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The utilisation of project portfolio information as a part of decision-making process in portfolio planning

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<p>In this thesis, a large public sector organisation's project portfolio management process was studied in a context, how the portfolio data could be utilised in a comprehensive way to enhance the decision making in a portfolio planning process. A knowledge management theory approach was followed in the research alongside with contemporary portfolio management theory.</p> <p>The studied organisation is executing a relatively large number of projects annually. The challenges in project portfolio composing, project prioritising and monitoring the projects under execution has been recognised earlier and they have been under a major development since the deployment of a project portfolio management system. The organisation's project work is very resource intensive and therefore a specific focus on a portfolio's resource management and its data integrity and validity will be accomplished together with other types of portfolio data.</p> <p>An action research methodology was applied in a series of operations, where the researcher was acting as a co-worker or observer in the researched organisation's portfolio planning process. Guided interviews were held among process participants and key stakeholders to form a clear picture of portfolio management's current state. The collected data was then analysed by using qualitative methods to prepare a proposal for a portfolio planning toolkit. A conceptual framework was formed as a theory fundament derived from contemporary portfolio and knowledge management theories.</p> <p>The formed toolkit was then tested in an actual portfolio management environment and partly as a proof-of-concept -solution due to schedule and resource restrictions. The results corroborated the opinion, that consequences of poor data quality and validity may be crucial, when factual data is needed in a project portfolio planning and composing process and its decision making. Another remarkable finding was the importance of a well-defined portfolio planning process and its decision-making gateways, and also the need for strategy derived project portfolios. The necessity of improving project portfolio data integrity was found evident and a specific toolkit or systematic process is a valid method to develop it.</p>	
Keywords	Project portfolio management, project data, project prioritising

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1 Introduction

1.1 Context

Nowadays an organisation produces and stores a huge amount of different kind of information. This information should be used and utilised systematically in managing and developing the organisation and its processes. Well utilised information is a success factor and therefore it should be taken as a part of management system and tools whenever the management process and decision making is in connection with information usage. Information is needed not only for understanding, but also to make decisions and to create new information. (Hannula & al. 2013: 8-12) Decision making based on relevant and valid factual information and knowledge will help an organisation to direct its operations towards success and also help it to succeed better compared to its competitors (Hannula & al. 2013:44). A practical approach and target to organise information for further use is needed when an organisation is willing to manage its information and use it as an effective resource.

A project oriented organisation produces a lot of information based not only on the outcome of a project, but the project management process itself. Projects are having plans like the project plan, quality and risk assurance and plans for costs, resources, benefits and communications for example. These plans and how their execution is monitored via reporting and managing the projects produce the core information for project portfolio management. To improve the overall performance of a project based organisation, the project information should be systematically collected and used for managing the organisation. Portfolio management offers a comprehensive methodology and tool for effective managing of a project based organisation's project work as a whole. When the projects are organised in well-defined portfolios, which can be monitored and measured on a uniform basis, the organisation can use the portfolio information for better defined and fact based decision making.

The Finnish Social Insurance Institution (a.k.a. Kela later) is a public insurance and pension organisation of which mission is to secure the income and promote the health of the entire nation, and to support the capacity of individual citizens to care for themselves. Kela provides basic social security for all persons resident in Finland through the different stages of their lives by offering a wide range of different kind of social security benefits funded by statutory contributions from the insured and employers and with funding from the public sector. Kela operates under the supervision of Parliament and its legal status,

responsibilities and administrative structure of Kela are defined in the Act on the Social Insurance Institution. Its responsibilities in the area of social protection are defined in a range of Acts of Parliament concerning specific benefits. The organisation is employing up to 6000 employees of which the central administration is approximately 1600 employees. The organisation chart is presented in figure 1, of which the units inside the red line polygon are forming the central administration, inside which the development operations are managed and the rest of organisation is belonging to the regional administration.

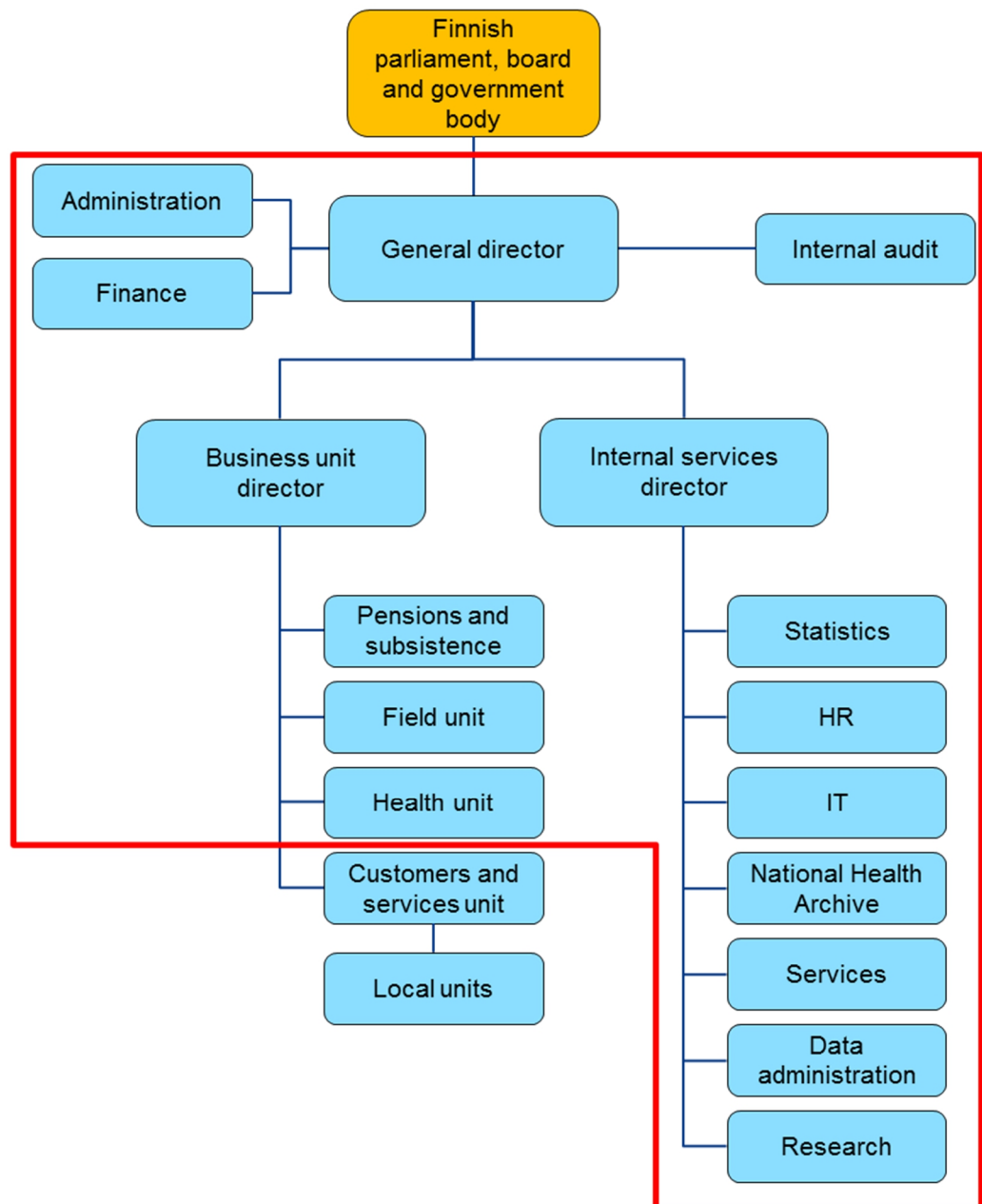


Figure 1. Kela organisation chart 2015

During this thesis' research and writing period an organisational change program was performed to renew the organisation. The new organisation started in January 2016.

Kela's operations are organised in three different process sectors, which consists of administrative and managing processes, the benefits and services processes and internal services. The customer and benefits processes are comprising the core business functions of Kela. A process chart view is presented in figure 2.

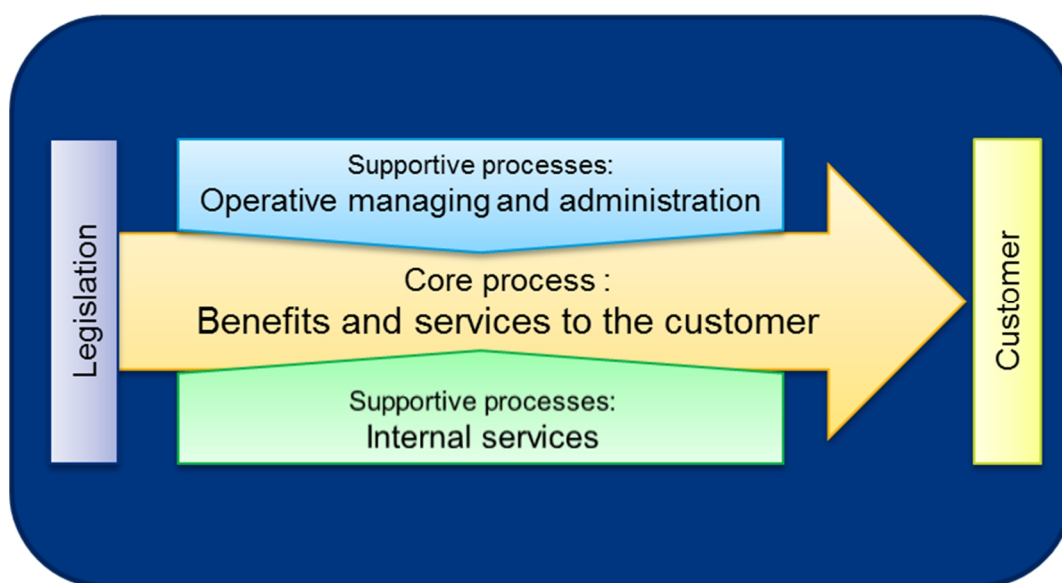


Figure 2. Kela's core and supportive process chart

Kela is managing its development operations by utilising projects, which are managed in the central administration and therefore it is also the central for project management actions. Kela is executing a plan of around 300 active projects on annual basis. They are organised in 12 different project portfolios following the structure of organisation for budget planning and monitoring. Projects using internal IT resources has been managed in a specific portfolio view, mainly targeting to achieve a transparent approach and sharing of IT-resources between all different departments. The portfolio management is connected to the resourcing process and the business scorecard -based annual budgeting process.

During 2013 - 2014 there has been an implementation of a project and portfolio management (PPM later) system, which has led into a situation, where the need for a project portfolio management process should be evaluated and aligned with the needs of this

system implementation. This is offering a natural chance to improve the portfolio management process and procedures to meet the new standards set by ongoing change. The change in portfolio management process and increasing demands and possibilities to use portfolio information for knowledge based management in the Kela's future will set the context for this study. The improvements in portfolio management will also target in Kela's overall development needs since the public sector has lately been under circumstances, where organisations have to focus more and more on cutting costs and at the same time enhancing their efficiency. This situation is also problematic considering the rising need for more customer-oriented services and the higher business and customer expectations. (Jenner 2010:18)

In this document the expression "portfolio management" is referring to project portfolio management exclusively. If used in a different context, the meaning will be specified.

1.2 Development challenge, objective and expected outcome

The project portfolio management operations in Kela has been lately under development to meet the requirements of a project portfolio management (PPM) system implementation. During this development process a need for a higher, more strategic level process revise was recognised. Due to usage of a PPM system more information about the organisation's projects is been collected through a formal process and in a structured format. The structured information offers an opportunity to use it as a knowledge base not only to help manage a single project itself, but also to utilise it for project portfolio management process decision making.

In this study the challenge is to figure out the critical nodes and decision making points in the Kela PPM process and to find a way, how factual information can help and guide the decision making in different process stages. Considering the Kela's current situation in portfolio management information usage and its' quality, the main challenge is to clarify how to refine and validate project information in such a way that it will become meaningful knowledge for the organisation and can by then help the organisation to improve its performance. (Hannula & al. 2013: 18)

The research objective is to define a set of tools which will assist the systematic usage of accurate portfolio management information in portfolio planning process. The set of tools will improve decision making process of an organisation (Kela) and make it more effective and reliable. This study will research what current portfolio information is used, how it is used and at which stages of the process. Then, the relevance of that information

will be evaluated against process participator's detected development needs and also against project portfolio management theory and best practises.

The outcome of this study will be a toolkit for project portfolio planning and composing process. This toolkit will support the portfolio planning to achieve a well-composed project portfolio consisting of prioritised projects with equally defined and revised information content, on which the prioritising is based on. The toolkit will include a simple data model for project information and definitions for these project information data types. Finally, a development proposal will be made to point out the stages of the process, where the usage of factual information could help to develop the organisations PPM process.

2 Research approach

2.1 Research design and process

The research approach used in this study is based on applied action research, where the researcher will be acting inside the organisation as an employee working in the process under examination or otherwise observing the process from a close view. The theory base of action research emphasises the learning through action -procedure, where new knowledge is produced in a specific or practical context and so leading to personal or professional learning and development. Action research is therefore considered as participatory research from its nature. The research process has a cyclic form, where at first a plan for change is set to identify and define a development challenge. Then a stage for acting and making observations concerning the process under study will follow. The results of these observations will be recorded and analysed and then utilised in adjusting the process. The adjustments will be implemented by making changes in the process and then, at the final stage, the impacts the changes have made will be analysed and revised. (Koshy 2005: 3-5) In traditional form of action research this research process is repeated in several cycles which is called the *action research spiral* (Altrichter et al 2002: 129-130). However, this is generally not seen as a rigid structure, as in a real world this research process will be more fluid, open and responsive. (Koshy 2005: 3-5)

In this study the plan of change -stage were composed through a series of discussions held in different contexts with personnel related to portfolio management process. The implementation project of the project and portfolio management system acted as a trigger for these discussions. This disclosed the actual need for well-defined and accurate portfolio data and how the usage of that information is linked with the portfolio management

process. That stage was followed by setting of the research objective, which was distinctly targeted to usage of portfolio information and its quality, as the PPM system usage required strictly defined structured information content and data validation. As a result, an idea of a toolkit helping the portfolio planning process to utilise well defined and validated portfolio information as a supportive tool for decision making was presented. Next, a current state analysis was made to collect existing information of Kela portfolio planning by personnel interviews and revision of internal documentary. The analysis was then evaluated against the portfolio and knowledge management theory and best practises. The results were used to compose a proposal for a portfolio planning toolkit, which was then tested as a proof-of-concept -way and adjusted according to the feedback to form the final result. A commentary and recommendations for further research and development were added to clarify the solution made. The research process is presented in figure 3.

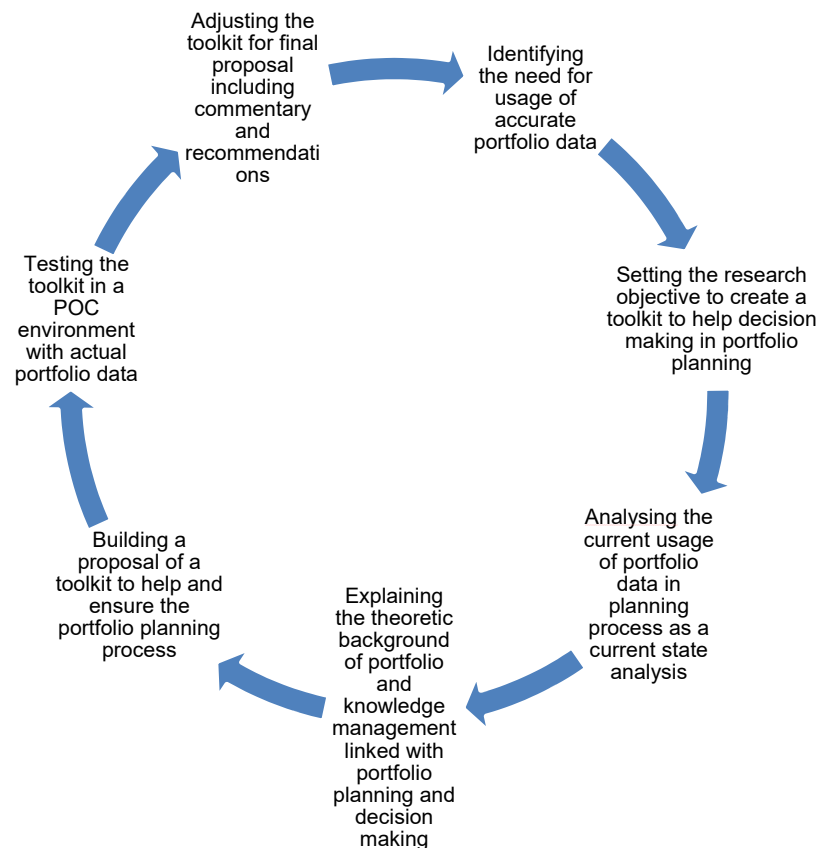


Figure 3. The research process as seen in a context of action research
In this research the action research methodology was considered to be applied because of the restricted time and the relatively long time period of annual project portfolio planning process. Therefore, not as many iterations could be made as might have been

methodologically used in an elementary action research process. Instead a proof of concept type model was created, tested among observed process participators, adjusted according to results and finally constructed as a solution for this research.

2.2 Data collection and analysis methods

The three primary data sources on which the data collection of this thesis is based were a series of interviews held with Kela portfolio management personnel, the IPMA Delta Assessment made by 3rd party neutral association and the existing internal documentary considering the portfolio planning and management processes, instructions, data flows and reporting. Also, some additional informal interviews or short discussions were held in a stage of building the proposal, where more detailed correctives were needed to adjust the idea for solution. The management personnel interviews were recorded, transcribed in a freeform text file, which was then send for each interviewee for validation and approval. No actual structured interview form was used, instead the interviews were led through using semi-structured themes considering the Kela's portfolio management methodology and the information usage. Also, some essential background information was collected to ensure the interviewee's context with the portfolio management. Therefore, it is also relevant to state that the principal methodology of data collection is based on the qualitative research's tradition. The interviews' structure and themes are explained in chapter 3.3 in a more detailed way. For other data sources the relevant documentary were collected for the analysis stage.

For data analysis, no actual statistical methods based on calculation were used. Instead, the results of interviews revealed some frequent patterns or recurring concepts, as certain expressions and issues were occurred more often than others and vice versa, some of those expected according to the context did not appear at all or only as a minor matter. From this ground, some simple calculations were made on e.g. how often the expressions like 'strategy' or 'strategic' were used in a context where expected. However, these results were not considered with actual statistical methods, instead they were availed to point out the focus of current state analysis' most critical issues. The IPMA Delta assessment and internal documentary were then evaluated against the interview results from the basis how well the results matched and were aligned with assessment results and how well the mentioned issues and opinions given in interviews correlated with portfolio process instructions and other documentary. The final result of analysis is comprised of comparison, how project portfolio management terminology and concepts are actually used in Kela, when compared to how its usage is described in documentary and instruc-

tions. Also, a comparison to the best practises and knowledge of project portfolio management will be needed to achieve a comprehensive view on Kela's portfolio management and how portfolio data is been utilised in portfolio planning.

3 Current state analysis of project portfolio planning at Kela

3.1 Introduction to Kela project portfolio management and description of the current process

In this chapter a short introduction to Kela's project work is presented in a general level, following a more detailed description of the portfolio planning process. The process description presented here is formed from existing process instructions and other documentary, and from the interviews and discussions held with different process participants. The Kela formal portfolio planning process in discussed and revised in chapter 3.4.

The development of operational functions, processes and procedures are based on project work in Kela. The number of on-going projects on an annual basis in a portfolio plan for the year 2015 according the budgeting stage on 20.11.2014 is 287 and the value of project work planned in Kela for the 2015 is about 10 % (40 m€) of its total operational costs. Of its nature, Kela's operations leans strongly on information producing and processing, and therefore the presence of information technology is inevitable. Depending on the definition, an average of 85-90 % of all development projects are IT-related projects in one way or another. Kela is having a relatively large IT-department of more than 450 personnel working for it. Kela is also producing most of its IT-services and systems by itself although an increasing number of outsourced services or off-the-shelf-software have been lately (or are planned to be) implemented.

The current portfolio management is organised on an organisational basis, where every department is having a project portfolio of its own. For the planning period of 2015 there are 13 different project portfolios to be planned and monitored. The planning period in Kela is a calendar year, which is aligned with the budgeting process. In addition, there are specific *portfolio views* for certain uses, of which the most important two are the strategic Kela-portfolio and the IT-project portfolio. The Kela-portfolio consists of the strategically most important programs and projects chosen by the executive management, whereas the IT-project portfolio view consists of the projects related to Kela's internal IT work, which are also using the resources and procurement budget of Kela IT department. Considering the high share of IT-related projects in the project portfolios and the fact that

Kela is utilising its own IT-developing department in the project work, the IT-work accomplished for the projects plays a very important role in portfolio management. Also, a major part of other project work executed in Kela is resourced using internal personnel of Kela. Therefore, it is substantial to say Kela's project portfolio management is very *resource oriented* and *resource intensive*.

The structure of the portfolios in Kela at 2015 by departments is shown in figure 4.

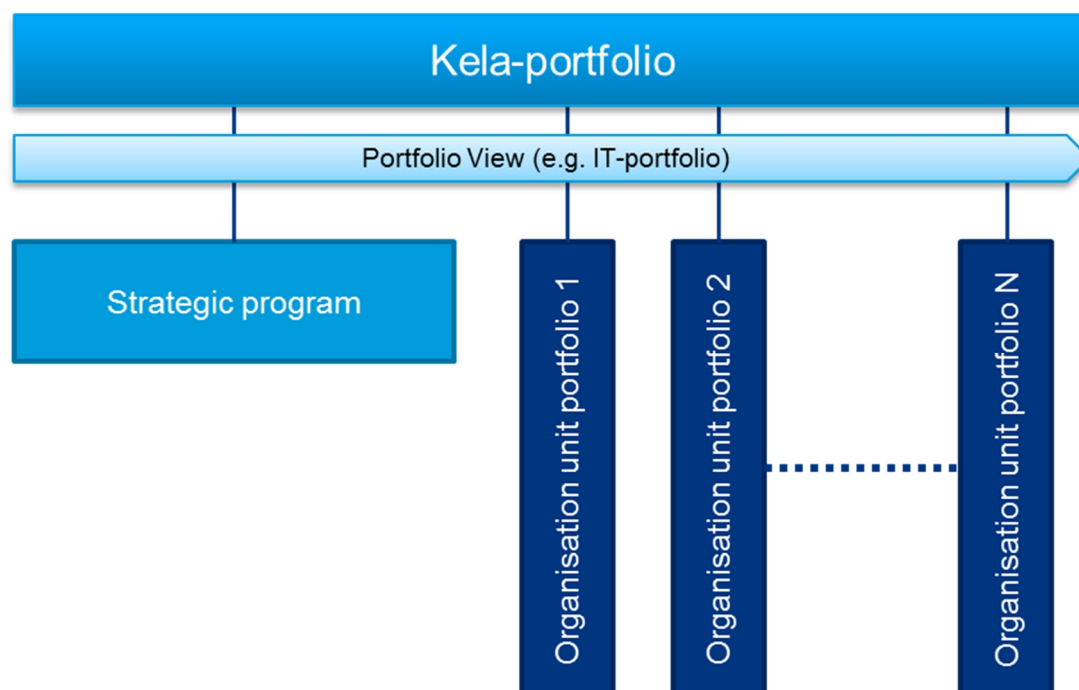


Figure 4. Kela portfolio division structure

In general, the portfolio management process is usually divided in a phase of planning a portfolio, where the actual portfolio content selection and prioritising is made, and then in the monitoring and change management phase (Rajegopal et al. 2007: 108 - 118). A formal project portfolio management approach has been described and used Kela in a certain way, where the focus has been on how project based work is organised and the project data is collected. This procedure is most likely linked to the annual general budgeting process, where each organisational department will have their share of Kela's annual budget allocated. The department-shared budget will also include the project work the department is planning to execute during the next portfolio planning period. In practice, this means each portfolio owner has collected a list of projects they will see important to be started during next portfolio cycle and also to revise the on-going projects

by their status and priority. This list has then functioned as a base documentary for further discussions, as the planning process has been proceeded. The result of the planning process in a simplified form will be an approved project portfolio, which contains a list of projects starting or continuing next year. The list will include some key project data like schedule and planned resource usage on a coarse level. Since the portfolio planning in Kela is based on annual budgeting process and monitored in a yearly basis, the planning and portfolio composing will be done for the planning period of upcoming calendar year.

A deeper review of the portfolio planning process will bring out three stages in the general budgeting process considering the project portfolio planning. Briefly, these stages can be seen as preparation, focusing and final decision making. The preparation stage will start with the executive board making the strategic alignment and focusing the development areas for the upcoming planning period. Results of the strategy (alignment) plan will be transferred from top-down planning -point of view to different units of organisation as instructions for planning the up-coming projects. This part of process gives the input and some early stage instructions for organisation units to pre-plan their need for development projects.

Departments organise independently their internal discussions on which development needs they are having for the next portfolio planning cycle to be raised up and turned into projects. From IT-project portfolio planning perspective, departments may have support from the so-called IT-customer representatives based on internal customership. That is, a project idea may have supportive person already in early planning stage to help to consider the IT-resource needs and e.g. some pre-planning for the architecture solution of the project. In the overall process, this can be seen as a sub-process of the portfolio composing. At the preparation stage, organisation departments are collecting their development needs and turning them into list of projects, which can be seen as a kind-of portfolio oriented form and will be further processed in the decision-making process. The format used in project idea collecting has been an Excel-spreadsheet, although during the research period of this thesis an implementation of a project and portfolio management system was dispatched.

At a second stage, a more focused phase will follow. This function starts before the end of Q2, when the final strategic and financial guidelines for portfolio planning will be delivered to each departments' portfolio coordinator or person responsible for the portfolio managing. The departments will do iterations over their portfolio plan focusing on more

in-detail view on the actual development resources and needs before moving to next phase. Then next, during Q3 all the department-level project lists are being gathered together for compilation especially considering the IT-resourcing point of view. This summary will form a final portfolio-type in-depth view into the existing projects continuing on and the projects suggested to be started during next planning period. The portfolio plan view gathered in the spreadsheets will form a basis for the discussions made in the general budgeting process. The discussions are mostly about the usage of the personnel's annual capacity of working hours. IT-resources are crucial because this capacity is shared and internally billed across the different departments executing IT-projects. Also, the need for outsourced resources e.g. IT-consultants or software purchases will be examined against the IT procurement budget at this stage. As the process is not straightforward and it needs certain amount of discussion and interaction between the process participants, it is substantial to say the process will go through several iterations at this stage, before the portfolio content is been set for the final decision making stage.

In the final stage of general budgeting process the project portfolios are completed. Negotiations on each portfolio are held between the general budgeting team, the executive management and department managers. On this stage, the focus is more on the aggregate of a single portfolio's budget and resource allocation plans instead of viewing a single project as well as balancing the portfolios between each other. The procedure is concentrated on matching the portfolios with the man-years available for project allocation and the allocated procurement budget. Thus, each portfolio will have an estimate of a budget framework for the next portfolio planning cycle. The results of the budgeting negotiations will be stored in the management's reporting system for future usage and monitoring. During this thesis' data collection, the portfolio planning process was re-engineered on the basis of interviews and documentary to compare it with the existing portfolio instructions and process guides. The re-engineered process model is presented in chapter 3.5.

From the project portfolio perspective the planning process is a sub-process of Kela's general budgeting process. During the research process, interviews and portfolio planning process re-engineering, an entirety of sub processes for the general budgeting process were recognised. This process map is presented in figure 5 in a timescale form, where each sub-process is set on timeline based on quarters. According to the results of the project portfolio planning process re-engineering, the general budgeting process is divided into (at least) six different sub-processes or stages. These include strategy

alignment and instructions, the project idea collection by departments, IT-planning support, financial planning, IT-portfolio planning and budgeting negotiations. Of all these, the financial planning did not appear in any researched documentary. However, its' role was recognised during research interviews. An evaluation of the process set is included in the chapter 3.2, where the different sub-processes are revised based on the process participants interviews.

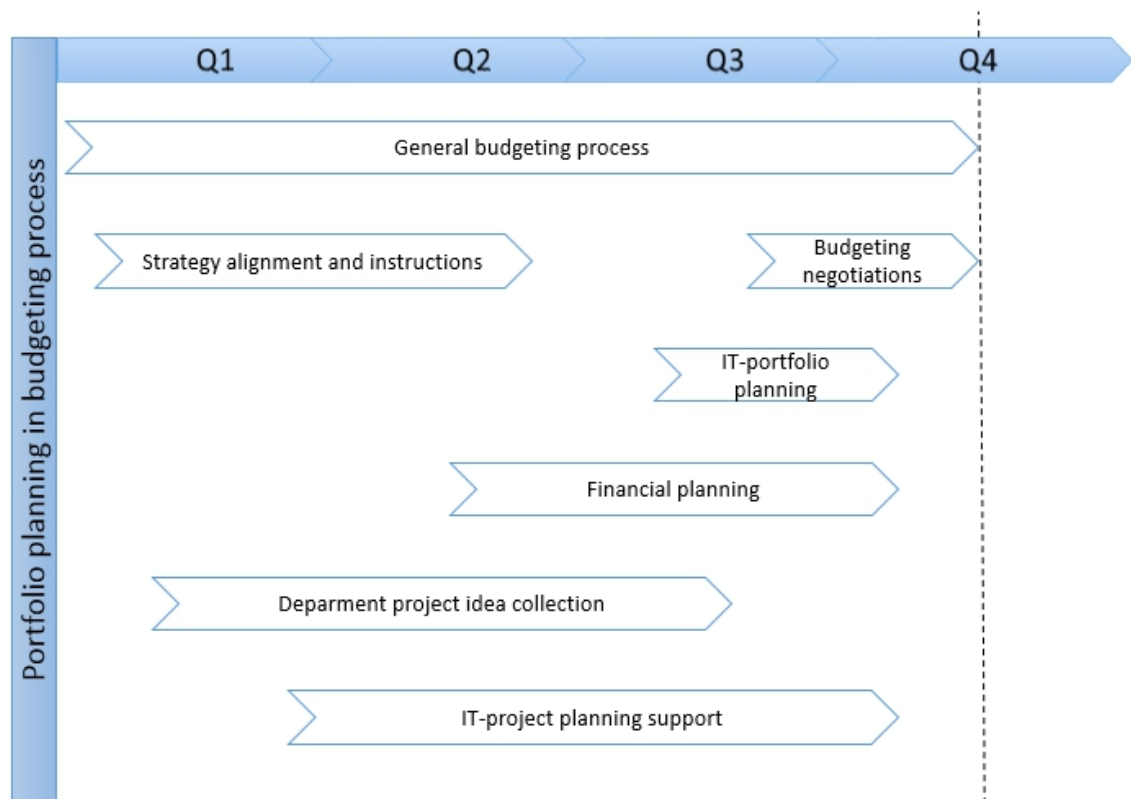


Figure 5. The project portfolio planning process map

3.2 Formal vs. practical project portfolio planning as seen by process key stakeholders
 To figure out, how the documented and instructed portfolio planning process was matching with the practice executed in Kela's portfolio management operations and procedures, semi-structured interviews were organised among relevant portfolio management process participants. Since the portfolio management process and its functions and responsibilities are not under a one single organisation unit nor are they described and instructed in a portfolio management handbook compilation, the group for interviewees had at first to be figured out. As a result of short examination, the selection for interviewees was rather natural process and people chosen for interviews were employees who

at least should have a rather important role in project portfolio management according to their position and tasks in organisation.

3.2.1 Interview methodology

In these semi-structured interviews data was collected by the interviewer using a specific form, where every interviewee shared the same three questionnaire themes, which were titled as

1. How well known concept project portfolio management in Kela is (for the interviewee) and what is the interviewee's role in it (as seen by him-/herself)?
2. Tasks in the project portfolio management as seen by interviewee him-/herself
3. The portfolio planning process and the portfolio information: in which way the interviewee is utilising the portfolio in his/hers tasks, is there enough information and what is the quality of the information

Under these three main themes there were more detailed set of supporting questionnaire which consisted of such topics as interviewee's position in the organisation, profession and role in the portfolio management process as seen by interviewee. Also, the interviewee was asked to tell his/her relation to the portfolio management process, how he/she is using or producing and what information to the portfolio management process and if he/she is taking part into decision making considering the portfolio management. Finally, the interviewee was asked to describe from his/her own point of view, if he/she is satisfied with the information used in the process, is there any lacking portfolio information from the decision-making point of view and what would be the key improvement for the portfolio planning process.

A total number of 16 personnel were interviewed during October - November 2014. The organisational positions of the representatives were shared in categories of three executive managers, five middle managers, three team managers and five specialists. The organisational positions were slightly weighted by personnel working at the IT-department due to the known importance of IT work and projects executed in Kela.

The interviews were held face to face and recorded. They were directed on a freeform discussion basis, where the questionnaire formed a semi-structured framework for the discussion. The interviewee could freely speech about his/her thoughts which came up of the topic during the interview. Data was collected also by the interviewer using a pre-

planned form based on the interview themes. Every interviewee had a possibility to revise the summary of his/her own interview and to have a commentary chance afterwards, if needed. The interviews were held in Finnish language.

The objective of the interviews was to find out relevant information, how the project portfolio management process key stakeholders see and share most common and fundamental concepts of portfolio management and how they see the portfolio information usage as a part of the management process and decision making. Concepts included for this research's analysis were such as the portfolio management itself, portfolio planning and budgeting, resourcing and strategy analysis. Also, process-wise, the relations between the key process stakeholders were under examination.

Another interesting topic was, how these concepts are used together with the information produced and used during the organisation's annual project portfolio planning process. The interview data were then analysed and classified in a simple way to find out the similarities and differences from interviewees' stories and how strongly they will support or be against when compared with the organisation's formal process descriptions.

3.2.2 Results

As results from interviews some key observations were made. The average career length of the 16 interviewed personnel was 14 years which had a remarkable deviation, where 7 employees out of 16 interviewees had a working career of more than 20 years in Kela. On the contrary 8 interviewees had a career length of 10 years or less. It is relevant to notice, that the interpretation of the results needs to be analysed in such context where the interviewees were having either a very long or relatively short career in Kela.

On how well the portfolio management and the planning process is known and how clear it is to its participants there was a major observation in which the process seemed to be clearer for those participants, who represented the group of people having a long career in organisation. Mutually those employees, who have a career of max 10 years did not mostly see the process clear at all or at least they knew only the part of process which is related to their tasks. A major observation was that a significant number of participants saw the portfolio management (process) equal to the so called "Reppu-työ", which is a specific portfolio management sub-process set for IT-project resourcing as described in chapter 3.1. Some mentioned the portfolio management has been around somehow "always", but it has had a different name like "year plan". Another opinion was that portfolio management in Kela is a procedure or a methodology on how to arrange the upcoming

needs for developing and to collect lists of projects and their information on spreadsheets. Only one of the interviewees mentioned the connection between organisation's strategy and portfolio management.

On decision-making in portfolio management, the participants' answers distributed rather logically alongside their organisational position. The higher the interviewed person were placed on organisational hierarchy, the more he or she was considered to have a role in decision-making. Of the interviewees, seven told that participating in portfolio decision-making is a part of their duties or a consequence of their organisational position. A one person stated to be indirectly taking part to the decision-making, three persons said they are acting as supervisors in decision-making process and five persons told they won't have any kind of role in decision-making. The opportunity to affect on decision-making was as well aligned by the interviewee's position in organisational hierarchy. When asked if the portfolio management is defined as person's duties in his/her job description, eleven of participants mentioned that it is included their job description, although many pointed out it is not expressed exactly in terms as "portfolio management" but as a part of the other process responsibilities written in the job description.

The next theme of the interview covered the tasks included in the portfolio management process as seen by the interviewees themselves. They were asked to informally describe concrete tasks they consider to be related to portfolio management and which are allocated on them. As a result, a group of tasks referring to the resourcing and estimating the workload were among the most frequent. From this group apart, the IT-resourcing and the tasks included in the "Reppu-työ" came particularly up. Another remarkable group of tasks mentioned often in the answers were the ones related to responsibility of personnel's own organisation unit portfolio and the tasks involved with it. These include such as project plan preparing, prioritising, approval process and communication with the supporting IT-team. From the portfolio planning point of view, some process-oriented observations related to year-clock -based planning and general budgeting process were made. However, these were not aligned in a similar way with certain process check-points or decision-making points except the annual general budgeting seminar. Only a few mentions were made considering actual portfolio budget planning and cost estimation, since these items were mainly covered within or alongside the operations included in the general budgeting process.

Reporting and portfolio monitoring had several mentions among portfolio management tasks. They were mainly apart from any process control points or were not related to any year-clock based events. For monitoring, distinct observations were made as reporting the allocated IT-resources and the follow-up of the actuals reported. Also, quarterly made financial reports for the IT-department's board and twice a year made "tulosraportointi" (considering the monitoring of the annual budget) were mentioned. Another group of tasks, which got several mentions were the planning and preparing the project ideas. There was partial overlap with the resourcing tasks and they also included tasks such as collecting the project data needed for project initiation and validating the project data.

Tasks involved with portfolio know-how-, change- and risk management were given only few mentions among interviewees. On the commentary considering the "Reppu"-process there were some indication on change management involved with resource management. However, this change management processing was said to be "light-weight" and the output and impacts were told to be diminutive considering e.g. the amount of work covered in the change management procedures. Also, some other single tasks mentioned in the interview results included such as progression planning and ensuring, value-cost analysis, mentoring and training, coordinating the co-operation, communication, organising events, process development and modelling, making instructions, enterprise architecture, process control and preparing the decision making.

As the interviews were based on a free-form discussion, some other remarkable observations considering the portfolio planning and management process were made. The overall schedule of the general budgeting process was somehow seen in a uniform way at least on a harsh level. The publishing schedule of the planning instructions given by financial department were stated to be in a rather late point considering the needs of portfolio planning process. However, the projects, which are based on amendments driving the core business process of Kela and which are therefore mandatory, are mostly recognised in early stage of the planning period. Together with the late planning instructions this can cause a gap between the planning of mandatory and non-mandatory development projects, which makes it more difficult to plan the annual project portfolio in a balanced way.

The interview commentary raised up an interesting point-of-view which indicates that departments' seem to have their own kind portfolio planning processes. These may somehow be connected to the general budgeting process; however, they don't show up

as sub-processes' of the main process. Instead, they seem to be more likely a department's own solution or procedure on how to organise the portfolio planning by their side in a way that the needs of the general budgeting process will be fulfilled. A department may (as well may not) organise its' own budget planning seminar to align the updated strategy information with their need for prioritising and selecting the projects for up-coming planning cycle. No systematically used tools e.g. work-flow which is based on uniform use of document templates or forms were told to be used except the project list Excels used in the "Reppu-työ". A need for collaborative forum(s) over departments was seen as a major absence in the process according to many interviewees. Such forum(s) would help in prioritising the projects and balancing the portfolio and it would also bring transparency to the process. Also, the terminology used was not uniform through-out the process(es) and the concept of the year-clock as the main guideline in the planning process was not seen in a similar way between the interviewees. The significance of the "Reppu-työ" process is emphasised as a forum for work planning and budgeting, since the operations executed there were seen most likely as the portfolio management or a kind of synonym for it among the majority of interviewees. Another confirmation of the importance of the "Reppu-työ" is that its' process was described and modelled more precisely than any other connected to the portfolio planning. Also, the process responsibilities in "Reppu-työ" were seen more clearly than in the portfolio planning process generally.

When asked about how lucid the portfolio planning process is, the answers of the interviewees varied clearly according to the career length of an interviewee. There was rather clear correlation with the career length and the lucidness of portfolio planning process as longer the career of a person was the more lucid he or she saw the portfolio planning process. This was also mainly in correlation with the strong deviation in career lengths since the employees who had more than 20 years of career in Kela, saw the planning process mostly to be clear and the employees who had a career of ten years or less did not feel so familiar with the process. Also, the process connected with the "Reppu-työ" in IT-related resource- and workload planning was indicated to be more lucid compared to the overall portfolio planning process. The IT-project related "Reppu-työ" planning process was also said to be separated compared to the planning of other project work, which may cause overlap and make the prioritising more difficult. The personnel accountable for budgeting do not share commensurate concepts with the personnel responsible for the project work, which has caused some obscurity to the perceiving of a department's

development budget for project work. The decision-making procedures were seen unclear especially considering the final decision making stage after prioritising procedures. Also, the large number of different actors in the process, the difference in size of portfolios and the differentiation between actions and procedures of portfolio coordinators were said to cause fuzziness in the planning process. A major observation was also that process was seen more lucid inside a single department's procedures, however, on the whole organisation level it was more unclear.

When asked about the usage of existing portfolio information and its quality, most interviewees pointed out, that the existing information like the on-going portfolio has been used to some extent as a background information for the up-coming portfolio planning cycle. The information used from the existing portfolio has mainly been such as the amount of actuals in hours and how well the project plan has been actualised ("suunnitelmapito"). The status of the on-going projects has been somehow informally examined and then tried to make an estimate, which projects will continue over to the next planning cycle as well as how much resources they will need during the next planning process. When discussed about collecting and using a history database of portfolio information for further analysis and learning, two opposite perceptions came up. In one case the portfolio information was collected specially to improve workload estimates. However, the most common shared opinion was that there is no systematic review of any project or portfolio estimates in the context how successful they have been. In some unique cases, single projects may have been metered and analysed to improve the future planning precision, but the data was not systematically collected for further utilisation.

The quality of the portfolio information was criticised in the case, when the source was the project information stored in Kela's ERP-system (TAHTI). That information was mentioned to be complicated and abundant, also it was said to be out of date and that it does not meet the needs of end-users. A common way of collecting portfolio and project information among interviewees was by personal networks asking from colleagues and process participants. A remarkable human factor was considered when filling and updating the portfolio information in spreadsheets, which may cause decrease in the quality of portfolio data, since people tend to use their own incoherent methodologies and data sources in this part of process. Consequently, the lack of portfolio data consistency, validity and accuracy, the portfolio resourcing and monitoring has not been on a reliable level, which has caused e.g. systematic overbooking on project resourcing. Also, it was

told that the overall portfolio monitoring process is not based on the principles of portfolio management, since no follow-up information has been collected in portfolios, which mainly has covered only the baseline information from the very beginning. On the other hand, an annotation was made by an interviewee, where the information received was said to be of a good quality when considering the purpose of the information usage.

When asked about if the portfolio information used and available is reliable, the answers had some variation and uncertainty among interviewees. An overall consideration was that the data is reliable to some extent at least on such level it could be represented. However, this level was given some critics due to the actual needs of the information in the planning process. No methodology exists to validate the data quality. However, some mentions included such commentary as when it is hard to contradict the reliability of the information, you should trust on it. Also, the amount of the information was told to be diminutive but the information itself is reliable. The person's position had such a correlation in data reliability that on top-management level it was seen more reliable than among persons in middle and team management. The existing reporting data reliability was disputed concerning the actuals reported. The reporting was mentioned to be on a too high sum level, which will make the details disappear and will make it difficult to track down e.g. where the actual hours have been spent and what has been made with them. On the availability of portfolio information there was again a deviation between answerers, since the personnel with longer careers seemed to have portfolio information more easily available, however the easiness of availability was often referring to the answerer's internal networks and personal relations to other process participants than actual defined and validated process data sources.

3.3 Conclusions on Kela's current project portfolio approach based on an internal existing assessment

As a part of Kela's project and portfolio management improvement program, a specific IPMA Delta Assessment were made during February 2014. The assessment is based on the International Project Management Association's (IPMA) data collection and analyse methodology (IPMA Delta Regulations and Guidelines IDRG version 1.0). It offers a systematic method to define the maturity and the level of portfolio and project management related operations and processes performed within an organisation. The assessment is independent and was conducted by the Project Management Association Finland. The scope of the assessment was targeted to cover the actual status of project management at Kela including portfolio management.

The assessment criteria is derived from a specific IPMA Delta reference model and it has three separate modules, which forms the foundation for the analysis. The modules are “O” (organisation), “P” (projects) and “I” (individuals). The project work of the organisation under study is examined in context of these three modules and the target is to find out strengths and weaknesses of an organisations project culture and the areas of future developing. In this thesis, the items of report considering analysis of Kela’s portfolio management will be referred. From the project portfolio view, the findings about how the portfolio is currently managed and should be managed in the future were the most interesting. Also, the aspects on how strategy is connected to the overall portfolio management were found interesting. These approaches were covered mostly in the assessment’s Organisation-module, but also some findings can be connected to the two other modules.

As main strengths pointed out in assessment considering the portfolio management and strategy alignment, the strategic planning process and use of various steering boards in strategy implementation for project work were mentioned (Wagner et al. IPMA Delta Assessment 2014).

As an overview of weaknesses, the assessment states overall behaviour should be more professional among all portfolio and project management activities. Also, the strategy base is not clearly visible in common project work in a way how it is commonly considered according to generally accepted best practices. The project work including project, program and portfolio management does not have a strategy of their own, which could be linked and aligned with the organisation’s mission, vision and goals. Also, the connection between projects and overall strategy is not clear. (Wagner et al. IPMA Delta Assessment 2014)

According to the assessment, there is an obvious lack of standardised processes and methodologies for program and portfolio management as well as the lack of definition for the concept of a project portfolio itself. The portfolio composing does not have guidelines and method to be connected to portfolio management process and the general budgeting process. Also, there is no portfolio management handbook and the concept of what is a project portfolio in Kela is not defined from Kela’s point of view. The overall lack of portfolio methodology acts also as a hurdle for strategy implementation via project work. The

portfolio composing and project prioritising is lacking of classification and typing of projects by the assessment and the managing responsibilities of portfolios are weakly described. (Wagner et al. IPMA Delta Assessment 2014)

Of regular tasks linked with portfolio management, the assessment notices that the resource management is not established on a portfolio level, which is causing uncertainty in overall project management process, whether there exist sufficient resources for all projects. The capacity usage is therefore regularly unbalanced and the decision making is not done on a solid basis. Also, the role of Kela's project management office (PMO) is not defined in the portfolio management process. A recommendation is made by the assessment to enhance the position of PMO to have a role as a governance body having an overall control in the projects through portfolio management and decision making processes and to put them in practise and making them transparent. This would also add more project control which is needed and performed from a portfolio perspective point of view. (Wagner et al. IPMA Delta Assessment 2014)

A crucial observation not only from Kela's point of view but also a straight link to this study's business problem was a finding that resources should be better planned on a portfolio level. So far there hasn't been any systematic process for resource management in Kela to ensure the planned usage of resources based on the organisation's overall development needs and attempt to balance the personnel between different kind of projects and other work. Considering the resources on a portfolio level would enable decision making on a more solid basis according to IPMA Delta observers. (Wagner et al. IPMA Delta Assessment 2014)

The IPMA Delta assessment points out as a major improvement target the lack of guidance of how to structure and plan a project. As recognised, the portfolio information relies on the data which can be collected from single projects and therefore the competence and ability to plan and compose the content of a single project's work breakdown structure and other content in a standardised and reliable way is crucial. According to the assessment, the project (lifecycle) planning forms the basis not only to the quality of the single project itself, but also to the portfolio composing and management. Projects in a portfolio should be planned against same standards using a guided plan process and tools. This way the information used in portfolio management is more reliable and gives more control over portfolio managing tasks as well. Also, it is mentioned in the assessment, that project management plans do not support strategic decision making and the

reporting is not consolidated on a portfolio level as a task of such an operator like project management office, which can be seen as a major lack of utilisation of a single project and also portfolio information. (Wagner et al. IPMA Delta Assessment 2014)

Of risk and opportunities management it is stated that they are not implemented on a portfolio level. Risk management is said to be done on a single project level but there is no consolidated view on it from a portfolio level point of view. No linkage is performed between Kela overall risk management and portfolio and project risk management, which could be a portfolio management function. On portfolio management decision making the role of a portfolio manager was said to be poorly defined by human resources department or other factor responsible for it and that it should be done on a standard level. Clearly defined responsibilities and tasks are inevitable in a portfolio management process and decision making. (Wagner et al. IPMA Delta Assessment 2014)

Of all the three modules under examination in IPMA Delta Assessment, the results pointed out that the module of organisational capabilities in portfolio and project management were found to be on the most incomprehensive level. This gives a focus on developing the portfolio management towards a real tool for management and to enable strategic control over the project work done in Kela.

3.4 Strengths and weaknesses of current planning process based on internal documents

A specific program targeted to develop the administration and change the Kela organisation structure was set in June 2013 (HAKE-hanke). A report (HAKE-report) was produced by Kela's internal audit and a consultant to support the planning of organisation change. In the report the main objectives were to make an organisational current state analysis and to find out the major targets of improvement and to create a selection of alternatives for the renewal of organisational structure and operations model. For the report basis, many personnel were interviewed from different units of organisation covering the positions from top-down. The results of the HAKE-report were not compulsory but more like a recommendation for the executive board responsible for the change program. The report was completed in May 2014.

From this thesis' point of view it is interesting, how the portfolio management and project work as in whole is visible and referred in the HAKE-report. It is also important to recognise, how the managing of the development by projects is referred and is there a clear, visible connection between management, decision making, development process and

project work and portfolio management. As told in report's background information and how the assignment was defined, one major objective of the HAKE-program is "to ensure, that Kela's renewed organisational structure will allow and support the targeting of resources and competences to the strategically important operations, programs and projects" (Hongell et al. 2014, s. 4).

When analysed in a project portfolio management context, the project work's and portfolio management's overall occurrence in the HAKE-report is diminutive. There are many references to past or existing actual projects, but only a little attention is paid to the actual project management process as a development management method used by Kela. However, it is a defined methodology for development in official management system documentary find e.g. in intranet documentary.

One major factor, which may cause semantic obscurity and misunderstanding among those involved with project and portfolio management is the loosely defined concepts of a project, program and portfolio. In the HAKE-report there is more often used the Finnish language expression "hanke" standing for a project than the actual term of project. That causes some inaccuracy and misinterpretation among the used concepts since there is not unambiguous substitution for "hanke" in English. It is often translated as "program" which is also known as "ohjelma" in Finnish. It is distracting to use the term "hanke" as a synonym for "project" therefore, that "hanke" should always consist of two or more projects heading to same goal. However, in HAKE-report there are many references to different kind of developing "hanke", and it is not clear, whether it is referring to a project or a program and therefore it is difficult to interpret the report and how accurate the interviewees' commentary on the topic has been during the report interviews. This same observation of loosely defined concepts of project, program and portfolio was also recognised in the IPMA Delta report. This is also somehow in correlation with the discovery in the interviews among portfolio process participants, where the portfolio (planning) process was found to be dispersed and the different participators see and consider it from their very own point of view.

In the HAKE-report, term "Portfolio" is mentioned altogether 10 times. It appears in three different contexts, which can be divided in following groups:

- 1 The analysis of process-like procedures, where the report points out as a positive example the way the planning process for the legislation development portfolio is been put in practice. The chapter was about the general management system in

Kela. In this context, there was one mention of a portfolio as a concept (Hongell et al. 2014, p. 16).

- 2 In the analysis and description of how the Kela's core business operations and internal services connected with them are organised currently, there is one mention of portfolio usage in context where the general budgeting process' content is been discussed. It states about the role of project portfolio as that kind of concept may exist among finance and HR plan "as an attachment" (Hongell et al. 2014, p. 44).

On other part considering the analysis of internal ICT services the concept of portfolio is been mentioned five times (Hongell et al. 2014, p. 65-66). This context is the only one considering the report, where the concept of portfolio is mentioned in such a coherent context, which is somehow comparable to the general purpose of a project portfolio. The usage of term portfolio is, however, divided in 2 sub-contexts inside the text: one is more like description of the objective to be achieved and another one is describing the actual portfolio work done in ICT-resource management-specific "Reppu-työ" process.

- 3 The third context is the chapter of HAKE-report, where the summary of the proposed renewal actions is been published including all the recommendations for the Kela organisation and administration renovation process. In this sub-chapter "Managing the developing operations", portfolios are seen as systematic way of putting the strategy in practice on different organisational hierarchy levels, which can also be seen well aligned and linked with the overall function of a project portfolio. The proposal itself contains project portfolio management's typical characteristics, but it is not seen as a single process but more like at least three different procedures tied on organisational hierarchy relations and containing some similar parts altogether. (Hongell et al. 2014, p. 97)

As an overview on HAKE-report, the concept of portfolio seems to somehow appear in Kela's organisation, but it is not defined clearly and in a uniform way. In HAKE-report, the number of references on portfolio (management) as a concrete term or an identifiable concept is diminutive. Therefore, it can be considered, that the portfolio management process is not consistently put in practice throughout the Kela on those areas and functions, where it could most apparently be utilised. It can also be questioned, if there is a portfolio management process, which would meet the standards of overall portfolio management principles' best practices. The ICT-department's procedure is shown in a context, where there may occur some at least partial systematic portfolio management. That observation is also supported by the results from interviews, where there were several mentions about the "REPPU-työ" process and the procedures related to it (see chapter 3.2). However, the ICT-procedure -chapter in HAKE-report included also some statements, which are clearly controversial with the interview results. Those observations include such statements like "...portfolio management is an important function and a strength in Kela considering the large number of IT-projects and -programs executed and also the work done when prioritising projects and building a general view over the

status of project work” (Hongell et al. 2014, p. 97). This statement can be seen more or less related to the resource planning process done in “REPPU-työ” instead of actual portfolio management procedure, which would be strictly defined as a process and conducted in a systematic way considering the planning, executing and change management. Also, HAKE-report states the steering groups will regularly follow the status and results of programs/projects and a development program/project will be a part of each department’s project portfolio, which is controversial when compared to interview results. As a conclusion, the stronger appearance of portfolio management in the context of ICT-departments procedures in HAKE-report will underpin the idea of dispersed portfolio process.

When analysing other existing background material and documentary considering Kela’s portfolio managing related procedures and processes, some relevant topics come to the fore from this thesis’ point of view. Firstly, there are the descriptions of Kela portfolio processes, which are published in a specific project management handbook. Secondly, there are documentary concerning the resource planning for IT-projects and the project lists linked with this procedure (the formerly mentioned “REPPU-process”). Also, there are common management system documentary published on intranet, of which the most relevant are the documentary based on general budgeting process. This documentary covers such items like the compartmental share of general budget, which is establishing the department’s performance agreement. This agreement contains also strategy alignment adaptation for department's planned development work and will also therefore act as guideline for next planning period’s project and program selection.

On Kela project management handbook, the chapter 3 consists of portfolio management processes and operations. Also, the REPPU-process is referred and told that IT-project portfolio is having processes of its own, which are related and aligned with other portfolio management processes, although it is not clearly set out, where the process descriptions may be found. In the handbook, Kela portfolio management process entirety is divided in two main processes, which are the strategic Kela program portfolio management and the single department’s project portfolio management. The strategic program portfolio process is presented in figure 6.

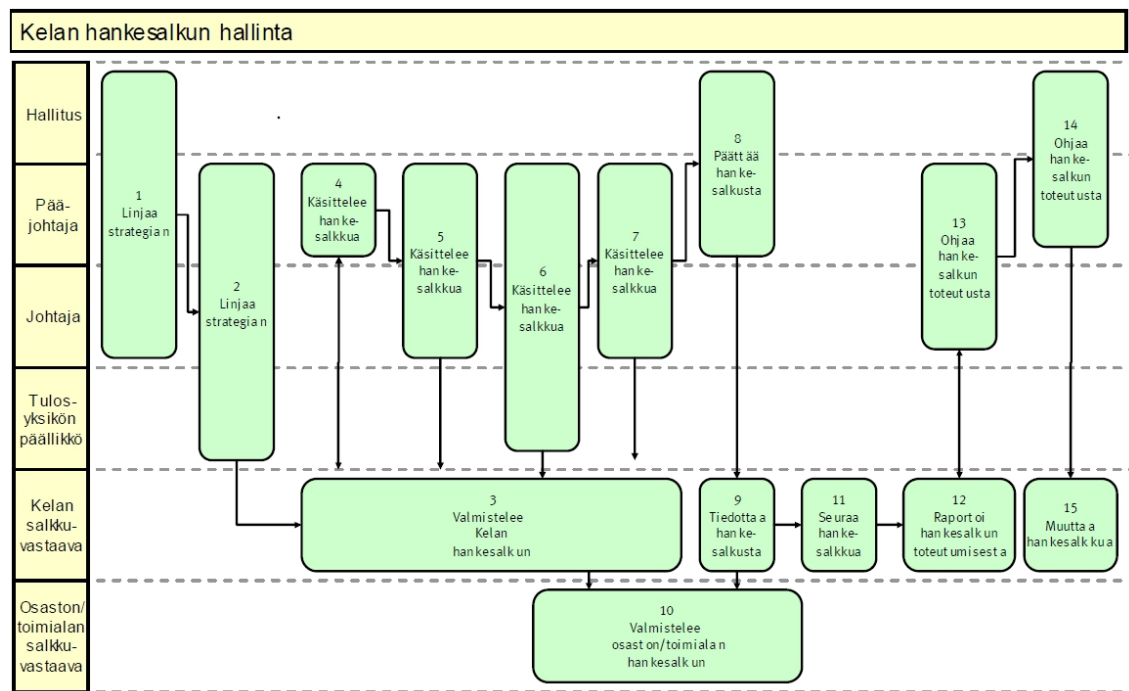


Figure 6. Kela strategic program portfolio management process

When analysing this process description, it turns out to be described from a rather top level point of view and the process is modelled using some kind of business process modelling flowchart, which is not formal. A short verbal description of the process exists in project handbooks chapter 6.2. “Kela’s program portfolio management” comprising mapping of process input/output demands, roles, yields and goals of the process. A table is attached including short verbal presentation of roles, stage of process, output of the stage and possible risk. These are linked to process flowchart with digits. In the flowchart, the responsibilities of who’s in charge are presented on lanes and include such actors as Kela’s board of directors, general director, director, executive manager of a profit centre, Kela portfolio manager and a department portfolio manager. The tasks of process are on a general level and the responsibility of a single task is spread over several process actors on process swim lanes. Some of the process tasks are weakly differentiated, e.g. task “Strategy alignment” is twice on process flow and task “Processing the portfolio” is included four times. The process flowchart does not include any formally represented decision making gates. Another process diagram is representing the single department’s project portfolio management process, as shown in figure 7.

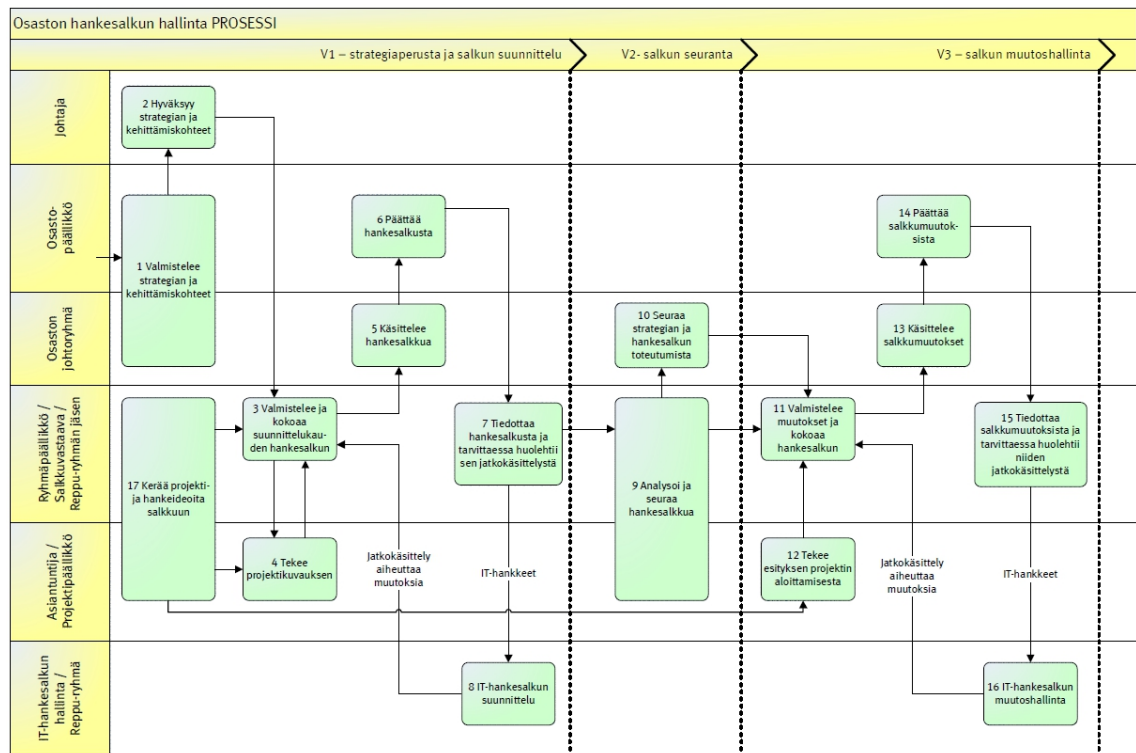


Figure 7. Kela department project portfolio management process

This process description is more in detail and is divided in three phases considering the planning, monitoring and change management phases. Similar verbal description than with the Kela program portfolio process exists in project handbooks chapter 6.3. As an addition, a column “Why” is included in the description table consisting of explanations for each stages procedure. The tasks are on more detailed level; however, no decision gates are encompassed in this process model either. Again, some tasks are extended over two swim lanes, but there are no duplicates in tasks. The Reppu-process is having its’ own swim lane in this process model containing two tasks which are more closely links to Reppu-process than actual process tasks.

The IT-project portfolio planning (Reppu-process) is described in more detailed way compared to the two other portfolio management processes. It is divided in three sections presented as different process descriptions considering the strategic and operative management of the portfolio and the change management. The strategic management is presented in figure 8.

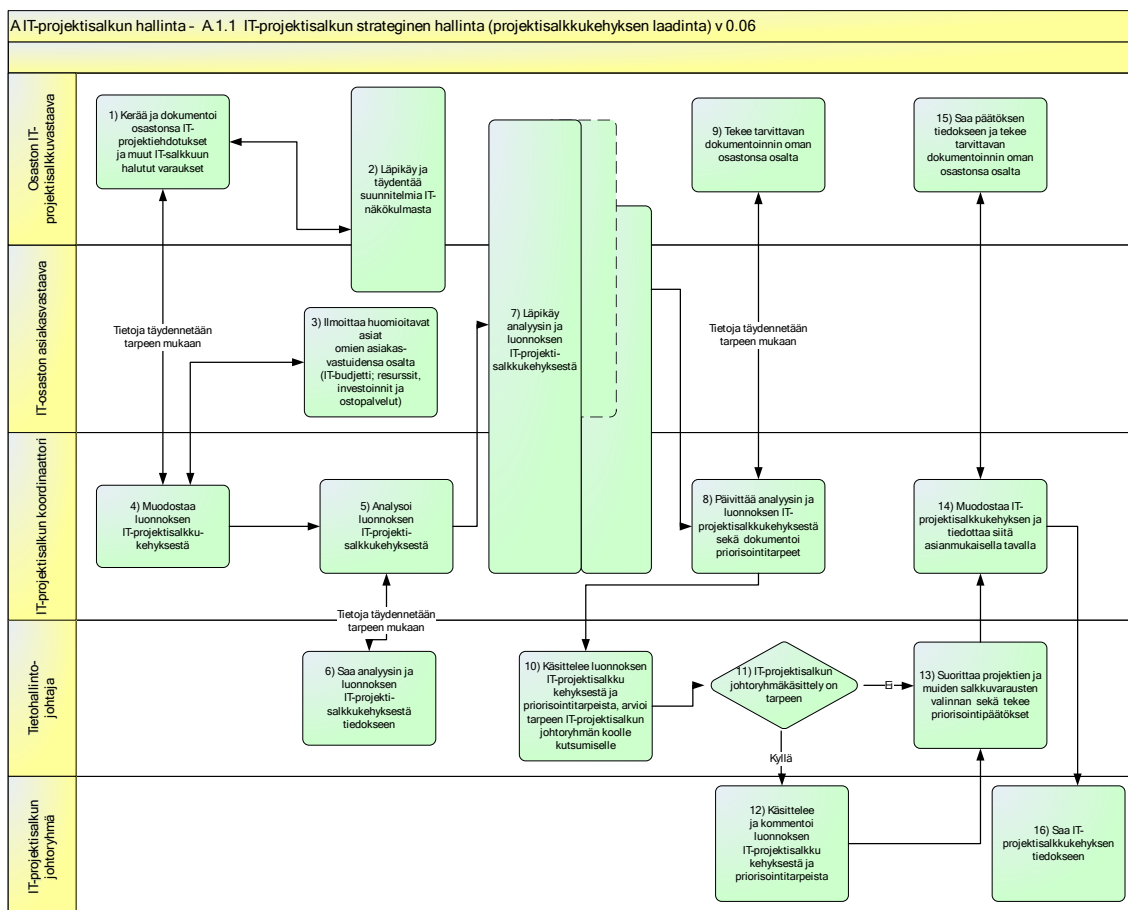


Figure 8. Kela IT-portfolio strategic planning

As a process description, it does not differ much from previous flowcharts, although the actual tasks are more descriptive and guiding. Also, one decision make gate is included. The operative portfolio management and change management process flowcharts are presented in figures 9 and 10.

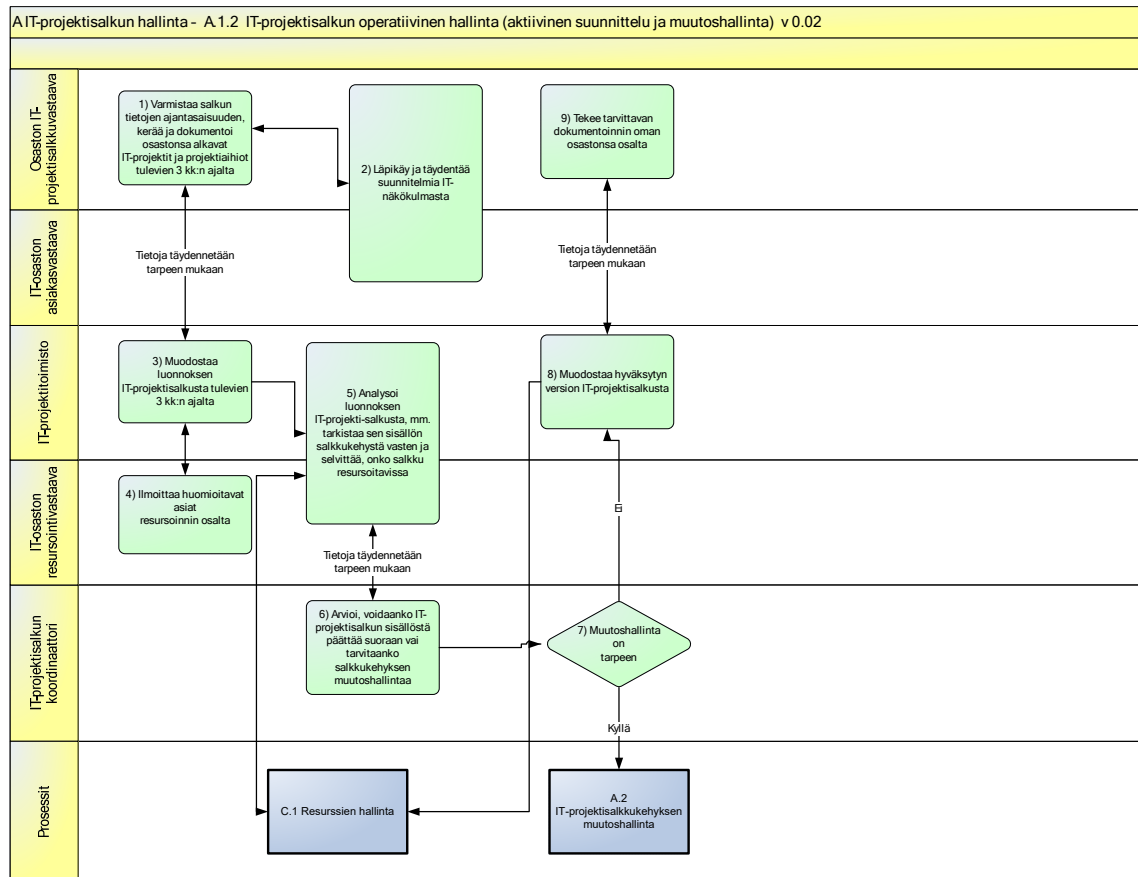


Figure 9. Kela IT-project portfolio operative management process

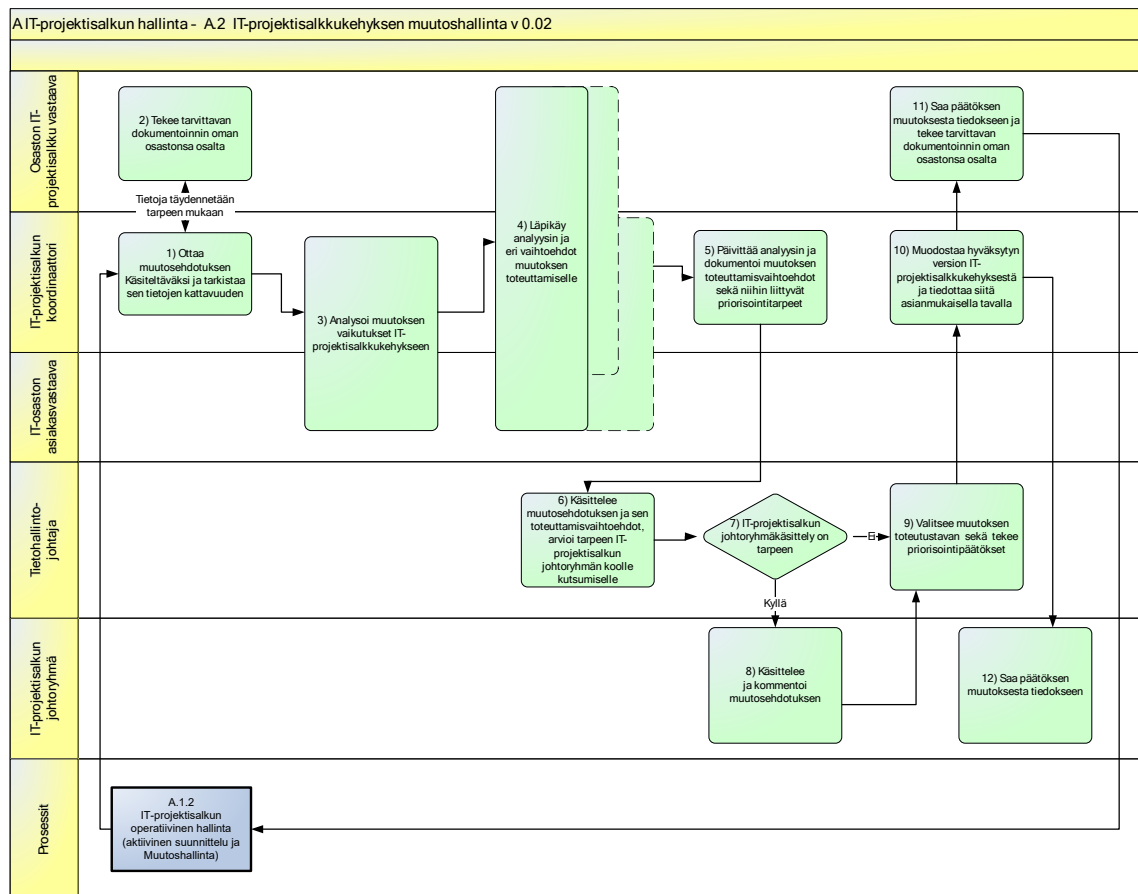


Figure 10. Kela IT-portfolio change management process

These IT-project portfolio management processes share the same process description characteristics than the Kela portfolio management processes otherwise, but there is again single decision making point included. The processes do not have clear output/input requirements and checkpoints and some tasks are spread on several process swim lanes. The actual task descriptions are more in detail in these presentations compared to Kela overall portfolio management descriptions. The project handbook were not updated using these IT-project portfolio process flowcharts, however, there were similar verbal descriptions of these processes as were on other portfolio management processes.

As a base for portfolio reporting, the monitoring/change management processes are not defined or described in a clearly recognisable way. However, a certain tradition in reporting can be identified. The “Kela-portfolio” is been reported on a half year basis for the Kela executive board. The content and the analysis methodology of Kela-portfolio is not systematically defined and the data used in the analysis is not structured as well as its

validity is not verified in organised way. The content of Kela-portfolio is primarily comprised of the strategically most important projects and programs. The selection of the strategically most important projects/programs is based on the executives' enlightenment instead of systematic utilisation of existing factual background information, which would have been verified by validity and measured by standards or by using some other uniform procedure. Strategy-base is confirmed annually during Q2, but there is no evidence on how the strategy would affect on portfolio composition in a well-defined, systematic way, but instead it is based again on executives' decision-making and preferences.

The relation between the projects included in the Kela-level portfolio monitoring and the projects in other portfolios does not appear in a clear way. In the process model the relation is not considered in any way, since there is two process models, which are not aligned and linked as processes. Since the connection and impact between the projects selected in the strategic Kela-portfolio and the other portfolios is not described and monitored, therefore it cannot be indicated, how the changes made in the Kela-portfolio and the other portfolios are affecting each other considering their interdependencies. This complicates the monitoring and understanding of the processes and makes it more challenging to get a confident picture of the project work executed in Kela. The IT-project portfolio view -based portfolio plan is been reported on quarterly basis for its steering group. Due to this monitoring process and the critical nature of the usage of the IT resources, the result of this control operation has under some conditions led to re-arrangements in project resourcing. However, no documentation how this change-process is been run periodically and what kind of reactions and results there have been exists.

The basis of Kela's project portfolio planning and selection process is the general budgeting process, which aims for a budget framework for each project portfolio. As a part of this budgeting process, every department is making their own performance agreement which should contain specified arguments for project selection based on Kela's executive board's strategy alignment decision. In practice, for every department this means processing their internal development needs according to the strategy alignment and making a proposal, what proceedings they should make during the next planning period. When analysed from project portfolio point of view, these performance agreements varied significantly compared to each other. Only two departments paid attention to concretise their development plan in some actual form of project work considering the strategy alignment given. However, this was made on a level of programs and no actual projects

or single concrete developing items were mentioned. Some mentions were made applying to overall project work and development projects as a methodology for achieving the goals, but they were not turned to concrete project ideas.

3.5 Summary of findings in portfolio planning process with a focus on decision making
As a conclusion of current state analysis stage, some fundamental observations were made. The concept of project portfolio is somehow used in Kela, although it is not understood always in a similar way. A certain drive for systematic portfolio management can be recognised according to interviews, but it has been challenging to put in practice. The portfolio planning process is to some extent fragmented and instead of one clearly defined and supervised process there are several separate actors, who are performing their part of the process rather individually and not in a transparent way. It is not meaningful to speak of one single and solid process but instead a collection of process-like actions and procedures which are somehow connected and still aiming to the same target to have the general budgeting and performance agreements to be made. This conclusion is derived from personal interviews and is supported by the IPMA Delta assessment findings of the lack of portfolio management methodology and framework. Also, the portfolio planning process and its' sub- or side-processes were not modelled and described in a comprehensive way as was noticed in the shortcoming of formal process documentation. These process descriptions did not have actual decision making gates defined and there were no description, what information should be used in decision making at which process stage. The main and only collective documentation concerning the portfolio planning and management was the project handbook, however, no one referred to it in the interviews and it was not recognised in the IPMA Delta assessment and therefore its' weight can be seen as diminutive.

Compared to the guided portfolio process instructions and manuals, the process showed up rather differently and in a simplified mode. The process was re-engineered for this study and is described in figure 11.

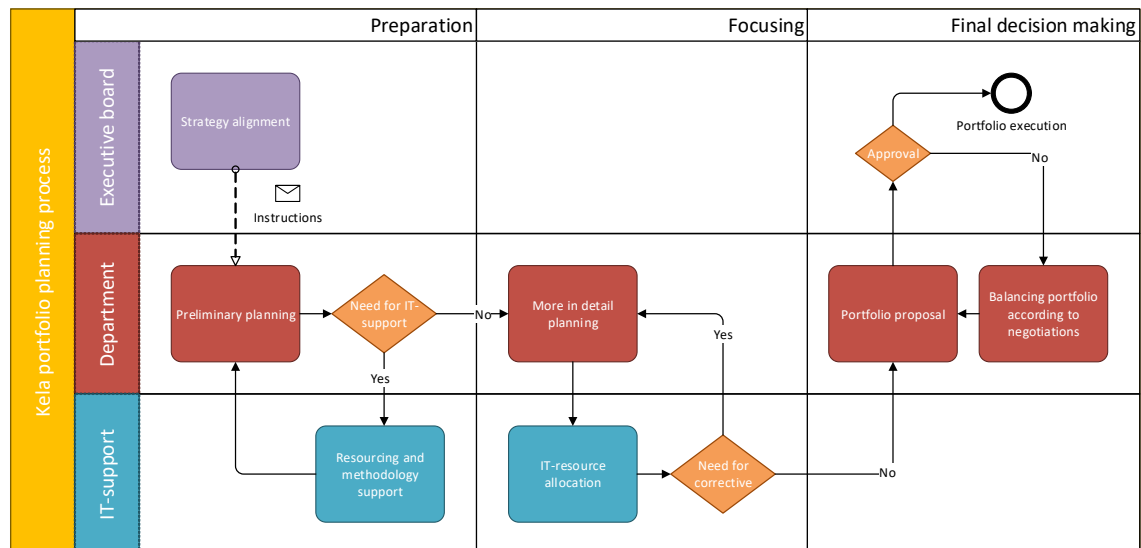


Figure 11. Re-engineered Kela portfolio planning process

Noticeable weaknesses in this process model are the instructions given for planning, as they were seen insufficient or they came rather late in process schedule. Also, the resourcing was seen problematic considering especially the usage of IT-resources. The final prioritising and decision making responsibility was also seen challenging.

The information used in the portfolio planning process is not consistent. It is collected from several different, non-aligned sources and the data validation is not executed in a uniform way or, in remarkably many cases, there is not any methodology for data validation. A major part of data validation is based on individual's ability to estimate the reliability of the data used in portfolio process. On the other hand, the data reliability is depending on the individuals, how motivated and precise he or she may be, e.g. when filling in the project data collection Excels.

The lack of strategy link in the portfolio planning process is clearly distinguishable. Most of the interviewees did not even mention the word "strategy" during interview and those, who mentioned, used it mainly in a context where they told about the lack of strategy linkage in the portfolio planning process. This is particularly important observation due to the nature of portfolio management as a management system, because one of its main foundations is how the strategy shows up in the organisation's project work and how it can be put in practice via projects and by that way also be measured. According to Kela's strategy, there are 3 main strategic fields of which each one is having focused strategic goals defined. However, these goals did not show up in the interviewees' com-

mentary in such way, which would link the strategy actions and the project portfolio management. This lack of strategy linkage was also referred in the IPMA Delta assessment in a context how projects should pay back the invested money considering their value to the strategy implementation. The performance agreements made by departments should contain strategy-thinking as a base for development ideas, which should turn into executable projects. This was however rather weakly found out in documentary except two departments' agreements, which contained strategy alignment based program planning. The performance agreements were compiled with remarkable variation, when compared to each other and their contents were not uniformly defined.

The absences in strategy management and processes leads also to weak objectivity in project selection as observed in interview commentary, where several statements were given considering the easy acceptance of almost every project idea. The resource management process was covered on many interview commentary as a problematic field especially from the point of view, how the IT-resources could be ensured and allocated in a realistic and reasonable way. This can be seen in a context, where there is a lack of focus in portfolio management. Thus, there are relatively large number of projects executed simultaneously altogether with a shortcoming of critical resources. It will cause a diminutive average allocation per resource per project, which in turn leads to fragmented and non-effective resourcing. The resourcing was planned using top-level, coarse information and based on a department personnel's FTE-framework instead of a project-level planning. According to the documentary on general budgeting process and supported by the interviews, the division of portfolios is based on organisational hierarchy, where each single department is negotiating its' own budget plan, which can lead to partial optimisation instead of thinking the whole organisations collective development need from strategy point of view. It was also seen as a complicating factor for project prioritising, since a single department may have a project or several of them in the whole organisation's project pipeline, which is only important due to that department's inner needs of prioritisation and it is not aligned with the organisation's other project work. The portfolio management in Kela is rather clearly focused on resource management due to resource intensive project work and the other approaches to the portfolio management like budget and risk control will exist only in small amount or not at all. This came up especially in the interviews, since portfolio planning was mostly seen through yearly FTE framework of departments instead of budget or ROI based planning.

4 Existing knowledge on portfolio management

4.1 Introduction

In this theory chapter, project portfolio management is been discussed in the context of contemporary portfolio management theory. Because of the objective of this thesis is focused on a public-sector organisation, the theory emphasis will be focused more on the specific portfolio management needs of such organisation, if possible. Due to the nature of portfolio management theory, most of the existing writings are focused on private sector and business companies and organisations, which makes it essential to apply the overall theory to make it more applicable on a public-sector organisation.

A specific theoretical focus will be targeted in project portfolio information, how portfolio information should be used in decision making and how to define integrity and validity for portfolio data. This information utilisation will be examined in the context of knowledge management theory, how the usage of validated quality information will enhance and support an organisation's decision making process.

4.2 Project portfolio management

Taken aside from the overall portfolio theory, the project portfolio management (PPM) is focusing on projects as investments and how their value and benefits can be maximised (Jenner 2010: 3). Projects and programmes are different by their nature when compared with pure financial investments, where the quantified data of traded values and other similar items of portfolio value formation can be utilised in the context of classic portfolio theory according to Markowitz (Markowitz 1952: 77-91). Instead, there is a group of other value factors, which are non-financial and subjective and will call for decision making driven by both managerial judgement and data-based analysis (Jenner 2010: 3).

Although a single project may be consequence of a great variety of (business) development needs from different business areas, it is always important to understand that projects are devoted part of an organisation's business and operations' development and also a major tool for putting the strategy in practice (Rajegopal et al. 2007: 3). An organisation's strategy development will be playing a critical role if the development project portfolio selected is considered to promote the business objectives of the organisation (Archer and Ghasemzadeh 1999: 213). Project portfolio management can be defined as a series of business operations put in practice in a context, where the target is to clarify the connection between the project execution and the other business operations. In a nutshell, that means aligning the project work done in an organisation with its strategy,

resources and overall executive management as well as structuring and defining processes for project portfolio governance (Levine 2005: 1 - 4). A project portfolio can be specified as a group of projects that are carried out under the sponsorship and/or management of an organisation. This is definition has an addition, where each of these projects must compete of limited resources since an organisation does not usually have them enough to execute all the planned project work in demand. (Archer and Ghasemzadeh 1999: 208)

Another interpretation of the purpose of project portfolio management is to coordinate and control several projects sharing the same strategic goals, which includes also a competition for the usage of same resources. This causes a need to prioritise the projects by managers so they can ensure the achievement of strategic benefits pursued by the projects. (Cooper and Edgett 1997: 16 - 28) Considering the targeted benefits achieved by well organised project portfolio management, the process should have a strategic criterion for project selection to choose only the projects which are valuable and well-focused. In other words, it is a process and methodology for *choosing and doing the right projects* which is considered as the base principle of project portfolio management. (Cooper et al. 2001: 5) To strengthen the connection between an organisation's strategy and its impact on project work executed inside the organisation, it is essential to understand that different projects have different strategic purpose. This will lead in demand of forming different project types, where the projects of same type will have similar strategic importance as well as they will require specific management approach of their own. (Arto and Dietrich 2007: 2)

Besides the strategic role of a project type, it will also help to categorise projects by others values such as how much a project will make a change on an existing product and/or process. A development project typing by Wheelwright and Clark divides a company's projects in three fundamental classes by how much improvement they are gaining into products or processes. These classes include *breakthrough projects* (new core product/process), *platform projects* (major improvements on current products/processes) and *derivative projects* (major improvements on current products/processes). The model includes also a project type for research and development as a precursor for commercial development and a project type for alliances and partnerships. A development project type mapping chart by is presented in figure 12. (Wheelwright and Clark 1992)

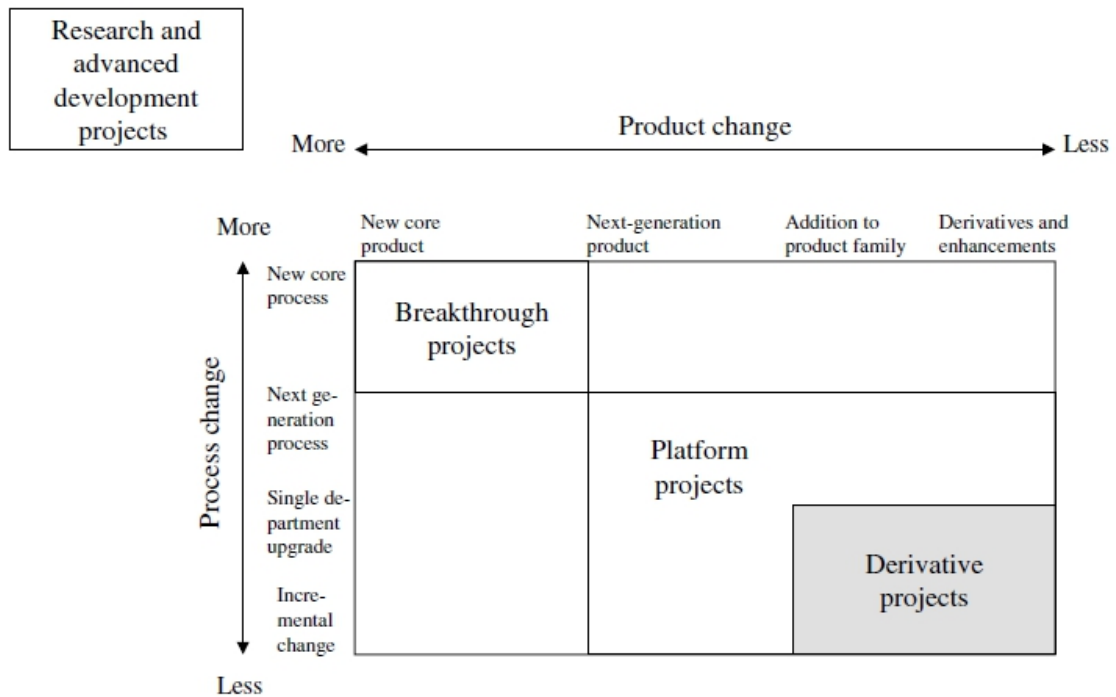


Figure 12. Development project type mapping (Wheelwright and Clark 1992)

If an organisation is operating in a context where an execution of a remarkable number of IT-related projects is needed, also an IT portfolio management -type approach is relevant for arranging its project work and project portfolio management. The IT portfolio and the project portfolio management both share the same base elements like project registry, strategic objectives, priority, and categories and the overall managing and monitoring of a portfolio (Rajegopal et al. 2007: 8 - 9).

A specific portfolio management process is implemented for project selection, resource allocation and other portfolio management procedures. It is considered as a rational decision making process as many successful organisations has shown with their systematic approach to portfolio management, decision making and resource allocation (Martinsuo 2013: 795-796). However, the process is not a single independent process of its own, since there is typically some overlapping with several other decision-making processes and procedures connected to each other within an organisation. These include e.g. the overall strategy decision making and resource management processes (Cooper et al. 2001: 4).

Project portfolios are considered as frameworks in decision making for management (Blomquist and Müller, 2006: 3). Therefore, it is also essential for an organisation to have

a portfolio management methodology, which is adapted to the organisation's needs, since the main method dominates the decision-making process although many organisations use a mix of methods. According to a study, the most popular portfolio management methods include (several different types of) *financial methods*, *business strategy*, *bubble diagrams/portfolio map*, *scoring models* and *check lists* among several methods classified as "other method". (Cooper et al. 2001: 13-14)

Project portfolio selection can be defined as a cyclic procedure, where individual projects are been selected to named portfolios. These projects include the proposed new items as well as the ones under current execution. Altogether these selected projects must meet the standards of organisation's objectives and resource constraints. In project portfolio composing more than 100 techniques can be differentiated. However, three main stages can be determined, which include strategic considerations, individual project evaluation and portfolio selection. When considering the portfolio composition techniques, in the first stage the strategic focus and overall budget allocation are used and in the second phase the evaluation of a single project independently comes up. The third phase is about project data and resource constraint based re-examination considering the portfolio projects' interactions and interdependencies with other projects under portfolio selection. (Archer and Ghasemzadeh 1999: 208) The portfolio management process can also be described as a bunch of procedures which include management of the portfolio entry stage, managing the stage gate process of portfolio trimming funnel, organising periodic portfolio reviews and reporting progress on a dashboard based analysis. The entry stage is considered as a critical one, since no portfolio methodology will be efficient if the entry process is not strictly controlled and insufficient ideas get through or there are a way too many project ideas coming thorough. (Jenner 2010: 94)

For simplification of the portfolio selection process, it is recommended to divide the process into differentiated stages to assist decision makers to move step-by-step to form a well-considered composition of the portfolio. For decision making in selection, gateway-based screening process is needed for choosing the most appropriate projects among many candidates to eliminate clearly deficient projects from portfolio. These eliminated projects may include such as the ones which do not match the strategy alignment, do not have sufficient information for decision making, or do not meet the marginal requirements such as minimum internal rate of return. This screening criteria should be carefully specified to avoid too many projects going through this gateway to the actual portfolio selection stage. Also, the project interactions should be taken in account as there may

be direct dependencies or resource competition considered between projects. The project resource requirements are usually very time-dependent causing a situation where all the projects cannot start at the same time, which should be taken into consideration in project scheduling and used portfolio selection technique. The role of the chosen selection technique may often be more like supportive for the decision making instead of an actual decision making system, since the decision makers may need to have an active role in adjusting the final portfolio selection results instead of leaning strictly on a model based selection system. (Archer and Ghasemzadeh 1999: 209-210)

The Information collection for portfolio selection is important to start at the very beginning of the development project ideation stage. Lack of background information on the early planning stage may cause not only wrong product or service specifications, but also makes it more difficult to choose the right projects. The preliminary homework before the project is entering the actual portfolio selection or execution stage is critical to success. This front end of project information gathering process is presented in the figure 12.

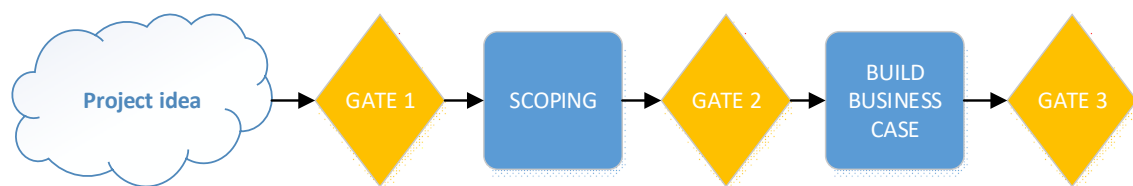


Figure 13. The front end of the process. Cooper et al. 2001

In this selection process predecessor, first there is selection of ideas, which continue in scoping-stage, where usually a short low-cost preliminary (market) assessment is done for the project. The passing project candidates will then continue on business case building stage, where more in-depth analysis of the project candidate will be proceeded. This analysis may include such analytic operations as user needs/wants study, competitive analysis, market analysis, technical assessment, concept testing and financial/business analysis. As a result of the analysis procedure, a plan of actions will be made to decide the viability of the project. (Cooper et al. 2001: 210-211)

To consider the project's travel from idea to an executable item, an integrated framework for project portfolio selection by Archer and Ghasemzadeh (1999: 211) is described in figure 13 (Archer and Ghasemzadeh 1999: 211). It includes integration of different selection process stages and involves the participation of decision maker committees. The idea of the model is to decompose the process into flexible and logical series of activities

and, as an idea of a framework, not to tie the process in a one single formal model and technique.

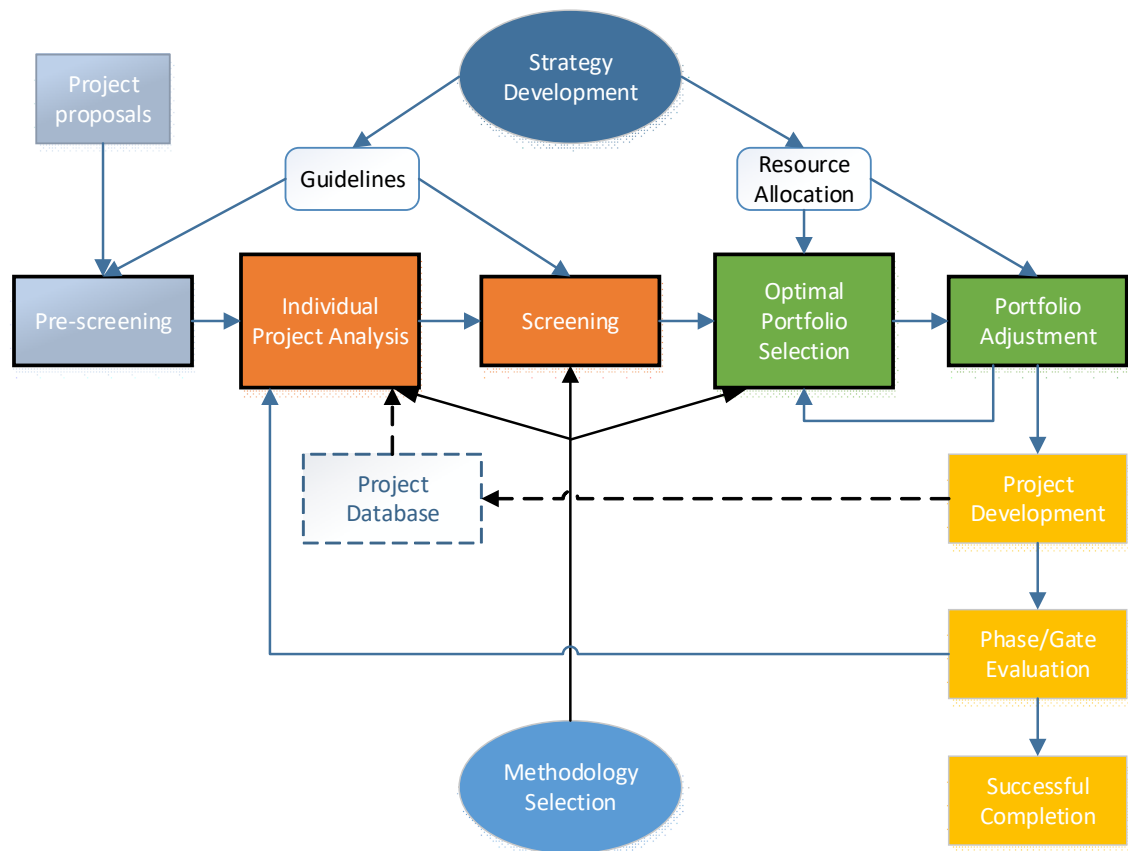


Figure 14. A framework for Project Portfolio Selection (Archer and Ghasemzadeh 1999)

The idea of the framework is to partition the process in series of discrete phases starting from strategy progress and ending up in a well composed project portfolio. The main steps in the process are represented in the middle line of the figure with the stronger outlined rectangles. The ovals are representing procedures taking their part before the actual process. Also, the post-process stages are considered, since they may have an important effect on portfolio planning data generation and project evaluation during the composing process and therefore also affect also the portfolio selection. However, the result of the whole process described in the framework should be an optimised project portfolio. The main stages in the process according to Archer and Ghasemzadeh 1999 are represented in the following table 1:

Stage	Purpose
Pre-Screening	To ensure every project considered to be part of portfolio will fit the portfolio strategy alignment. Uses manually applied guidelines from strategy development stage and also includes a business case based feasibility evaluation and harsh level estimates of project evaluation data. Mandatory projects will be identified at this stage.
Individual Project Analysis	The data content supporting the next stage decision making is been calculated separately for each project. It is based on feasibility study estimates and/or project history database. The output from this stage will be a common set of project data parameter estimates for each project.
Screening	The screening step of the process is for filtering and eliminating the projects, which do not meet the pre-set criteria, except the ones, which are mandatory or supporting other projects to be considered.
Optimal Portfolio Selection	To consider the interactions between various projects. Detecting the value and benefit of the projects determined from the data collected during previous stages based on selected selection model and considering the resource limitations and other constraints.
Portfolio Adjustment	To allow the user to make fine-tuning independent of the used selection model. If the changes are causing a major impact on the portfolio, the process will be recycled to the selection stage.

Table 1. The explanations of the portfolio selection framework stages

The pre-process stage is responsible for high-level guidance for portfolio selection process, which consider the strategy alignment for the organisation's development operations and project work as well as the methodology selection for the actual portfolio selection stage. The methodology selection will not be a repeatable part of the process, if the one used is matching well enough to organisation's needs. (Archer and Ghasemzadeh 1999: 211-213)

Alongside with single portfolio selection process it is essential to understand the need for different type of portfolios for different project types. This will not only help to organise and clarify an organisation's project work but also give a reasonable and aligned basis for monitoring the projects that have the same strategic goals. As discussed earlier, it is essential to differentiate the mandatory projects at the early stage of portfolio selection to ensure their resources in advance. Also, prioritised development projects should be categorised in different portfolios by their type for uniform monitoring, since different project types have their unique characteristics and information, and therefore should also

have distinctive meters for monitoring. A universal model for portfolio categories by Mierlitz / Gartner is presented in figure 15. (Mierlitz 2015: 7)

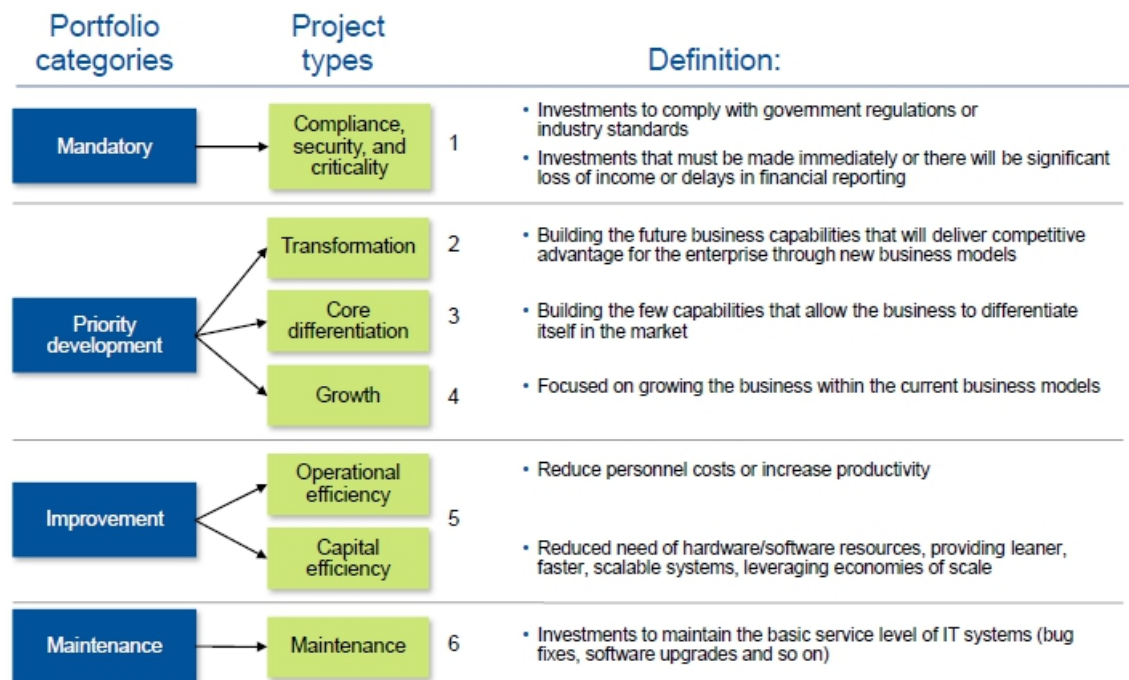


Figure 15. Gartner model for portfolio categories (Mierlitz 2015)

4.3 Knowledge management in the context of portfolio planning

A one common approach of knowledge-based management is to define it as bunch of procedures which are used to refine and utilise the information usage in the management processes of an organisation. In this context, the information is owned and produced by that organisation itself and the knowledge-based management is separated from knowledge management, which is a concept concerning more of organisational learning, information creation process and managing the information in databases and -flows. Another division of knowledge-based management sets it in four different categories: organisational learning, knowledge management, managing the intellectual capital and the management of business information. (Laihonen & al. 2013: 32) Considering the nature of project portfolio planning and management processes, as they can be presented as a sequence of different decision making points, it is relevant to examine the planning process from knowledge management point of view. This will raise up the concept of portfolio information usage and the quality of the information, since selecting a project portfolio is a strategic decision, where the information relevance and reliability is playing a key role in decision making. Also, it is crucial to use the right information in right decision

making situation for portfolio evaluation, since unnecessary information will overload the decision makers and therefore disturb and dilute the decision under consideration. (Archer and Ghasemzadeh 1999: 211)

The intellectual capital is a concept belonging to strategic management and therefore used by an organisation's executives, steering committees and executive boards. It is also an appropriate concept to be used among public sector organisations, since they are by their nature more concerned in non-economical and non-profit way on thinking and acting. This acts also as a linkage to project portfolio management, since it is also considered as a tool and method for strategic management, as referred in chapter 4.2. (Laihonen et al 2013: 40) The intellectual capital is often defined as collection of things which can be used to explain the difference between a company's market value and book value (Relich 2014: 202). A portfolio management process and PPM system is considered here as supportive systems for information storing and knowledge sharing and therefore they will have a role as a part of an organisation's intellectual capital management in the context of project and portfolio management? (Laihonen et al 2013: 35) Intellectual capital should be approached systematically within an organisation and develop a structured model, which consists of such things like the organisation's:

- Values and culture
- Work atmosphere
- Processes and systems
- Documented information
- Immaterial rights.

This structured intellectual capital is in an important role, because it is not dependent on single humans, but the information is usually stored e.g. in databases or other systems and can therefore be used by many different people simultaneously (Laihonen et al 2013: 37 - 38).

Since project portfolio management should be considered and organised as a process, it is included in the category of organisation's structured intellectual capital. In this thesis, the portfolio information will be not only covered as information included in processes, systems and documentation, but also information tied with organisations values and culture, since e.g. portfolio selection stage will most often need also some human negotiations instead of pure calculated data for decision making.

In an organisation's portfolio management decision making process the validity and actuality of information supporting the decision-making is critical. The importance of real-time information, especially when managing enterprise level complex project portfolio environments, will increase remarkably, when an organisation's goal is to augment its decision making on a more reliable level. The ability to recognise and react fast on change requests in situations like budget overrun, schedule delays, government regulation impacts and market and business environment transitions will put a pressure on reliability and availability of the information corroborating the decision-making. (Rajegopal & al 2007: 50 - 51)

The concept of intellectual capital is also important in a context, where one needs to concretize the organisation's most important resources related to its knowledge and which the critical success factors are also. Managing the intellectual capital means those procedures, processes and models which are used to make an impact on how an organisation's intellectual resources are being developed (Laihonen et al 2013: 42). In project and portfolio management this concept formulates a linkage with portfolio planning and a single project resourcing, since the success of a portfolio management is driven by single projects' success which again is a result of right resourcing. Doing right decisions and successful management in both project and portfolio management will lean strongly on well managed intellectual capital, as discussed in chapter 4.2.

As the knowledge management is based in verified information, the concept of information system is inevitable for utilisation of data gathered from an organisation's operational, internal business systems as well as external data sources. An information system pyramid is represented in figure 16, where IT-infrastructure is a supportive basement for data gathering from different sources. The actual information system will then utilise existing business information sources which may include typical applications like sales order system and this way it will become a part of a decision-making system. (Leek, C. 1997: 86) The role of a PPM system can be seen as a decision support system in this context.

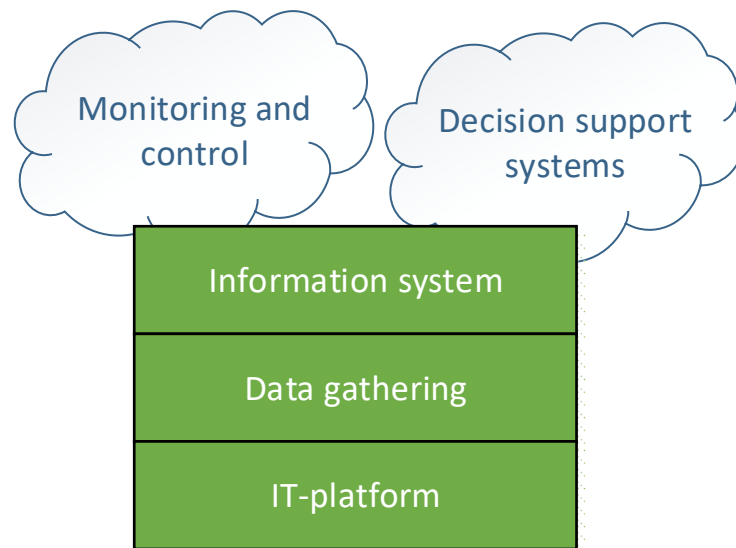


Figure 16. The information system pyramid. (Leek, C. 1997: 87)

Managers, directors and executives who are responsible for an organisation's decision making, will need an accurate picture of the organisation's current status. This picture will be only on such level of accuracy as the precision of available information used and interpreted by management. The interpretation will be based on the former existing experience of the management. In these kinds of situations relevant and timely information may help the management to recognise and analyse the alternative solutions and directions when making decisions. (Laihonen et al 2013: 44) Project information is usually spread around between organisation's different departments and units. That increases the difficulty of decision making of where to invest the limited resources, which projects should be started and how to prioritise and balance the projects in portfolios. (Rajegopal et al. 2007: 4)

4.4 Portfolio decision making and information integrity

As discussed in 4.2, the portfolio management process is a tool for selecting the right projects and thereafter monitor them to ensure their success. The selection process includes several decision-making points, where decision making support will be needed to verify the decisions made. From decision making point of view, there are several challenges associated with the portfolio selection process. Those include such as multiple and conflicting objectives, the qualitative nature of some objectives, uncertainty and risk factors affecting projects, the balancing of portfolio, the interdependency of the projects and the actual number of portfolios may be high. Also, the resource constraints like finance, employees and facilities raise up hurdles for successful project portfolio planning. (Ghasemzadeh and Archer 2000: 73) When considering the knowledge management

approach as a supporting tool in project portfolio decision making, it is essential to understand the carefully defined information requirements as a critical factor in portfolio decision support system implementation (Houdeshel and Watson 1987: 139).

The classic approach to project portfolio management considers it as a rational decision making process tool, where projects exist for fulfilling the organisation's strategy and compete for the same resources which are well known and controlled by the organisation itself. However, this can be disputed, since portfolio selection decision making appears to be less rational and involved with some organisational politics and need for negotiating and learning process in decision making. (Martinsuo 2013: 796-797) This approach is verified also by Blichfeld and Eskerod, as they point out how contemporary project portfolio management methodologies rely in the main on rational decision making theory. The approach is based on utilisation of certain project evaluation criteria supporting the organisation's strategic and operational objectives. The criteria will be used to evaluate projects on the basis how likely certain items as project priority or project business plan (project proposal) will meet the standards of the criteria. On the contrary, on certain situations there should also be a more freeform way to select (some) projects into portfolio instead of using a formal process. Also, organisations do not act in such practical and formal way in the real world. (Blichfeldt and Eskerod 2007: 358) The nature of decision making is often thought by executives like a one special event in a time on which something special is happening. Instead, the decision making is more likely a process connected with politics, single person's history and ideology and an organisation's cultural history. This all is put together by the power plays inside an organisation. A common execution of it can be referred as an advocacy process, where everyone is arguing on the behalf of their own statement and making a confrontational situation where at least two competitive rivals standing each other behind their statements exists. As an alternative for decision making process, an inquiry method can be used. This means recognising the different options together with people and forming the best solution together with participants. (Garvin and Roberto 2005: 159 - 160)

However, to ensure the right project composition in portfolio planning, some systematic method for project selection is needed. By using a formal process as a base in decision making, the decisions will be based more on facts and objective criteria (Cooper et al. 2001: 5). When the portfolio management process is led by clear, formal rules and guiding principles to support decision making, it will also enhance data integrity and allow

more proficient comparison of different type projects. (Teller et al. 2012: 599) As discussed earlier, the project portfolio management's basic nature consists of connecting the right information with decision making to select the right projects (Levine 2005: 4). Therefore, the reliability of the portfolio data used is critical for the portfolio planning process in each decision-making gateway. If the information fed into project portfolio is imprecise or false, the result is a portfolio on which one cannot trustfully base exact and right decisions. Therefore, the concept of data integrity in project portfolio information collection and decision making is crucial. As noticed, the problem is not so often the methodology or model used (e.g. the financial methodology), but the low quality data and forecasting leads into poor performance on portfolios. (Cooper et al. 2001: 207)

When starting PPM, at first organisations often rely on their existing tools such as Excel spreadsheets, different databases and other detached desktop applications. Over time this can cause risks when an organisation's project work expands or differentiates and the limitations of these tools becomes realised. When the portfolio information is spread around many different sources and maintained manually, it becomes difficult to achieve and it is not constant as there is no single source of data of which content is maintained under uniform rules and processes. This causes a situation, where different project portfolio process participants and stakeholders use different data sources, which leads into non-transparent cross-portfolio data utilisation and non-consistent data as a ground for decision making. Same data is often duplicated, used in different contexts and organisation silos and maintained incoherently. The manual nature of data sustainability and the tools and processes causes major data integrity risks for portfolio management decision making reliability. (Perry 2011: 56) The users participating in portfolio selection stage should have a drill-down capability to access the data being used and the decisions being made during the selection process to ensure the reliability of the data. Also, the amount of data used in decision making should be limited to the actual data needed in each stage of the process, since unneeded data may overload users. (Archer and Ghasemzadeh 1999: 208)

Cooper et al. classifies the project information types for portfolio planning in four different categories. First category includes information considering the marketing, revenue and pricing, as these are critical success factors for new product launches and therefore this information is a major factor for project portfolio selection in product production businesses. The second category is considering the manufacturing or operations and how they are related with the costs. It is based on estimates on project profitability, as the

manufacturing or operation costs acts as important input for estimating the project and its' results lifecycle costs and benefits earned. The actual information types listed in this category are manufacturing, operating or delivering costs and equipment and capital costs. The third information category stands for project success probability estimating and deals with such problematics as a project's probability of technical and commercial success and answering questions like "can we do it" and "will it pay pack". The fourth category is about estimating resource requirements. This is considered as a key information category for many portfolio models as it is used for background information base for e.g. financial, bubble diagram and value maximisation models. In the portfolio planning stage, all these models are examining the resources spent per project and the information used for decision making should support accurate resource estimating. The information needed on resources will include such as development, testing, upfront homework and commercialisation resources and the expressions of this information can be e.g. time (elapsed or calendar), person days (or hours/FTE) and actual amount of money needed for project execution. However, these information usage models usually suffer from inaccuracy since project estimates are made in the early planning or starting stage of a project, where the information reliability is not on a high level. (Cooper et al. 2001: 208-209) At each decision-making stage it is crucial to recognise the fact that a piece of information will have specific value only if it improves the quality of the actual decision. Also, the background information collected for each decision should contain only the information the decision makers will need to make an effective decision. (Cooper 2008: 230)

When analysing the information needs for decision making in project selection stage, the strategy determination and overall budget allocation of the organisation must be done before considering the individual projects. Therefore, the strategy alignment for the direction of the project based development operations and the guidelines attached should be defined at the first stage. Each project should be selected into portfolio by using common measures which can be calculated separately. Since the selection process and portfolio adjustments are repeatable procedures, they need to be evaluated using same measures. As the on-going projects resources interact with the new projects' schedules and resources requirements, a change management process using comparable criteria in a form of major milestones or gateways for portfolio changes is needed. (Archer and Ghasemzadeh 1999: 208-209)

4.5 Conceptual framework

To summarise this thesis' theoretical approach, a specific conceptual framework is been introduced in this chapter. This framework will collect the key concepts and findings from theory for further refinement to be utilised for analysing the business problem and helping to produce a solution as planned in the original goal setting.

As stated and explained earlier in the chapter 4, project portfolio planning should be defined as a *process*, which consists of different stages starting from *strategy definition* as an input gate for planning. As the actual planning *process* moves on, more and more detailed information will be gathered to form a portfolio proposal. A project portfolio will be *composed* under certain, well defined *methodology*. Validated *portfolio information* will be guiding the decision making whenever it will need fact based information. The nature of the information needed will be more focused on details as the planning process goes on. As a top-level compiling concept, knowledge management will be on the background to ensure the right and valid information is been used in a right decision making stage. A graphic model for this framework is presented in figure 17.

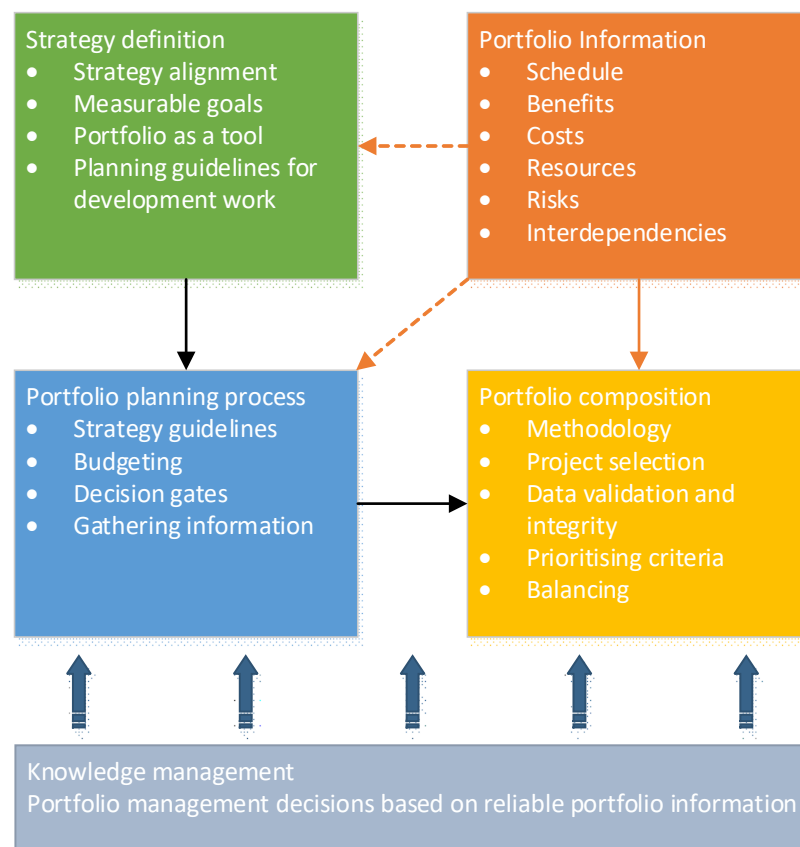


Figure 17. Conceptual framework for information usage in portfolio planning process

To examine the framework in a more close-up view, first there is organisation's strategy definition, which will provide the goals and guidelines for strategic alignment of development operations. In this model, the project portfolio will offer a tool and management methodology for achieving these goals. As derived from theory, a well-defined process is needed for forming and managing a portfolio for strategy implementation. It will contain tasks and decision making points to be executed in certain order and schedule to ensure results. Also, during the process execution the essential information is been gathered to help in objective decision making. As the process moves on, the need for certain information will become more precise. At the portfolio composition stage, projects are prioritised against certain in advance decided criteria by using selected methodology. At this stage, the quality of the information is invaluable, since non-valid data will cause immediate bias in portfolio plan. Finally, the portfolio information is connected in various ways to this entirety, since its role in strategy definition will be more like giving feedback of current situation, but as the process goes on, its significance is emphasised towards the end of process and the actual portfolio composition stage, where the precision of the data used should be on an adequate level. All these key parameters and functions used in a portfolio planning process should be viewed in a context of knowledge management, since the decision making should be fact based and justifiable.

In the next section 5 this conceptual framework will be utilised as a basis, on which the proposal for a project portfolio data model enhancement and validation will be based.

5 Building a proposal for a portfolio planning data toolkit

5.1 Background of proposal: Project portfolio information focused approach on portfolio planning

As presented in current state analysis (section 3), three main aspects of development came out in discussions. These aspects consist of weak strategy visibility in project work, elusive portfolio planning process(es) and diffused and loosely defined project portfolio information. In theory analysis (section 4), the strategy implementation by using portfolios as a management tool were evidenced as a main function for a project portfolio according to several references. Also, the well-defined portfolio management process and formal methodology were an ensuring background for objective and fact-based decision making in portfolio planning (Cooper et al 1999). Finally, in a knowledge-based management context, the integrity, validity and reliability of the data used for fact-based decision making is crucial for right and objective decisions when managing project portfolios.

For this thesis' solution proposal, some restrictions have to be considered, when building the proposal. Since the portfolio planning process was incompletely defined and it could not be improved to appropriate level during this thesis' research period, it was challenging to link the exact portfolio information to actual decision making gateways. Also, the idea of project portfolios derived from strategy for using strategic buckets as portfolio methodology must be left on a level of a concept. This was mainly due to organisational change program run at the same time, which led into a situation where there were no development for portfolio division structure, and Kela was keeping the original portfolio structure based on organisational units. Therefore, first part of the proposal will cover the strategy implementation, planning process and prioritising more as a proof-of-concept - kind of model and the second part will consider the actual portfolio information concept and its' integrity and validation definitions.

Derived from the conceptual framework, the solution will be presented in sections of strategy based portfolio division, the planning process and prioritising, which all are discussed in the context of project data definition and validation. Due to the approach of knowledge management in this thesis, the focus will be in the data definition and validation. The usage of a PPM system as a fundamental project master database is seen here as an information system in the context presented in chapter 4.3 (Leek 1997). The PPM system will be used here for existing project information utilisation and therefore applied as a part of decision making system. The necessity of a comprehensive and systematic project planning from the very beginning of the project lifecycle is emphasised when a project and portfolio management system is been used, since it forces to use project data in a formal unified mode. The information produced in project planning will consist of such components like work breakdown structure, resource estimates, cost estimates, well defined goals and requirements, and risk analysis.

5.2 Strategy based project portfolio structure

In this chapter, a model for a strategy-based project portfolio division will be introduced. The approach used here is based on project information type of which sets the project into a selected portfolio according to the project's strategic target and is therefore considered as a ground information type for a project. For portfolio selection and prioritising methodology this section will form the strategic buckets used in project selection, prioritising and portfolio balancing. The solution will also lead the Kela's existing portfolio-thinking away from organisation-structure based portfolio division, which can be considered weakly applicable according to best practises.

Kela's strategy is divided into 3 different main categories (strategy focuses), which are (freeform translation):

"Customer experience improvement, trust strengthening and improving the customer processes quality and efficiency"

Projects included in this category should answer positively in some of following strategic goals: are they producing positive solutions for customers' different life situations, do they strengthen customer collaboration in developing services and products, are they developing customer-oriented services and -channels and does the project improve the Kela personnel's know-how in social security improvement.

"To become a top-level workplace of collaboration, improvement and well-being"

Projects included in this category should answer positively in some of following strategic goals: do they improve such leadership, which will maintain innovativeness, continuous improving and will encourage the entire personnel to take part in improvement, do they enhance the improvement of good leadership and management services for personnel and do they strengthen cross-organisational goals' value, when evaluating and rewarding the organisation's performance.

"Kela's operations in implementing and developing the social security are socially effective and socially, ecologically and economically sustainable"

Projects included in this category should answer positively in some of following strategic goals: do they improve performance by renewing functions and strengthen co-operation with stakeholders, do they ensure uniform and high-quality, customer-oriented service, do they renew online-services towards full-service, easy-to-use and clear service channel, do they enhance focusing the resource allocation with strategic goals, do they improve productivity and economic efficiency by improving processes and structures and do they gain long-term economic planning.

Derived from this three-part strategy field division, analogous portfolio division should be implemented and completed with other portfolios needed. In this portfolio division schema, portfolios are needed also for two different kind of mandatory projects: legal

based and operationally mandatory projects, and also for non-mandatory operational projects. This portfolio division structure is presented in figure 18.

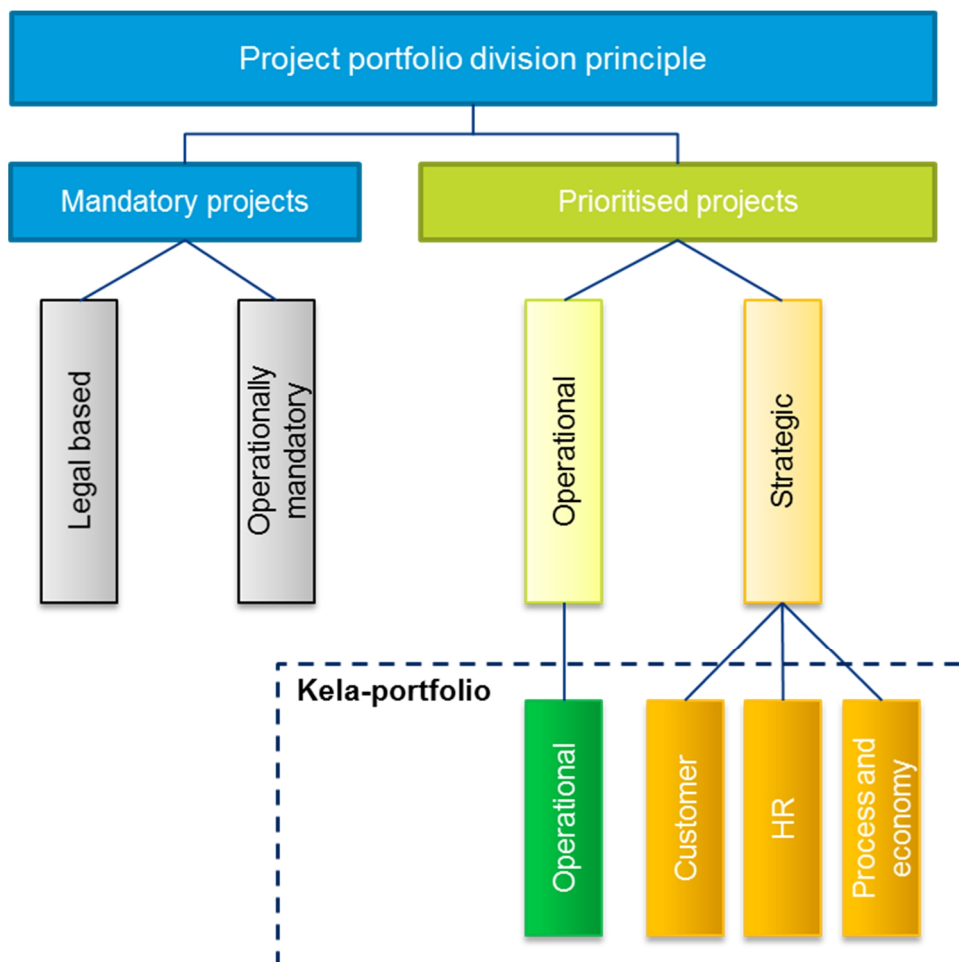


Figure 18. Kela strategy-oriented portfolio-division structure

In this portfolio division model, the projects are first divided in buckets of mandatory and non-mandatory projects. The mandatory projects will be forming two different portfolios considering the legal based projects in one and operationally mandatory projects in other. This division is important since a great majority of Kela's project work is legally regulated due to the legislation decreed on Finnish social security. The operationally mandatory portfolio consists of projects for e.g. IT-systems, which has come to the end of their life-cycle or has their contract period ending and therefore they must be renewed to ensure the continuity of Kela's operations.

The non-mandatory projects will be divided in sections of strategic and operational projects, which will have analogous portfolios. The operational portfolio will gather the projects, which are improving Kela's operations for some reasons, but do not have or will

have very little or indefinite strategic value. The operationally non-mandatory projects will be prioritised against each other for the portfolio selection. The rest of non-mandatory projects will form a group of strategically important projects which will be divided into three different strategic portfolios. In this model, these portfolios are linked to the three strategy focus main categories. The strategic portfolio “Customer” is linked with the first strategic category (See page 52), the second “HR” is for human resources development and linked with second strategic category and the “Process” is for processes and economics and analogously linked with third strategic category.

In this model, all the non-mandatory projects will be prioritised inside their own portfolios after pre-selection and screening executed before actual portfolio selection on business case basis. Each portfolio may have their own prioritising rules, since the projects in each portfolio are of different type and the same rules may not fit for all portfolios. Also, this model will consider a budgeting schema, where each portfolio will have their budget planned in advance starting from strategy planning point of view. If a certain strategic focus or goal may need boosting, it should be decided during the strategic planning and then channel the larger share of total budget to that certain strategic portfolio. This budgeting schema is remarkably differing from the one existing in Kela at the moment, since now project ideas are been collected and selected into portfolios long before the annual budgeting will be completed on such level, where one can see, how much there are resources left for project work. This late completion of project budget framework was also seen as one major issue in interviews. Offering a clear and unambiguous budget for a project portfolio planning will form a foundation for portfolio selection and balancing them after prioritising.

In figure 18, the four portfolios containing the prioritised projects are altogether forming a specific Kela-portfolio -view, which consists of all prioritised projects. This portfolio view is presented here considering the Kela’s current need for seeing the planned projects to match with general budget and annual resource allocations. One remarkable point of using one large project portfolio as a planning tool in this situation is, that it will fade out the organisation unit boundaries, which were formerly seen as a major disadvantage in portfolio planning, since it was leading into partial optimisation and prioritising only from one business unit’s point of view.

5.3 Planning process and prioritising methodology

As referred earlier, the portfolio planning process in Kela was dispersed and therefore it was rather challenging to cover the process decision making gateways within this thesis

scope. There were no formal portfolio selection and prioritising methodology apart from the PPM system's automatized scoring factor, which is based on certain project metadata given to projects. However, this automatization was not easily accepted by users and its' reception was somehow disconcerted mainly due to the idea of an information system ranking the projects instead of human beings. Also, the ranking scale varying from 1 to 36 points were considered to be fuzzy and project prioritising data were not given by using uniform standards. As discussed in theory chapter, the selected portfolio methodology and process are affecting also on the information used in portfolio planning decision making points and in this context, the decision making will be defining the data needed. In this chapter, a simple model will be presented for process decision making points and the information needed.

The generic, methodology-independent portfolio planning process shown in figure 14 (Archer and Ghasemzadeh 1999) was chosen as a ground for analysing the data needs in different process nodes. A model adaptation considering more of Kela's demand is presented in figure 19:

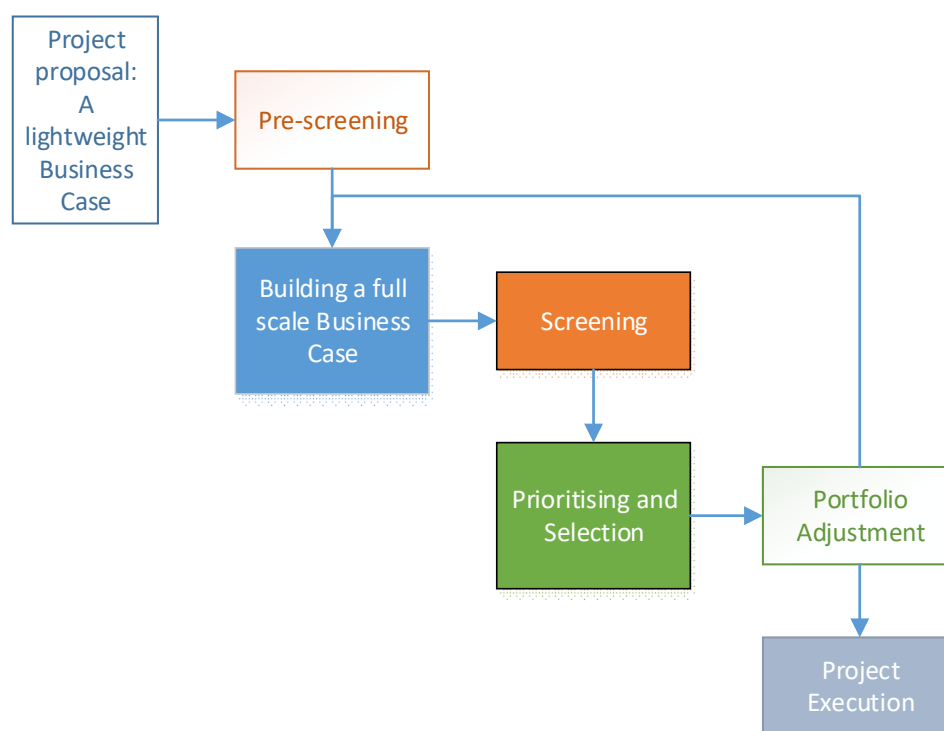


Figure 19. A simplified portfolio selection framework

This model presented here should not be considered as a formal process model, but instead a representation of a series of functions put in order for project portfolio selection.

At the starting point of Kela project portfolio pipeline there will be a creation of a lightweight business case for the project idea as a first stage project proposal. In Kela, a project proposal was implemented for 2015 portfolio planning, but it was not used uniformly and the contents of proposals varied too much between each other, and - process wise - the information content required in the very first phase were too heavy and partly inappropriate. From this point of view the lightweight business case should contain at first the data for proposed project's strategy goal and alignment. Also, at the first stage it is important to separate the mandatory projects. This information will lead the project to the right portfolio and set some basic strategic value for it. At this stage a typical business case information will be given, including things like the goal, impact and outcome of the project as well as preliminary calculations on project's benefits and costs. A first stage estimate of projects feasibility and realism should be included in the proposal. All this information should be given and revised uniformly between proposals and keep the process on a lightweight and rather precursory level. As the process moves on, the first stage project proposals will be collected and controlled against unified criteria in the stage *pre-screening* by likely independent steering committee or a function like PMO. The result will be a list of project proposals continuing to next stage, which is a more precise *building a full-scale business case*.

At the next stage, more defined information will be collected and the business case will be extended to cover all the necessary information for screening the projects before the actual project portfolio prioritising and selection. For the screening, the project proposal of a single project will be completed with detailed project information estimates. These include such as project schedule, resource allocation needs on a coarse, role-based level, defined project goal and a budget estimate. A feasibility study is recommended to be made at this point to evaluate the project's reasonableness. If possible, a use of a history database may be utilised to collect background information of former similar projects to support planning. When a proposal is completed at this stage, it will be taken into main screening, where different proposals are assessed against a criterion to filter the projects passing into the portfolio prioritising and selection stage.

At portfolio prioritising and selection stage, the projects will be evaluated against each other based on well-defined and validated project data. This phase will also consider the use of the Kela PPM-system as a project database for mitigating the work needed for arranging the project data into a comparable format. A scoring methodology will be used to rank the projects in a preliminary priority order for detecting the value and benefits

based on computational project data and other data collected during previous stages. The project interactions and interdependencies should be considered no later than at this stage. Also, the resource allocations and purchasing budget should be reconciled and adapted with Kela's other work and operations. A more precise definition of this selection stage's information needs and project data model will be discussed in detail in chapter 5.4, where a brief idea of a simplified prioritising methodology based on scoring will be presented. Finally, the result of this stage will be a prioritised project portfolio, where projects are ranked in order by their value/importance. In an ideal situation, the budget of the portfolio and resource restrictions will lead the selection process to eliminate the projects of most diminutive value from the portfolio and the portfolio will be transferred to next phase.

After the prioritised, project data based portfolio selection a manual and human discussion based portfolio adjustment will usually be needed as cited in 4.2 (Martinsuo 2013). Kela's project work now is diverse and therefore it would be challenging to launch a reliable scoring methodology, as the experimentations with the PPM-systems 36-step scoring model had shown. The adjustment stage should be operated by certain forum or steering group of internal stakeholders including at least Kela department managers and other accountable. This part of process should also be led by an organisationally independent function or actor like Kela PMO to ensure objective decision making. The discussions held in this forum will do the final balancing and fine-tuning of the portfolio and make the final decision to proceed towards execution. At this stage, it is still possible to return projects back to previous stages of selection process, if changes planned to make are causing a major impact on the portfolio. In this return procedure, the following function is to specify a single projects data content in more precise level and to re-evaluate the project's priority and value for further discussion.

5.4 A selected project metadata model

In this chapter, a more in depth discussion of project data needed in portfolio selection will be presented. This information will be considered as project metadata, which will be prepared in the project proposal stage, completed during precision of the project plan and maintained through the project life cycle. The solution will consist of specified Kela project data model, where each data type will be defined in context of portfolio planning and data integrity and validity. Also, the specific needs of different process stages will be discussed and an introductory, simplified model for prioritising data to be used in scoring methodology will be defined. As Kela's portfolio management is proved to be very human resource critical, a special attention will be given to the factors of resource allocation and

other resource management data. The focus will be in the data integrity and the fundamental idea of portfolio data as an aggregate of several single project's data. The naming of each metadata presented in this chapter will follow the titles used in Kela's PPM system for the same concept, when possible.

The elementary metadata for each project will target the project in the right portfolio and set some obvious attributes for each project, which are not seen relevant considering the portfolio planning and selection process. These include such as project name/id, owner and organisational information. The relevant information in this context will be the information guiding the project in the right portfolio and giving the basic idea of the project's nature. A model for this type of metadata is presented in table 2:

Metadata	Description
Portfolio Name / Project Type	The name of the portfolio in which the project should be included or the project type, which will link the project to the right portfolio. "Salkkutieto" in Kela terminology.
Strategic Goal / Operational Significance	The main strategic goal for the project. A project may have more than one strategic goal. One should be the major goal, against which the project's strategic value will be evaluated. Operational significance is an alternative value for those projects included in non-mandatory operational portfolio.
Priority	The given / calculated priority digit varying from 1 to 5, where 1 is better. This metadata is set in value 5 during the business case stage processing and the actual value will be given in the portfolio prioritising stage. The value may be re-evaluated during projects life cycle.
Project Duration	Derived from project schedule, this metadata is expressing the project length counted in calendar days. It refers partly to the project's extent and may be used as a priority and/or portfolio balancing factor.
Project Status	Status is referring to the stage of project lifecycle and having values like proposal, planning, execution etc. and will be linked with the other project data to be validated. Project status information have to correspond the project's actual status.
Mandatory	The mandatory projects will be placed in their own portfolios divided between legally and operationally mandatory projects. These projects will not be prioritised.

Table 2. Definitive metadata setting project into right portfolio

The project duration is here for anticipating the projects time-scale. The actual schedule information and its' utilisation will be covered later as well as project status' importance and connection to other project information.

For project prioritising information, a rough model is included in this solution, since Kela's portfolio management methodology and process stage did not allow an in-depth analysis of data usage in portfolio prioritising. According to interviews and other findings during

research, the scoring methodology developed during the implementation was found challenging to perceive and some simplifying would be needed. A prioritising scale of 1 to 5 was chosen to scale down the scale of 1 to 36. The number one stands for higher priority. Also, the amount of information needed for a single projects prioritising was rather large and also found complex, since there was some controversy between the different characteristics of different project types and the information collected for them. A simplified model for prioritising information is presented in table 3.

Metadata	Description
Strategic Value	Given for projects included in strategic portfolio(s). The value 1 will represent a project most strategy aligned and promoting.
Operational Value	Given for projects included in operational portfolio. The value 1 will represent a project, which belongs to operationally most important category.
Benefit / Profit	A derived value describing how much benefit the project will produce to the organisation, when executed successfully. May consider quantitative and qualitative base or a combination of them. The benefit may be e.g. actual savings counted in money or time or improvement in service quality.
Risk	A value mirroring amount of loss occurred, if the project fails and the probability of it. The value is derived and counted from separate project risk analysis included in business case / project proposal.
Reasonableness	A value representing if the level of resources allocated for project will lead to its successful completion considering the project objectives, schedule and budget.

Table 3. Project prioritising metadata

In this model, each priority data will be given a value from 1 to 5 and by using a un-weighted average, a project will have a single priority value between 1 and 5, where 1 is better than 5, e.g. the project priority value may be 2,2. It is remarkable to notice the usage of the scale, as number 1 will be also the best for benefit, risk (no. 1 is for lowest risk) and reasonableness (no. 1 will be most feasible). For further examining, the prioritising model may be taken to another level and e.g. different weighing may be used for different priority items. Also, different portfolios may need different priority factors and weighing, since the content of portfolios may vary considerably between each other considering the project type(s) included in a single portfolio.

The project scheduling information is found very important in Kela's case since the overlap in schedules of different projects is usually causing the most constraints in resourcing, especially, if a project overruns its schedule or there is a delay in its start. For scheduling, just the two self-evident metadata is presented in table 4:

Metadata	Description
Project Start	The planned or realised project start date.
Project Ending	The planned or realised project end date.

Table 4. Project schedule metadata

The utilisation of schedule data is important in many ways. For resource planning, there must not be too many projects starting at the same time or otherwise executed simultaneously. Also, the start and ending dates must be validated throughout the project life cycle from portfolio planning stage on to ensure, if the project is starting or has started in time and if it is ending when planned. The scheduling and assumed changes in it will be crucial when matching and balancing the resources between projects.

The project cost plan information will have a major effect in portfolio planning, since the model presented in this solution is based on a top-level planning schema, where the planning is cost-wise done against a pre-defined portfolio budget. The project cost metadata is presented in table 5:

Metadata	Description
Planned Cost	A cost plan consisting of projects planned man-hour, purchasing and investment costs sum.
Cost Actuals	The monitoring of actualisation of the cost plan during the project life cycle.

Table 5. Project's planned and actual costs

A cost plan is approved in the portfolio planning stage and set for the start stage of the project. The monitoring will be done against the accepted original plan's baseline and changes to the plan should be done via controlled change management process and updated to the plane. However, in the real world, a project's cost plan may not be updated or it may start to change in an uncontrolled way, if the projects ETC will increase undesirably. An important thing to notice is that a project will have a total cost plan for its' life cycle, but in Kela's portfolio monitoring period (a calendar year) only the project's annual costs will be under examination since the budget is matched with them. However, projects often last longer than a year or for other reasons their schedule may be continued over the turn of a year. The actuals of the cost plan will be one major item when

monitoring the project's progression. As the project's actual costs will consider both working hours done for the project as well as purchased services and other things, it is important to follow the cumulative accrual of costs and compare them to the project's assumed degree of completeness at the same moment. The accrual may not increase evenly on actuals, so it will be essential to analyse how the cost accrual is spread over the project's life cycle. For example, in an acquisition project the costs usually realise in the very end of the project (if included in project's budget) and therefore it is relevant to understand that the project's cost accrual will not follow the projects degree of completeness.

As referred earlier, Kela's project portfolio management is considerably focused on resource management, since a great majority of the portfolio planned cost is comprised of Kela's internal work. Considering how the internal work is divided between different functions and the way resources are balanced between them will form directive guidelines for portfolio planning. Due to resource management's point of view there is a major part of other work which has to be recognised as a part of portfolio management process. A single employee's annual total working time consists of different types of functions such as administrative work and absence together with the actual business tasks of the employee. For 2015 the annual working time for a full-time employee was 1821 hours. This will include the administrative work and holidays as well as the process work done for line organisation and project work. In portfolio planning this means the understanding of how the realistic capacity for the project work will be constructed. In figure 20 is presented the division of different work types in annual working hours:

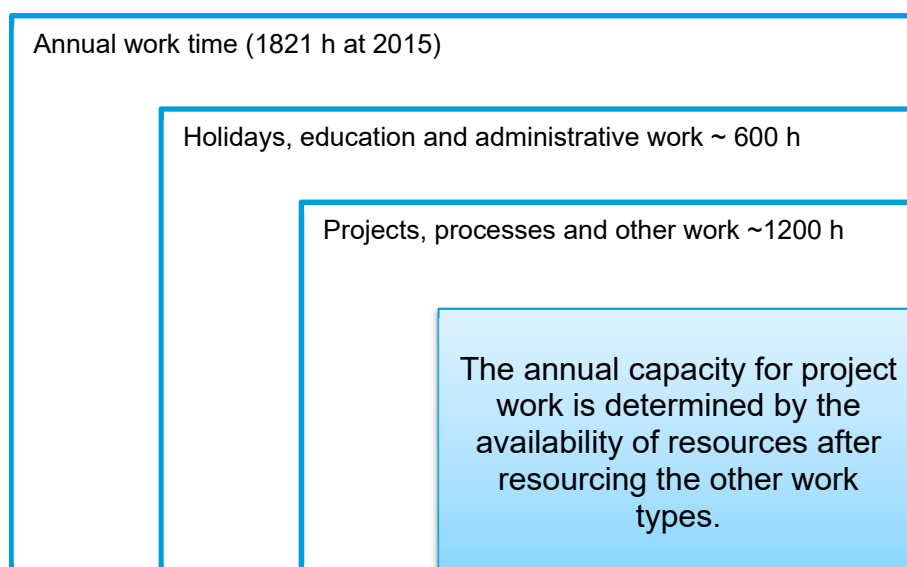


Figure 20. Work time division between different work types

To achieve a balanced resource allocation, a certain workflow is needed to support the project portfolio planning. A sequence for work planning is presented in figure 21:

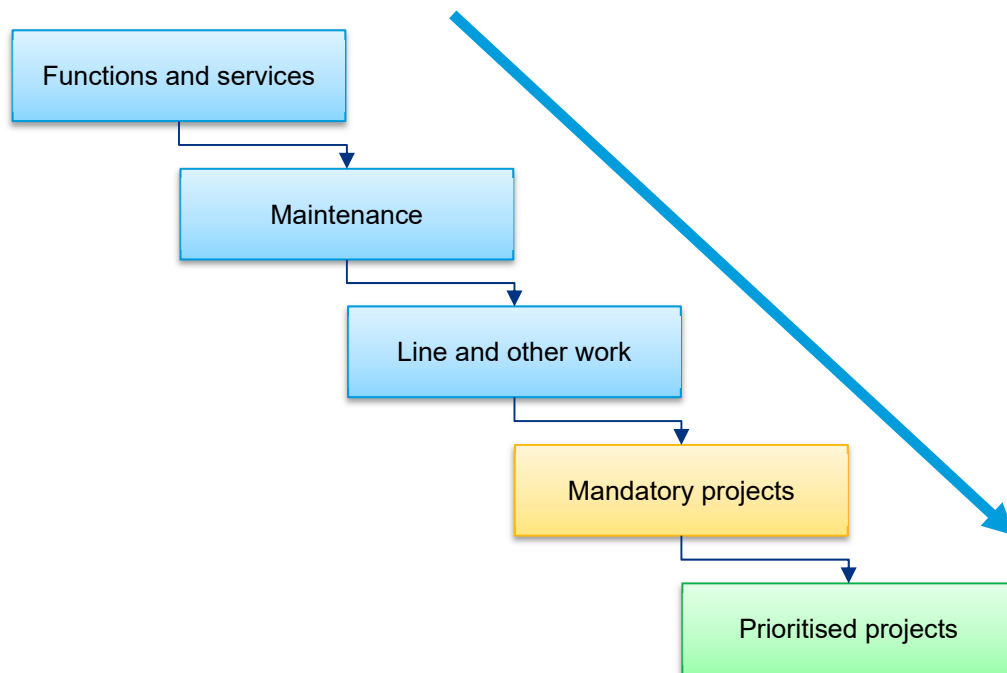


Figure 21. A workflow for resource allocation

This workflow will form a resource planning sequence, which should be followed to ensure realistic capacity data for final portfolio prioritising stage. Considering the change management during a portfolio execution phase, all these steps should be repeated regularly from the monitoring point of view to verify the resource allocation conditions then. Regular check points for portfolio data reconciliation are important not only for monitoring the portfolio's current status, but also to validate the data for up-coming or at the same time on-going portfolio planning phase. In this planning workflow, first every employee will be given a basic allocation for so called Functions and services -work type ("Toiminnot ja suoritteet" in Kela-terminology), which was 30 % of normal FTE and about 600 hours of annual working time at 2015. This allocation may be higher, if it is known that a person will do more of this type of work by default. Next, the mandatory maintenance work's resource allocations should be targeted following the allocations on line work and other work objects, which are not-so-strictly defined work types. The remaining capacity will be utilised for project work in such order the mandatory projects' allocations must be planned at first and finally, the rest of capacity will be left and used for planning the development projects under portfolio selection and prioritising. The resourcing will be

done first on a role-based, harsh level and then more in detail, when the process goes further on and more information will be gathered for planning support. In the real world, this resourcing part of planning will not have exact check points, where one stage ends and the next will begin, rather the different parts will overlap and at least in the beginning of the process, the resourcing will be done simultaneously. More important is to understand the dependency of project resourcing in context with other work capacity needs and to organise cyclic data check points for resourcing information's integrity. As a principle, always before the final prioritising stage and also as a part of change management, the resourcing information should be verified against certain criteria presented next in this thesis.

For resourcing information integrity and its validation, certain concepts which are used in Kela will be more relevant and they are covered in this section. In table 6, the elementary resource data is been collected and its usage defined. Next, a short description considering the dependency between different resource data types and how they should be utilised will be covered and analysed.

Metadata	Description
Role Demand	The human resources allocated for projects in man-hours. The allocation must correspond to the total planned work of the project. The allocation must be focused in more detailed way as the project planning goes ahead.
Role Actuals	The actualised working hours posted to the project. They must correlate with the project progression, stage and schedule.
ETC (Estimate to Complete)	The estimate for total work remaining in project. It should be realistic at the start of the project and shall be updated during the project life cycle. ETC must correlate with project stage and progression.
Role Demand Status	The status will be changed from tentative to obligatory not later than at the project start. Project may not start if the resources for the upcoming 3 months of the project will be obligatory by their status. The status of role demand will be checked monthly and the obligatory allocations will be ensured at least for the next 3 months.

Table 6. The resourcing metadata.

A guiding principle is no project execution will be allowed, if the project resource allocation is not ensured, available and accepted. Situations, where projects were started without proper resourcing and plan were mentioned often in the interviews and also found in project data analyses. For resource information analyse and validation, it is essential to understand the dependency between different data types. In the figure 22 the connection of resourcing data is perceived in a simple model.

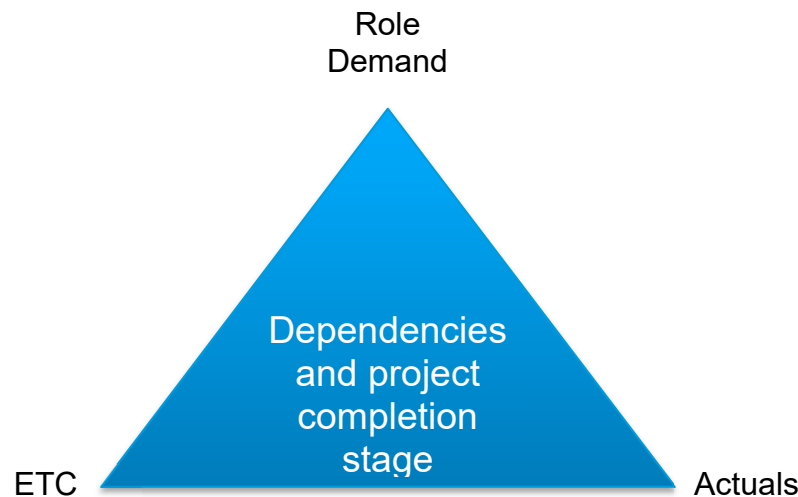


Figure 22. The resourcing information dependency triangle.

For each project coming into portfolio planning pipeline, at first the scope and the estimate for actual work needed should be defined. The role demand and ETC should be then reconciled to make the allocation match with the workload needed. During the project life cycle, it is expectable that changes in work estimates and therefore also in resource demand will occur, so it is essential to maintain and update the project ETC and role demand data. As the project starts, it will also start to accumulate the actuals in forms of hours and costs and the amount of ETC will begin to decrease. To understand the connection between these three data types, it is essential to confirm the role demand will not overrun the amount of ETC at project start and later, when the project is running the sum of ETC and actuals (together EAC, Estimate at Complete) will not as well be overrun by role demand. Otherwise the result would be overbooking and a resource deficit elsewhere or a resource waste in overall operations. Another important factor is to understand how the ETC and actuals interact in connection with the project progression. As the ETC should diminish as the project goes on, it is substantial to compare the planned remaining work to the progression of the project to recognise, if the project's deliverable's completion will be aligned with the amount of work needed. The actuals will be under observance as well, since they have to increase in relation to the project completion. During this thesis' research period in Kela, there were no reliable model for estimating a project's level of completion. The PPM system's project completion degree model was calculated from project data, but the algorithm behind the calculation was found unreliable and difficult to interpret. A manual estimate given by project manager was the next planned step, but the implementation of it was out of this research's time window. So, under these circumstances, the resourcing information will form also a base

for analysing and deriving the knowledge for a project's completion degree. Considering the high dependency on resource management in Kela's project portfolio management, this approach of handling the role demand together with the project ETC and actual hours and how they are related to the actual stage of a project will set the critical and most important factor for portfolio information usage from this thesis' point of view.

5.5 Summary: the utilisation of project portfolio data model

In previous chapters 5.1 - 5.4 a model for setting up strategy based portfolios and a simple prioritising methodology was given in context how they are linked with project data used in portfolios. In this summary chapter, an epitome of these portfolio planning factors is presented in a context, how project portfolio data should be utilised in more holistic and process-wise way throughout the different planning stages.

As mentioned earlier, the project portfolio execution period in Kela is a calendar year mainly for budgeting-based reasons. This causes a need to understand the portfolio planning process in a cyclic form starting from idea collection and leading towards the end, where the result will be a well composed project portfolio plan for next calendar year. This plan will act as a certain portfolio baseline against which the portfolio execution and change management will be performed. In figure 23 the principal factors of portfolio planning process are presented in context of a cyclic, year clock -based form starting from project idea collecting.

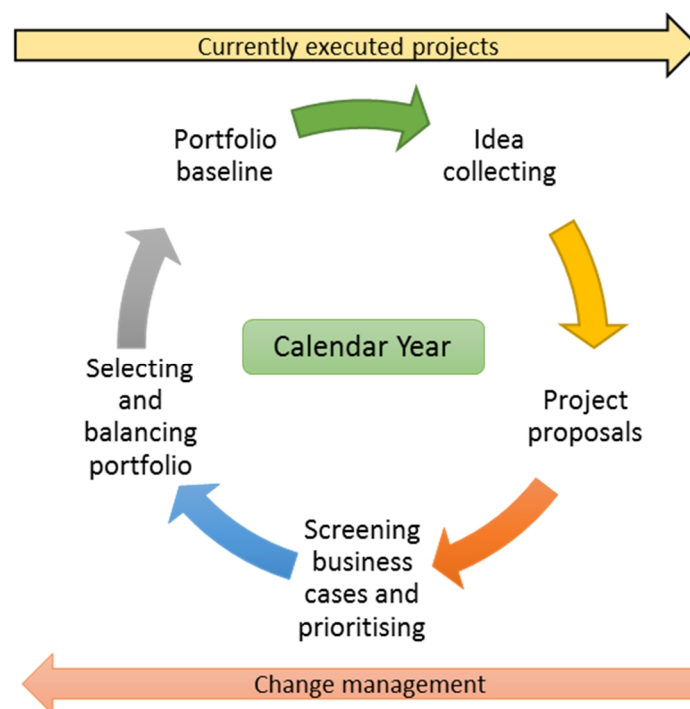


Figure 23. The year clock based factors in Kela portfolio planning process

In the figure, the actions shown in a circular sequence are presenting the actual portfolio planning process discussed in chapter 5.3 to select the new entries in portfolio. At the same time the progress of the currently executed projects' stages is affecting to the portfolio plan since there will be changes in projects' cost plans, resource needs, scopes etc. Therefore, it is essential to understand the impact of on-going projects and strictly monitor them in unified way to ensure proper conception of the project works status as whole. The change management will be the tool for keeping the current portfolio in shape as new project candidates usually appear during the portfolio execution period and the changes in on-going projects affect as well to the portfolio.

As a summary of this proposal in process context, the planning process should be considered more in terms of *a continuous series of tasks executed periodically* e.g. at least monthly instead of a one large effort to compose a portfolio towards the end of year. For budgeting reasons, a snapshot will naturally be formed for Kela's general budgeting process' demand, which will be scheduled in the end of November. This snapshot will form the baseline for portfolio monitoring and the change management starting in the beginning of calendar year.

From knowledge management and decision making point of view, the quality of the data used in all portfolio management tasks and routines should be considered in a holistic way since the planning process cannot be dispatched totally isolated from monitoring and change management processes. The decisions made during current portfolio execution's change management have to be premised on validated and reliable data as well as in portfolio planning. Therefore, the *regular portfolio data integrity checks* will form the backbone for trustworthy project portfolio decision making. Following the data model presented in chapter 5.4 and using it as a guideline for project data validation, the decision making will be more based on verified factual information. The data validation checks should be tied in change management process' regular tasks on monthly basis as referred earlier and also when needed e.g. for special portfolio planning or reporting demands. In figure 24, the data check flow is presented as a simplified model, where both portfolio planning and monitoring are considered as parallel processes and the monitoring of the currently executed portfolio is giving an input to the portfolio under planning.

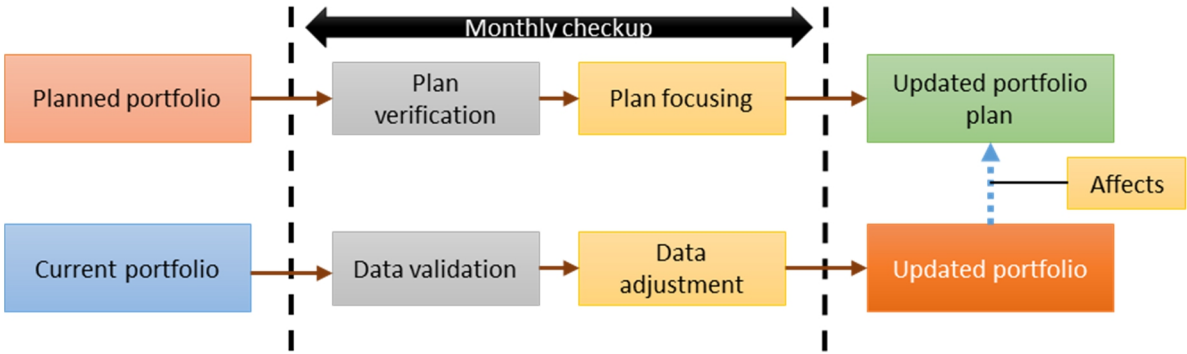


Figure 24. Monthly based data validation for portfolios

It is substantive to recognise the relation and dependency between planning and monitoring processes. When planning the next period’s portfolio, the focus is often more on the new project-candidates. However, the projects under execution and continuing to next portfolio planning period will usually be under continual change which causes a need to update regularly the primary data used also as a base for planning. As stated earlier, it is especially crucial to identify those projects of which ending is shifting over turn of the year and therefore they are directly affecting to the new portfolio. In table 7 is listed some of the most usual situations, which should be considered as inputs for portfolio plan updates.

Project status	Action
Start delayed	A project may not be started as planned and it may be therefore transferred to the next year portfolio. The resourcing of the project must be considered when planning new portfolio.
Ending delayed	A project may continue longer for several reasons, which causes a need to update the resourcing schema of the portfolio under planning in case the new ending date will transfer the project to the next year portfolio.
Scope extended/decreased	If a project’s scope is extended or decreased, it will affect to resourcing and scheduling of the project e.g. the start/ending dates etc. of which effect have to be considered in new portfolio plan when needed.

Table 7. Some factors considered as inputs for portfolio plan update

Also vice versa, a project may also end earlier than planned and so releasing resources for other projects, which may offer an opportunity to move a new project from portfolio under planning to current portfolio and start its’ execution in advance.

To ensure the data validity and integrity in its entirety, it is inevitable to organise a solid process for data check-ups and clarify the accountabilities of personnel responsible for maintain the project and portfolio data updated. In table 8 is presented the main actors recognised in this thesis' research part and recommended to act as Kela's portfolio data integrity accountable (each from their own point of view).

Actor	Area of responsibility
Portfolio manager	Updates project information before the execution. Monitoring of portfolios and status reporting. Recognising and correcting possible risks and troubles.
IT-responsible	Responsible for planning and updating a project's IT-work allocations throughout the project lifecycle.
Project manager	The main accountability for project information validity for the whole project lifecycle.
Line manager	In charge of his/her employees' resource allocation's soundness.
Resource manager	Responsible for the resource management process as whole. Gets involved with challenges and risks detected in resource reports.
PMO	Acts as a "third party", independent inspector performing regular check-ups and audits.

Table 8. Roles responsible and connected with portfolio data validity

As a final summary of a toolkit for portfolio information utilisation in project portfolio planning and decision making, it is essential to understand the role of each actor described in table 8. Whether a project is in the very beginning of its life cycle and not even selected to a portfolio yet, it is already containing information that must be evaluated, validated and updated. This toolkits' primary function is to show for each participants of portfolio planning process the importance of data integrity when making decisions in planning and how to utilise the data model presented in 5.4 when verifying and updating the project data. From knowledge management point of view, it is not justifiable to execute a decision-making process, if the data utilised is inaccurate. In next chapter 6 the evaluation of this toolkit in practise will be discussed.

6 Testing a project metadata model

6.1 Test plan and arrangements

Due to the nature of this research, the testing is split in two stages of which the first part consists of testing made with actual portfolio data and the second considering the closing summary discussions held with people involved with this research in Kela. As referred earlier, due to certain reasons caused by organisational change program executed at

the same time during this thesis' research period, no comprehensive testing could be arranged and the results will be partly based on proof-of-concept testing. However, the PPM system's real portfolio data used in actual production environment were available and utilised as a ground data source for testing.

Test schema was built on data found most relevant considering the effectiveness reached by data correction and updating when reconciling the portfolio data. For Kela's internal use, some other factors were verified during the same operation and they are not included in this test's analysis. In table 9 is presented the data items chosen to be used in testing purposes.

Data	Description
Schedule and status	Is the project started in time and proceeded as planned? The project status must correspond to the actual stage of the project progress, when analysing e.g. actuals vs. plan etc.
Resource allocation	Allocations must correspond to the person's total amount of work planned for him/her in project Allocations must not exceed the total sum of ETC and actuals (EAC) Allocations must be targeted to the project stages, where the actual tasks are been completed. The total resource allocation of the project may not exceed the project's total workload.
ETC (Estimate to complete) and EAC (Estimate at completion)	ETC have to correspond the projects stage and progress. Sum of ETC and actuals (EAC) may not be more than allocations.
Actuals	Actuals of a project must correspond to a project's progress and stage.

Table 9. The data types utilised in project data validation

Again, it is rather evident there is a clear connection and dependency between the allocations, ETC and actuals as indicated in figure 22.

To test the data model, an equivalent view was created in the PPM system to collect relevant data from portfolio under examination. An Excel™ report was created from the portfolio view for further data analysis of a selected sample of projects. The test plan was formed to cover a rather simple scenario, where by each project the data types were analysed by comparing them to each other and evaluating how sound or realistic they were considering the overall project stage or what it should have been. For results analyse, some basic statistical calculations were made to prove how large amount of the

data was non-valid and to consider the data type having most demand for correction. It was substantive to restrict the sample in ongoing projects, since projects of which lifecycle are on proposal stage do not have actuals, and evaluation of project proposal data like workload and cost estimates were out of this thesis' scope. However, as stated earlier in chapter 5.6, the validity of ongoing projects data has a clear correlation not only in currently executed portfolio's data integrity, but also it affects the portfolio planning process strictly by offering background data of projects continuing in new portfolio.

In project data check-up, also the work breakdown structure (WBS) was under exploration, but since the concept of WBS is rather complicated as a singular project data type, it was not included in this testing schema. However, a carefully planned WBS will help to plan and maintain the realistic workloads and resource allocations for a project, so in another case it would be a justified idea to put some effort in analysing WBS and how it is build, and then considering its effect on project portfolio data.

6.2 Implementation of test stage

For testing purposes during Q4/2015, a sample of 27 projects were taken from PPM system for further analysis. The chosen ones represented seven different types of projects and were ongoing at the moment the sample was taken. A specific filtering was made to restrain the sample in projects starting during 2015 and ending during 2016 to ensure the projects were on an active stage for data analysis and that the projects should have some effect considering the next year portfolio planning. The main target in test was to survey, how realistic and sound the planned project allocations and workload were considering the project stage and compared to the actual hours reported to a project. Therefore, the testing was focused on project hours instead of planned or actualised costs. This solution was also explained with the remarkably large amount of Kela's internal work comprising the actual costs of a project, as discussed earlier. The testing was implemented by help and expertise of Kela PMO's portfolio service's personnel to achieve a pervasive viewpoint to data usage. Test data were analysed in an Excel™ -spreadsheet for further refinery, a screenshot of data is shown in figure 25.

	A	B	C	D	E	F	G	H	I
	Investointi	Alkamis	Päätymis	Roolin kysyr	Kustannussuun nitelman työtunnit	Roolin kysyntä EAC	Roolin toteutunt	Kysyntä - toteutuneet Roolin jäljellä	Kulutusprosent
1									
2	A-Konesalisaneerauksen IT-työt	15.12.2015	15.5.2016	1048	877	-218	389	659	24%
16	Arkki-SOHLD -ympäristön perustaminen	1.7.2015	31.12.2016	1258	1846	-814	226	1032	3%
21	Asiakkuudenhallinnan kehittämisprojekti	12.10.2015	30.6.2016	652	898	-281	35	617	3%
22	Asumistukien yhdistäminen	22.6.2015	31.8.2016	4 107	4 231	-2 756	2 632	1 475	55%
23	CSC-VIRTA	28.4.2015	31.12.2016	526	630	-395	290	236	35%
24	DB2Tools-kilpailutus	30.3.2015	1.4.2016	1 687	1 200	336	151	1 537	12%
26	Eläkuntoutus-projekti	1.1.2015	31.12.2016	612	1 169	-1 012	454	158	38%
28	HAKE -Tietojärjestelmät	2.1.2015	31.3.2016	21 990	35 137	-31 971	18 824	3 166	48%
29	Hallinnollinen asiantuntijajärjestelmä, v	1.3.2015	30.6.2016	1 376	1 604	-1 089	861	515	26%
30	Henkilökohtaisen Kela-neuvonnan valv	1.9.2015	31.8.2016	950	913	-356	392	557	6%
32	Kali - Kanta tietovarastointi	2.10.2015	24.10.2016	703	1 885	-1 647	465	239	12%
33	Kehitys- ja palkkauskustelun jatko	1.3.2015	28.7.2016	1 108	609	-344	844	264	69%
34	Kela.fi:n statistiikkayökalun kilpailutus	1.4.2015	11.3.2016	1 067	965	-324	426	641	38%
37	Kelan tiedonohjaussuunnitelma	1.5.2015	31.12.2016	2 031	2 049	-876	859	1 173	18%
43	Kuntoutuspsykoterapian korvaustason r	2.1.2015	30.12.2016	678	703	-235	209	468	24%
44	KZ-järjestelmän budjetoinnin kehittäm	21.4.2015	31.12.2016	509	507	-73	75	433	4%
47	Lääkekorvauskoeksien toimeenpanoo	28.1.2015	31.8.2016	1 288	1 408	-344	223	1 064	13%
49	Lääkärinlausuntojen koulutus ja viestint	1.7.2015	31.12.2016	1 275	1 350	-177	102	1 173	3%
52	Organisaatiotietojen keskitäminen SAP	24.8.2015	29.4.2016	689	600	-240	329	360	27%
54	Osoite- ja kuolin tietojen vaihto Espanjar	2.1.2015	31.3.2016	1 934	1 773	-1 825	1 986	-51	75%
58	Pyyntötiedostot verovuodelle 2016	1.7.2015	31.3.2016	872	732	-216	357	516	24%
59	SAP HR-henkilöstötietojen laajentaminen	27.8.2015	30.4.2016	580	546	-203	236	344	23%
60	SAS CPM 8.1 migraatio	31.7.2015	31.3.2016	1 333	882	-540	990	342	58%
61	Scrum soveltamisohje (JKET)	20.8.2015	31.3.2016	656	1 134	-1 662	1 185	-528	51%
62	Suuhygienistien it-suorakorvausmenett	9.3.2015	31.10.2016	1 715	1 620	-11	106	1 609	3%
64	Takausvastuujärjestelmän YG-kehittä	23.2.2015	31.3.2016	608	854	-702	455	152	36%
65	Vaikeavammaisten lääkinällisen kunto	1.2.2015	31.12.2016	3 086	3 047	-1 867	1 906	1 180	47%

Figure 25. Test data sample collected into a spreadsheet

Two derived data columns were added to original PPM data for further analyse, their content is presented in table 10.

Derived data	Description
Allocation minus EAC (Estimate at Completion, ETC + Actuals)	To describe how well the project resource allocation is matching the planned and actualised work amount (EAC).
Allocation minus Actuals	To describe how well the project resource allocation is matching to the actuals considering the project stage.

Table 10. Derived data for analysing purposes.

These derived field's information was then proportioned to the project stage considering the starting/ending dates. Since a project's workload is not usually evenly divided throughout its lifecycle, it was essential to make some checkouts and drill deeper into a project data to see how the workload was spread over a project's schedule. This was done by using the PPM system's workgroup feature's view offering the information of resource usage in the project during its execution, the used view is shown in figure 26.

Resource/Role	Project Role	Start	Finish	Allocation	Actuals	ETC		Allocation By Period			
								syys 15	loka 15	marras 15	joulu 15
ari Pertti	Sovelluskehittäjä	1.7.2015	31.12.2016	0,00	0,00	0,00	Allocation ETC Actuals				
ari	Projektipäällikkö	1.7.2015	31.12.2016	0,00	0,00	0,00	Allocation ETC Actuals				
, Patrik	Arkkitehti	1.7.2015	31.12.2016	0,00	0,00	0,00	Allocation ETC Actuals				
n, Esko	Projektipäällikkö	1.7.2015	31.12.2016	0,00	0,00	0,00	Allocation ETC Actuals				
n, Petri	ICT-asiantuntija	1.7.2015	31.12.2016	0,00	0,00	0,00	Allocation ETC Actuals				
, Rainer	Käyttöympäristö-asiantuntija	22.9.2015	15.11.2015	36,76	6,00	67,52	Allocation ETC Actuals	6,60	20,74	9,42	
n, Raimo	Käyttöympäristö-asiantuntija	1.7.2015	31.12.2016	0,00	0,00	0,00	Allocation ETC Actuals	5,00		1,00	
i, Erno	Käyttöympäristö-asiantuntija	22.9.2015	15.11.2015	36,76	10,25	70,52	Allocation ETC Actuals	6,60	20,74	9,42	
Ahti	Käyttöympäristö-asiantuntija	22.9.2015	15.11.2015	36,76	11,00	25,76	Allocation ETC Actuals	7,25	1,00	2,00	
Jouko	ICT-asiantuntija	1.7.2015	31.12.2016	36,76	11,00	36,76	Allocation ETC Actuals	7,00		4,00	
								6,60	20,74	9,42	

Figure 26. PPM system project workgroup view used in resource allocation examination

In the actual testing process, a comparison was first made with the resource allocation and EAC by subtracting the amount of EAC (in hours) from allocation, as shown in spreadsheet's column F (figure 25). For results interpretation, the count should most likely be positive and differing less than 10% from the allocation. This result was then evaluated against project's start / end dates to understand, how sound the resourcing seemed to be considering the workload in comparison to the project stage. Next, another comparison was made by subtracting the amount of actuals (in hours) from allocation, shown in spreadsheet column H in figure 25. Again, this count was proportioned to the project schedule and stage, how much the project has consumed its resources when compared to its stage and total resource allocation. For example, if a project's stage was in the middle of its life-cycle, it is relevant to expect the resource expenditure to be around 50 %, if the allocations are shared evenly throughout the project duration. For assistance, a specific "Expended %" was used in PPM view to clear out resource consumption, although it was cost-based instead of hours and covered also the project procurement costs. This was used for comparison and to point out how the PPM system was functioning in this data check-up process.

6.3 Findings and summary of test stage

The results of project data analysis indicated major inadequacies in project data validity and integrity. As an overall result, none of the 27 projects included in the sample passed the test stage check-up without any annotations. The most common issue was that the workload of the project was greater than amount of resources allocated for the project. When analysed in more statistical way, the percentage of the projects, which workload were more than 50 % greater than resource allocation was 41 %. Percentage of projects,

which workload overrun their resource allocation between 25 - 50 % were 37 % and the number of projects having a workload overrun less than 25 % were 19 %. One project formed the remaining 3 %, of which resource allocation were more than project's planned workload and therefore it was closer to the Kela's instructed procedure, which guides to match the resources with the workload. However, this project was having an overbooking of 20 % considering it was having a resource allocation of 1687 hours and a planned EAC of 1351 hours and therefore it was planned against the Kela's guidelines which emphasise the rule of resource allocations to match the project EAC. The single largest relative overrun of workload (or under-booking) was 253 % and the largest absolute overrun in hours were 31 971 h, which is more than 17 man-years in FTE. This project was then put in specific audition and it turned out to be more like a program-kind project considering of several sub-projects of which were not planned in an equal and aligned way, which caused some serious duplication in work plans. However, it is remarkable to notice and understand that all these biased plans will be contained in PPM-system's project portfolios and therefore affecting to reporting and other information used for background in planning, change management and therefore also affecting the decision making.

In the next stage of testing, a comparison between the resource allocations and the actuals reported to the project were made on a basis how much a project has consumed its resources. Again, this was proportioned to the supposed stage and schedule of the project to understand and estimate, if the project is having enough resources to survive till its end. In this test scenario, the results were not so concerted compared to the EAC vs. allocations comparison and more deviation existed. For data analysis, projects were categorised in three classes by their stage: projects, which are in the beginning, in the middle and in the finishing stage of their life cycle, and the reported actuals then were compared to this stage-classification. The results are presented in the table 11.

Class	Number of projects	Number of projects actuals mismatching stage	The percentage of projects actuals mismatching stage
In start stage	5	3	60 %
In the middle stage	14	8	57 %
In finishing stage	8	4	50 %
Total	27	15	56 %

Table 11. Comparison of how well project actuals match the allocations/project stage

As we can see in the table, 56 % of all projects included in the sample did not have actuals matching the project stage. This was mostly due to the reason, where reported

actuals were too small when compared, what they should have been at the project stage at the analysis moment. A minority of projects were having too much actuals, when proportioned to project stage. These mismatches may have several reasons, of which further analysis is not included in this thesis' scope. Mostly the question is about a project, which has started "officially" but do not have the actual resources or other prerequisites for successful execution and therefore their actuals are dragging behind when compared to the supposed project stage and the project is not making effective progress. A single project came up with 66 % of consumed resource allocations although it was just started two months earlier and had still over 9 months to go. This was an example of under-resourced project which was given a permission to start although the resources were not confirmed and adequate.

When examining the resource consuming of projects in the middle of their lifecycle (14 projects in the sample), four projects (29 %) were having a resource consumption less than 18 % of total resource allocation. Among the projects of the sample, which were on their finishing stage (8 projects in the sample), four projects (50 %) had spent less than 41 % of their resource allocations, although they had less than a third of their lifecycle left. Only one project had overrun its resource allocations by 3 %, although still having three months to go to its end. This result was also seen as a trend and confirmed by quarterly portfolio reporting, which indicated an average of close to 30 % of over-allocation in all projects when compared to the actuals come true. The report covered all the development and legally mandatory projects planned to run during 2015. A short interpretation of these results will again strengthen the relation between allocations, ETC and actuals (see fig. 22) as project resources seem to be somehow under-allocated, but then their actuals will continuously drag behind planned ETC and also the resource usage will be rather far from planned allocations.

As stated earlier, this thesis' test phase was part of a larger project data verification process accomplished in Kela during October - December 2015. During this data verification process, also some actions and procedures were made to correct and update the project information. This was mainly done by contacting project managers and having discussions with them about their project's situation and the corrective actions needed. These actions included such as balancing the resource allocations with the actual need or updating the project ETC to match the project's real stage and progress. Some other findings made during these discussions were e.g. a project may have very little actuals because of the work was mainly done as line-work and the project did not really exist. Also,

in one case the project did have very little actuals considering its stage at almost in the end. When contacted, the project manager told that the work is almost done and project is finishing in time, but they just have some 800 hours of unreported actuals. A one single but exemplary sample of sloppy resource allocation was a project, which was interrupted for 3 months but its resource allocations were not unleashed and re-allocated for other projects.

As summary and interpretation of results, 5 elementary scenarios can be pointed out, where project data quality does not correspond to the integrity and validity requirements considering dependable decision making in portfolio management:

- 1 A project, which is having too little resources allocated considering the total workload (EAC) of the project
- 2 A project, of which resource allocations are significantly greater to its planned total workload (more than 10 % higher), and is therefore having an over-booking.
- 3 A project, of which resource allocations are considerably over scaled when compared to project's actuals and degree of (conceivable) completeness
- 4 A project, which is still having a remarkable amount of ETC left although it is almost complete
- 5 A project, of which actuals do not follow the stage of the planned project progress.

Also, the projects, which were on idea level stage were having the resource overbooking as a common problem when compared to the planned ETC. However, when a project started its execution, the situation shifted towards under-allocation, since many projects' ETC did start to increase when they proceeded. This was not balanced with increased resource allocation for a project and at the same time cutting resources from somewhere else, which will intrinsically cause a biased view in portfolio resourcing data. Another perception made in testing was that the announced project stage information did not always match the reality of the project progress. A project may be already in execution although it was stated to be an idea or under planning by the PPM system and vice versa, a project may be completed although its status was on-going.

To summarise the testing phase, the results verify the facts that project planning will need major development as well as maintaining and updating the data of a project under execution. This conclusion can be derived from the results, how reliable the resource allocations are and how realistic the planned total workloads are considering the project

life cycle. The evaluation of project actuals' validity was outside the scope of this thesis, since it is a rather complex area of research and would most probably be an item of a separate research. Results also reinforce the original hypothesis based on interviews that project portfolio decision making in Kela is not based on validated, good quality data. A complete summary and evaluation of this research is represented in the chapter 7.

6.4 Discussions with process participants

For research feedback, some pre-planned discussions were held with Kela's portfolio process participants, who took part in the research interviews and also with some other related personnel from Kela PMO. The proposal of generic portfolio planning process was introduced altogether with the idea of strategy based portfolio division and simplified prioritising methodology. Finally, the project metadata model was explained and the idea of a toolkit for project data validation. As a top-level summary of discussions, the presented ideas were seen relevant and justifiable and setting the Kela's portfolio management in a better context and giving it some developing ideas for a new direction.

Of strategy based project portfolios the general opinion was that the idea is highly acceptable and seen as a need in future. However, the Kela's strategy formation and alignment process was seen rather inadequate when considering the needs of project and portfolio management. The strategy has had a diminished visibility in Kela's project work (as stated in interview part in chapter 3.2.2), and according to discussion, it might be rather long process to change the procedure to make it fit better for portfolio management's need. The main development factors were seen the ability to set the targets for project work by strategic goals and measurability of their success. In the PPM system, there is collected some information for measuring and defining a project's strategic significance, but it's usability in project prioritising and monitoring the progress and outcome was seen fairly complex and difficult to use consistently.

Of project prioritising based on a distinctly defined portfolio planning process, the mutual view was that the former process-like planning actions need equalisation, simplification and clarity. First steps should be cutting down the number of currently on-going projects and focusing the usage of resources on fewer projects to avoid deviation in resource allocations and therefore to achieve more efficiency in project work. This would also help the portfolio management process as the amount of managed information would decrease. The proposed simpler priority model scaled from 1 to 5 was a favourable improvement, since it would classify projects in a more easily understandable format for

prioritising. The classification was tested during autumn 2015 and deployed in 2016 portfolios. In discussions, the budgeting process was seen as one challenging issue considering the portfolio planning and the idea of planning a single portfolio against pre-defined budget. This budgeting challenge was also partially seen as a compulsory reason for collecting all the projects in a one large Kela-portfolio instead of several, individually targeted portfolios as proposed in this research's solution results earlier.

When discussed about the project data utilisation, the attention turned into resource management which was seen also as the major factor in Kela's project portfolio management's success by both discussion participants and the research results. A one major transition observed during this thesis research period was the raising overall comprehension of the resource management and its importance in Kela's project work. Formerly, the portfolio management discussions have been held mostly around the annual working capacity counted in hours or FTE as stated in research interviews. When the project portfolio planning process-like thinking was improved during this thesis research process, the awareness of capacity and resource restrictions came up in a new way as well as the understanding of the cost correlation of Kela's internal work and the cost of a project. Current resourcing model was seen complicated and also that it would need some simplification. Due to its complexity, the resourcing process was seen cumbersome to implement and therefore it was performed unevenly throughout the project organisation. This has led to a situation, where both project and line managers act differently when resourcing projects, which has a straight correlation with the non-valid project data, as detected in this research. There has not been any kind of resource management validation before project has gone live to ensure its viability. During project and portfolio execution the monitoring has been non-systematic and it has not based in a standardised process apart from those project portfolio data monitoring and check-ups performed by Kela PMO. The lack of data verification and inadequate planning and updating of a single project's data can be seen as a major hindrance in the Kela's portfolio planning process' decision making reliability and soundness. In the final discussion, this was also seen as a major improvement target especially in a context, where possible resource overbooking, deviation and dependencies should be recognised in much earlier stage together with improved project data maintenance and quality assurance. As a final result of discussion, the current resourcing process was also seen problematic and a proposal came up to re-think the resourcing model in a new and more agile way. This model would be on a higher and coarser level and the resourcing should be obligatory confirmed just from three to six months in advance instead of current model, where the resourcing has

to (in some cases) stretch as far as year and a half in the future. These improvement propositions are discussed in a more compiled context in the conclusive chapter seven.

7 Discussion and conclusions

7.1 Summary

In this thesis, the research challenge was to understand Kela's project portfolio management process in a comprehensive way, and particularly to figure out the planning part and decision making points of it and also, how portfolio information could be utilised in the process. The focus of this research was in portfolio information's quality and how to define and improve it to correspond better with the organisation's needs. As an objective for this thesis, an idea to define a specific set of tools to assist the usage of portfolio information and to ensure its quality was introduced. As told in chapter 1.1, one main driver for this research was the implementation of a project portfolio management system, since the deployment and effective utilisation of such system needs well defined project metadata structures and governance processes. This procedure was also offering a great opportunity to enhance the usage of portfolio information as a relevant part of decision making.

The research process started in the late autumn 2014 by analysing the current state of portfolio management and portfolio information utilisation. This research part was executed by collecting the existing portfolio process descriptions and information and then comparing the official instructions to the real-world procedures by making a series of interviews among process participants and stakeholders. The choice of applied action research as a research methodology turned out to be applicable in this case, where the researcher acted as a committed employee in the portfolio management process. However, as proven in the current state analysis section (No. 3), it was occasionally challenging to understand the process itself and its actors clearly, since the process was divided in several parallel process-like actions which were often dependent on participants' personal relations and ability to communicate among each other. Also, due to the relatively long temporal duration of portfolio planning process, the action research methodology was considered to be *applied*, since it was impossible to repeat the planning process steps in the real-world context in several iterations. Instead, a proof of concept-type approach was used, which was found practical, since the planning process steps and use of necessary data could be simulated in the PPM system.

During the research interview, the research approach and data collection was primarily focused on how alike process participants understood the concepts of project portfolio and its planning process as well as the concept of project portfolio data and its utilisation in the process. The results were then examined against contemporary project portfolio and knowledge management theories to form a coherent picture of the status of portfolio management in Kela. For summarisation, the theoretical analysis was then encapsulated as a conceptual framework, which was divided in three main sections, the strategy definition, portfolio planning process and portfolio composition. In the framework, the portfolio information utilisation was then examined in context of these three sections and considering the knowledge management as an elementary ground factor for decision making in portfolio planning.

This theory emphasised current status analysis was then turned into a concrete proposal of a toolkit for portfolio planning data in section 5. From the very beginning it was rather obvious that there would be some restrictions, when creating the solution. This was mainly due to the elusive portfolio planning and management processes, where it was challenging to recognise the actual decision making points as distinct decision gateways. Another major restriction and delaying factor for this research's solution was the organisational change program, which took its place at the same time and therefore caused some disruption in the research process. However, the proposal was made, although partially on proof-of-concept -basis, which could not be tested in an actual environment. The part of this proposal considering the portfolio information usage and the integrity and validity checks for information could be constructed, though.

The solution was then derived from the conceptual framework, divided in sections of

- Strategy based project portfolio structure (Chapter 5.2)
- Planning process and prioritising methodology (Chapter 5.3)
- A selected project metadata model (Chapter 5.4)

of which the selected project metadata model had the major role considering this thesis' purpose and expected outcome. This was mainly originated from the knowledge management -based approach of this thesis, why the focus was also concentrated on the data definition and validation, as sited in chapter 5.1. For the first part of solution, the idea of strategic buckets was introduced and linked with project data by using metadata to connect the project, the strategic goal and the right portfolio. Also, a project portfolio

division based on strategy was created to match with the Kela's three strategic fields and to correspond with the need to separate mandatory projects from prioritised projects. Secondly, a model for *simplified portfolio selection framework* was introduced based on model introduced by Archer and Ghasemzadeh (1999). This was required since there was no lucid portfolio planning or managing processes recognised during research process. Also, the project prioritising procedure was not transparent although there were certain system in the PPM system to support project prioritising, but it was found inoperative for process needs or difficult to utilise otherwise. In this simplified model a three step portfolio selection process was described, which consists of *a lightweight business case, full scale business case and adjustment of the selected portfolio*. Each of these steps will finally direct into a decision gateway, where a project candidate may be approved or rejected. Considering this thesis' focus, the supporting idea of this process model and decision gateways is to define the information needed in every gateway to help arrange the projects in a priority order by their value and importance.

Finally, the third part of the proposal comprised the selected project metadata model, which was formed by analysing and utilising the actual existing project data collected in the data base of the PPM system and which was already in everyday use in Kela's project management. The idea of the project data utilisation was primarily linked with the planning process model, where the data content should become more precise as the planning process moves on towards its end. For this thesis' solution, the defined metadata were divided into five different classes including elementary, prioritising, scheduling, cost and resourcing metadata. Each of these metadata classes were comprised of more than two different data items, which was seen essential for portfolio planning. For each single data field, a short description was defined and then the usage of the data was explained in more detail (if needed) to help understand, how to utilise the data in practise. In this part, a description of the principles for annual project work planning was also given together with some principles on how to reconcile the portfolio data by making regular check points for portfolio data validation. To understand the proposed toolkit for portfolio planning in practise, a process wise introduction was finally given to understand the context, in which situations and how the data should be utilised and also, how the data quality should be assured. A process participant's ability to understand the purpose of portfolio data and its validity was then emphasised in the proposal summary to highlight the connection between accurate information and the quality of the decision making.

The toolkit was then tested by using actual project portfolio data from the Kela's PPM-system as presented in the section 6. Test plan was based on a selected sample of projects, of which resourcing, status and schedule, workload and actuals were then compared to these projects' factual status utilising the resourcing information dependency triangle presented in chapter 5.4. The results gave a good evidence in some major deficiency considering the quality of project data stored in the PPM system. Five typical cases were formed, where a project was suffering from poorly planned and/or updated data. Since there were some major restrictions to test the strategy based portfolio structuring and the planning process and project prioritising part of this proposal, some discussions were held with the portfolio management stakeholders and process participants. The idea of these discussions was to ensure the proposal's proof-of-concept -part on how well the idea of strategy driven portfolios and project selection process would serve the actual development need of Kela. Also, the data quality and assurance issues were discussed. The overall response of these discussions was supportive, since the presented ideas were seen relevant and appropriate. However, the strategy visibility in the portfolio management was seen challenging, and during the research process it was also rather difficult to enhance due to the existing organisational conditions. The portfolio prioritising part was seen more functional, of which a good indication was the implementation of the simplified prioritising scale in the 2016 portfolio planning. When discussed about the portfolio data utilisation, there was a great consensus of the need for regular data validation check-ups as presented by the toolkit proposal. This was even highlighted, when it comes to the resource management and its data integrity, since the resource data validity was a major challenge at the discussion moment.

To summarise the whole research process, the final outcome is a *toolkit for project portfolio data validation* and a model, how to utilise it. According to testing phase and results, this toolkit is ready for implementation as described in sections five and six, considering the restrictions with strategy visibility and process decision making as mentioned above. These restrictions and how they affected in this thesis' research process and original expected outcome are discussed more in depth in final chapter 7.3. In the next chapter 7.2, the recommendations for next developing steps will be presented.

7.2 Immediate next practical steps

In this chapter, the recommendations for the next improvement steps are discussed in a context of the research results. As a primary observation, the found and proved deficiencies in the Kela's portfolio management processes affected this solution in a way, where the original objective of this thesis is getting less weight. Summarily, this signifies the fact

that certain parts of portfolio management process must be on a more mature level, before the benefits from the better defined and validated project portfolio data could be capitalised.

As a result, it was obvious that the project portfolio information stored in the PPM system was not of a good quality considering the demand for decision making needed in the portfolio management. During the research process, a project data check-up was made not only for this research's purposes, but also as a Kela portfolio management routine task. Project managers and owners were sent a message and instructions on how to update and/or correct their projects' data content to match with the standards and regulations set for project management in Kela. However, the reception of these check-up tasks varied significantly, since some of the recipients did not even understand, why this data validity control was organised and a majority did not react at all. This observation can be seen as a strong evidence of a gap between the Kela's actual project culture (how people actually act) and the guided instructions and regulations set for project and portfolio management (how they should act). Therefore, it is firstly essential to understand, that an infinite process of project data correction will not produce satisfactory results in a reasonable time. Instead, the improvement should start from top-down point of view and start to raise up the maturity of the Kela's project culture. From this thesis' point of view, the improvements should be seen divided in two sections, the portfolio management process itself and the procedures executed in a single project's management.

Starting from the process side, first recommendation is to develop and implement processes for portfolio management in a way as it is discussed in chapters 4.2 and 5.3. This should include not only the portfolio planning process, but also at least processes for monitoring and change management of a project portfolio. Since the very start of this research, it was rather prominent, that portfolio planning in Kela was not controlled under a single, well defined planning process but instead it was managed via several process-like actions. With a defined and managed body of processes, the responsibilities of the process participators would be transparent and recognised by other stakeholders. A process would also include the decision-making gateways, which would ease the planning especially in a way, how planning steps should be placed in a chronological order e.g. using a timeline or a year clock. The gateways would also pin the portfolio data utilisation in different process parts and ease the data check-ups. Considering this thesis' subject on how to utilise project portfolio data, the utilisation will be much more relevant and

effective, when the data is not only valid, but also strongly linked to process and its decision gateways. The prioritising included in the portfolio selection should be also noticed in the planning process and when defining the prioritising data needed as presented in chapter 5.4.

When examining a single project's management and its' relation to the portfolio data and its' integrity, it is rather clear, that a project manager's competence on project planning and project data maintenance in Kela will need improvements. This must be understood in a context where the data of the projects currently under execution does affect not only to the ongoing portfolio, but also to the portfolio under planning as stated in chapter 5.5. Therefore, every project manager is responsible to update and maintain his/her project plan in the PPM-system also considering the fact that it has a straight connection on how the project is appearing in a portfolio. Since a research of Kela's project management process was not included in this thesis' scope, this recommendation will be based more on discussions held during the action research process with portfolio stakeholders and PMO personnel responsible for portfolio data quality. A single project's manager, owner and steering group members should understand the need for keeping the project plan and project information up-to-date in a similar way. Therefore, it will be essential to train the project managers, owners and steering group members to understand the Kela's standards and instructions for project planning and execution, and why it is important to take care of a single project's data validity. This improvement together with the well-defined and executed portfolio management processes would be most effective improvements according to the research results.

Performing regular portfolio health checks and data check-ups will be also needed, but as mentioned earlier, they may not be very effective, if the project manager (or other personnel related) do not understand the reason for data updates and the value of the valid data. When the process will be under a control and regulated, the data check-ups should be tied to the decision-making gateways to ensure correct data for making correct decisions. This check-up procedure should be based on standardised check-lists and should be synchronised with both the portfolio under planning as well as with the currently executed portfolio.

Some separate, but obviously important suggestions for improvements, which came up during research process includes a well-defined measuring method for a project's level of completeness and also the need for a uniform project prioritising rules and procedures.

The budgeting process was also seen rather problematic among portfolio management personnel, and a highlighted improvement wish was changing the budgeting procedures into a more transparent process-like actions. The portfolio planning budget should be defined and completed before the project selection and prioritising stage.

7.3 Evaluation of thesis project

When evaluating this research process and its results, it was rather clear from the very beginning, that the operational environment of this research was rather wide and diffuse. In the Kela's portfolio management, there are many operators in different roles, which made it rather challenging to form a big picture of the operations as whole. This was also rewarding in the context of action research methodology, since examining and re-engineering the weakly defined portfolio processes was instructive and produced also a great amount of beneficial information for different purposes also outside this thesis' scope. The reverse effect was a rather time consuming research process, since the data collection and analysis was a major challenge due to the ambiguous roles and responsibilities of the portfolio management actors as well as the diffuse processes. However, it was a major finding also for this thesis' purposes that the portfolio (planning) processes were not explicitly and uniformly defined and operated. Instead there were several different approaches to the portfolio planning and management depending on the process actors role. At first it was not only confusing but also a finding, which correlated with other findings especially in the data integrity and validation.

The applied action research was a justifiable choice as a research methodology, since the researcher could act as an observer also during his daily work and not only in specific situations organised for the research only. In some occasions, there was a challenge to have the chance to follow some substantial portfolio planning procedures due to the hidden process parts, but nevertheless the information used and/or produced in these situations were later available. In the research environment, it would also have been fairly challenging to proceed by utilising quantitative methodology, since the studied phenomenon was in this case hard to confine and repeating the process would take remarkably long time to ensure the results. This was emphasised by the fact that Kela was under a large organisational change program during the thesis process. The chosen methodology could also be seen as a reliable and valid one considering the results, since the correlations found between different research findings matched well with the best practices in theory and also with the opinions by the process participants in the final discussions. A good example of this was the especially strong correlation between a weakly defined portfolio planning process and the incoherent understanding and utilisation of

the portfolio data. The theory review and examination was satisfactory except the concepts of portfolio data integrity and validation. It was relatively effortless to find out information and writings about the portfolio management, portfolio composing and prioritising. However, when it comes to the concepts of portfolio information management and portfolio data integrity and validation in the context of knowledge management and decision making, it looks like there is not very much research and writings done considering the portfolio data quality vs. decision making reliability. The main reference on this field of theory was the writings of Cooper et al. (1997, 2001 and 2008), otherwise the theory formulation had to be partially interpreted by combining the portfolio management and knowledge management theories.

The conclusive outcome of the research does not exactly match with the initial objective and pursued outcome set at the very beginning of this study. As stated in the chapter 1.2, the expected outcome would be “a toolkit, which will support the portfolio planning to achieve a well-composed project portfolio consisting of prioritised projects with equally defined and revised information content, on which the prioritising is based on.” When analysing the results against this statement, it is noticeable, that the linkage between portfolio data and information needed in project prioritising had to be left on a proof-of-concept - idea level. The same deprivation was found, when trying to link and define the portfolio information with the process decision making gateways. Since the portfolio process(es) were found weakly defined and fragmented, there were not a systematic procedure for prioritising nor process gates for decision making. However, this was noticed in a rather early stage of the research process and instead the proof of concept method was used to indicate, how Kela should organise its portfolio planning to make the information more functional and available. Finally, the part of the initial objective, which consists of “...a simple data model for project information and definitions for these project information data types” succeed satisfyingly. During the research, the erratic planning, updating and maintenance of the project data was revealed, which showed the need for project data definition and correction tool. This tool was then created and as a result from testing and final discussions, it was also found essential in the future development. The deployment of the data model toolkit and data check-up criteria was then implemented to the Kela’s PMO for further utilisation.

As summary and result of this thesis, if an organisation wants to improve its performance by utilising project portfolios and knowledge based management, it is firstly important to

understand how these concepts operate together by setting an appropriate and applicable management processes. Since the idea of knowledge management is based on how factual information can be utilised in decision making, it is also essential to define and validate the data needed in decision making gateways. The research evidenced certain immaturity in Kela's project portfolio management as well as deficiencies in project culture. This case was recognised also by Kela during this research period, and a plan for moving towards more agile methodology like Scaled Agile Framework (SAFe) was started to speed up improvements in Kela's operational developments.

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Appendices

Appendix 1

The research interview form

The form used in the research interviews is presented below (in Finnish only). Parts 1 – 3 are background information or metadata and the actual interview themes are in part 4. The summary of the interviews was dispatched to the instructor for a review.

KANSANELÄKELAITOS Koodi Opinnäytetyöhaastattelu Sjöberg Mikko	Haastattelulomake 20.10.2014	
<p>Haastattelulomake</p>		
<p>1 Opinnäytetyö</p>		
<p>"The <u>utilisation</u> of project portfolio information as a part of decision making process in portfolio planning"</p>		
<p>2 Opiskelija</p>		
<p>Mikko Sjöberg Health Business Management -<u>masters</u> thesis program <u>Metropolia amk</u></p>		
<p>3 Haastattelu</p>		
<p>3.1 Opinnäytetyön tarkoitus</p>		
<p>Työn lähtökohta tiedolla johtaminen, portfoliotiedon käyttö päätöksenteon tukena, kehittämisen johtaminen</p>		
<p>Kelassa kehittäminen tehdään kehittämisprojekteilla, jotka ovat salkuissa</p>		
<p>Tavoite: työkaluseti salkunsuunnittelun prosessin apuvälineeksi ja tueksi</p>		
<p>Metodi action <u>research</u>, kvalitatiivinen, prosessissa mukanaolo ja/tai sen tarkkailu, tiedonkeruu, johtopäätösten tekeminen, parannusehdotus, testaus</p>		
<p>Tiedolla johtaminen on kontekstina, siksi kiinnostus salkkuinformaation tuottamisesta, tarpeesta ja hyödyntämisestä</p>		
<p>Työn tarkoitus on jatkaa siitä, mihin IPMA Delta jäi, eli kohdasta <u>what</u> to > <u>how</u> to</p>		
KANSANELÄKELAITOS PL 450, 00101 Helsinki Puhelin 020 634 11 etunimi.sukunimi@kela.fi	FOLKPENSIÖNSÄNSTALTEN PB 450, 00101 Helsingfors Telefon 020 634 11 fornamn.efternamn@kela.fi	1 (8) www.kela.fi

3.2 Haastateltava**3.2.1 Nimi/koodi****3.2.2 Asema organisaatiossa****3.2.3 Rooli organisaatiossa****3.2.4 Paikka****3.2.5 Nauhoitus Kyllä/Ei**

4 Teemat**4.1 Rooli salkunhallinnassa**

Muista: yksikön salkku, katso asiaa omasta näkökulmastaan

Osallistuuko päätöksentekoon

Onko rooli annettu vai tuleeko se muiden tehtävien kautta

4.2 Tehtävät salkunhallinnassa

Mitä tehtäviä

Muista kysyä miten, millainen, joissakin tapauksissa miksi

Tuotatko tietoa salkkuun

Mihin kohtiin prosessia osallistut

4.3 Miten hyödynnän salkkua työssäni vuoden aikana

Miten haluaisin hyödyntää

Missä vaiheessa

Ojko riittävää tietoa

Tiedon laatu

Mitä haluaisin lisää