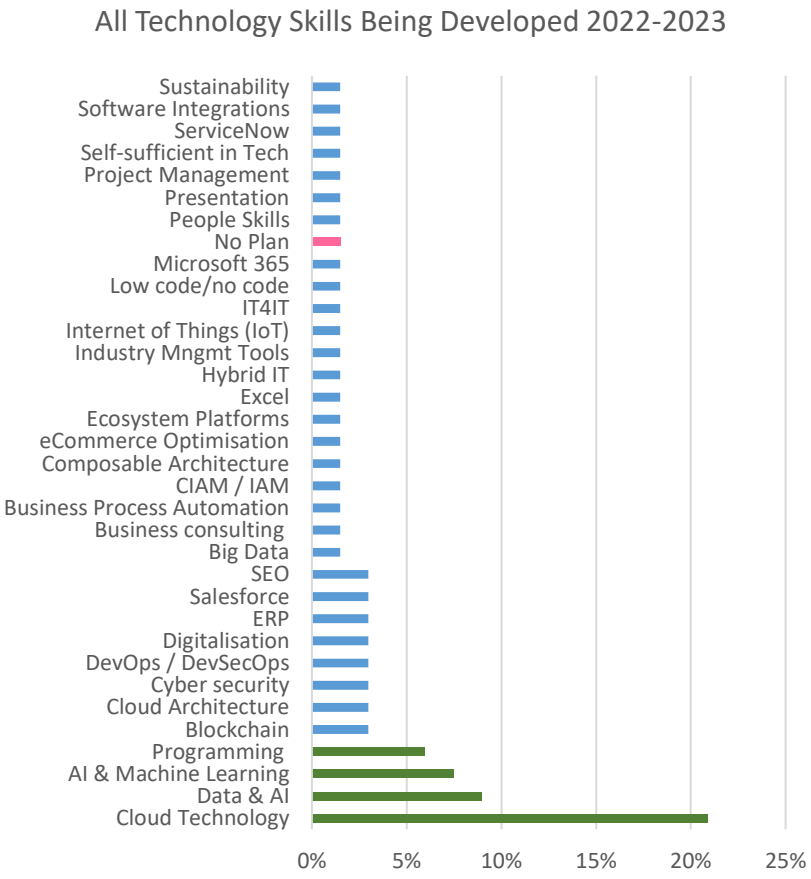


Figure 27. All the skills being developed within my network.

Through the responses I learned that the same key areas were identified for skills development on technology domain by my network as by the World Economic Forum (2020). Also, the top technology areas are the similar.

Based on the research, interviews, and results of the questionnaire, I have chosen the next study subjects by two factors: 1) what will help me in my current assignment, and 2) what am I personally interested in. My personal study plan can be seen below (Figure 28).

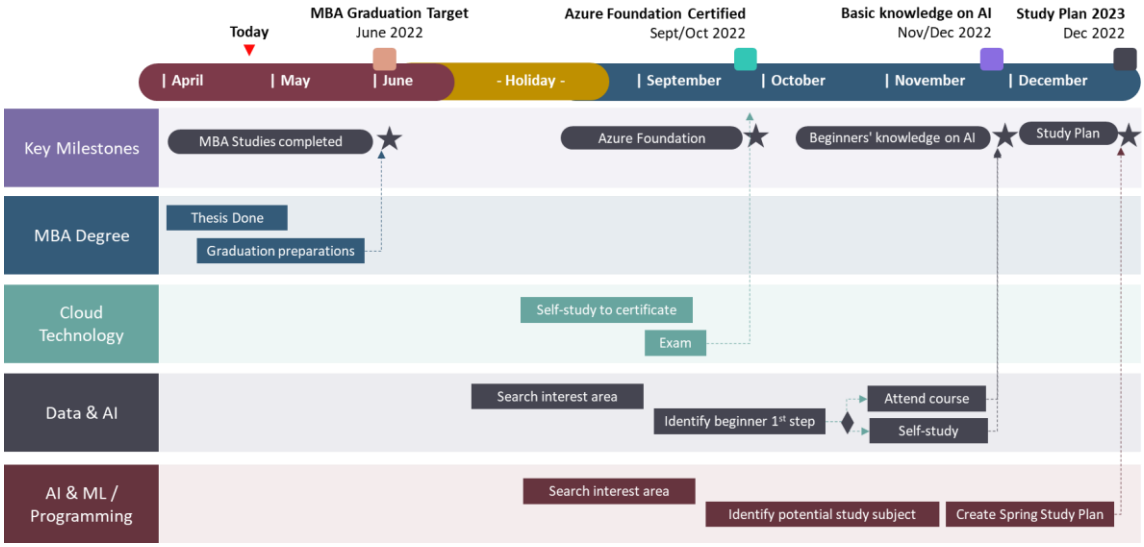


Figure 28. My personal study plan for 2022.

The aim is to have some time of from study as a full-time hobby after this thesis, but certainly continue learning as part of the work I do. During autumn, I am going to get basic cloud foundation certificate, most likely from Azure, but have kept the technology still open. During late summer / early autumn I will also investigate further what kind of studies I could easily pick up based on my current skill level on Data & AI and r AI & ML and or Programming. It will be a combination of self-studying and some courses/training. This is the first part of my continuous lifelong learning plan.

Well-being and self-knowledge

This was a good week for exercise. I succeeded to get multiple friends with me for long walks separately. There was also two days out of five, where I succeeded to have a good lunch break and eat my lunch in peace. However, I am still lacking the proper habit of doing real exercise regularly.

4.3.4 Week 11 – Sprint 3 analysis and retrospective

Sprint 3 - Program Delivery

Due to Easter week and with only 4 working days, we have jointly (with customer) attempted to make 5 days' worth of work within the four days. However, some of our international team members do also work during the Easter as the bank holidays differ a bit from country to country.

Within the past 3 weeks we took the new Program Plan into use and aligned governance against the plan. The changes on Executive level have given me more time to concentrate on leading the program delivery and not to only be focused on responding to exec level escalations. The overall confidence has not been restored completely as we still have the same problem statement creating escalations i.e., whether we can with certainty and evidencable facts deliver the full scope of re-engineered solution within agreed timeline.

In addition to the fixed delivery date, we are facing challenges with resourcing. Some developers did not want to renew their contracts, which means that we need to almost double the number of new developers to be recruited and onboarded. As the onboarding is slow, we need to ensure that we take this into account within the program delivery timelines. Another aspect is that we have received feedback from the developers and why they are leaving. The feedback has been taken seriously and there are activities put in place to address the potential issues.

Sprint 3 - Problem Solving and Adaptability

The key focus has been working on the improvement items that we can influence Removal of impediments, Ways of Working and Team Size. These items were identified in earlier sprints as the possible opportunities for solving the problem in hand. No new problem models were adopted in this sprint.

The work on increasing the team sizes has been slow and we have recognised a new problem which is to keep the current team members. Also, the velocity has not been increasing, as we are still not been able to produce enough work items to the developers.

The improvements on the ways of working (WoW) have been progressing well especially on those areas where we can remove waste and enable better collaboration, but when it comes to the changes in customer side or in the integration of supplier and customer, we have faced slow decision making and resistance on managerial level. This is something that we need to address as an impediment or blocker as we go forward.

The removal of top priority impediments has been raised on executive level and there is a continuous attempt to resolve the ones that can be easily influence.

There is a need to visit the problem statement and find out if there are areas of problem that have not been recognized and could help in the problem solving.

The Sprint 3 objective “Continue studying different concepts of complex problem learning and applying learning to real cases and apply the complex problem model to something that is in hand at the work life”, was achieved. I continue studying the 7 step cycle and applied it to the final steps of the complex problem solving.

Sprint 3 - Technology and Future

The questionnaire was sent out to around 900 + connections through Facebook and LinkedIn. 55 answers were received for the single question questionnaire, which is around 5,7% of the audience.

Based on findings throughout this process, assignment related demands and own interests a personal study plan has been created which spans till the end of this year and is the first step for lifelong learning.

The objective for the sprint 3 of “creating a survey on technology study elements among the persons having similar background” was achieved.

Sprint 3 - Well-being and self-knowledge

Out of 15 working days, I succeeded to do a longer walk or some type of exercise during 7 workdays. During these 15 workdays, I failed even once to take a long enough brake to exercise. I succeeded to have lunch without being in a meeting at the same time only 4 times out of 15.

Once again, the objective of reserving 30 mins per day for exercise was somewhat met. This has been the skill that I have had most difficulty in developing.

Sprint 3 - Retro:

- Keep doing: Be consistent and tenacious in working forward. Believe in the set goals and objectives.
- Stop doing: Multiple new goals and objectives, but rather concentrate on one of two items at a time.
- Start doing: Start taking seriously the intensive high-load that the remote work is building up, before it is too late. Start building small but sustainable habits to improve well-being.

4.4 Final Analysis

4.4.1 Sprints planning

There were in total three development sprints during which the progress of sprint objectives was followed and recorded into a weekly diary. Each sprint was three weeks long and the last week of the sprint was always reserved for reflection and analysis, with a short retro. The analysis and retro were also the basis for planning the following sprint. The main goal was to adjust the sprint activities and objectives where it was seen justified.

The original scope and objectives for the sprints are presented in below table (Table 11). The original objective is with the adjusted objective. The adjusting of the sprint objectives was done based on the ongoing learnings.

Table 11. The Original vs. the Adjusted Sprint Objectives.

Skill to be developed	Sprint 1	Sprint 2	Sprint 3
Problem Solving and Adaptability	Study different concepts of complex problem learning	**Original:** Find a models that are useful in everyday work life and adapt it if needed **Adjusted:** Continue studying different concepts of complex problem learning and applying learning to real cases	**Original:** Apply the complex problem model to something that is in hand at the work life. Study one useful skill of critical thinking and apply it to something concrete within your life **Adjusted:** Continue studying different concepts of complex problem learning and applying learning to real cases Apply the complex problem model to something that is in hand at the work life
Technology, focus on information technology	Learn through casual conversation from peer, colleagues and acquaintances how do they keep up with the new technology.	**Original:** Take one learning into practice and test it out **Adjusted:** Continue learning through casual conversation from peer, colleagues and acquaintances how do they keep up with the new technology.	**Original:** Create a plan on future learning / studies within the technology domain **Adjusted:** Create a survey on technology study elements among the persons having similar background
Well-being and self-knowledge	Keep the length of workday under 10 hours by prioritizing the task, Reserve 30 mins per day for study Reserve 20 mins per day for exercise	**Original:** Have every week at least one meeting while walking, Reserve 30 mins per day for study Reserve 30 mins per day for exercise **Adjusted:** Reserve 30 mins per day for study Reserve 30 mins per day for exercise	**Original:** Reserve 30 mins per day for study Reserve 30 mins per day for exercise **Adjusted:** Reserve 30 mins per day for exercise

In each sprint there were three (3) skills developed that were Problem Solving and Adaptability, Technology and Well-being and Self-knowledge. In addition to these three skills, each sprint also included diary notes of the Program Delivery, which were based on the current assignment I am working on and its progress. The details of current assignment were seen important as they bring context to the learning of the selected skills.

In the following chapters I will analyse the objectives and achieved results against each skill that I was to develop including the analysis of the current assignment.

4.4.2 Program Delivery

During the past 11 weeks while documenting the daily development of future skills and weekly assignment work, I recognized how demanding the current setup it is to learn new skills and while working long hours. Those subjects that I could easily adapt to the daily work, such as Problem Solving, were more easily adapted to the daily life then those, that required additional time and effort outside of working hours.

During the research the assignment work has been consistently driven by escalation and long working hours. We have added more people to the teams but are still facing the same challenges as earlier. The different ways of working i.e., agile (supplier) and waterfall (customer) has been even more challenging than in the beginning, as the issue of delay has been escalating. Applying the problem definition worksheet and the prioritization matrix helped in visualisation of the current problem statement and to crispier communication internally.

What helped us in difficult situation was to add a new layer of governance or defence as we sometimes joke as the new Program Director on our side joined our team and took over the management of the continuous Executive level escalation. This arrangement enforced local partnership as he is in same location as end customer and gave the time to the delivery to continue improving the ways of working and the daily governance. These changes on organisation helped the delivery organisation to plan more carefully the required activities. The updated prioritisation matrix acted as the basis for the Gant plan that visualised the activities planned.

The holistic new E2E Program plan that was created in during Sprint 1, has still not brought the value in the areas they were meant to bring. The customer is content as they have more visibility on detail level and both CIO and Program Director are now able to evaluate the progress on as detail level as possible. And if evaluating the value against the progress on development/re-engineering, it is very little if not negative.

After the three weeks of re-planning workshops, we have Covid circulating through the program during Sprint 2 and many of us caught the covid at some point during the following weeks. It is also during the Sprint 2 that Russia started its invasion to Ukraine.

Sprint 3 working weeks were shorter as the Easter bank holidays were a bit different in each European country. The new plans and improved governance improved the joint program progress, but we still did not succeed to restore the full confidence that we can deliver the full scope program within agreed timeline. During the final sprint we also faced

the issue of ending contracts and developers no willing to renew their contracts. Activities in recruiting new developers is ongoing.

In the last sprint the previously recognised prioritization matrix improvement were still very much valid and improvement items were progressed according to the updated Gant plan timeline.

4.4.3 Problem Solving and Adaptability

Table 12. Problem Solving and Adaptability Sprint Objectives.

Skill to be developed	Sprint 1	Sprint 2	Sprint 3
Problem Solving and Adaptability	Study different concepts of complex problem learning	**Original:** Find a models that are useful in everyday work life and adapt it if needed **Adjusted:** Continue studying different concepts of complex problem learning and applying learning to real cases	**Original:** Apply the complex problem model to something that is in hand at the work life. Study one useful skill of critical thinking and apply it to something concrete within your life **Adjusted:** Continue studying different concepts of complex problem learning and applying learning to real cases Apply the complex problem model to something that is in hand at the work life

The original scope of Sprint 1 was to study different concepts of complex problem learning and not to apply any of the models till Sprint 2 (Table 12). As I studied the practical 7 step problem solving cycle tool (Conn et. al, 2018), I could not restrict myself to only ready, but started immediately applying the problem-solving model to real life cases (Figure 29, see next page). This is the reason why I also rephrased the Sprint 2 objective as “Continue studying different concepts of complex problem learning and applying learning to real cases”

The objective for Problem Solving and Adaptability for sprint 2 was to get an “Understanding of the different methods that can be used for problem solving”. The objective was met, but there were still couple of steps of the process that needed to be studies.

Therefore, continued studying and applying the last steps of problem solving cycle in sprint 3, as I had not completed all steps. For this reason, I removed studying critical thinking from the sprint objectives and updated the Sprint 3 objective as follows: “Continue studying different concepts of complex problem learning and applying learning to real cases. Apply the complex problem model to something that is in hand at the work life”

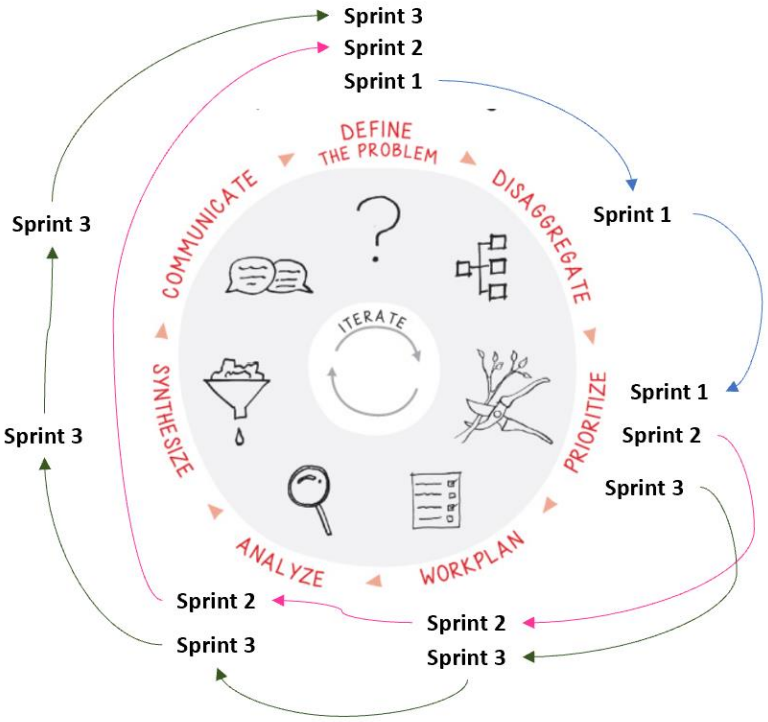


Figure 29. The progress in sprints for studying and applying of the problem solving cycle (Conn et al., 2018).

What comes to the sprint objective of “Understanding of the different methods that can be used for problem solving”, I personally feel that I have a good start on understanding some of the methods available but have also only scratched the surface and this requires more studying. However, the more I studied the model the more I understand that the complex problem solving, and the different model needs to be studied further and applied into different real-life cases to get a more comprehensive understanding. This is a skill that I will continue to develop.

4.4.4 Technology and Future

Table 13. Technology and Future Sprint Objectives.

Skill to be developed	Sprint 1	Sprint 2	Sprint 3
Technology, focus on information technology	Learn through casual conversation from peer, colleagues and acquaintances how do they keep up with the new technology.	**Original:** Take one learning into practice and test it out **Adjusted:** Continue learning through casual conversation from peer, colleagues and acquaintances how do they keep up with the new technology.	**Original:** Create a plan on future learning / studies within the technology domain **Adjusted:** Create a survey on technology study elements among the persons having similar background

Initially I thought that the technology and future would be the most straight forward task in learning skills, but this was not the case. I dedicated two sprints for technology related interviews or rather free flowing discussions (Table 13). Technology is not something that

is discussed in natural flowing discussions in daily life, and I had to find the way to discuss about the subject.

However, the conversations in the end were fruitful and through these conversations I learned that studies of information technology are very much driven by the decisions and choices made by the organisation where we work. These decisions are driven by the work culture and by the scope of business they are in. There was no self-driven plan on learning technology skills.

Furthermore, our institutes can introduce new technology, like Oodi, which is the central library of Helsinki and brings new technology available to all (3D printing, VR gaming, Robot workshops).

This time of pandemic and closeness of war in Europe have also brought the threats into everybody's thoughts. While technology brings advantages into our daily life, it also makes us vulnerable.

The objective was to get Understanding of the different sources of learning the new technologies, which I achieved. Also, the second objective was to find what technology related subject my peers in my own network are going to study in the upcoming year and create a study plan for myself. Personally, I feel that I succeeded to achieve both goals.

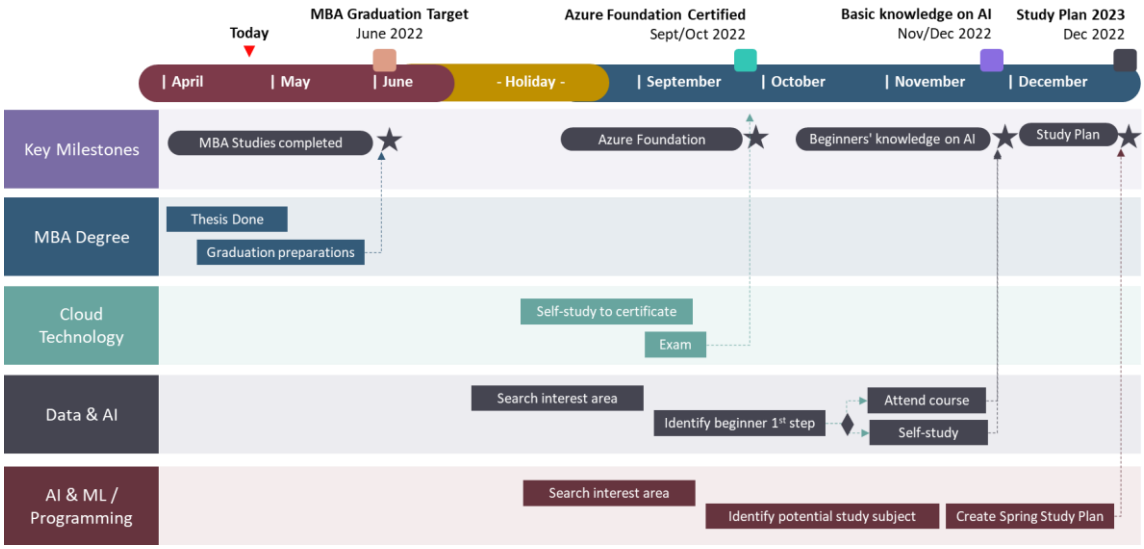


Figure 30. My personal study plan for 2022.

The future skills study plan (Figure 30) that I created in Sprint 3, week 11, is the first study self-driven plan that I have created during my career. Earlier, I have either followed the curriculum of an institution or just planned ad hoc certification and training, but never had

a longer timeline or definitive goals in mind. This study plan is the first part of the lifelong learning that I need to pursue.

4.4.5 Well-being and Self-knowledge

Table 14. Well-being and Self-knowledge Sprint Objectives.

Skill to be developed	Sprint 1	Sprint 2	Sprint 3
Well-being and self-knowledge	Keep the length of workday under 10 hours by prioritizing the task, Reserve 30 mins per day for study Reserve 20 mins per day for exercise	**Original:** Have every week at least one meeting while walking, Reserve 30 mins per day for study Reserve 30 mins per day for exercise **Adjusted:** Reserve 30 mins per day for study Reserve 30 mins per day for exercise	**Original:** Reserve 30 mins per day for study Reserve 30 mins per day for exercise **Adjusted:** Reserve 30 mins per day for exercise

This is the area where I failed quite badly to achieve my objectives, even though this is area where it should be easiest for me to excel. In the end I did not achieve the objectives in any of sprints (Table 14).

In the pre-pandemic time, I used to exercise 5-6 times per week and there was a clear rhythm to the workday. After the remote work to become the new norm and sports centres being closed for months in a row, I lost the rhythm for exercise and found difficult to get it back. It is obvious that I underestimated the impact of pandemic and the big change of daily work.

I find that one of the key reasons in failing to meet the objectives of well-being, are the dramatic change of work life and not really comprehending the change. The first being the change form working in office locations to complete remote work with only digital collaboration. The second being the change in the rhythm of the word day, that is from being available at offices and having joint lunches with colleagues to being all the time at home, with not breaks between meetings and being available all the time through instant messaging. There is no longer travel between home and work, but the days are a continuum of the work.

To successfully improve my well-being, I need block time for the well-being activities from the workdays and to give myself the permission to have the time off and not to work. As the well-being is the key enabler for continuous learning and therefore this will be one of my focus points in future learning by creating new daily habits within the normal daily life.

5 Conclusions

After five three-week sprints and bit more, I have finally concluded my self-development journey on future skills and future work staying competent within the information technology domain. The chosen Diary Process methodology helped me see in more clarity my habits within daily work and recognize how difficult it is to change the existing habits.

There seems to be pretty good clarity of the future jobs and future skills that are increasing in demand at least within the near future. The technology skills are one area that everybody should study, but it is not enough, as technology is predicted to overrun human abilities in future and therefore also cross-functional and complexly human skills need to be developed. Though, if the world is going to change faster than ever before, we should not only rely to these forecasts, but stay vigilant and research new information continuously and keep discussing with each other on the future and the technology.

For my self-development I selected three future skills with lowest scores to develop through diary process. These future skills were technology, complex problem solving and well-being. Through my conversations on technology with people from diverse professions and backgrounds, I learned that people rarely create study plans of their own, but they expect the training plans or opportunities provided by their employers. Furthermore, no one really followed the technology in media, unless it was newsworthy. Also, the public institutions, like libraries, have a role of introducing new technology and making it available to all. These conversations gave me a perspective that I had not understood before and gave me a new motivation to pursue my own technology related studies, which I documented into the study plan.

What comes to the self-development of the other two future skills, the complex problem solving was something completely new to me and I have a feeling that only surface was scratched during my self-development. However, I did succeed to capture some useful tools and practices that I can use also in the future and will continue studying this subject in the future. The third skill of well-being should have been easiest, but to be honest this was the area where I saw least improvement during my development sprints. Development of this skill requires changing of the habits, which I found difficult.

In the end of all the development work and effort, there are couple of key findings that will be the drivers for my next cycle of learning, that are: 1) everything is worth learning and I just need to pick a subject, 2) I am myself in charge of the plan of my future learning and need to continue planning ahead, and 3) the change of work starts from oneself, which

means that also I need to change. This final thesis was the first chapter of the lifelong learning that I will pursue actively during my work career.

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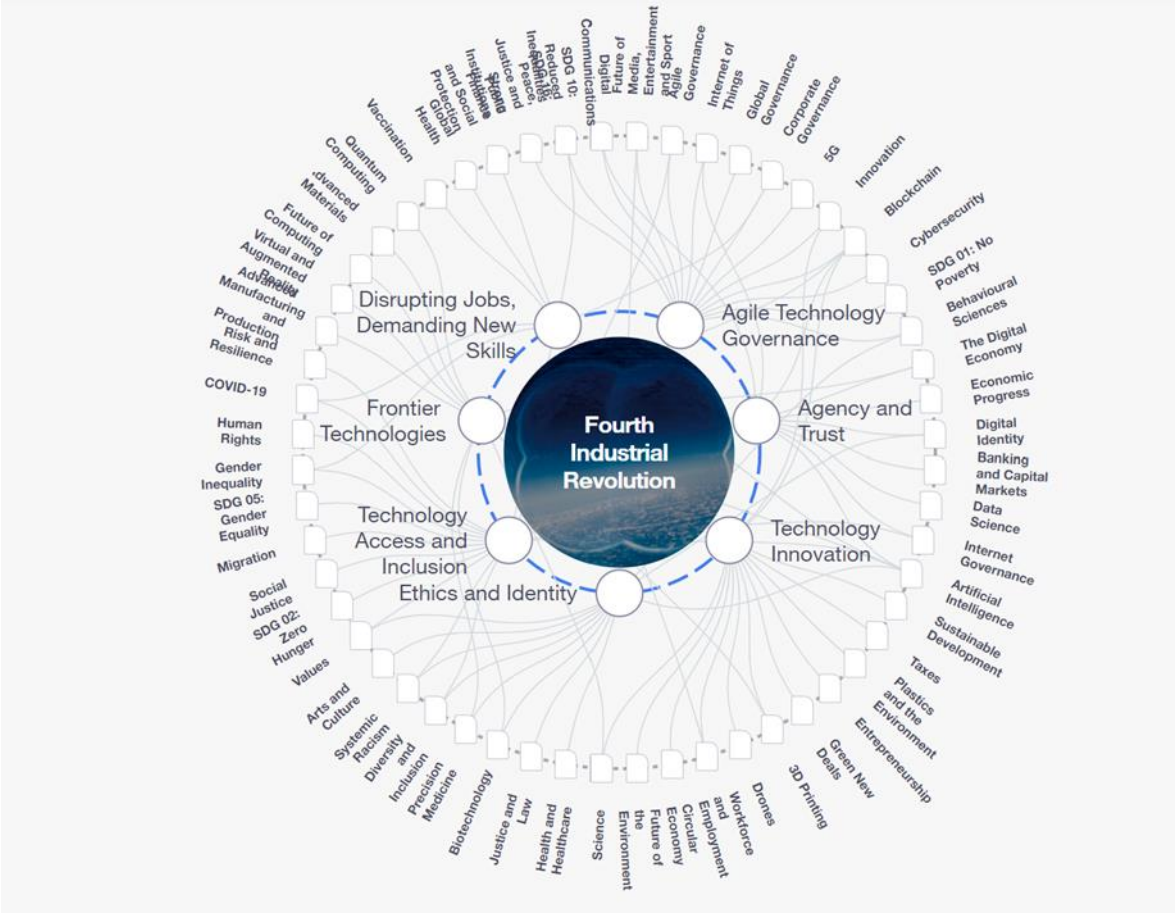
Attachments

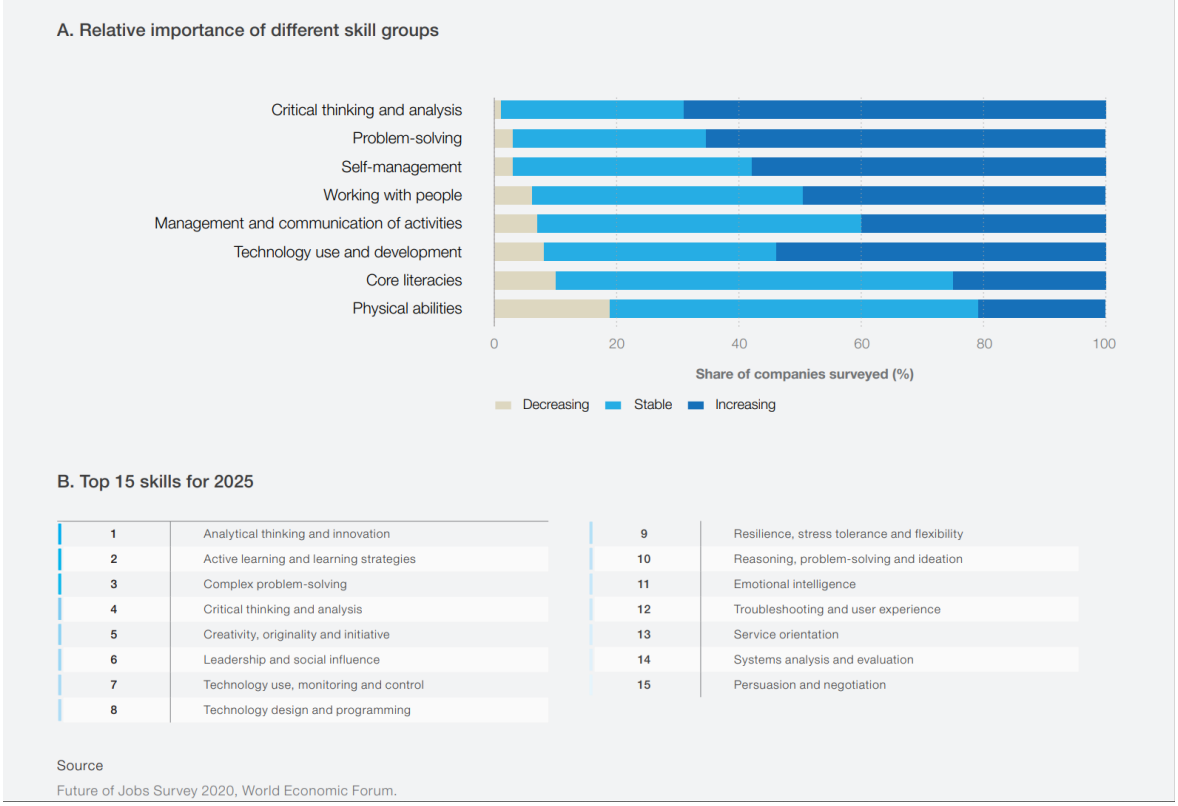
Appendix 1. Fourth Revolution Interactive Wheel by World Economic Forum

“The Fourth Industrial Revolution represents a fundamental change in the ways that we live and work. It is a new chapter in human development, enabled by advances that are commensurate with those of the first, second and third industrial revolutions - merging the physical, digital, and biological worlds and fusing technologies in ways that create both promise and peril. The speed, breadth, and depth of this revolution has forced us to rethink how countries should develop, how organizations create value, and how people from all walks of life can benefit from innovation. Now, as the world grapples with COVID-19, there is an opportunity to further embrace this revolution in ways that create a more inclusive, human-centred global economy.” (World Economic Forum, 2022)



Appendix 2. Relative Importance of the different skill groups

Below is the relative importance of different skill groups defined by World Economic Forum (2020).



B. Top 15 skills for 2025

1	Analytical thinking and innovation
2	Active learning and learning strategies
3	Complex problem-solving
4	Critical thinking and analysis
5	Creativity, originality and initiative
6	Leadership and social influence
7	Technology use, monitoring and control
8	Technology design and programming
9	Resilience, stress tolerance and flexibility
10	Reasoning, problem-solving and ideation
11	Emotional intelligence
12	Troubleshooting and user experience
13	Service orientation
14	Systems analysis and evaluation
15	Persuasion and negotiation

Source

Future of Jobs Survey 2020, World Economic Forum.

Appendix 3. Self-assessment on future skills maturity

Skill	Upskilling task	Assessment score on current skills (5 good - 1 poor)
Technology	Talk to your friends regularly about future technologies for example artificial intelligence	1
Technology	Get out there and try every new technology that comes along	2
Technology	When something doesn't work, give feedback and help developers make it better	3
Technology	Take critical approach to future predictions and your own fears	3
Technology	Remember that the limits of your imagination are not the limits of the world	3
Technology	Keep humanity at the heart of everything	4
	Score	**2,7**
Skill	**Upskilling task**	
Curiosity and experimentation	Dare to try. Remember that you can survive anything with a little embarrassment	3
Curiosity and experimentation	Ask what-if questions	4
Curiosity and experimentation	Never stop wondering. Always ask when you don't know something	4
Curiosity and experimentation	Talk about the future with children	3
Curiosity and experimentation	Let randomness surprise you, and be spontaneous. Stop hesitating!	4
Curiosity and experimentation	Don't let anyone discourage you from being curious	4
	Score	**3,7**
Skill	**Upskilling task**	
Creativity and improvisation	Do things that put you in a good mood	3
Creativity and improvisation	People are at their most creative when they're having fun!	3
Creativity and improvisation	If you're stuck, forget right and wrong for a while	3
Creativity and improvisation	Remember that mistakes are an essential part of the process	3
Creativity and improvisation	Be whimsical and childish every now and then	4
Creativity and improvisation	Be open-minded. Eventually you'll find a solution to every problem	3
Creativity and improvisation	Don't let ego get in the way. Create because it's fun!	4
	Score	**3,3**
Skill	**Upskilling task**	
Problem Solving and Adaptability	Don't start out thinking about whether something is possible or not. A certain lack of realism is good.	4
Problem Solving and Adaptability	Surround yourself with people who don't know anything about your specialty	2

Problem Solving and Adaptability	Gather opinions from the old and the young and everyone in between	2
Problem Solving and Adaptability	Be versatile! Fill your week with different pastimes	2
Problem Solving and Adaptability	Identify your specialties. In which areas are you the best expert in the world?	2
Problem Solving and Adaptability	Break social bubbles so your thinking doesn't get lazy surrounded by peers.	2
	Score	**2,3**
Skill	**Upskilling task**	
Passion and character	Accept all the different stages of your life and be proud of them	4
Passion and character	List at least five different titles for yourself and think about what connects them	4
Passion and character	A machine can't tell its own story, but you can. Don't be a human battery!	4
Passion and character	Expose yourself to new things so you can find your new passion	4
Passion and character	Surround yourself with people who are making their dreams come true	3
Passion and character	Listen to yourself. Someone is trying to tell you something.	3
	Score	**3,7**
Skill	**Upskilling task**	
Communication and storytelling	Tell stories that unite people. Be proud of your roots.	3
Communication and storytelling	Listen to what others have to say. Keep in mind whom you're talking to.	3
Communication and storytelling	Even when your message is on a screen, imagine the other person standing in front of you.	4
Communication and storytelling	Don't be provided by incomplete information. Put off getting irritated.	3
Communication and storytelling	Get to know the different communication apps, and learn how to use them	4
Communication and storytelling	Consider what digital messages are missing.	4
	Score	**3,5**
Skill	**Upskilling task**	
Critical thinking and interpretation	Ask questions that can't be answered by googling	2
Critical thinking and interpretation	Believe people who ask more than they answer	3
Critical thinking and interpretation	Challenge your own thinking and let others challenge yours	3
Critical thinking and interpretation	Don't waste your energy on speculation and overinterpretation	3
Critical thinking and interpretation	Question, challenge, and search for reliable sources	2

Critical thinking and interpretation	Consider how someone else might interpret the same event	4
	Score	**2,8**
Skill	**Upskilling task**	
Entrepreneurship and Teamwork	Don't waste a good crisis! It's giving you an excellent opportunity to learn something	3
Entrepreneurship and Teamwork	Think of yourself as an entrepreneur. Entrepreneurship is an attitude.	5
Entrepreneurship and Teamwork	Believe in your dreams and create your own path.	4
Entrepreneurship and Teamwork	If something could be done better, don’t be a bystander. Do it!	5
Entrepreneurship and Teamwork	Have the courage to take responsibility for yourself and learn to sell your ideas.	5
Entrepreneurship and Teamwork	Be the one everyone wants to work with.	4
	Score	**4,3**
Skill	**Upskilling task**	
Perseverance and patience	Think about the single most important thing you need to do today	3
Perseverance and patience	Do a few small things well, but do them everyday	3
Perseverance and patience	Don't tire yourself out for a small goal. Dare to dream big.	2
Perseverance and patience	Remind yourself of why you do what you do. Keep the goal in mind.	5
Perseverance and patience	If something goes wrong, don't let one moment ruin your whole day.	4
Perseverance and patience	Don't let the pursuit of happiness fool you. Do something that matters.	4
	Score	**3,5**
Skill	**Upskilling task**	
Well-being and self-knowledge	Stop. You must be able to interpret your emotional state before you can improve it.	4
Well-being and self-knowledge	Take your brain out for a walk. Like a dog, every day. Take your mind for a jog.	3
Well-being and self-knowledge	Give up control, enjoy uncertainty, and live in the moment	3
Well-being and self-knowledge	Think about whether you fears are just tricks of your imagination. Be brave!	3
Well-being and self-knowledge	Don't compare. Other people's lives look better online than they really are.	4
Well-being and self-knowledge	Keep the basics in order, even when you're in a rush. Don't short change your well-being.	2
	Score	**3,2**
Skill	**Upskilling task**	
Compassion and honesty	Think about what will best help you be present with other people	4
Compassion and honesty	Be critical of your empathy. Try to be fair!	4

Compassion and honesty	Comfort you friend in ways machines can't	5
Compassion and honesty	Be honest about your intentions. Don't play games. Imagine changing places with someone else. How might they feel?	4
Compassion and honesty	Be the person others are willing to talk to about sensitive subjects. Always ask this question: "What is it like to be you?"	4
	Score	**4,2**
Skill	**Upskilling task**	
Moral courage and ethics	Do something that inspires others	4
Moral courage and ethics	Delay forming an opinion. Think about the good and bad consequences.	4
Moral courage and ethics	Set an example to others with your ethical choices	4
Moral courage and ethics	Remember that nature does not have a social media profile and cannot update its status itself	3
Moral courage and ethics	Dare to act when the situation demands. Encourage others by your own example.	4
Moral courage and ethics	Keep in mind that individual right choices have always changed the world.	4
	Score	**3,8**

Appendix 4. Reponses to questionnaire

#	Open-Ended Response
1	Ekosystem-platformit
2	Salesforce Marketing Cloud
3	Azure Sentinel & Azure Monitoring
4	Data analysis
5	Cloud technologies (AWS, Azure) and AI / machine learning
6	ERP and software integration
7	AI
8	DevOps
9	programming in C# and Python, using Azure
10	Cloud, MS dynamics
11	Cloud related aws azure gcp
12	Salesforce platform
13	Generally, it's needed in all adopted skills, so a little bit of this and that. If one skill I should select is project management.
14	Presentation
15	Analytics; Frontend (React); SEO
16	Cloud foundation skills
17	Excel
18	Artificial Intelligence
19	Increase my understanding of both Cloud and Artificial intelligence
20	Azure Architecture
21	cloud architecture
22	AI/ML (specifically Image analysis)
23	Cyber security
24	Azure AD
25	New Azure skills: Eventing, Serverless architecture, Security
26	Microsoft cloud
27	Microsoft 365 modern work capabilities
28	eCommerce optimisation
29	Financial analytics skills, analytics in general
30	business process automation and software integrations
31	Have no plan on that.
32	Power BI
33	AI
34	Internet of things (Home automation) skills

#	Open-Ended Response
35	Sustainability
36	Block chain
37	Big data
38	IT4IT
39	People skills ;)
40	Field Service Mgmt tool in Industry for Maintenance. AI based digital product as Service in Industry to improve Efficiency, availability and safety. Remote Control for wind power and substations and once again from Maintenance perspective.
41	More self sufficiency at tech
42	Low code/no code (power Automate, Power apps, Power platforms) & DevOps/DevSecOps
43	Customer Identity and Access Management, Public Cloud & Web Assembly
44	Blockchain
45	Edge to cloud. The Edge is where data is created (iot devices etc) from there to the data center and cloud is where the dats gets processed and put to use.
46	Cloud technology
47	AWS, Linux
48	Service now
49	I my work within marketing the positive attitude will be the most important skill. New technologies, platform, new way of doing your job is critically important. The world changes fast. In Social Medias there will raise 4-6 new conversation within next 1,5y. If you need to reach crowds you better know those and be prepared to pilot. In marketing technologies it will happen much development. At least Keep someone who knows the new field near to you. It is all the time more common use consultants within marketing as well. They are expected to bring the deep niche. Generalists we have within the staff. And that is Great. But you need to be able to bring in experts, and developers of certain areas that help you grow. Even better or more effective remote work tools is important to learn, as that is a new normal. (Positive attitude to new technologies, agility to adapt, wisedom to use specialists in their own fields probably as key strenghts and and skills to learn each day)
50	Going back to basic principles & then re establishing the principles of the operating variables that control system. Then & only then can you build it back up with the addition of new technologies that were not available when it was initially developed.
51	Programming
52	For sure: Search engine optimization, app store optimization. Maybe: programming
53	Hybrid IT
54	Business consulting
55	Composable architecture