

# 12

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## Empirical Results – Others

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This chapter presents other empirical results which had been collected during the research. These other empirical results had been collected supplementary to the formal research plan and could be seen as support and increased empirical verification and knowledge to the formal PhD project. As explained in this research project, the SMEs involved had informal and parallel product development processes and activities. Similarly, this research offered the possibility of carrying out informal research activities outside the formal research – program. Such activities allowed me to observe and participate in other product and project development activities. In this last empirical chapter I have chosen to demonstrate some of these activities together with my visits and discussions with SME businesses and research colleges. The reason for this is mainly based on the fact that the empirical results support and increase the knowledge about NB HS NPD.

### 12.1 Introduction

While working on my research project I had the opportunity to participate in activities which empirically support and increase the knowledge about NB HS NPD already verified in Chapters 9–11. The activities to be described in this chapter were divided into three main groups:

#### 1. Business observations and empirical data

- Visit to Tele Danmark Internet
- Visit to Licentia Group
- Visit to Sideros

#### 2. Research projects on NPD HS NPD

- The Dolle case
- The PITNIT research group
- Stay at Polytecnico di Milano

Participating in the TOM research project  
The DISPU research project  
The SMER research project

### **3. Action research learning projects**

The TIP project  
The BESTCOM – EU Project

These activities provided important empirical data to NB HS NPD on e.g.

- other HS PD models than the ones I had previously observed.
- observations and knowledge in an international perspective demonstrating how PD models and processes were carried out at high speed in four European countries.
- observations on product development models and process on products which were not physical products – mainly software and service products.
- knowledge of how HS product development were carried out in research.
- further information of the consequences of NB HS NPD.

I therefore choose to include these observation and empirical data in my research.

The aim of the chapter was:

- to verify, test and give answers to different part of the research hypotheses and questions set up earlier in Chapter 1. Please see Table 12.1.
- to show and verify NB HS NPD models and processes carried out in other product development projects under pressure of speed.
- to verify other different product development groups, e.g. SMEs' solutions to NB HS NPD.
- to verify if there were differences or extras that had not been observed in either case, focus group interviews, or survey.
- to reflect on which consequences high speed and right speed had on different parameters in other environments. The parameters in focus were shown in Table 12.2.

In each case the contribution to the research questions were shown in the Table 12.1.

## **12.2 Visiting Tele Danmark Internet**

During the research project I had the opportunity to visit Tele Danmark Internet in Spring 2001. Tele Danmark Internet or TDC ([www.tdc.dk](http://www.tdc.dk)) had been the market leader on the Danish telemarket for several years and had just some

**Table 12.1** Hypotheses to be verified in Chapter 12

Empirical Results – Other Empirical Results		Visit to Tele Danmark Internet	The PITNIT Research Group and the Dolle Case	My stay at Politecnico di Milano	Participating in the TOM Research Project Milano	Visiting the Sideros Business	The TIP Proejct	The BESTCOM Project	The DISPU Research Project	The SMER Research Project
Overall Research Questions to be Verified	Hypothesis to be Verified and Tested									
What is network based high speed NPD?	HS NPD can be seen from different views (macro environment, business, product, market, customer, technology, competitive, and network view). HS NPD is a matter of right speed and not high speed.	X	X	X	X	X	X	X	X	
What enablers to NB HS PD can be identified?	Businesses use different HS enablers.	X	X	X		X	X	X	X	X
	HS enablers are identical to the 10 enablers – 1–10	X				X		X	X	X
	There can be more than these 10 enablers to HS PD.	X		X					X	
	The enablers will play a different role according to the PD situation and project (Secondary focus).	X		X			X	X	X	
	The customer enabler, the network enabler, and the PD model enabler plays an important role in the upper phase of the HS PD phase.	X	X	X		X	X	X	X	

(Continued)

**Table 12.1** Continued

Empirical Results – Other Empirical Results		Visit to Tele Danmark Internet	The PITNIT Research Group and the Dolle Case	My stay at Politecnico di Milano	Participating in the TOM Research Project Milano	Visiting the Sideros Business	The TIP Proejct	The BESTCOM Project	The DISPU Research Project	The SMER Research Project
Overall Research Questions to be Verified		Hypothesis to be Verified and Tested								
What framework models and processes in the idea and concept stage/gate of HS PD based on networks can be measured?	The HS PD projects can be divided into radical and incremental PD projects.	X		X		X	X	X	X	
	The radical and the incremental PD projects follow different generic HS PD models and processes and can thereby be described by different generic frameworks.			X		X	X	X	X	
What success criteria can be used for measuring HS PD based on networks?	The success criteria for HS PD are dependent on the specific PD project – radical or incremental.	X		X			X	X	X	
	HS PD success criteria can be formulated as short term and long term success criteria			X			X	X	X	
	Time, costs, and performance are central success criteria in a short-term perspective	X		X		X	X	X	X	
	Continuous improvement (CIM), continuous innovation (CI), and learning are central success criteria in a long term	X		X	X		X	X	X	

**Table 12.1** Continued

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perspective so reach right time, right cost and right performance in NB HS PD.
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**Table 12.2** Impact on different prametres by speed

Consequences	High Speed	Right Speed
Time		
Cost/Value		
Performance		
Market fit		
Risk		
Uncertainty		
Continuous improvement		
Continuous innovation		
Learning		

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few years ago decided to increase with a new SBU and move into the internet market. TDC had a turnover of many billions DKR and was represented on the Danish stock exchange. The American business SBC was one of the main owners of the TDC business.

TDC were represented by the personnel director Lars Hansen and manager of a special task force which should help Tele Danmark Internet's current develop managers and teams to speed their product development – which meant a very high focus from TDC on the HRM enabler as a main enabler to keep high speed in product development and to support his speed.

During the interview I had the opportunity to discuss network based high speed product development with four persons within Tele Danmark Internet. These were product development manager Preben Meyer, Human Resource Manager Lars Hansen, Product development Manager Stig Bøgh Carlsen and Manager of task force Lars Bundgard.

The research framework of the research project was used for the interviews with Tele Danmark Internet.

### 12.2.1 PD Task – PD at HS in Radical New Market

The product development tasks were many in the TDC and were always related to the introduction of new products to the market. In this case the product development challenge to the management at TDC was to focus on keeping

the process running – and at high speed. This meant that TDC was always into new rather radical product development task.

### **12.2.2 Field of Product Development**

Tele Danmark Internet was a very interesting business to visit because they were at that time – 2001 and 2002 – under an immense pressure from nearly all components on the field of product development especially the market, technology, and network to carry out high speed product development. At the same time a new foreign investor in TDC increased the pressure on Tele Danmark Internet to speed product development further and to introduce more new products on the market at a higher speed.

**The market** for Internet products was extremely dynamic and turbulent in Spring 2001 because of a very evolving market with several businesses offering different products to the market. As a service provider Tele Danmark Internet faced an enormous increase in turnover, new products, new employees and development into new market. It was very important for the business to continuously innovate new products to the market and to gain first mover advantage. At the same time the Internet **technology** along with the tele technology were evolving at a speed that had hardly been seen before. Furthermore, **the network** which Tele Danmark was involved in and was dealing with was also increasing, and they were consequently forced into more unknown networks at an exceptionally high speed. Finally, **the competences** of Tele Danmark Internet were under high pressure. At the same time, this forced the manager into some areas to join more with the sub-suppliers.

Taking all these aspects into account the product development managers and the product development leaders were under extremely high pressure because of dynamic and fast moving markets, technology, networks, and competences. In the competence area Human Resource Manager Mr Lars Hansen was in a situation where it was a question of the rate and speed of how many new employees he could adapt to the organisation to develop to support the development and support of new products to the market.

For a long time the managers of Tele Danmark Internet had been able to develop new products at the right time gaining the first mover advantage but suddenly, they faced a situation of stagnation within the business's competence to develop new products.

*“We have seen the creativity and the development of new products have stagnated. We feel it has something to do with the fact that*

*there are too many employees and too many rules to work on.”*  
(Lars Hansen TDC)

To overcome this, Tele Danmark Internet established a special task force managed by Lars Bundgaard where four people were full time applied to service and nurse different product development managers and teams. This task force had one main goal – to keep the product development managers on track and help them not to fall into stagnation or slow speed.

Looking into the model of product development of TDC it could be verified that it was mainly dealing with **a stage-gate approach**. Another important observation was that many product development projects were managed by young managers and the teams included many new, young and inexperienced product development participants.

Lars Hansen also noticed that the organisation faced a challenge of moving from a rather entrepreneurial young organisation where every body new everybody and were highly motivated the entrepreneurial, organisational environment to a more stabilised organisation. The change could be characterised as a change in focus on success criteria from short term speed and long time continuous innovation to short term cost and performance together with long term continuous improvement and learning.

### **Summary on TDC**

The task of TDC's product development was now changing into a more stabilised situation where TDC would have the opportunity to change focus from short term success criteria to long-term success criteria. An increased focus on continuous improvement and learning together with a focus on right speed was theoretically appropriate. The first two areas were presently being cultivated at TDC.

### **12.3 Visiting Licentia Group**

Licentia ([www.licentia.dk](http://www.licentia.dk)) was one of Europe's largest producers of knock-down furniture with factories in Denmark, Sweden and England. Licentia's turnover was more than 1 billion DKR. The Licentia group was owned by the holding business Bækgaard holding in Ikast, Denmark.

At a seminar at the University in Aalborg I had the opportunity to talk to the product development manager at Licentia, Eva Paarup. Furthermore, during three visits to Licentia I had the opportunity to discuss product development

with the managing Director Lars Thorrid. At the same time Licentia joined the Bestcom project which gave me a close insight into the product development activity of the Licentia group.

### **12.3.1 Field of Product Development**

**The market** for knock-down furniture had been under an extremely high price pressure for a long time. This had caused a further pressure on high speed product development. Many international producers had turned their focus to more and faster product development.

**The technology** and increased used of new materials gave major new opportunities and challenges to Licentia's product development. **The network** component was also evolving as new networks was attended to support the increased demands for new competences to support the product development process. Licentia's **competence** especially in the product development department was under a high pressure because they were in lack of knowledge about what was the new trend in the market and further in lack of a faster access to knowledge about new trends in the market.

#### **Product Development Task – Multiplying Incremental PD with HS**

The product development task was as in a general speaking very incremental but a high pressure from customers and sales department along with a pressure on including new materials and new technology in the products gave some major challenge to the product development department to speed product development more. Licentia had also in the last two and three years merged with a furniture business in England and Sweden which challenged the product development department to do product development in network with the product development department in the merged businesses.

Licentia had chosen to solve the above-mentioned challenge by focusing on the product development model enabler – especially on introducing the stage-gate model in Licentia. Licentia had also chosen to focus on the customer enabler which meant that the marketing manager would be more integrated to the product development process and be responsible for “the customers voice” into the product development process.

Licentia had further decided to focus on the cost of product development and develop a cost model which would be able to show how much direct cost had been used on each product development project. The direct cost were collected from idea stage to the product development project was introduced to the market.

Licentia focus very much on the **short term success criteria** time and cost. Licentia wants to focus on long term success criteria but were very much stuck in their new decided product development model and further the high pressure on time in product development.

## 12.4 Visit to Sideros

The Sideros business ([www.Sidaros.it](http://www.Sidaros.it)) was the second largest Italian producer of woodburning stoves and exports more than 85% of its turnover to most of Europe. The Sideros business had a strong cooperation with a Spanish producer of stoves. Sideros had for a long time had a strong cooperation with businesses in Modena which produce hand painted tiles which were used to decorate the stoves.

### Field of Product Development

The Sideros product development department had for a long time been into a rather stable **market** all though with high pressure on price competition but a rather stable and slightly falling market. The **technology** had also been very stable along with the **network cooperation** in the industry. Sideros was cooperating with some long time network partners very much placed in the local area where the Sideros business was placed.

**The competence** of Sidaros was until 2003 very much focused on a stable efficient industry business. Product development had until now been very much incremental with some very stable introduction 1 time a year of new products.

### Product Development Task – New Stove, New to Market, Developed at HS

The challenge to Sideros on the product development area was on more areas. Firstly to integrate new technology into the stoves because of new possibilities to produce stoves which were more efficient than the old existing ones. This challenge was a movement into some new rather radical product development areas. Furthermore, the market trend was moving towards some increased pressure from the market on a higher speed on introduction of new products. The market was therefore changing from a stabilised market to an evolving and to some extent dynamic market.

Some new to the market products had entered the market and put further an increase to pressure on high speed in product development. Product life cycle was shrinking.

### **Sideros Solution**

The Sideros business choose to solve the challenge by increasing their network activities – focus on the network enabler. An increased use of network and unknown network to gain access to competences that Sideros did not already have inside the business was in focus. Furthermore, the Sideros business choose to force the product development department to use a new product development model – rapid prototyping. This was not a normal procedure in the business but as the market was moving very fast the Sideros management felt they had to take new product development methods in use. Therefore the product development enabler was also used.

However, the Sideros business had still some consideration to the previous product development because the products was developed at a very high speed which could include that some faults e.g. not yet had been discovered.

The pressure on speed had at the same time resulted in some increased costs which Sideros hoped they could win again by coming so soon to the market.

The high speed in Sideros product development activity and the risk of still having faults in the newly developed products prevented Sideros to penetrate new markets because they were frightened to be dragged into a “first mover bad advantage” situation.

### **12.5 Dolle Case**

The Dolle case was elaborated during the research project as a part of the PITNIT research project. The PITNIT project will be comment later in this chapter. The case of DOLLE can be seen in the case book – Organizing for Network Information Technologies – Cases in Process integration and Transformation (Hørlück et al., 2001).

The Dolle case shows how e-development could be developed and I had through my cooperation with the DOLLE business ([www.DOLLE.dk](http://www.DOLLE.dk)) the opportunity to follow at close sight how the architecture both the network and the e-development software were developed in the Dolle business.

The main results of this work is shown in Table 12.3.

### **12.6 PITNIT Research Group**

The PITNIT research project was a typical development project with similar terms and conditions as product development projects in the industry.

**Table 12.3** Results of development at Dolle

Main Results of the DOLLE Case	Main Results of DOLLE Case in Details
Development of e-development in networks demands a strong trustful network	The case showed that the Dolle e-development network system demanded a strong and trustful network because the projects touch all parts of the network partners internal systems and procedures.
The software part of an e-development project can be overcome but “the soft part of the network cooperation” can be difficult to overcome if the network partners do not have trust in each other.	The Dolle case showed where the barriers was to more NB HS NPD. It showed very clearly that it was not a matter of software integration and development but instead “the soft part” of the network cooperation
When developing a e-development system where customers also are a part of the development team, then businesses should focus on how the customers perceive the product.	The cooperation with Dolle showed very clearly that Dolle had a major challenge to elaborate a e-development system that matched the customers terminology and there way of seeing and developing the product. This was the difficult part of the development of a e-development software.

### 12.6.1 Field of Product Development

The field of product development was in this case rather stable. The researchers had no pressure from the **market** except a deadline for some delivery which was fairly reasonable. The customers to the results of the research was initially the ministry of science but later the industry. Both the **technology** and the **network** was fairly stable however the **competence** were evolving at a high speed because each individual researcher were developing their competences both individually and together with other network partners.

#### Product Development Task – a Knowledge and Research Product

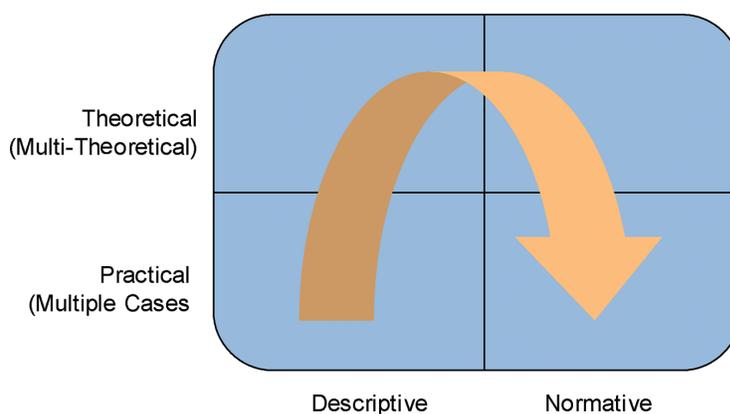
The goal of the PITNIT – project was to describe, analyze and offer practical guidelines for the integration and transformation of industrial processes that were enabled by new network information technology. The project integrated researchers from engineering, social sciences, and information systems.

The key research challenges were

1. the merger between a number of process innovation concepts and associated IT.
2. the extended enterprise that emerges from a multitude of different co-operating organizations and associated IT.

3. network-based interaction with the environment using new IT for marketing purposes.

To address these three challenges the research group alternated between a practical level and a theoretical level. First, the research group was engaged in a joint case description of businesses using new network IT – The research group decided to focus on the network enabler. The cases were analyzed from the three theoretical perspectives. On this basis the research group formulated a new interdisciplinary framework. Finally, the resulting normative guidelines were evaluated. The research methodology is depicted as an illustration in the Figure 12.1.



**Figure 12.1** Research methodology.

The project results in the following “products”:

1. Cases
2. An interdisciplinary vocabulary
3. Multi-theoretical frameworks
4. New inter-disciplinary normative guidelines (can be seen in the case book “Cases in Process Integration and Transformation”, Hørlück et al., 2001).

The “product development process” used a typical stage-gate model and reached all deadline in time. However there were crisis to reach the time schedule but buy some extra efforts and some informal product development activities the products was delivered within time. The product was judged as a success as it matched the performance demands stated earlier in the process.

## 12.7 Stay at Polytecnico di Milano

During my research project I had the opportunity to visit Polytecnico di Milano to do some further research together with Italian researchers. During my stay I discovered major findings which helped me very much in my research to find new way of understanding NB HS NPD.

The first discovery was the theory of “**on the market product development activity**”. Professor Mariano Corso showed me through his case on an Italian Scooter business how this business left a major part of its product development process stay “on the market”. This business let their customers “play” with their products on the market and observed carefully their movements and “play” with the product. The business were well aware of the customers need and want to change the product into some personal need satisfaction. The customers change The Scooter businesses products into something that would match their individual needs.

All these valuable findings and observations were collected at the Scooter business and the best of these were transformed into further improvement of the old products or even new products.

**The time aspects** was further discussed and elaborated on at my stay in Italy. Before my discussion with my Italian colleagues I was convinced that physical time was possible to measure to product development projects. Additionally, I was convinced that all product development projects had a start and an end.

However I must say that I change my opinion on this when I saw how the many Italian businesses work with the product development time not in a physical perspective but more as in a process perspective. I had often wondered about since then if this way of thinking about time is related to south European style of living but in my opinion it convinced me and gave me some new ideas how to work with time and speed in product development. These has been comment before in this research project and will further in details be comment in the next chapters to come.

## 12.8 Participating in TOM Research Project

The Tom project was another typical research development project with the same terms and conditions as a product development project in the industry would have at that time. However, to a large extent the PD project was based on network development – the network enabler and was under a much

higher pressure of time than the PITNIT – research project. I often found that this pressure was very much coming out of the structure of the project and further the manager and team of the research who were very much focused on developing several articles e.g. at a high speed.

### **12.8.1 Product Development Task**

The product development task was stated as follows:

*Starting from the identification of the emergent approaches and from the analysis of their effects within specific industrial and organisational contexts, the project will develop interpretative models and management tools intended to support managerial actions. Project objectives may therefore be articulated at the interpretative and the supportive levels.*

*At an interpretative level, the objective is to identify and describe the emergent configurations of technological, organisational, and management tools, to identify the determinants of such configuration adoption, as well as analyse their impact on performances. In particular, the objectives are as follows:*

- 1. to describe processes through which knowledge, in its different forms, is assimilated, created, transferred, stored and retrieved;*
- 2. to identify the organisational mechanisms, the Information and Communication Technologies (ICT) and the Management Systems through which firms can influence such processes;*
- 3. analyse internal coherence between technological, organisational and managerial choices;*
- 4. analyse relationships between technologies, organisational mechanisms and Management tools and, then, identify the coming out of exhaustive configurations for Knowledge Management;*
- 5. identify relationships between different configurations and contingent characteristics at industrial, geographical and organisational level;*
- 6. identify each configuration effect in terms of innovative capabilities and quality of working life;*

*At a supportive level, on the other hand, the objective is to identify implications for Knowledge Management analysis and re-design in terms of:*

1. *support in ICT choice and coherent adoption in order to foster a more effective Knowledge Management, given the firm contingent situation and the improvement objectives/priorities;*
2. *guide to analysis and improvement of Organisational Mechanisms – in terms, for example, of structures, network roles and mechanisms – in order to foster a more effective Knowledge Management, given the firm contingent situation and the improvement objectives/priorities;*
3. *guide to the analysis and improvement of Management Systems – in terms, for example, of procedures, performance measurement systems, wage and reward systems – in order to foster a more effective Knowledge Management, given the firm contingent situation and the improvement objectives/priorities;*
4. *analysis and improvement of the whole configuration for Knowledge Management.* (Source: The Tom project description)

As can be seen the product development task was very ambiguous and must be said to be of a rather radical character. Further as stated before the research was under a high pressure on time. This time pressure was mainly coming from those who were funding the project and internal the researcher group particularly “the manager” of the research group.

The research was not yet finish when I left Italy in 2002 and some few articles and conference papers on the very first research results had just been published when I finished this research project in 2003. However it seemed as if the research group meet the timetable. As far as I could observe by joining the research group I found the reason to why the “research team” could perform at such a high speed due to two main enablers. Firstly a strong and often hierarchical management of the research project, which was necessary to steer so many researcher who were all placed in different universities all over the north and mid Italy – the management enabler. Secondly and strong focus on the network enabler where different competences and resources were used at exactly the right “spots” in the research project. Finally I observed a increased use of the ICT enabler were all participant participating in the research could connect, find all necessary materials and communicate with each other electronically. Further the manager and the individual members could watch each others activity to the electronic research place together with a continuously development of the results of the research project which was shown and visual to all research partners at “the electronic research place”. I claim this last part as similar to an advanced used of electronic development or the use of the e-development enabler.

## 12.9 DISPU Research Project

During the research project time I joined another research project called the DISPU research project. The DISPU project were focusing on distributed product development with a support of E-development software. The research was carried out in 3 different stages.

Firstly a focus group discussion with representative from industry, university and national consultancies. Secondly the research project established a conference for SMEs and e-development software supplier to do a discussion in large and small groups about the use or non use of e-development software to support product development and high speed product development. Finally a survey was developed and send out to more than 1000 SMEs asking them several questions on product development.

The main result of this research can be seen in Table 12.4.

**Table 12.4** Results of DISPU survey

Main Results of DISPU	Main Results of DISPU in Detail
The use of e-development software is very poor in SMEs	Some SME use some CAD, CAM software in their product development but the use of these systems are very poor and it is not integrated to the businesses other system.
The SME's do generally not develop new products with e-development software tools together with network partners	The DISPU research showed very clearly that the development on new products in network supported by e-development software was very poor.
Development of new products in networks supported by e-development software demands that network partners trust each other.	The DISPU research project showed that many SMEs did not develop in network based on e-development software because they did not trust or saw themselves in a competitive dangerous situation if joining and implementing such a cooperation. Obviously the price of e-development software was a barrier to further implementation of network based e-development but the major barrier was trust to network partners. The DISPU project showed some few examples where networks had overcome this barrier by signing a strategic alliance and in these networks e-development was a major tool in the network based product development and further help the businesses to develop new products faster.

## 12.10 SMER Research Project

The purpose of the SMER survey was to give a descriptive status of E-business in SMEs in Northern Denmark. One area of this survey focused on product development and in particular product development in networks and with the use of e-development software tools. The survey was done on more than 500 SME businesses with a answer rate of 19%.

The SMER research showed different results and the main results related to NB HS NPD are shown in Table 12.5.

**Table 12.5** Results of SMER research project

Main Results of SMER	Main Results of SMER in Details
The use of e-development software in networks is very poor	The SMER research showed very significant that the use of e-development software in networks was very poor.
The product development model most used in SMEs is the stage-gate model	The SMER research verified that thee stage-gate model is the most used product development model
The SME businesses focus mostly on narrow networks	The SMEs involved focus on narrow network partners mostly the geographic nearby. The research showed that the SMEs had more trust to the narrow network partners as they were known and easy to access.
The product development projects are mostly on incremental product development projects	The SMER research showed very significantly that most product development projects was on incremental product development.

## 12.11 TIP Project

The TIP Project was an inter-organisational product development project carried out as a cooperation between four institutions.

### 12.11.1 The Aarhus School of Architecture

One of the four institutions was the School of Architecture in Aarhus. From this institution industrial design students toke part in the project. They used the project as their final assignment of their study.

### 12.11.2 The Aarhus School of Business

BA students from the Aarhus School of Business also participated. The TIP project was often used as the students' final bachelor report in the 6th semester.

### **12.11.3 The School of Engineers in Horsens and Aarhus**

From HHH a number of machine engineer students participate.

In the TIP project new products were developed at high speed in a network consisting of the above-mentioned students and often in cooperation with businesses from the Danish industry. All three groups of students were “forced” to cooperate on all aspects of a product development process – analysis of customer needs, customer use of the product, technical and economical restrictions and possibilities, production technologies, project management etc. within a time span of only four months.

The project began with a “kick start” where all students meet for the first time at the beginning of September. The aim of the first meeting was to encourage the students to learn from each other and to form new product development teams. Additionally, the “kick start” meeting addressed the issue of conflict solving, product-/business development and other relevant topics.

Through September the students worked with idea development, idea screening, and analysis of market possibilities.

From October to December several courses on management of product development and product development were held e.g.:

- Idea generation
- Product development leadership and management
- High speed in network based product development
- Product patenting

Several visits to product development departments of Danish businesses were made to discuss and learned about other product development projects.

### **12.11.4 Experience and Observations from TIP Project**

The TIP project gave me the opportunity to monitor 18 product development teams over three years. I observed their performance when doing NB HS NPD and observed their reaction and solutions to how to carry out NB HS NPD.

It must be said that all groups were formed by students and that some would say that this was not a realistic picture of what was going on in industry. However, it must be said that the amount of work the students had to do in these product development groups was no less than what was done in the “real” industry. Furthermore, the students were also “pressed” by other study activities. Thus, their situation very much resembles the situation found in industry. No one joining a product development team was relieved of other activities and responsibilities.

During my observations I made several findings which I will comment upon in the following Table 12.6.

**Table 12.6** Observations from TIP project

Observations	Details
Use of high speed enablers is low.	The use of high speed enablers seemed to be low. Although the students had access to and knowledge of several high speed enablers, they hardly ever used them
The planning of the use of high speed enabler is poor, coincidental or non-existent.	The students mostly did not plan to use high speed enablers. If anyone used the high speed enablers, they only did it by coincidence and often at a late point of time in the product development process.
The students often felt stuck in the product development process and wanted to go back and restart.	Many product development projects seemed to be stuck in the product development process and seemed to have gone the wrong way. The students even wished that they had not moved so far and could not see any way back. The pressure on time prevented them from going back and redo their work.
Speed and time pressed the students into a line of product development which they did not want.	Some of the students claimed that they were forced further into the product development “tunnel” because of the pressure on speed and time. They knew it was not an optimal way but they felt that it was not possible to go back.
The students always adhered to a stage-gate model.	None of the product development projects used another model than the stage-gate model, even though they had been introduced to other PD models at the beginning of the TIP project.
Those PD projects which seemed have difficulties at the beginning of the project turned out to be those with the best results.	As an observer of the product development process it was very peculiar to watch product development projects with serious problems in the first phase of the project turn out later to be the ones to come up with the best results.
The students seemed to loose time in the initial phase and in the middle of the product development phase.	It was significant that the students’ product development projects lost time in the initial phase. The students forgot to stay and finalise a good product development architecture and plan. Therefore they encountered serious time problems later in the product development process. Also in the middle of the product development process it seemed as if the students lost time and motivation or access to solutions.
The students do not use all their competences from the beginning of the product development project.	In all projects we could observe that the students did not use all their competences at the beginning. Especially the students of business economics waited for the designers and engineers to come up with “an answer”. Later it was the opposite when the designers waited for the students of business economics to give answers from the market.

## **12.12 BESTCOM – EU Project**

### **12.12.1 Objectives**

The Bestcom project was an EU 5th framework program with an activity corresponding to more than 3 million Euro.

The overall objective of the BESTCOM project was to implement best practice on E-business strategies and solutions in 11 European businesses in order to improve their competitive advantages. Furthermore, the project should develop best practice guidelines for use in regional business centres in three European regions, with special emphasis on the enlargement of country participants to further their interaction and networking with EU partners. Working with the various technological models and solutions and organisational alterations, the businesses would be enabled:

- a. to define E-business strategy and choose the best business and technical solutions,
- b. to handle the implementation of the chosen solution in best practice way,
- c. to train employees at all levels in the organisational changes and the new technology.

Specific objectives were to achieve competitive advantages, notably to secure success in making new sales channels, more cost efficient production, and new service opportunities.

### **12.12.2 Description of Work**

The project had four phases as described in the contract signed with EU:

- The analytical phase which identifies specific user requirements reflecting the businesses' future business processes enabling them to operate in the new economy. Evaluation of adequate solutions to match the needs will be carried out. It will include available technology as well as EU RTD results.
- The planning phase will elaborate the implementation plans for each business to assure that their business and technical needs are met by the selected systems. The training plans will be prepared for all levels in the businesses.
- Implementation plan will cover all the actual deployment, monitoring and evaluation and refinement of the solutions and practices. It includes changes in management and redesigned business processes.
- The evaluation and dissemination phase will ensure increased awareness of the project's best practice experience with E-business implementation.

It will be ensured through presentations, seminars and workshops both internally and externally to the consortium. Special attention will be given to the Czech participants to reach a larger business community in the candidate country. Dissemination will be ensured through various networks, e.g. business advisory centres, chambers of commerce, labour offices as well as through publications on both web-site and press. Meetings and targeted workshops will be organised with the above.

The consortium consisted of 11 businesses, 3 catalysts, and 1 project coordinator. The businesses represent various sectors and sizes (with a majority of SMEs) and had different profiles in terms of technological status and business practices. The group represented a sufficiently critical mass to obtain measurable results. The three catalysts represented experienced consulting businesses and a well established educational institute to ensure the implementation of technical and business solutions according to best practice, and to assist the businesses' transition into innovative digital businesses.

### Milestones and Expected Results

- M1: SME user requirements completed and evaluated
- M2: SME contracts with suppliers and sub-suppliers
- M3: Implementation plans reviewed and approved for implementation
- M4: Implementation review and E-business review
- M5: Final report dissemination and validation

The E-business solutions enable the businesses to reduce entry costs, establish new sales channels, new service opportunities and gain first mover advantages to stay competitive. Three regional clusters for innovation had been established.

During the Bestcom project I discovered the following findings related to NB HS NPD as seen in Table 12.7:

**Table 12.7** Findings during BESTCOM project

Observations	Observations in Details
The network enabler is difficult to use trans-nationally.	The Bestcom project showed that it is very difficult to use the network enabler trans-nationally if the network partners do not see any need for or benefit of working together. The Bestcom project showed very clearly that businesses in the three countries focused on the narrow network although they could gain major benefits from working together in trans-national networks.

(Continued)

**Table 12.7** Continued

Observations	Observations in Details
High speed in product development becomes an issue when businesses are pressed on finance.	The Bestcom project showed that when businesses become pressed on finance, they begin to develop new products and to evolve existing products and projects at high speed. However, this will often be too late and additionally, it may turn out not to be not business economically optimal.
Businesses that perform right speed have a good architecture behind their project development together with a manager who focuses on long-term success criteria.	The Bestcom project showed that the businesses who had developed a good architecture behind their project also were able to develop new projects and products at an optimal speed – right speed. Also, these businesses often had a manager who focused on long-term success criteria.
SMEs develop new products and projects with a stage-gate model.	All SMEs in the Bestcom project turned out to develop their projects with a stage-gate model. This was interesting as this model was chosen exactly because they wanted to achieve high speed.

### 12.13 Reflection

Table 12.8 shows the results of other research activities related to the PhD hypothesis.

**Table 12.8** Verification table of Chapter 12

Empirical Results – Other Empirical Results		
Overall Research Questions to be Verified	Hypotheses to be Verified and Tested	Verified/Not Verified
1. What is network based high speed NPD	HS NPD can be seen from different views (Macro environment, business, product, market, customer, technology, competitive and network view).	Verified
	HS NPD is a matter of right speed and not high speed.	Verified
2. What enablers to NB HS PD can be identified?	Businesses use different HS enablers.	Verified
	HS enablers are identical to the 10 enablers – 1–10.	Partly verified
	There can be more than these 10 enablers to HS PD.	Verified
	The enablers will play a different role according to the PD situation and project (Secondary focus).	Verified

**Table 12.8** Continued

	The customer enabler, the network enabler and the PD model enabler plays an important role in the upper phase of the HS PD phase.	Partly verified
3. What framework models and processes in the idea and concept stage/gate of high speed product development based on networks can be measured	The HS PD projects can be divided into to radical and incremental PD projects.	Verified
	The radical and the incremental PD projects follow different generic HS PD models and processes and can thereby be described by different generic frameworks.	Partly verified
4. What success criteria can be used for measuring high speed product development based on networks?	The success criteria for HS PD are dependent on the specific PD project – radical or incremental.	Partly Verified
	HS PD success criteria can be formulated as short term and long term success criteria,	Partly Verified
	Time, cost and performance are central success criteria in a short term perspective.	Verified
	Continuous improvement (CIM), continuous innovation (CI), and learning are central success criteria in a long term perspective to reach right time, right cost and right performance in NB HS PD.	Not verified

