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Contract Negotiations in Inter-Organizational Collaborative Projects for New Product Development:

An Intellectual Property Rights Management Perspective

Master Thesis

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“In the long history of humankind those who learned to collaborate and improvise most effectively have prevailed”
- *Charles Darwin*

Nam et ipsa scientia potestas est (Knowledge is Power)
- *Francis Bacon*

Acknowledgement

The brief yet fulfilling journey of my master thesis has been a great learning experience academically, professionally and personally. The master thesis, for its completion today is indebted to several amazing people that helped me all along in achieving the final milestone of my master education. Though emotions cannot be rightfully converted to text, I will do my best to acknowledge them.

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Executive Summary:

Inter-organizational collaboration for new product development is increasing all over the world due to soaring Research and Development costs, and the uncertainties posed by the new technological products and processes, companies are reluctant to spend all their in-house resources and are searching for new strategies for innovation , like inter-firm technological collaborations. The main advantages of such collaboration are as follows:

- ✓ Strategic planning,
- ✓ Risk and Cost sharing,
- ✓ Alternative technological solutions,
- ✓ Complementary resources,
- ✓ Joint learning

But there are certain disadvantages that are related to inter-organizational collaboration, some of which are as follows:

- ⌦ Suppression of alternative R&D pathways;
- ⌦ The risk of creating dependencies between parties;
- ⌦ The risk of leakage of proprietary knowledge(strategic Intellectual Property) through other partners

Intellectual Property is a strategic asset to a company not only providing technological competence, but also increases the reputation of the company along with the provision of tradable assets. Hence nurturing and protection of IP is very crucial for an industry to excel in its field. But inter-organizational collaboration create a paradoxical situation regarding IP, as all partners wish to expose as little of their in-house IP for new product development but reap the IP benefits of the developed product as much as possible. The main focus of the master thesis is on the risk of leakage of propriety knowledge, which relates to the IPR management in inter-organizational collaboration. The scope of the thesis in focussed on the contract negotiations process that leads to a developer agreement between the collaborating parties for a new product development. The main objective of the research is to manage the conflicting situation of cooperation and competition in collaborative projects with the development of a process design for IPR management during contract negotiations.

The research is based on a framework called the ‘Design Science’ approach. The design science is an iterative process that takes business needs of the organization as an input to build a solution or recommendation, based on the knowledge base available on the state-of-the art methods, and which is to be improvised(which will be the scientific/research contribution) to tackle the specific problem/s of the organization. The developed solution (which is referred as design) is evaluated and refined based on the evaluation results

After the research overview is presented, the case-study provided by the Company A is discussed in detail, and the various challenges faced in that real time collaborative project are studied and taken as an input for designing a process for contract negotiations

Several interviews with IP Managers, project managers and Engineers were conducted to identify the business needs of the Company A with respect to the IPR management related to the contract negotiations in collaborative projects for new product development with external partners. Also a comprehensive literature search was performed to have a knowledge base of the requirements for a successful IPR management not only limited to contract negotiations. Based on the pointers received in these interviews and references from literature a comprehensive survey was conducted among several employees in various global offices of company A to test the generality or locality of the problems related to IPR management, and several key factors were identified as the most influential criteria for IPR Management in contract negotiation, which are as follows:

- The IP Organizational structure of Company A
- IP Awareness of the Project team members that are involved in the contract negotiations
- Trust and common Understanding together with Due Diligence

The relevance of these criteria to contract negotiations is explained in detail, with further knowledge from literature and exploration of the actual scenario in the business environment , with the help of workshops, questionnaires etc. After gathering insights from the literature and the exercises in the business environment, a process design is developed for IPR Management in contract negotiations.

The process design is based on the design science framework and hence requires continual improvisation. Hence the design and evaluation of the process is not sudden but iterative. The first process design illustrating the base line process which is improvised to a desired process for contract negotiations, which is further improvised to a process with role descriptions, and this model is finally improvised to a comprehensive BPMN model. Business Process Modelling Notation (BPMN) is a global standard to design business processes and activities. At each of the improvisation iterations, the model is evaluated and the feedback received is incorporated in the subsequent iteration and the final process design is evaluated in the same way along with its effect on the key factors identified

The final process is divided into four stages such as

- Estimation Phase
- Preparation Phase
- Negotiation Phase
- Execution Phase

These phases are explained in detail in order to address the problems identified in the beginning of the research and are designed to be adherent to fulfil the identified criteria such as IP awareness, Trust etc.

The concluding chapter provides answers to the research questions posed in the beginning of the report, and concludes the master thesis with the following recommendations to the Company A

- The Organizational structure of Company A has to be made visible, supportive and top-down in nature, with the involvement of at least few high level administrative personnel
- The IP awareness among Engineers has to be increased with training programs, IP Coaches, workshops and job rotation
- The importance of trust and common understanding with due diligence has to be emphasized heavily among the project team members involved in collaborative projects with external partners and they should be trained in negotiation skills
- Project plans should be modified to allot specific time and resources for IPR Management during for the contract negotiations, and the documentation of the process has to be standardized , in order to simplify the task for a new project team that takes over the project.

Table of Contents

1. Introduction

1.1. The concept of Open Innovation and Inter-Organizational Collaboration

Innovation has been a key success factor for the economic growth of the OECD countries[1] and a prerequisite for sustainable development (OECD, 2008).The design of innovative products or processes in organizations today is most often multi-disciplinary, and requires the fulfilment of various needs of a variety of customers and stakeholders. 'As systems become increasingly complex, their design requires collaboration between various domain, process and technical experts' (Kolfschoten, Piirainen, & Lukosch, 2010). Challenged with globalization, soaring Research and Development costs, and the uncertainties posed by the new technological products and processes, companies are reluctant to spend all their in-house resources and are searching for new strategies for innovation (OECD, 2008). The concept of 'open innovation' is being increasingly embraced by several companies across the world. Open innovation as defined by (Chesbrough, 2003a)'is a paradigm that assumes that firms can and should use external ideas and paths to make technological advancements and remain competitive in the market. Furthermore, open innovation combines both internal and external ideas and resources into architectures and systems whose requirements are defined by a specific business model'. The Figure 1.1 illustrates the increase in the dependence on external sources of technology in companies across Japan, Europe and North America.

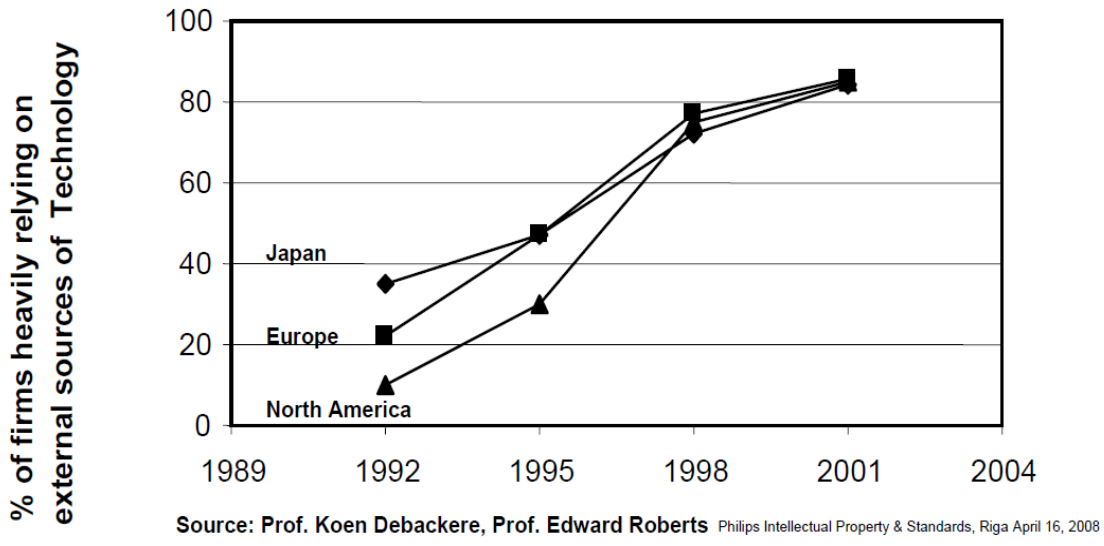


Figure 1.1:Increasing reliance on external collaboration for new product development

The main reasons this trend of increasing inter-organizational collaboration/open innovation can be explained by the following determinants (Gassmann, 2006):

- ***Globalization*** is driven by high mobility of capital, lower logistics costs, superior ICT support and increased market homogeneity across countries.. Hence open innovation is

[1]Refer to Appendix C

highly favored among global industries as it leads to economies of scale, establishes powerful standards and dominant designs (Anderson & Tushman, 1990)

- ***Technology intensity****:* Even the large companies cannot cope up with the degree of today's technology intensity, and uncertainty in the emerging technologies, in terms of finances, resources, infrastructure etc. In an environment characterized by rapid-technological change, companies tend to cooperate and collaborate with external partners to remain competitive in the market (Miotti & Sachwald, 2003)

- ***Technology fusion*****:** The need for inter-disciplinary cross border research is ever rising due to the continual emergence of fused technologies like mechatronics, optronics, bio-informatics etc. (Kodama, 1992).This leads to permeable industrial borders, in order to facilitate such research.

- ***New business models:*** The rapid stretch of industrial and technical borders leads to the generation of a variety of business opportunities, which in turn require specific innovations for the necessary business models. This leads to strategic alliances of various companies to fulfill the needs of the business model for e.g.: Sony-BMG, Sony-Ericsson. A successful incident of sourcing technology and know-how externally was the turnover of USD 5 billion by Protect & Gamble in the years 2003-2006, with its 'Connect and Develop' strategy, aiming to involve external partners and customers in almost 50% of their innovations in the near future(Dodgson et al, 2006).

- ***Knowledge Leveraging:*** Knowledge is an important resource for company, and acquiring new knowledge related to their field of expertise is very essential for companies to remain in business. The main source of learning about new technologies is by collaboration and co-operation with external partners

Open innovation is a generic concept, and 'inter-organizational collaboration'(for Research and Development) is a specific application of open innovation in the form of innovation networks among companies (Enkel, Gassmann, & Chesbrough, 2009).This term can be more specifically defined as: A joint venture among several partners to reach a common goal by pooling resources and co-coordinating their activities (EU, 2002).

1.2. The Two Sides of Inter-Organizational Collaboration

The main advantages for companies to adopt inter-organizational collaboration have been discussed in detail in the section 1.1 ,but in a business entity point of view, can be summarized as the following:

- ✓ Strategic planning,
- ✓ Risk and Cost sharing,
- ✓ Alternative technological solutions,
- ✓ Complementary resources,
- ✓ Joint learning

Though Inter-organizational collaboration is increasingly adopted by various firms across the world, they are threatened by some of the challenges posed by such a collaboration which are stated as follows (EU, 2002) & (Kolfschoten, Piirainen, & Lukosch, 2010)

- ⌦ Suppression of alternative R&D pathways;

- ⌦ Common Understanding among all the partners regarding the perception the problem to be solved, current state of the system, and the envisioned solution is very difficult to achieve
- ⌦ Satisfying the quality standards of all the partners without compromising on the optimal design
- ⌦ There are several stakeholders in a collaboration, who's interests might be conflicting in nature, but nevertheless have to be dealt with.
- ⌦ Collaborating partners need a platform to share ideas and work together, most of which are virtual as they don't share the same work environment and space. It is very difficult to organize and communicate efficiently in such an environment
- ⌦ The risk of creating dependencies between parties is very high, and sometimes collaboration can be turned into opportunism by one or more of the partners ;
- ⌦ The risk of leakage of proprietary knowledge through other partners is a very serious challenge

The risk of leakage of propriety knowledge refers to an intangible asset of a company, termed as Intellectual Property.

'Intellectual property refers to creations of the mind: inventions, literary and artistic works, and symbols, names, and images used in commerce. It is divided into two categories:

- *Industrial property* which includes patents for inventions, trademarks, industrial designs and geographical indications and

- *Copyright* which includes literary works such as novels, poems and plays, films, musical works, artistic works such as drawings, paintings, photographs and sculptures, and architectural designs'. (WIPO, 2005)

According to a survey by the Economic Intelligence Unit, conducted with almost 300 senior managers from several multi-national companies around the world, the major challenge that is perceived by companies regarding inter-organization collaboration is the theft of Intellectual Property as shown in Figure 1.2

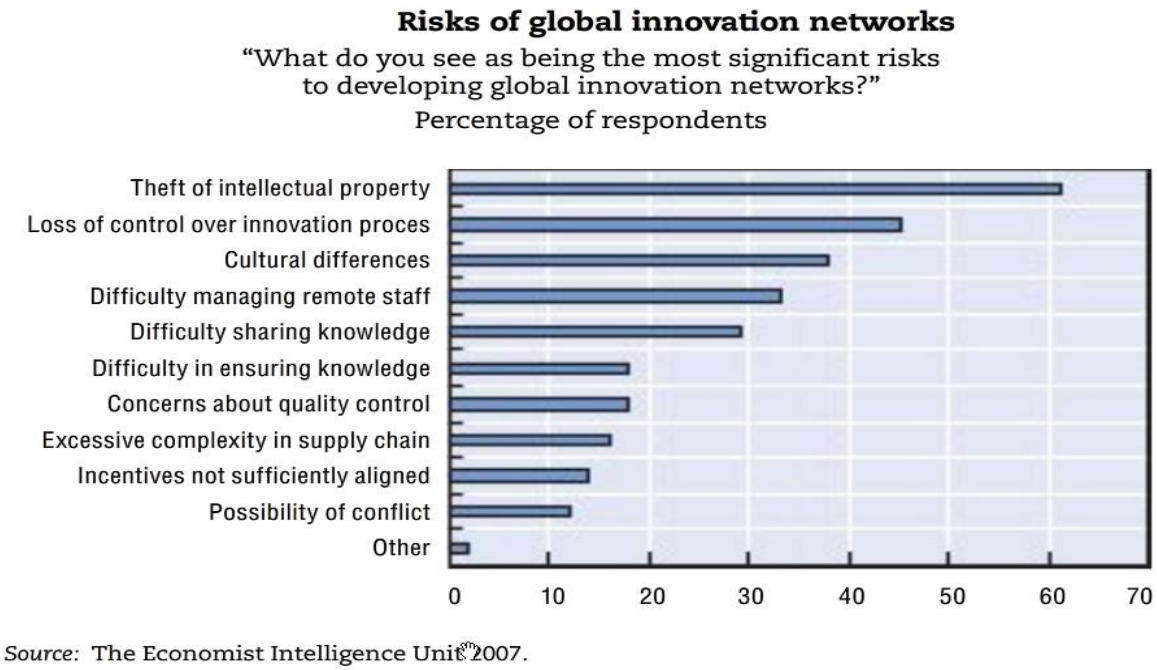


Figure 1.2: Risk of global innovation networks

There are several reasons why the threat of leakage of Intellectual Property, henceforth referred to as IP, is considered to be serious by several companies that engage in collaboration with external partners

During the collaboration, partners get together to work towards developing a new product. During this process a variety of new ideas, products and processes are generated. Each of the partners has to offer their resources and knowledge to enable a fruitful result. The various types of knowledge possessed by a company can be visualized in the illustration described in Figure 1.3

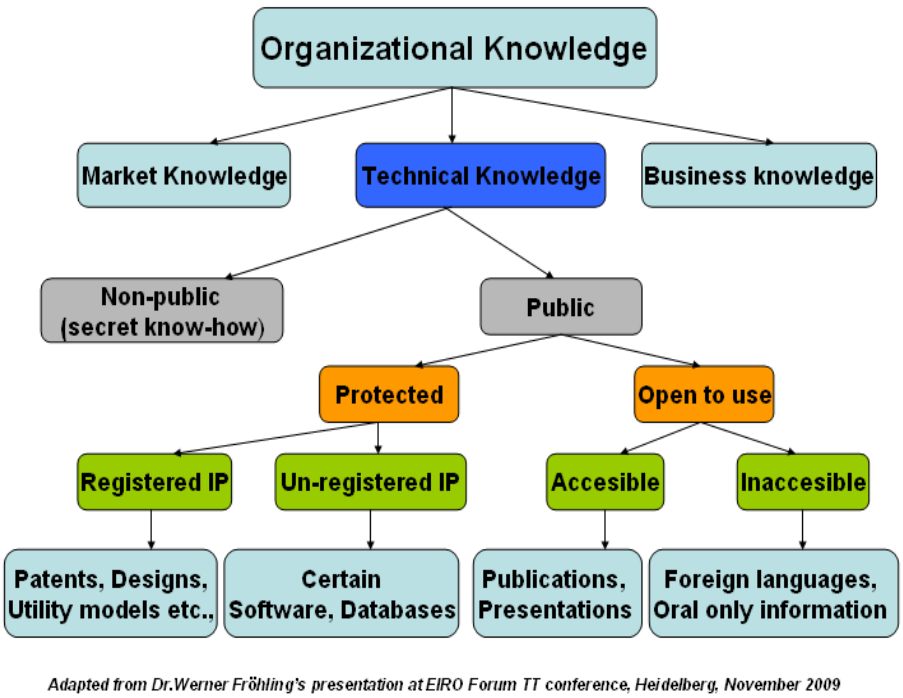


Figure 1.3: Knowledge categorization in Companies (Frohling, 2009)

As shown in Figure 1.3 , not all knowledge is categorized as IP. Only those expressions of intellect falling within a favoured category receive protection, allowing the owner to prevent

unauthorized use by an external party. Everything else is unprotectible; it belongs to the public. Most creative efforts will be eligible for protection within some IP regimes as patents, trademarks, confidential know-how (trade-secrets), copyrights etc. (Frank, 2006)
As property, they are tradable assets of a company. Intellectual property can be traded, by grading licenses to external parties either by seeking some license fee or by exchange of the other party's Intellectual Property (WIPO, 2005).For more definitions on IP please refer to Appendix D.
Since IP is a protected asset and it offers a competitive business advantage, unwarranted leakage can threaten the very existence of the company, if it is stolen or reproduced by others. Hence the protection of IP during collaboration with external partners is a sensitive, crucial and complicated issue as the risk of IP theft is high, though there is a potentially lucrative new product in the end

During an inter-organizational collaboration, apart from the protection of IP the companies also like to enrich their knowledge assets. A new product development project is a perfect platform to increase their IP base. But during a collaborative venture for a new product development, the IP of the companies are to be exposed to each other. This leads to a strange conflicting situation of cooperation and competition at the same time. All the partners prefer minimum IP exposure and maximum ownership of the generated IP. This calls for the need for IPR management to reduce the conflict and keep the cooperation in the cooperation to achieve the forecasted results of the new product development. Hence this master thesis is on the IPR Management in inter-organizational collaboration, with the main focus on the beginning stages of such collaboration, which begins with contract negotiations to draft a collaboration agreement/contract among the partners.

1.3. Chapter Conclusion and Context of the Master Thesis

Inter-organization collaboration is in itself a complex task, and the aspect of Intellectual Property Rights(IPR) Management which has to deal with the conflicting situation of competition and cooperation at the same time .

Though the number of companies entering R&D collaborations is increasing, their failure rate is between 30 % to 90% (Kline, 2003)& (Fontanari, 1996). Most companies traditionally aren't used to open knowledge sharing , and as try to secure as much as intellectual property on their side as possible (Markwith, 2003) . Intellectual property that is a joint outcome of a collaborative venture, is a great challenge to handle (Dillahunty, 2002).Agreement on how the intellectual property ownership and benefits are generally to be divided among the collaborating partners is very important. (Bader, 2008).

Knowledge sharing is an inevitable part of the collaboration, but also creates an inherent paradox because protection of confidential information and proprietary knowledge, as it is extremely important for companies to retain their business advantage . But, very little focus is placed on the protection of technological competencies of companies, while at the same time enabling them to enter into constructive collaborative networks. Policy makers, economists and business leaders have well-debated the trade-offs between the advantages and disadvantages, and in almost all cases favoured the inter-organizational collaboration and acknowledged its importance, which is quite a rational approach.

But, the increasing complexities of such collaborations and the nature of the underlying resources and knowledge are yet to be explored (Chesbrough, 2003a), (Das & Teng, 2000), (Granstrand, The Economics and Management of Intellectual Property: Towards Intellectual Capitalism, 2000) , (Gulati & Singh, 1998)& (Henkel, 2006)

To dig deep into the unexplored areas as mentioned in the hitherto paragraph, the Master thesis aims at addressing the need for a successful IPR Management during the contract

negotiations among partners that enter into a collaboration agreement for new product development. The reason for choosing the contract negotiations as the scope of the research is because most of the decisions regarding the path of the collaboration and IP are taken during this stage. The thesis research was performed at a larger OEM(Original Equipment Manufacturer) referred to as Company A all through the report due to confidentiality reasons. This thesis is also a part contribution towards the Smart Vortex Project, funded by the EU to study and improve the inter-organizational collaborative processes.

The report of the thesis is organized such that the introduction chapter presents a brief overview of the objective, motivation and the need for the master thesis research. The subsequent chapters are presented such that chapter 2 provides an overall path of how the research was planned and executed along with the logical explanation the structure of the thesis. Chapter 3 introduces the case study provided by the company A, to provide insights into how collaborations with external partners function. Chapter 4 dwells on the knowledge base(literature) and environmental base (business scenario) regarding IPR management, and this information is utilized to design a questionnaire to evaluate the IP situation of company A

2. Research Overview

The Research Overview chapter, as the name implies provides the overall description of the objectives, method of planning and usage of scientific framework, and the execution of the master thesis. The scientific framework used for the master thesis is termed as Design Science framework, which is explained in detail in this chapter. The chapter concludes with the illustration of the logical sequence of the chapters of the report, explaining how the research framework was employed in structuring the master thesis.

2.1. Research Objective and Scope:

The master thesis, as explained in chapter 1 is focused on the IPR management in inter-organizational collaborations for new product development. The boundary for the master thesis is the contract negotiations part of the collaboration. Partners who wish to collaborate, join together to discuss the terms and conditions, rights and responsibilities of each of them for the collaborative venture, which is materialized as the collaboration agreement or the developer agreement.

The main focus of this master thesis with be on the path from signing a memorandum of understanding between partners and finalizing the legal contract. A Memorandum of understanding or MOU is a written but non-contractual agreement between two or more agencies or other parties to take a certain course of action. The path between the MOU and the actual collaboration agreement is a crucial phase in terms of information sharing and most of the challenges with respect to IPR arise during the negotiations, before finalizing the final binding contract. It is to be noted that this research doesn't dwell into the legal aspects of the collaboration but only the process that leads to the final contact, but focuses on the key issues on the collaboration dynamics and the main factors affecting the process. The motivation for the research has been well described in chapter 1, regarding the limited research in arriving at desired results in an complex and dynamic environment of collaborations towards new product development

Accordingly,

The objectives of this thesis are three fold,

- ✓ Firstly, to study the processes of collaboration of the company A with external partners for new product development before agreeing to sign the final binding contract.
- ✓ Secondly to identify the key challenges and knowledge gaps in the current collaboration regime and the factors affecting the contract negotiations with the help of a real case on a collaborative project provided by company A.
- ✓ Thirdly to formulate a process for IPR Management during contract negotiations and recommendations for the same based on the identified challenges and key factors
- ✓ Last but not the least, to evaluate the formulated design and investigate the applicability in industry, to combat the complexities of IPR management in collaboration.

The research objectives are translated into a more tangible form by the means of a main research question, which points the direction to be followed towards the realization of the objectives. The main research question and the complementary sub-research questions are posed in the succeeding section.

2.2. Research Questions

Pertaining to the Research Objectives, the main research question that is to be answered in the thesis is as follows

Main Research Question:

How can Intellectual Property Rights be managed during contract negotiations with external partners, in a conflicting environment of cooperation and competition to achieve a desired technological product while safeguarding one's IP advantage?'

Figure 2.1: Main research question

The sub research questions that need to be answered to complement the main research question are as follows

1. What is the current process followed by Company A with external partners for the contract negotiations towards reaching a collaboration agreement for new product development?

2. What are the challenges and gaps in the process followed by Company A

3. What are the key factors- organizational, social, and behavioural or otherwise, that affect the contract negotiations among collaborating partners?

4. How to enable unwarranted IP leakage, while creating a nurturing platform for new product development, during information sharing sessions consisting of engineers and the project teams of either partner?

5. How to inculcate trust and common understanding in an environment constrained by Intellectual Property Protection?

The main Research question along with the sub-questions will be answered in the course of the thesis, and will be explained further with answers in the concluding chapter. The following section describes the scientific research framework called the Design Science cycles that is adopted for the master thesis, providing the explanation for the choice.

2.3. Research Methodology

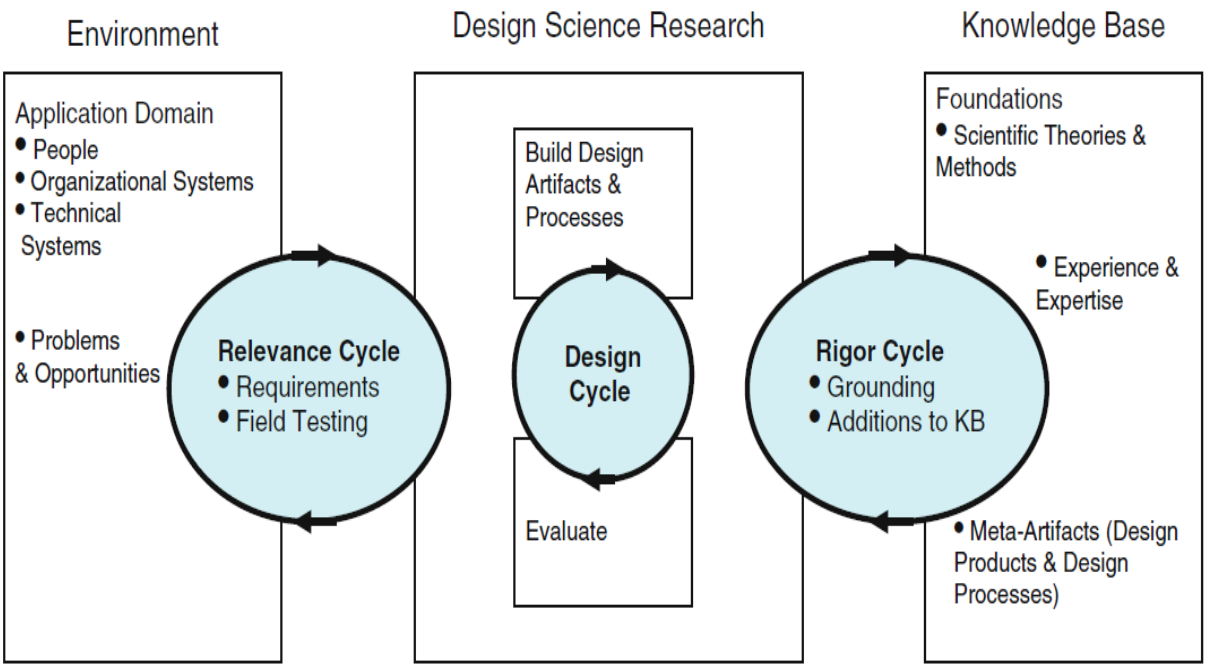


Figure 2.2: Design Science Cycles (Hevner & Chatterjee, 2010)

Design science is a research methodology, generally used for Information systems, which offers specific guidelines for design of solutions, and their evaluation for complex organizational problems (Hevner & Chatterjee, 2010). Design science is used to tackle complex organizational problems which have the following characteristics (Rittel & Webber, 1984)& (Brooks, 1987)

• Unstable requirements and constraints based on ill-defined environmental contexts,
• Complex interactions among subcomponents of the problem,
• Inherent flexibility to change design processes
• A critical dependence upon human cognitive abilities (e.g., creativity, negotiations skills etc) to produce effective solutions, and
• A critical dependence upon human social abilities (e.g., teamwork, trust building) to produce effective solutions.

The IPR management in inter-organizational collaboration can be characterised as a complex organization problems with the above mentioned characteristics, as information sharing and IP protection at the same time which is a extremely complex scenario, which requires human cognitive and social skills, combined with vague constraints and ill-defined processes. Also, according to the research objectives a process design is to be developed and evaluated considering the ever-changing business needs. Hence the design science cycles framework was found to be apt for realization of the objectives of the master thesis

As illustrated in the Figure 2.2, the design science is an iterative process that takes business needs of the organization (Environment base, which corresponds to people, organizational systems, and technical systems that interact to work toward a goal) as an input to build a solution or recommendation, based on the knowledge base available on the state-of-the art methods, and which is to be improvised (which will be the scientific/research contribution) to tackle the specific problem/s of the organization. The developed solution (which is referred as design) is evaluated and refined based on the evaluation results. In this master thesis the

solution is a set of recommendations and a process that will be evaluated through workshops and expert feedback.

The three cycles (Hevner & Chatterjee, 2010) described in the figure are as follows

- ***Relevance Cycle***

Design science research is aimed at improving the environment by the introduction of new and innovative processes (Simon 1996).The research often begins by identifying and representing opportunities and problems in an actual application environment.
Thus, the relevance cycle initiates design science research with an application context that not only provides the requirements for the research, but also defines acceptance criteria for the ultimate evaluation of the research results

- ***Design Cycle***

The Design cycle is the heart of the master thesis research. Simon (1996) describes the nature of this cycle as generating design alternatives and evaluating the alternatives against requirements presented until a satisfactory design is achieved. The requirements are input from the relevance cycle and the design and evaluation theories and methods are drawn from the rigor cycle. The design cycle iterates between the construction of a process design, its evaluation, and subsequent feedback to refine the design further.

- ***Rigor Cycle***

The Rigor cycle is an evaluating cycle based on the knowledge base which can be divided into the following categories

- Scientific theories and engineering methods that provides the foundations for rigorous design science research
- The experiences and expertise that define the state of the art in the application domain of the research.
- The existing processes found in the application domain.

The Rigor cycle, provides past knowledge as stated above, is used to check the originality and inventiveness of the new process designed based on the relevance cycle

The various research tools required to evaluate the business environment and identify the business needs, which would be the gaps between the expected and the current situation regarding the IPR Management during contract negotiations with external partners are as follows. Also research tools are required for evaluating the recommendations and process that is to be developed, are as follows:

i. Desk Research

Literature search on Collaborative New Product Development, IPR Management- terminology, importance in collaborative projects and related challenges, and related case studies .The sources of this information are online journals accessed from TU Delft library, books and internet. The literature study is performed to have a theoretical back ground on the inter-organizational collaboration and IPR Management in technological organizations, terminology, differences between terms etc. Literature search also provides the knowledge on the best practices around the world with respect to IPR Management

ii. Case Study

The Company A, provided a real project as a case study. For confidentiality issues, the names of the corresponding organization and the collaborating partners aren‟t revealed in this document. The case description is provided in the section 3 . the case study will provide a better understanding of the problem, and will also add practical value to this research as the case study is real project. This will also provide a better insight into the real challenges of the collaborative process.

iii. Observation of the collaboration process On-site

The collaboration process of a large technological organization A is observed by being present at the internal meetings, tele / video conferences related to the test case study. The trend of negotiations process among partners for arriving at the final agreement can be evaluated by being privy to internal processes and the organizational attitude towards collaboration. Also the draft collaboration agreements and documents of the project were made available for perusal, which provided very good insight into the contract structure and the trends of information sharing and minor disagreements and conflicts and related challenges with respect to IPR management.

iv. Interviews

A series of interviews are planned to be performed with the senior managers, engineers, patent managers, chief project managers in Company A, to secure fine details of the organizational culture, current collaboration regime and more precise intangible information like trust, reliability with suppliers etc. Also the difference in perspectives about knowledge sharing and awareness of IPR management, limits of knowledge sharing etc will be identified. Undocumented information and tacit knowledge is expected to be acquired from such interviewed. Other practical issues related to the inception of a new product, procurement of suppliers and the road towards a final agreement will also be discovered. By Interviews, it is meant that an meaningful conversation that provides information about the organizational processes, collaboration protocols, information about the project, challenges faced, desired situation etc, and not necessarily always a question and answer session.

v. Surveys

A Survey on the IP Landscape of Company A was conducted among Engineers, Purchasing managers and commodity buyers, Project Managers, Early stage project leaders, IP managers/specialists. Others-consultants, technology coordinator, distributed in offices of Company A all over the world (Sweden, Germany, Korea, United States, India among others). IP landscape can be defined as an initial assessment of the Intellectual Property Rights management in a company that assesses the level of IP protection, awareness, and organizational structure of IP.

vi. Workshops

Workshops are planned to be conducted among the personnel of Company A, to gather feedback about the process design. Since the said process is iterative and is improved in tune with the business needs, a workshop provides a perfect platform to receive feedback and suggestions. Also, several exercises regarding IPR management to evaluate the social, cognitive and creative skills of the personnel regarding IPR management can be done through questionnaires and mind tests that are well practices in literature and management games. Workshops also provide a platform for interaction with different project managers, IP managers and Engineers on a single venue. Several

insights can be gathered, and a brainstorming session is planned to gather collective thoughts and feedback regarding the requirements for a process design for IPR management in contract negotiation

2.4. Chapter Conclusion

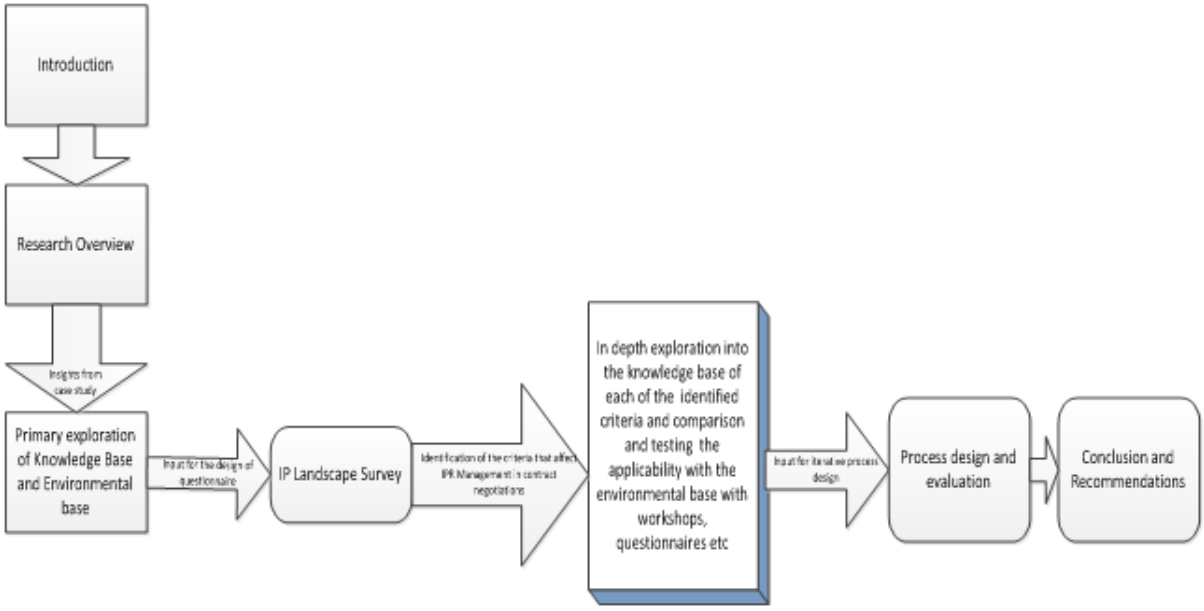


Figure 2.3. The logical sequence of the master thesis structure based on the research framework

The Figure 2.3 shows the planning of the master thesis, based on the Design science framework. It represents a logical sequence of the master thesis structure, explaining the essence of the framework in the planning. This diagram illustrates how the knowledge base and environmental base interact and how they provide inputs for the iterative process design. The research is concluded with providing some observations, conclusions and recommendations regarding IPR management in contract negotiations during inter-organizational collaboration for new product development

After the research overview is discussed, the succeeding chapter is dedicated to the explanation of the real case study provided by Company

3. Introduction to the Case study

An ongoing collaborative project in Company A with external partners for a new product development has been provided as a case-study to study the collaborative process during the contract negotiations .This case provided an initial insight into the collaborative process during contract negotiations, the key role descriptions, the challenges and proved to be a basis to explore into the knowledge base and environmental base of IPR management during contract negotiations in inter-organizational collaboration.

3.1. Case Description

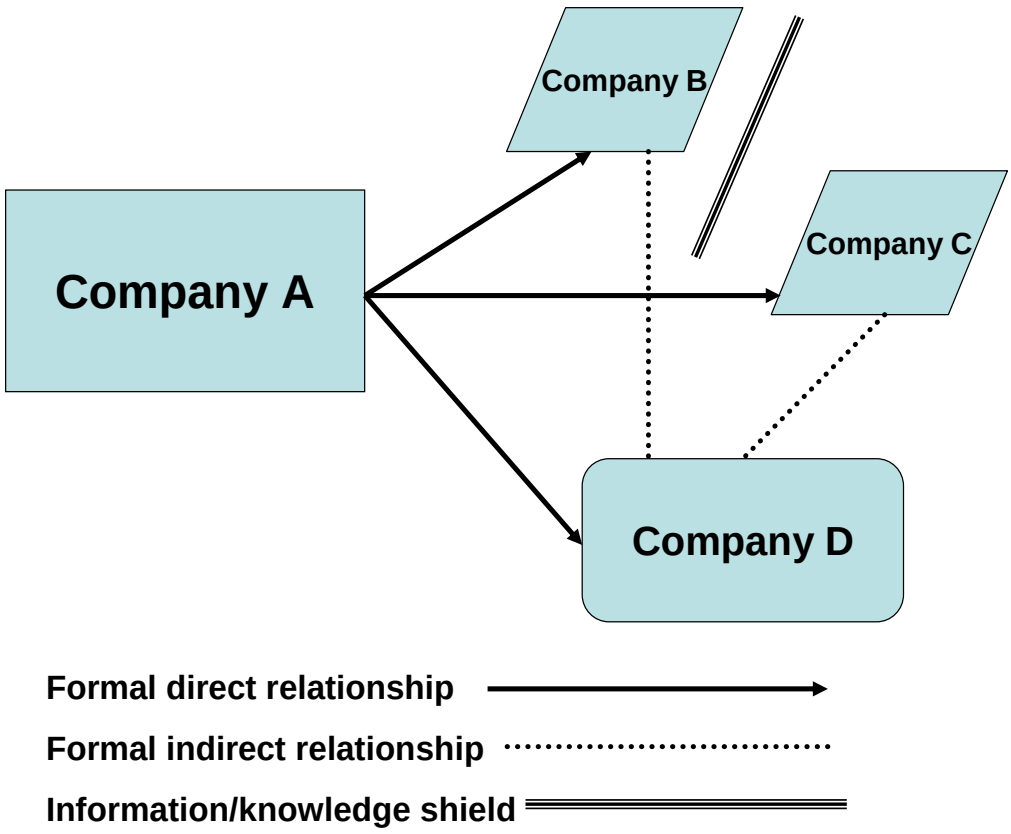


Figure 3.1: Collaboration map among partners

Pertaining to the customer feedback, **Company A** wants to introduce a new integrated product, to replace an existing system in their machine. The new component if successfully implemented is expected to have several advantages (for the machine) such as

1. Longer operation life
2. Less maintenance and repair
3. Minimal errors in measurement
4. It can be easily integrated with the tracking systems available at Company A as data can be transmitted through telematics(any integrated use of Information and communication technology for sending, transmitting and receiving information via telecommunication devices in conjunction with effecting control on remote objects)

Company **A** decided to have a collaborative consortium in order to make use of external competencies for the new product development. The partners involved in the consortium are Companies **B, C** and **D**.

Company **A** is the problem owner or a client in this situation. **A** has a concept for the integrated product which contains an enormous amount of background IP. **A** shares the concept with **B, C** and **D**, bound by developer agreements.

Companies **B** and **C** provide parts for the integrated systems. They are competitors in the market, hence they are shielded from each other. Both companies are unaware of the presence of each other in the project, but are aware of the presence of Company **D**

Company **D** is the designer of a crucial aspect of the integrated product, and hence requires information about the parts requested from **B** and **C,** and hence **D** interacts with **B** and **C** individually in the presence of **A**

The case was studied with an IPR management perspective. So, several interviews were conducted with the Project manager and IP manager of Company A in charge of this collaborative project regarding the process followed during the contract negotiations, and the role description of the various personnel involved . The following section described

3.2. The contract negotiation process followed for the Case study

The interview with the project manager of the project described in the case study was very informative to discover the various steps in the process that lead to the final binding agreement between the collaborating partners. Apart from providing the details about the process description, she opined that trust is very crucial in having a collaborative environment in the first place, and the black box model of information sharing never once works. Though the details shared among the collaborating are protected by confidentiality statements, there is always a risk involved while sharing crucial information. This is more complex when there are different levels of trusts among partners and when the technical outcome of the collaboration is uncertain, as it is a new product
In this specific case two partners B and C, who are competitors who are expected to provide the specific component desired by A, responded differently regarding sharing information. B was proactive, more open to share information and was quite eager to gain insights into the real problem. B was not a new partner for A, and they shared good client-supplier relations. Whereas, C was a new partners and was slightly reluctant to be open. But the fact that there was B, with open information sharing attitude, the project manager could ask the right questions to C, to derive the required information. B and C are from different countries; hence cultural differences could be an influence on trust levels.

The key roles in the negotiation process are the **Project Manager**, whose role is pivotal throughout the contract negotiations and is mainly in charge of the technical aspects of the project, and is responsible for delivering the part specifications, and discussing the

necessary and key information exchange, which ideally should be a healthy give and take policy

The **purchasing department** is responsible to make the confidentiality agreement and the cost split regarding the collaboration costs. If an expert negotiator is not present, they also take the role of negotiators in practical matters, concerning matters of patents, licensing, ownership of background and foreground IP involved. But in this project there was an **IP Manager/ Expert negotiator,** who also is an IP expert to handle the contract related matters as mentioned hitherto and potential IP infringements. An expert negotiator in the context of Company A can be described as an IP manager, who has rich experience and talent not only in IP issues but also in negotiation skills. The presence of the expert sped the process considerably in this case. But not all projects have the presence of such an expert negotiator. But the project manager opined that she witnessed a smooth contract negotiation process for the project described in the case study due to the presence of such a negotiator, who took care of the IPR management.

3.3. Chapter Conclusion

The case study provided a real-time example of an inter-organization collaboration for new product development. Related to this real time project, several project and process documentations were made available for perusal. These documents provided a starting point for a literature search to enrich the knowledge base regarding IPR management, related term, the versatile benefits of a strong IP policy and corporate structure etc. The case study also provided valuable contact to several industry personnel associated with IPR manager, and several interviews with some IP managers revealed the actual state of affairs of IPR management during contract negotiations in company. Hence the environmental base was also studied. The following chapter presents the findings of an initial exploration into the knowledge base and environmental base of IPR management in inter-organizational collaboration.

4. The primary exploration of the Knowledge and Environmental base of IPR Management in Contract Negotiations

This chapter on the knowledge base and environmental base is related to the rigor and relevance cycles as explained in chapter 2. The knowledge base of IPR management is a primary explanation of the concept, terms, importance and best-practices available around the world. The environmental base is derived from the various interviews with several project managers and IP managers of company A, regarding the processes followed and challenges faced with respect to IPR management in Company A. Using the inputs from both the environment and knowledge bases, a set of criteria that affect the IPR management during contract negotiations are identified and used as an input to prepare a comprehensive questionnaire to be distributed to employees of company A all over the world to test and understand the importance of the identified criteria. This leads to the identification of the accurate business needs by checking the locality or generality of the problems related to IPR management through the survey.

This chapter provides a preliminary exploration, as each of these bases are updated and explored further in the subsequent chapters, which is the essence of design science cycles approach.

The following section explains the importance of IPR management, and the terms related to IP have been well explained in chapter 1 and Appendix D. The further sections in this chapter are dedicated to the explanation of collaboration agreement, their content, the corporate IP management styles, and finally the environmental base of IPR management and a ends with the chapter conclusion

4.1. The importance and need for IPR Management in inter-organizational collaborations

Intellectual property, though intangible is no less of an asset than a bank account or citizenship. It is an integral part of an organization's competence resource pool. IP that provides a competitive advantage is a precious resource for a company, and it is all the more crucial to protect it. It is also unfair if an external party claims credit for a technology and process, developed by another company, which considered more serious than piracy or theft. But on the other hand, knowledge sharing is an important criterion for enabling an inter-organizational R&D collaboration.
But, companies realize that collaboration maybe competition in another form .To quote several examples of industrial competitors in close cooperation, Toyota and General Motors entered into a joint venture to assemble cars, though it ended in 2010. Siemens and Philips develop semiconductors, Canon supplied photocopiers to Kodak, . ICL, the British computer company, could not have developed its current generation of mainframes without Fujitsu. Motorola needs Toshiba's distribution capacity to break into the Japanese semiconductor market. (Hamel, Doz, & Prahalad, 1989). Not only established industrial competitors, but even new partners could be potential competitors, if not directly, they could collaborative with the immediate competitors of a company in the future, thus creating a risk of critical knowledge leak. The success of a collaboration and depends on several factors like the quality and leverage of the knowledge possessed by either partners. An example of describing such factors is described in Figure 4.1.The uncertainty about appropriating and sharing the benefits of collaboration is due to the complex issues surrounding the safeguarding and protection of Intellectual property and assets. (OECD, 2008)

The Rover-Honda alliance: A story of one-way gain collaboration (Hamel, Doz, & Prahalad, 1989)

In the 1960's Rover was a world leader in small car design. Honda had not even entered the automobile business. But in the mid-1970s, after failing to penetrate foreign markets, Rover turned to Honda for technology and product-development support, to avoid investments to design and build new cars. Honda has cultivated skills in European styling and marketing as well as multinational manufacturing.

Having fallen behind in a key skills area (in this case, manufacturing small cars), Rover attempted to compensate for past failures through the alliance. But Honda used the alliance to close a specific skills gap (in this case, learning to build cars for a regional market). But Rover that forged a partnership for short-term gain may find itself in a dependency spiral: as it contributes fewer and fewer distinctive skills, it must reveal more and more of its internal operations to keep the partner interested.

For the weaker company, the issue shifts from "Should we collaborate?" to "With whom should we collaborate?" to "How do we keep our partner interested as we lose the advantages that made us attractive to them in the first place?". This is an undesirable scenario for a successful collaboration.

Figure 4.1: Hitches in the Rover-Honda Alliance

Hence a successful IPR management is required to mitigate the conflicting situation of cooperation and competition among collaborating partners at the same time, to ensure fair play and to achieve a win-win situation among the partners, while avoiding unwarranted IP leakage during collaboration.

Traditionally, closed IPR Management in companies deal with IP created internally and the main motive was to prevent copying and infringement. But in today's open innovation regime, an effective Intellectual Property Management doesn't only mean that the strategic assets of the company are protected legally, but also can be used as for strategic purposes like for negotiating (cross-licensing), increasing the reputation as an innovative company, stating protected IP as a key performance indicator and to earn licensing revenues from it (Cohen, Goto, Nagata, Nelson, & Walsh, 2002). 'The other strategic advantages of IPRs include blocking whole areas to competitors and the use of patents relating to technical standards in gaining control over market sectors. Management of IPRs as commercial assets has increased and manipulation of IPR portfolios now forms an important part of commercial strategies. Many companies now view their IPRs as tradable capital assets. Companies advertise their ownership of patents as proof of their commercial strength, and use this in negotiations, often trading or pooling IPRs to form complex products. IPRs may be considered as the currency of the knowledge-based economy'. (OECD, 2008)

Figure 4.2 illustrates the many reasons for protecting IP(in this case specifically patents), analyzed from a survey conducted among respondents in various Japanese and American companies.

Reasons for patenting product innovation

Share of respondents and ordinal rank

	United States	Japan
Prevent copying	98.9 (1)	95.5 (1)
Prevent blocking	80.3 (2)	92.6 (2)
Prevent lawsuits	72.3 (3)	90.0 (3)
Use for negotiations	55.2 (4)	85.8 (4)
Enhance reputation	38.8 (5)	57.9 (7)
Licensing revenue	29.5 (6)	66.7 (5)
Measure performance	7.8 (7)	60.1 (6)

Source: Cohen *et al.* (2002).

Figure 4.2: The strategic advantages of IP

The various strategic advantages offered by IPRs to the owner company, provides a strong incentive to protect them further with legal backing, hence collaboration agreements are signed among partners that embark on a collaborative venture. The following section explains the essence of collaboration agreement in detail

4.2. Collaboration agreements: The Essence

Collaboration agreements are generally formulated among partners when they enter a joint venture for R&D collaboration. It is can be defined as-

"An agreement or a contract is a tool for the participants in a collaborative venture to identify one's own interests, rights and responsibilities and to recognize those of others within the project, and to codify these within a legally binding document which can be consulted during and after the project's lifetime" (EU, 2002)

Figure 4.3: Collaboration agreement

Collaboration agreements are contracts that are required in collaborations because promises between partners are not always kept and there is a potential risk of opportunism that may be taken by any of the parties (Lecraw & Morrison, 1993). Most collaborative joints venture require a contract to be signed by the participants. As discussed in the Introduction chapter, the main risk of inter-organizational collaboration is the leakage of proprietary knowledge or Intellectual Property.

Hence contracts can serve as tools for delineating rights and responsibilities of the collaborating parties and provide a legal backing, thus creating a constraint for reckless opportunism. In general, contracts though are of several different types; broadly contain the following 8 elements,

'(1) Periodic written reports of all relevant transactions;
(2) Prompt written notice of any departures from the agreement;
(3) The right to examine and audit all relevant records through a firm of CPAs;
(4) Designation of certain information as proprietary and subject to confidentiality provisions of the contract;

(5) Non-use of proprietary information even after termination of agreement;
(6) Termination of agreement;
(7) Arbitration clauses;
(8) Lawsuit provisions' (Parkhe, 1993)

Though rights and responsibilities, and ownership of IP can be discussed and codified in a collaboration, there are several limitations to a collaboration agreement, some of which are as follows:

- Collaboration agreements are complex legal documents, which consume a lot of time to be agreed by all the partners in the collaboration. Not all partners have the same expertise in drafting these documents
- Many skills, knowledge and information cannot be covered in formal terms of collaboration. Though certain parameters can be defined in legal terms for such exchanges, some of the factors that risk unintended transfer of knowledge skills are:
  - The day to day interactions of Engineers, product developers etc.,
  - Who says what to whom.
  - Who has access to what facilities.

Hence there are other soft factors like trust and common understanding need to be considered, as no contract is fool-proof and can be completely relied upon , due to the above mentioned reasons. The following section sheds some light on the importance of trust and common understanding in contract negotiations

4.3. Trust and Common Understanding

Trust is 'a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another'. This definition implies that trust is a state of mind, not behaviour (Nooteboom, 2006)

Trust enables us to tolerate uncertainty through an expectation that a trusted person will work or agree to reduce our sense of vulnerability to unpredicted contingencies and increase our confidence that others will act proactively in any case where the need to adapt to unforeseen contingencies arises. But developing such a trust in collaborations is easier said than done. (Blois, 1999)

Building trust takes a lot of effort and time and is dependent on the various interactions of several individuals of a company, who collectively portray the image of 'trust' of the company as a whole during collaboration.

Though building trust is a big effort, several studies have stated that in most of the cases studies trust formation in new product development partnerships has affected the performance of the collaborative project in a very positive way (Bstieler, 2006)

Hence it is important to consider trust with external partners during contract negotiations.

After doing a preliminary exploration into the knowledge base regarding IPR management , the following chapter focuses on the environmental base, about the functioning and challenges of IPR management in company A

4.4. The IPR Management in collaborative Projects in the Environmental base (Company A)

After studying the draft collaborative agreements between the companies, and observing the collaborative dynamics in the contract negotiations of the case-study, two Senior Patent Managers were interviewed regarding the IPR Management in company A. These interviews, yielded good results in terms of identifying the main obstacles of implementing IPR management in collaborative projects. In brief the following were the major causes of concern

1. The organisation of IP in the company is highly diffused, as patents, brands, customer support (that has its own IP) etc are different departments and are dispersed all over the world offices in varying hierarchies

2. The company A has a manual for best practices for project management and though the IP infringement check is a pre-requisite to proceed further into a legal agreement, it is sometimes being overlooked, for many reasons.

Firstly, there is limited awareness about Intellectual Property and its categorization among the project managers, who are more concerned with the technical aspects. There is not always an expert negotiator /IP expert in the project team during the negotiations. Hence finding information in a highly diffused IP structure of the company is extremely time consuming and detrimental to the project progress and hence some managers don't perform the IP check.

4. Patent managers cannot solve all the IP problems, and they are don't feel as a part of the team, just by mere consultations as and when required by the project manager. "We work as groups, not as a team" says the senior patent manager

4.5. Chapter conclusion

With this primary data, the facts provided by the Project Manager and the Patent managers, and several other interviews with few design engineers and early stages project leader, a questionnaire for a survey was developed. The survey named as 'The IP landscape survey' is aimed at fine tuning the business needs and locating id the problem is local or generic. The survey was conducted among the employees of company A from all over the world. The questionnaire for the survey was designed with a mainly on the following pointers, which were identified in this chapter which are as follows

- IP awareness and knowledge of company IP processes
- Contracts and legal language
- IP organization and support
- Trust and Common Understanding
- Requirements for a successful IPR management
- Suggestions for improvement

The details of the survey and the analysis of the results is discussed extensively in the following chapter.

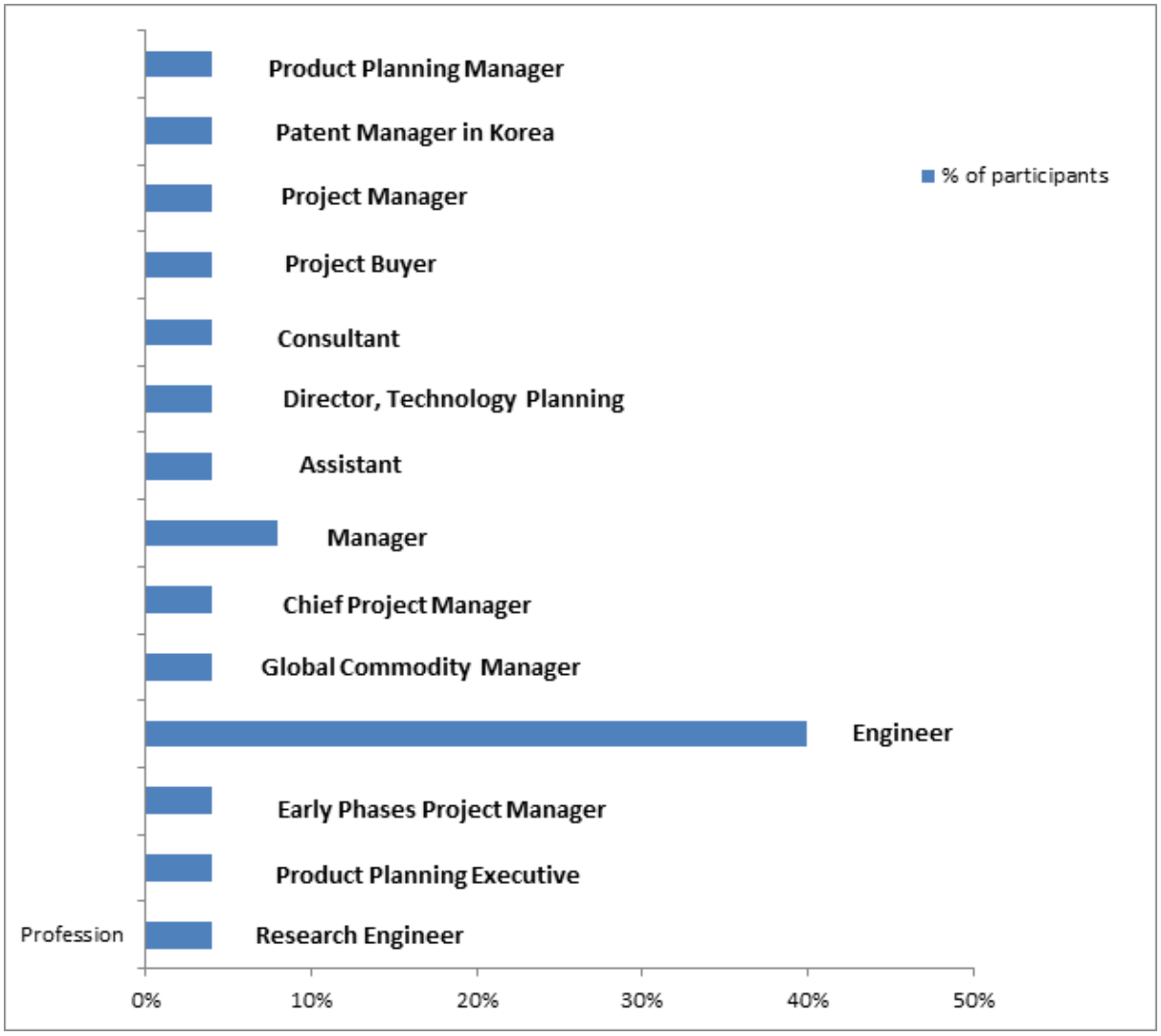
5. The IP Landscape survey: The major results

The knowledge gathered about the importance and the key criteria that affect IPR management during contract negotiations from the knowledge base and the environmental base, the findings were tested and reconfirmed by the help of a survey,
After gathering the inputs regarding IPR management during contract negotiations from several project leaders, patent managers and engineers, a short questionnaire for assessing the IP landscape of Company A (Refer to Appendix A) was designed and circulated to the project managers, engineers, project leaders, senior managers of company A, to test the actual situation and find the real gaps in the contract negotiation process regarding IP issues

5.1. The respondents

The target audiences for the survey were employees of the company all over their world branches, at Project manager, senior manager, and Engineer level. This selection was made to make the respondent list as random as possible, to check if the problem situation was local or generic

Figure 5.1: The Respondents of the survey



5.2. Involvement in collaborative projects, IP awareness and organization

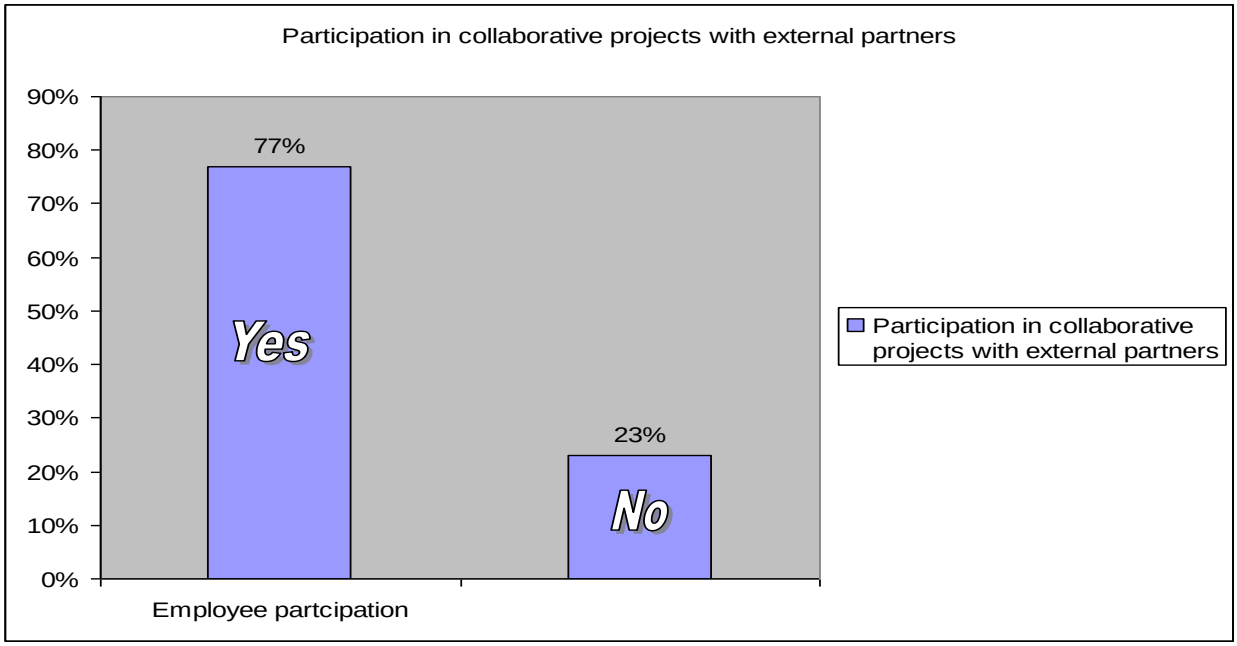


Figure 5.2: Participation in collaborative projects

Most of the respondents (77%) were involved with collaborative processes with external partners, and the majority of the respondents claimed to have very little knowledge about the company's Intellectual Property Organization, that can guide them during the contract negotiations. Hence can be fairly concluded that it is a generic problem in the organization

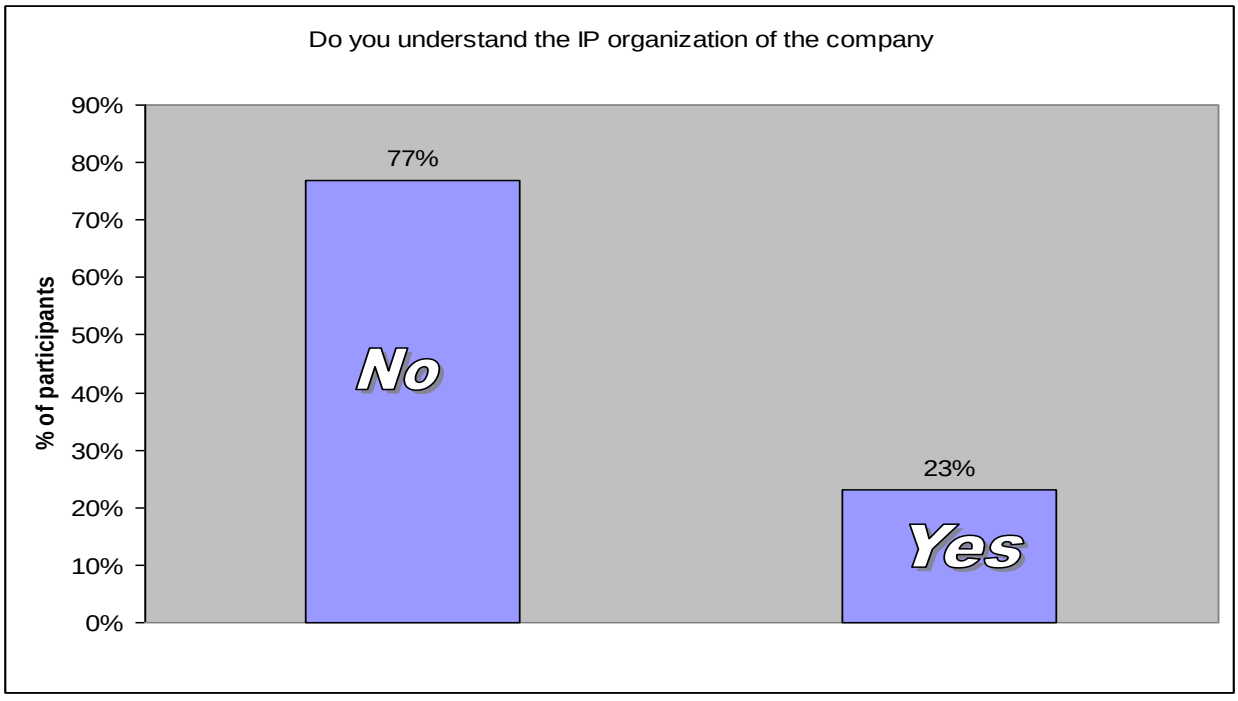


Figure 5.3: IP Awareness

Surprisingly, almost all the respondents that were aware of the IP organization of the company named one person ,Mr. Sukh Sagar, a senior IP manager as their source of information. But the interesting aspect is that the department that Mr.Sagar is a main part of- Technology acquisition and IP department of the company, and this department is within a

highly specialized branch of advanced engineering, which by itself is few layers below(the organizational chart can be found in Chapter 5)the organizational hierarchy. Hence if any IP organization is present in the company, the organization is is bottom-up , rather than top-down, that would be visible to all departments in the company. Also, the respondents that named Mr.Sagar, knew about his competence due to word of mouth, rather than information on their internal databases.

5.3. Hidden agendas and trust with due diligence

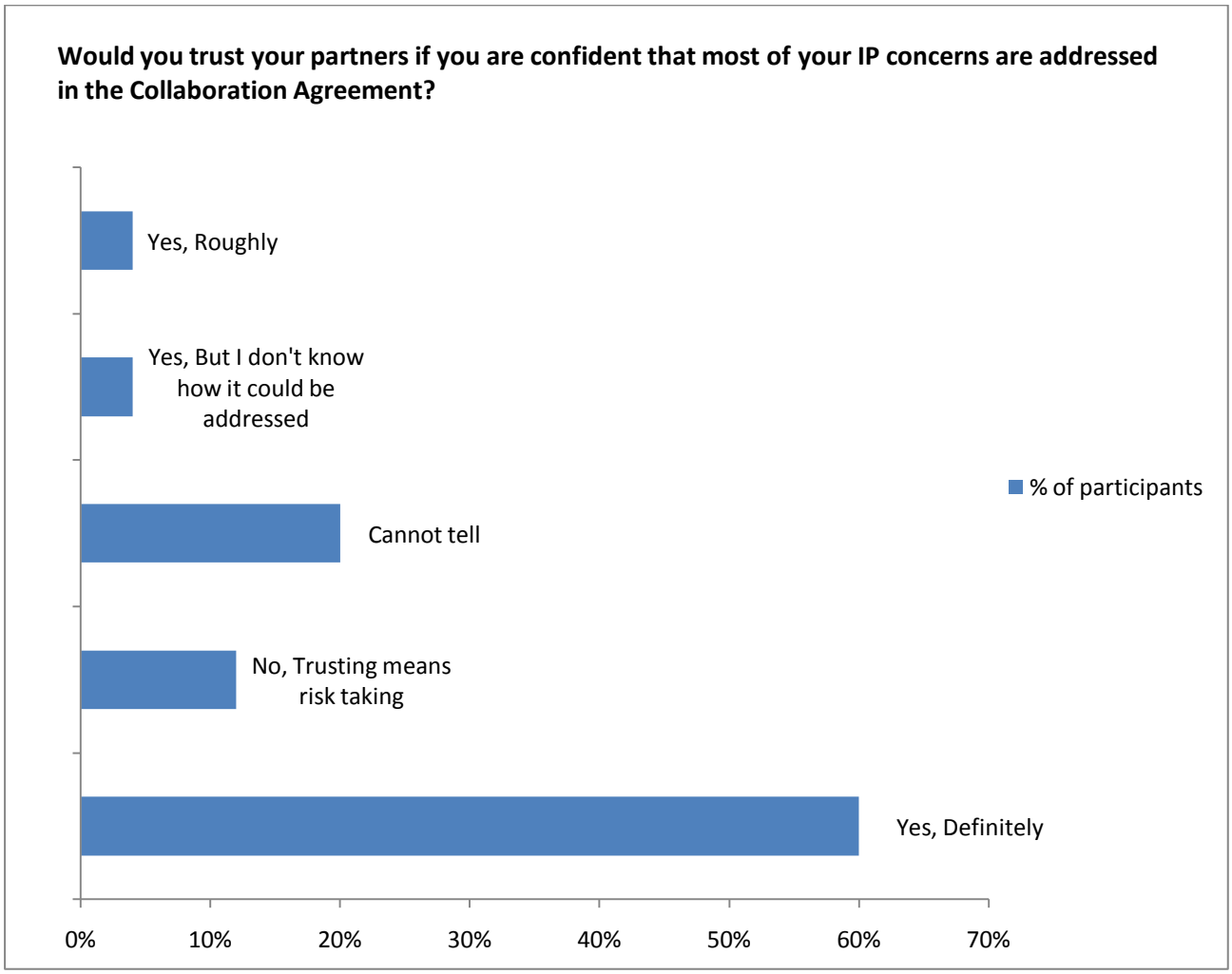


Figure 5.4: Hidden agendas and trust-1

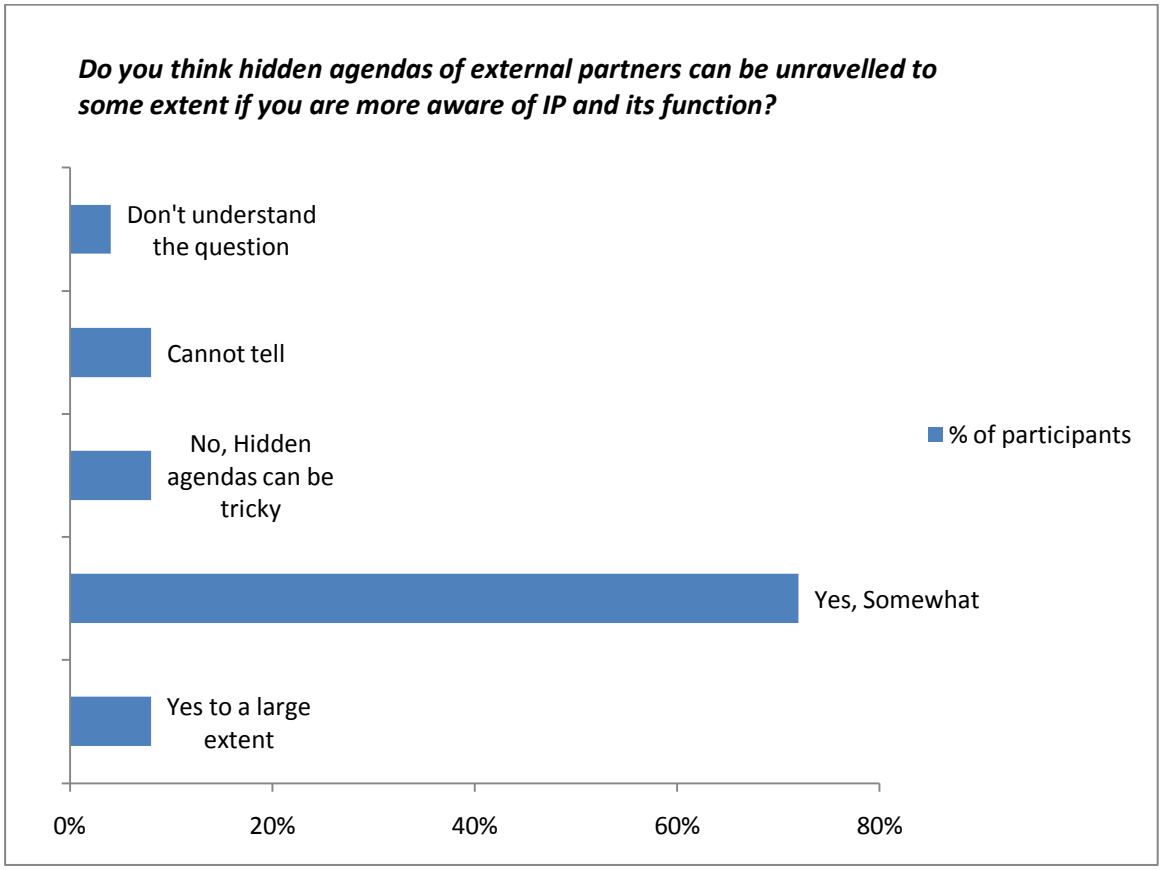


Figure 5.5: Hidden agendas and trust-2

As Figure 5.4 explains, majority of the respondents felt that they could trust the collaborating partners more if they were assured that the IP issues were tackled in the development agreements or an early common understanding is reached regarding the same.

5.4 Legal language

The majority of the respondents felt that the legal language used in contract negotiations is very complex for an engineer to follow and aren't sure if it actually represents the actual negotiated details. They also felt that a support, in most cases an IP expert is required to deal with these issues

5.5. Chapter Conclusion

Based on several interviews and the comprehensive survey on IP landscape of company A the following factors were identified as the most important factors that influence IPR Management in contract negotiations in collaborative projects with external partners

- The IP Organizational structure of Company A (IP personnel)
- IP Awareness of the Project team members that are involved in the contract negotiations
- Trust and common Understanding together with Due Diligence

As well the various criteria that are used to evaluate the identified factors are also derived from the analysis of the survey which is as follows:

- A simple and easily understandable process for IPR management
- Ease of applicability
- Whether the said process can improve trust and common understating and IP awareness

The following chapter focuses on one of the key factors identified through the survey, which is the corporate IP organizational structure. The chapter includes further exploration into the knowledge base which dwells deep into the best-practices in the IP organization structure and serves as a recommendation regarding a strong IP strategy for company A.

6. The Organization of the IPR management in the Corporate Management Structure

One of the key criteria that affect the IPR Management in companies is how the corporate structure of IP is designed and managed. The need for a functional, visible, and efficient IP structure has been well stated in several literary publications, and company appraisals. The need was well discussed in the knowledge base and was observed in the environment base (the company A) through the IP landscape survey. Since the importance of the IP structure has already discussed, this chapter is dedicated to explain the different types of IP structures practiced in companies across the world, the best practices of Japanese firms who are considered to be world leaders in designed well functioning IP corporate structures. One of these companies (Hitachi) in Figures is actually a competitor for company A, hence it might be insightful to compare them, for final recommendations and as a consideration for the process designed to be developed in chapter 9

There are several modes of IP Organization for companies, where IP activities could be:

1. Centralized at corporate headquarters (mostly as a staff function)
2. Decentralized to business areas, business units and subsidiaries, domestic and foreign
3 .***Decentralized to one business division as a lead-house with corporate-wide IP responsibility****

4 Organized as an independent IP business unit in the corporation
5 . Externalized to a supplier organization, with one, two or more patent bureaus, agents, attorneys and law firms (more than one is definitely advisable for a large company), or to collective IP resources shared with others.

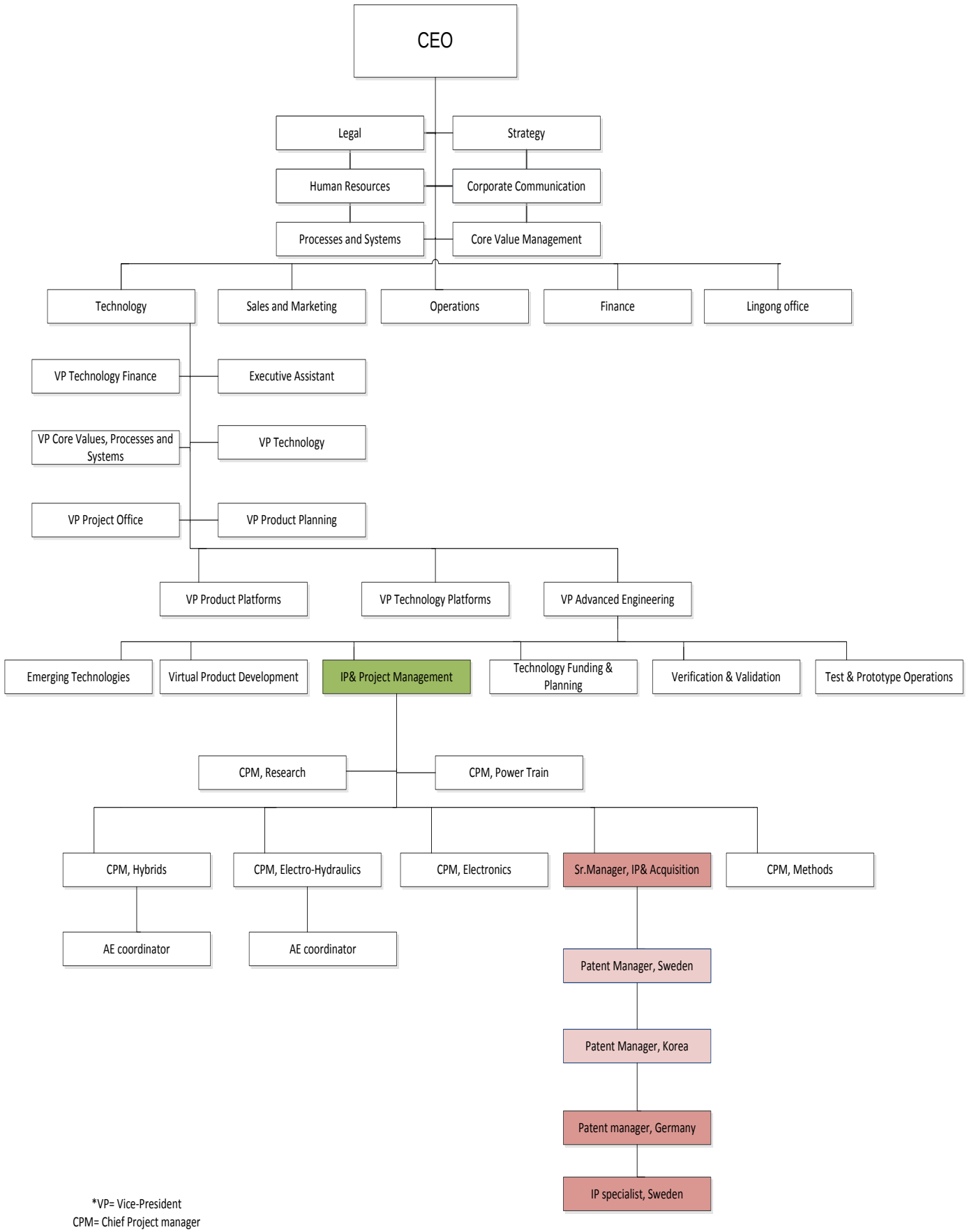
At functional level IP may be organized as:

a***) As organizationally separate functions for various IPRs (patents, trademarks, copyrights etc.)****
b) As a comprehensive IP department, integrating various IP activities
c) Integrated with R&D, a special innovation company, a legal department, a licensing department, a department for intelligence, information and documentation, or with marketing."

(Granstrand,O.2000)

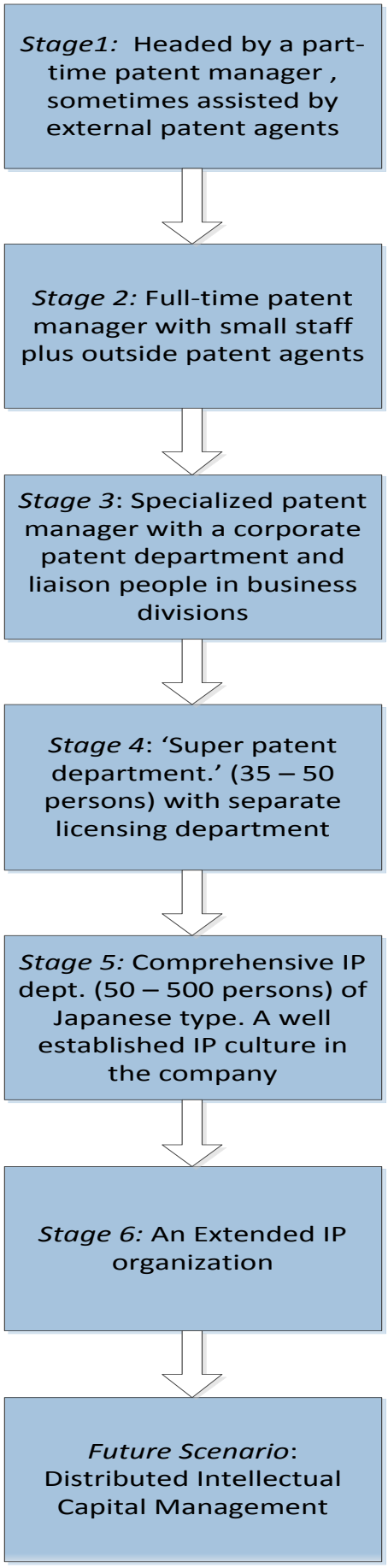
*the highlighted sentences in bold are the IP organizational regime followed in Company A, for an illustrated version refer to Figure 6.1 , where the IP section is several layers top-down, with a very small division within another department.

Figure 6.1: Organizational chart of Company A



*VP= Vice-President
CPM= Chief Project manager
AE= Advanced Engineering

Figure 6.2 The Evolution of IP Organization (Taylor& Silberston, 1973)



As Japanese companies are considered to be pioneers in managing IP, a comprehensive study on the IP organization was constructed by (Granstrand, 2000)which explains some important pointers for a successful IP strategy. The following paragraphs explain them in detail

6.1. Comparing the Patent Organizations: Learning from the Japanese

Though the West were the forerunners in the development of a functioning IP system, Japanese companies were far ahead in designing a comprehensive and detailed IP organization which covers all the dimensions of IP, not just limiting to patents and provides support to the employees with respect to matter relating to patenting, licensing, information provision and training. Figures 6.4 to 6.8 show the functioning of two big Japanese companies- Toshiba and Hitachi. They describe the organizational hierarchy and the functioning of an innovative IP system followed by Hitachi named as Patent Strategy System . It has to be noted that these IP departments are large with the number of personnel ranging from 50-500 involved in all the essential dimensions of IP, with a centralized IP division. It has to be noted that these extensive IP organizations were developed in the early 1990‟s and can be assumed that they are much more advanced today

The Japanese company Hitachi, not only has a super patent division but also is an active competitor of Company A, hence it makes it all the more interesting to compare the IP organizations to suggest a recommendation to Company A, at the end of this analysis. Comparing the functioning of IP divisions in Japanese companies, the Organizational hierarchy of Company A is illustrated in 6.1 and at a first look can be noticed that , when compared to the IP Organization evolution in Figure 6.2 , it is at stage 3,as of 2011. Also, the various IP dimensions like Patents, Trademarks, are not integrated under one division. Keeping in mind the need for an efficient IP Management system, it is not practical to provide short term advice regarding the improvement of the IP organization as it goes beyond the scope of just the contract negotiations which is the key focus of the master thesis, but nevertheless a very important and non-separable aspect to be mentioned with respect to IPR Management. Hence, the following success indicators, derived from the Japanese way of IP Management (Granstrand, The Economics and Management of Intellectual Property: Towards Intellectual Capitalism, 2000)can serve as good references for the formulation for a robust IPR Management strategy. The success factors will be explained with the focus on the current situation of IP organization and problems related to that in Company A.

Key factors for a successful IP strategy:

1. Involvement of Top Management

Though involvement of the Top Management isn’t a necessary condition in IPR Management , in Japanese companies it is common to have very high ranking administrative employees involved in R&D and IP division, some of them with prior patent or IP experience. This leads to the mentioning and discussion of IPR Management in high level business meetings, which creates an inherent IP culture, right from the top level and elevates the importance of IP in the whole company. This aspect is missing in Company A, as the functioning of the IP division is quite bottom-up, instead of the top-down structure in the Japanese firms.

2. IP as a common concern for all engineers

Though IP division can have several specialists to work on IPR Management, it will be ineffective unless Engineers who are the innovators aren't exposed to the concepts of IP. Engineers are involved during activities like filing patents, contract negotiations with external patents; hence IP should be a topic of concern even for all Engineers.
In Company A, majority of the respondents expressed that IP issues should be dealt by either patent managers or the purchasing department and is not necessarily present in their job description. An example for the demonstrating a clear gap in this respect, while dealing with projects with external partners prior to or during the contract negotiations Japanese try to inculcate a knack for IP among Engineers through courses, job rotation and career paths with at least a stop through the patent or IP department

3.IP policies and strategies integrated in business and project plans

Company A has a Global development plan for projects specifying the need for an IP check, but the process to be followed for such a check is not described. Without a requirement to make patenting and IP a regular and specified item on the agenda of business plans or project plans , managers will easily neglect the IP situation or let IP strategies become overly general and watered down‟.(Granstrand,O.2000). This attitude is clearly expressed in figure.
In Company A, though there is a requirement of performing an IP check in all projects, it is not project specific, and there is no clear process description on how to do it. This is of serious concern, as lack of due diligence may lead to several financial, legal and reputation losses for the Company. For every project it is essential to answer questions like‟ how can we protect our competence (IP) in this project with external partners‟? , and integrate the project goals with the IP goals.

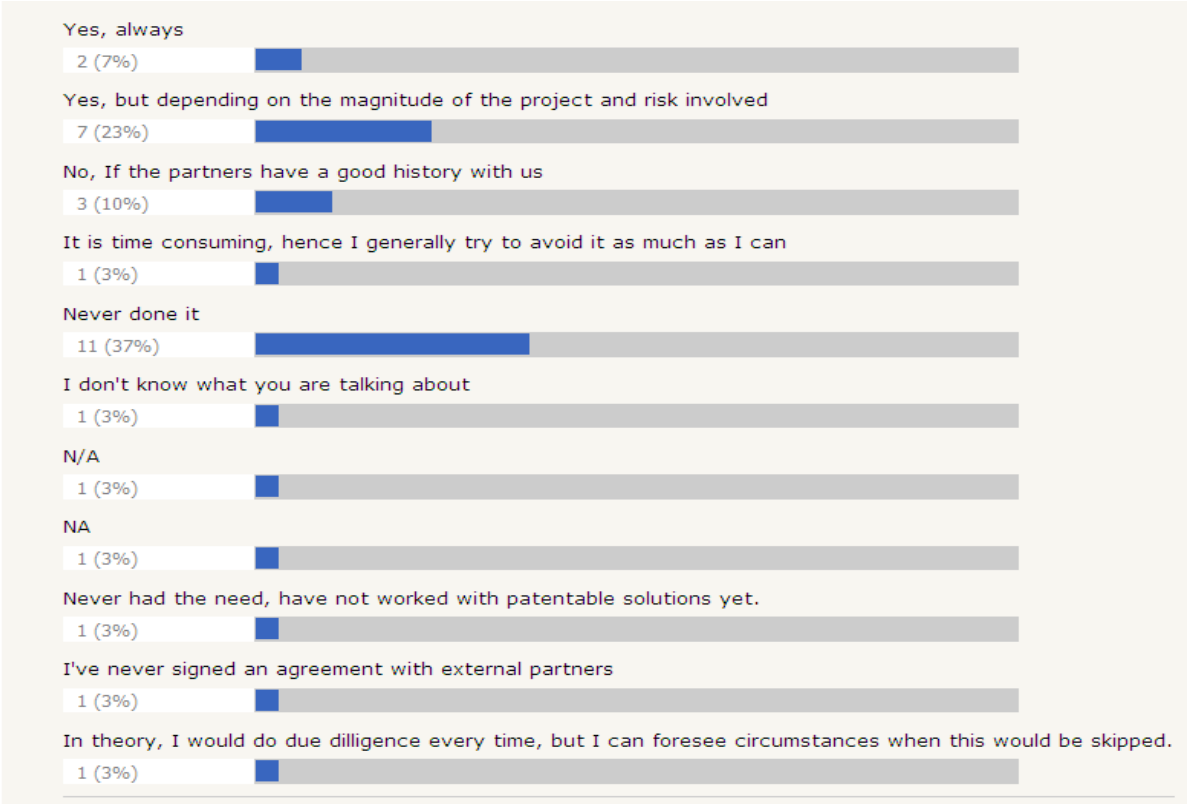


Figure 6.3: Response to the question, Do you perform IP check before embarking on a project with external partners in Company A?

4. Clear patenting incentives for R&D personnel and organizational units

Most Western technological companies expect employees to innovate, and consider it as a part of their job description, whereas Japanese firm provide incentives for innovation and generating IP. Annual cash awards are given to employees generating the most number of patents- strategic or otherwise . The provision of incentives for patent filing , or for adopting best practices in IPR management wasn't observed in Company A, like in most western companies.

5. Fostering the IP culture

"I encourage our researchers to read patent specifications rather than academic theses. I also tell them to make virtual experiments (Gedanken experiments) in order to have them apply for more and more patents, so that we can be prepared for the era to come when only some companies, strong in patents, will cooperate with each other and survive."
- *Keizo Yamaji*
Former CEO, Canon Group

Japanese companies like Canon, encourage and try to inculcate certain habits in employees like aligning reporting on R&D work to the norms and standards used in patent documents. This creates a sense of familiarity and comfort among Engineers while having to deal with issues concerning IP, like contract negotiations with external partners . The fostering of IP culture is driven by the top management itself as one of the key future strategies for the company.
Drawing comparison to company A, IPR Management during contract negotiations with external partners was considered to be analogous to legal language, and the Engineers viewed the project objectives and IP objectives as completely different dimensions. (Refer to Appendix E, for more details on the survey conducted on this topic in Company A)

6. Visible Organizational means

The patent organization and support needs to be visible to all the employees that require of its services. In Company A, a large percentage of Engineers and Project Managers have difficulties in consulting the right personnel or department to resolve their doubts about IP or seek support or information during contract negotiations. . (Refer to Appendix E, for more details on the survey conducted on this topic in Company A)
In Japanese firms, the accessible means of IP support are made visible through IP promotion centres, patent liaison officers distributed in the organization, corporate-wide IP campaigns, patenting prizes, and IP strategy seminars.

The above mentioned success factors can be noticed, by observing the highly structured organizational charts of Toshiba and Hitachi (as old as 1992) in the following pages :

Figure 6.4: The IP division of Toshiba as of 1995 (Granstrand, The Economics and Management of Intellectual Property: Towards Intellectual Capitalism, 2000)

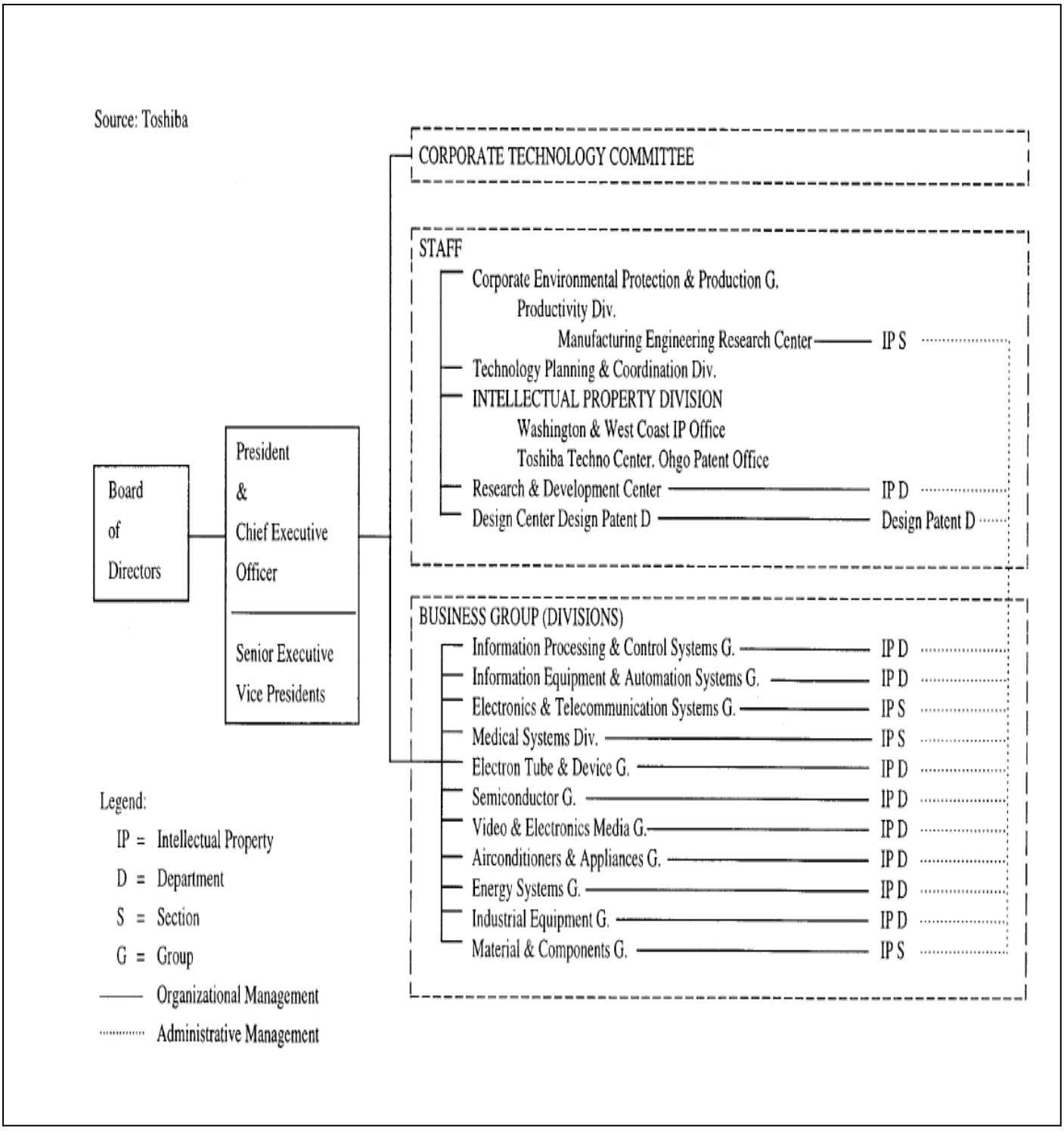


Figure 6.5: The IP division of Toshiba as of 1995 (Granstrand, The Economics and Management of Intellectual Property: Towards Intellectual Capitalism, 2000)

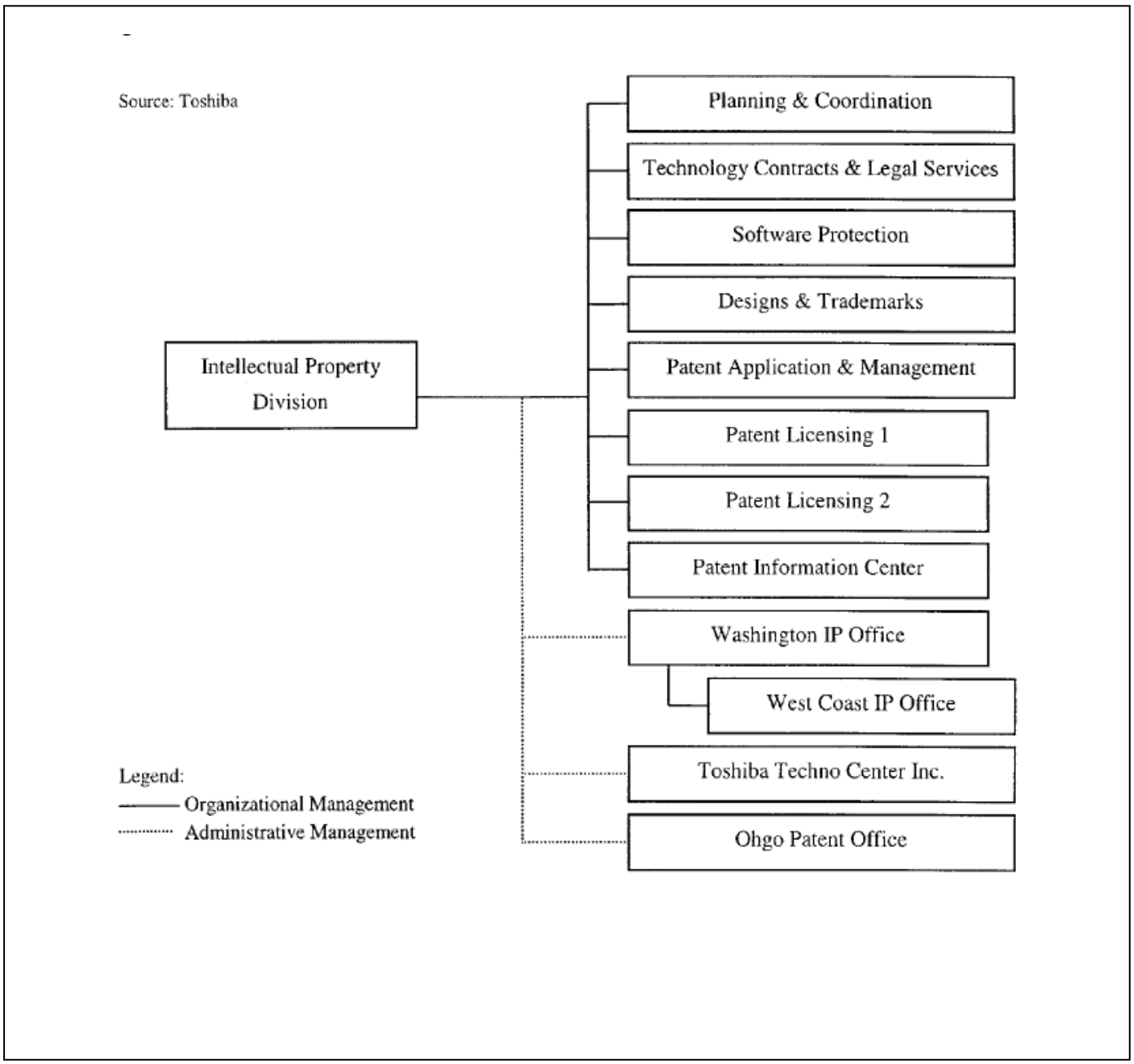


Figure 6.6: The IP organization of Hitachi as of 1992, (Granstrand, The Economics and Management of Intellectual Property: Towards Intellectual Capitalism, 2000)

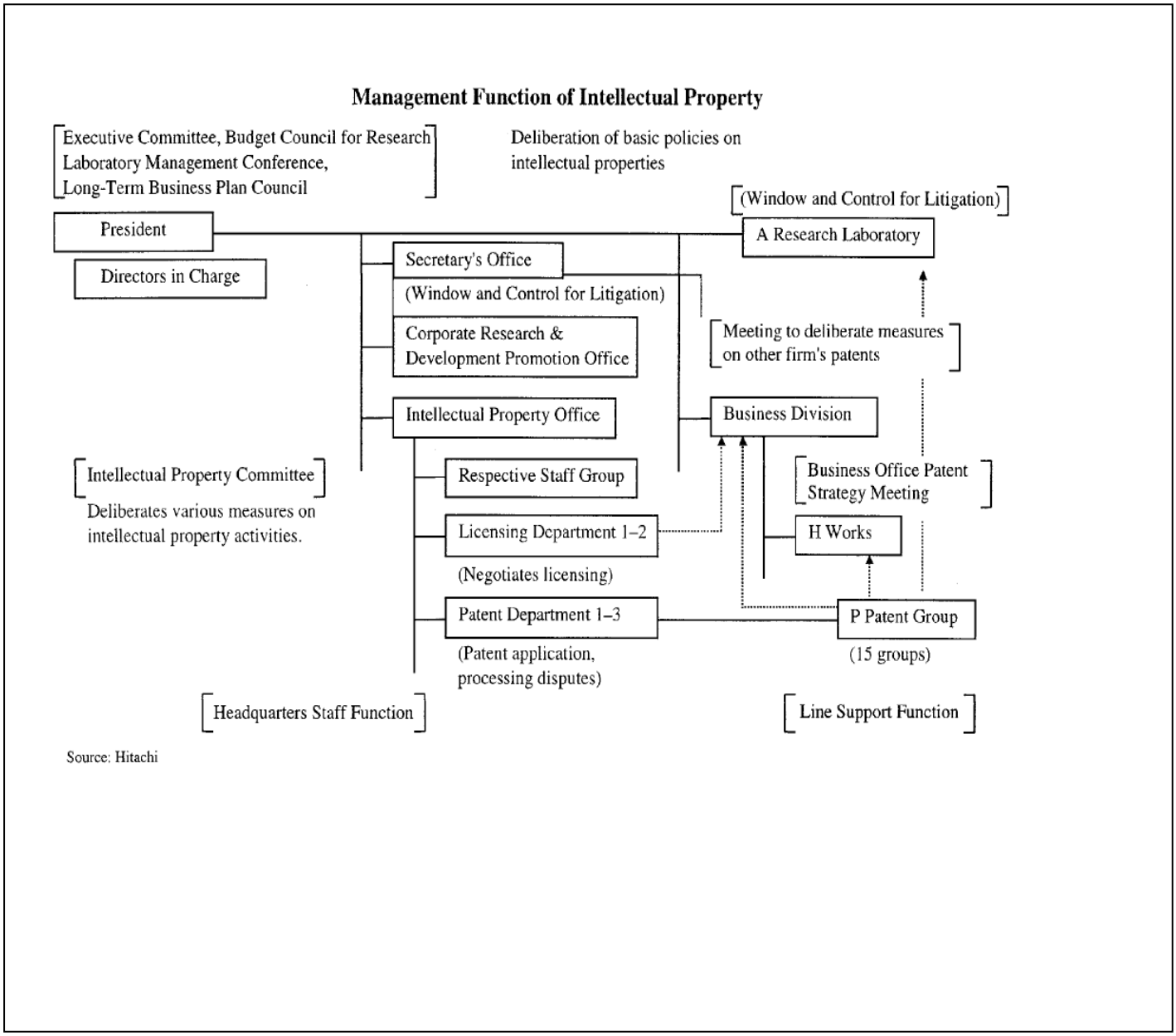


Figure 6.7: Function of the IP office of Hitachi (Granstrand, The Economics and Management of Intellectual Property: Towards Intellectual Capitalism, 2000)

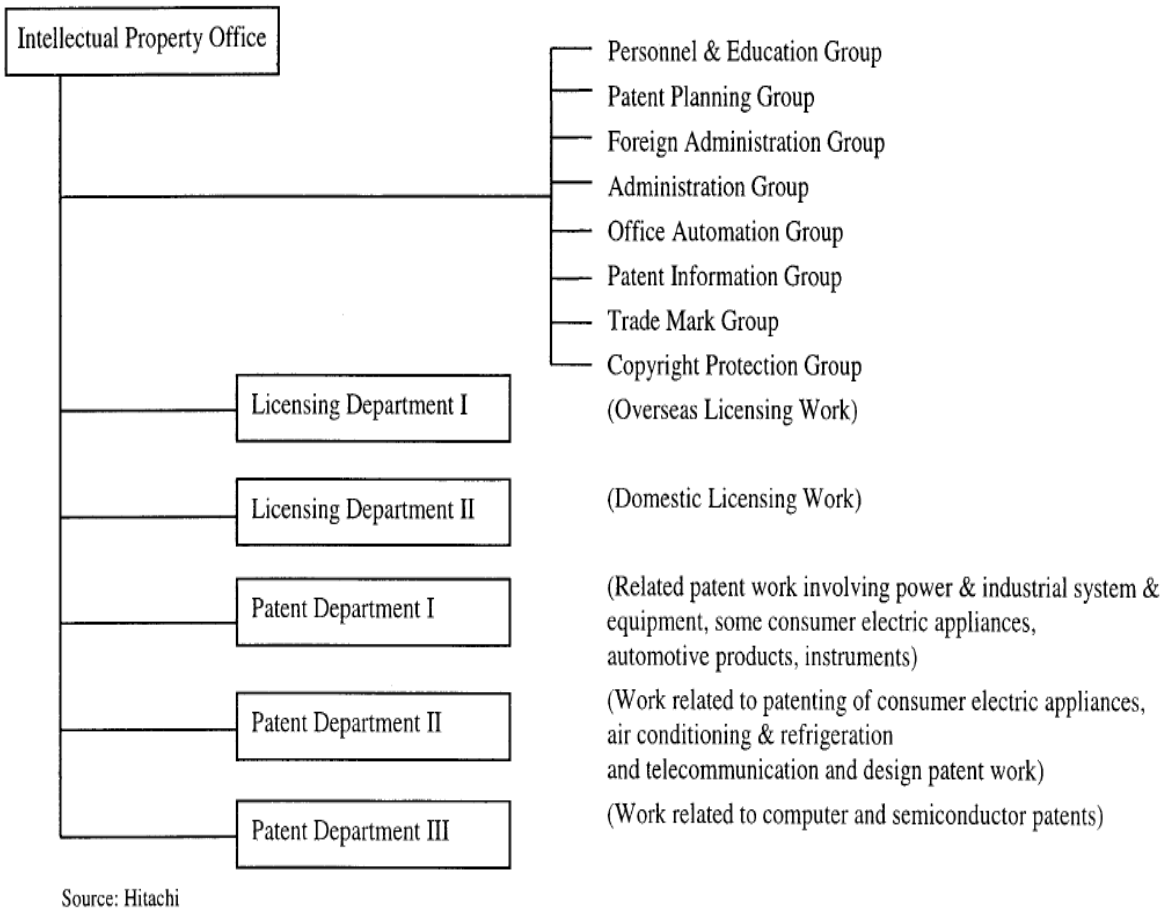
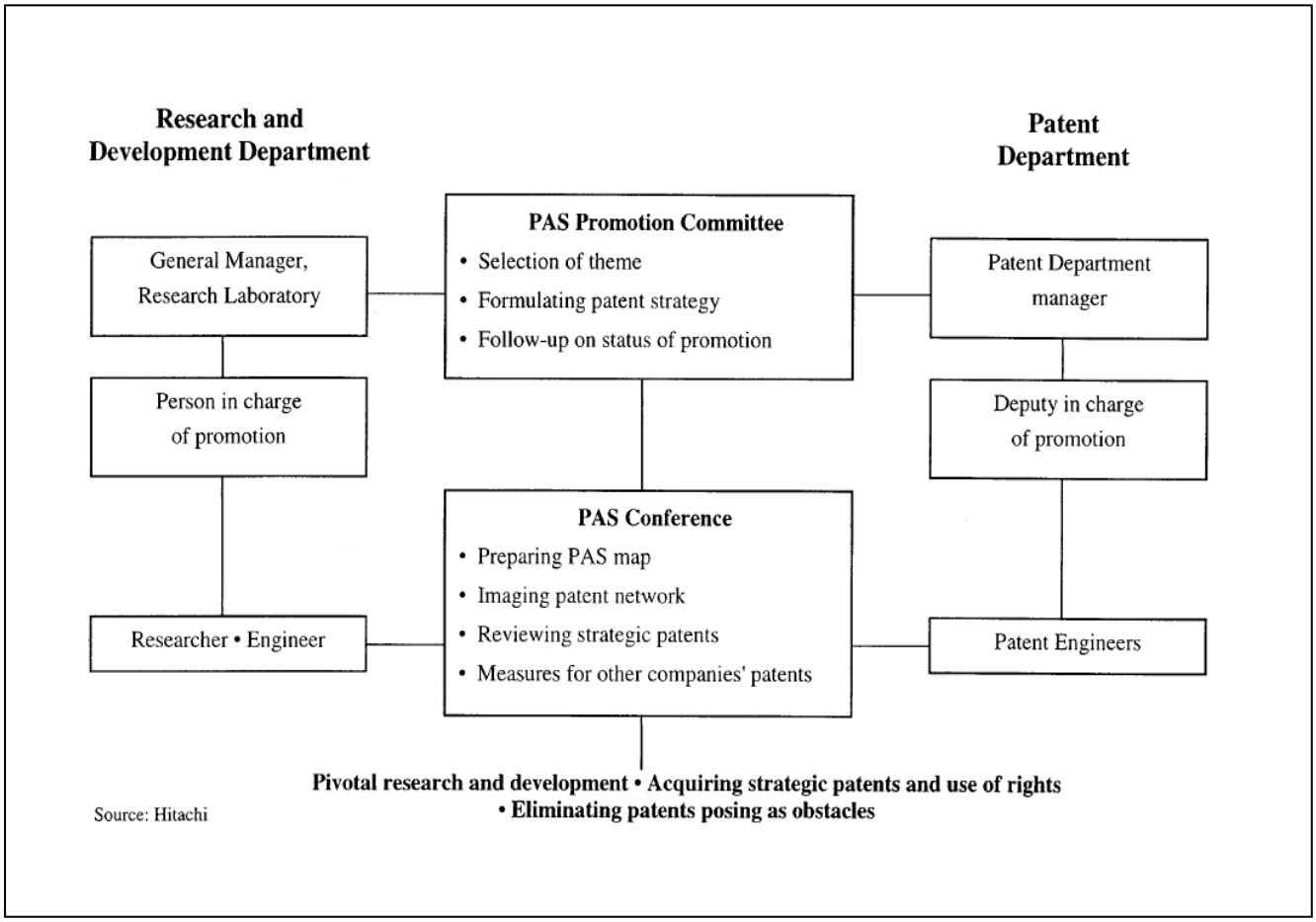


Figure 6.8: Hitachi's PAS (Patent Strategy System) strategy (Granstrand, The Economics and Management of Intellectual Property: Towards Intellectual Capitalism, 2000)



6.2. Chapter conclusion

The IP organization in the corporate structure is extremely essential for enabling the project team involved in collaboration projects with external partners to follow successful IPR management in their projects. IPR appears to be a legal concern, but it has to be noted that most technological product developments involve the information sharing among engineers; hence they play a key role in contract negotiations. The support and function of a well organized IP structure can nurture and protect the IP of a company. This has been proved by several Japanese companies right from the 90's. Hence this chapter can be used to propose a recommendation to company A as well as several European OEMs, who's corporate IP strategy is weak, as the main competitor Hitachi has a well developed and functional IP department. This recommendation gains more importance as European firms are migrating to countries like China Vietnam , India etc for cheaper resources and currently the migration is limited for manufacturing facilities. But in future if firms decide to collaborate for new product research with the local companies in such countries, they need to make fool-proof plans to protect their IP, as the laws and attitude towards IP in those countries may be detrimental to the interest of the European OEMs

Nevertheless, another importance factor that affects the IPR management as indentified in the previous chapter are IP awareness. The IP organization directly is responsible for this factor, but it is discusses in detail independently along with contract negotiation skills in the following chapter

7. IP Awareness and Contract Negotiations

One of the key challenges faced by the Company A, with respect to the IPR Management during contract negotiations is the limited IP awareness among the members of the project team, especially the Engineers, who discuss most of the technical details with the external partners regarding the desired collaborative project. This factor has been discussed in Chapter 4, in the comprehensive survey conducted about the IP landscape of Company A. IP awareness was also identified as one of the key influential factors for a successful IPR management for collaborative projects with external partners. This chapter is dedicated to explain the basic concepts that are ought to be known by the project team about IP, before they embark on collaborative projects with external partners.

The main contents of the IP awareness can be summarized as follows

1. The IP Organization in the Company and Support (Discussed in detail in Chapter 5)
2. The Concept, Importance and Definition of IP
3. Contract structure, Contents and Dilemmas
4. Potential Conflicts
5. The need for shaping the right Contract/Developer agreement

7.1. The Concept, Importance and definition of IP

The definition is IP cannot be defined precisely in one particular way as Intellectual property is any valid invention of the human brain and this definition is too broad to inculcate any professional sense. This ambiguity in the very definition and understanding of IP is a major cause of the limited IP awareness quotient. But it is no reason not to attempt to understand the concept. The understanding of the concept of IP will lead to a better understanding of the strategic importance of it in the organization. As a step towards stating the definition of IP and related IP terms, Appendix A has been dedicated to the explanation of each of the IP related terms, adapted from the world renowned organization from IP, which is the WIPO. Also, contractual terms related to IP like Background, Foreground etc are discussed in great detail in chapter 9, in the Estimation phase of the contract negotiations

7.2. Contract Dilemmas

The contract structure and contents have been well discussed in chapter 4.2. These elements can provide a basic insight as to what is included in the contracts. For a typical developer agreement for Company A with external partners , which is the final product of the contract negotiations, the written reports about relevant transactions would be the technical specification and the concepts exchanged between each other's and improved over time. An another addition generally observed in collaborative contracts among firms is 'Terms of divorce' or the consequences if either parties wish to end the collaboration, accompanies by the conditions that lead to such a situation.

The contract is dubbed as a developer agreement for Research collaboration projects, and the developer agreement is drafted and continually improved over the negotiations between the parties regarding the content and agreement on the same. This process takes between 1 to 4 years, and it is a critical stage in the new product development, as a lot of information is transferred without having a formal legal backing. Hence to avoid unwarranted exploitation of such a vulnerable situation, which is only based on mutual trust and common understanding, many companies enter an MOU(Memorandum of Understanding) or a Confidentially statement, which is discussed further in Chapter 9 in the Preparation phase of contract negotiations.

The focus of IP awareness for Engineers is not about the legal jargon of the contractual statements but the functionality and limitations of contracts. An important limitation of contracts is their incompleteness (Williamson O. E., 1996)Engineers should be aware that, though contracts serve as tools to protect one's interests, it is impossible to delineate all possible contingencies that may occur during collaboration (Simon, 1961)and (Malhotra & Murnighan, 2002). This incompleteness creates a sense of dilemma for the very mechanical of contractual governance due to the following social findings

- ***Voluntariness:*** Contracts have to be a voluntary commitment and no one can be persuaded to make a contract as voluntariness promotes contract fulfilment

- ***Incompleteness***: Due to bounded rationality , it is virtually impossible to incorporate all details in a contracts, and is often done that parties fill in gaps as they move forward and most often do so inconsistently

- ***Reliance Losses:*** Contracts are generally created to benefit the parties that take part in the agreement. Hence changes in the contracts most often lead to some losses for some or all the parties involved. Contract related activities generally strive towards reducing losses

- ***Automated processes:*** Once the contracts are signed , they create a mental model in the signed parties that resist changes, such a mental model keeps the parties from actually noticing the changes that actually occur

7.3. Potential conflicts

'A stitch in time saves nine'

Though all contingencies cannot be expected while formulating a contract, the knowledge or perception of potential conflicts that may arise in the future is very essential to draft a good contract. It is not only helpful for a good contract but also helps to understand moves of the collaborating partner, and some issues can be nipped off in the bud, if the Engineers have some idea of a potential conflict that could arise. Also, some due diligence measure can be taken if there is an understanding of a future conflict, as well as mitigations measures can be planned if situations go out of hand. Based on the case study and interview with several patent managers, some of the conflict situations that could arise during a collaboration are as follows

Potential Reasons for conflicts or disputes among collaborating Partners (As observed in Company A in several Projects)

Situation 1

IP check of purely mechanical components supplied by the partners is much simpler than if the products have some software involved. Currently, more and more components provided by the collaborating partners have some software embedded in them. If there is not enough due diligence done on the software IP of the component (if any), or if the issue isn't addressed during the negotiations, the partner might have a hidden agenda to hold back information regarding the software patents, that company A may have overlooked .This issue again corresponds to the IP awareness of the negotiating members. The consequences could be that of a legal suit that the partner may file after the component is utilized in the product of A and released into the market blaming patent infringement of A. This could be seriously detrimental to Company A both financially, reputation wise and also destroys the trust levels with the partners

Situation 2

Today, partners choose to be providers of systems rather than mere component providers. Systems, in hydraulics for example are a component with a microprocessor and control software along with it. Hence when Company A desires a new component from partners, they are very eager to request the control software (the secret know-how and some patent protected) of company A, to device the system rather than just a component. If company A provides their control software of their machinery, which is their core competency, the partners might provide similar solutions for the competitors of A, the consequences could be as drastic as A being out of competition.
Nevertheless, the partners may put an argument of testing the component for better results, which is completely valid and required too. Hence there should a clear delineation and sharing rights for object code and source code for example , and again there should be a clear understanding of which information sharing might be detrimental and which might be useful to provide better results.

Situation 3

This is an interesting and challenging case of conflicts regarding ownership of the IP produced during the collaborative exercise.
If Company A collaborates with a partners without agreeing on how the ownership of the IP generated during the joint collaborative process. The both the parties meet for an IP summit, where they check the patents filed by both parties, on this collaborative project and then the situation can turn murky, when A claims that some patents filed by the partners are actually the innovation generated by A and vice-versa. Since it was a collaborative result, agreeing on who owns the generated IP, is a largely complicated issue, and if not dealt in the right way might result in no further progress of the project and may even become a deal breaker due to potential legal action by both parties

7.4. Shaping the Right Contract in Inter-organizational Collaborative Projects

In a very practical and cynical business point of views, Inter-organizational collaborations for a new product developments means working in an uncertain environment with potentially opportunistic partners (Parkhe, 1998)Though partners needs to trust each other when they enter a collaboration, the risk involved with such trust can be only limited in order to protect the interests of the Company.
'The perceived risk of opportunistic behaviour by partners, therefore, can reduce the potential benefits of cooperation' (Das & Teng, 1998)

Contractual governance is introduced in order to reduce this perceived risk. Contracts can reduce the opportunism by two mechanisms, firstly by increasing the cost of self-interest activities, i.e., making it more expensive to violate contracts by imposing penalties for opportunistic behaviour (Parkhe, 1993). Secondly, contracts can reduce monitoring cost by increasing the transparency of relationships and clarifying the objects of monitoring (Reuer & Arino, 2002)

According to two independent studies, one in the information service exchange, managers who formulated structured and detailed contracts, achieved higher exchange performance and the performance of collaborative projects in China with international partners increased when the developer agreement was more specific and had more contingency situational clause (Luo, 2002)

Hence it is very essential for the project team to focus on the content and structure of contracts in order to make full use of its functional powers. Shaping the ideal contract depends not only on legal competence but also heavily on negotiation skills.

7.5 Negotiation skills

'You don't get the deal you deserve; you get the deal that you negotiate'

'Due diligence is a necessary first step before embarking on any kind of business transaction and particularly important when considering entering into a long-term business relationship such as a license agreement. *There is no substitute for diligent preparation. Being ill prepared would be fatal for a forthcoming licensing negotiation. The negotiation itself is the tip of the iceberg. Being informed of the market, the technology, the potential licensor or licensee and their particular business circumstances and one's own business objective(s) is indispensable for ensuring a successful negotiation.'(WIPO,2005)*

Negotiation is a key part of the contract negotiations process. It is all the more required to reach not only a desirable collaboration agreement but also trust and common understanding among the participants.(Trust with due diligence).

The World Intellectual property Organization in a report in 2005, defined phases and certain golden rules of negotiations with a special focus on IP issues, they are as follows:

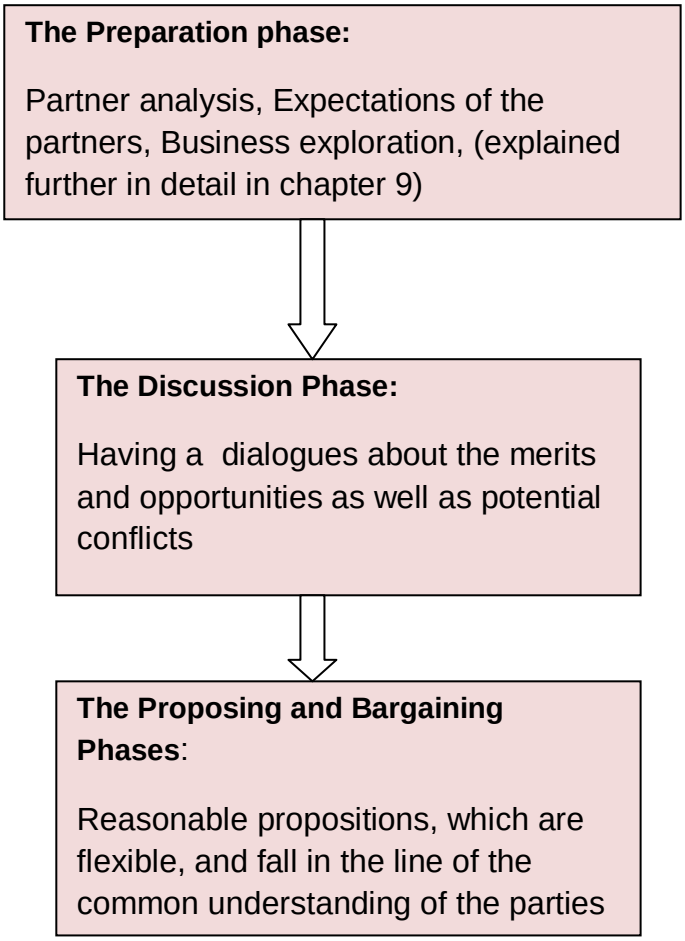


Figure 7.1: Negotiation phases

The golden rules of negotiations are follows, which are interpreted for IPR Management for contract negotiations :

- ✓ ***Aim for a "Win-Win" Outcome***
  Collaboration means a long-term technical, commercial and personal relationships and, if a partner feel that they have been given an unfair deal, their grievance can be very detrimental to the joint venture and can bring mutual losses, hence win-win situations are most desirable, and in the impossible case each partner should be given some sense of sense that is acceptable to them.

- ✓ ***Establish the Maximum (or Best) Position, and the Minimum (or Worst) Position in Respect of Each Issue***

  This is a part of the preparation process of negotiation, where one should be ready to face a variety of consequences that could occur in a collaboration so that there will not be real rude shocks in the process

- ✓ ***Aim High, but Protect Your Credibility*.**
  It is always possible to accept a lesser position after the negotiations, when the initial propositions are aimed high but the vice-versa is not possible. But also the propositions made need to be rational, practical and credible, so that the collaborating partner wouldn't consider them as superficial

- ✓ ***Trade Variables That are Cheap for You but Valuable to the Other Party***
  Identify the IP assets that may not be valuable for the Company A but maybe very useful for the partners. In a negotiation, that requires provision of incentive sin order to reach a desired decision outcome with partners, these assets can be well put in use.

7.5.1 Negotiation skills test in Company A: Rate the Negotiator questionnaire

The success of negotiation depends on the skills of the negotiator; hence it is very important for the project team negotiation a developer agreement with external partner to understand the nuances of negotiation.

In order to assess the negotiation skills of the employees A workshop was conducted in company A, and as a part of it a small exercise was organized for the participants of the works,(IP Managers, project managers and Engineers, and Purchasing department personnel). A questionnaire to assess the negotiation skills was filled out by the participants and the scores were evaluated against the provided analysis. The questionnaire is available in detail in Appendix B.

Interestingly almost all the participants fared very well, with IP Managers and some project Managers scoring as perfect negotiators, but the majority of the participants scored as potentially good negotiators, needing more training and practice.

7.6 Chapter Conclusion

On a concluding note to this chapter, the following two observations can be stated:

1. The concept and understanding of IP terms and broad contents of Contracts/Developer Agreements are essential for IP awareness

2. Good Negotiation skills of the project team will help achieve a strong and well-desired contract, and help achieve a win-win situation

3. Most project team members are good negotiators and some are potential negotiators, who can improve their negotiation skills with further training

4. Contracts are powerful tools, and there is little doubt that a well-structured and formulated contract is a good control mechanism to check the irregularities in a collaborative venture, but as explained they have limitations too. Hence Engineers should understand that the success of collaboration cannot be entirely achieved by contracts alone. Though negotiation skills can tune the contract to one's benefit, factors like trust, common understanding to be inculcated among partners along with shaping a good contract.

Hence the following chapter is dedicated to explain the importance of trust and common understanding, which is as important as drafting a good contract

8. Trust and Common Understanding

In Inter-organizational collaboration, there is always a battle between Trust and Control during contractual negotiations as cooperation and competition exist at the same time (Brattstorm, 2011). But as discussed in chapter 4, trust is an inevitable part of a collaborative venture, and according to many project managers, the key to kick-start a good collaborative venture is mutual trust and its importance is not open to debate. Hence this chapter is dedicated to the further exploration of the definition, concept and importance of trust

There is no formal definition of trust in business terms, as it can be associated on a personal, professional, and group basis. But figure 7.1 described some business and economic related definitions for trust during a collaboration between partners.

Definition of Trust for business	Source
The concept of trust can be conceptualized as coming into existence when a party has confidence in his exchange partner's reliability and integrity	(Morgan & Hunt, 1994)
Trust is a calculated risk assessment in an economic exchange. In other words, when you trust your partners, you calculate a certain probability of their acting positively toward you and reach a decision that you would take the risk of their opportunism based on this probability	(Williamson ,1993)
Trust is a label given to a behaviour of goodwill, but the act of goodwill doesn't necessarily mean that it was performed because of the existence of trust between the parties that took part in the transaction	(Craswell, 1993)

Figure 8.1: Definitions of Trust

Trust and Common understanding are very essential in a collaborative project with external partners as contracts alone cannot ensure commitment, goodwill and performance among the participants. It cannot be generated instantly but is a long , and continuous process. The collaborating partners should be willing to spend time and resources towards building long term trust and relationships with external partners.

The process of evolution of Trust as explained by Ford et al ,1998 in the following stages:

(1) The pre-relationship stage;
(2) The early or exploratory stage;
(3) The developing stage; and
(4) The stable stage.

In the first stage there is a great amount of uncertainty among the collaborating parties, and the subsequent stages reduce the mutual distance and develop mutual trust.

In collaborative projects with external partners, it is practically impossible to continue the joint venture without a contract. But either trust alone or contracts alone cannot ensure a successful collaboration for new product development. Hence Trust and common understanding have to be exercised with due diligence, i.e., contracts have to shaped in such a way that they ensure that sufficient measures have been taken to protect propriety knowledge, but at the same time should establish a trusting and a long-term relationship that will lead to a fruitful collaboration.

Though it seems complicated, the good news is that, it has been proved that well-shaped contracts can help inculcate trust and common understanding. Formal written contracts bind the parties together; specifying the content of the transaction; and providing evidence of the nature of the agreement and its enforcement (Blomqvist, Hurmelinna, & Seppanen, 2005) In addition, the contract acts as a communication tool for the transmission of information from one party to the other; reducing uncertainty and risk by stating each party's contribution to the relationship; and/or meeting the requirements of accepted practice in a given business setting, (Malhotra & Murnighan, 2002), (Roxenhall T. , 1999), (Roxenhall & Ghauri, 2004) and (Williamson O. E., 1975)

Figure 7.2 explains the contract parameters that influence trust and common understanding while drafting a developer agreement among collaborating partners. These parameters have to be kept in mind by the project team during contract negotiations. Also the cultural issues can be extended to trust and common understanding in the sense that, several employees in company A felt that they could trust a partner more if they spoke their own language against foreign partners. But in today's globalized world cultural differences need to be dealt with and extra efforts have to be spent in order to establish trust with such partners

Figure 8.2: Contractual parameters that affect trust in collaborations (Camen,2011)

Parameters	Definition
Contractual settings	How the contractual situation is organized, number of contracts the contractor has, structure of the public transport services etc.
Degree of detail in contract	The design of the contract, how detailed it is, and its duration etc.
Financial issues	The use of financial aspects to create desirable behavior
Technical issues	The degree of technical specifications in the contract as regards adjustments to products and processes to meet partner requirements
Issues of creating trust and social bonds	Wording of the contract to create trust and social bonds between the parties
Cultural issues	The creation of a subculture in which the supplier is a provider
Knowledge issues	How to create learning between the parties within the relationship domain

8.1 Chapter Conclusion

It can be concluded that Trust and common understanding are very essential for collaboration with external partners and if the contracts are shaped taking into the consideration the importance of trust, collaborations can be more fruitful. Though trust building is time consuming, takes a lot of effort as a minor dispute can disrupt years of trust, it is essential to do so, as collaborations cannot materialize without trust and common understanding. Hence trust and common understanding are considered with great importance while designing the process for IPR management in contract negotiations. The following chapter explains the iterative process design using the design cycles framework

9. Process Design and Evaluation

After studying the various challenges, knowledge gaps and key factors that influence IPR management in contract negotiations, with a focus on company, an iterative process design is developed. This process is bases on the design cycles frame work as discussed in chapter 2.The various inputs for this design are the knowledge base and environmental base discussed in detail in the previous chapter, then the key factors identified like IP awareness, trust and common understanding. The process as mentioned is iterative, and is improved in three stages with the received feedback and suggestions from the personnel of company A and new discoveries in the knowledge base. This makes the process design more realistic, usable and helps reach the actual objectives of design science which is based on constant improvisation based on business needs. The process is evaluated based on usability, simplicity and reaching the expectations of the project team members who could be potential users of this process.

The process design is done in four stages. The first being the baseline process, which is improved to a desired process for contract negotiations, which in turned is fine tuned with role description and the final design is an outcome of comprehensive feedback and application of best practices to develop a series of bpmn models, defined for each of the 4 stages designed in the final process model. The four stages are then combined to present a comprehensive bpmn model for IPR Management in contract negotiations with external partners and are evaluated against the described key factors and further feedback from the company

9.1. Baseline process

The baseline process for contract negotiations was formulated after a brief series of interviews with the IP manager, and the Chief Project Manager for Research Projects of Company A is shown in Figure 9.1.This process was formulated with the preliminary sources of information regarding the contract negotiations in the company A

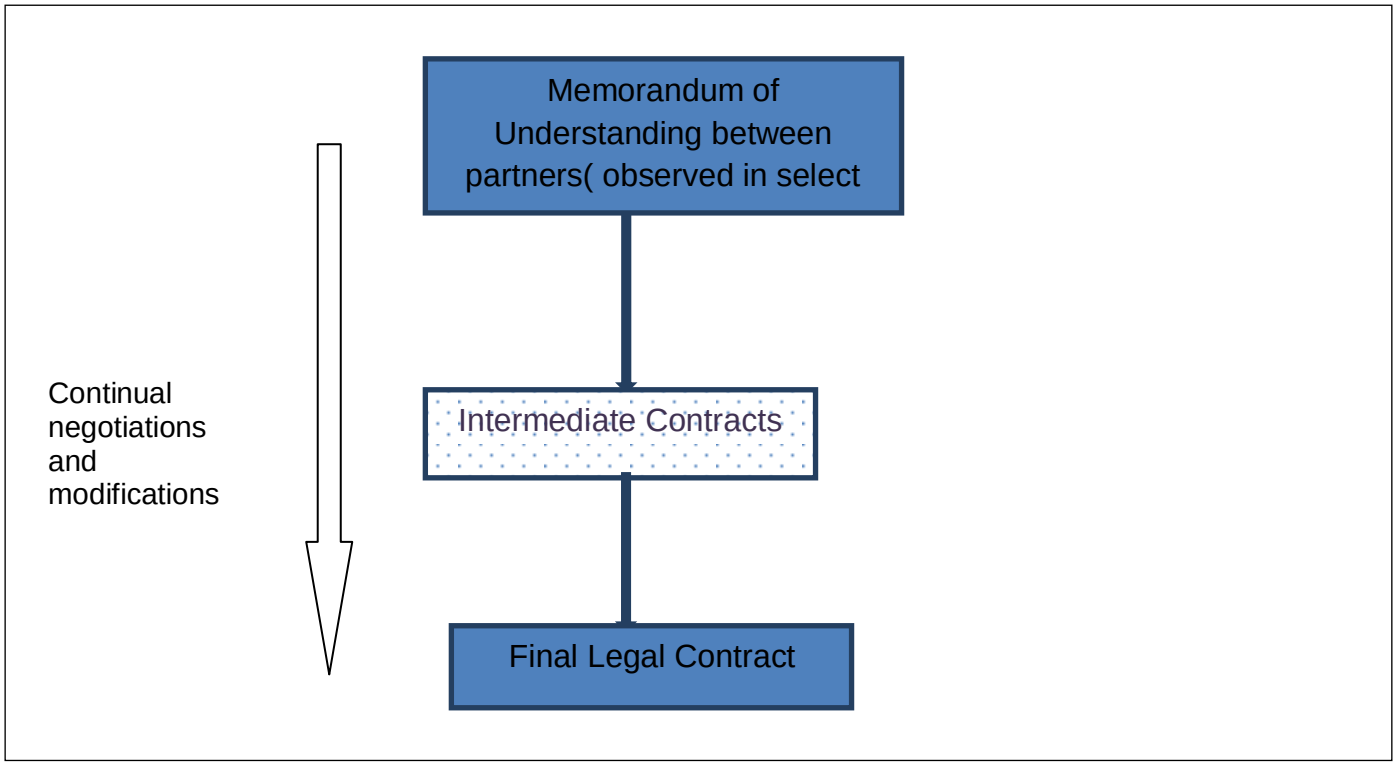


Figure 9.1: MOU to a contract

In Company A, for a new product development involving collaboration among multiple external partners, generally the parties involved sign memorandum of Understand or a Letter of Intent which is defined as ***written but non-contractual agreement between two or more agencies or other parties to take a certain course of action.***

After signing the MOU, the parties negotiate on the terms of their collaboration, and discuss upon several issues including the knowledge sharing, patents, technology transfer, licenses , ownerships rights of the Intellectual Property if generated during the collaborative process, and after signing the MOU, the parties negotiate on the terms of their collaboration, deliverables, deadlines and agree upon several issues including the knowledge sharing, patents, technology transfer, licenses , the ownership of the Intellectual property etc[.

9.2. Evaluation and Feedback for the Base line process: Interviews, Case study, project documentation, meetings

The base line process which is an output of a preliminary idea about the contract negotiations process. After designing the baseline process, which seemed to be incomplete with respect to crucial details of the contract negotiations, the need for having a better knowledge about the process prompted me to study in-depth the collaborative project provided as a case-study. After referring to the project documentation and communication available in the internal database of company A regarding the case study it was realized that many essential details regarding the interactions and information exchange with external partners wasn't presented. Also attending meetings with external partners over telephone, helped to gain an insight about the negotiations process. After presenting the baseline process to the project manager of the case-study project, several inputs were gathered based on the steps followed in contract negotiations in that project, and various challenges faced by the project team in dealing with a collaborative project with external partners. Further interviews with IP managers and other project managers revealed the basic requirements and stages of a contract negotiations process. The several inputs gathered were incorporated in the improving the process in the Iteration 1, which is considered to be the basic desired process for contract negotiations

The main set of observations made to improve the baseline process towards a desired process for contract negotiations (Iteration 1) are as follows

- The MOU is not present in all collaborative projects in Company A, as there is no standardized procedure for contract negotiations.
- The base line process is vague and doesn't provide any details about the actual stages in the contract negotiations process
- The major challenges and uncertainties in contract negotiations with external partners are not mentioned or even considered.

9.3. Iteration 1: Desired process for contact negotiations

After receiving feedback and extra information regarding the improvement of the baseline process, through further interviews with the project manager, IP Managers, and perusal of the project documentation and communication related to the case-study in the internal data base of company A. as well as attendance of telephone meetings with external partners, an improved process for contract negotiations was designed as illustrated in Figure 9.2.

The contract negotiation process begins after the collaborative partners sign a confidentiality statement that protects the owner subjected to unwarranted information leakage

Then the project team of company A takes part in several internal meetings to discuss about the plan of action for the next steps in the negotiations process.

The next step is the meeting with the project team of the external partner, during which a template for the developer agreement is agreed upon, and the subsequent step is to fill in the contents of the developer agreement by company A

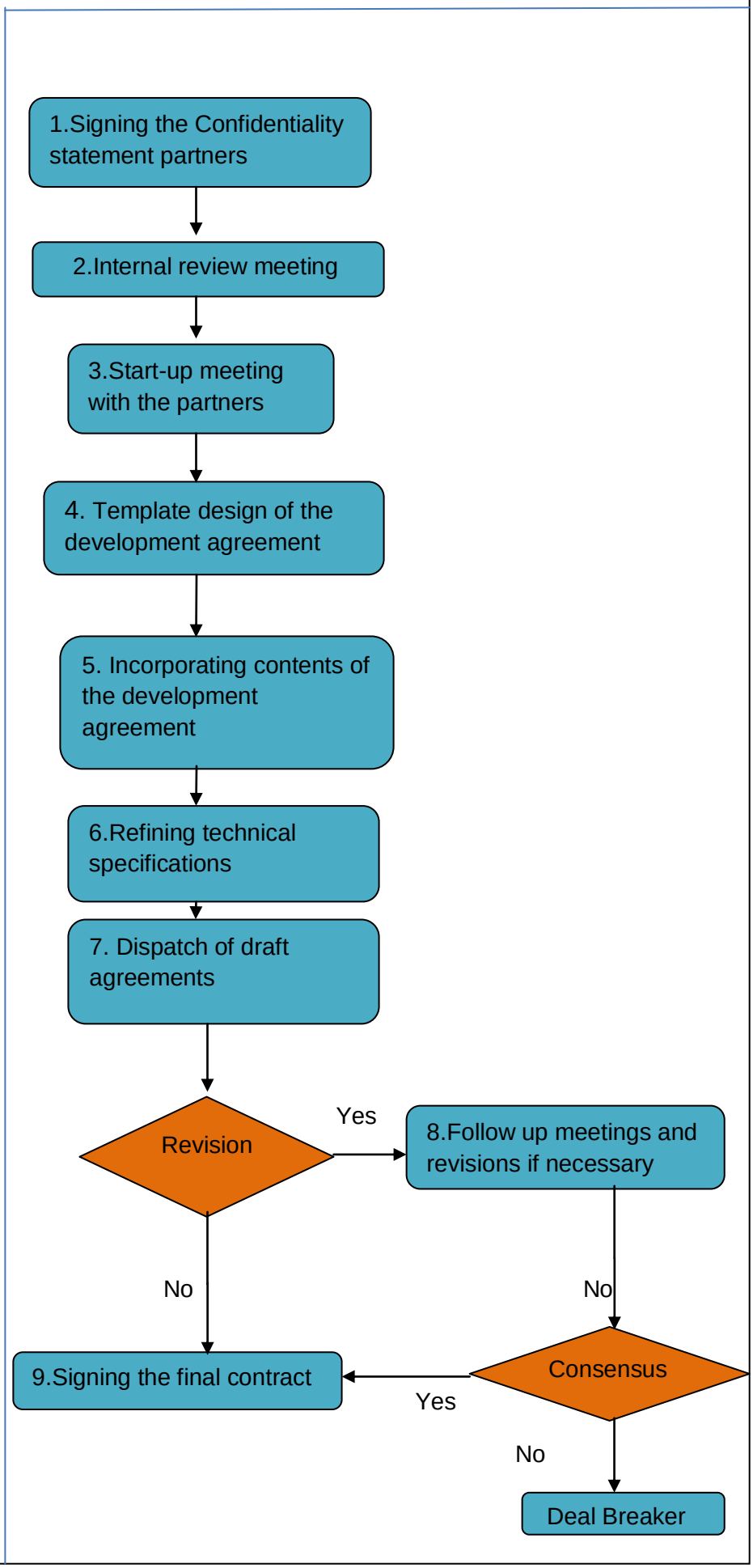
This draft agreement is exchanged among the participants of the collaboration, and several refinements are made, especially the technical part specifications, which is the major part of the developer agreement. For e.g.:, Like in the case study in chapter 3, Company A provides the concept and design for a technological product and Company B has to design a part of the new desired product, the technical specifications and details of the part to be designed by B are shuttled between the companies in the form of draft developer agreement until Company A is satisfied with the design offered by B. There is a great amount of knowledge flowing across organizations during this stage as well as new innovations arising.

After the final refining of the technical requirement the final draft agreements are dispatched to the partners and if revisions are necessary due to conflicting legal opinions of either Companies' lawyers or the IP personnel

If the revisions are acceptable by both parties, then the developer agreement is signed, if not then the collaboration is ended, which is unlikely in most cases.

The contract negotiations process takes about 1 to 4 years to reach a final developer agreement and in some extreme cases even 5 to 6 years.

Figure 9.2: Desired process for contract negotiations



9.4. Feedback: Presentation, and meetings

The process defined in figure 9.3 was presented to 3 project managers, 2 IP Managers and 6 engineers and the common conclusion was that it was representative of the desirable process of contract negotiation process in company A. Along with the meetings with professors of systems engineering and Policy Analysis from TU, Delft, the scope for improvement in the process was identified as the lack of role descriptions in the process. There was a need to identify the task delineation and role definitions of each of the stages in the contract negotiation process, which is incorporated in the Iteration 2 of the process design in chapter 9.5.

9.5. Iteration 2: Contract Negotiations process with role descriptions

The key roles in the negotiation process are the project manager, who is mainly in charge of the technical aspects of the project, and is responsible for delivering the part specifications, and discussing the necessary information with the collaborating external partners

The purchasing department is responsible to make the confidentiality agreement and the cost split regarding the collaboration costs. If an expert negotiator is not present, they also take the role of negotiators in practical matters, concerning matters of patents, licensing, ownership of background and foreground IP involved . But in this project there was an expert negotiator, who also is an IP expert to handle the contract related matters as mentioned hitherto, and potential IP infringements. An expert negotiator in the context of Company A , is a specialist in IP matters as well as negotiation skills, with rich experience in collaborative projects with external partners.

The presence of the expert negotiator, who dealt with the major decisions that led to the final collaboration agreement to be signed without unnecessary delays, is very pivotal in this contract negotiations process for company A

The Figure 9.3 illustrates the role descriptions in the contract negotiations process

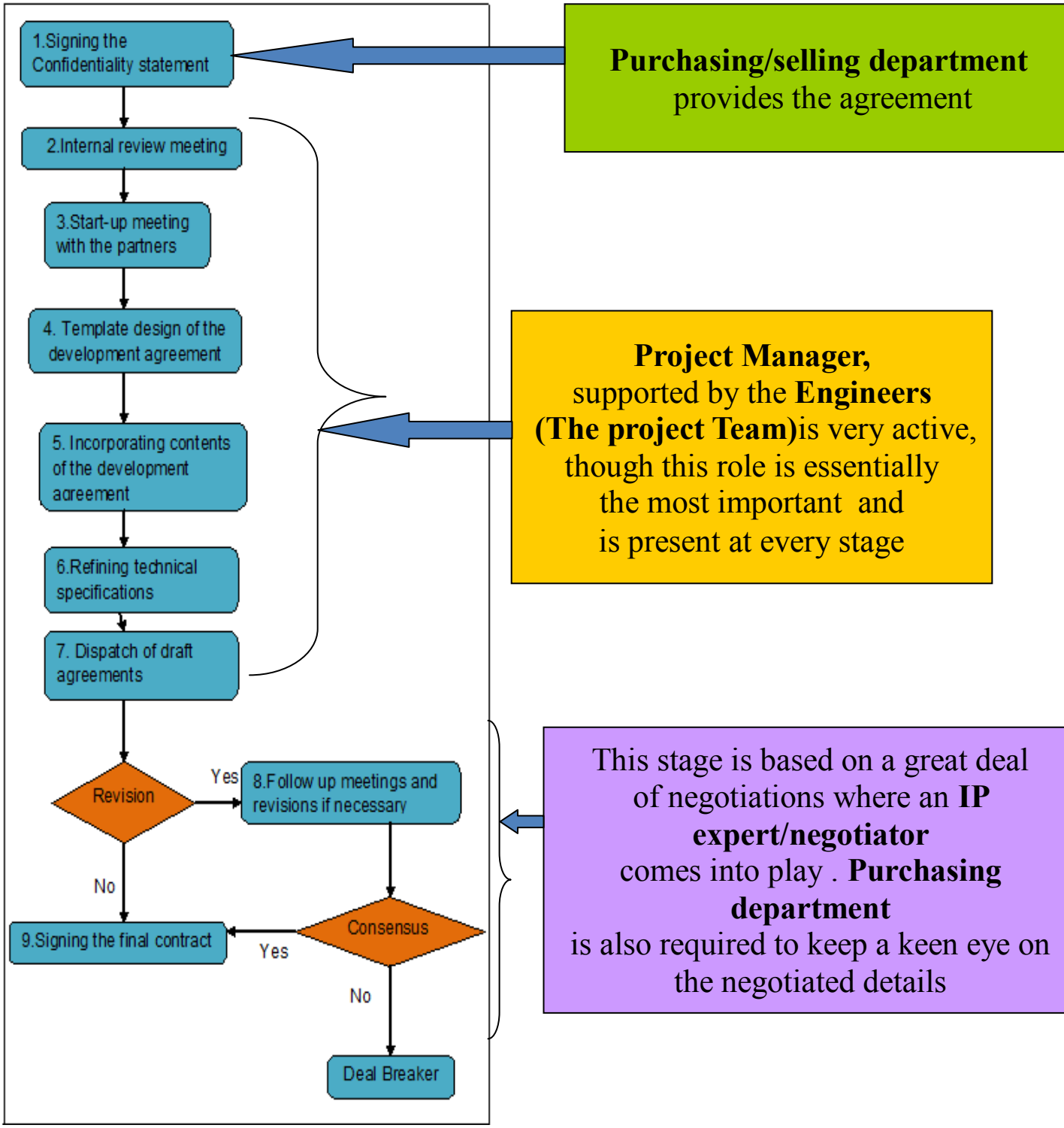


Figure 9.3: Desired contract negotiations process with role descriptions

9.6. Evaluation and Feedback: Workshop on IP Landscape of Company A and Survey

For the development of the final process design, a strong theoretical background supported by the personnel who are the potential users of the design is required to design a robust model. Hence a workshop named as the 'IP Landscape of Company A'was organized with several personnel of various functions who are involved in collaborative projects with external partners

- ***The Participants and schedule of the workshop***

The participants consisted of two senior IP managers, two project managers, one chief project manager, four Engineers and two personnel from the purchasing department. The composition of the workshop was chosen such that all the functions involved in the collaborative projects with external partners were present to express their views and feedback.

The workshop consisted of two sessions, the first being the presentation of the model as described in 9.3 and the scientific analysis regarding some of the shortcomings. The session ended with questions and feedback from the audience. The second session consisted of a group exercise based on the collaborative framework described in the following section

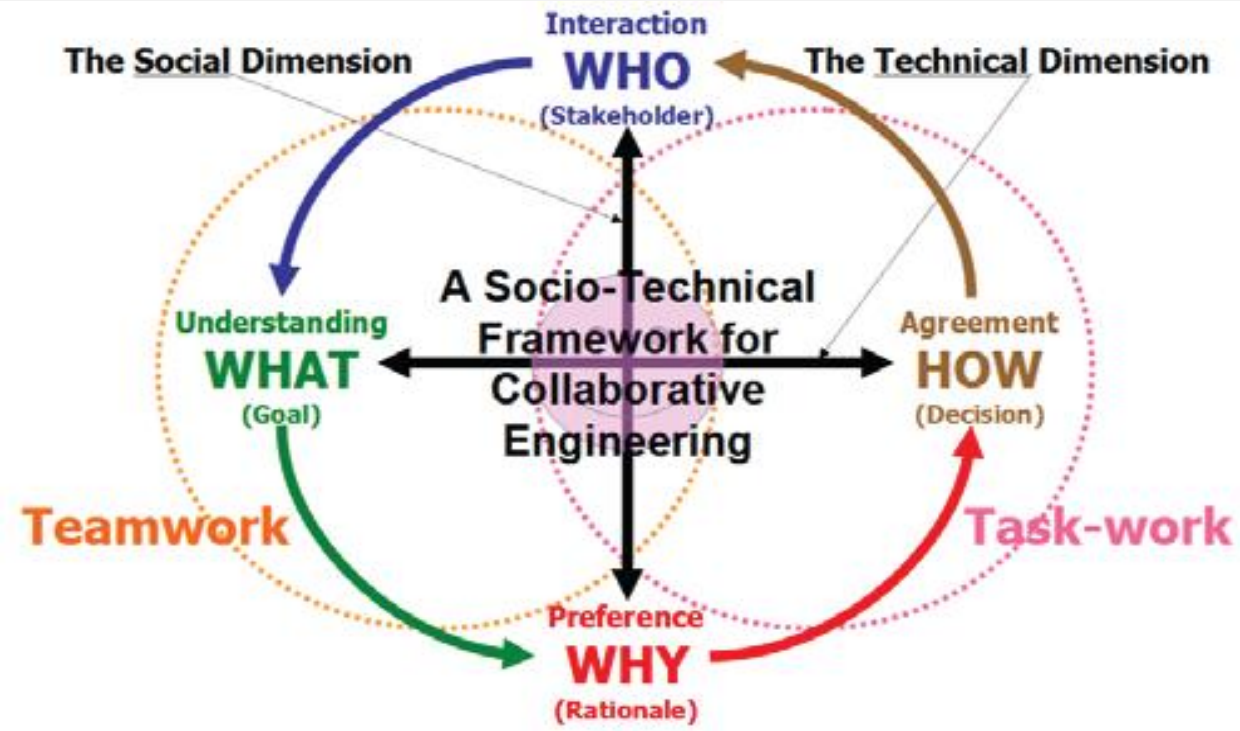
- ***Theoretical base for the workshop***

A scientific analysis was performed on the process design in Figure 9.3, particularly with respect to role definitions and was presented to the audience and a framework to improve the short-comings of the process design was also presented followed by an exercise of idea generation for a good process design for the contract negotiation process. The results of the analysis are as follow

A traditional and common belief in the social sciences (Arrow, 1963)states that "group decision-making is inherently chaotic because there is no rational means to derive a consistent group preference from individual preferences." This led to a popular argument that the only scientifically viable means to achieve a group decision is to rely on a "supra decision maker" who takes members' interests into consideration and makes an autocratic decision for all In this case the expert negotiator and IP Manager who is is sought to solve problems in contract negotiation processes. But resources like him are limited in the company and also this means that the opportunity for engineers to actively participate in making joint decisions and rational agreements, which is the principal benefit of collaborative engineering, would be unilaterally taken away. (Scott & Antonsson, 1996)

"Another major stems misunderstanding by some researchers is that they treat collaborative engineering, in a mathematical sense, as a "cooperative game." Games do not adequately capture all types of engineering collaboration activities in industry practice. Engineers often must work together to reach a single joint decisions in teamwork. Achieving consensual agreements through joint decisions is the hallmark of collaborative engineering, which is not the focus of game research" (Lu, Elamaraghy, Schuh, & Wilhelm, 2007) This brings us to the importance of trust in the contract negotiations, as making consensual agreements require optimal information sharing with a healthy relationship between partners, without having to worry about infringement of intellectual property rights. Also there are is a need to define roles in a collaborative process, and provide adequate information in a simpler manner. (Lu, Elamaraghy, Schuh, & Wilhelm, 2007)created a very comprehensive model for collaboration engineering and I'm planning to adopt the socio technical framework described by him, with some additions for the process model for IPR management during contract negotiations

Figure 9.4; Socio-technical framework for collaboration (Lu, Elamaraghy, Schuh, & Wilhelm, 2007)



The main section of interest in the above diagram is the socio-technical framework for collaboration. The aspects of the framework are chosen and improvised to design a process for IPR management during contract negotiations are as follows:

WHO: Clear role definitions, as to who should be delegated a particular task or activity during the negotiation

WHAT: This deals with optimal information sharing. Guidelines about what information to share with external partners

WHY: Awareness regarding IPR managements. Consequences explained if due diligence isn't adopted

HOW: The execution of such a process with the above aspects while maintaining a trust relationship for a fruitful collaboration. This is relatively a soft issue. But the more tangible examples are providing clear and simple definition of IP jargon and improving the contents of the templates of the MOU statement and contract agreements

These factors alone aren't sufficient to define the process; hence the following two factors are to be taken into consideration for designing a useful process for IPR management

WHERE: Sources of information and support during the contract negotiation process for IP related issue. It could range from supportive documents, which are easily understandable, and easily located or an advice of an expert IP manager or a Purchasing manager.

WHEN: Timing is very essential for discussing the details of the contracts. The optimal stage of the contract negotiation in which the IP issues are to be discussed is very essential for further progress in talks between partners

- ***Execution and feedback of the Workshop***

This results of the analysis as well as the collaborative framework (Figure 9.4) was presented to the audience. There were several feedbacks and suggestion regarding the improvement of the presented design in Figure 9.3. After which the audience were divided into two teams, each team consisting of an IP manager, project manager, purchasing department personnel and engineers. Each of the teams worked on the case study described in chapter 3, to apply the framework suggest in 9.4 to provided the insights about improving the process design of contract negotiations to a comprehensive, structured and informative design by answering the Who, why, what, how, when and where questions during the contract negotiations. The documentation of the responses of the participants is added in Appendix E.

Apart from the feedback received from the workshop, several other meetings with supervisors from TU, Delft were conducted and the feedback received was utilized as a valuable to create a process design that truly influences the identified key factors that affect the contract negotiation process like IP awareness, trust and common understanding.

The inputs gathered in the workshop were incorporated in designing the final process for contract negotiations for collaborative processes, as described in chapter 9.7, which is the third and final iteration of the process design

9.7. Iteration 3: A comprehensive BPMN model for IPR Management for contract negotiations

The final process design for the contract negotiations is based on a BPMN model. The final design is shown in figure consists of the following four stages

1. The Estimation Phase
2. The Preparation Phase
3. The Negotiation Phase
4. The Execution Phase

The complete model is illustrated in figure 9.5

Each of these stages are explained in detail in the subsequent chapters 9.7.2 onwards.

The process for each phase have been designed in the BPMN(Business Process Modelling Notation) notation, and the choice for the notation and the function are briefly explained in chapter 9.7.1

The design of the process in each of these phases will be evaluated in terms of the key factors identified, and also through expert validation. The evaluation will be explained in detailed in the end of this chapter.

9.7.1 An introduction to BPMN notation

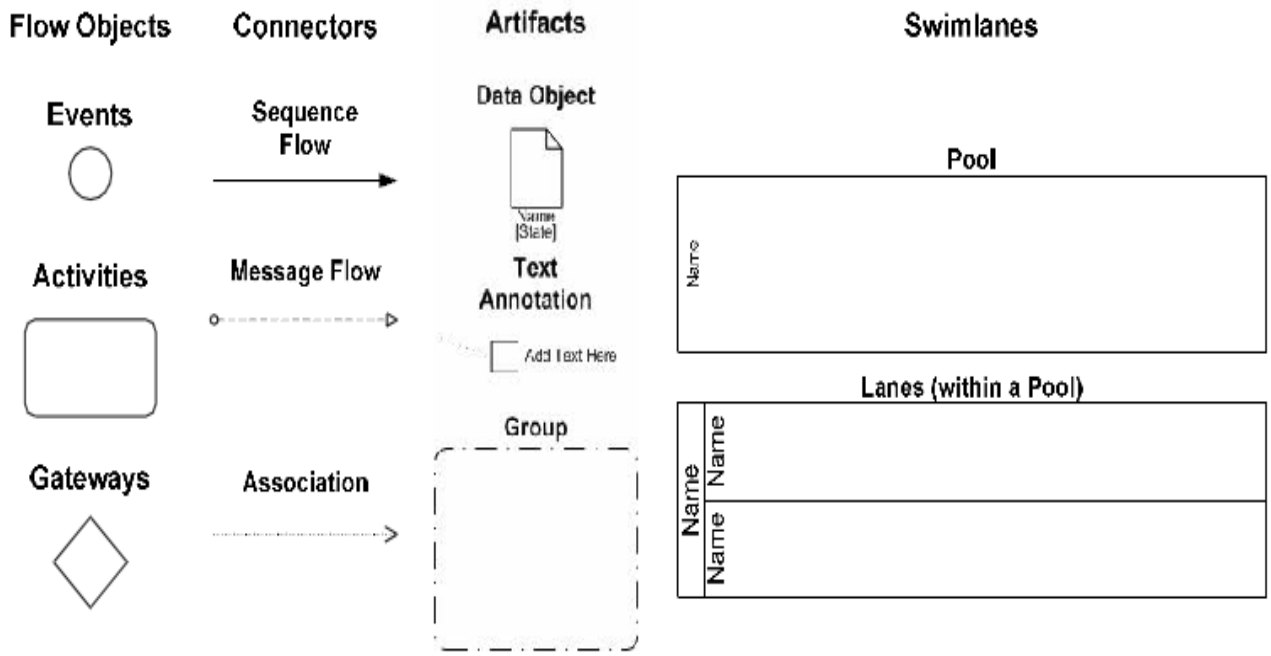


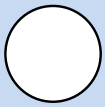
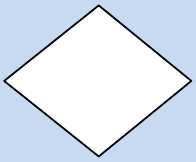
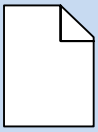
Figure 9.6: Elements of BPMN process

'BPMN'(Business Process Modelling Notation) is a flow-chart based notation for defining business processes. This notation is an agreement between multiple modelling tools vendors, who had their own notations, to use a single notation for the benefit of end-user understand and training. BPMN provides a mechanism to generate an executable Business Process (BPEL) from the business level notation.' (White, 2006)

It is used extensively in the business world and it also accommodates the collaborative processes to be better illustrated in business activities.

Figure 9.6 illustrates the main elements of the bpmn, and the main elements used in the succeeding chapter are explained briefly as described in Figure 9.7

Figure 9.7: BPMN Elements used in process design and their functions (definitions adapted from (White, 2006)***)***

Element	Function
	Start of the process
	End of the process
	**Activity** is a work performed during a business process
	**Gateways** are modeling elements that are used to control sequential decision making points.(Yes or No condition)
	A **Sequence Flow** is used to show the order that activities will be performed in a process
. . . . .	An **Association** is used to associate information flow and data objects with activities and other artifacts
	**Data object** to represent if a data/document is used or generated in before, during or after an activity
	**Pools** represent the activities of major functions/participants in a process

9.7.2 The Estimation Phase

Collaborations with external partners can lead to the generation of high-end technological products, and hence project teams for new product development in companies are eager to collaborate, sometimes with a bit of haste. Collaboration, even intra-organizational is complex posing several challenges like conflicting interests of the participants, ,complex design processes and methodologies, problems in joint implementation and sustained performance assurance etc,. This makes inter-organizational collaboration, which is inhibited by several constraints like information sharing and lack of accountability-free level of trust, make collaboration with external partners doubly complex (Kolfschoten, Piirainen, & Lukosch, 2010).Hence before embarking on a collaboration project, it is essential to evaluate if the collaboration is really necessary or not, and as in many cases if found very necessary, it is all the more important to evaluate and analyze the potential partners that the Company will be associated with in the said project. Thus, this estimation phase is aimed at evaluating the necessity of the collaboration itself, and especially to gain an insight of the reputation, criticality, goals, objectives and the position of the participating potential external partners. The partner analysis, can be marked as a starting point for establishing trust levels and credibility, without major inhibitions , as there is already some overview, if not comprehensive information about the potential partners. The first part of the Estimation Phase is illustrated as a BPMN in figure 9.8

9.7.2.1 Evaluation of the need for collaboration with external partners

The necessity of a collaboration with external partners for a new product development has to be checked, through an extensive patent search as it is important not to reinvent the wheel. This search could be performed by the Engineers using several patent search databases. There are several databases for patent search like the WIPO patent search, Google patent search etc. It is very important for the project team to identify personnel from the IP organization of the company, who are required to support in the issues of IPR Management. The suggestions of the IP personnel during the patent search shall prove to be valuable with respect to the legal characteristics of the patent like the valid jurisdiction, validity, and the way to license it etc.. It has been observed that many project teams in Company A are more confident of dealing with IPR issues with external partners when they have an IP expert to consult with In the current organization of Company A, IP support personnel can be found through organizational charts , or their internal database called violin. If the IP personnel aren't available for consultation, the next option is the purchasing department, who possess a good knowledge about IPR management, only second to the personnel from the IP department. Hence after performing the extensive patent, if there already exists a technology that has been patented similar to the desired product of the project team, then that technology can be licensed form the owner instead of starting a collaborative project. This step also requires the assistance of the IP personnel, as there are aware of the required procedures for acquisition and licensing. On the other hand, if there are no patent matches, or if the licensing proves to be very expensive compared to the estimated collaboration costs, then the engineers should move forward towards conducting an initial potential partner analysis with the support from the Purchasing department.

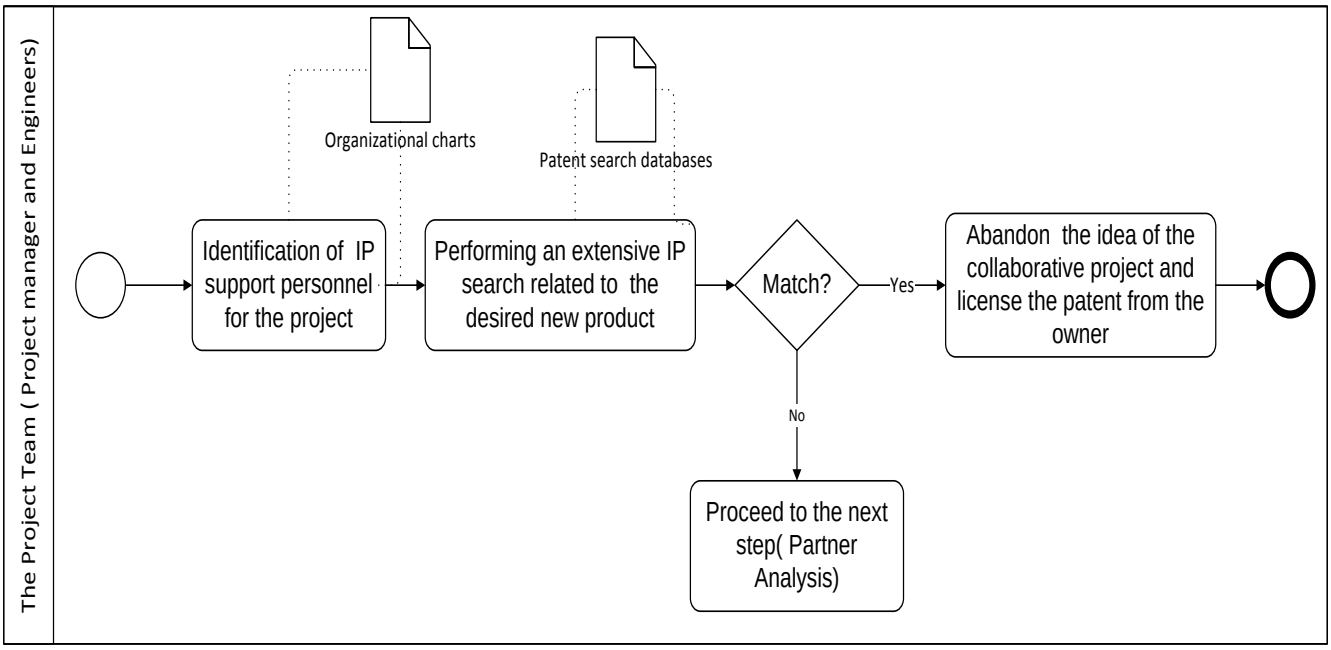


Figure 9.8: Estimation Phase-1: Evaluating the necessity of the collaboration

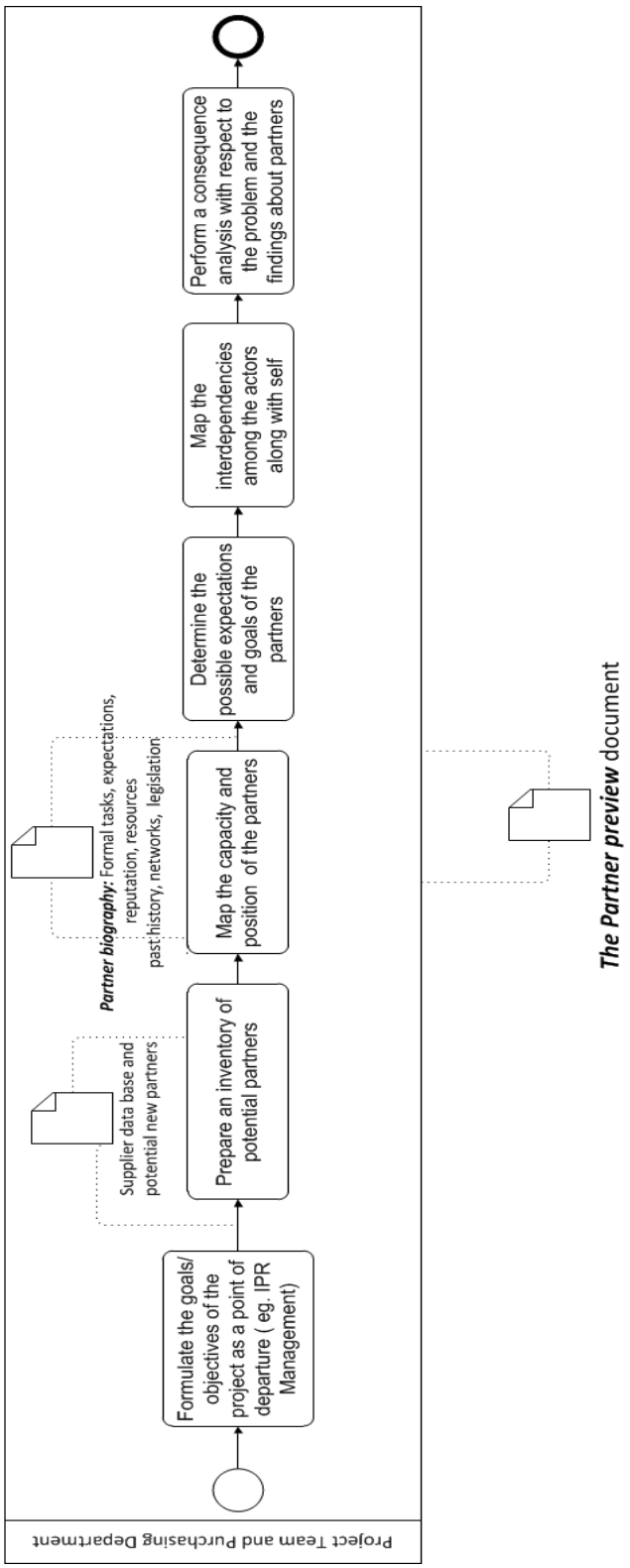
9.7.2.2 The Partner analysis

An actor is a social entity, a person or an organization, able to act on or exert influence on a decision (Enserink, Hermans, Kwakkel, Thissen, Koppenjan.J., & Bots, 2010). Extending this general definition to the participants of an inter-organizational collaboration, each partner has a power, and resource position to influence the contract negotiations. The main problem is the IPR Management during contract negotiations cannot be solved by viewing it only from one perspective (that of Company A), hence a preliminary insight into the potential partner's perspective is much needed. Hence a partner analysis before kick starting they collaborative project provides this preview into the world of external partners.

A step by step process (Enserink, Hermans, Kwakkel, Thissen, Koppenjan.J., & Bots, 2010)to perform such an analysis is briefly illustrated in figure 9.3, adapted to commercial partners as actors. This has to be performed by the Engineers with the knowledge available about external partners form the purchasing department.

The outcome of this partner analysis is a 'Partner preview document' which contains the list of potential partners, their resources, criticality, dependencies and the consequence analysis with respect to the initial problem formulation

Figure 9.9: The Preparation Phase



To explain each step in detail of Figure 9.9

1. **Goal/Problem formulation as a point of departure**

   Partner analysis can appear to be broad and extensive term, with no clear point of reference. Hence the first step of the partner analysis is to kick-start the analysis itself by identifying and formulating a general problem description for which the partner analysis has to be performed. The problem focus of this thesis which is the IPR Management during the contract negotiations can be elaborated in terms of the challenges, past experiences and the expected outcomes for company. The main problem description for the partner analysis would be as follows:

   'How can we co-operate and negotiate with our external partners to achieve a desired technological product while safeguarding our competitive IP advantage?'

2. **Preparation of the inventory of partners**

   The main aim of a joint collaborative project with external partners is to create a desired technological or process solution which can promise high performance, durability, efficiency and adaptability to the existing machines. Hence it is essential to find competent partners that are able to deliver such solutions during a collaboration. To formulate such an inventory list, the supplier databases of purchasing department are very valuable. The different databases available with the purchasing department are categorized as follows

   - *Preferred suppliers' list*: This list contains the partners that have a very good track record with the company. The level of trust with such suppliers is naturally high
   - *Back-up suppliers' list:* If it is not possible to choose the preferred suppliers, the back-up suppliers are an alternative.
   - *Blacklisted suppliers' list:* These are the suppliers that the company doesn't wish to do with business with due to unsuccessful or dissatisfactory collaboration due to many reasons like insufficient capacity, conflicts, poor accordance to cost and time plans, lack of quality in their products/processed, low reliability, trust etc.,

   The suppliers are generally chosen by the purchasing department, but as the engineers are to be associated with these partners all along the collaboration, it is all the more necessary to involve the project team during the partner selection . There is also a possibility to choose new partners, that could be introduced to company A through technological expositions, recommended by existing partners, company presentations etc,

3. **Capacity and Position mapping: Partner Biography**
   The capacity and position mapping of partners refers to the evaluation of partner capabilities, against formal tasks and responsibilities that are required to be fulfilled, which are necessarily the expectations of Company A from the partners. This mapping also takes into account the resources, reputation, possible networks of the partner with competitors, and past history of credibility (if applicable), on a broad basis. Also, this step includes the listing of the possible legislation and the jurisdiction of the court of law for the partners, as an important information that needs to be agreed upon during the contract negotiations. The outcome of this step can be termed as a '*partner biography*', that reveals the available information of the partners, which can be updated along the collaboration process or at the end, and be added to the supplier database to serve as a reference for future projects

4. **Exploring the potential goals and expectations of the external partners**
   It is not sufficient, only to evaluate the expectations of Company A against the capabilities of the external partners, but also to guess the expectations of potential partners, and be prepared for it. A systematic comparison can be made by completing the table in Figure 9.10 and some example situations have been presented in the same, based on the case study, and interviews regarding challenges of IPR management. This step has to be completed by the project team with the advice from IP personnel or the purchasing department, as they have varied experience regarding partner expectations during contract negotiations. It is to be noted that these expectations are speculative based on experience or rational intuition

Partner	Desired Situation/Objective	Existing situation and the gap	Causes	Possible Solutions
Partner 1	Receiving the final supplier contract from company A	Supplier contract is not assured, hence partner 1 is under the constant threat of rejection, which might reflect on their performance and trust levels for future projects	Company A collaborates with more than one partner simultaneously to get the best possible solution and can only award one supplier contract	Compensation for the design and engineering hours regardless of the supplier contract award
Partner 2	Securing as many patents as possible before the collaboration agreement is signed	Conflicts between company A and the partner regarding IP ownership	There is no agreement on the sharing of IP generated during the collaborative venture before an agreement is signed	Discussion about IP issues in the early stages of contract negotiations ,Increasing IP awareness among engineers etc,.
…….				
Partner n				

Figure 9.10: Overview of partner's expectations (table format adapted from (Enserink, Hermans, Kwakkel, Thissen, Koppenjan.J., & Bots, 2010)**)**

5. Interdependency mapping

It is important to analyze the dependency of Company A on the external partners during the collaboration. As discussed in the introduction chapter the biggest challenges of inter-organizational collaboration is the excessive dependency on external partners, who may take a strategic advantage of the situation undesirable to Company A. For example, a partner, on whom company A is heavily dependent on during a collaborative project can demand more compensation or secure more IP on their side, knowing that they cannot be replaced. Hence it is very crucial to assess the interdependency with the partners, to be prepared to avoid or manage the unfair advantage of dependency or have alternatives. This step is also very useful during the contract negotiations, regarding the approach to be taken towards critical and non-critical actors. This can help Company A to spend more time on the critical actors and focus less about satisfying the non-critical actors.

	Limited Importance	Great Importance
Limited options to replace	Medium dependency	High dependency
Can Easily be replaced	Limited dependency	Medium dependency

Figure 9.11: Resource dependency (Hanf & Scharpf, 1978)

Figures 9.11 illustrates a matrix to check the dependency with the partners and using which a partner can be judged as critical or nor by completing the table in the Figure 9.12. The project team has to fill in the speculative resources of the partners and assess the extent of replaceable nature of the partners, combining Figures 9.11 and 9.12

Partners	Important Resources/Competencies	Replaceable?	Dependency? Limited, Medium or High	Critical actor? Yes/No

Figure 9.12: Over-view table to determine critical and non-critical partners (Enserink, Hermans, Kwakkel, Thissen, Koppenjan.J., & Bots, 2010)

After assessing the criticality and dependability of partners, a consequence analysis has to be performed based on potential opportunities and threats in the collaboration

6. **Consequence analysis**

Based on the previous steps, a list of potential opportunities and threats emulating from the collaboration with each partner should be formulated. These threats and opportunities can be identified with respect to the problem formulation, which would be IPR management. The potential conflict situations(discussed in chapter 7) should be discussed and the consequences if a partner defects either with IP related matter or otherwise, it will not be a rude shock , if there is already an insight about such situations and if the project team is prepared to face them.

9.7.3. The Preparation Phase

The project team collaborating with external partners, before beginning to interact with external partners should have a good understanding about the working and dynamics of a contract negotiation process and the main issue of IPR Management. A initial understanding of the contract structure, the contents, is not entirely sufficient to deal with IP issues (discussed in chapter 7). The dynamics of IP generation during the joint venture, even before the contract is signed, and the nature of ownership of such an IP have to be understood, before starting a full-scale negotiation with the partners. Firstly, the concepts of the various types of IP and their ownership details are very essential as a beginning for a good IPR Management. As important as it is to estimate the resources of the external partners, it is all the more crucial to have an understanding of the resources of one self, to gain a better insight about their importance, and to protect and acquire the IP that rightfully belongs to the Company.

The most important aspect that needs to be understood by the engineers about IP is its categorization- according to ownership and circumstances of development. It is divided in to three main categories termed as Background IP, Foreground IP, and Side ground IP and a not a very widely used addition to these categories is called Post ground IP. These definitions are presented in Figure 9.13

Type of IP Knowledge	Description
Background Knowledge	Existing knowledge put into the collaboration
Foreground Knowledge	Knowledge created as an outcome of the collaboration
Side Ground Knowledge	Knowledge relevant to the collaboration developed in-house in parallel to the collaboration
Post Ground Knowledge	Knowledge relevant to the collaboration developed in-house by the firm after the collaboration (formally) finished

Figure 9.13: Types of knowledge relevant to R&D Collaborations (Bogers, 2011)

Figure 9.14 explains these terms of knowledge in a more illustrated fashion and their position in the innovation process. The framework also serves as a reference point for engineers in Company A, to identify their core competencies and draw project specific boundaries for sharing crucial information sharing

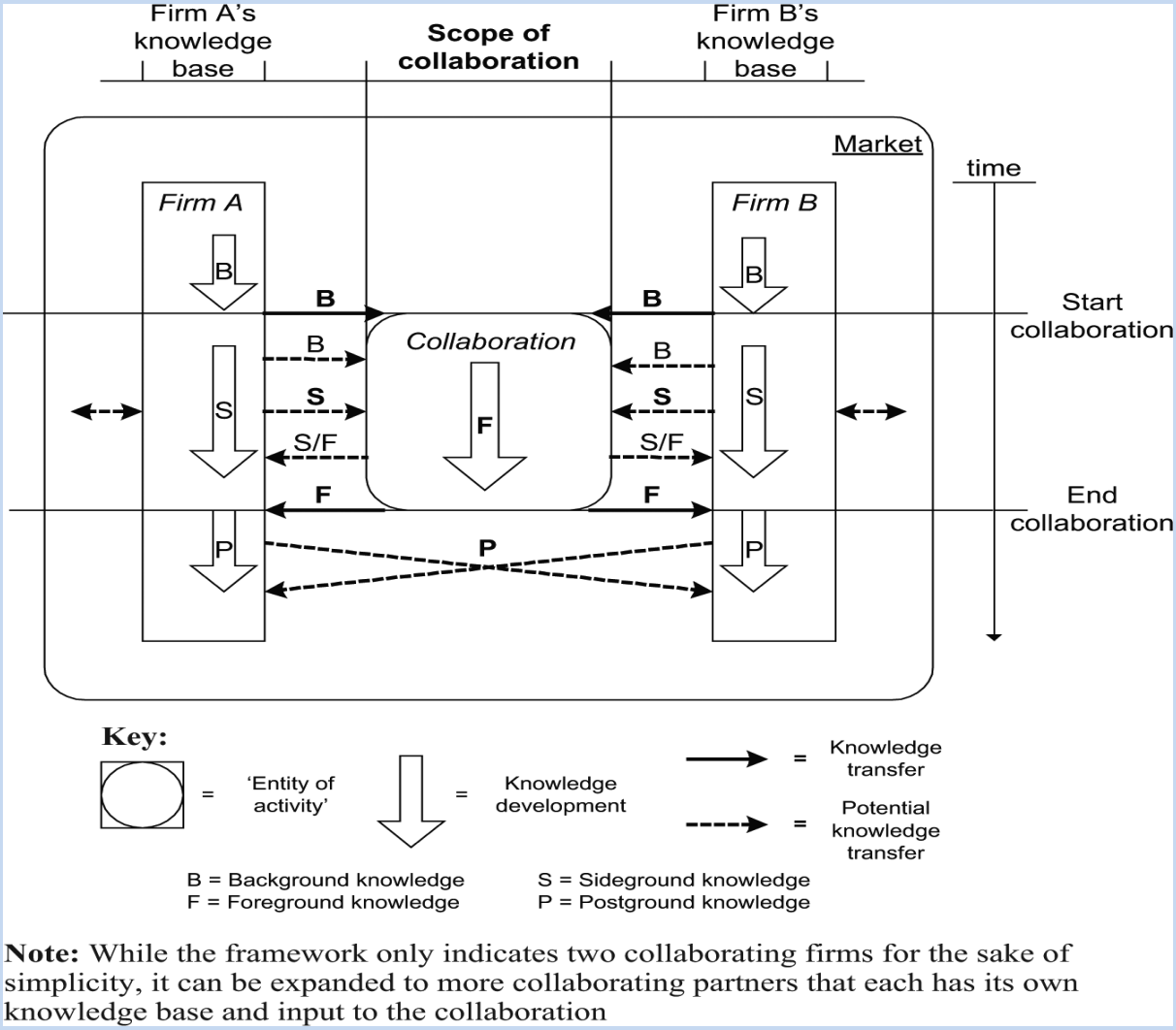


Figure 9.14: Framework to illustrate the knowledge generation and their position in an open innovation process (Bogers, 2011)

A business process model for the preparation phase is designed as shown in figure 8.15. The model explains the various steps that are recommended for the engineers and project manager of the project team to take before they enter into negotiations with the external partners. The first step in the process is to have internal team meetings to identify the core competencies of the company that may have an association with the scope of the knowledge sharing in the collaborative process. With that as a reference, a broad boundary has to be drawn about knowledge sharing, specific to the collaborative project. With the advice of the IP personnel or the chosen IP support member from purchasing department, IP assets of the company that are tradable, which could be of interest to the collaborating partners can be identified, as incentives for reaching a desirable IP sharing situation during the contract negotiations process. Since the knowledge of the IP personnel is very important to identify

and set information boundaries regarding IP during contract negotiations, the project team should maintain constant communication with them, and allot sufficient time and resources in the project plan to accommodate the preparations for the negotiations. This can also help the engineers to gain insight about the matters related to IP, and the dependence on the IP personnel can be lowered in the future collaborative projects.

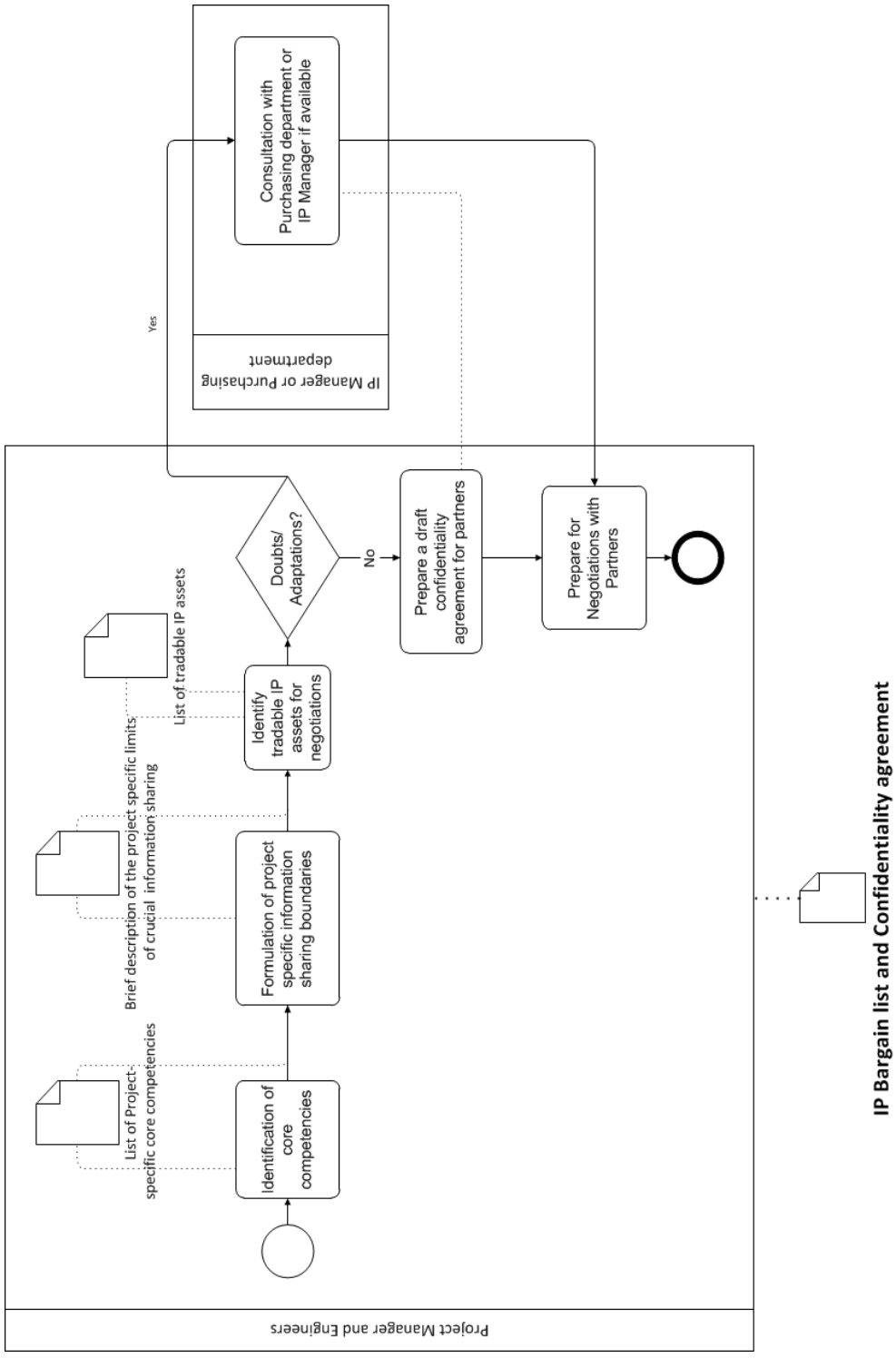
In many collaborative projects in Company A, negotiations with external partners begin without any formal agreement . In many cases, the project teams begins a dialogue about their requirements to potential partners, even before consulting the purchasing department or the IP personnel, there by risking crucial information transfer without record and no formal documentation. This leads to unchecked leakages of IP, though the project team has the best interests of the company while doing so. Hence it is important to kick-start the collaboration even with a potential partner, with a confidentiality statement or a memorandum of understanding to have a legal backing for any unwarranted IP leakage. This can be done by signing a memorandum of understanding with the chosen partners, before discussing the main details of the collaborative project.

The memorandum of understanding consists of the following elements:

- The objective of the collaboration
- Names of the signee parties
- Definition of confidential information(e.g., patents, designs, company visits, information-oral or textual, manual etc)
- Terms of non-disclosure
- Terms of non-applicability
- Agreement regarding the court of law

This statement needs is generally drafted by the purchasing department and the project team should consult the purchasing department well in advance before starting a dialogue with external partners. The project team can also use this statement as a formal opening for the contract negotiations process. Thus it can become a norm to start the negotiations only after such a statement is signed. Though some engineers rightly argue that trust is more important than agreements, it is an universal truth that competing business entities cannot survive without due diligence though they are willing to embrace the need for trust. Another important word of caution is to have an occasional if not continual communication with the lawyers, preferable through the IP personnel. The lawyers need to be aware of the contents of all the legal documents, in order to avoid unwanted changes during the end of the negotiation process. This issue should be communicated to the partners for them to communicate with their lawyers to avoid unwanted queries from both sides, when the collaboration agreement is ready to be signed

Figure 9.15: Preparation Phase



9.7.4. The Negotiation Phase

Contract negotiations in a joint venture are of mixed-motive nature, containing two dimensions- the cooperative dimension and the competitive dimension. Though it appears to be paradoxical, companies need to cooperate to achieve the best possible technological solution and compete at the same time by protecting their key knowledge and core competencies (Walton & McKersie, 1965)and which is the key challenge of a successful IPR Management .The main components of complex integrative transactional negotiations, which are representative of the contract negotiations with external partners.

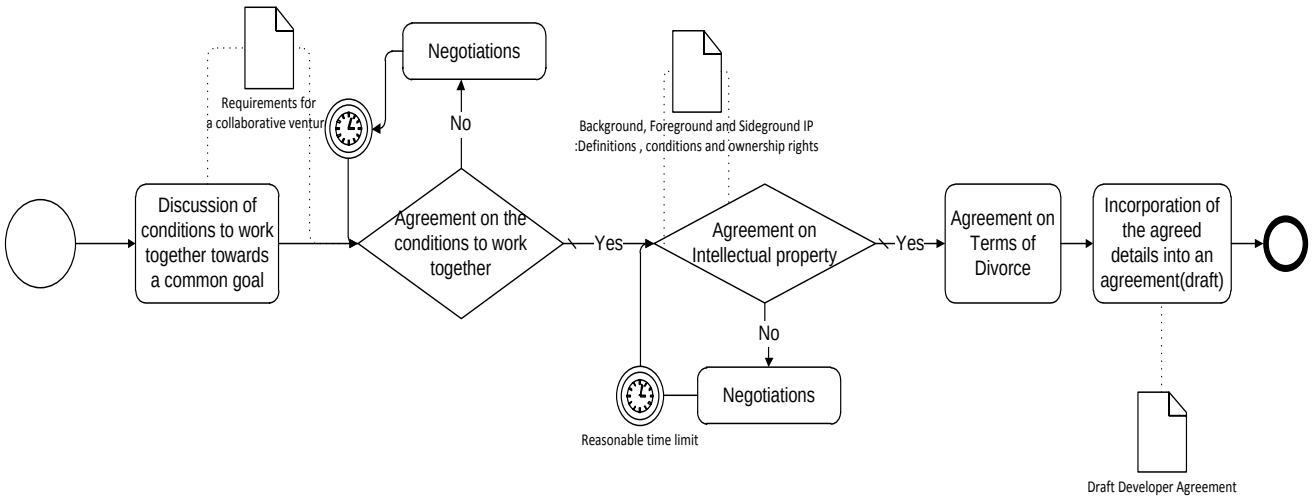


Figure9.16: The Negotiation Phase

The Negotiations phase is the most important part of the contract negotiations process. It involves about the conditions to work together in order to gain a common understanding among partners regarding each other's expectations and fears. The process to be followed after this stage is described in figure 8.16. The negotiation phase should reach an agreement on sharing the IP. Interaction of the project teams of the collaborating partners and

se which shapes the final developer agreement. This phase is also very important as building long-term trust relationship. The Negotiation phase should start with a dialogue of common understanding with either parties agreeing on the conditions to work together. The documents generated in the estimation and preparation phase like the partner biography and the bargain list has to be put to good use for conflict prediction and providing incentives to push forward a proposition. In addition, the golden rules for negotiations can be referred to in chapter 7. The final step of the negotiation stage is to agree on the terms of divorce, which is the list of consequences if either parties choose to end the collaboration, after which a draft developer agreement is generated, which has to be circulated among the partners for final approval.

9.7.5 The Execution Phase

The last but not the least of the contract negotiation process is the ratification of the collaboration agreement by both the parties, as a contract is not valid if the parties don't sign it. The personnel authorise to sign such a contract has to be identified and should be informed about the contents well in advance in order to avoid delays in the execution process. This ratification should be performed in an environment of trust and common understanding, so that the partners can have a successful long standing partnership. If all the steps in the previous stages are followed, then the execution process will become a mere formality.

9.8 Evaluation of the BPMN model and Conclusion

The BPMN model was designed with the various inputs received from the personnel of Company A as well as the best practices in each of the stages defined derived from an extensive literature study. The process can be evaluated against the key factors identified in Chapter 4 which are IP awareness, trust and common understanding and Due diligence and the effects on each of these factors can be seen as an answer to the research sub questions in Chapter 9.

The process model was submitted to company A, and feedback was received from a Chief project manager and three engineers who participated in the workshop organized for the feedback of the process design iteration 2. The following were the main points of the feedback regarding the process design as well as the entire thesis are as follows

- ✓ The model is informative and easy to understand and follow
- ✓ The suggestions provided regarding visible organizational means is very essential to get the IP support for collaborative projects
- ✓ The role of purchasing department has been highlighted, which is otherwise not considered much by some project team members
- ✓ The chapter on organizational structure of IP can be utilized as an input for the company A's IP strategy
- ✓ The distinction between four different types of IP knowledge in figure 9.14 was very helpful to give a better understanding of the different aspects which needs to be captured in the development agreement.
- ✓ It is a good process to follow and it would help build trust among partners since the fear of having missed something important is eliminated.
- ✓ It helps to increase IP awareness among the project team members

In addition to the various positive comments, the feedback also provided some suggestions for improvement such as the explanation of various patent bargaining strategies, guidelines for determining the proposed knowledge sharing boundaries in the process design section and some domain specific requirements for IPR management, as every project is unique in its own way.

After analysing the evaluation results it can be concluded that the objectives of the master thesis have been reached, as the process is judged as informative, simple and helps to increase trust and IP awareness among the project team members. With that notes, the master thesis is concluded in a comprehensive way in the following chapter 10.

10. Conclusion

The concluding chapter of thesis is dedicated to explain the extent of congruence of the research claims to the final results produced .This is done by explaining the realization of the research framework proposed, stating the deliverables generated as promised at the beginning of the research, providing answers to the stated research questions, and explaining the practical and scientific contribution of the thesis. After which recommendations regarding IPR management are provided to company A, based on the achieved results. In addition, since no research work is perfectly complete, due to a plethora of constraints, certain reflections about the work are made paving way for future work to be done to steer the further improvements and continuations to be made

The main research question of the thesis is :

How can Intellectual Property Rights be managed during contract negotiations with external partners, in a conflicting environment of cooperation and competition to achieve a desired technological product while safeguarding one's IP advantage?'

The main research question cannot be answered as a one shot operation, hence it is divided in several sub questions, and the research path followed to realize the answer of the question. To summarize the 'how' part of the main research question , a process design for contract negotiations has been developed, summarized as a brief illustration in Figure 10.1, which is explained in detail in chapter 9 and the outputs of the process is described further in the answers to the sub questions in the succeeding pages. This process design has been improved twice, through the feedback received from the Company A. The answer to the main research question is also supplemented by suggesting a set of recommendations to Company A at the end of the conclusion chapter

The path towards designing the said process is based on the research framework known as 'Design Science' approach, as mentioned in chapter 2. The figure 10.1 describes the realization of the research framework for the master thesis. The knowledge base which contains the best practices of IPR Management and the related challenges, from extensive literary search is contrasted against the Environmental Base, which is the current position of IPR Management in the company, and when these two bases are confronted business needs arise. For company, the business need is identified as IPR Management for collaborative projects with external partners, for which the research is dedicated to design a process model, which is iterated twice adapting feedback from the Company A. Also a set of recommendations have been suggested to Company A regarding IPR management in collaborative project

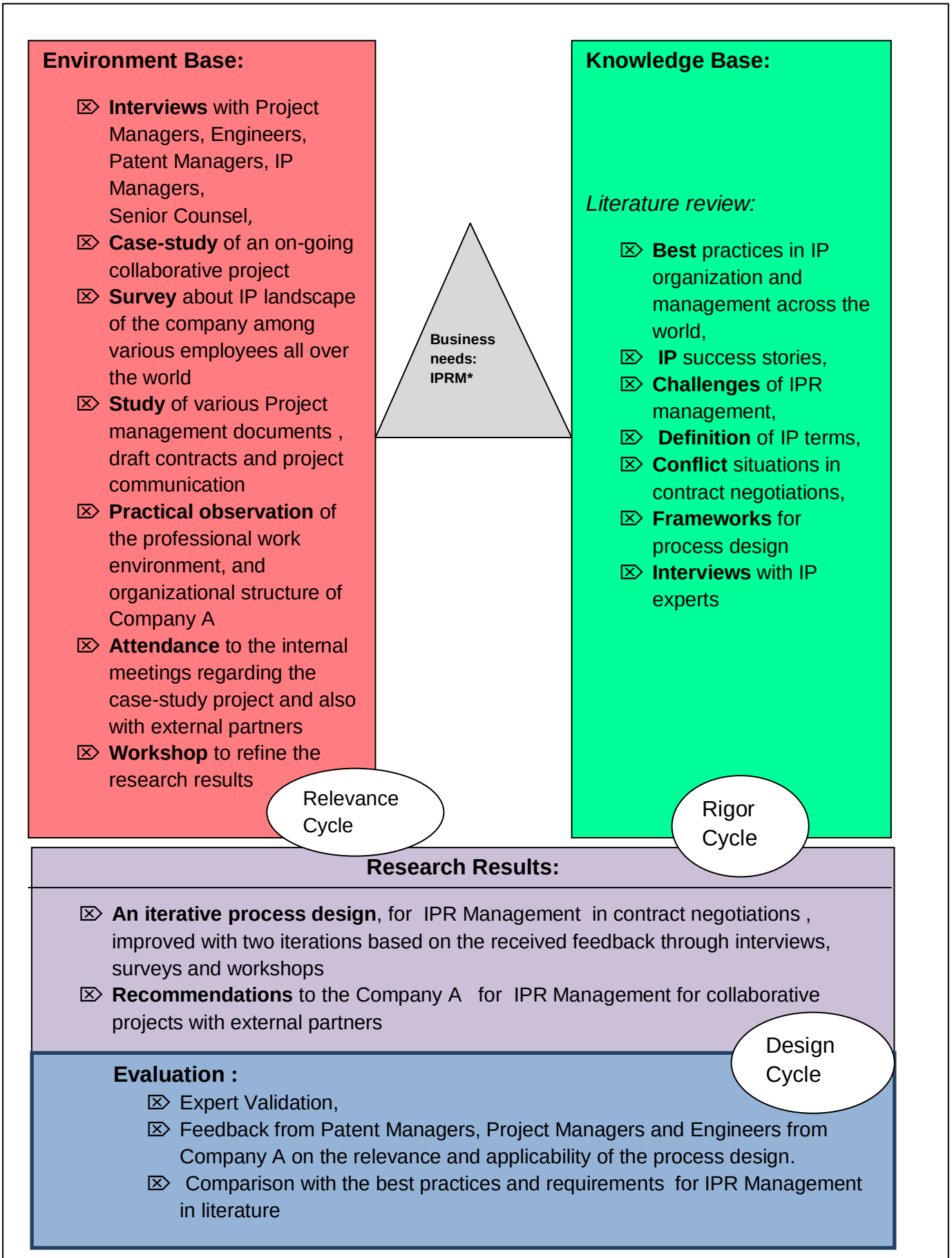


Figure 10.1: Realization of the Design Science Cycles Framework

**** IPRM= IPR Management***

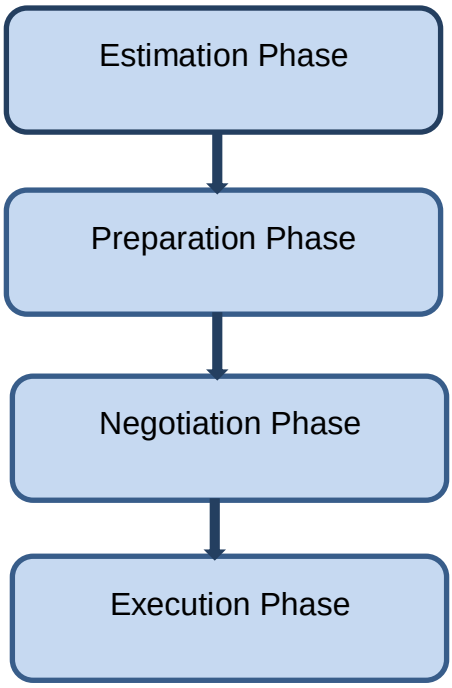


Figure 10.2: The process design stages

1. ***What is the current process followed by Company A with external partners for the contract negotiations towards reaching a collaboration agreement for new product development?***

Though Company A has a standard procedure for project management and requires the performance of an 'IP check' during the initiation of projects with external partners, it doesn't have a standardized procedure to follow for performing the same durin contract negotiations. But as in some collaborative projects, the process followed in figure 9.2 is followed in certain collaborative projects in company A and is considered the apt representation of what is expected to be followed by all collaborative projects that have external partners

2. ***What are the challenges and gaps in the process followed by Company A***

The major challenge of the current procedure for contract negotiations followed by Company A is that, it is not standardized, and several due diligence measures are ignored in many projects before contract negotiations. Though, the company A has a standardized procedure for project management, and there are several gates need to be passed and of one of which is called the IP check, in almost every stage of the project management gates. But the procedure for IP check isn't well defined; hence several project members interpret it in several different ways, and in many cases even ignore it.

Hence the two major problems s due to the lack of a standard procedure are as follows:

i. Risk of leakage of propriety knowledge and no formal method to keep track of such an unwarranted information flow.

ii. The lack of a standard procedure makes it very complicated if there is a change of the project team, to take over the contract negotiations, which happened in several projects in company A.

3. What are the key factors- organizational, social, and behavioural or otherwise, that affect the contract negotiations among collaborating partners?

- ✓ ***Organizational key factors : IP organization of the company and IP awareness***

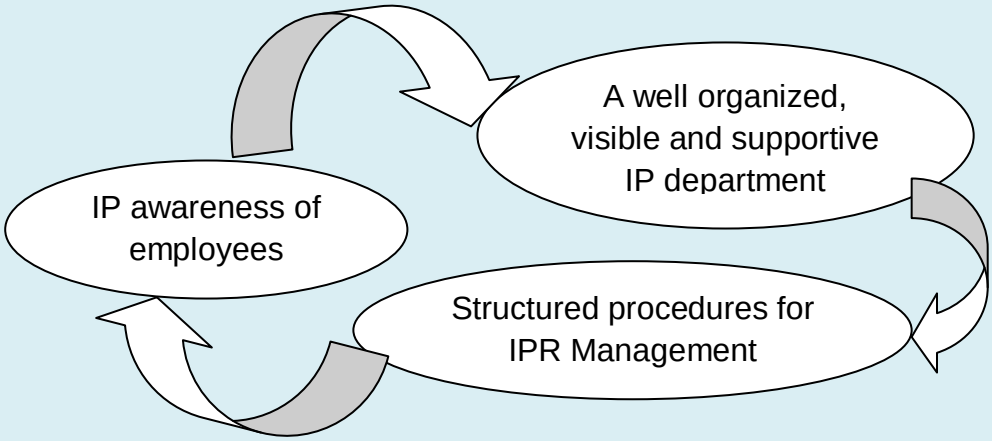


Figure 10.3: Organizational key factors and their relationship

The IP organization of Company A is still in the nascent stages of development. In the recent years, there were a series of organizational changes in the Company A before which the IP organization was limited only to patent managers, and several IP issues were tacked by the purchasing department. After introducing a dedicated IP section, the involvement of the purchasing department has been diluted, on the other hand several employees are unaware of the existence of IP personnel and how to utilize their services, as the organization is bottom up (figure 6.1). Hence the support from the IP department for the project team is largely unavailable to the lack of visible organizational means to reach it. This largely influences the IP awareness among employees. As explained in the brief illustration in Figure 10.3, a visible, supportive and well functioning IP department will be instrumental in creating standard procedures and support structure for IPR management for the project teams not only for contract negotiations but also all along the project development and execution, hence increasing the IP awareness of the employees. And if the project team employees, gain experience regarding matters of IPR management, they can be a great asset for the IP organization as their technical knowledge can largely supplement the expertise of the IP department. In companies with successful IP strategies, employees are job-rotated to IP department to increase the importance and awareness if IPR management and bring in the technical expertise required in the IP department in matters like patent search and opinion about new IP acquisitions.

- ✓ ***Social and behavioural key factors: Trust, common understanding , due diligence and negotiations***

Trust and common understanding with collaborating external partners are not only important for successful collaboration but are the prerequisites to kick-start a functional joint-venture. The importance of these factors was repeatedly stressed by all employees of varying cadres and responsibilities sin the organization, during interviews, surveys and workshops. There are several social and behavioural influences the trust and common understanding with external partners, the main ones being the past history. When a company worked with an external partner over several projects in the past, naturally the trust level for such partners is high. The globalization of today's technology is prompting companies to choose external partners from all over the world for competence and cost reasons. The cultural differences due to such non-local partners can affect trust and common understanding. A preliminary knowledge about the resources and capacity of potential partners and the consequence analysis of collaborating with them can affect the level of trust with them. Figure 10.4 summarizes the relationships of various social and behavioural factors to achieve a successful collaboration, with contract negotiations as a beginning.

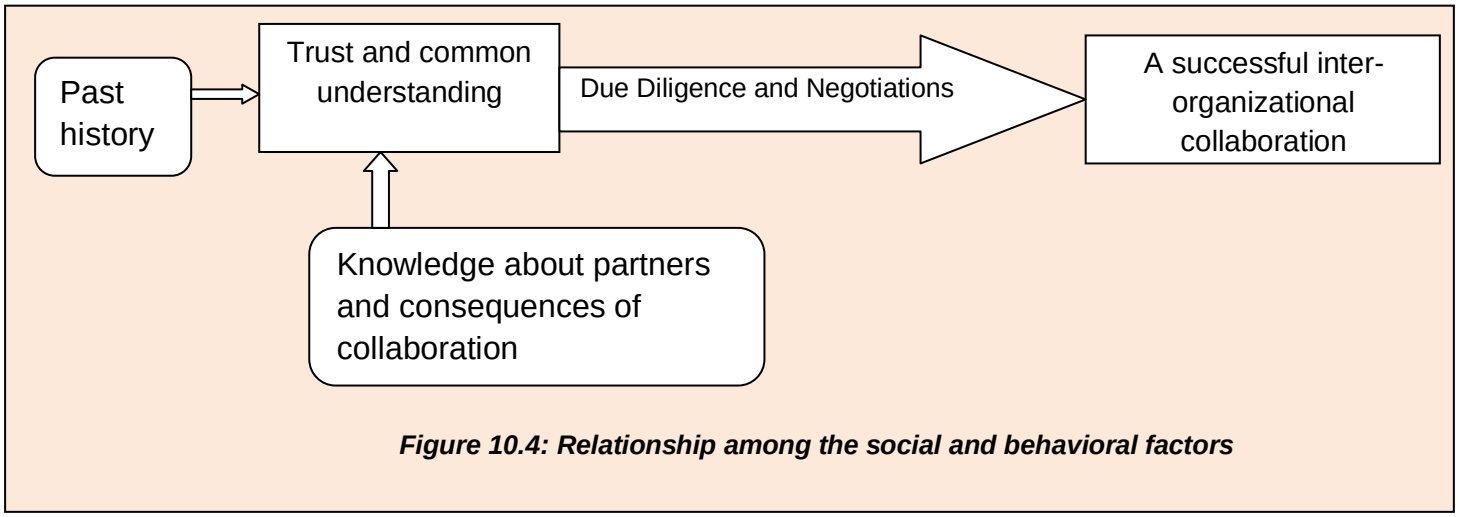


Figure 10.4: Relationship among the social and behavioral factors

Though trust and common understanding are very crucial, they have to be practiced while ensuring due diligence. Hence this brings the confliction situation of cooperation and competition at the same time. But this can be tackled through effective negotiations. Negotiations skills are largely behavioural, but with sufficient training and practice they can be inculcated in the project team members that share a dialogue with external partners, even in the absence of an expert negotiator.

4. ***How to enable unwarranted IP leakage, while creating a nurturing platform for new product development, during information sharing sessions consisting of engineers and the project teams of either partner?***

&

5. ***How to inculcate trust and common understanding in an environment constrained by Intellectual Property Protection?***

The research sub questions 4 and 5 can be answered together as the answers to them involve a process design explained in chapter 9. The process for contract negotiations has been divided into 4 stages- the estimation, preparation, negotiation and execution stages. The table in figure below summarizes the results of each of these stages with respect to the outputs generated in each phase, and the remarks against each of the stages explain how optimal information sharing, IP awareness, trust and common understanding are achieves. The table also states the key factors in IPR management during contract negotiations that are positively affected after each phase of the process.

Phase	**Output**	**Remarks**	**Key factors affected**
Estimation Phase	A partner preview document and Identification of IP support personnel	Contains a list of potential partners, with the their resources and capacities mapped and a preliminary assessment of the level of dependency on them, past history, and a consequence analysis with respect to IPR issues. Also in this phase an IP support personal is identified for further advice to the project team	Due Diligence, Trust
Preparation Phase	IP Bargain list, Confidentiality agreement	The preliminary boundary conditions for information exchange are set which could be modified with the advice of the IP personnel, Tradable IP assets are identified for negotiation purposes and a confidentially agreement is drafted to mark a formal kick-start of the negotiations process	Due Diligence, Trust, IP awareness
Negotiation Phase	Agreement about IP sharing , contract structure and contents	Long term trust building, conflict reduction, sustainable supplier relationship, clear understanding of IP sharing	Common understanding, Due diligence
Execution Phase	A ratified final collaboration agreement	A kick-start towards a successful collaboration	Common understanding and Trust

Figure 10.5: The outcomes of various process design phases

Based on the conclusions, the following recommendations are made for the company A

10.1. Recommendations for IPR Management for collaborative projects with external partners

- The Organizational structure of Company A has to be made visible, supportive and top-down in nature, with the involvement of at least few high level administrative personnel
- The IP awareness among Engineers has to be increased with training programs, IP Coaches, workshops and job rotation
- The importance of trust and common understanding with due diligence has to be emphasized heavily among the project team members involved in collaborative projects with external partners and they should be trained in negotiation skills
- Project plans should be modified to allot specific time and resources for IPR Management during for the contract negotiations, and the documentation of the process has to be standardized , in order to simplify the task for a new project team that takes over the project.

10.2. Relevance to Industry

Though the research was performed predominantly, considering the business needs of Company, the results generated can be generalized. This is because Company is one of the largest OEMs (Original Equipment Manufacturer) and the personnel of the company A, who provided inputs for the master thesis have been involved in various collaborative projects with several mechanical, automotive, electrical, electronic and hydraulic companies across Europe, North America and Asia. Hence the evaluation of the process design performed by the engineers of company A to be easy to follow and useful for collaboration, can be speculated that it wouldn't be too different for other industry personnel as well.

The challenges, and knowledge gaps presented in the IPR management, could be generalized to European manufacturing industry, according to the opinion of an advisor from the World intellectual Property Organization, who opined that mechanical industries are getting complex with the addition of new technology, and in order to protect their core competence should adopt efficient IP strategies. This fact is strengthened by the study of (Granstrand, 2000) who studied that Western companies have much to learn regarding IPR management, especially from the Japanese who have perfected their IP division right from 90's. The study also states that especially European companies could face a risk of IP infringement, if they extend their outsourcing from manufacturing with research with partners from economies that offer cheaper areas of operation.

The process design itself is designed using several state-of-the art techniques from a variety of literature regarding IPR management and collaboration. The various challenges identified in company A were also evident from some sources in the literature, and the knowledge gaps in certain areas like the IP organization in corporate structure were clearly displayed for the whole of Western industry by a study done by (Granstrand, 2000). Hence though it cannot be proved through real application, due to constraints of time and scope of the research, it can be assumed that the process design is still relevant to similar industries such as Company A.

10.3. Future Outlook

The master thesis was performed in accordance to the objectives stated in the second chapter. But in retrospect of the five months of the master thesis there few pointers that could've added extra value to the research performed. They are as follows

- There was no consistent time line available to assess the duration of the contract negotiations, hence was difficult to provide the time component for the proposed process design
- As the contract negotiations take at least an year or two to reach the final contract, there was no real platform to test the process design within the thesis time frame of five months
- The research was performed only from the perspective of company A, similar studies on the partner's side could've improved the understanding of the overall dynamics of the contract negotiations, as collaboration involves more than one actor.
- The involvement of the lawyers in this research was very limited, hence their opinion couldn't be added to the design as desired.

Though these pointers are just a representation of the universal fact that there is always room for improvement in research, if there are additional time, resources and opportunities available. Hence they can be employed as suggestion for future research work.

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Appendix A: The IP landscape at a glance: A short questionnaire

1. What is your role in Volvo (Project manager, Engineer, Sr. Manager etc.)?

2. Which of the following terms do you associate with Intellectual Property (IP)?

- ☐ Company name
- ☐ Employee Identification card
- ☐ Patents
- ☐ Reputation and good will
- ☐ Creative expression

3. Please add more terms that you think are related to the Intellectual Property of the company

4. Were you involved in collaborative projects with external partners/suppliers?

- ○ Yes
- ○ No

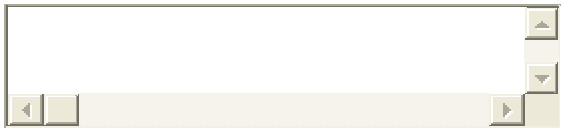
5. Do you have a clear understanding of the company's IP organization?

- Yes
- No

6. Do you know where to find information about IP related issues during contract negotiations with external partners?

- Yes
- No

7. If yes, name your source.
If no, where would you ideally like to find it?



8. Do you feel that Intellectual Property knowledge corresponds to complicated legal jargon?

- Yes
- No
- Silly question, I think they are two different things

9. Do you always perform the patent check before signing agreements with external partners?

- Yes, always
- Yes, but depending on the magnitude of the project and risk involved
- No, provided the partners have a good history with us

- It is time consuming, hence I generally try to avoid it as much as I can
- Never did it
- I don't know what you are talking about

10. Who do you think should be involved with the Intellectual Property clearance function during contract negotiations?

- Project Manager
- Purchasing Department
- Patent manager(limited)
- IP Manager(limited)
- Lawyers(limited)
- Others, please mention

11. Are you aware of (most of the) the potential conflicts/losses that could occur with external partners if the concept isn't well protected?

- I know there could be conflicts, but not sure about the reasons
- I think it is not a part of my job description
- I deal with technical problems, hence it is too stressful for me to think about conflicts
- No, I cannot sense conflicts

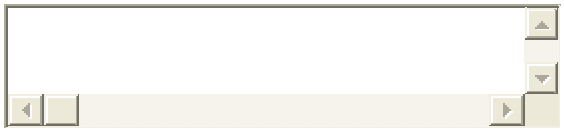
12. If you identify a conflict, do you address this concern internally or with external partners to add an additional clause to fool proof the concern?

- No, I follow the standard template
- I don't know how to confirm my concern
- I'm not sure if I have the power to do so
- Yes, I will try to change it

13. Do you plan time and resources to clear Intellectual Property issues with external partners during contract negotiations?

- Yes
- No
- Sometimes

14. If yes or sometimes, what is the time required and resources generally

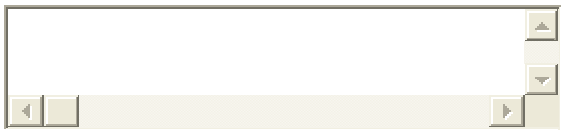


15. Would you feel more supported if you had an IP expert/ consultant/ negotiator in your team during the contract negotiation process to address the IP issues until the final contract is sealed?

- Yes
- No, I would prefer a well-defined standard IP process to avoid too much dependence on limited resources
- Could be nice, but not practical

- With sufficient planning it is possible and useful
- I'm not sure

16. Which were your biggest challenge(s)/experience(s) regarding IP, if any, in the projects with external partners?



17. Would you trust your partners more if you are confident that most of your IP concerns are addressed in the agreement?

- Yes, definitely
- No, trusting means risk taking
- No, thank you

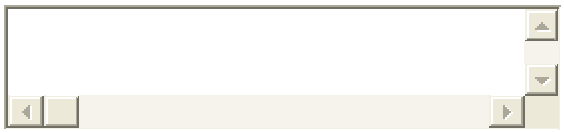
18. Do you think hidden agendas of external partners can be unravelled to some extent if you are more aware of IP and its functioning?

- Yes, to a large extent
- Yes, some what
- No, hidden agendas are tricky
- I cannot tell

19. Would you like to know more about Intellectual Property Rights management, in a clear and simple language?

- Yes, that would be helpful
- No, thank you

20. Please provide your remarks, suggestions and experience regarding Intellectual Property Management with external partners



Appendix B: "RATE THE NEGOTIATOR" QUESTIONNAIRE

(Taken from *Exchanging Value – Negotiating Technology Licenses*, *A Training Manual* published jointly by the World Intellectual Property Organization (WIPO) and the International Trade Centre (ITC)."

The following questionnaire has been prepared for use in negotiation training workshops to illustrate, in an informal manner, some of the principles of negotiation. Use the scorecard attached to record your answers to these 20 questions. Circle the letter - a, b or c – which most closely tallies with your response. Then add up the number of times your answer falls into the first, second or third column, indicating the dominant and sub-dominant columns. Now see the explanation in the pages following the scorecard

(1) At the end of a negotiation, do you think that:

(a) There must be a "winner" and a "loser";

(b) The loser should be allowed to think he/she is the winner;

(c) Both sides should feel satisfied?

(2) When a difficulty arises, do you:

(a) Get around it, even at a small sacrifice;

(b) Impose your own will;

(c) Wait patiently in the hope that matters will settle themselves?

(3) You want to buy a new car, but the color of the one you prefer will be unavailable for several months. What do you do?

(a) Hope the showroom will tell you if someone cancels an order;

(b) Buy a different colored car, or a similar one at a bargain

price or second-hand;

(c) Walk angrily out of the showroom?

(4) Is the consent of a third party obtained most easily by:

(a) Explaining to them the reason why you need his/her consent;

(b) Pointing out the disadvantages of not cooperating;

(c) Playing on their imagination, spirit of enterprise or aggression?

(5) A traffic warden gives you a ticket. Do you:

(a) Sit down at the wheel and start up the car without

speaking or looking at him;

(b) Try to reason with him;

(c) Shout abuse and tear up the parking ticket?

(6) Your goodwill is not returned by your opposite number in a negotiation. What is your reaction?

(a) Disappointment and bitterness;

(b) Do you redouble your efforts to win him/her over;

(c) Just think your opponent is playing the game his/her way?

(7) What is the ideal negotiating style? Manner of speaking:

(a) Easy (i.e. good speaker);

(b) Circumspect, precise;

(c) Skilled and convincing?

(8) Character:

(a) Warm, likeable;

(b) Overbearing, sure of oneself;

(c) Discreet, subtle?

(9) Intelligence:

(a) Brilliant, capable of impressing an audience;

(b) Capable of deep analysis with faultless memory;

(c) Commonsense, clarity and open-mindedness?

(10) Clothes and outward appearance:

(a) Elegant and discreet;

(b) Sporting and trendy;

(c) Unaffected?

(11) When a salesperson rings your doorbell, what is your first reaction?

(a) You refuse to talk to him/her;

(b) You only buy what you really need;

(c) You haggle without intention of buying, because it amuses you?

(12) A casual business acquaintance asks a favor which would bring you no immediate advantage. What do you do?

(a) Ask a favor in return;

(b) Perform the favor without expecting anything in return;

(c) Make some pretext for refusing?

(13) If the opportunity arises, do you:

(a) Socialize with the negotiator to keep on good terms;

(b) Try to keep relations on a strictly business level;

(c) Try to infuse some human interest into your business relations without overdoing it?

(14) When you have to make an important decision by telephone, do you:

(a) Consider that the talks are binding;

(b) Always request confirmation in writing;

(c) As a general rule, refrain from being too affirmative (e.g. by making excuses and not hesitating to go back on your word)?

(15) During the course of a deep and intense discussion, your opponent quotes figures that are incorrect. You possess irrefutable proof of this. What do you do?

(a) Let your opponent insist what he/she says is true, in order

to refute him/her afterwards;

(b) Advise your opponent to think it over again;

(c) Interrupt your opponent immediately to expose the mistake?

(16) During some important negotiations, one of your opponents approaches you discreetly and says: "There are always ways and means of arranging these matters between ourselves." What attitude do you take?

(a) You agree;

(b) Turn him/her down;

(c) You ignore/pretend not to understand the approach?

(17) When your colleagues have rambling conversations, do you:

(a) Keep your mouth shut;

(b) Express your opinions quite freely;

(c) Pretend to approve of what your colleagues say, even if you secretly disagree?

(18) Supposing that during negotiations, you feel an irrational antipathy towards your opponent, do you:

(a) Decide to hand the work over to someone else;

(b) Try to overcome your personal feelings;

(c) Continue regardless with the negotiations in order not to lose?

(19) Do you think that in marriage it is best:

(a) To take all the important decisions only after having

discussed the matter with your marital partner;

(b) For one partner who is better qualified to decide on domestic subjects;

(c) That when couples are unequally matched, the decisions should be taken by the stronger partner?

(20) Your son says Napoleon died in 1821, and you think he died in 1831. After having checked out which one of you is right, you decide to:

(a) Admit your error, and put up with some mockery;

(b) Give your child a clip over the ear;

(c) Talk to your child about age and chronological errors?

i. Scorecard

SCORECARD

	I	II	III
1.	c	b	a
2.	a	c	b
3.	b	a	c
4.	a	b	c
5.	b	a	c
6.	b	c	a
7.	c	b	a
8.	c	a	b
9.	c	a	b
10.	c	a	b
11.	b	c	a
12.	c	b	a
13.	c	a	b
14.	a	b	c
15.	b	a	c
16.	b	c	a
17.	a	c	b
18.	b	a	c
19.	a	b	c
20.	c	a	b
TOTAL			

ii. Scorecard Analysis

COLUMN I DOMINANT, COLUMN II SUB-DOMINANT

You are a born negotiator: patient, persistent, knowing when to make sacrifices and how to put them to use. Negotiate yourself a huge pay rise. You deserve it.

COLUMN I DOMINANT. COLUMN III SUB-DOMINANT

Potentially you are also a good negotiator, but are inclined to have off days and to quarrel with people without understanding why. Invariably, the rows are followed by

reconciliation. Your problem is that you don't seem to appreciate the overall picture of the problem at hand.

COLUMN II DOMINANT. COLUMN I SUB-DOMINANT

You could do better and, what is more, you know it. This means you are potentially a good negotiator. People find you are easy to get along with. All you need is more practice.

COLUMN II DOMINANT. COLUMN III SUB-DOMINANT

You are short on tact and diplomacy even though these qualities are needed every day both at home and at work. Yet you will realize the usefulness of getting on with people. You need to assert your will. Not quite a square peg in a round hole, nor an oval shape.

COLUMN III DOMINANT. COLUMN I SUB-DOMINANT

Even your real attempts at dialogue are seldom well received. You are impatient, suspicious of your colleagues' intentions and misjudge their good will. Some measure of success would give you more of the right kind of self-assurance. You might even conclude that all you need is a plan of action to cover areas of conflict. Clearly, you are not much of an asset to yourself or your company.

COLUMN III DOMINANT. COLUMN II SUB-DOMINANT

Try a more fitting job, like raising private armies and hunting pheasants. You are either a tyrant or a martyr, or a bully-boy imposing your will on others. Short-term effectiveness is your sole criterion. You make use of people rather than work with them. Unfortunately for you, when your own back is to the wall, people will exploit you eagerly.

Appendix C: List of OECD Countries

Country	Membership	Geographic location	Notes
Australia	7 June 1971	Oceania	
Austria	29 September 1961	Europe	OEEC founding member.
Belgium	13 September 1961	Europe	OEEC founding member.
Canada	10 April 1961	North America	
Chile	7 May 2010	South America	
Czech Republic	21 December 1995	Europe	
Denmark	30 May 1961	Europe	OEEC founding member.
Estonia	9 December 2010	Europe	
Finland	28 January 1969	Europe	
France	7 August 1961	Europe	OEEC founding member.
Germany	27 September 1961	Europe	Joined OEEC in 1955
Greece	27 September 1961	Europe	OEEC founding member.
Hungary	7 May 1996	Europe	
Iceland	5 June 1961	Europe	OEEC founding member.
Ireland	17 August 1961	Europe	OEEC founding member.
Israel	7 September 2010	Asia	
Italy	29 March 1962	Europe	OEEC founding member.
Japan	28 April 1964	Asia	
South Korea	12 December 1996	Asia	
Luxembourg	7 December 1961	Europe	OEEC founding member.
Mexico	18 May 1994	North America	
Netherlands	13 November 1961	Europe	OEEC founding member.
New Zealand	29 May 1973	Oceania	
Norway	4 July 1961	Europe	OEEC founding member.
Poland	22 November 1996	Europe	
Portugal	4 August 1961	Europe	OEEC founding member.
Slovakia	14 December 2000	Europe	
Slovenia	21 July 2010	Europe	
Spain	3 August 1961	Europe	Joined OEEC in 1959.
Sweden	28 September 1961	Europe	OEEC founding member.
Switzerland	28 September 1961	Europe	OEEC founding member.
Turkey	2 August 1961	Eurasia	OEEC founding member.
United Kingdom	2 May 1961	Europe	OEEC founding member.
United States	12 April 1961	North America	

The European Commission participates in the work of the OECD alongside the EU Member States(Source www.oecd.org)

Appendix D: Definition of IP terms

Intellectual Property Rights

Intellectual property refers to creations of the mind: inventions, literary and artistic works, and symbols, names, and images used in commerce. It is divided into two categories: *industrial property* which includes patents for inventions, trademarks, industrial designs and geographical indications and *copyright* which includes literary works such as novels, poems and plays, films, musical works, artistic works such as drawings, paintings, photographs and sculptures, and architectural designs. Rights related to copyright include those of performing artists in their performances, producers of phonograms, and those of broadcasters in their radio and television programs.

Patents

A patent is an exclusive right granted for an invention, whether a product or a process, which must be industrially applicable (useful), be new (novel) and exhibit a sufficient “inventive step” (be non-obvious). A patent provides protection for the invention to the owner of the invention. The protection is granted for a limited period, generally 20 years from the filing date.

A patent owner has the right to decide who may – or may not – use the patented invention for the period in which the invention is protected. The patent owner may give permission to, or license, other parties to use the invention on mutually agreed terms

Secret know-how/ Trade secret

Any confidential business information which provides an enterprise with a competitive edge can qualify as a trade secret. A trade secret may relate to technical matters, such as the composition or design of a product, a method of manufacture or the know-how necessary to perform a particular operation like manufacturing processes, market research results, consumer profiles, lists of suppliers and clients, price lists, financial information, business plans, business strategies, advertising strategies, marketing plans, sales plans and methods, distribution methods, designs, drawings, architectural plans, blueprints and maps, etc.

Appendix E: Outcome of Workshop 'IP Landscape' on May 20,2011

IP Managers view:

Goals of IP: The WHAT

1. Retaining competitive advantage by licensing and collaboration
2. Blocking OEM to OEM
3. Suppliers blocking buyers
4. Ambulance chasers

Agreement: how?

1. Do we want to work together?
2. On what conditions
3. What happens if we agree on conditions and not IP
4. Agreement on IP? Can it be discussed?
5. Terms of divorce

A Chief project manager's perspective:

What? Exploratory study of business opportunities

Who ?should do it: Engineers , sales personnel and the parties all together

How? Discussion about background IP on a high level and about patents

Why? Better transparency and to not have a constraint regarding information sharing and to maintain due diligence

An Engineers perspective

1. Trust, even b4 the IP process starts , who? Partners; how? have a feeling of the potential partners; why? To have mutual benefits
2. Consequence analysis; how? Iterative internal meetings; why? Keep sustainable trust relationships
3. Definitions of party responsibilities: How? Negotiations; why? Clarifications of rules and responsibilities, and to allow the win-win scenario

Contents of the brainstorming session:

1. What is the IP policy?
2. Defining project specific constraints for information sharing
3. Awareness of sharing information e.g.: Drawings circulation
4. To cut the unnecessary legal delays for technologically insignificant details
5. Identification of the trading IP variable: Negotiation strategies
6. Inducing confidence among the Engineers for information sharing,
7. Drawing clear guidelines for research projects regarding publication of details
8. Background, foreground, side ground

9. Modular agreements
10. Emails and relevance
11. Exposure analysis
12. Internal communication to whoever you may think maybe involved
13. Supplier selection methodology: Who does it? Apart from purchasing
14. How to make the best of lawyers: The necessary evil
15. System constraints and boundaries
16. Project set up, counseling
17. IP coaches
18. Definition of IP- Project specific
19. Contract templates
20. Common understanding
21. Issues to be discussed: Cost sharing

Appendix F: IP Success stories

The IP advantage: Success story 1

Engineering Company Reaps Rewards by Smart IP Management

Overview

Name: L&R Ashbolt Pty. Ltd. Inventions	**Object of Protection:** Confidential Information,
Organization **Type**: Commercial Enterprise Industry: Industrial Engineering	Instrument of Protection: Patents, Trade Secrets
Country/Territory: Australia	**Focus:** IP Management, Patent Information

Background

L&R Ashbolt is a highly specialized surface engineering company based in Wollongong (Australia) whose core business consists of identifying potential cost saving areas for companies through enhancement of the surface characteristics of components. Its clients save millions of dollars by reducing the wear and tear and corrosion, and increasing the durability of surfaces in heavy engineering environments such as mining, paper mills, petroleum, plastic extrusion and
power stations.

Patents

Danny Ashbolt, L&R Ashbolt's general manager, is well aware of the importance of intellectual property (IP) protection: "My father lost potentially millions of dollars when he founded the company in 1972", he explains. "Back then, people were not so aware of the importance of IP and trade secrets. **He *developed technology for BHP to coat the inside of blast furnaces which extended their life by a factor of two, and it is now an accepted Standard around the world. But BHP took that technology in-house and my father got no recognition or financial reward".***
L&R Ashbolt currently owns two official patents, but Mr. Ashbolt believes the company must now invest even moreresources in IP because the industry has become so IP-intensive. ***"Information dissemination is so rapid in oursociety today - particularly with the Internet - and now there is an even greater need for protection of ideas",***
he says. Still, patenting decisions should be evaluated carefully: ***"It is about being sensible. For example, a company should lodge a patent only in the specific countries where it will be doing business because it may be a complete waste of money lodging it around the world. You have to be sensible and realistic about where the future of the product lies".***
Mr. Ashbolt says there are many things L&R Ashbolt could have patented over the years, but did not because it did not want its competitors to have access to the information and copy it.

"I believe progress is very much about learning from each other, but it is a delicate balance", he says. ***"Our competitors have copied us on a number of occasions and of course that has scared us".***

Using Patent Information

Mr. Ashbolt and his team of five research and development (R&D) staff, all experts in their field, use the services of IP Australia to carry out extensive patent searches in Japan, the United Kingdom, the United States and other countries. ' ***I think it is important not to reinvent the wheel",*** he says. "IP Australia's patent search facility ensures that we will not waste valuable time and dollars developing something on which someone else has spent $100,000 and two years. We do not copy patents that already exist - they just give us an idea of a direction we could follow and improve on. Examining competitors' patents also provides us with invaluable marketing knowledge".

Business Results

L&R Ashbolt is recognized as a world leader and a pioneer in its field. Orders come from all around Australia and from many parts of the world, making it a truly global engineering company. The R&D team is constantly investigating new methods to alter the surface characteristics of materials. Employing over 40 people, the company has sales offices in Newcastle and Perth in addition to its head office in Wollongong.

Successfully Competing in the Global Market with Smart IP Management

L&R Ashbolt's success has been driven by the development of intellectual property. "Managing IP is absolutely vital for a company's growth and development", notes Ashbolt. "The lack of seed capital has always been big problem in Australia, and this has resulted in great ideas being bought by overseas companies", he says. "We have a great base of IP in Australia, and I believe this is the key to our future". Ashbolt adds that Australian companies need to place more importance on the value of IP and be smart about it, using it to their advantage. "IP is one of those intangible assets of a company", he says.
"People become fixated on the tangibles and forget to look at the bigger picture. IP is one of the strong driving forces behind the successful growth of a company. There are many thingswe cannot control in a business - but we can control IP".

Sources, References and Related Links

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The IP advantage: Success story 2

Measuring Up To Success

Overview

Name: Tramex Ltd. Names,	**Object of Protection:** Distinctive Signs/ Commercial Inventions
Organization Type: Entrepreneur Trademarks	**Instrument of Protection:** Patents,
Industry :Electronic and Electrical Equipment	**Focus:** IP Management,
Country/Territory: Ireland	

Background

Tramex Ltd (Tramex) was founded in 1973 by Alan Rynhart - a sales agent with entrepreneurial instincts who distributed electric instrumentation products for non-lrish companies in the construction industry in Ireland. The company's core business is creating, manufacturing and supplying electronic measuring devices. Tramex's most notable achievement - and its market leading innovation - was to develop the world's first non-destructive moisture detector in 1982. The invention originated from an observation made by Mr. Rynhart of a particular problem that arose in trying to discover the
precise location of a leak - due to rainfall, for instance - in structures such as flat roofs. To help solve the problem, the entrepreneur sought advice from technical experts in a university.
Following the experts' advice, the sales agent manufactured a device that takes measurements at the surface level – of wood, concrete or glass re-enforced plastic, among others - without penetrating the measured object. An incision is avoided by using direct contact electrodes (an electrical conductor) which makes contact with a nonmetallic part of a circuit. Tramex's Moisture Encounter Plus Non-Destructive Moisture Meter, can solve the challenge of finding such leaks by scanning a surface, taking an electrical conductivity measurement of it - the measure of a material's ability to conduct
an electric current - and thereby locating the problem. After satisfactorily developing and testing the moisture detector, the sales agent established a manufacturing company through which the new product was successfully launched onto the market.

Trademark

Having spent much time and resources producing innovative products, Tramex recognizes the need to ***protect its inventions with patents in order to make a return on investments through licensing white retaining the exclusive right to market its goods.*** To that end, in 1981 the company filed patents in Ireland for one of its earliest moisture meters; subsequent patents were filed in1992 through the Patent Corporation Treaty (PCT) system. In 2002 and 2003 the company also filed for a patent for its moisture and mould meter in one of its most lucrative markets, the USA - at the United States Patent and Trademark Office (USPTO).

Patents

Tramex is also aware of the importance of safeguarding its ***corporate image, marketability, brand awareness, consumer confidence, and brand-loyalty with registered trademarks.*** In 1999 the company filed for a trademark registration of Tramex™ at the Office for Harmonization in the Internal Trade Market (OHIM) and at the USPTO in the USA. The Tramex brand is now readily recognized within the industry and its core products are recommended by some of
the leading companies in construction including Robina Floors in the USA - a well-known manufacturer and provider of engineered wood and laminate flooring.

Partnerships

Although Tramex was initially apprehensive over its first AE project - ***especially over the cost and technological uncertainties involved in such an enterprise -, the company was able to allay such fears, gain confidence and know-how, make innovative technological advances, and break into new markets, by working closely with industry partners who provided tremendous financial, technological and logistic support and advice.***
Among the company's many partners at the beginning of the AE project, was the UK's Department of Trade & Industry with whom Tramex consulted, helped the company understand the necessary processes involved in technology transfer initiatives..Another important partner for the company is the Technology Transfer Network (TTN) - an industry organization whose aims, among others, are to provide independent commercialization advice to companies similar to Tramex. It also had several connections with universities and research centers to test an innovative idea, before attempting it on a commercial scale. In order to promote its market knowledge and extend its networks within the industry, the company also works in close association with organizations such as the Irish Small to Medium Enterprise Association
(ISME) . Tramex recognized the importance of ***choosing the right new technology, the need to seek independent and expert advice, the indispensability of commissioning feasibility studies, and the need to have a detailed project plan with clear time-scales and costs.*** By being proactive, the company ensures new product are successfully introduced into market on time and on budget allowing the company to maintain its market position as a low cost, top
quality instruments maker. Tramex's strong reputation for engaging in ***productive industrial partnerships in order to innovate new products*** for new market needs has led to an ever-widening list of collaborations including that with the Oak Ridge National Laboratory (ORNL) - a multi program science and technology laboratory of the USA Department of Energy.

IP Management

Determined to protect its inventions from competitors in the industry, and aware that the company's trademark has a ***world-wide good will capital that results in customer confidence and brand loyalty,*** Tramex established a separate company - Rynhart Research Limited (RRL)- to manage its IP portfolio. RRL files patents on behalf of Tramex and keeps
track of the company's varied IPRs portfolio in case of future IP infringement.

Business Results

The company continues to use the model of identifying market opportunities and contracting experts to research and develop products in order to expand into new commercial sectors and innovate new products. With decades of experience as an industry leader, Tramex has developed a strong reputation as one of the most creative and trusted manufacturers of hand-held, electronic devices and has close to 100,000 innovative, practical and user-friendly devices in use world-wide.

From the floor of innovation to the roof of success.

Tramex continues its outward expansion not only because of its astute exploitation of its experienced and ***imaginative R&D staff and comprehensive IP strategy,*** but also due to its ***strong links to industry and academia,*** and to national and international partners.

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