

Concept for IT Demand Management: Case UPM-Kymmene Oyj

Laitinen, Pekka

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Laurea University of Applied Sciences

Concept for IT Demand Management: Case UPM-Kymmene Oyj

Laitinen Pekka
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Laitinen Pekka

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IT demand management creates the foundation for the operation of every IT department. The demand is generated by many different sources. The IT department must be able to respond to the demand with adequate resources and capabilities. Controlled demand management positively affects the cost management, resource allocation and the ability to respond to business needs more proactively.

This research was commissioned by UPM-Kymmene. The main purpose was to increase the transparency and visibility of IT demand across services and businesses. In addition, the objective was to unify processes and tools for capturing demand.

The developed concept is based on the theory, best practices in IT demand management and benchmarking results. With reviewing internal material and conducting interviews the current state has been examined and the most significant problems in the process identified.

Based on the study results, a model has been created for collecting demand, categorizing according to type and size, and managing demand with common rules. Key responsibilities were also described. In addition, the required actions and tools for deploying the concept have been presented.

In conclusion, it can be shown that the foundation for effective IT demand management is created with sufficient and proper communication between company representatives and the IT department. Clear roles and responsibilities are required for gathering and analyzing demand in addition to common rules based on which the demand is approved for implementation. A suitable tool is also needed for collecting and managing the demand.

Keywords: IT demand management, IT service management, IT portfolio management

Pekka Laitinen

IT kysynnänhallinnan konsepti: case UPM-Kymmene Oyj

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IT kysynnänhallinta luo perustan jokaisen tietohallintoyksikön toiminnalle. Kysyntää syntyy monesta eri lähteestä ja siihen pitää pystyä vastaamaan riittävillä resursseilla ja kyvykkyyksillä. Kontrolloidulla kysynnänhallinnalla voidaan vaikuttaa kustannuksiin, resursointiin sekä kykyyn vastata liiketoiminnan tarpeisiin ennakoivasti.

Tutkimus tehtiin yritykselle UPM-Kymmene. Sen tarkoituksena oli lisätä näkyvyyttä IT-kysyntään palveluiden ja liiketoimintojen välillä sekä yhdenmukaistaa prosesseja ja työkaluja kysynnän keräämiseen.

Konsepti perustuu tutkittuun teoriaan, parhaisiin käytäntöihin IT-kysynnänhallinnasta sekä vertaisarviointeihin. Lisäksi sisäisen materiaalin ja haastattelujen läpikäynnillä on kartoitettu nykytilaa ja tunnistettu merkittävimpiä ongelmia prosessissa.

Tutkimusentulosten pohjalta on luotu malli jolla kysyntää voidaan kerätä, luokitella tyyppin ja koon mukaan sekä käsitellä yhteisillä säännöillä. Mallissa esitellään myös avainroolit ja niiden vastuut kysynnänhallintaprosessissa sekä tuodaan esille tarvittavat toimenpiteet ja työkalut konseptin käyttöönottoa varten.

Lopputuloksena voidaan osoittaa että tehokkaan IT-kysynnänhallinnan pohja luodaan toimivalla vuorovaikutuksella liiketoiminnan ja IT-osaston välillä. Kysynnänhallintaan tarvitaan selkeät roolit ja vastuut kysynnän keräämiseen ja analysointiin sekä yhteiset pelisäännöt, minkä pohjalta kysyntää hyväksytään toteutukseen. Kysynnänhallintaan tarvitaan myös sopiva työkalu jolla kysyntää kerätään ja käsitellään eteenpäin.

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Abbreviations

BITS	Business IT Services
CMDB	Configuration Management Database
CI	Configuration Item
CRM	Customer Relationship Management
CSI	Continual Service Improvement
ITIL	Information Technology Infrastructure Library
PMO	Project Management Office
PPM	Project Portfolio Management
SaaS	Software as a Service
SLA	Service Level Agreements
SM	Service Manager
SO	Service Owner
SPM	Software Portfolio Management

1 Introduction

This chapter provides descriptions of the main topic, the sponsor, the scope and the background of the topic. The main concepts are also described in order to be able to understand the environment within which demand management is located and interacts. The limitations to the scope and the research methods of the study will be also covered.

1.1 Objective and research questions

The topic of the thesis is “Concept for IT Demand Management - Case UPM”. The research questions are:

- What are the key elements of effective and comprehensive IT demand management?
- How to implement effective IT demand management process in the case company?

From the point of view of ICT functions and in order to achieve effective cooperation with business it is vital to ensure that ICT understands business demands and is able to respond to those with adequate resources and capabilities. To be able to manage business demands holistically and in a proper way a formal governance model, clear responsibilities within the process and common agreed principles for gathering and categorizing demands are needed. In other words, a concept of demand management.

It is known that the market positions, markets and customer demands are changing rapidly all the time. Thus, IT must be able to adapt the allocation of resources and the focus of attention at the same rate. To be able to predict demand and future business prospects may assist in gaining a competitive advantage (Vlcova & Paták, 2010).

There are also possible risks which can be mitigated with discipline and transparent demand management process. Such as avoiding parallel projects and actions within ICT and businesses. There is an increased risk to carry out the same sorts of projects or development action without comprehensive visibility to all demand items. Parallel work will usually cause extra cost with the waste of extra labor and supplier work. With a comprehensive and holistic demand management concept it is possible to avoid parallel development or gain some synergy by combining several similar demand items. (IT Standard, 2016; Piot & Baschab, 2007, 544-545.)

Another point is the risk that if ICT does not react to business demands properly and soon enough, the business might be forced to pass ICT department when commissioning development and implementation work. This action might even be taken without the ICT that has the

knowledge of IT purchasing or sourcing. The lack of proper evaluation and sourcing of the project and its requirements will often cause extra costs.

1.2 Background

This thesis is ordered from a sponsor of the thesis, UPM-Kymmene Oyj (hereinafter UPM). UPM-Kymmene is a Finnish forest industry company. UPM consists of six business groups: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Paper Asia, UPM Paper ENA and UPM Plywood. The Group employs around 21,000 people and it has production plants in 14 countries (UPM-Kymmene, 2016). UPM is branding as a “Biofore” company as it is heavily developing and utilizing bioproducts like biofuels, biocomposites and biochemicals made of new innovative raw materials.

UPM IT department is a global function which provides IT services to all business units. UPM global IT carries out application development and maintenance services, IT infrastructure maintenance and end-user services together with external suppliers. IT functions currently employs around 250 people worldwide. The following figure 1 will show the operation model in service integration and management function between the business demand and IT supply. The structure is built based on the service integration and management model where UPM IT is performing as a service integrator in multi-vendor environment.

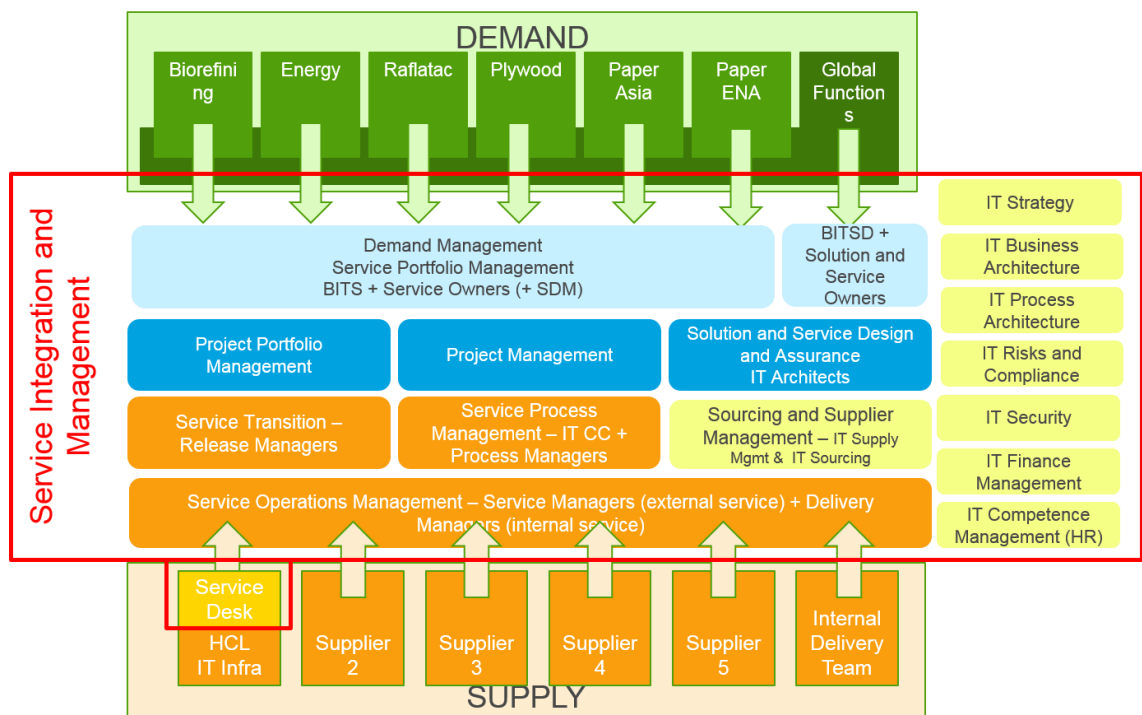


Figure 1. UPM IT Operating Model (UPM 2015)

As it is seen in the picture from an operational point of view demand management is part of the service portfolio management and IT strategy function. Demand from business is captured by Business IT Service (BITS) accountable managers or service owners and communicated to all necessary stakeholders for further processing and evaluation.

UPM has conducted a preliminary study by Timo Kaulio about the demand management status and recommended development actions. This report will clearly show that there is a need for clearer concept and process for managing demand. First theme is that the comprehensive concept is missing. There is no process defined for demand management which would combine the process to the other part of the service lifecycle. Such as from technology or platform maintenance viewpoint, to development roadmaps and pre-approved or regular maintenance windows. Second theme is that there are no commonly agreed ways of interacting with business (like meeting practices). Effective communication and cooperation with business units are crucial parts of effective demand management.

Third theme is that there are no holistic ways of gathering and validating demand within the business lines and services. In addition, role descriptions of the responsibilities to the demand management process are partly missing, misused or misunderstood. Last theme concern a tool. There is no common tool or way of gathering all demand. Therefore the total visibility of demand and demand classification is missing. At the same time dependencies across different demand items are missing. (Kaulio, 2015.)

1.3 Scope and limitations

The study is limited on the concept level to IT Demand Management. Demand management can be considered in different ways depending on the context. Information technology infrastructure library (ITIL) describes demand management with a narrow focus as it is directly linked to capacity and resource management. “The objective of ITIL Demand Management aims to understand, anticipate and influence customer demand for services. Demand Management works with Capacity Management to ensure that the service provider has sufficient capacity to meet the required demand.” (ITIL Service Strategy, 2011, 245). However, IT Demand management also includes gathering business demand, evaluation, prioritizing and categorizing demand. There is also a close relationship to demand management tools as a collective repository for all demand items.

From the service lifecycle point of view the scope is limited to the part of service strategy and service portfolio management from IT viewpoint. The study does not take a stance on how the business validates demand or what the business approach of suggesting IT development items is like. From the process flow point of view the scope is limited to the phase from demand has been identified and captured to the phase in which demand has been classified, prioritized and

recorded at the common database. Financial aspects like financial validation, chargeback or ROI return on investment (ROI) calculation is also out of scope when determining demands justification or prioritization.

Resource management, staffing and resource allocation are also excluded on a tactical level. In addition, initiatives has been not covered as a type of demand item. There is a separated process for handling initiatives in the client company. Demand items on the scope are projects, application enhancement requests, bug fixes and technical IT items such as planned maintenance actions, patches, version upgrades. Hardware related demand as a part of asset management process has been also excluded from the subject of the review.

1.4 Research methods

The following research methods have been utilized for gathering information and knowledge about the topic: interviews, benchmarking, literature research, articles about the topic, documentation and other sources like external specialists in the research area. This thesis is a functional thesis. There is a clear output in the form of concept or guidelines for process deployment and improvement. The thesis is also strongly based on interaction with the other parties and aim to develop working life. In that sense the thesis differs from a research-based work. (Salonen, 2013.)

The theoretical framework based mainly literature sources, articles and other documentation about the demand management. The conclusion and the concept for IT demand management have been conducted based on the results from the interviews, benchmarking and theory of the best practicalities to manage demand. Results have been reviewed, analyzed and brought down for concept creation.

Structured theme interviews have been utilized as methods for collecting data. Interview questions and interviews can be found in appendix 1. The interviews have been carried out with the email questionnaires and face-to-face meetings. Interviews were used for trying to find out the main challenges or problems in the demand management process and the current status and level of demand management in the UPM organization.

Benchmarking was used to find out how the other companies had utilized and organized demand management process into their organizations. Benchmarking is the way of learning from other companies or organizations and identifying the best practices that have been used by similar actors. And further to adopt and conduce these practices to the company's own operation (SixSigma, 2016). Benchmarking helps identify the weakness and deficiencies in the operation and processes. Based on the results it is possible to make corrective and required actions. The benefits which can be achieved with benchmarking method are for instance process or quality

improvements, encouraging the use of dialog and interaction in addition to identify weaknesses and improvement targets. Benchmarking interviews have been carried out by visits in the target companies and email questionnaire. Target benchmarking companies were KONE, Neste Oil and Ahlström. Benchmarking Interview questions can be found in appendix 1.

The concept for demand management will be based on the analysis of interviews and benchmarking results in addition to the internal and external material about demand management theory and best practices. Figure 2 will show the logical path from processing of theory to the analysis phase and the finally to conclusions.

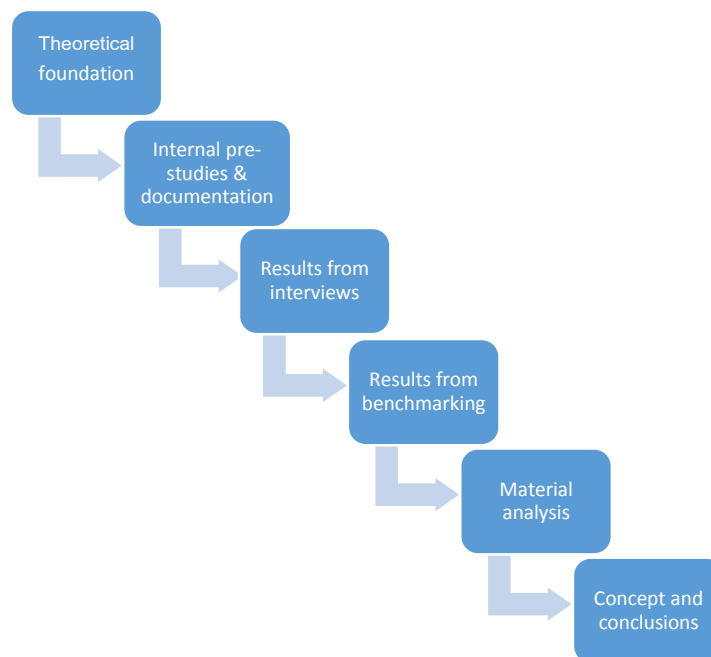


Figure 2. Analyzing Methods.

Material analysis also includes all the existing sources utilized, in addition to presentations that have already been created within the research topic. Case company's internal preliminary studies and other documentation have been utilized to analyzing the current situation and level of demand management. The more detailed concept with company specific guides and information has been classified confidential.

1.5 Main concepts

Business strategy fundamentally aims to define company's vision and mission and the ways of achieving the main objectives set within business strategy. Organization's business strategy gives high-level principles and framework with the key characteristics within which IT will operate. The other way around IT will contribute business strategy with the solutions that best support the business vision and fit the strategical business goals. (ITIL Service Strategy, 2011, 134, 164.)

Enterprise Architecture (EA) aims to build a holistic view of the organization's strategy, process, business and technology. In practice it is a construct used to describe the relationship between the strategic direction, business practices applications, technology resources and information flows. This work is then documented in different architectural models that illustrate how the current and future needs of an organization will be met. (Scott 2012, chapter 1.)

Information Technology Infrastructure Library (ITIL) is the collection of the best practises to perform and deliver IT services. ITIL framework is owned by Axelos together with U.K government and Capita. ITIL consists of five book which also define the five main phases of service lifecycle management. The books are service strategy, service design, service transition, service operation and continual service improvements. (Gartner, 2016.)

IT service management (ITSM) gives the guidelines how the IT services are managed, organised and developed by IT provider(s). Maturity of ITSM will directly reflect to the ability adapt and provide services whit best possibly way for support business needs. (ITIL Service Strategy, 2011, 164.)

Project portfolio has an essential part of collecting and prioritized development initiatives which will be executed in project format. The main targets of project portfolio management are classifying and prioritizing projects in addition to ensure appropriate and sufficient resourcing balancing with priority. (IT Standard, 2016.)

Service lifecycle management consists of five parts of service lifecycle. Those stages are service strategy, service design, Service Transition, Service operation and Continual Service Improvement. The ultimate target is that service can be adapted and responds effectively in the every stage of the lifecycle to the business demand changes and business needs. (ITIL Service Strategy, 2011, 248.)

Service portfolio is the set of services which are managed by service provider. It will help organization in tracking investments against business outcomes. The service portfolio consists of three elements: Service pipeline, service catalogue and retired services. (ITIL Service Strategy, 2011, 170.)

Service strategy defines the principles and processes how the service provider will enable an organization to achieve its business outcomes. Which services will best be suited to meet business outcomes and what is the most efficient way for managing these services. (ITIL Service Strategy, 2011, 133.)

2 IT demand management

The follow chapter describes the demand management process generally and tries to describe the best practices and suitable tools for managing demand and at the same time helps understand the real nature of demand management and its behavior in the different phases of the process.

2.1 Meaning and purpose of the IT demand management

ITIL Service Strategy (2011) describes the essence of the demand management. Demand management is the process which aims to fundamentally identify, understand, anticipate and predict demand which comes from the customer. A further aim is to respond to this demand by providing adequate and required services and capacity. Demand management is a critical part of service management.

As a process, demand management is part of the ITIL service strategy stage of the ITIL lifecycle. However, a fully effective demand management process needs to be active in each stage of the service lifecycle. Those stages are service strategy, service design, service transition, service operation and continual service improvement. These stages build the essential framework of ITIL best practices. (ITIL Service Strategy, 2011, 244-245.). The draft of the service lifecycle and the demand influencing in the different stages can be found in Appendix 8.

As the ITIL Service Strategy stated demand management ensures that services are planned, tested and delivered so that business objectives have been achieved with adequate and demanded level. Demand management is also strictly associated to other processes. The most essential interfaces are strategy management for IT services, service portfolio management, project portfolio management, business relationship management, financial management for IT services, IT service continuity management and capacity management. (ITIL Service Strategy, 2011, 254.)

The essence of the framework of demand management consists of IT service strategy management and portfolio management. The service portfolio consists of three parts, which are described more closely in chapter 2.2. Project Portfolio management targets to steer and monitor project development on the high level to ensure that all the projects have valid justification and all project dependencies have been identified (IT Standard 2016). The project portfolio is managed by the PMO that is responsible for keeping the project portfolio up-to-date, managing project dependencies, and evaluating new development initiatives by using common criteria and prioritization. It is essential that all the projects in the portfolio have a proper justification and all significant dependencies have been recognized. Figure 3 shows how the projects can be classified into four categories on their impact on systems and processes.

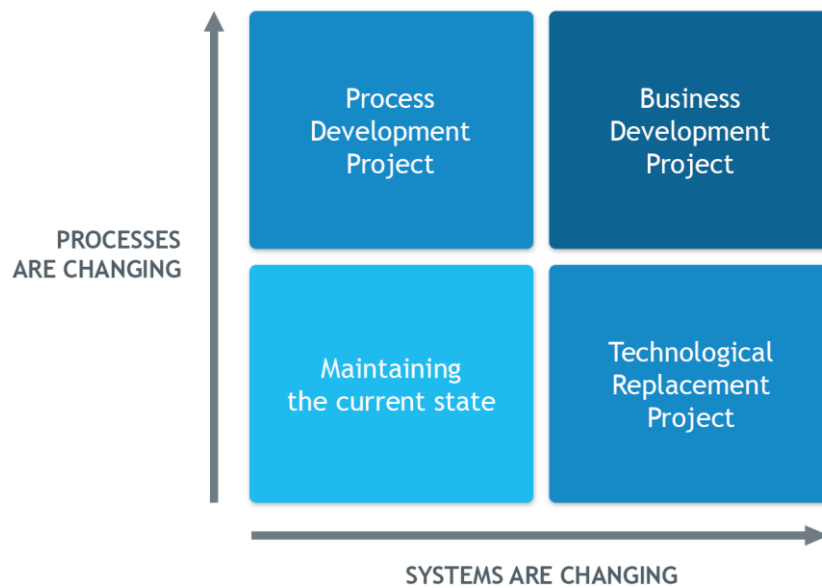


Figure 3. Changes affect processes and systems to different degrees (IT Standard, 2016)

The figure shows if the project has impact on technology and maintenance level or if it is more focused on process development or business development and affects the business core processes like ERP or CRM systems (IT Standard, 2016.). According to ITIL Service Strategy (2011), the purpose of IT service strategy is to define how the service provider will enable and how the organization will achieve business outcomes. Strategy management for IT services ensures that strategy is defined, maintained and achieves its purpose. Service strategy is the subset of overall company strategy and part of the IT strategy. From ITIL point of view the service strategy is a hub, which three other stages are surrounding and supporting as shown in the figure 4.

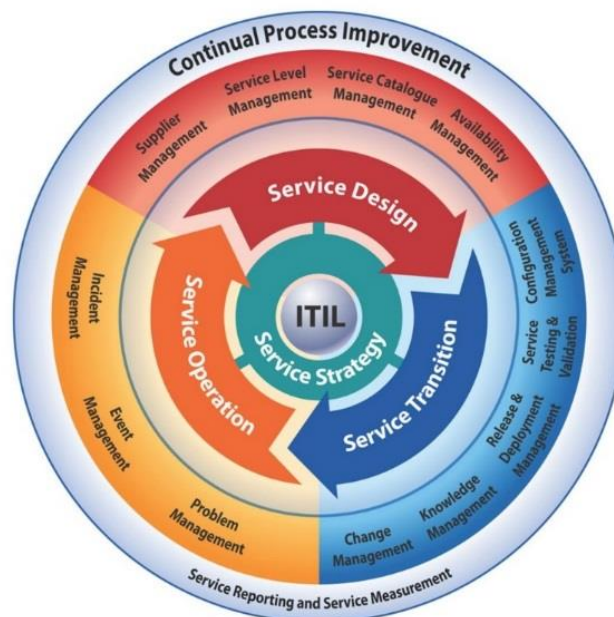


Figure 4. The ITIL service lifecycle.

As the above figure of service lifecycle shows, service design stage service is designed including governance practices, processes and policies required to meet the targets which have been set in the service strategy. Service Transition is a stage in which service is built and transferred into production with the expectations and requirements that have been defined in the service strategy and service design stages. Service operation will monitor and coordinate that service is delivered and managed at agreed levels to the business users and customer. (ITIL Service Strategy, 2011)

The Service Operation stage will be responsible for daily service operations including service desk, request fulfilment, problem management and access management. Continual service improvement (CSI) surrounds and supports all the other stages. The demand management aim is to achieve optimal balance between costs of service and the added value the service brings to the business. In practice this means optimal adaptation of the service to the existing business model and the manner how business takes the advantage of certain service. The value of the same service can differ between the business units depending on the customer segments, operations and volumes. (ITIL Service Strategy, 2011, 247-248.)

The main sources of information required for effective demand management are customer portfolio, project portfolio, service portfolio, meeting minutes between business relationship managers and customer and configuration management system. Ways of predicting and identifying demand rely on existing data and information. That kind of data sources can be business plans, marketing plans and forecasts, production plans, sales forecasts or new product launch plans. Different sources for demand are for example a need for the new service or changes to the existing ones. Like new service to supporting or creating strategical initiatives and needs or changes to the service model and processes. (ITIL Service Strategy, 2011, 248-249.)

2.2 Demand types and classification

As stated above IT demand may come from many different sources and formats. By Craig Symons at Forrester Research (2006, 5), demand can still be divided into three main categories. These categories and examples of those are described in figure 5.

Demand types	High-level management process	Sublevel Management process	Examples
Strategic	Project portfolio management	<ul style="list-style-type: none"> Clearly identify strategic objectives Take a full life-cycle approach to investments and benefits realization Use a fact-based process for decision-making 	<ul style="list-style-type: none"> Embed relationship managers Use a standard business case template with financial return Use a product plan to address upgrades and retirement/ replacement
Tactical	Service portfolio management	<ul style="list-style-type: none"> The service catalog is the heart of SPM Automated workflows for ordering, approving, and delivering Information for IT and user management 	<ul style="list-style-type: none"> Catalog a service: an email account with 50 gigabytes of storage costs \$1,000/user/year with 99.9% availability and weekly backup Process a request: a manager with a new employee starting orders a PC using a Web-browser interface to the catalog
Operational	Asset management	<ul style="list-style-type: none"> Keep desktop and infrastructure software up to date Comply with regulations Support the applications Maintain the hardware 	<ul style="list-style-type: none"> Install and configure exchange server Deploy latest Microsoft patch Take inventory of application software
	Application portfolio management		

Figure 5. The components of IT demand (Symons, 2006)

The classification above of different kind of demand types will cover all the sources where demand can be generated and all of those have a specific model of execution. These demand types are described in more detail in the following chapters. By Symons (2006) strategic demand is a demand for new projects which provide new innovations, new business applications and services. Typically that kind of demand accounts fifth of the IT budget but enables the most significant opportunities for business growth. Best practice for managing strategic demand and required a tight link between the strategic plan and project initiatives is done via Project Portfolio Management (PPM). Project portfolio management provides processes for evaluate, prioritize and monitoring projects. (Symons, 2006, 10.)

PPM incorporates the processes for a strategic plan, resource and budget allocation, project selection and implementation in addition to post-project measurement and meters. To be capable to enable strategic development and identify strategic business objectives close collaboration between IT and business is needed. By embedding IT relationship managers closely to business units ensures two-way information between business strategy and IT capabilities. (Symons, 2006, 5.)

When the strategic demand typically spent approximately 20% of IT budget remaining part is accounted to the day-to-day activities. Often referred to the term “Keeps lightning on”. Typically, it is difficult to forecast or anticipate to that kind of demand. Demand consists of different (informal) sources and activities. That kind of sources can be bug fixes, service request for

provisioning new employees, request generated by ticket management systems or verbal request made in the corridors. (Symons, 2006, 6.)

By Symons (2006, 6) it is possible to manage tactical demand via Service Portfolio Management (SPM). Service portfolio management provides tools and transparency for following of service costs, service quality and the link between service delivery and business value. One of the key element of the SPM is a service catalog. (Symons, 2006, 6.)

According to ITIL Service strategy (2011, 24) service catalog records all services delivered by IT with the structural form and will represent all the resources which are being utilized in various stages of the service lifecycle. It is a view for customers in order to describe the intention of the service and the level of the quality of service (SLA, service level agreements) which can be expected to be delivered to customers. Service catalog includes also a service pipeline which consists of all the service which are not yet in production but are under consideration or development. Includes opportunities and ideas of possible future services. Retired services will also be recorded into service catalog. The relationships between the different levels of service catalogs haven been described in the appendix 10.

By Symons third type of demand consists of operational demand. Operational demand comes from IT internally and is generated from IT driven activities, which aims at ability to support business core operations with IT assets and services. Operation demand consists on following parts: IT infrastructure management, patch management and security updates and applications software maintenance. (Symons, 2006, 7.)

IT infrastructure including servers, storage, physical hardware assets like servers, PCs, workstations, network, operating systems etc. needs continuous maintenance. Regular updating and maintenance of systems keeps infrastructure up to date and stable. Patch management and security updates. Software environment need continuous and active patching and updating for ensuring secure environment and preventing possible viruses and other threats. Applications software maintenance. Application Management Portfolio (APM) could be utilized for maintain and managing applications through their life cycle. With discipline APM processes application costs and software-related requests could be managed holistic way (Symons, 2006, 7.)

2.3 Best practices for managing IT demand

Based on the Gentle (2007, 37-38) in the traditional operating model the most important objective of the IT department has often be implement the project within given frame of the money and schedule. In which the main focus is on the execution of desired service or deliverable. The main question is “How” the outcome is carried out (by project, software development or leveraging physical assets) instead of “What” should be done (like capture demand, prioritize

it based on the business objective or implementing the project which really delivers business benefit). Projects have traditionally been launched based on the loudest demanding instead of the rational decision-making and thorough evaluation of real benefits. In addition, the criteria or meters often based more on time and financial factors or required features than the real value added for business.

According to the Gentle one of the most obvious and clear model to describe demand management as a progressive process is as a funnel or pipeline in which on the top is demand capturing stage. Meaning all the ideas, opportunities or requests identified and gathered by business. In this phase only the high-level schedule and financial framework is needed in addition to benefits in the overall level. In the next phase is for to build business case. In this phase, a closer look to the demand item is taken. The aim is to create as accurate and realistic business case as possible. With cost estimation and/or cost-benefit estimate for approval decision making. Pipeline approach is demonstrated in figure 6. (Gentle, 2007, 39-40.)

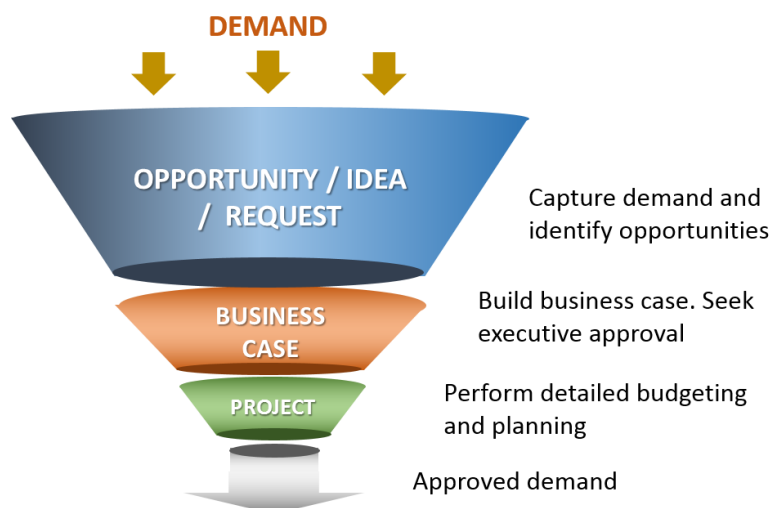


Figure 6. Managing demand - pipeline approach (Gentle, 2007)

If the business case is approved, the demand item will reach the final phase and bottom of the funnel. In the project phase a detailed plan including resource and cost allocation will be made based on the more detailed requirements and estimations. In this context “project” may mean any of the product application, development item etc. depending on the type of the demand item. To be noted that demand item will on exit the funnel for execution only if the project phase is approved. In the other words item has been approved to the project portfolio and roadmap with real allocation of funding and time. (Gentle, 2007, 40.)

Gentle type the demand into two section based on the approach. Planned demand as a part of the annual planning and budgeting process. In the other words demand has been taken into account into projects and funding of the continuous services as annual review. That kind of

demand need to be noted even if there is no funding at all to the other projects. Another part of the demand based on the unplanned demand which is unpredictable and appears more or less suddenly. That kind of demand may occurs as an enhancement or change request, bug fix and changes in the business or market environment. Also changes in the organizational structure can result in unexpected demand. (Gentle, 2007, 41-42.)

Because of a different type of demand needs the different level of approval process and business case validation, it is reasonable to divide the approach based on the type. The next picture of the pipeline will show how the different type of demand items can be managed with the different type of processes via approvals to the implementation. In some cases, a more time consuming process is acceptable when sometimes “fast-track” approach is needed. Figure 7 will show the differences between decision-making processes depending on the demand type. (Gentle, 2007, 42.)

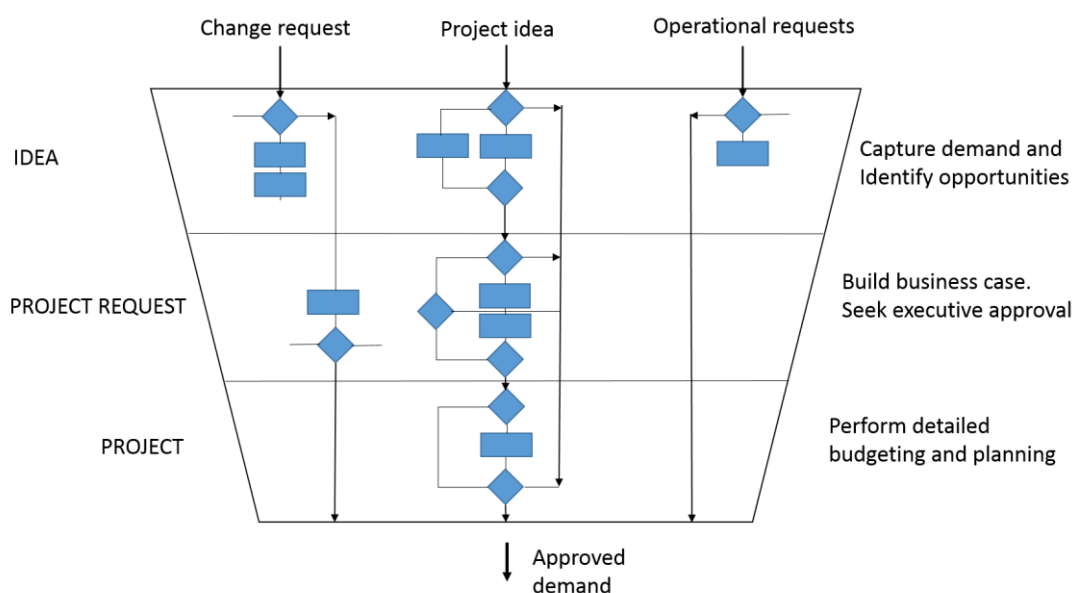


Figure 7. Different decision-making process as a function of idea type (Gentle, 2007)

Demand items, which passes through the first level of screening, will move to the more detailed review. In this stage, the business case is to be build based on the costs, achievable benefits, risks and other resources like labor and schedule. The most essential thing which also need the most accurate of defining is the business case creation so that the business justification point of view the demand item will be examined with adequate accurate of the real business objectives and goals. Not only the overall need or most loud asking of the demand (Gentle, 2007, 43.)

According to Gentle, the ultimate goal is to be able to build the business case with adequate accurate of the costs of the implementation. By Gentle (2011, 45) there is a challenge because the accurate costs cannot be known before more detailed specification requirements and

needed features are known. Because the exact requirements are not known in this phase, which is shown as an initial phase in the figure 8, we need to lean on the existing data to be able to compare resources and costs to the similar case. That way as accurate as possible business case with the required estimation of the resources is able to build.

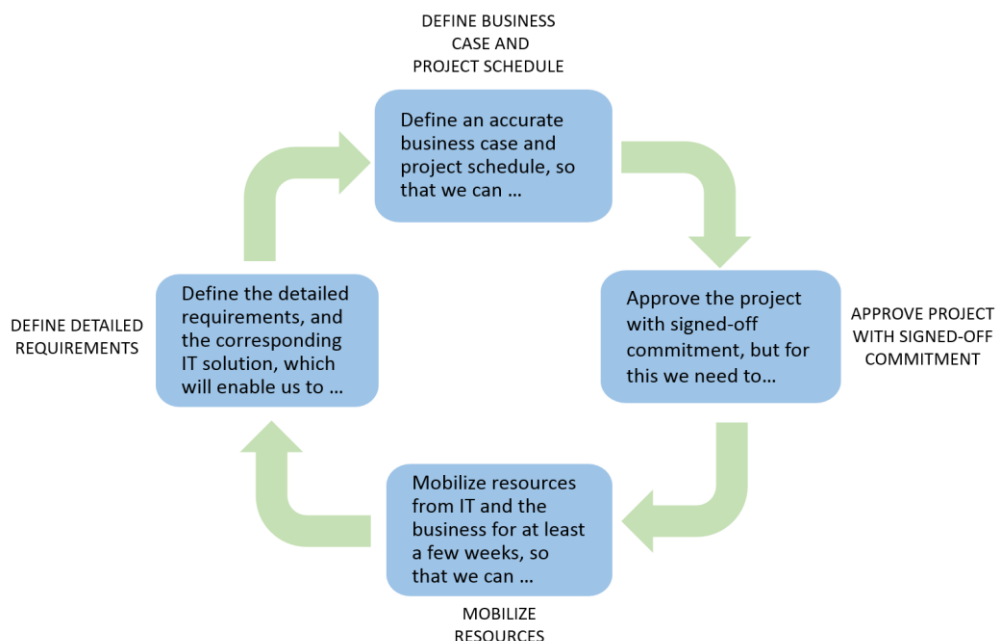


Figure 8. The commitment conundrum during the approvals process (Gentle, 2007)

We have the same challenge in the next stage when validating the business case. The project cannot be approved without the detailed budget for which we would need the detailed requirements which we still cannot have. The above picture will demonstrate that “Commitment conundrum”. It will show that in the decision making process in demand management can only rely on estimated resource planning based on the high-level requirements (Gentle, 2007, 45-46.)

By Gentle roughly all the demand should, when realized, support two main core objective. Either the growth of the operating profit or reducing costs. Because all the development or changes cannot be measured so straightforward (for example the projects aiming for increasing customer satisfy or enhance the corporate’s image) is the often more open scale of estimation needed and criterion which are not directly based on the profit increase of the cost decrease. (Gentle, 2007, 46.)

Another important aspect to be taken into account is to ensure that demand is aligned with the technology environment and architecture. In practice, this means the assessment of the demand item in order to ensure that from the competence and feasibility point of view it is aligned with company’s technical architecture and application environment. The availability and development of the technology need to be ensured also in the future. Either with the

internal or external resources. And at the same time make sure that adequate resources are available for building the service. In addition, need to be ensured that service will support and fit for (among other things via integrations) to application environment and required connections to the other systems can be made. (Gentle, 2007, 47.)

Finally, prior to final approval, should the potential risks be considered based on the above points: 1. Is service be integrated (and how well) to the existing application environment and architecture (technology viewpoint)? 2. What is the maturity of the organization to be able to adapt or change the process? 3. Resources and competences. Are there or required resources and competences available and at what costs? 4. Benefit realization. Are the desired benefits really realistic and achievable with the changes? (Gentle, 2007, 49.)

2.4 Resource management

Craig Symons (2006) will introduce resource management and importance of it in the demand management process. Resource management purpose a one of the key parts of the demand management is to align supply with demand. IT resources consists of capacity (infra related assets), people, and skills.

One of the main element of the resource management to storage and maintain skills, experience, and availability to be able to match the best people to project, continuous services or operations. Effective usage of the resource management tool ensures quick responses to staffing requests and will enable IT quickly identify and deploy right people to the required positions from both internal and external resources. It is also important constantly tracking skills and ensure appropriate development of employees to be able to find fast optimum resources for every kind of work. The following figure 9 will summarize the main components and processes of the resource management. (Symons, 2006, 10.)

Resource management component	Resource management process	Examples
Manage, plan, and schedule people resources	<ul style="list-style-type: none"> • Match people to projects, support, operations, and planning • Manage resource requests and staffing • Identify and track skills and experience 	<ul style="list-style-type: none"> • Staff projects with best available talent • Project manager uses Web-based form to request DBA resource for project • Resource manager uses skills database to determine best DBA to fill request
Proactively manage resource capacity	<ul style="list-style-type: none"> • Decrease overall costs • Ensure high availability of critical business services • Ensure appropriate response time • Use flexible external supply at the margin 	<ul style="list-style-type: none"> • Automatically provision additional Web server capacity • Automatically provision access for new hire with policy-based identity management tool • Augment help desk staff at end of quarter with temps or outsourcer

Figure 9. The components of resource management (Symons, 2006)

By Symons (2006, 9) an ultimate goal is to balance supply of IT resources to the demand and at the same time ensure that the business objective can be achieved with maximum cost-effectiveness and at an acceptable level of risks. To be able to provide effective service delivery resource management should aim to proactively approach instead of reactive staffing. Symons will introduce the following actions which support transition to the proactive way of working:

To automated resource provisioning. For example capacity to the web server can be auto-provisioned based on the experiences of the response time changes and the average demand for the server usage. Via policy-based capacity provisioning from the shared service pool it is enable to increasing or decreasing the capacity based on the current usage. That will decrease the overall costs and ensuring always adequate capacity for the end users. (Symons, 2006, 9.)

To automate and use auto-provisioning in the critical business services. Because of many workflow or process may be interrupted or is prone to failures due to the human based elements that kind of critical processes could be automated to increase their stability and availability. By pre-defining workflows, auto provisioning access rights via role-based identity management system, automating approval processes and utilizing self-service need for manual work can be minimized and that way accelerate process passage time and avoid the human mistakes. The good example of that kind critical process is when organization hires new employees. (Symons, 2006, 9.)

By using flexible external supply. To avoiding expensive last-minute supply, upgrades or hiring new people external resources can be utilized during peak times. If it is known that during the certain period, for example at the end of quarters, in financial services there is an increased

need for support it is able to proactively react to it. In this situation for instance the staff of help desk can be increased temporarily by external resources for “flattening-out” demand pike. (Symons, 2006, 8.)

2.5 Investment management

One of the essential part of the demand management process is to align the demand with the project portfolio. With the correct balance of different business objectives investments can be evaluated via portfolio management. By Michael Gentle (2007) demand for IT investments are typically high and in that way also demand needs to be able to justified from cost-benefit aspect.

To facilitate those intention investment categories could be defined based on the business objectives, expected return and risks. When evaluating demand types and defining those from the investment point of view in different areas, effective portfolio management is the critical tool. Examples from the IT investment portfolio categories following could be used: 1. Keep the lights on 2. Increase revenue 3. Decrease costs 4. Regulatory compliance 5. Strategic initiatives. (Gentle, 2007, 50-51) Figure 8 identifies the relative big amount investments are allocated to the day-to-day request as a source of demand.

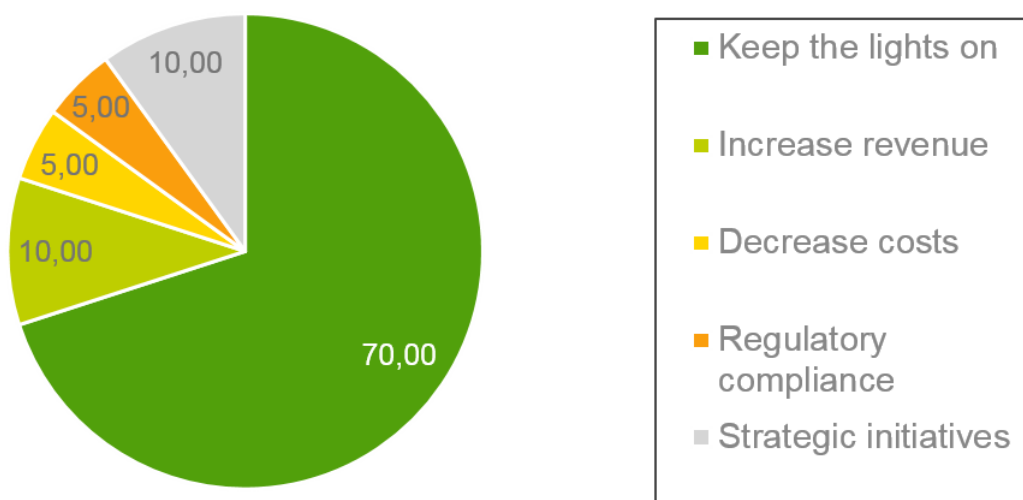


Figure 10. IT investment portfolio example (Gentle, 2007)

The chart in the figure is weight as a total amount of investments is 100. The IT investment portfolio can be stressed on different types of demand and that stress can be change based on the circumstances. By appropriate staffing can be ensured that company is able to allocate limited resources according to the most beneficial business objectives. The project with high-risk and high-return expectation would might be rejected but when seeing the overall portfolio

that kind of project can be justified and approved as a category of the high-return expectation strategic initiative. (Gentle 2007, 51.)

Portfolio planning does not take only decision if the demand objects are corresponding business objects in addition to opposite shows are there too few or too many of business objects against the projects requested. The below table, figure 11, for example shows that here are too much project funding allocated for business object “decrease cost” compering the other possible more important object “increase revenue” which has too few project funding. (Gentle, 2007, 52.)

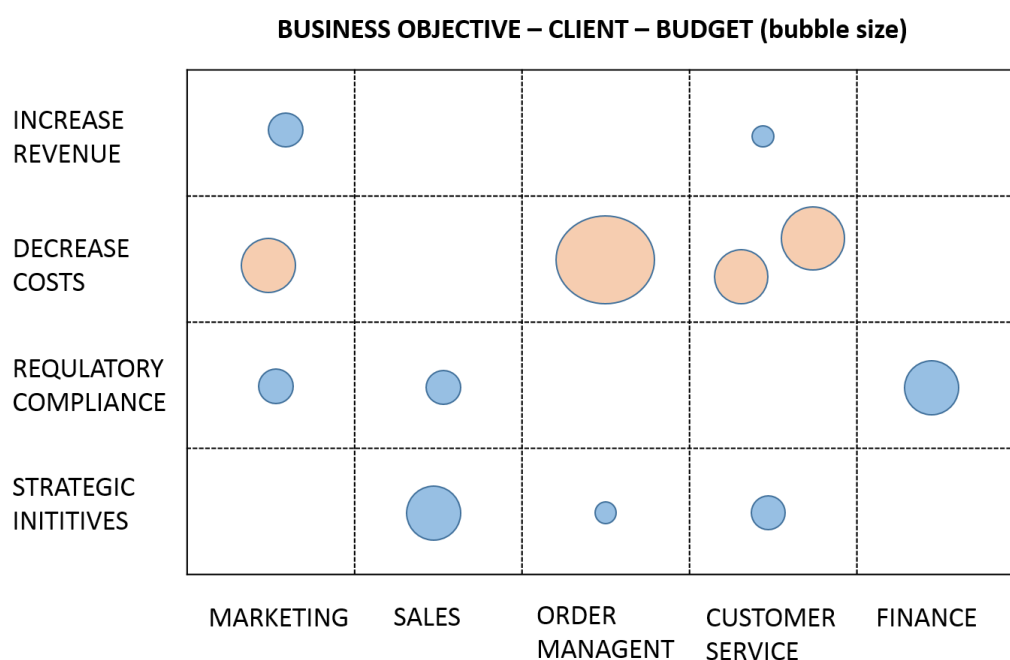


Figure 11. Sample investment portfolio breakdown by client (Gentle, 2007)

This may follow the changes to the weighting of the portfolio in order to achieve better balance between the investment objects. The monitoring will not ends in the project launch instead of the performance of the portfolio need to be reviewed regularly for ensure it is meeting the original objectives. (Gentle, 2007, 52.)

3 Demand management tools

Whit suitable and the proper criteria chosen tool will give a great number of benefits and useful features for comprehensive and transparent management of demand. Tools will also give an opportunity for integrated demand management as a part of the larger lifecycle of service or application management. Often the tools which have been utilised for demand management are implemented as a part of larger IT service management toolset. (Symon, 2008, 12.)

There are also demand management dedicated tools like HP PPM project and portfolio management tool which are concentrate for the portfolio and demand management level of the operations. Comparing to the comprehensive ITSM tools there might still be missed ability for end-to-end lifecycle management. Meaning there is either lack of integration to the other processed or missing some essential components like incident or change management. (Mercury Interactive, 2006, 9.)

In summary there are, however, a couple of major players in the market, which are covering demand management in addition to other service management processes and toolset. Gartner is an independent research and advisory firm providing information technology related insight. Figure 12 shows the matrix of ten leading ITSM tool providers.

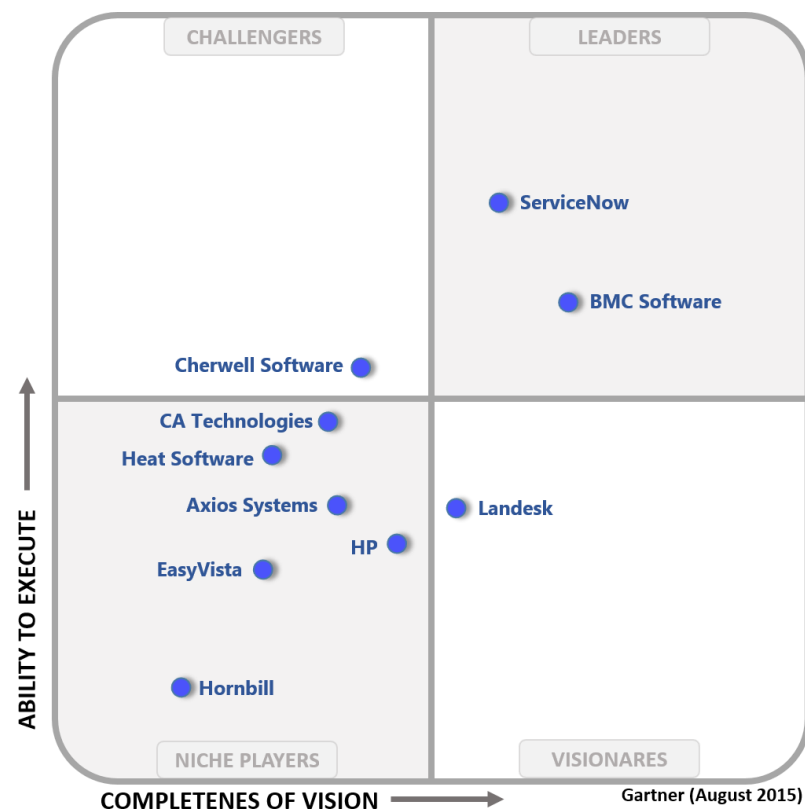


Figure 12. Gartner 2015 Magic Quadrant for ITSSM Tools (Gartner, 2015)

As the above figure by Gartner Magic Quadrant report from year 2015 will show, ServiceNow and BMC Software (Remedy) platform are the leading technologies in ITSM tool markets. The "Magic Quadrant for ITSSM" report based on the evaluation of the vendors. The evaluation has been based on the completeness of vision and ability to execute, and includes a summary of each vendor with strengths and weaknesses in the solutions. (Gartner, 2015)

By Forrester research (Cardin, 2007) an evaluation has been done based on certain criterion about the project portfolio management tools including the demand management process and capability to manage demand. Forrest evaluated 14 leading project portfolio management (PPM) vendors. The evaluation criterion has been “How well does the application process demand for new work?”. The result of the evaluation can be found in appendix 7. The results have been shown in the matrix in which scores are based on a scale of 0 (weak) to 5 (strong). It is still be taken into account that the research has been done in year 2007 and for example, ServiceNow is missing from the scope of evaluation. The assessment will, however, show that the demand management tool is essential part of project and portfolio management tools and in that sense also essential part of the holistic management of project portfolios, demand and the relations between those elements.

4 Main challenges and current state of demand management

This chapter will provide the information about how the interview questions, target audiences and benchmarking companies have been chosen. In addition, the chapter includes the results of the interviews and benchmarking. Interviews are reflecting the current state of demand management seen by UPM personnel and certain roles.

4.1 Background of the surveys

The research study will be based on the source material, interviews and benchmarking results. Interviews have been carried out by email questions and face-to-face meetings to summarize answers and feedback. Target audience for interviews has been chosen based on the roles which are in the key roles in the business relationship management and in this way in the demand management process. Communication and relation between IT and business are in the crucial role in the capturing and identifying demand (van Bon, et al., 2008).

The roles have been interviewed were business IT service managers, service owners, service managers and IT architects. All of those roles are in key role in the business relationship management, ensuring customer satisfaction and accountable for managing of the IT solutions for customer. As the below figure 13 shows, UPM has already taken the steps further in order to enhance business relationship management and communication between business and IT.

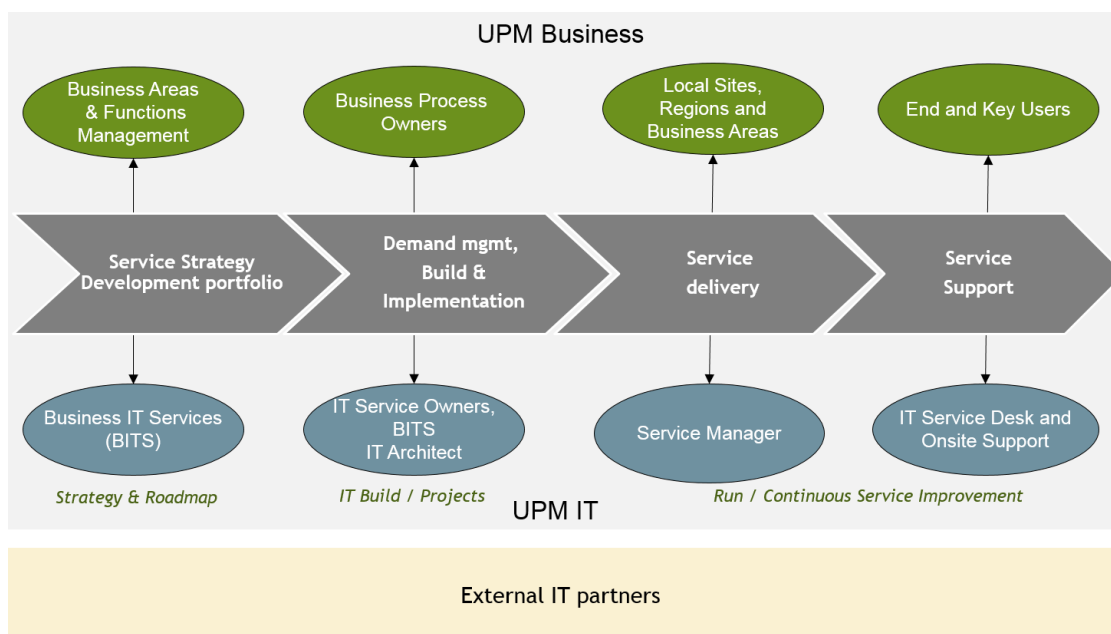


Figure 13. Business integration model (UPM, 2016)

The above figure shows the UPM IT business integration model, so called “zipper” model, in which there are representative counterparties from the business side in each stages of service delivery lifecycle. Further, those roles are in essential part when defining and developing a process for managing demand whit more efficiently and discipline way.

The interview question has been tried to limited only to the most crucial ones and reflected in the research questions. Interview questions are listed in appendix 1. The questions clearly highlight the main topics which should be answered in the questions. What are the main problems in the current process and how those things could be improved? The questions were also defined based on pre-study results made by Timo Kaulio, UPM, which clearly highlighted a few main themes of the demand management current status. There are no tools or ways to react and predict for demand soon enough and on the other hand the long enough period planning on-coming demand. In addition, the common procedures and tools for capturing, storing and classify demand are missing (Kaulio, 2015).

4.2 Major development areas in the demand management - case UPM

The results from the interviews can be break down into three main themes have been raised up. Predictability of demand in addition to balancing between the resources and works in pipeline. Tool with the repository for demand initiatives. Roadmap and dependency management. Main themes are opened more closely in the following sections.

First theme was to increase predictability and balancing of demand. One of the clearest messages from the interviews was concerned to the ability of forecast demand and balance

development work to reasonable timeframes. This means in practice more balanced roadmaps in addition to be able to extend the predictability and roadmap planning periods. Currently new initiatives and development requests from business come on too short a period to reach and prepare beforehand with suitable resources and capabilities.

Second theme concerned to ability get the suitable tools for capturing and managing demand. Tool was the most significant single wish concerning the concrete element of demand management. Because there is no currently common tool for capture and manage demand, many of the useful and efficient features will be missed. It was also stated that ServiceNow platform will be the most natural and suggested option for manage demand records. JIRA software was also mentioned as a one option for demand management.

Third theme emphasized to manage roadmaps and dependencies between different layers of services. The theme was raised up concerned different level of roadmaps and dependencies between roadmaps and service components. Nowadays roadmaps are being upkeep with several different format and repositories mainly in PowerPoints, Excel sheets and SharePoint sites. It was also mentioned that dependencies between different layers is difficult to understand and look into in a comprehensive manner.

There were some variation of the emphasis depending on which role was in question. BITS (business IT services) managers were more concentrated to the high-level strategic initiatives and projects. They are seeing in that level there are not very much problems identified. Instead of on mid-side project and initiative level there were some uncertainty how some common principles could have been implanted in addition to the criterion against which the demand items could have been classified and prioritized.

Service owners, who has the overall responsibility for gathering business demand and development initiatives, concerning certain service area, are seeing more challenges in the overall amount of the demand and further for tools and ways to classify, balance and resource between different development requirements and items. Nowadays it too often based on "who shout the loudest" model. In the other words who requires more forcefully to provide and execute deliverables. Therefore, the long-term planning of work is missing.

From architectural point of view, the greatest cause of concern was the lack common practices of managing development roadmap and the missing of comprehensive view of dependencies during the solution lifecycle.

Overall methods and mode of operations varies a lot between UPM business units or service areas. In some areas there were clear concept and responsibilities how to gather business requirements and by whom. Some other areas there might have a heavily customized way fitted best for current operation environment and maturity of the business. More often young and constantly developing business need more agile and fast respond to business. The older and more stable businesses utilizes usually more solid and standardized model of operations (UPM 2016).

Overall demand management was clearly proved an interesting topic to which each one seemed to be an opinion. However, depending on own role and responsible area emphasis between the challenges and development targets varied.

4.3 Demand management in Finnish companies

In addition to interviews, benchmarking was chosen as another research method in order to cover the different aspects of demand management process. By benchmarking it is possible to compare the level of operations with the other operators' and learn about the best practices from other organizations. To get to know other similar companies and organizations can improve the reliability of the results. (SixSigma, 2016)

Benchmarking visits and interviews were made to the three pre-selected company: KONE, Ahlström and Neste Oil. All of those are part of the same major size class of Finnish companies as UPM-Kymmene is. All of those companies are also using the same kind of toolset for managing demand and project portfolios. Considering the above-mentioned similarities, the use of those companies for benchmarking supports the original idea of benchmarking very well.

All three companies have lately changed or are currently changing their processes and tool environment. The changes may include renewing their project and portfolio management (PPM) processes or, as of the initiative part of that, demand management process, or renewing the whole set of ITSM tools. From that perspective, the results are mainly a combination of the current situation and the targeted future state.

One of the companies was using a combination of the Salesforce and BMC Remedyforce tool for project portfolio management and gathering requirements. Salesforce is a cloud based CRM (customer relationship management) tools. BMC Remedyforce is also cloud based tool including all the essential ITSM processes and can be integrated into Salesforce CRM system. The initial point of the portfolio management was a requirement management phase in which the demand was gathered by key user network.

The demand capturing was done by the change manager and validated together with the appropriate business process owner. When demand was justified and approved in request management part of the process, it moved further to the portfolio management or change management process. Enterprise architect was responsible for creating and keeping road-maps up to date. In the future vision there is a common committee with IT and business in which the IT service owners, change managers and service managers are reviewing business IT demand.

The second reference company created custom-made solution based on the ServiceNow platform. ServiceNow (as Remedyforce and Salesforce) is the cloud based SaaS (software as a service) platform, which includes all the essential ITSM processes such as incident, change, problem or request management. The solution was based on the initiative or idea form via which requirements were entered to the ServiceNow system. There were eight pre-defined questions to the users in order to gather all the relevant and necessary information about the requirement and its benefits. When the required form was submitted, it was received to the ServiceNow system for further assessment and processing.

The third company had lately implemented demand management application of ServiceNow platform and was planning to start gathering demand through the demand management dedicated module. The workflow was built on the very light interface for idea logging which was then approved or rejected in ServiceNow. After the idea had been completed, it generated a demand item to one of the three classes. The first class was for project level initiatives meaning over 50,000 euro projects. The second class was for enhancements, which means a lighter decision-making process without the mandatory pre-study or feasibility study. The third class was the so called “e-class”. That class was especially for projects aimed at the increase in digitalization by leveraging the newest technologies like Internet of Things (IoT) or industrial internet. E-class could be executed directly by CIO approval.

As the results of the benchmarking in addition to the experience of the external expert of the matter (2016, Symfoni), it can be summarized that demand management maturity varies a lot between the Finnish companies. Especially tools for managing demand are usually missing or not complete enough to be able to manage an end-to-end lifecycle of demands. However, there is a growing interest in improving that area and an increasing amount of activities to enhance demand management. Demand management is usually considered as an integral part of the project portfolio management and project justification process. In addition, tools play an important part in capturing and managing demand.

5 Concept for effective IT demand management

This chapter will introduce the concept for IT demand management, which has been formed based on the results of the theory, interviews with benchmarking results in addition to overall

literature and documentation about demand management. The chapter will be divided into the overall process description with required roles and role descriptions, concept presentation and conclusions with suggested action points to the further development. The concept has been made with the aim of fit for purpose for the case company but can be adapted and utilized in other organizations freely with suitable parts. More detailed concept description with company specific values and processes has been set as a confidential material.

5.1 Key elements of effective demand management process

Business relationship management creates a foundation for adequate predictability and communication. After all, everything initiates from cooperation between business and IT department. Without proper and well working communication channels there is no possibility to deploy efficient and properly working demand management practices. For that reason, it is crucial to define and establish common meeting practices and practices for other necessary communication in order to keep both parties, business and IT, aware of each other's activities, requirements and future planning. Ideally, the aim should be to move from separate working functions towards a more fused operation model between business and IT (van Bon, ym., 2008, 24). The matrix of the communication maturity levels is presented in the appendix 6.

In order to establish well and efficiently working cooperation and a communication model between IT and business there are several essential things to be taken into account. These include, for instance, strong commitment and clear visibility to business strategy, IT's participation in business management committees, understanding about business markets and industry, and in addition that key metrics are defined in business language instead of technical IT terminology (van Bon, et al., 2008, 24-26.)

The tool is an essential part of demand management. Demand management needs a dedicated repository for storing and receiving demand initiatives. In addition features for capturing, classifying, prioritizing and managing demand items in a holistic and comprehensive way is required. The requirement of the tool with adequate features was the clearest signal cross the different roles and positions. When the tool is missing, most of the required features or possibilities are very difficult to deploy or facilitate wider. In order to get the synergies via integrated ITSM processes it is the most beneficial to select primarily the same tool for demand management that has already been chosen for other service processes. That will facilitate end-to-end process capability and visibility during the service lifecycle. However, the tool is still not the solution itself without a proper understanding of the process in addition of the understanding of the larger framework.

Roadmap and dependency management provide a required tools for proper planning of demand. The last theme concerned the ability to get an overall and solid view on different layers

of roadmaps and in that way getting a view on the dependencies between services, applications and technology components. Standardized roadmap templates and principles for maintaining roadmaps would give the answer to the requirement of both roadmapping and dependency management capabilities. It is recommended to utilize CMDB relationships management together with ServiceNow demand management and roadmap functionalities in order to achieve the targeted state of the area

5.2 Concept for IT demand management - case UPM

The concept and process description is focused on three main topics. Those topics have also been identified and brought out in several interviews and discussions about the current status and challenges of demand management. 1. Capturing demand in a holistic and centralized way 2. Demand classification with the suitable criterion. 3. Demand assessment, processing and qualification for the decision created capability and led to the approval of the development item.

It was also indicated that in case the company already has a common ITSM tool in use the same tool will be the most beneficial and natural choice as for the tool for managing demand, collecting initiatives and composing roadmaps according to the development items. In that sense, the ServiceNow platform will be the suggested tool for demand management. At the same the tool will enable the project portfolio management. And it is also suggested that all projects are entered into the tool, at least the basic information. The high-level concept focuses on four parts of manage demand. Capturing, classification, roadmap alignment and service portfolios. The figure 14 below shows the main elements of the effective demand management concept as a high-level draft.

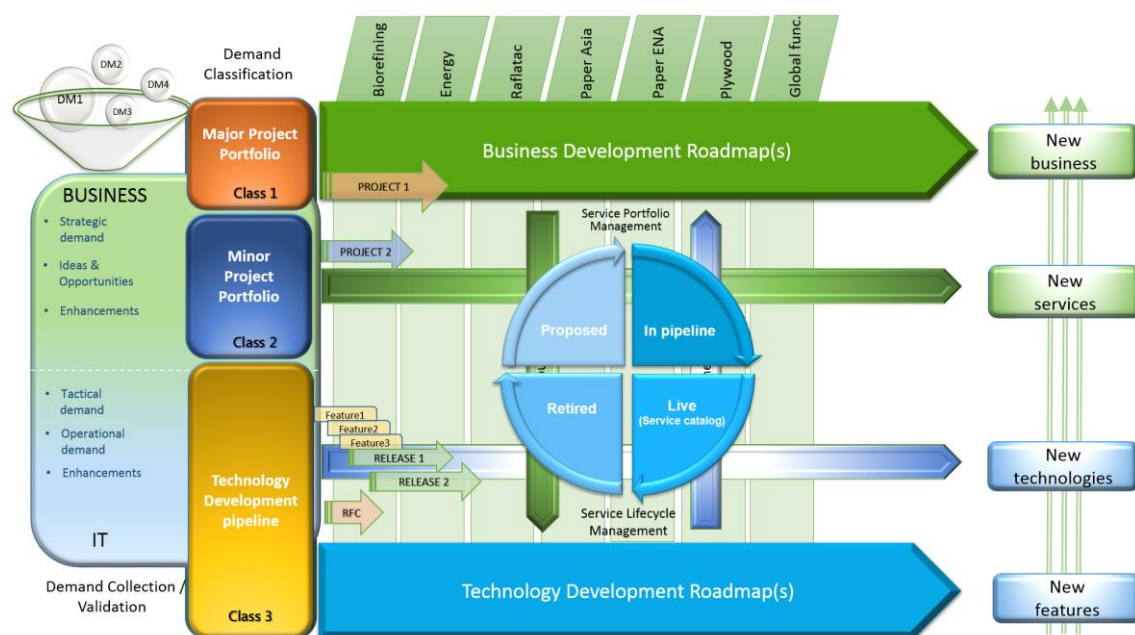


Figure 14. High-level draft of concept.

All demand, either as business or IT driven or generated from joint actions, will be addressed to the one funnel of demand items. In practice that means all items will be recorded in the ServiceNow tool. The target is to keep the registration of initiatives as simple as possible in order to receive demand as comprehensively as possible.

Demand lifecycle in ServiceNow consists of five stages. The starting point is to create demand (idea, request, enhancement and other types) as a draft into the system. In the second stage the demand is submitted. At the third stage, the demand is screened based on the result of the survey or other screening actions that have been defined. There is an option in this stage to gather assessment and opinions from the all relevant stakeholders.

At the fourth stage, the demand is enhanced and filled in with all necessary information for decision-making. In the fifth and last stage, when a qualification to the demand has been completed, it can be either accessed for further processing or rejected. If the demand is accepted, a project, a change or an enhancement request can be created depending on the demand type. Figure 15 shows the default workflow built in the ServiceNow demand management module.

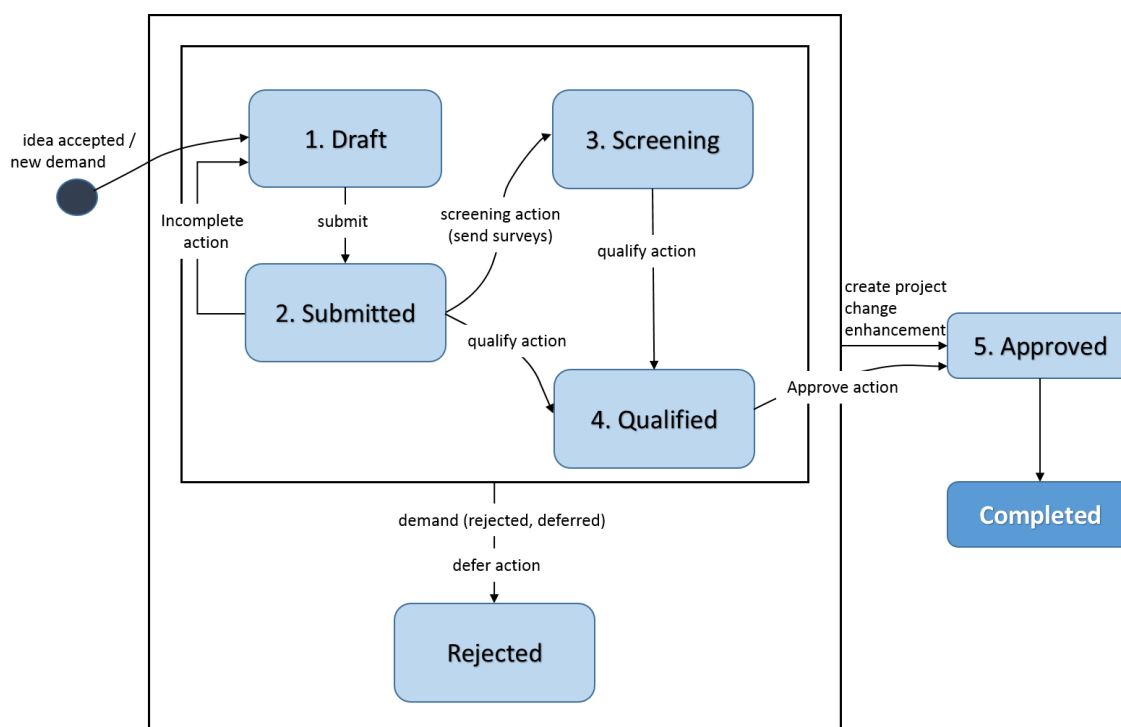


Figure 15. Demand management states (ServiceNow 2016)

Demand management module and default stages can quite easily be customized for the best fitting solution for case company according to the desired actions and stages into workflow.

In the tool, demand will be classified into three categories: Major demand, Minor demand or enhancement. The more detailed classification with criterion can be found in appendix 2.

Demand types and classification are based on the existing classification of projects that have been done in UPM earlier.

After demand items have been approved, meaning the required business case and other justification actions have been done, the execution will be chosen based on the demand type. It can be by project work methods, as a change request or by features, which go to the production with releases. After approval the demand will also be inserted into the current service portfolio roadmap. It can either be in business development roadmap or in technology roadmap but it is essential that those roadmaps are synchronized with each other. That means that items are taken into account on both sides: business development and IT development.

The fourth aspect is the service portfolio and service lifecycle management. It is important that all demand items and requirements have been assigned to one (or several) service portfolio. That will give the transparency of demand across the services and in that way make demand transparent to the business units. The same service can affect several business unit or func-

tions. When demand is assigned to the service, it is also important to check the possible influence on the service itself and the service lifecycle. That will be valid mainly in major projects and large-scale changes with a wide impact on systems or processes

5.3 Roles and responsibilities

There are a few key roles in the demand management process which require to be highlighted. These roles are business IT services accountable, service owner and IT architect. These roles have major responsibility on the one hand in ensuring all demand from business is identified and captured and on the other hand in demand classification and justification.

Business IT services accountable (BITS) has an overall responsibility for service delivery and service quality toward business. BITS is Responsible for service strategy and major portfolio level initiatives and projects. In the demand management concept that means the highest class of demand on impact, coverage, cost and often also risk level. BITS role is also essential for predicting and anticipating opportunities, ideas or other initiatives within the business.

When BITS is responsible for the major project class of demand and projects, service owner (SO) has the ultimate responsibility for all of the other demand items, including class 2 and 3 of demand. That means development initiatives which will be executed as a minor project, change or enhancements. The service owner manages the development portfolio of his/her own area and ensures proper prioritization of IT service delivery in addition to being the single point of contact for business escalations. From concept viewpoint SO is responsible for his/her own service portfolio and the specific demand pipeline management. SO takes care of that all demand, ideas or requirements have been collected and stored into the tool.

The third key role in the demand management process is the IT architect. IT architect is responsible for validation and the evaluation the feasibility of the demand. It needs to be verified that requested enhancement, change or renewal is aligned with the enterprise architecture and technology roadmaps. It is important to ensure that solution landscape stays standardized and is provided with enough resources, capabilities and technologies upon oncoming versions or other mandatory changes into the systems. It is appropriate to consult architects every time it is even possible to have risks, discrepancies or major influence on the current solution architecture.

Concept wise IT architects need to be consulted every time with major class demand and always in the minor class demand when the certain criterion with the impact and coverage to the systems landscape or technology roadmaps have been met.

It is recommend that certain roles and responsibilities are specified in detail, including agreed practices that enable IT to participate more closely in business decision committees and idea-tion as early as possible. More detailed description about the roles and responsibilities in the demand management process have been described in appendix 3.

6 Discussion

This chapter gives some ideas for further research and actions could be taken for developing demand management. Chapter also includes a short evaluation of the work and the wider usability of the concept.

6.1 Development ideas

It is recommend to pay attention to some of the key objective, which will give obvious advantages and enhance opportunities for developing and refining demand management processes further. By increasing communication and improving collaboration with business can the improved capability to predict and prepare for demand be conducted. By unifying demand planning tools and management processes could the more solid and transparent ways of operating be achieved.

As a further research, it could be consider the following topics. What kind of service portfolio management structure could best support the effective demand management and the other service management processes? On the other hand, what kind of communication and cooperation methodologies could increase the predictability of the demand and provide the effective tools for planning demand further? The tools could also be reviewed and evaluated with more accurate and detailed level. What kind of different demand management tools there are currently in markets. In addition, the comparison of the feature and benefits of the tools. More detailed development ideas have been described in the Appendix 9.

6.2 Evaluation of the research

The work itself went mainly according to the plan and on schedule. Thanks for that also belongs to the great expert mentors who have given very valuable information regarding both the target company and relevant processes within the UPM IT. From reliability point of view it can be consider could the more covering results been achieved for example with wider surveys via email. In that kind of multi-corporate company, which are several partly independently operating companies, there are also important to be able to target the change to the specific level of coverage. It can be either in the global level or some of the certain function. Otherwise, there is a risk that the process will not fit properly for anyone. It might be too harmonized for global use and on the other hand not specified enough for the certain level of an organization.

As the entity, I can be satisfied with the results which have been achieved in the thesis. Complex operational environment and processes have been able to be built as one unified concept of demand management. With the concept and ideas have been given the clear benefits can be achieved and the concept can be utilized wider than only in the case company. The model can be taken into use as-is or developed further to best fit the purpose. Even though the totally new way of thinking haven not been created the study will introduce the most essential parts of the effective and comprehensive demand management.

7 Research conclusion

This final chapter summarizes the results by comparing the target and research questions that have been set at the beginning of the study.

One of the original aim of the thesis was to define and present the key elements of effective demand management. The first research question was: “What are the key elements of effective and comprehensive IT demand management?”. These elements were described in the chapter 5.1. Concept for demand management was build based on these elements as targeted to the most appropriate solution for UPM IT’s current environment and operational model. The other research question was: “How to implement effective IT demand management process in the case company?”. The results was covered in the concept definition phase with the action plan. The most important actions in order to achieved the targeted model of the demand management process were introduced in the chapter 5.2.

When reflecting on these targets and the achievements, the model created as a result can be considered a successful combination of research outcomes which relies on the interview, theory and examination. The fundamentally complex topic that was also partly difficult to understand and the context have been explained and adapted to form a quite simple and understandable concept. The concept answers to the challenges and requirements which have been raised up in the interviews and research questions. However, it is worth to determine in which scope and coverage UPM IT should implement the concept in order to achieve optimal balance of controlled way of forking and the other hand give an enough freedom for lean and agile execution of the demand. To achieve the clear benefits and targets, the well-prepared pilot should be conducted before the real implementation.

At the same time, the research has been a big learning lesson to me. The topic and the learning experience during the research have been huge, and I have also found totally new aspects and thoughts concerning many other areas like service strategy or IT architecture. Working with the professionals of IT and IT service management experts has given me a lot more knowledge and has increased my professional experience of many areas. In that sense, I could not be happier for having chosen such as a complex and interesting topic.

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Appendices

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Appendix 1: Interview and benchmarking questions

Interview questions:

1. Do you feel that current IT demand management process is working well? I.e. do you feel the demand from business is gathered quickly enough and comprehensively. If not, what are the main problems you see in the demand management process?
2. How does the collaboration between business and IT could be enhanced in order to identify and react to demand sooner?
3. How does the IT demand management process could be developed? Mention a few key point.

Benchmarking questions:

1. How does the demand management process has been implemented in your organization? In the other words, how does IT categorize and gather demand items from business units (process description in brief and the key roles in the gathering and identifying of demand).
2. What tools (if any) is being used for gathering, categorizing and managing demand (name of the tool is not mandatory)?

Appendix 2: Concept - Demand classification & criterion (UPM)

Demand types

Demand type	Impact	Cost effect	Roadmapping timeframe	Implementation time	Justification	Execute model
1. Major Demand (Strategic project)	Strategic project or program which will affect to one or several service and/or business units. May have significant impact to IT solution architecture environment.	> 500 k€	1-5 year	> 1 year	Business management /Portfolio steering approval required	Business case/feasibility study required. RISK/ROI assessment required. Executed by project or program roll-outs and deliverables.
2. Medium Demand (project/change)	IT project or change which will affect locally to one business unit/service/application. May have some impact to the current solution architecture.	100 k€ - 500 k€	6-12 month	< 1 year	Business Approval required	Business and technical analysis required (business case). Implementation in release, RFC or project delivery model.
3. Minor Demand (Enhancement, bug fix, upgrade)	Small enhancement or maintenance work done in service mode. Comes mainly from IT internally. Not notable impact to the services or current architectural environment.	< 100 k€	3-6 month	0-3 month	IT/No approval required	No business and technical analysis required. Implementation in maintenance/service model.

Demand classification criterion

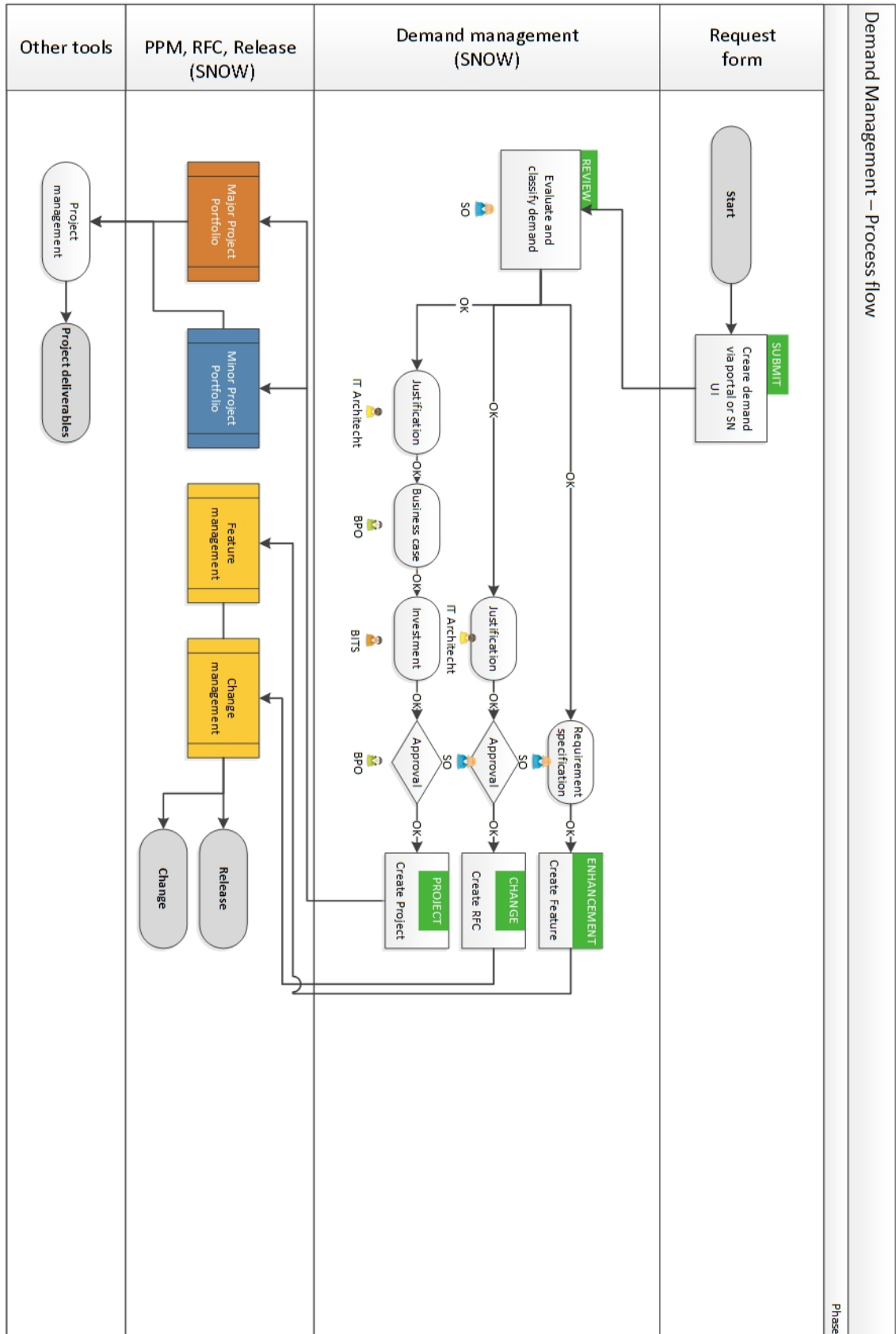
Classification criteria	1. Major Demand (Strategic project or program)	2. Minor Demand (project/change)	3. Enhancement (Enhancement, bug fix, upgrade)	"Rapid decision-making Demand"
Business Case volatility / risks	Planned business case has many uncertainty factors requiring high attention.	Core elements of the business case deployment are secured.	Business case does not need special attention.	Digitalization/IoT projects. Urgent need. High-Risk / High-Return.
Organisational Change impact	Global or across BUs and/or functions or including outsourcing activities.	Local or one BU / Function.	Local or one BG / Function.	N/A
IT Architecture impact	Creates a major change in UPM IT Architecture or in preferred technologies.	Is aligned with UPM IT Architecture and not creating a major change.	Has no change impact on UPM IT Architecture.	N/A
Resourcing need	Resources and competencies needed from several specialty areas. Resources needed globally / cross-functionally. Multi-vendor initiative.	Resources and competencies needed from single / couple of specialty areas. Resources needed locally or from one BG / function. One major vendor.	One person or a small team needed, not full-time.	N/A
Dependencies	Major interdependencies to other portfolio projects.	Minor, one-way, dependencies to other portfolio projects or services.	No major dependencies to other (Major or Minor) projects or IT applications.	N/A
External impact of the demand	Project has a direct, major impact to customers.	Project/Change is mainly internal development.	Only internal development.	N/A
Project budget	> 500 k€	100 k€ - 500 k€	< 100 k€	N/A

Classification criteria	1. Major Demand (Strategic project or program)	2. Minor Demand (project/change)	3. Enhancement (Enhancement, bug fix, upgrade)	"Rapid decision-making Demand"
Roadmapping timeframe	1-5 year	1 year	> 1 year	1-6 month
Implementation time	> 1 year	< 1 year	0-3 month	< 0,5 year
Justification	Business management/Portfolio steering approval required. EA alignment required.	Business Approval required. Architectural feasibility to be checked.	IT/No approval required	CIO/CDO. Rapid decision-making process.
Execute model	Business case/feasibility study required. RISK/ROI assessment required. Executed by project or program roll-outs and deliverables.	Business and technical analysis required (business case). Implementation in release, RFC or project delivery model.	No business and technical analysis required. Implementation in maintenance/service model.	Agile and light development methods. Depending on the type and scope.

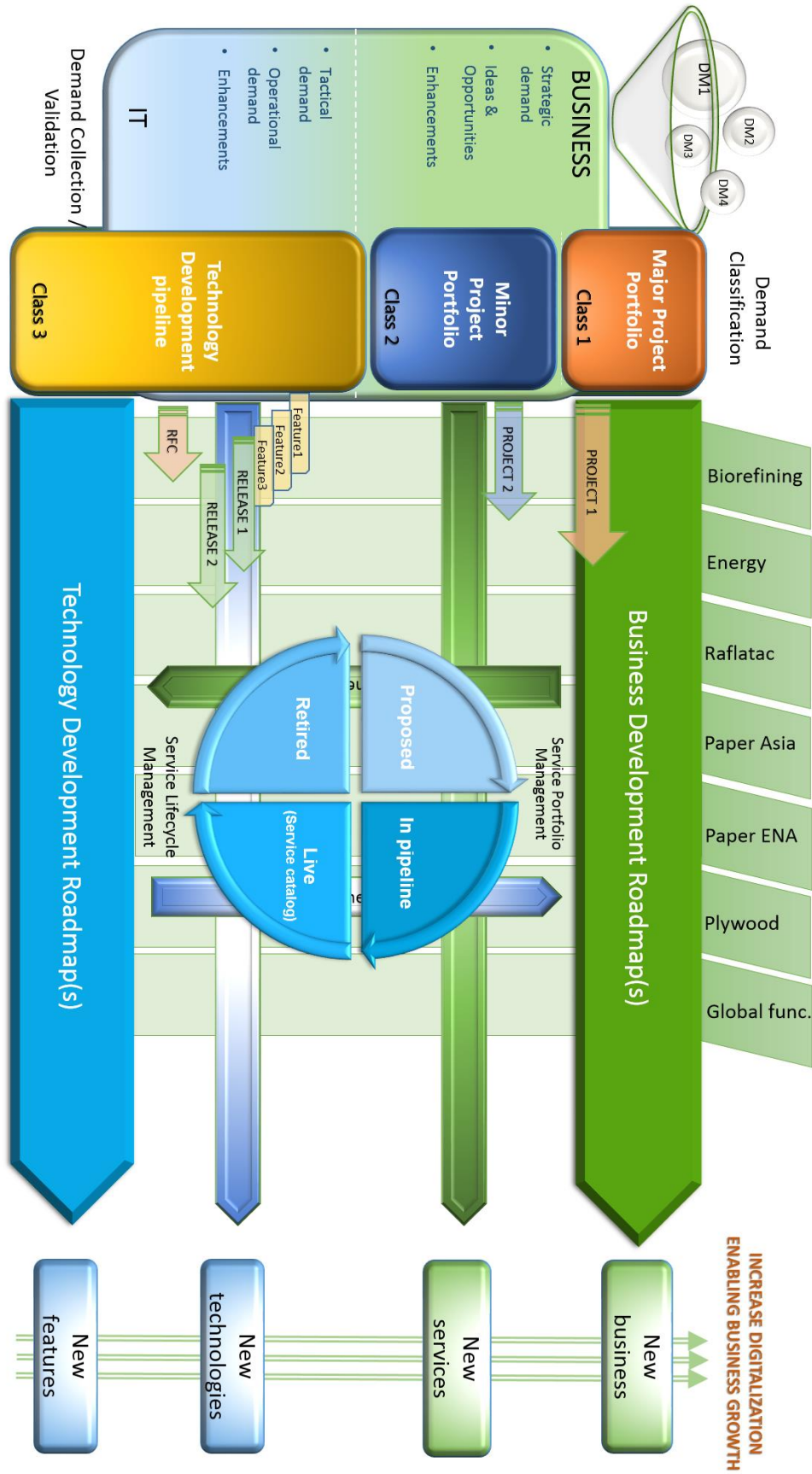
Appendix 3: Concept - Roles and responsibilities (UPM)

Position/Role	Valid in demand type	Responsibility
Business Process owner/Business development manager	D1, D2	Responsible for business process development/management. Communicate regularly with the corresponding IT partner about new ideas, opportunities and development initiatives. Responsible for coordinating business-specific development initiatives with a roadmap.
Business relationship management (Business IT Services, BITS)	D1	The role of UPM IT BIT is to identify service needs and to ensure service delivery to global functions and business groups. Responsible for service strategy and major portfolio level initiatives and projects. Promote existing solutions to business.
Business relationship management (Service Owner)	D2, D3	Accountable for end-to-end IT Services towards UPM businesses. Managing business relationship and demand. Responsible of content and costs of BUILD. Manages the own area development portfolio. Ensure proper prioritization of IT service delivery and be single point of contact for business escalations. Promote existing solutions to business.
IT Architect	D1, D2	End to end responsibility for respective applications including architecture, platform and integration. Understanding and apply the reference architecture and application component model. Lead and manage external BUILD development including BUILD handover to production. Contribute RFCs and project initiatives. Main stakeholder for SO's in BUILD to give content for BUILD partner(s). Review demand form architecture point of view. Ensures demand alignment and consistency with the current solution / technology landscape and roadmaps.

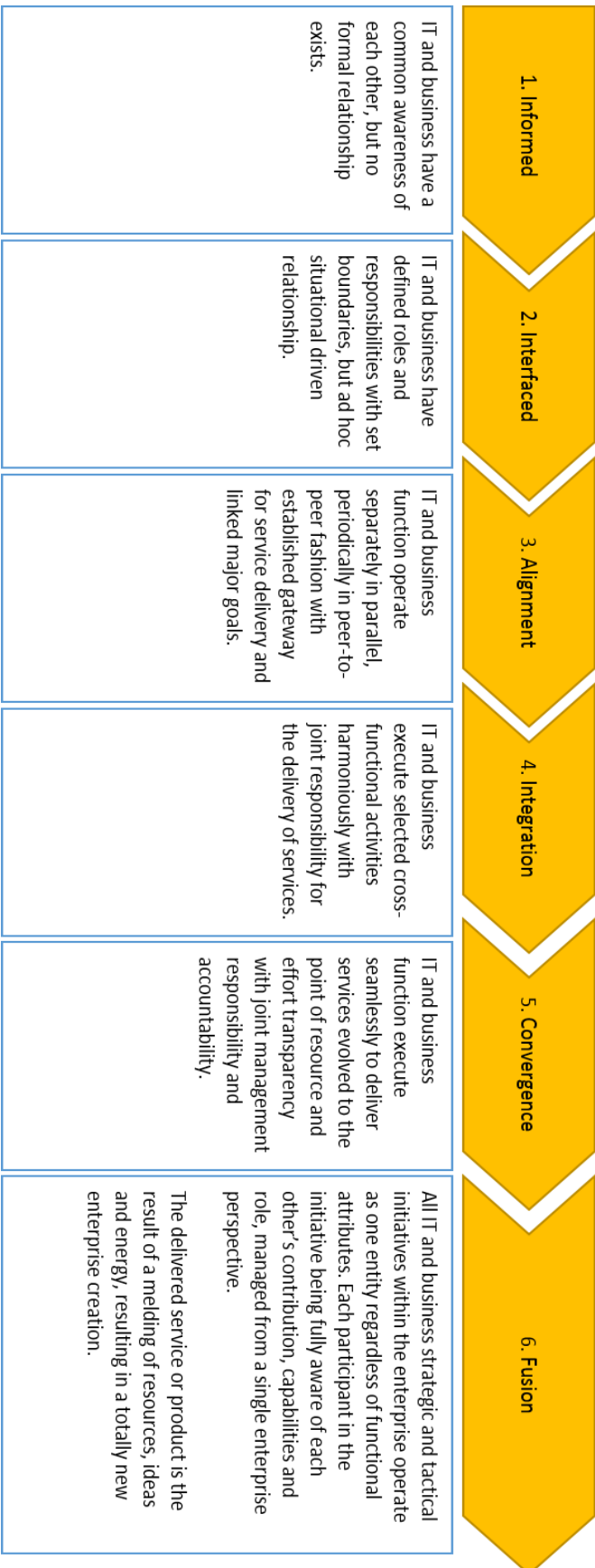
Appendix 4: Concept - Demand management process flow (UPM)



Appendix 5: Concept - High-level draft (UPM)



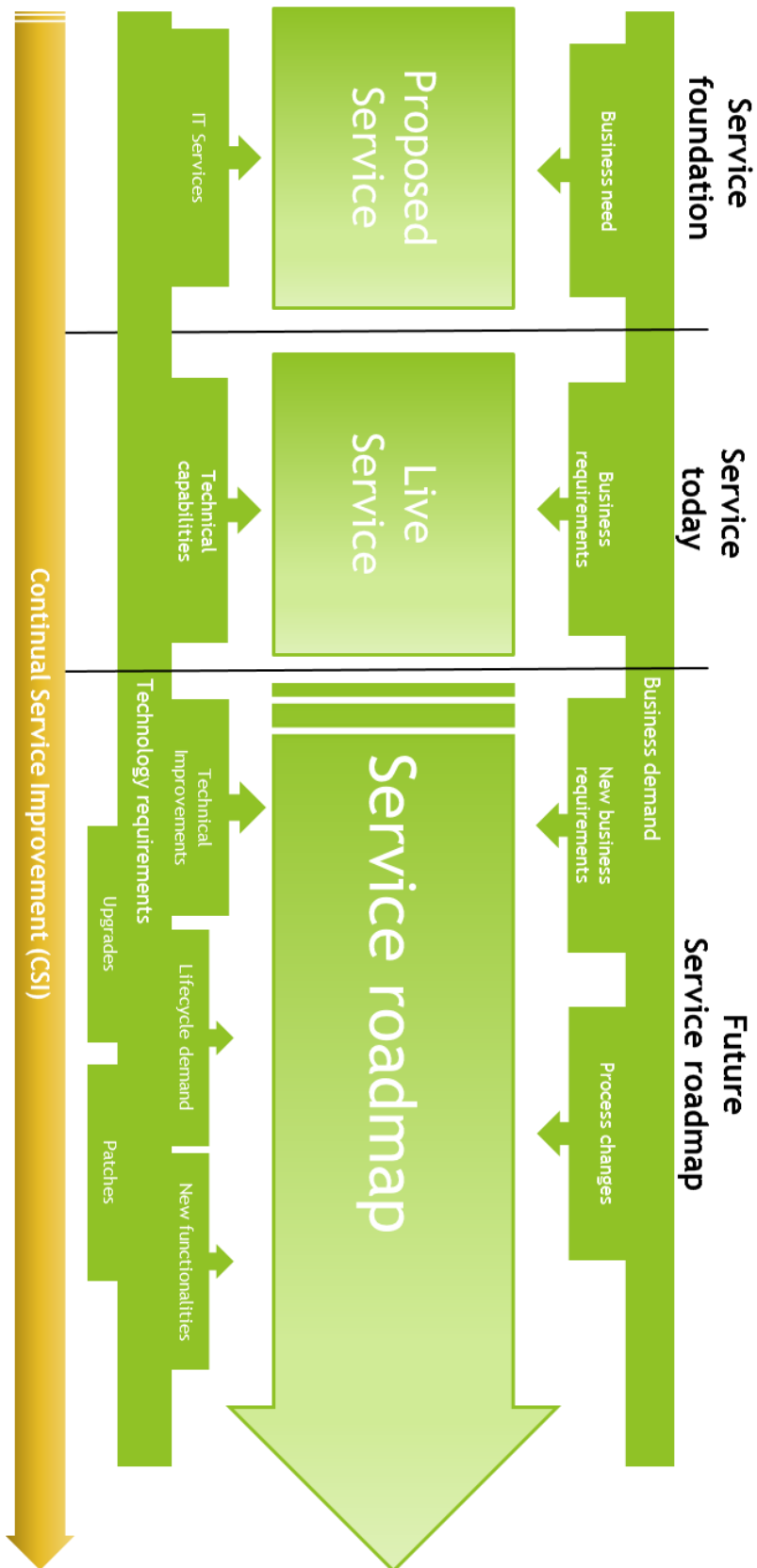
Appendix 6: Business relationship maturity levels



Appendix 7: Forrester Wave™: Project Portfolio Management Tools

	Artemis	CA	Cardin's	Compuware	Daptiv	HP	IBM	ITM-Software	Microsoft	Oracle	Planview	Primavera	SAP	Serena
Demand management	3.00	4.50	2.00	5.00	4.50	5.00	4.40	3.00	5.00	3.00	5.00	5.00	3.00	5.00
Portfolio management	3.00	4.80	3.50	4.70	3.95	4.65	4.70	4.60	4.60	3.60	4.85	4.80	4.15	4.60
Project management	3.25	5.00	3.30	4.65	4.05	4.80	4.30	3.00	4.00	4.15	4.60	4.50	3.45	4.45
Resource management	4.40	5.00	2.10	5.00	4.00	5.00	5.00	2.45	4.65	4.85	5.00	4.75	4.75	4.80
Financial management	4.60	4.75	2.70	5.00	3.35	4.50	4.20	3.80	2.10	5.00	5.00	4.70	4.50	3.80
Methodology	2.60	4.70	3.00	4.60	3.30	4.20	5.00	3.50	2.70	3.80	5.00	5.00	2.20	4.00
Workflow	3.85	4.65	2.40	5.00	3.45	5.00	4.85	4.10	3.20	4.35	5.00	5.00	3.75	4.35
Reporting	4.50	5.00	3.00	5.00	5.00	4.75	5.00	4.00	5.00	5.00	4.75	4.50	3.75	4.00
Integrated IT management	1.60	4.30	0.00	4.30	0.90	5.00	3.00	2.00	2.70	3.00	2.20	1.60	2.30	1.60
Application technology	2.90	3.50	3.50	1.40	5.00	2.60	4.40	2.90	2.00	4.40	2.60	3.50	3.80	1.40

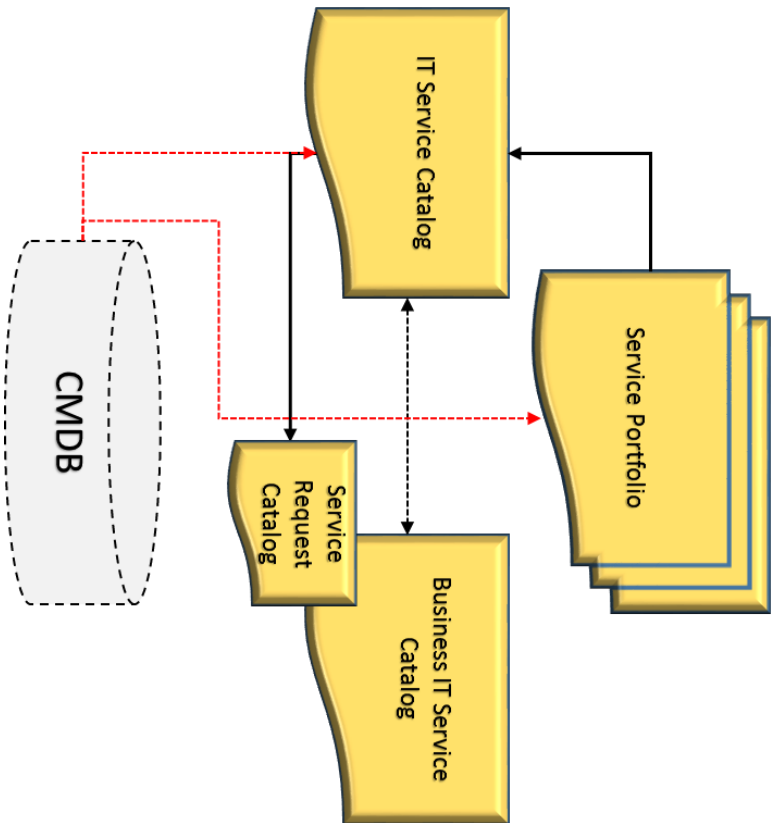
Appendix 8: Service Lifecycle - Demand influences in different stages



Appendix 9: Development proposals

Suggested actions	Accountable	Responsible	Benefits
1. Implement ServiceNow Demand Management application together with project portfolio management	ITSM/PPM team		Gives centralized visibility to all of the demand. Enable demand classification and management into the one common tool. To integrate demand management part of the other (build) processes.
2. Integrate business and IT management committees on appropriate parts. Establishment of information sharing practicalities across the BUs and Services.	Business/IT mgmt./BITS/SO		Enhance the collaboration between business and IT. Aims to more unified operative model and cooperation. Increase business demand predictability within the IT.
3. Get the standardized roadmap templates in the use	PPM team		Unify layout and the form of the roadmap template. Facilitate overall management and availability of roadmaps and templates.
4. Decide the common rules for managing business development roadmaps in synchronization with technology roadmaps	SO, SM, Design, Architect		Improving the timeliness of roadmaps and comparability between business development and technology roadmaps.
5. Utilize CMDB relations in dependency management	ITSM/SNOW		Improving planning and implementation of the oncoming and pre-planned maintenance breaks.
Suggested actions	Accountable	Responsible	Benefits
6. Enrich CMDB service structure with important and required data. Classify services by criticality.	ITSM/SNOW/SO		Enhance the visibility to the services and facilitate service classification by business criticality. Unify the service structure and dependencies.
7. Replaces business application enhancement request (BAER) with ServiceNow demand management evaluation/justification stages including biz approval.	ITSM/SNOW/SO		Streamlines process. Decrease process passing time → faster execution

Appendix 10: Relationships between the different levels of service catalogs



Service Portfolio	The complete set of services that are managed by a service provider. Manage entire lifecycle of services (In pipeline, Live or Retired).
IT Service Catalog	Structured database with information about <u>all</u> live IT services. These can be business services or technical services or personal services.
Business IT Service Catalog	User facing services with business understandable terms like email, information access or new users.
Service Request Catalog	Standard (routine) requests that link to standard changes or work orders that don't need to go through change control. Enabling interaction and ordering services for end-users.