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Designing a Framework for Linking Company Goals with Daily Tasks in a Small Software Company

Master's thesis submitted in partial fulfillment of the requirements for the degree
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Aalto University School of Science and Technology Faculty of Information and Natural Sciences		ABSTRACT OF THE MASTER'S THESIS	
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<p>Abstract:</p> <p>Action of a company should be based on company's strategic objectives and strategy. Strategy is the plan to fulfill the strategic objectives. Fluidity of resources is important: resources should be easily allocated to strategically important areas. Today, strategy work in companies is more dynamic and practical than it used to be earlier. Also a small company can take a major advantage of the practical strategy tools and models.</p> <p>Agile software development methods have made it more effective to manage the development work through stories selected into iterations and broken into tasks for development to be completed. This model working effectively to provide a method for effective resource allocation.</p> <p>In this thesis, the possibility to improve a company's functions and management by linking the strategic, company-level goals with day-to-day tasks is studied. The target of the study was a small software company, which employs less than 50 employees and is using agile software development methods.</p> <p>The business and management models of the case company were studied profoundly. The model was perceived to be functioning well and serving the purposes of the company. The company uses a software tool called Agilefant.org for managing its software development projects. Agilefant is very suitable for operational management purposes. All the work efforts (i.e. also other than software development) are logged into Agilefant.</p> <p>The activity logged into Agilefant was analyzed for a 13 month period. The analysis of the data showed that the personnel of the company have notably too many projects in-process at the same time. The company suffers from the loss of effectiveness due to task switching. The most important reason for too many projects running at the same time was noted to be the inability to plan future activated. The company did not have any functional method or tool to do the planning and prioritization of future goals and therefore it did not have a functional model to manage future work.</p> <p>A framework was designed to link future goals with day-to-day activities in the studied company.</p>			
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<p>Tiivistelmä:</p> <p>Yrityksen toiminnan tulee perustua sen strategisiin tavoitteisiin ja strategiaan eli suunnitelmaansa toteuttaa tavoitteita. Resurssien sujuva liikuteltavuus strategisesti tärkeille alueille on tärkeää. Varsinainen strategiatyö on kehittynyt dynaamisemmaksi, mutta myös käytännöllisemmäksi. Myös pieni yritys voi saada hyötyä käytännöllisempien strategiatyökalujen avulla..</p> <p>Ketterät menetelmät ovat parantaneet ohjelmistokehityksen hallittavuutta: kehitysidea valitaan käyttäjätarinoina iteraatioihin ja pilkotaan kehitystehtäviksi toteutettavaksi. Tätä voidaan hyödyntää resurssien ketterämmässä ohjaamisessa.</p> <p>Tässä työssä tutkitaan mahdollisuuksia saada hyötyä ja parantaa tehokkuutta strategisten tavoitteiden yhdistämisestä käytännön jokapäiväisiin tehtäviin. Tutkimuksen kohteena on pieni, alle 50 henkilöä, työllistävä ohjelmistoyritys, jossa sovelletaan ketteriä menetelmiä ohjelmistokehityksessä.</p> <p>Tutkimuksen kohteena olevan yrityksen tapa toimia ja ohjata toimintaansa selvitettiin seikkaperäisesti. Yrityksen toiminnan mallin havaittiin olevan perusteltu ja hyvin yritystä palveleva. Yritys käyttää ohjelmistokehityksensä ohjaamiseen Agilefant.org –nimistä ohjelmistoa. Se palvelee hyvin operatiivisen tekemisen ohjaamisessa. Agilefant-ohjelmistoa käytetään kaiken tehdyn työajan ja sen kohteiden keräämisessä, myös muun työn kuin ohjelmistokehityksen.</p> <p>Yrityksen työtehtävien toteuttamista tutkittiin 13 kuukauden ajan. Kerätyn tiedon analysointi osoitti, että yrityksen henkilöstöllä oli merkittävästi liikaa tehtäviä hoidettavanaan samanaikaisesti. Tämä johtaa siihen, että yritys menettää paljon työaika, kun henkilöt vaihtoivat jatkuvasti tehtävästä toiseen. Isoimmaksi tekijäksi samanaikaisen työn ylimäärään havaittiin tekemisen suunnittelun puutteet. Yrityksellä ei ollut sille istuvaa tapaa ja työkaluja työstää ja priorisoida tulevan tekemisen tavoitteita, eikä siten myöskään toimivaa mallia hallita tekemistä.</p> <p>Työssä suunniteltiin viitekehys, jossa yritystasoiset tavoitteet yhdistetään alempien tavoitteiden kautta käytännön tekemiseen tutkitussa yrityksessä.</p>			
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Espoo, 15th June, 2010

Terho Norja

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1 Introduction

1.1 Background

As widely agreed by the organization and management research, both small and large companies need a vision and a strategy to be able to efficiently manage company goals. However, the traditional strategy frameworks are prepared in the context of a large company. For a small company, strategy work ought to proceed much faster to quite practical things. This problem was also faced in IPSS - Intelligent Precision Solutions and Services Oy, the target company of this case study when an ambitious strategy project was started in autumn of 2007.

The strategy project in IPSS started by applying commonly used strategy frameworks like Porter (1996) and Hambrick & Fredrickson (2001). In the first phase the management formed a preliminary strategy draft to clarify the company's position on the market and to choose the most promising future directions. The strategy was launched to the personnel but it was noticed soon that the different areas of the strategy were not clear and supported not the company's daily work. In the second phase, more than half of the company personnel were recruited to the strategy project. Soon the strategy project was a collection of eight different sub-strategy projects. Finally, in the spring 2008 the strategy project was quietly killed because not any of the sub strategies was finished. The management came to a conclusion that the strategy work model was too heavy and the results of the work did not give enough tools for the management to make crisp decisions on company's future goals.

The strategic agility, suggested by for example Doz & Kosonen (2008), has become a very popular topic in the management. In the software industry the lean software development (Poppendieck & Poppendieck 2007) is promising new benefits. Even though both the strategic agility and the lean are originally studied in large enterprises they seem to be scalable into the small companies.

Due to the unsuccessful experiences in a strategy process, the management of IPSS avoided to start any serious strategy project for a couple of years. However, at the same time a continuous progress in the project work efficiency was accomplished in IPSS by nurturing agile methods (Leffingwell 2007) and by deploying a new tool, Agilefant.org, to support the agile task, iteration, and project management.

The success of the agile development in IPSS led to the idea to use analogical methods to develop agile management system for the company. Optimally, the management should be based on company's strategy. Furthermore, the strategy tries to fulfil strategic objectives (Hambrick & Fredrickson 2001). At the end the deployment of the strategy is realized in the fulfilment of tasks related to objectives.

While agile management of the tasks has been a success, a blurred idea or hope to find a way to connect company-level goals with agile tasks was born. Can this be at least for small companies a way to realize strategy very practically?

1.2 Research Problem

The research problem of this thesis is stated as follows:

How can the planning and prioritization of daily tasks based on company's goals be supported in a small software company to achieve work efficiency and strategic agility.

A solution to this research problem is sought through finding answers to the following research questions:

- 1) How is work effort used in the Company? How is the work effort distributed between employees? Based on collected data, what kind of improvements can be achieved in the effectiveness of work?
- 2) What is the current way of managing company goals, the project portfolio and other tasks and how well is it working?

- 3) Based on the literature, how could a tool for connecting company goals with daily tasks be designed? The tool is aimed to support better task planning and more efficiency of work for a small software company.
- 4) How could a better way of managing company goals, the project portfolio and other tasks be designed?

1.3 Methodology

The answer(s) to the research problem will be sought through analysing company's current work effort usage, way of management, and challenges. The basis for the new management model will be created through literature study. A proposal for the new framework of a management model based on the company goals will be designed. The framework will be discussed together with company's management team members to collect their opinions on the suitability and challenges related to the framework.

Answering the research questions in Chapter 1.2:

Answering the research question (1) starts by composing an overview of the target company, IPSS Oy: in what business it is, what kind of work is done in the company, how the company is organized. This supports also **answering the research question (2)**.

For answering the research question (1) study is continued with collecting and analysing company's current usage of the work effort. The work effort of the whole company from May, 2009 until May, 2010 is analysed. This material is investigated to be able to gain understanding how much effort different work areas need and to track opportunities for improvements in the work efficiency.

Answering the research question (2) is studied by first documenting the current way of management and the project portfolio. Documentation is prepared by analysing how the different functions and teams work currently and how the interaction and co-operation between these are realized.

Secondly, the management group members are interviewed to collect their opinions about needed improvements and this data analysed. One workshop will be held to deepen the opinions and to build a shared vision about the needed improvements.

For answering the research question (3) literature is investigated to combine information on software development management and more universal company strategy work. Strategic agility is a popular area both in scientific and business research. The findings of the literature survey are put into the scope of a small software company to find out what are in practice the ways to proceed to improve the company's model and tools of management, projects, processes, and tasks. This work also gives preliminary findings to **answer the research question (4)**.

For answering the research question (4) another workshop with management group members will be held to present and further modify the first draft model of the management of the company's strategy, company-level goals, and their linkage to daily tasks and the project portfolio. Formatted Wiki pages are created to the company's intranet wiki system to visualize and describe essential parts of the framework and to demonstrate how the framework can be implemented from the tool and documentation perspective.

1.4 Scope and Restrictions

The target small software company is already practising agile software development methods. An agile way to run project work is already expected to take place. The personnel in the target company are already using iterative sprints, tasks tied to user stories and through these entered into a shared project management tool. These practices can be widened to cover tasks outside the pure software development work. The company has been heavily investing in the agile development methods like Scrum and applying these methods into its businesses. Therefore, the findings of this study cannot be directly applied to companies running their projects by using more traditional plan-based methods.

This thesis is focusing on linking the goals to the task. This study concentrates on improvement of company's functions and results by linking better hi-level company goals to practical day-to-day tasks.

Both in agile and lean development there are a lot of other aspects and sources for improvement of work efficiency and quality. These aspects were not studied in this thesis.

The new framework includes all the work tasks in the company, not only the project work tasks. In the literature, the agile software development is often focuses on the software product development tasks and portfolio, not all tasks and processes in a software company. Setting the scope of this thesis to include all company's tasks was understood crucial, because in *small company* the same employees are involved in all the processes. The most crucial challenge in managing the product development is the management of the work effort required by other tasks than direct development work. Strategic agility (Doz & Kosonen 2008) and Lean Software development (Poppendieck & Poppendieck 2007) set emphasis on the fluidity of resources. In a small company, this means taking a wide look into all operations. In the target company, the present matrix organisation is functioning well and an easy way of organising the work into hierarchical units or teams does not seem possible.

The results of the study might not be relevant to tiny or large software companies. This study is based and concentrating in a small software company i.e. less than 50 employees. The findings may not be directly applied to tiny companies where the amount of employees is less than ten. Tiny company can still work as one team and thus overcome many of the challenges of a bigger company.

The objectiveness of the study might be in some part influenced by the close relationship of the writer of the thesis to the target company. Terho Norja has been the CEO of IPSS Oy for ten years.

1.5 Structure and Outline of the Thesis

This describes the structure and contents of the study and the contribution of each section to the research problem. Furthermore, the background and motivation to start this study are presented in Chapter 1. Chapter 1 introduces the research problem which was divided into research questions. The used methodology, scope, and restrictions are also presented in Chapter 1.

Chapter 2 describes the design of the case study on IPSS Oy.

Chapter 3 describes the results of the case study on IPSS Oy and answers the the research questions (1) and (2).

In Chapter 4, the literature is investigated to combine information on software development management and more universal company strategy work. The answer to the research question (3) is based on the literature evaluation. Chapter 4 continues with the design of a framework of a model that combines company-level goals with daily tasks. Chapter 4 gives the answer to the research question (4)

Chapter 5 summarises the study with conclusion and discussion.

2 Research Design of the Case Study on IPSS Oy

The case study consists of three parts and a conclusion. The study starts by composing an overview of the target company, IPSS Oy: The company's business area, the type of projects and products done in the company, and the organizational structure of the company. The goal is to understand the company's current situation and to form the basis for the second and third part and to ensure that the findings are realistic and the suggested changes are feasible.

In second part of the study, the goal is to reveal where work effort takes place in the company. The information about the work distribution between employees is based on the company's work management system. The data will be analysed to gain understanding to the challenges and to be able to show whether there is an opportunity for improvement in the effectiveness of work.

The goal of the third part of the case study is to examine the current way of managing company's goals, the project portfolio and other tasks. The aim is to reveal the current management status and the ways to improve this.

The conclusion combines the key findings of the three parts of case study.

The research approach using a case study can be characterized as a revelatory single case study (Yin 2003).

2.1 Research Design of the First Part: Services, Products, and Organisation

2.1.1 Data Collection

The company overview is based on the presentation material, strategy documents, and internal development project documentation. The writer of this thesis has worked for ten years as a CEO of the company and therefore the collection of the overview and background information is straightforward.

2.1.2 Data Analysis

Collected material contains both up-to-date and outdated information. An up-to-date overview is composed from the collected material to this study. The company type and profile is verbally and superficially compared with generic company profiles. Profound comparative study could have been useful but did not fit into the scope of this study.

2.2 Research Design of the Second Part:

Work Effort Distribution and Improvement Opportunities

2.2.1 Data Collection

All the work effort of the whole company from May, 2009 until May 2010 is extracted from the company's work management system (Agilefant.org) into an Excel sheet. The structure of the work input to different areas is investigated through the user interface of Agilefant. The documentation also includes the employees' views on their tasks and how they log their efforts with the tool.

2.2.2 Data Analysis

To the data extracted from the work management system, a new classification for projected vs. non-projected work is added to differentiate these work categories which are managed differently. A new classification for internal vs. external (i.e. customer-specific) work is added. Both new classifications are generated as dependency rules on original data and therefore no manual adjustment or corrections of the data are needed for this part.

The content of the data is scrambled so that actual customer names, employee names as well as the project and support area names are transformed to general terms like "Customer1", "Emp1", "Project1". Extracted data contains also work log comments but these are not transformed with the collected data due to the confidentiality..

The amount of work effort and structure per employee and per month will be investigated to track possible defects in the data. Some employees may not have logged their work effort as carefully as the others and some corrective operations on the data may be

needed to maintain the ability to make conclusions from the data. Especially the work areas other than project work have more challenges in the coverage.

To evaluate the potential for improvements, the analyses on the number of projects and other main work areas the employee works on each day and week will be prepared.

2.3 Research Design of the Third Part: Management Model

2.3.1 Data Collection

First, the current way of managing the work and the project portfolio is documented. Documentation is prepared by analysing how the different functions and teams work currently and how the interaction and co-operation between these are realized.

Secondly, the management group members are interviewed to collect their opinions about the needed improvements. One workshop is held to discuss and better understand the opinions and to consolidate them to a shared opinion.

2.3.2 Data Analysis

Shortcomings and weaknesses in the current management system are combined from three sources: the model documenting the current way, interviews, and the workshop results.

3 Results of the Case Study on IPSS Oy

3.1 Part 1: Services, Products, and Organisation of IPSS

The background information on services, products, and organisation of IPSS was collected from company's presentation material and strategy documents. The target of this evaluation was to gain understanding about the mission of the IPSS and the type of work and businesses that are done in the company.

3.1.1 Services and Products

The mission of IPSS is to develop software for leading and managing customer relationships and to implement solutions in this area for its customers (Figure 1).

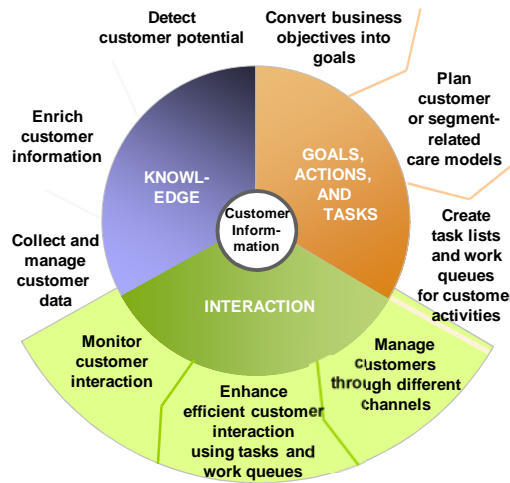


Figure 1: The business idea of IPSS is to build solution for customer leaderships and management to its customers. IPSS implements tools for three major areas shown in the picture: 1) Build knowledge on customer potential, 2) Set goals and plan activities to create tasks linked to customers and customer segments, and 3) Optimize interaction with customers.

IPSS earns major part of its income from project work with customers (Figure 2). Implemented solutions are normally based on commercial CRM (Customer Relationship Management) software and Business Intelligence software (see Figure 3).

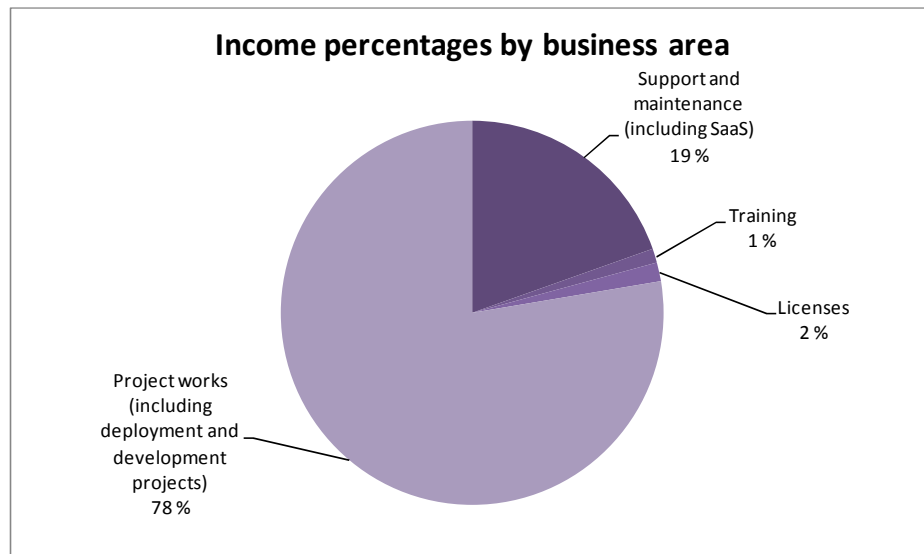


Figure 2: The income structure of IPSS from the fiscal year 2009/4 – 2010/3.

IPSS also develops a suite of its own products (see Figure 4). These products are used as modular building blocks to minimize customer-specific software development in those areas that are often repeated from case to case. License fees from these products are at the moment very small.

Project work at IPSS is integration and configuration of the tools for customers to comprehend a needed solution. IPSS also provides its software as service through an outsourced hosting centre. An important part of the income is based on customer support services. IPSS also offers help desk and technical 2nd line support services for its customers.

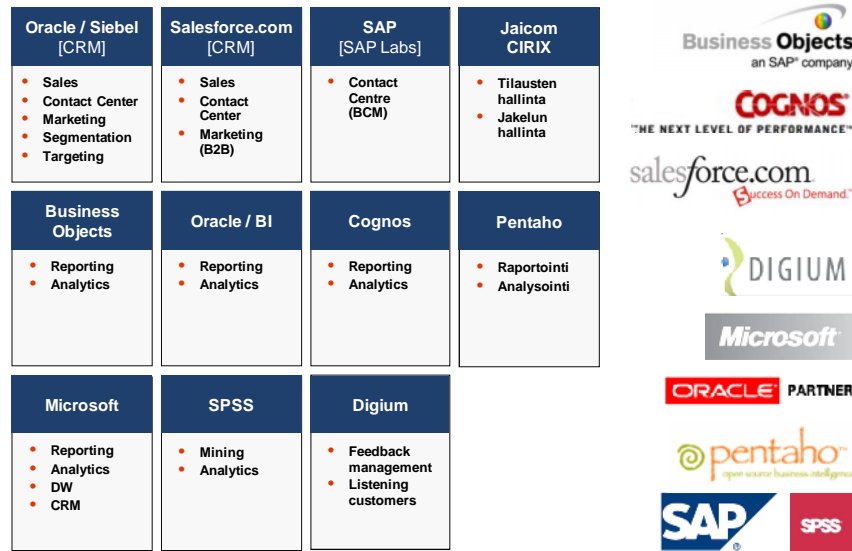


Figure 3: Partnerships of IPSS with commercial software providers to build solutions to customers.

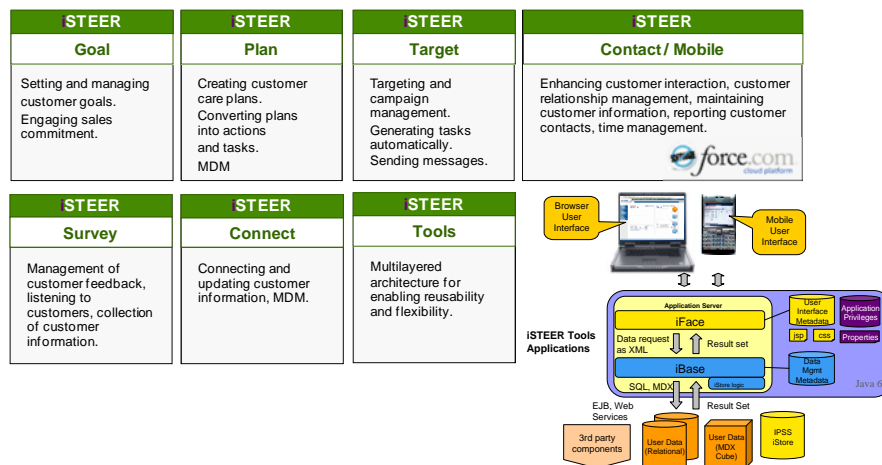


Figure 4: IPSS's own product suite. Other modules than iSTEER Contact are based on Java 6 SE platform. iSTEER Contact is based on Salesforce.com's Force.com cloud software platform.

3.1.2 Organisation

During the study, IPSS employs 29 persons. IPSS is organised as a matrix organisation (see Figure 5). People and knowledge are divided into three technology teams (Business intelligence team, CRM solutions team, and Integration and platform development team) and a management team. Each team has a named team leader and the CEO manages the management team. People resources are owned and managed by technology teams and teams are responsible for the development of the knowledge and capabilities at IPSS.

Most of the work (processes, projects, and development) is managed by business areas: Development, Customer Service and Infrastructure, Projects, and Sales. Members of each technology team are named and responsible for different tasks within business areas. Work is done for business areas and resources are provided by technology teams. Structure supports the model where the major part of the work is organized into projects or iterations resourced by technology teams.

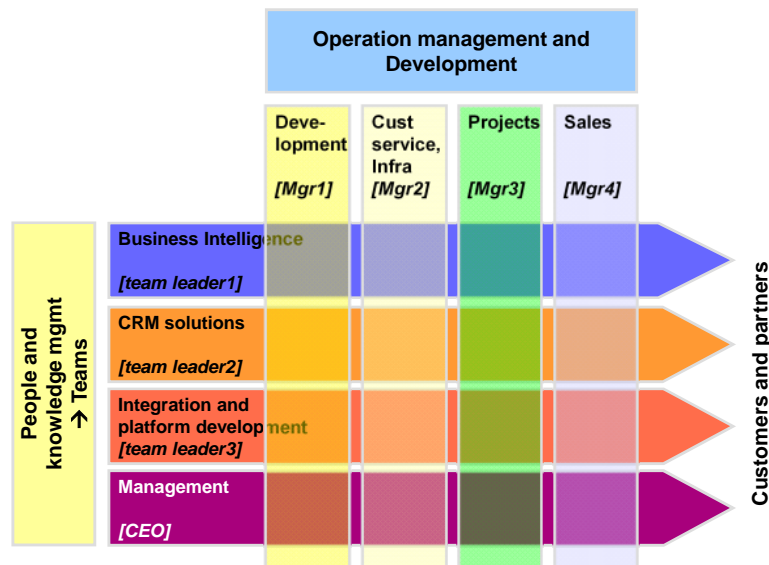


Figure 5: IPSS organisation. Personnel are organised into three technology teams and a management team. Development and other work are divided into four areas: Development, Customer service & Infrastructure, Projects, and Sales and Marketing. technology teams and the team leaders are responsible for people (as resources) and knowledge development. Technology teams do not own any projects while they only provide resources and knowledge to the projects.

Duncan (1979) presents a decision tree for deciding the best organisational structure. The key driver in his work is the classification of the organisational environment (Figure 6). In practice IPSS has been forced to organise as a matrix organization to be able to achieve a good quality of people and knowledge management in reasonable sized teams and at the same time to be able to deliver resources to all business areas. The conclusions of Duncan (1979) support the decision of IPSS.

CLASSIFICATION OF ORGANIZATIONAL ENVIRONMENTS			
	<i>Simple</i>	<i>Complex</i>	
<i>Static</i>	<i>low perceived uncertainty</i> Small number of factors and components in the environment Factors and components are somewhat similar Factors and components remain basically the same and are not changing <i>Example: Soft drink industry</i>	1	<i>moderately low perceived uncertainty</i> Large number of factors and components in the environment Factors and components are not similar to one another Factors and components remain basically the same <i>Example: Food products</i>
		2	
<i>Dynamic</i>	<i>moderately high perceived uncertainty</i> Small number of factors and components in the environment Factors and components are somewhat similar to one another Factors and components of the environment are in continual process of change <i>Example: Fast food industry</i>	3	<i>high perceived uncertainty</i> Large number of factors and components in the environment Factors and components are not similar to one another Factors and components of environment are in a continual process of change <i>Examples: Commercial airline industry Telephone communications (AT&T)</i>
		4	

Figure 6: Classification of organisational environments by Duncan (1979). Although small organization, IPSS still seems to fit best into the category “high perceived uncertainty”.

According to Bartlett & Ghoshal (1990) the development of human resources is an important motivation argument for matrix organisation. This is also supported by experiences in IPSS. When IPSS was organised hierarchically by the business areas and functions the team size became too small. To solve this, virtual teams were founded to seat same employees to several teams at the same time. Furthermore, knowledge management and employee career planning are especially important tasks for a software company. To manage those tasks excellently presumes that team leaders have reasonably-sized teams. Otherwise they cannot invest in themselves enough to be professionals in management.

Matrix organisation, on the other hand, enables fluidity of resources to those tasks where they are needed, which is important to achieve strategic agility (Doz & Kosonen 2008). The matrix organisation may, on the other hand, create serious challenges. Bartlett & Ghoshal (1990) perceived some usual problems: “Dual reporting led to conflict and confusion; the proliferation of channels created informational log-jams as a proliferation of committees and reports bogged down the organisation; and overlapping responsibilities produced turf battles and a loss of accountability.” More focus and effort on the functionality and handiness of methods and tools are needed in the matrix organisation to be able to manage different tasks. Reporting the status of activities and

keeping all stakeholders in touch with changes, progress, and possible impediments all need special tools.

3.1.3 Agile Task and Project Management

IPSS has applied agile development models since 2003. First phase happened in 2003 when Excel-based work task and project management was replaced with a browser-based AgileElephant tool. In practice this tool was mainly used for logging project work hours. In the spring of 2009 IPSS trained 35% of its personnel working as or planned to be working as project manager positions to be Scrum masters. In May 2009 IPSS started to use a new tool, Agilefant.org, for managing all the work in IPSS.

3.1.4 Business Model

Rönkkö et al. (2009) categorized software companies in different but overlapping contexts (Figure 7): customer tailored software, software products, in-house systems, and embedded software. IPSS is operating in all the contexts despite embedded software.

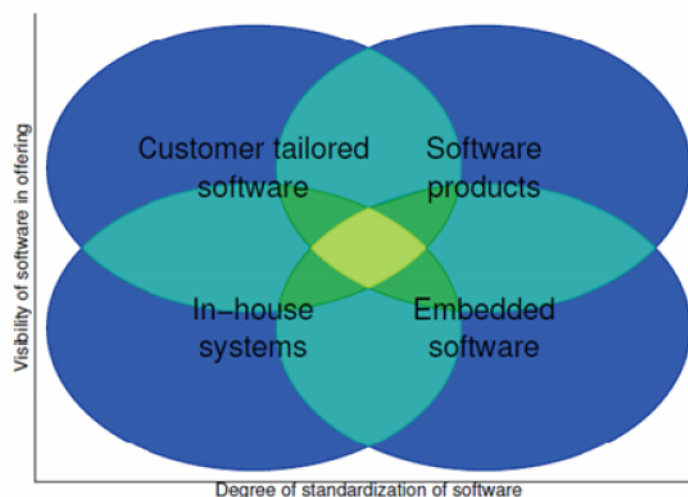


Figure 7: Contexts for professional software development by Rönkkö et al. (2009). IPSS business includes all other contexts than embedded software.

Business models in Finnish software companies and their revenue sources are presented in Figure 8 (Rönkkö et al. 2009). For IPSS the most fitting business model of these categories is the deployment project firm, as major part of the income is based on deployment projects.

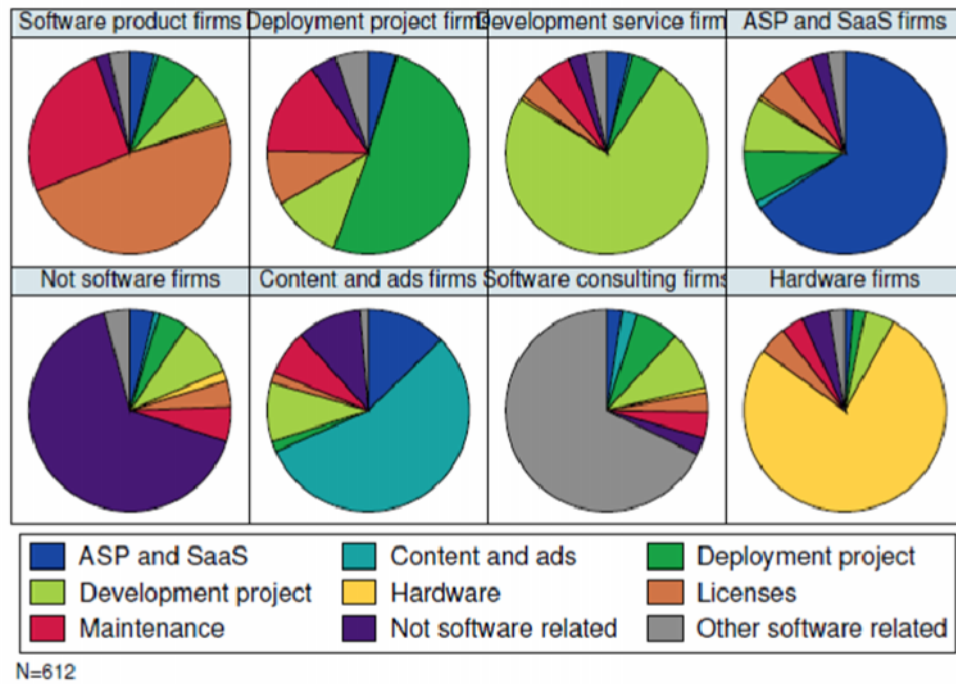


Figure 8: Sources of revenue by business models in Finnish software companies by Rönkkö et al. (2009). The revenue structures between these business types differ very much from each other. The business model of IPSS is nearest to the deployment project firm category. However, IPSS still also invests in the own product development.

Rönkkö et al. (2009) present information on how many of the studied deployment project firms also have major investment in their own software product development. Table 1 presents research and development investments of different company types including “Software project contractor”, but R&D figures contain all research and development investments, not just software product development.

Research and development investments in IPSS can be estimated from the work effort distribution presented in Figure 9, page 17. Major part of the costs of the research and development is based on the work effort amounts. Research and development is coded in Agilefant into three areas: product development (8%), non-projected development (2%), and knowledge development (7%). The total percentage for R&D in IPSS is 18%.

Table 1: Research and development investments in Finnish software companies by Rönkkö et al. (2009).

	Year							
	2000-2003		2004-2006		2007		2008	
	R&D / revenue		R&D / revenue		R&D / revenue		R&D / revenue	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Revenue								
0-<0.3 Meur	35.2	30.0	29.0	20.0	12.5	12.5	19.3	8.3
0.3-<1 Meur	26.4	20.0	26.3	15.0	17.8	12.3	19.6	10.9
1-<3 Meur	23.2	20.0	18.8	15.0	20.1	14.3	14.6	10.0
3-<10 Meur	26.5	20.0	20.0	16.7	19.4	12.7	15.0	10.6
10Meur-	20.3	21.0	16.7	14.0	10.0	5.1	11.5	8.2
Age								
<2	43.2	50.0	32.3	21.4	5.3	2.1	19.6	7.1
2-<5	33.9	30.0	26.3	15.0	19.6	14.1	23.1	10.0
5-<10	26.9	20.5	20.7	15.0	20.9	12.5	15.7	10.7
>10	24.6	20.0	24.2	18.0	17.4	13.2	15.7	10.0
Firm type								
Software product firm	28.5	25.0	29.3	20.0	28.0	21.8	27.0	19.9
Device manufacturer	27.1	28.0	40.5	40.0	26.3	14.1	30.4	25.0
Software project contractor	23.9	20.0	19.4	10.0	9.6	6.5	11.5	5.9
Consulting firm	23.7	15.0	8.7	5.8	11.1	6.2	7.7	3.0
Reseller			2.6	2.6	5.0	5.0	1.1	0.0
Total								
All firms	28.0	24.6	22.5	16.3	15.9	10.9	16.6	10.0

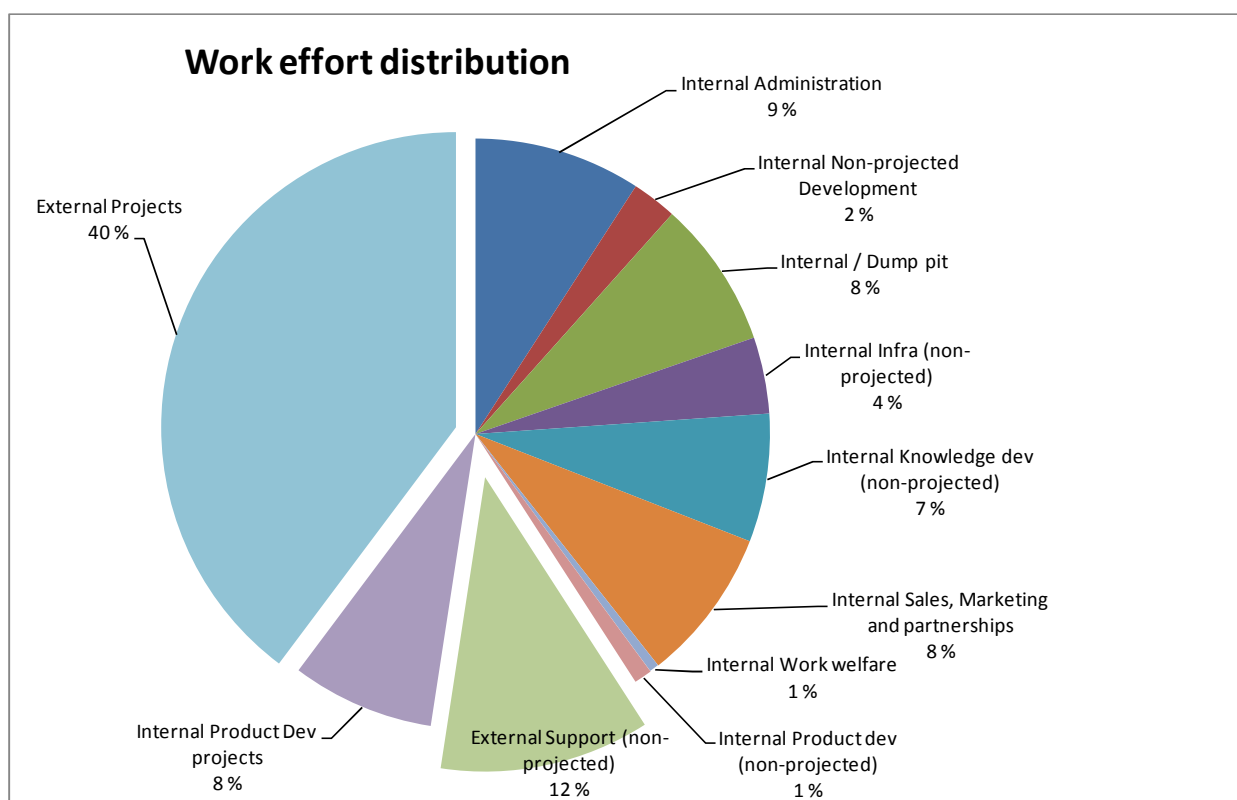


Figure 9: Work effort distribution in IPSS.

Comparing the revenue structures of Finnish software companies in Figure 8 (Rönkkö et al. 2009) to the revenue structure of IPSS (Figure 2 at page 11) reveals that IPSS seems to be fitting best with development service firm category. However, the income from support services, maintenance services, and SaaS (Software as a Service) is 19% at IPSS while the percentage is much lower in typical Finnish software development companies on the average. The direct income from licences is minimal (2%) at IPSS. This percentage is misleading because major part of the service income is based on renting the licences of own product development as a part of the service.

3.1.5 Key Findings

The business idea of IPSS drives it to operate on exceptionally many software business areas, especially when taking into account its size. The amount and distribution of the areas of work is more carefully studied in the next part (Part 2 - study on the usage of work effort in IPSS). While matrix organisation seems to be the best choice for the organisational structure of IPSS, it also requires special emphasis on the model of management and functionality and tools for managing and reporting.

3.2 Part 2: Work Effort Distribution and Improvement Opportunities

3.2.1 Agile Task and Project Management

IPSS uses Agilefant.org (Figure 10) as a tool to manage all the work done in IPSS. Customer projects and own product and service development projects fit easily with Scrum and Agilefant.org. For other areas included into Agilefant.org, in practice only the work effort is logged to the stories and tasks prepared structurally into the tool.

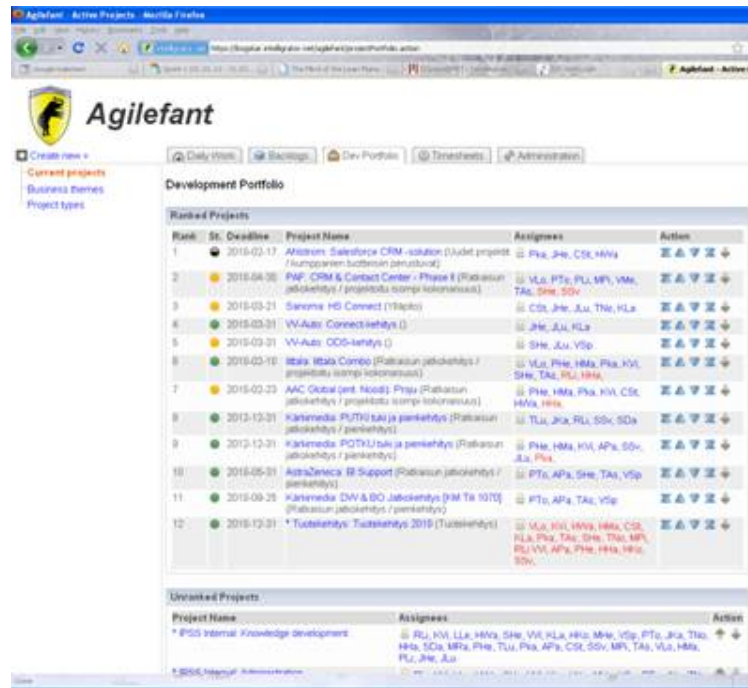


Figure 10: View from development portfolio view of Agilefant.org. Currently running projects are prioritized and status (green = ok, yellow = some problems, red = serious problems, black = status not updated) of the project is updated in project manager meeting in every two weeks.

3.2.2 Work Effort Distribution

The project management tool, Agilefant, contains work plans and effort for example customer-specific projects, recurring processes like customer support, administration, sales and marketing. Table 2 presents the structure of projects and tasks in Agilefant as well as the work efforts in hours [h] logged to each area.

Table 2: Work areas in IPSS and amount of work logged [h] to each area.

Sum of Spent effort			Year ▼ Mon ▼														Grand Tot
			2009					2010									
Int-Ext	Product*	Project*	5	6	7	8	9	10	11	12	1	2	3	4	5		
Internal	IPSS Internal	Administration	409	333	164	357	410	373	300	246	291	260	306	272	259	3979	
		Dump pit	246	276	194	323	313	256	271	266	258	264	313	291	250	3520	
		Development	165	92	16	69	115	80	49	83	51	49	69	120	120	1077	
		Infra	82	104	56	121	196	195	237	179	217	137	114	103	81	1822	
		Knowledge dev	401	347	196	279	173	214	213	105	198	338	225	217	162	3069	
		Sales, Marketing and p	300	255	25	292	348	356	268	275	270	276	346	324	332	3668	
		Work welfare	12	3	1	9	16	2	1	23	13	39	100	7	2	227	
	IPSS Internal Total		1614	1410	652	1451	1571	1476	1340	1177	1297	1362	1473	1333	1206	17363	
	Product dev	Product Dev	227	144	128	175	223	257	249	241	223	187	528	401	415	3398	
		Concepting									6	11	16	1	6	40	
		Fixes		17	20	22	8	2	3		1	1	1	1		78	
		Evaluations						16	30	38	33	21	33	13	30	213	
		Roadmapping	1	15	1	11	12	14	9	2	3	8		11	4	91	
	Product dev Total		228	176	149	208	243	289	290	290	271	232	563	432	449	3820	
Internal Total		1842	1586	801	1659	1814	1765	1630	1468	1568	1593	2036	1765	1655	21183		
External		1879	1882	920	1452	2016	1982	2204	1727	1611	1743	1573	1584	1761	22336		
Grand Total		3721	3468	1722	3112	3830	3747	3835	3195	3179	3336	3609	3349	3416	43519		

Agile way of working is practised only in projected type of work: external customer projects and internal product development projects. For other types of work, administration, sales, infrastructure maintenance and development, process development, knowledge development, Agilefant is currently used only for logging the work effort used on tasks belonging to these areas. For different projects the goals of project iterations are planned as user stories into Agilefant. After this the project team plans the tasks for design and implementation work and estimates the work effort for each task. Therefore for projected work Agilefant contains typically one sprint ahead telling what is planned to happen but for the other type of work Agilefant shows no visibility to future tasks, work effort, and objectives.

As presented in Table 3 and Figure 11 the percentage of projected work during the studied period was about 48% of the total work effort and the percentage of non-projected work was about 52%. These numbers are not absolutely exact because for major customer support tasks (12%, see Figure 9, page 17) separate stories and/or tasks may be created and work effort estimated beforehand. In Agilefant these tasks are entered into same hierarchy where recurring support tasks are and therefore sorting the projected tasks out of the basic recurring work was not possible. The percentage of this kind of tasks can still be estimated to be quite low because normal convention in IPSS is to create a project – iteration structure for all customer project work.

Table 3: Work areas in IPSS and amount of work logged as percentages [%].

																Grand Tot
Int-Ext	Product*	Project*	5	6	7	8	9	10	11	12	1	2	3	4	5	
Internal	IPSS Internal	Administration	11,0	9,6	9,5	11,5	10,7	10,0	7,8	7,7	9,1	7,8	8,5	8,1	7,6	9,1
		Dump pit	6,6	8,0	11,2	10,4	8,2	6,8	7,1	8,3	8,1	7,9	8,7	8,7	7,3	8,1
		Development	4,4	2,6	0,9	2,2	3,0	2,1	1,3	2,6	1,6	1,5	1,9	3,6	3,5	2,5
		Infra	2,2	3,0	3,3	3,9	5,1	5,2	6,2	5,6	6,8	4,1	3,2	3,1	2,4	4,2
		Knowledge dev	10,8	10,0	11,4	9,0	4,5	5,7	5,6	3,3	6,2	10,1	6,2	6,5	4,8	7,1
		Sales, Marketing and p	8,1	7,4	1,4	9,4	9,1	9,5	7,0	8,6	8,5	8,3	9,6	9,7	9,7	8,4
		Work welfare	0,3	0,1	0,1	0,3	0,4	0,1	0,0	0,7	0,4	1,2	2,8	0,2	0,1	0,5
	IPSS Internal Total		43,4	40,7	37,9	46,6	41,0	39,4	34,9	36,9	40,8	40,8	40,8	39,8	35,3	39,9
	Product dev	Product Dev	6,1	4,1	7,4	5,6	5,8	6,9	6,5	7,5	7,0	5,6	14,6	12,0	12,1	7,8
		Concepting								0,2	0,4	0,5	0,0	0,2		0,1
		Fixes		0,5	1,2	0,7	0,2	0,1	0,1	0,1	0,0	0,0	0,0	0,0		0,2
		Evaluations							0,4	0,8	1,2	1,0	0,6	0,9	0,4	0,9
		Roadmapping	0,0	0,4	0,1	0,4	0,3	0,4	0,2	0,1	0,1	0,2		0,3	0,1	0,2
	Product dev Total		6,1	5,1	8,7	6,7	6,4	7,7	7,6	9,1	8,5	6,9	15,6	12,9	13,1	8,8
	Internal Total			49,5	45,7	46,5	53,3	47,4	47,1	42,5	45,9	49,3	47,8	56,4	52,7	48,4
External			50,5	54,3	53,5	46,7	52,6	52,9	57,5	54,1	50,7	52,2	43,6	47,3	51,6	51,3
Grand Total			100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Based on this analysis, about half of the work takes place without any real plan and objective. Thus there does not exist any straightforward tool or model for communicating to each other of the intended progress and result. For some areas of currently non-projected work the creation of plans and setting goals does not make much difference i.e.

majority of administration (9%) and dump pit (8%). For some areas of the work, totally non-projected at the moment, there is also development targets for which objectives could easily be set and tasks planned into the already available tools. These work areas include some of the infrastructure maintenance and development (4%), sales (8%), and knowledge development (7%).

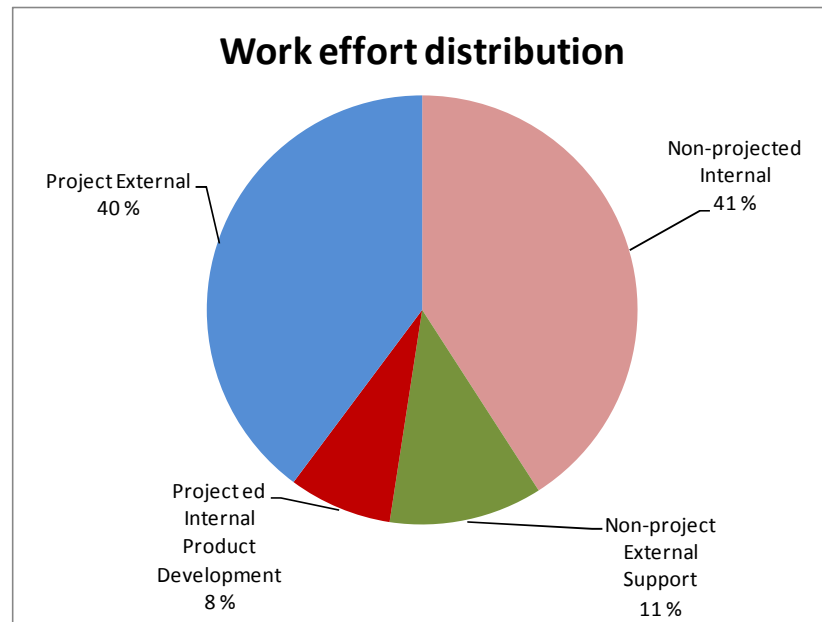


Figure 11: 48% of work effort is projected (External projects 40%, Internal product dev 8%). 51% of work effort is external work for customers. 49% of work effort is internal (i.e. not directly for customers).

3.2.3 Waste from Task Switching

Effect of task switching and interruptions on the software developer work has been widely studied.

Parnin & Rugaber (2009) state that developers consistently spend a significant portion of their time doing non-editing activities before making their first edit in a session. During this time period, developers are performing a variety of activities that relate to rebuilding their task context. Iqbal & Horvitz (2007) found that users spent about 15 minutes in resuming phase after email or instant message interruption. Solingen et al. (1998) state that if more than 10 interrupts occur during a day, the time between the interrupts

becomes too short to accomplish product development work. Perry et al. (1994) claim that developers typically perform their work in blocks of two hours.

Most of the studies are concentrating on the software development work and therefore these findings do not directly fit to all work areas and types registered by work management system of IPSS. Furthermore, at this study the employee roles other than software developer were also under investigation. However, almost all the personnel in IPSS are engaged in the development work.

Figure 12 presents the amount of projects and/or other major work areas each employee in IPSS is working during one day. It should be noticed that most of the ad hoc interruptions are entered into “dump pit” and therefore these kind of interruption are not visible in Agilefant data. If a significant contribution for some task had to be unexpectedly made normal practice was to log the work effort into the relevant task.

Most of the employees work on the average for 3 – 5 projects or work areas during one day. Although 3 – 5 may not be a highly alerting number it still means switching the major task 2 – 4 times per day.

Both Poppendieck & Poppendieck (2007) and especially Rothman (2009) warn about task switching. Poppendieck & Poppendieck (2007) note that when knowledge workers have three or four tasks to do, they will often spend more time in resetting their minds as they switch to each new task than they spend actually working on it. Task switching time is waste in the terms of lean software development. Poppendieck & Poppendieck (2007) state that, albeit causing task switching, it still is viable to have software developers to take care of support tasks on the software they have developed.

Rothman (2009) is quite strict about the harmfulness of part-time people in a project. Rothman (2009) states that if a project is staffed with people who are working part-time on that project and part-time on other projects, the project is an uncommitted project. As understood from the data and Figure 12 at IPSS projects seldom get staffed with every team member working fulltime for one project. On the other hand in IPSS the projects and resources are managed through a common shared system which diminishes the harm

of employee involvement in many projects at the same time and offers tools to manage the work at a higher level than one project.

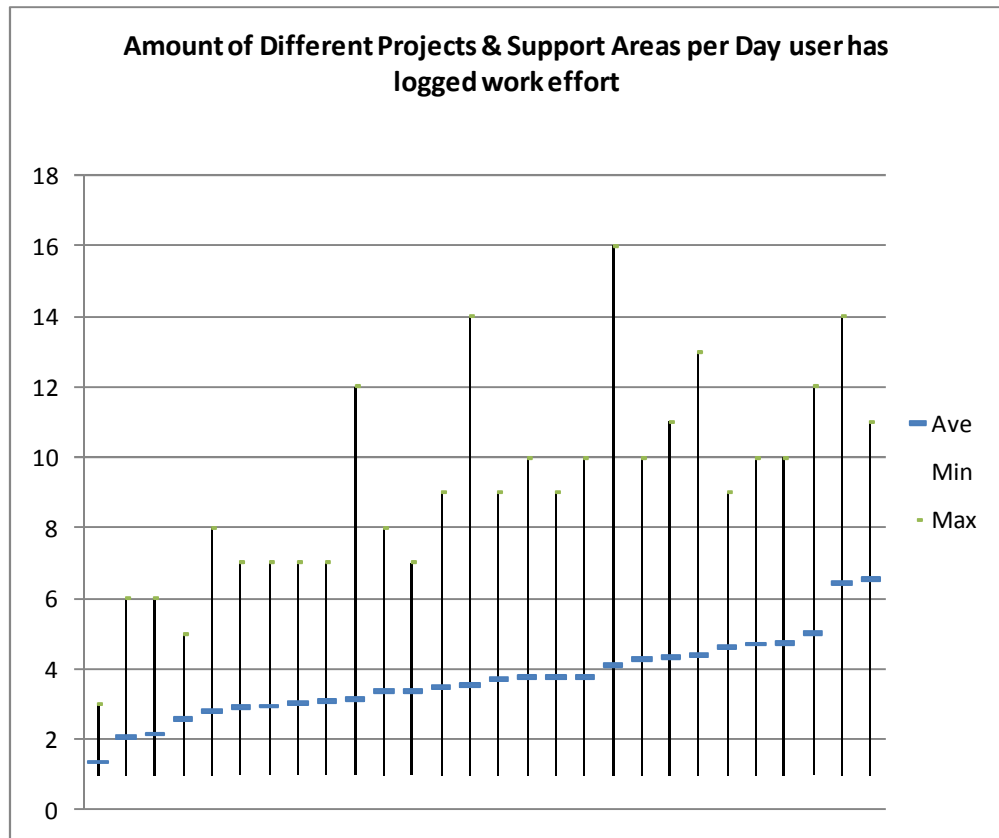


Figure 12: Chart shows how many projects and work areas employee contributes during one day in the average (Internal administration or “dump pit” work logs are not taken into account in this analysis).

Figure 13 shows the distribution of the lengths of the efforts one employee has worked for different tasks during one day. Actual non-interrupted lengths may be even shorter because employees commonly log the daily effort into one task at once even though they were interrupted in the mean time. Only 19% of the effort logs are at least for two hours.

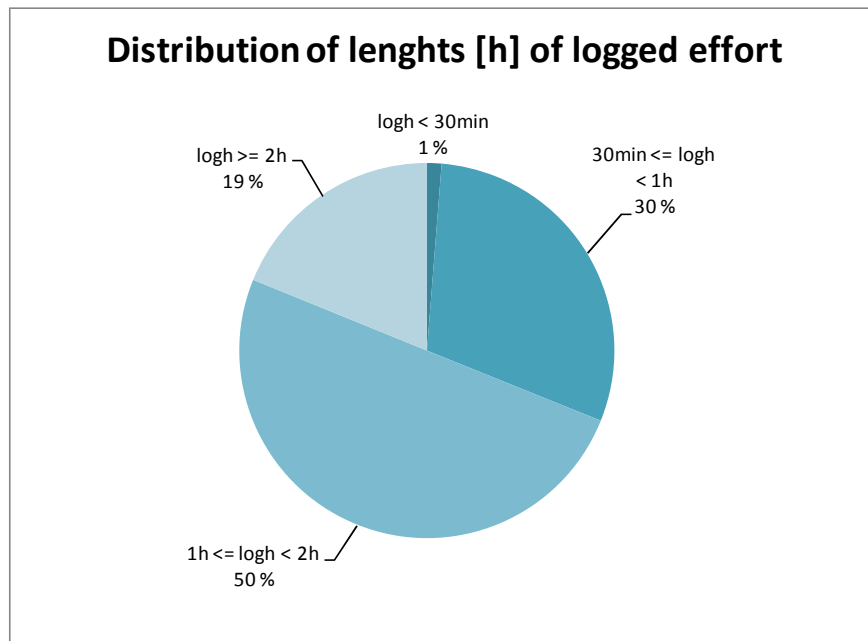


Figure 13: Chart shows the distribution of lengths of logged efforts: how long employee has worked on one project or work area during one day.

As the maximum values in the Figure 12 were quite high the distribution of the amount of tasks employee works during one day was analysed more carefully. Days were classified into six categories: less than 2 tasks per day, 3 tasks per day, 4 tasks per day, 5 tasks per day, 6, and more than 7 tasks per day. Figure 14 presents the results of this analysis. Only 27% of the work days were such that the employee was working at most three tasks. On 58% of the work days the employee was working on at least five tasks.

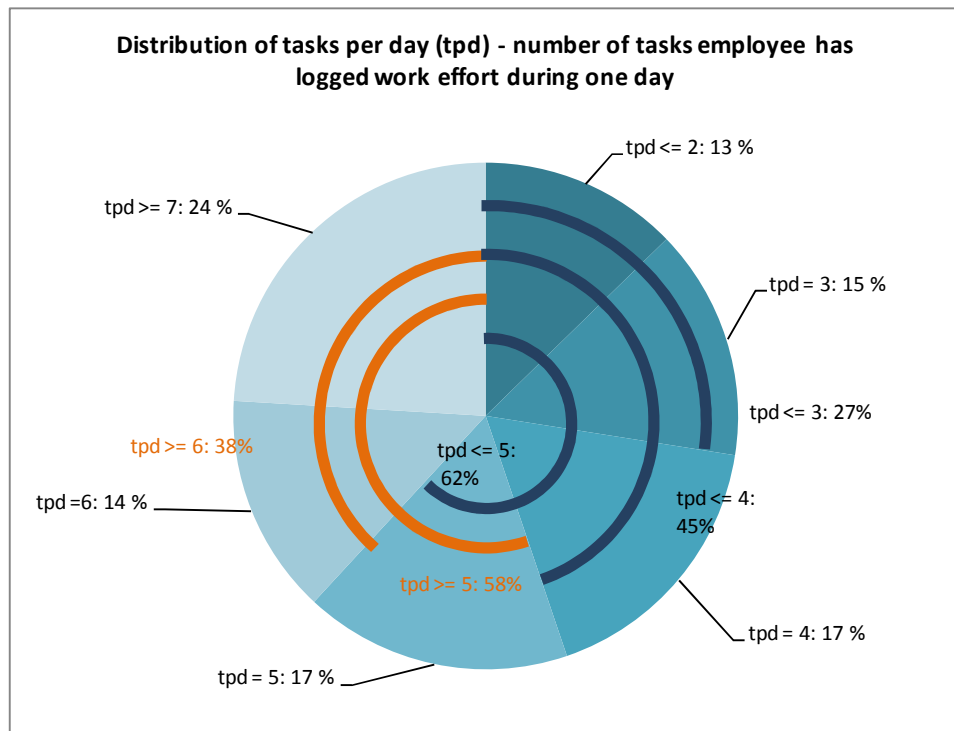


Figure 14: Chart shows the distribution of how many tasks one employee has worked on during one day. 58% of the days are such that employee has worked on at least 5 projects or work areas. 27% of the days are such that employee has been able to concentrate only at most 3 projects or work areas during the day.

Figure 15 presents the weekly average amounts of tasks for each employee. Most employees work on 10 – 20 tasks during each week.

Weekly averages do differ very much from the daily averaged multiplied by the number of days per week. Still the opportunity for reduction of task switching because of more advanced planning at weekly level was analysed. The selection of daily tasks may be done more intelligently from the collection of weekly tasks. Figure 16 presents the estimation for possible saving in task switching. The analysis indicates a possibility for about 0.7 task switch savings per day.

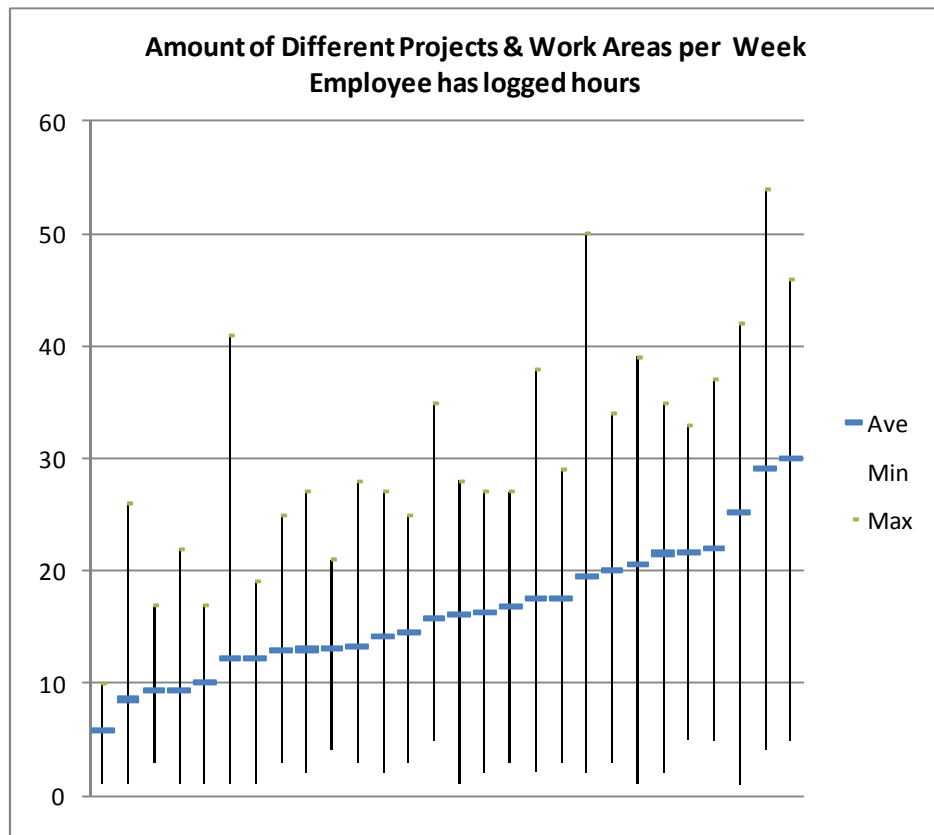


Figure 15: Chart shows how many projects and work areas employee contributes during one week on the average (Internal administration or “dump pit” work logs are not taken into account in this analysis).

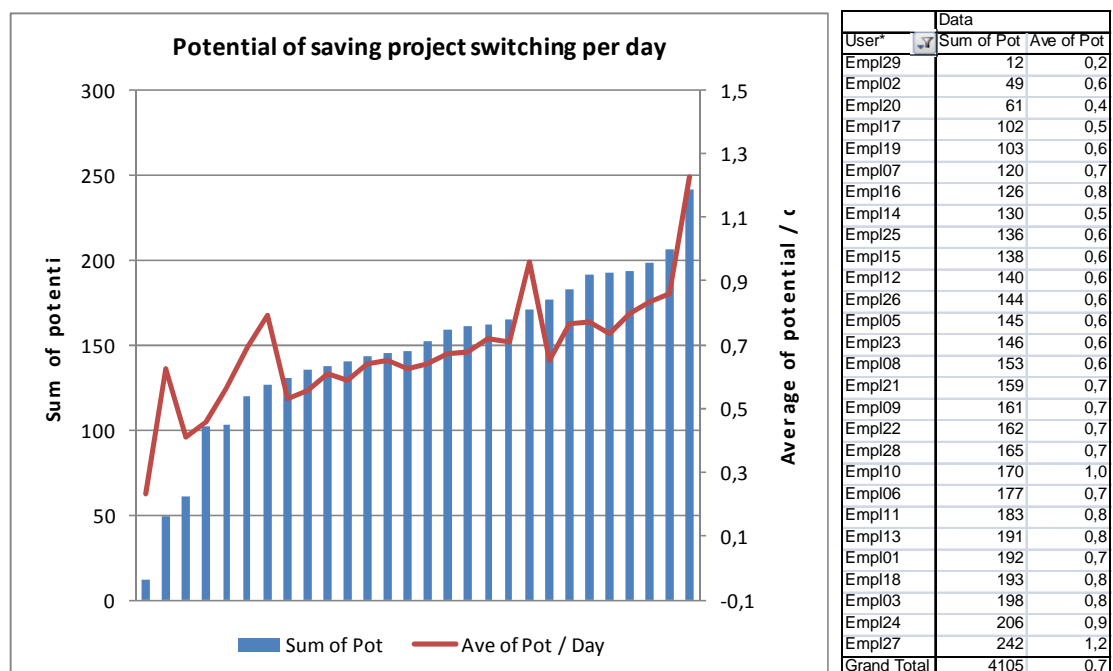


Figure 16: Chart estimates the potential daily saving in project or support work task switching if weekly level planning was implemented. Weekly work efforts were compared to daily and then estimated potential for saving.

3.2.4 Key Findings

Half of the work effort is managed without setting explicit objectives and plan shared with other people. Major part of this work can be managed as projects. This kind of change very probably can serve as moderate source of improvement in work effectiveness and shared communication.

Employees are working on too many different tasks on each day and week. As noted by Poppendieck & Poppendieck (2007) less work gets done by the same effort because the effort used for task switching is waste. IPSS has a significant potential for improvement in work effectiveness if the amount of tasks in-process at the same time is diminished.

3.3 Part 3: Management Model

3.3.1 Current Management Model

Figure 17 presents the participants of the management of IPSS and the tools mainly used by each of them. The board defines the objectives and decides the strategy for IPSS. These are documented in PowerPoint slides and meeting minutes as Word documents. CEO's duty is to execute the board's decisions. Some orders and guidelines are delivered verbally or ad-hoc emails, etc. CEO is participant in management team, product steering group, and sales team. Major part of the orders is delivered in the meetings of those teams.

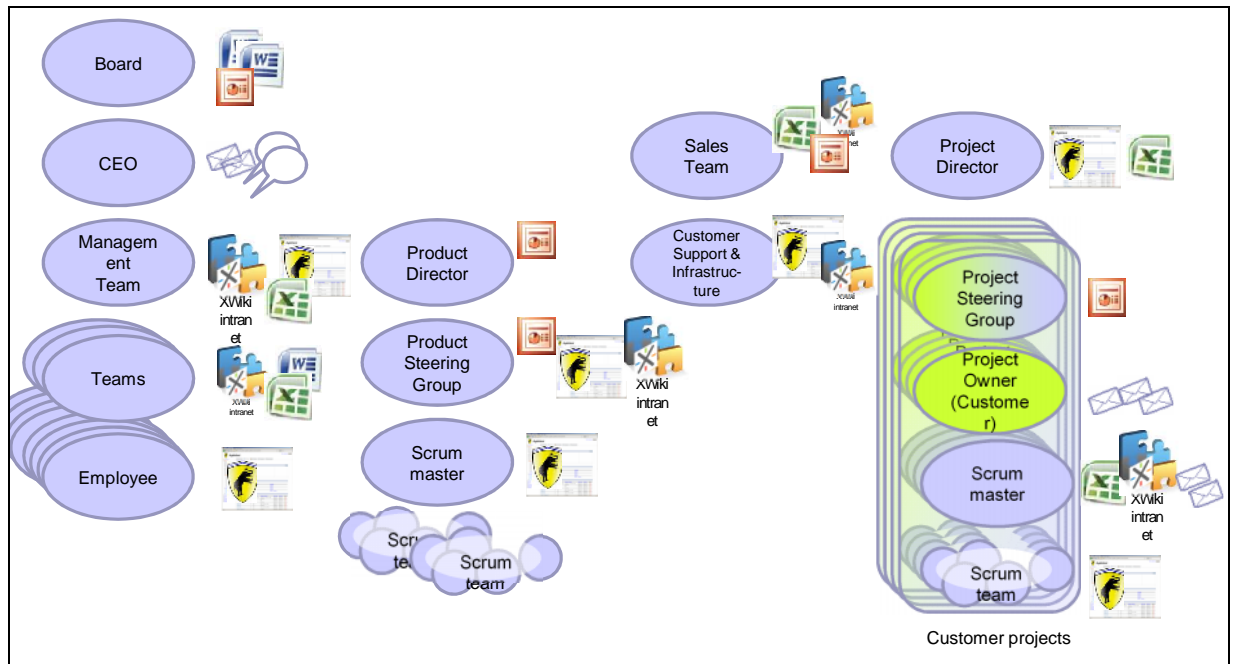


Figure 17: The participants of the management in IPSS and their common tools.

The management team meets twice a month using standard agenda, reports, and suggestions prepared into IPSS intranet XWiki pages. The management team tracks the future project cash flow using an Excel sheet updated by project managers before the meetings. Furthermore, the management team tracks the tasks decided in the meetings using Agilefant. The controller presents financial results from the last full month using an Excel sheet.

Team leaders present status reports of their teams using a stationary XWiki pages. The sales director present the sales opportunity and lead reports using Excel. Future sales and marketing activities are updated in XWiki. CEO presents strategy changes and strategy deployment activities using a stationary XWiki page. A project director presents project status reports using a stationary XWiki page. Furthermore, the product director presents a product road map status update using a PowerPoint document.

The product director keeps the product road map up-to-date as a PowerPoint document. Product idea collection and a large part of the documentation is worked on in XWiki. Product steering group decides the sprint content and priorities. The project director is responsible for the preparations to the project steering group meetings. A Scrum master named to all product development projects presents the status of the product development

sprints using Agilefant. The next iteration content is prepared to Agilefant. The scrum master enters the stories decided in the product steering group, assures the assignments, and takes care of the task planning and effort estimation for the forthcoming development sprint.

A scrum master tracks the progress of development and preparation in weekly meetings with employees assigned to the sprint. There might be more than one team active on product management at the same time. Usually the same scrum master manages them all. Team members log effort hours daily and update the effort left value at least weekly.

A scrum master is named for each customer project. For all projects a steering group is named as well as a product owner from customer side. Usually the customer account responsible is also a member of the project steering group. The project team works the same way in customer projects as in product development using mainly Agilefant. Status updating protocols and methods may be different in each customer project. Also the development idea management, primary project backlog, and the documentation methods vary. Current iteration's of backlog stories as well as tasks are always in Agilefant.

CEO may start other projects if needed. He negotiates with team leaders and project director to name optimal team (a scrum master and team members) into them. A project steering group is usually also named. In many cases CEO is the project owner, but this position can of course be given to somebody else.

The project director collects the status of all the projects in project managers' meeting held twice a month, just before management team meeting.

A sales team is managed by the sales director. Sales teams meet twice a month to coordinate sales operations and follow-up lead and opportunity statuses. Sometimes, for extensive offer preparation or some other big marketing or sales operation a scrum team is started up. The sales director is usually the project owner.

Technology teams meet weekly to keep team leader updated of the situation of each team member. Actual project issues are not discussed in the technology team meetings. These

meetings concentrate on resourcing issues, knowledge development, administration, and employee management.

Customer support and infrastructure are at the moment of the study managed by CEO. A permanent team is named to be responsible for different areas. For a more extensive work a project with scrum master and team is named and started.

3.3.2 Requirements for Improvement

Improvement ideas collected from the management team members are presented in Table 4. Most of the issues presented relate more or less to the development of tools used to support management. Each idea was classified whether it is a tool related issue or not, whether it is a management related issue or not, and whether it has something to do with future planning or not. Positive answers are marked with “X” in the Table 4.

Table 4: Improvement ideas collected.

Suggested improvement	Tool	Mgmt	Future
Better model: How to react and interact if challenges are detected in a project		X	
Better model to communicate company level focus changes or progress in big subjects	X		X
Better model for agreeing who is responsible for each task <ul style="list-style-type: none"> - visibility of the responsibilities - communication of the changes in responsibilities - employees do not perceive their load 	X		
Challenges at task level are not always notified. Agilefant is not highlighting the problems.	X		
More efficient tools and work model for gaining ideas and suggestions. <ul style="list-style-type: none"> - support for many sources of ideas: internal processes, customer cases, sales cases, .. - big picture of ideas 	X	X	X
Quarter review of the strategy. Wider involvement by employees.		X	

Suggested improvement	Tool	Mgmt	Future
More visibility on long-term goals and next quarter goals <ul style="list-style-type: none"> - currently board is not making its decisions easily visible and understandable 	X		X
More visibility on how goals and strategy are linked	X		X
More functional planning tools <ul style="list-style-type: none"> - in one place - decisions visible: what is done / what not 	X		X
Tools for prioritization of tasks between projects <ul style="list-style-type: none"> - in most of the cases decision could be made by responsible 	X		X
Continuous collection of ideas <ul style="list-style-type: none"> - management of received ideas 	X	X	X
Tool for working on roadmap for the board <ul style="list-style-type: none"> - “one slide” → big goals, not necessarily tied to time - order of progress: what first, what then, - technology team goals (knowledge development) 	X		X
Better tools for technology team level <ul style="list-style-type: none"> - for discussing and treating issues - team member status reporting - future load visibility and planning 	X		X
Company goals <ul style="list-style-type: none"> - present the vision of optimal situation - more straightforward linkage to sales operations and goals 	X		X
Reduce the amount of work done without clear objective	X	X	
Road map of the future goals should be visible to all	X		
Management model of IPSS is not clear <ul style="list-style-type: none"> many views to steering (team leader, project manager, top mgmt) visibility of decision or suggestions made at different forums 		X	
Technology team meetings are not useful enough. Technology team role clarification	X	X	
Project portfolio status report and forthcoming things shown in flat screens in the kitchen	X		
Activities better linked with Strategy.	X		X
Better visibility to resource usage and assignment. There is many parties who need this information, i.e. project manager, team leader, responsible employee	X		
Better tools for progress follow-up <ul style="list-style-type: none"> - progress vs. goal - progress vs. forecast - progress vs. last check - effort lefts should be updated 	X		X
More effective communication of strategy to all <ul style="list-style-type: none"> - focus and focus changes - progress and progress follow-up (clear, measurable goals should be defined, ability to measure) - activities required for success - linkage to knowledge development 	X		X

Suggested improvement	Tool	Mgmt	Future
More concrete communication (→ easier to remember) - in the future this should change.. - in the future this is staying..	X		X
Better linkage on company strategy and to areas team leaders need to improve knowledge in their technology team	X		X
Support mentoring to grow shared best-practices		X	

3.3.3 Key Findings

The management model supports well the needs of IPSS and its challenging business structure. The aim to start all remarkable work as scrum project or iteration brings them to the same model already used in practise for project work. The study did not find any major missing participating actors or gaps in interaction between actors.

Agilefant covers the operational requirements for a tool. Otherwise the tool set in IPSS is quite fragmented. The opinions of the management team members strongly supported this.

Tool set is crucially insufficient in the area of future planning. The management team members named altogether 26 improvements. 15 improvement ideas were in the area of future planning. Agilefant supports future planning for only one iteration ahead. Tools for planning are currently fragmented or even totally missing.

3.4 Conclusions of the Case Study

The conclusions are dependent on each other. They are marked as C1 - CN to help cross-referencing.

IPSS is a matrix organisation. This implies that special emphasis should be put on the model and functionality of the management and the tools for managing and reporting (C1).

IPSS suffers from ineffectiveness of work for two different reasons. Firstly, half of the work effort is managed without setting explicit objectives or plans shared with other people (C2). Secondly employees are working on too many different tasks during each day and week (C3).

In addition to direct inefficiency, a big portion of unplanned work effectively damages load planning and management (C4). Otherwise load planning would be functioning better and thereby reduce C3.

Developing tools for planning should be top priority for IPSS (C4). Missing or too superficial planning harms the ability to prioritize subjects. There is no clear visibility or continuum of the long-term goals nor agreed and selected high-level plans to proceed. As a result, too many projects or iterations are continuously selected in-process at the same time (C6). C6 is the reason of C3.

Success in deploying functional tools for planning solves problems or reduces their impact.

4 Designing a Framework for Linking Company Goals with Daily Tasks

In this chapter a framework for setting explicit company level goals is designed. The target is to be able to present a model connecting company goals through required mid-entities to daily tasks. This framework is expected to help IPSS to improve its functions and management as stated in the conclusions in chapter 3.4.

The starting point for the design of the framework was to collect ideas, requirements, and possible designs from literature. These findings were analysed against the findings of this study and the reality of a small company. These ideas for solution were prepared as PowerPoint slides and a workshop was organised with management team members to collect their opinions on the solution.

Finally the design of the framework was enhanced to use current IPSS tools as building blocks where viable.

4.1 Strategy as a Starting Point for the Framework

A classic strategy article by Porter (1996) sees strategy as a positioning of an organisation. Oliver (2001) defines that “strategy is understanding an industry structure and dynamics, determining the organization's relative position in that industry, and taking action to either change the industry's structure or the organization's position to improve organizational results”. Thus he sets strong emphasis on the external things outside the organisation.

Neither Porter's (1996) nor Oliver's (2001) vision about strategy is easy to integrate with activities other than analysis of external markets and industry and the own organisation. For the purposes of a small company extensive analysing is either too superficial or too costly to be practical. For large companies this kind of positioning is probably more useful and economically viable.

Hambrick & Fredrickson (2001) see a strategy to be more an internal plan of an organization for five areas: (1) Where will the company be active, (2) How will the company get there, (3) How will the company win in the marketplace (differentiators), (4) What will the company's speed and sequence of moves be, and (5) How will the company obtain its returns. By Hambrick & Fredrickson (2001) the strategy of a company is an integrated concept of how the company will achieve the objectives set.

The vision about strategy, presented by Hambrick & Fredrickson (2001), is linked to actions of a company. All the mentioned areas, when studied more carefully, start to imply things which the the organisation should do in practise.

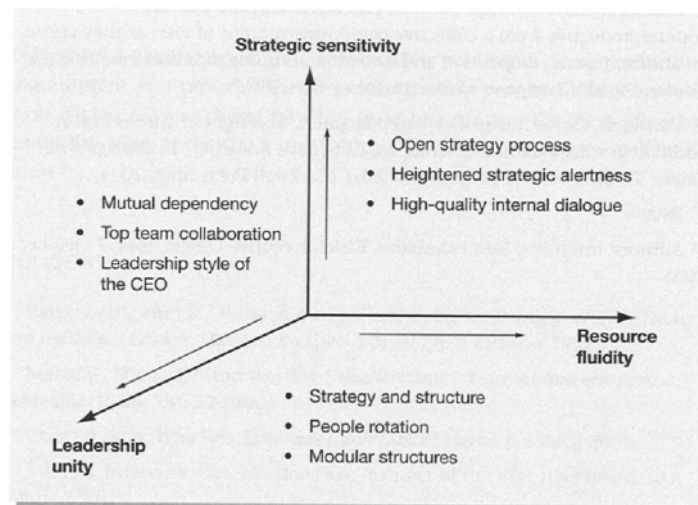


Figure 18: Goal-Driven Software Measurement by Park et al. (1996) [corrected 16.6.2010]
Factors for strategic sensitivity, resource fluidity, and leadership unity by Doz & Kosonen (2008)

Doz & Kosonen (2008) put emphasis on fluidity of resources (Figure 18). A company should be able to target the usage of its resources aligned with the strategic decisions. Lean software development contains analogical ideas of flexible and just-in-time allocation of resources (Poppendieck & Poppendieck 2007). Doz & Kosonen (2008) also note open strategy process to be one factor of strategic sensitivity.

Ala-Mutka (2008) suggests that companies could prepare a dynamic *model of strategic management* instead of preparing a strategy through a classical strategy process. A classical strategy process contains phases for analysis, decision making, deployment, and measuring.

4.1.1 Key findings

Supported by the literature, a model for strategic management c be prepared (Ala-Mutka 2008). This model was able use strategic objectives, like Hambrick & Fredrickson (2001) state, as a starting point. Optimally, the model could provide a linkage between the objectives and the action. Thus, if the objectives are changed, respectively the actions get changed and resources are re-allocated to new activities. This can improve the fluidity of resources, which Doz & Kosonen (2008) see important.

4.2 Agile Software Development

In agile development paradigm the requirements are defined as stories meaning units for development that can be estimated and completed reliably (Poppendieck & Poppendieck 2007). Suitable size of development effort is selected for one iteration for designing, coding, testing, and deploying completed stories in the end of iteration.

This kind of model could be used for managing other kind of tasks than just software development. It offers a possibility to effectively guide the stories and tasks selected in-process and resources allocated. Thus it may support strategic agility when the selection of task is based on strategic objectives. Agile model also support resource fluidity if resources are not necessarily allocated to certain functions for more than one iteration.

4.3 Software Goal Management

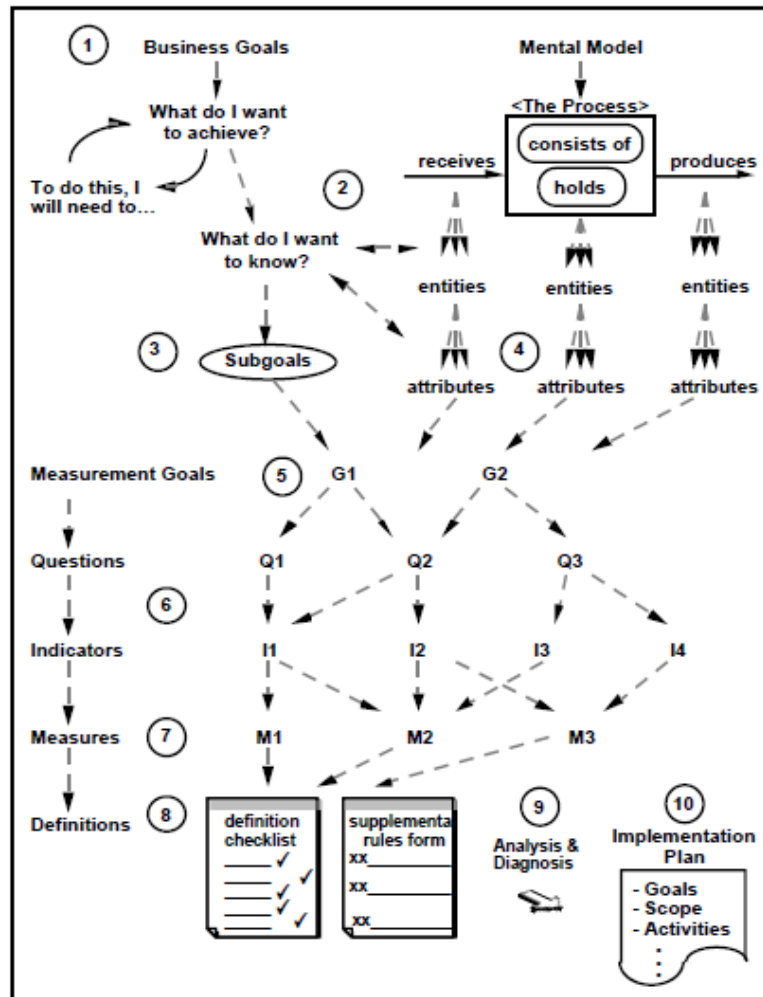


Figure 19: Goal-Driven Software Measurement by Park et al. (1996)

Park et al. (1996) present a model for connecting business goals with software development definitions (Figure 19). The model is very thoughtful covering the steps measurement goals, questions, indicators, measures, and finally definitions. Breaking questions, indicators, and measures from each other helps to formulate measurement. For a small company this model probably is too complicated and needs to be simplified if applied.

4.4 Software Product Management

Vlaanderen et al. (2009) has been studied agile software product management and presents promising models for the rhythm of development sprints and product management sprints (Figure 20). Same kind of practise probably is interesting for goal-based task management as the rhythm tasks and stories are prepared and ready for development needs to functioning smoothly.

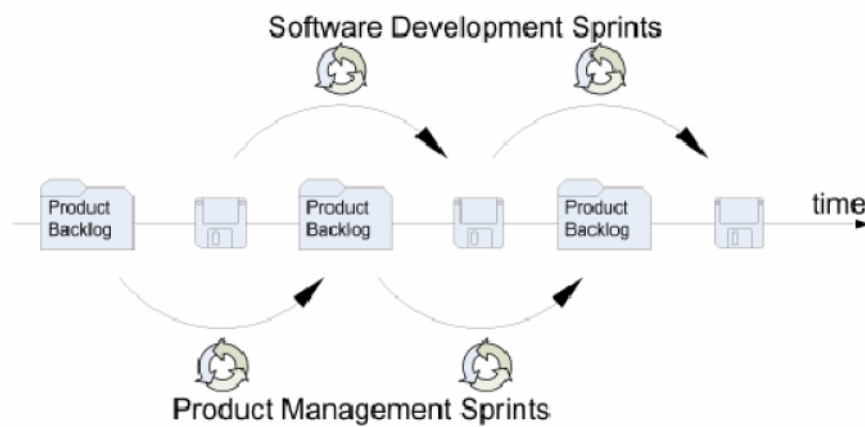


Figure 20: Agile software product management by Vlaanderen et al. (2009)

Software product management functions and actions can be studied even deeper like van de Weerd et al. (2006) (Figure 21). The outcome is probably too complex for a small software company.

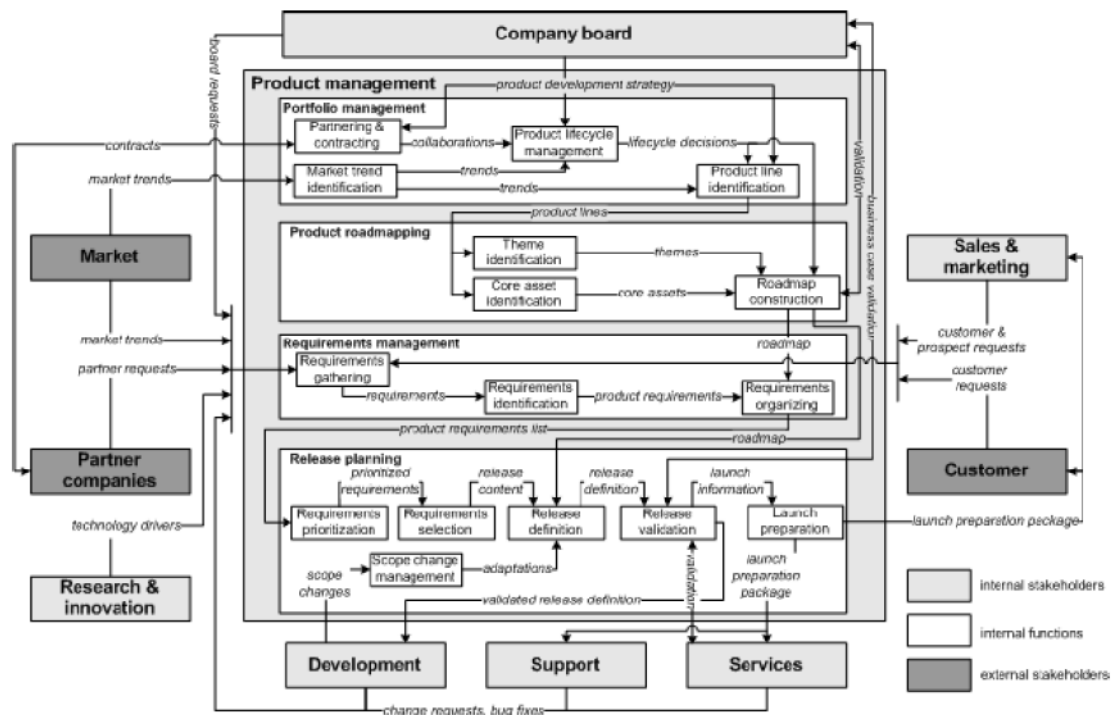


Figure 21: Reference framework for software release management presented in (van de Weerd et al. 2006).

Vähäniitty (2003) studies product strategy decisions and cycles of management. Lehtola et al. (2008) continue the work trying to open how software solution planning should be based on strategy. Work of Lehtola et al. (2008) may seem to be in the same area as this study. But Lehtola et al. (2008) try to study software planning basis, structure, dynamics, and roles of actors. The work of formulating and managing the goals for software development is included.

The scope of this study is try to find out a model to put goals into action after formulated and agreed.

4.5 Key findings

Novel software development practises, models, and tools serve a good starting point for integration of agile task management and strategic objectives for small software companies.

4.6 Designing a Goal Based Model for Managing Portfolio and Tasks

A model for goals was integrating with tasks was next designed. Figure 22 present the simple idea. Goals are tied to different levels of activity i.e. strategy, portfolio, product, customer's product, process, project, release, sprint, and task. Thus this kind of goal serves as an integrating entity between different types of planned work. It also serves as a platform for keeping unified goal level information like name, description, measure, and time series of measurement.

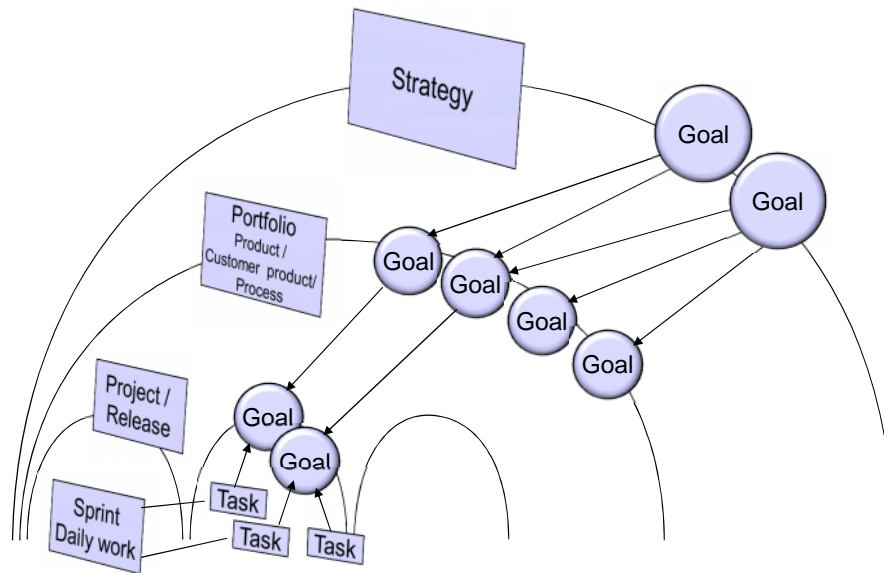


Figure 22: Company goals, sub goals, and project / iteration stories and tasks.

Figure 23 shows the structure of Goal and Sub goal entity. Note that Sub goals may be linked to other Sub goals. Goals are divided into two major classes: Goal and Sub goal. Goals are linked to one or many Sub goals. Sub goals are linked to other Sub goals or work management items such as Project, Iteration, or Story in Agilefant.org.

It would be useful if for some of the Sub goals also measures like work amount used or tasks completed could be gained from Agilefant without manual input.

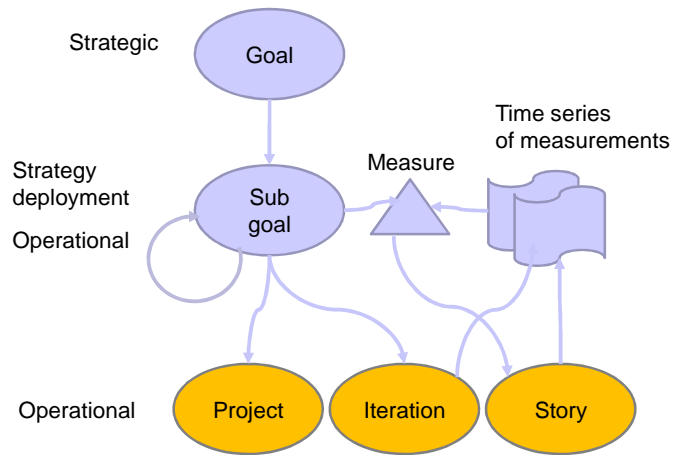


Figure 23: Structure of goals. Goals are divided into two major classes: Goal and Sub goal. Goals are linked to one or many Sub goals. Sub goals are linked to other Sub goals or work management items such as Project, Iteration, or Story in Agilefant.org.

Figure 24 presents the information content of Sub goal. In addition to descriptive and linkage information also priority and schedule of the goal is managed. The priority and schedule can be used to plan work effort usage: who is going to work with the sub goal and when.

The content and structure of Goal Sub goal tool is not overwhelmingly complex. For piloting the Goal – Sub goal tool different actors were listed (Table 5). Standardized XWiki pages were prepared to sketch the user interface of Goal – Sub goal tool. Appendix B contains some examples of prepared XWiki pages.

Sub goal information

- **Name**
- **Description**
- **Priority [= LINKED to a specific Goal tells the priority]**
 - LINK: Company goal which this subgoal supports
- **Links to projects / iterations / stories in Fantti**
- **Progress measuring**
 - Sub goals are required to be some how measurable
 - Questions
 - Indicators
 - Task implementation or other indicator
 - Measures
 - Implemented percentage / effort left vs. estimated total effort / other measure
 - Checked dt
 - When the progress measure has been updated
- **Status**
- **Schedule**

Figure 24: Planned information content for Sub goal. In addition to descriptive and linkage information also priority and schedule of the goal is managed. The priority and schedule can be used to plan work effort usage: who is going to work with the sub goal and when.

Table 5: Actors, responsibilities and tasks, and tools for goal-based management.

Actor	What	Why	Tool(s)
Board	Decide goals	to make decisions about company direction shown to everybody	Wiki
	Name and understand sub goals	To understand itself what big goals actually mean and how they could be implemented (strategy)	Wiki
		to make decisions about company concrete goal shown to everybody	Wiki
CEO	Execute decisions by working with sub goals	to guide what is important and what is done	Wiki
	Follow-up & react	To prepare to make or propose changes if required	Agilefant reports, Wiki
Product development & customer project owner	Execute decisions	To plan and guide the actual work	Wiki, Agilefant

Actor		What	Why	Tool(s)
		Follow-up & react	To prepare to make or propose changes if required	Agilefant reports, Agilefant
		Proposal for prod roadmap / prod dev sprint targets	To plan and guide the actual work	Agilefant, Wiki
Mgmt team		Operate, react to changes	To follow up and guide the actual work	Agilefant
Product mgmt team		Task prioritization	To follow up and guide the actual work	Agilefant, Wiki
		Agree the sprint plan	To plan and guide the actual work	Agilefant
Project	Owner / Steering group	Project management	To follow up and guide the actual work	Agilefant, Wiki
	Project manager	Project management Project reporting	To follow up and guide the actual work	Agilefant, Wiki
	Project group member	Task management Task status reporting	To see what tasks are assigned to me To update status of my tasks	Agilefant
	Competence centre	Follow-up & react	To see the workload in our team	Agilefant reports
Team		Follow-up & react	To see what is expected from me and why. To manage my workload	Agilefant, Agilefant reports
		Follow-up & react		Agilefant reports, Wiki
Individual		Proposal for prod roadmap		Wiki
Sales team		Task management Task status reporting Proposal for prod roadmap	To follow up	Wiki

4.6.1 An Example of Strategy Work: How Strategic Decision is Transferred to Goals and Activity

Figures 25, 26, and 27 present a real life situation in strategy work of IPSS. Figure 25 shows current positioning of the product and service areas. After the situation and opportunities were analysed, a target product and service positioning for year 2011 was prepared and accepted by the IPSS Board (Figure 26). The transition is implemented as tasks and/or with goals tied to them. This illustrates that the tool could be very useful in deploying strategy decisions and following their progress although it is not designed to support strategy preparation process at all. It could be used for making strategy preparation goals and tasks involved to them visible.

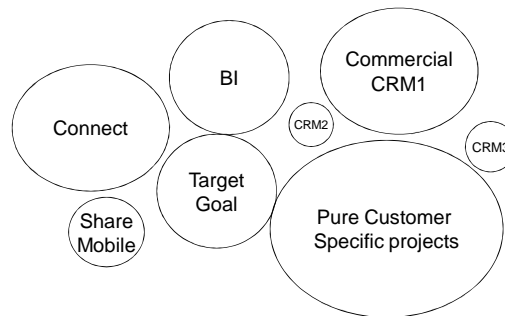


Figure 25: Current IPSS business areas by volume at 2009.

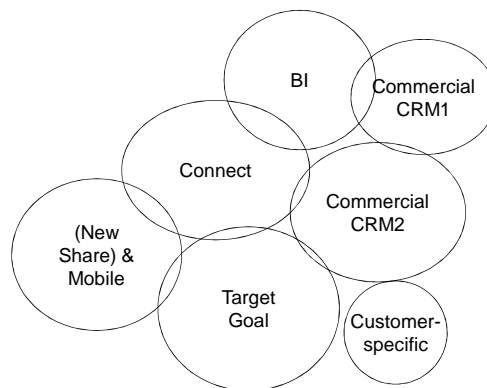


Figure 26: Goal for 2011: Goal IPSS business areas by volume. IPSS sees much opportunity in CRM2 area. And at the same time Customer-specific project importance and potential is diminishing. In Share & Mobile business area there might be opportunity for growth provided that IPSS is able to replace Share by “New Share”.

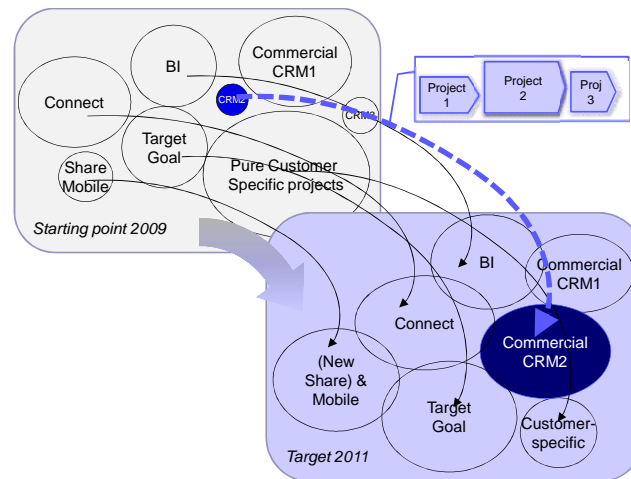


Figure 27: Transition from 2009 to 2011. Growing business on CRM2 area is for example not automatically happening. It means that IPSS sets the transition as an important goal and planned activities (here Task1, Task2, and Task3) are carefully planned, realistically resourced, and successfully fulfilled.

5 Conclusion and Discussion

IPSS has a significant potential for improvement in work effectiveness if the amount of tasks in-process simultaneously is diminished. The study presented a promising reason and background why too many things are selected to be done all the time: big amount of work gets done without clear goal, priority, or schedule.

Organisational arrangement (Figure 17) of project and product development work is healthy and practical. Furthermore, the operational tools for managing projects and sprints are up-to-date and efficient. Still, the studied company, IPSS, has not found a straightforward way to avoid the challenge of continuous multitasking. Probably something can and will be done in the company to improve the situation without any new tools, because the evidence is so overwhelming.

IPSS is missing a tool for setting goals and priorities for major part of the work. Sprint planning covers less than 50% of the work effort. Sprint planning is done for the purpose of running the current sprint. Especially IPSS has no tool to recognize or plan the for estimating whether some employee is going to be overloaded in the future.

Possibility have a tool for planning future work by setting goals, deciding priorities between goals and adjusting when the work is done opens lucrative opportunities for both gaining better operational efficiency as well as strategic agility.

A tool to be used in parallel with task management system (Agilefant.org) was designed. Goal – Sub Goal framework, a solution to link company goals and daily tasks was presented. The tool needs not to be overwhelmingly complex. The tool does not need to support strategy or planning work extensively. It should be very useful if only the goals and sub goals and their information were managed. The tool should be very useful in two ways: future load, priorities, and schedule could be continuously updated and react before harmful over tasking is already in-place.

5.1 Research Topics Found

Difficulties in managing excessive amount of work in-process simultaneously may be a major restricting factor for the growth of Finnish software companies of size 10 - 50 employees. So preparing a solution for this probably has substantial economic value.

Goal - Sub goal framework presented clearly requires more work. One interesting topic could be to study the dependency networks of goals, sub goals and work management items. It should be possible to develop a model from dependencies and thus automate the priority calculation and management as well as and task scheduling tools.

The integration of the tool with Agilefant.org is a promising topic for new projects.

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Appendix A: Interview questions and themes presented for management group members of the Company

Questionnaire was sent to company's management group members beforehand and opinions collected in interview meeting. Questions are originally in Finnish. Some explanatory text is added to translation – in interview situation respondent was led to answer to this point.

Original questions and themes in Finnish	Translated into English
<p>1) Strategian läpinäkyvyys ja jalkautus</p> <p>a. Miten saamme riittävän hyvän kuvan kaikille organisaatiossa:</p> <ul style="list-style-type: none"> i. Tavoitteistamme ii. Prioriteeteistamme: mikä tällä hetkellä on tärkeää, miksi, mihin liittyy iii. Edistymästä <p>b. Miten muutokset kommunikoidaan, jalkautetaan</p> <ul style="list-style-type: none"> i. Painopisteen muuttuminen ii. Edistymän kehittyminen 	<p>2) Visibility and deployment of company's strategy</p> <p>a. How we can deliver adequate picture/understanding to all employees in our organization about:</p> <ul style="list-style-type: none"> i. Our goals ii. Our priorities: what is important right now, why, and to which issues the priorities are linked iii. Our progress <p>b. How changes to the strategy are communicated and deployed</p> <ul style="list-style-type: none"> i. Changes in emphasis [of our goals] ii. Changes in [our] progress
<p>3) Miten eri asiat tulisi työstää</p> <p>a. Tavoitteista sopiminen</p> <ul style="list-style-type: none"> i. Pitkän ajan kehityssuuntaan liittyvät tavoitteet ii. Seuraavan jakson (3kk – 6kk) tavoitteet 	<p>4) How to work with our goals</p> <p>a. Agreeing our goals</p> <ul style="list-style-type: none"> i. Long term vision and trend ii. Next period (3-6 months) goals

Original questions and themes in Finnish	Translated into English
<p>5) Keiden ja miten tekemistä pitäisi seurata ja ohjata</p> <p>a. Etenemisen ja tilanteen seuranta</p> <p>i. Projektit</p> <p>ii. Prosessit</p> <p>iii. Poikkeamien havaitseminen – reagoinnista päättäminen</p>	<p>6) Who should be responsible to follow-up and guide action [upon fulfilment of the goals]</p> <p>a. Following progress and status</p> <p>i. Projects</p> <p>ii. Processes</p> <p>iii. Detecting impediments – decisions to reaction</p>
<p>7) Ihmisten ja osaamisen johtamisen näkökulma</p> <p>a. Miten tavoitteet ja tekeminen vaikuttavat</p> <p>b. Miten pitäisi vaikuttaa</p> <p>c. Motivointi?</p>	<p>8) People and knowledge management view</p> <p>a. Impact of goals and work-in-process</p> <p>b. What kind of impact they should</p> <p>c. [Dependencies to] motivation?</p>
<p>9) Miten uusiutuminen pitäisi huomioida</p> <p>a. Nykyisten tavoitteiden ja nykyisen toiminnan kyseenalaistaminen</p> <p>b. Uusien ideoiden kerääminen ja käsittely</p>	<p>10) How regeneration should be taken into account</p> <p>a. Questioning current goals and current work-in-process</p> <p>b. Collecting and managing new ideas</p>

Appendix B: Examples of XWiki Goal and Sub Goal pages

IPSS XWIKI GOAL

TERHO NORJA LOG-OUT

search...

EDIT EXPORT MORE ACTIONS WATCH

Goal Management

Goal Management

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IPSS Goals

G	Goal	Description	Sta	Sub goals SG
GFin	IPSS is financially profitable	Stay profitable, profitability >10% of turnover	●	SG-ProdResu, SG-Sales, SG-F2010, SG-Keep, SG-Effi, SG-P-Exis, SG-PD-Contact, SG-Mktng, SG-PD-Target, SG-NC-Siebel, SG-NC, SG-SaaS
GProd	Build new products and enhancements to current products - and get them successfully sold	1) Build new products creating value for customers or 2) enhance current products creating more value and 3) get products successfully sold.	●	SG-ProdDRM, SG-PD-Target, SG-PD-Contact, SG-Know, SG-Effi, SG-Wellf
GImp	Make successful customer implementations and create good references	Strong implementation and support partner in software having big market share and/or opportunity CRM: Siebel, Salesforce.com, Microsoft Dynamics, iSTEER Contact BI: BO, Oracle BI, Pentaho, Cognos Integration: web services to ERP, Finance, etc.	●	SG-Know, SG-Partner, SG-P-Exis, SG-Wellf, SG-Effi, SG-NC, SG-NC-Siebel, SG-NC-SF, SG-SaaS
GGrow	IPSS grows constantly	Keep growing: increase our ability to build products. Increase company value.	●	SG-Sales, SG-PD-Contact, SG-ProdDRM, SG-P-Exis, SG-PD-Target, SG-NC-SF, SG-NC, SG-Mktng, SG-Keep, SG-NC-Siebel, SG-Partner, SG-F2010, SG-EmpGr, SG-Wellf, SG-Know, SG-Effi

List of SubGoals

IPSS XWIKI GOAL

TERHO NORJA LOG-OUT

search...

EDIT EXPORT MORE ACTIONS WATCH

Goal Management » GFin Financial Profitability

GFin Financial Profitability

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Goal Description

Stay profitable, keep profitability at least 10% of turnover.
Customer projects need to create positive cash flow and be quite profitable to support also strong investing in product development.
Implementation in SaaS model creates more income from monthly service business.

Sub Goals supporting Goal

SG	SG Name	Imp	Comment	St	Results
SG-ProdResu	Run customer projects profitably	5	Crucial. Most of the income comes from project work. It cannot be backed up with other income sources.	●	Fiscal-2009 Fair, most projects profitable, still some bad projects also
SG-Sales	Develop and run sales	5		●	
SG-F2010	Financial goal for fiscal 2010: Turnover > 2.7 ME	5	Near term goal	●	[Not yet measured]
SG-Keep	Keep profitable customers	5	Very important. At least as far as new customer inquisition does not work better.	●	Fiscal-2009 Good, customer base stable
SG-Effi	Improve effectiveness of work & human resource usage	5	Important as long term success factor.	●	Good - improvements constantly made and road map ahead promising
SG-P-Exis	Get new projects from existing customers	5	Very important, most of PSS business comes from existing customers. And projects after first project tend to be more profitable than the first ones.	●	Fiscal-2009: weak, no new projects of reasonable size (>20k€)
SG-PD-Contact	Develop and start selling iSTEER Contact	4		●	
SG-Mktng	Develop marketing material, run marketing operations	4		●	
SG-PD-Target	Develop iSTEER Target as Customer Dialogue management tool	4		●	
SG-NC-Siebel	Gain new Siebel customers	4	Very important.	●	Fiscal-2009: actual poor, but promising, no new customer got, good prospects
SG-NC	Gain new customers	3	Important to improve profitability and grow share from licenses and monthly service.	●	Fiscal-2009: poor, only small new customer got
SG-SaaS	PSS's services delivered profitably as SaaS	2	Promising: SaaS model open new possibilities to make profitable projects.	●	Fiscal-2009: profitability ok, volume going down
	TOTAL			●	Fiscal-2009: expectations were set low - and met

Mon Jun 07 06:21:16 EEST 2010

Goal Management » Sub Goals » SG-Eff Improve effectiveness of work & human resource usage

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