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**Cooperation strategy for the University Science Park
of the University of Žilina**

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Thesis Abstract

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There are many problems that University Science Park of the University of Žilina in Žilina (hereinafter referred as USP) has been facing since its beginning, such as delay in public procurement processes, delay in construction of the Science Park building, etc. Due to the lack of tradition in building Science Parks in Slovakia there is overall problem with the proper management of USPs across Slovakia. There has been attempts for creating alliance of Slovak Science Parks in order to help each other and have bigger negotiation power towards stakeholders however this effort has never been formally completed. It is author's belief that cooperation is crucial not only in nature but also in business. Therefore, the final aim of this thesis is to propose new cooperation management model for the University Science Park that will be easily applicable. It will take into considerations all above mentioned discrepancies and environmental conditions. Action case study was chosen as a research method in this thesis. Action research techniques with many iterative cycles were implemented during the research process. The thesis starts with the introduction to the theory of cooperation as well as description of Science Parks as well as their purpose. The theory is followed by the examination of the current state of the USP and based on the result of these analysis the cooperation management model was proposed. It suggests ways how the USP can grasp its potential and should develop the relationships with its stakeholders so the cooperation will contribute to success and competitiveness on the market and thus financial sustainability of the USP. This model is based on author's experiences as well as key theories linked to the cooperation management and best practices learned thanks to author's visit of the foreign Science Parks. The biggest problem causing lack of cooperation management is bureaucracy that management has been facing since beginning of the USP. This has caused several problems: due to the lack of spare time management of the USP could not focus more important things such as defining the business strategy for the USP as well as other functional strategies including cooperation strategy. New proposed model should help management to define strategies according to the new cooperation strategy.

Keywords: Science Park, researcher, stakeholder, cooperation, responsible for international affairs, strategy.

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1 INTRODUCTION

Slovakia has been experiencing problems with the quality of research for many years due to the lack of cooperation among experienced researchers and commercial companies on applied research. Because there is a great need to improve the quality of research in Slovakia (Dennik N 2016; Trend 2007; Pravda 2009), the University of Žilina as well as other universities across Slovakia received EU funding to build Science Parks (CIJ Journal 2015). However, since there is no tradition in building and managing science parks in Slovakia many problems have soon occurred. The biggest problem is the sustainability of the Science Parks. Since all the Science Parks received two full years funding from the EU, there was no need to think about the sustainability of these Science Parks. People involved in the projects have no idea of how to keep the Science Parks going when the funding runs out. This resulted in massive staff layoff and misery for the universities as well as for Slovakia as a nation. However, Science Parks are expecting better future. The new round of investments should arrive until the end of 2016. The new cooperation with international companies will contribute to brand awareness of the USP as well as ensure new technologies arrival with flow of new know-how. Huawei Technologies in Slovakia and the University of Žilina announced they would cooperate in technology research. The two sides signed an agreement wherein Huawei will provide technology support and applied research for the USP (Xinhua 2016). This is a good example of the successful cooperation that the USP has experienced during this year.

This thesis begins with a review of a literature related to cooperation management to understand problems that has arisen in Science Parks. Section two describes the methodology used to conduct the research. It is followed by the brief overview of establishment of the Science Parks in Slovakia. It is followed by the identification of the causes of the failure of the current Science Parks in Slovakia. There are many issues that can cause the problem and with a help of literature they have been analysed. However, it is the author's belief that culture plays a crucial role as the main barrier in its failure. There seems to be a complete lack of collaboration among the people in a

previous communist dominant country such as Slovakia. Collaboration between different stakeholders is fundamental for the sustainability of the Science Parks. For organizations to survive and competitive, co-creation of value is a must. Section 4 discusses co-creation of value from service science and its implications for organizations. In order to help the Science Parks in Slovakia to sustain, a co-creation of value business model is needed for effective cooperation. Section 5 therefore describes the model and its uses. Evaluations of the model and its results are discussed. Section 6 concludes with further research in future.

1.1 Background of the research area

The International association of science parks and areas of innovation (IASP) has almost 400 members from 73 countries up to now. (IASP - Facts and numbers, [ref. 11 February 2016]). Unfortunately, Slovakia has not been on the list. However, everything has changed in 2013 when selected Slovak universities received grant from the European Union to build Science Parks across Slovakia. By then, thanks to the support of the European Union many Slovak universities were able to build competence centres, centres of excellence and centres for cooperation with industry which were predecessors to Science Parks.

The research question that needs to be answered throughout the thesis is: *How can the University Science Park cooperate more effectively with its main stakeholders?* As an answer cooperation model for the Science Parks will be proposed. Its implementation will help Science Park to be competitive and sustainable on the market by establishing effective partnerships with various stakeholders.

1.2 Research methodology

The research aims at addressing the following question: **How can the University Science Park cooperate more effectively with its main stakeholders?**

To address the above research question, the following objectives are to be carried out:

1. Conduct a relevant literature review.
2. Conduct a relevant analysis of the USP cooperation activities to find out what barriers are hindering effective cooperation in the Science Parks.
3. Develop a cooperation management model based on the co-creation of value to maintain sustainability for the Slovakia science parks.
4. Implement the proposed model.
5. Document the research.

To develop the model these steps are needed to be taken:

- To examine what processes and activities are needed to be done in order to develop cooperation strategy for the University Science Park.
- To define the new cooperation strategy and to describe how the process of implementation of cooperation strategy can be done so the cooperation will be effective and result in that kind of value that both partners will feel the benefit of the cooperation.
- To identify how new cooperation strategy can be created in order to ensure sustainability and competitiveness of Science Parks.

To do the above, the following questions needs to be answered:

1. Who are the stakeholders of the USP?
2. What the stakeholders require from the USP and vice versa?
3. What actions do we need to conduct in order to improve current cooperation activities of the USP?
4. How can we conceptually establish new cooperation?
5. How can we effectively manage the whole cooperation process?
6. How can be the new cooperation strategy defined in order to reflect all key elements?

As a core research method case study was used. The techniques of action research were used in order to reflect on the research questions. The research process was iterative and resulted to proposal of the new cooperation strategy for the USP.

1.3 University Science Park of the University of Žilina in Žilina

University of Žilina in Žilina as one of the few universities across Slovakia has received funding from the EU Structural Funds¹ to build a Science Park (CIJ Journal 2015). The Contract for Grant was signed by the former Minister of Education, Science, Research and Sport Dušan Čaplovič and current rector of UNIZA Tatiana Čorejová in May 2013. At the beginning of June 2013 the project has officially started. The duration of project supposed to be two years - until the end of June 2015. However, due to many problems such as the delay in public procurement processes, lack of fulfilled measurable indicators, an unfinished construction of building and missing technology project was prolonged until the end of December 2015. Fortunately, the building was constructed on time and official opening ceremony took place in December 2015.

The USP total area is nearly 5 300 m², floor area approximately 3 550 m². The project created 15 excellent laboratories focused primarily on the area of intelligent transport systems and smart production. Within the organizational structure more than hundred new jobs for researchers and professional staff were created. Total project costs were around 44 million euros.

From 2016 the USP will no longer be a project. It will act as an individual entity formally attached to the University. It has to be sustainable for the following 5 years. However, the future of USP is questionable. Because of the restrictions put on the USP, there is problematic to propose any ideal business model. Financial future will solely depend on the contracts from commercial environment and grants that researchers will be able to obtain. For few months USP will still have some finances to operate with because its management was able to save money from the project period and transfer them to the following "sustainability" period. Once all finances will run out there either has to be other project (kind of a follow-up project) or contracts with various stakeholders signed.

¹ According to European Commission definition "*Structural Funds play a substantial role to help all regions build research and innovation capacities corresponding to their situation and priorities.*"

For this reason the new cooperation strategy which will include all the possibilities and stakeholders will be proposed.

1.4 Outline of the thesis

The outline of this thesis is presented in the following Figure.

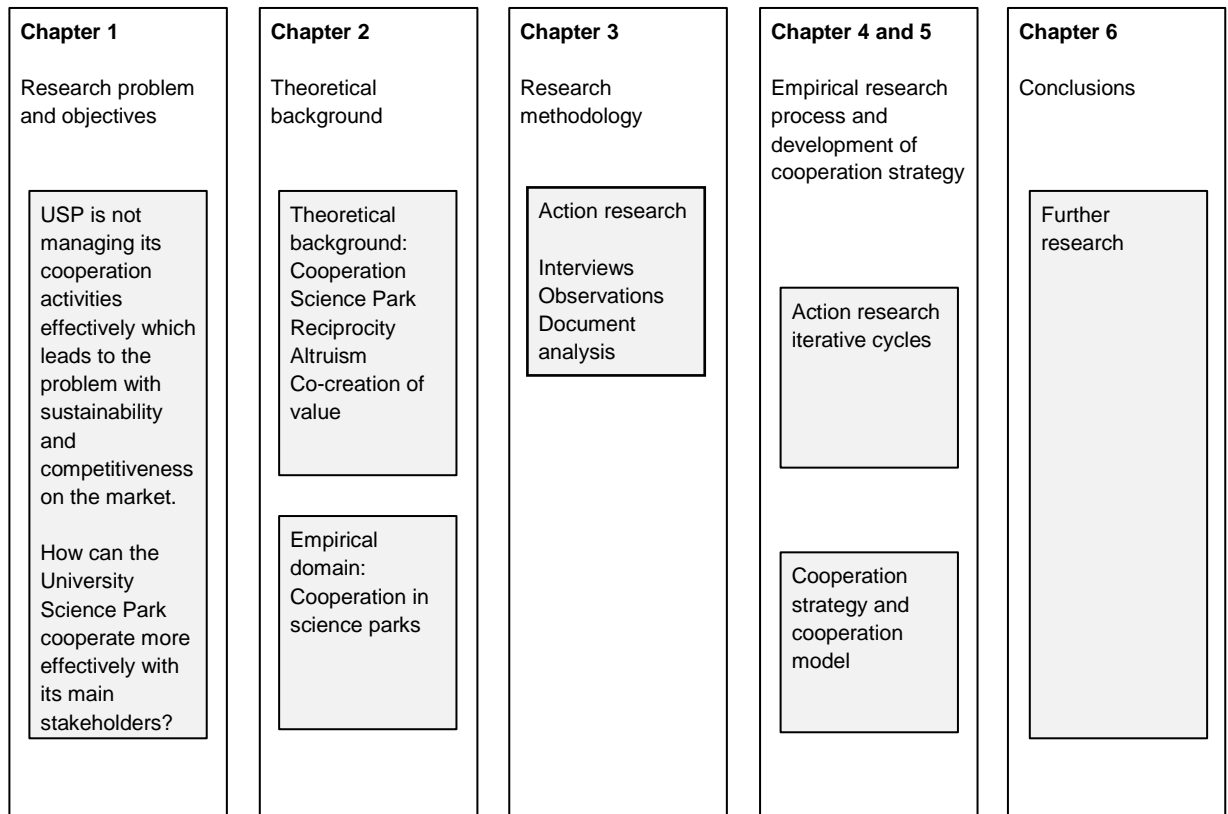


Figure 1. Outline of this thesis.

Chapter 1 presents the overall view on the presented thesis. There is one major question which need to be answered in thesis. It is focused on identifying barriers that are hindering the cooperation activities in the USP.

Next chapter introduces the major theories in the field of cooperation management and science parks and thus provides theoretical basis to the further research. Theoretical part is followed by methodological part of the thesis where the overall research method, research problem, objectives as well as techniques are defined.

Following chapter provides results of analysis of examples of cooperation abroad, current environment in Slovakia and University of Žilina including University Science Park as its formal organizational unit. The analysis leads to proposal of cooperation management model for the USP followed by the recommendations for its implementation. The evaluation of the proposals together with its further recommendations for continuous adjustments of the strategy in order to achieve sustainability and competitiveness on the market are suggested. The last chapter summarizes the conclusions arisen throughout the thesis.

2 THEORETICAL BACKGROUND TO COOPERATION MANAGEMENT

For organizations cooperation has become one of the key tools for achieving their strategic competitiveness. **Cooperation** is a complex system whose elements are stakeholders striving to achieve certain benefits which would be difficult to achieve individually (Czech invest, [ref. 25 February 2015]; Ketels et al. 2007; Solvell 2003). Cooperation may be organized in various forms - generally the most frequently used forms are networks (Solvell 2003; Williams 2002), clusters (Czech invest, [ref. 25 February 2015]), joint ventures, strategic alliances, and others.

The organizations' interest in creating cooperative connections, as well as the meaning of creating them, is based on the following *benefits* which cooperation can bring (Ketels 2007; OECD 2007; Solvell 2003):

- increasing competitiveness and productivity growth,
- extending innovation activities,
- accelerating process of transferring information and technological development,
- developing and spreading new knowledge,
- reducing costs, capacity sharing and achieving economies of scale,
- development of the region and improvement of infrastructure,
- reducing limitations of smaller organizations,
- flexible response to changing conditions on the market,
- attracting foreign investments,
- increasing negotiating power,
- developing specialization,
- usage of positive externalities.

There are several *preconditions* that should be fulfilled for the cooperation to be successful. They include geographical proximity of the partners'; sharing a common purpose, values and objectives; knowledge of the area in which they cooperate; and reaching a consensus (Robson et al. 2006). An important fact is that in the long term appears cooperative strategy to be more profitable than purely selfish one (Perru 2006).

Therefore, the benefits of cooperation are less likely to emerge in a short time, they show up after a certain lapse of time.

However, a cooperation is not always a success, and also the expected benefits do not always appear. It is important to realize in advance that there is such a possibility, and pay proper attention to *factors that may cause failure*, which may be following (OECD 2007; Robson et al. 2006; Solvell 2003; Williams 2002):

- vague or non-existent vision and quantification of objectives,
- lack of mutual trust among partners, and unwillingness to give up their independence,
- framework is not adapted to their own strengths,
- few active members,
- failure in achieving consensus,
- absence of a facilitator in the process of forming a cooperative structure,
- insufficient budget for significant projects,
- neglected brand building.

Cooperation is more likely to be successful, when it is properly managed. Cooperation management has already become an object of interest in Slovak republic not only for universities and business organizations, but also for politicians, regions and various research organizations. The main reason is changing view on the role of research and development (R&D) by supporting economic growth of the country or individual regions. There are several definitions of this term. **Cooperation management** is a “*philosophy of management that can be applied irrespective of ownership structure*” (Davis and Donaldson 1998), it represents “*effective and efficient management of relationships in a cooperation between separate and relatively independent organizations or individuals, with the goal of improving their competitiveness*” (Soviar et al. 2013). Creating cooperative interconnections allows spreading of innovative activities and helps increasing the global competitiveness of the participating organizations, because globalization means that internal efficiency isn't enough to achieve international competitiveness (Solvell et al. 2003). A summary of the strategic decisions, on the basis of which is strategic cooperation management performed and managed, is called a

cooperative strategy. Creation of cooperative strategy should focus on two key problems: what wants the cooperative group to achieve, and how should be partners involved in the cooperative activities (Soviar et al. 2013).

Within academia-business cooperation often occurs **technology and knowledge transfer**. Technology transfer is a process through which is technology extended. It may or may not have be secured with legally binding agreements, but it includes the transfer of knowledge (through an intermediary) from provider to recipient (UNCTD 2001). Technology transfer can be considered as successful if the recipient is able to use the technology effectively in practice.

Technology and knowledge transfer between universities and business organizations is important for both sides. Benefits for universities are mainly acquisition of financial resources, feedback on their competences and performance in research, their involvement in the identification of new research areas and acquisition of new knowledge. Companies benefit from getting access to external expertise, which is easier for them than developing new products or processes, and support by constructing specific competencies. These benefits may occur, but it should be understood that they are not automatically guaranteed (Hofer 2007). Technology and knowledge transfer has a wide range and the willingness to participate in it varies.

The current situation in Slovak republic is in the phase of implementing projects aimed at establishing science parks, which should support cooperation between universities and business organizations, which should in the end support applied research. Such projects have multi-source financing with money from universities and ministry of education, and they are mostly co-financed by the European Regional Development Fund under the Operational Programme Research and Development. There are currently 7 science parks and 5 research centres near universities in SR (SCSTI - Science parks and research centres, [ref. 18 May 2016]). On the national level provides support institution called *Slovak Centre of Scientific and Technical Information (SCSTI)*, which is a national information centre and also a specialized scientific public library of Slovak Republic focused on technical disciplines and selected areas from natural sciences, economic sciences and humanities established in Bratislava (SCSTI –

General information, [ref. 7 May 2016]). SCSTI launched project called *National infrastructure for supporting technology transfer in Slovakia (NITT SK)* whose strategic objective is creating and implementing a system of national support of transferring technology and knowledge acquired in R&D activities into economic and social practice in order to promote the development of knowledge-based society (NITT SK, [ref. 11 May 2016]). There is also *Industrial Property Office (IPO)* on the next level after SCSTI, and its mission is granting protection of industrial property, such as inventions (patents), utility models (so-called small patents), trademarks, designs, topographies of semiconductor products, designations of origin of products, and geographical indications of products. It also provides services and products to the public in the field of industrial-legal information and supports the development of technical creativity and its protection, education and popularization of intellectual property (IPO, [ref. 11 May 2016]). The importance of the national supporting of technology transfer consist in realizing R&D activities based on the specific needs from the business sector, which will result in increased rates of application knowledge and technologies acquired in research activities into industrial practice. The system should also significantly contribute to creation and development of long-term R&D cooperative partnerships of academia and industry (NITT SK, [ref. 11 May 2016]).

Science parks play an important role in the process of innovation, developing new technologies and contributing to economic growth and development of the country. A science park can be defined as *“an organization managed by specialized professionals, whose main aim is to increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions. To enable these goals to be met, a Science Park stimulates and manages the flow of knowledge and technology amongst universities, R&D institutions, companies and markets; it facilitates the creation and growth of innovation-based companies through incubation and spin-off processes; and provides other value-added services together with high quality space and facilities.”* (UNESCO 2002)

The International Association of Science Parks and Areas of Innovation states that the *main mission of scientific and technological parks* are following (SCSTI - Science parks and research centres, [ref. 18 May 2016]):

- stimulating and managing the flow of knowledge and technology between universities and businesses organizations,
- facilitating communication between businesses, entrepreneurs and technicians,
- providing an environment that enhances the culture of innovation, creativity and quality,
- focusing attention on companies, research institutions and also on people (entrepreneurs and "knowledge workers"),
- facilitating business start-ups through incubators and spin-off mechanisms, and accelerate the growth of SMEs,
- working in a global environment that brings together thousands of innovative companies and research institutions around the world, and facilitate the internationalization of their domestic companies.

The University of Žilina in Žilina (UNIZA) has acquired two projects from European Union for building up science parks – first is called *University Science Park (USP)* and second one *Research Centre (RC)*. USP is focused on the scientific approach to problem solving which could be applied in the practice and it aims to use and integrate experience and knowledge of research workers. There are 4 main research areas, 15 fully equipped research labs, and up to 140 job positions for external staff, PhD students and expert researchers from abroad (USP – Facts and numbers, [ref. 10 March 2016]). RC aims to achieve synergic effect in using and enhancing research potential by integrating crucial research activities as Regional Centre for applied research. Its team has over 110 workers including 11 professors, 11 associate professors and 39 PhD (RC, [ref. 10 March 2016]).

When speaking about science parks and role in the innovation process, it is necessary to mention innovation in terms of **co-creation of value** and **collaboration**. To be clear about used terminology, it is also important to explain the difference between the terms cooperation and collaboration. According to John B. Smith: *“Collaboration carries with*

it the expectation of a singular purpose and a seamless integration of the parts, as if the conceptual object were produced by a single good mind.... The reader is unable to tell from internal clues which chapters or sections were written by which authors. Cooperative work is less stringent in its demands for intellectual integration. It requires that the individuals that comprise a group ...carry out their individual tasks in accord with some larger plan. However, in a cooperative structure, the different individuals... are not required to know what goes on in the other parts of the project, so long as they carry out their own assigned tasks satisfactorily.” (Smith 1991)

During the last two decades, there has appeared a phenomenon that points in the opposite direction from clear separation between the production and consumption. Thanks to the Web and the associated information technologies (IT), consumers have been producing marketable value. **Co-creation** can be defined broadly as *the creation of value by consumers*. There are two types of co-creation (Zwass 2010):

- *sponsored co-creation* includes co-creation activities conducted by consumer communities or by individuals at the behest of an organization (termed the producer), for example Procter & Gamble and IBM, which seek product ideas from unaffiliated individuals in well-organized contests and jams,
- *autonomous co-creation* includes producing marketable value by individuals or consumer communities in voluntary activities conducted independently of any established organization, although they may be using platforms provided by such organizations, which benefit economically, a good example is Wikipedia that has changed the competitive landscape of the software and knowledge industries.

The goods that dominate co-creation are *digital and non-rival*, which means they are not consumed in use and thus available to all who have access. They are also not easily excludable, as some are intentionally available to all having access even without a reciprocal contribution. Network effects make them more valuable to each user as the number of users increases (the more contributors there are on a review site, the more visitors and the likelier future contributions). Two-sided network effects means that the more individuals use an OSS product, the more valuable is the experience its creators garner, and the more likely is the product to be well maintained for future use

by motivated developers. Beyond this, the collective processes of sharing data, information, and knowledge in the digital domain by individuals vastly contribute to the growth of co-creation activities. (Zwass 2010)

Collaborative innovation is “first and foremost a mind-set. Companies seeking to engage in collaborative innovation will have to earnestly examine their culture and beliefs, organizational design and technological infrastructure before committing to new and productive partnerships. Second, companies must examine their current collaborative models and establish a new target model of collaboration. Companies must first establish trusted partnerships in which intellectual properties will be protected and gains will be equitably shared. Finally, decision rights and redress mechanisms must be established to preserve the collaborative relationship for the long term.” (Barrett et al. 2011)

In the next chapters selected theories will be used to properly analyse cooperation activities of the USP and propose further recommendations to improve them. There will be mainly used concept of co-creation of value due to its logical connection to the cooperation management theory. Its principles of creating mutual value for both partners are closely linked to the principles of cooperation management where reciprocity is the key element in any cooperation. Any cooperation can be successful without an aim to achieve mutual satisfaction of both partners of the cooperation relation.

Besides the co-creation of value theory knowledge management theory is used as well. In every cooperation exchange of knowledge is crucial to achieve effectiveness (mainly in research) as well as synergic effect of the cooperation.

The last theory which is also logically linked to these theories is innovation management. As Nonaka, Toyama, Hirata (2008) noted the ability of an organization to create new knowledge is substantial for its innovation ability. Innovation can be result of an effective cooperation and therefore this theory plays an important role when talking about cooperation.

3 RESEARCH CASE AND METHODOLOGY

In this chapter the scientific basis of the thesis is presented. This part commences with how the reality is perceived and what perspectives the thesis is based upon. Furthermore, a discussion about research methodology and strategy is conducted, followed by case study design. Moreover, the chapter outlines how the data was collected and finalizes with a theoretical discussion in conjunction to contribution to the University Science Park.

The aim of this master thesis is to develop cooperation management model for the University Science Park of the University of Žilina in Žilina.

The **research problem** examined in this thesis is that University Science Park is not managing its cooperation activities effectively which leads to the problem with sustainability and competitiveness on the market. The USP management have poor awareness about the value of cooperation. It results to lack of interest in the cooperation activities and lack of definition of cooperation strategy that could lead employees to establishing and maintaining meaningful cooperation relations.

The **research question** which will be addressed throughout the thesis is: How can the University Science Park cooperate more effectively with its main stakeholders?

The suggested theory which will support the proposal of new cooperation strategy followed by model that will be applicable to all Science Parks in Slovakia is co-creation of value.

In order to address defined thesis aim, three research questions were devised:

- To examine what processes and activities are needed to be done in order to develop cooperation strategy for the University Science Park.
- To define the new cooperation strategy and to describe how the process of implementation of cooperation strategy can be done so the cooperation will be effective and result in that kind of value that both partners will feel the benefit of the cooperation.

- To identify how new cooperation strategy can be created in order to ensure sustainability and competitiveness of Science Parks.

Qualitative research method was used as a core approach for data collection.

Research strategy

The case study is explorative, inductive and focuses more on processes rather than ends or final results. This view implies no defined hypotheses, no manipulation by controlled variables and no limitation of the end product. Instead, the researcher observes and explores intuition to obtain knowledge of what happens place in a natural environment (Johnsson and Magnusson 2001).

Presented case study can be viewed from a static perspective, since observable facts based on a particular moment were studied. Presented case study builds on one year old facts and may not reflect the situation nowadays. The historical actions performed by individuals are presented. They create basis for the proposal of new strategy for the USP which reflects on the problems identified by the case study. This approach gives a background for why the activities are carried out at the USP at the time of this study. This perspective affected the choice of methodology of this thesis.

As a research strategy, case study was chosen. *“Merriam defines a case study as a process, aiming at describing and analysing specific units in complex and general terms often continuously during a certain period of time. The case study gives the investigation opportunities to maintain holistic and important kinds of real-life events, Yin argues. Furthermore, case studies facilitate understanding of complex and social events. The case study is suitable regarding our perspective, having the process in focus and intends to provide an understanding of the whole.”* (Johnsson and Magnusson 2001)

In this thesis case study research method was chosen as a main research approach. It combines data collection methods such as archives, interviews, and observations. The evidence is mainly qualitative (words), however also quantitative (numbers, documents).

Case studies can involve either single or multiple cases, and numerous levels of analysis (Yin 1984). In this thesis single case was chosen to be described. As a strategy there was used full case study description in order to better understand all cooperation processes as well as management approach to defining cooperation strategy at the USP.

Main methods used within the case study research can be categorized as follows:

- Methods used during data collection (document analysis, observation, semi-structured interviews).
- Methods used during information processing (modelling, quantitative and qualitative evaluation methods).
- Methods used during problem solving (induction, deduction, synthesis, analysis, modelling, etc.).
- Methods used during solution evaluation (comparison, analysis).

The following model presents the steps of a research process. It starts with defining the research problem and objectives and ends with a summarization of the research outcomes.

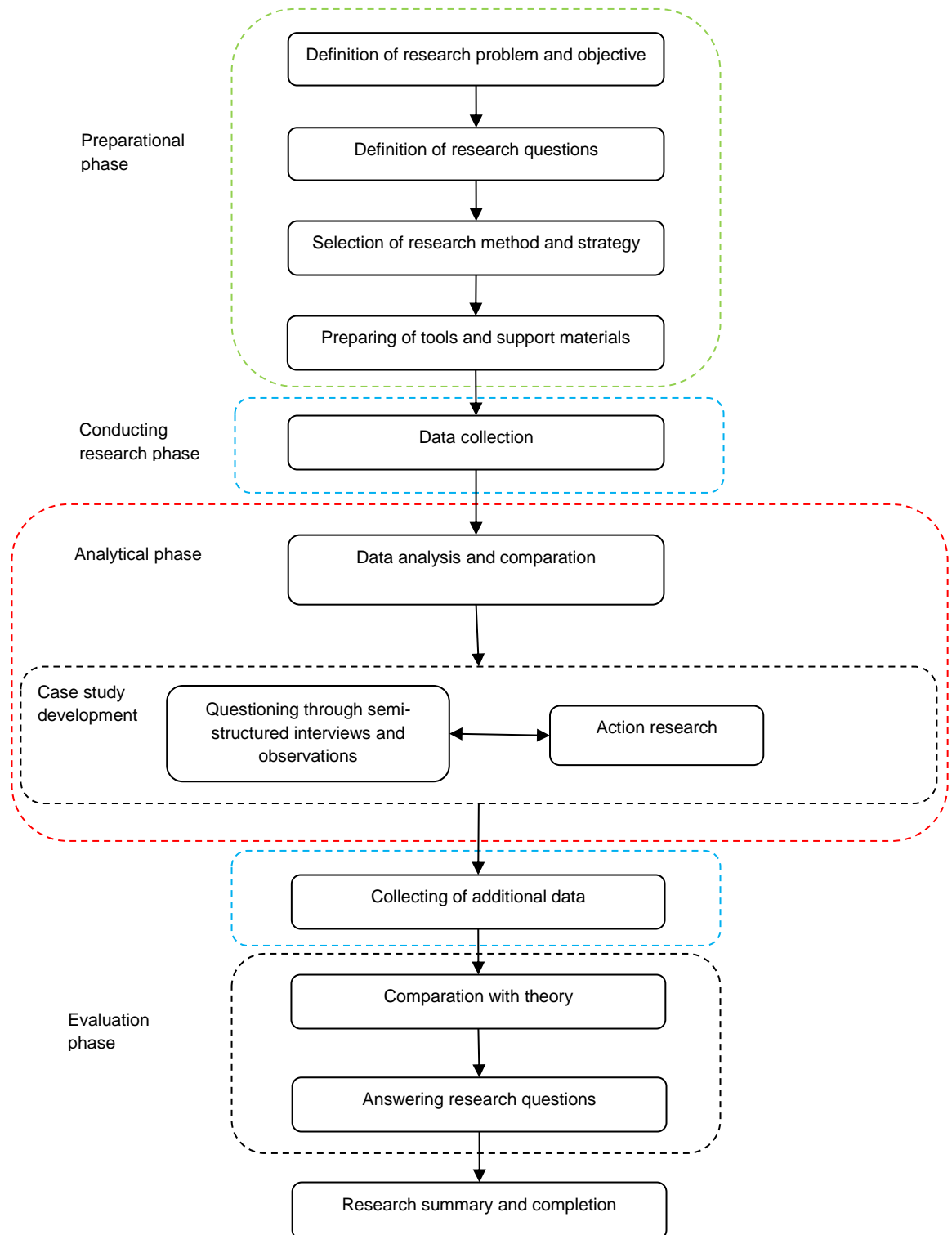


Figure 2. Structure of an empirical research preparation and conduction (own elaboration).

4 CASE ANALYSIS

The purpose of this section is to analyse the selected case and thus an attempt to answer the research problem. A summary of the most important parts in the procedures in the USP case is outlined. These are analysis of the current state of the cooperation activities of the University Science Park. Main aim of this analysis is identification of current state and discrepancies that can be improved in the proposal phase.

In 2013 Slovak universities received EU funding to build Science Parks. University of Žilina was awarded by two grants in total amount of more than 60 million EUR.

Science Parks in Slovakia are of a different nature than traditional Science Parks. They are more focused on science and research. The biggest difference between traditional Science Parks in the world compared to Slovak Science Parks is that they do not provide spaces for rent. This cuts off the possible cash inflow. Since Slovak Science Parks received EU funding, they are loaded with bureaucracy. Overall, they cannot make a profit which has negative impact on their business activities. The biggest problem is the financial sustainability of the Slovak Science Parks since the money run out and the second round of financing was not approved yet.

The solution to the mentioned problems is to put emphasis on the cooperation activities. Therefore, this thesis are mainly focused on the improvement of all cooperation processes from establishment of cooperation to its evaluation. Since there is lack of cooperation management in the USP following the theory of cooperation management several stages of cooperation will be further described.

4.1 Presentation of the University Science Park of the University of Žilina

In 2013 management of the University Science Park defined a clear vision which is: *“The Žilina region will be in year 2020 on top of the research activities in the field of intelligent traffic, transport and manufacturing.”* (USP - Internal documents, [ref. 23 April

2015]) This vision is representing the areas of research in which the USP see its excellence.

This USP vision is in accordance with The University of Žilina Long-term Plan. In the Long-term plan for the years 2014 – 2020 University of Žilina stated the strong need for cooperation: *"the broad development of international cooperation with educational and research organizations, permanent deepening of attachment to social practice"* (UNIZA, [ref. 23 March 2014]). Into its cross-sectional tasks were also included focus on applied research, its protection and transfer, which would not be possible without partnerships. Below are few of the tasks that shows the importance of partnership in research and science which University of Žilina involved in its Long-term Plan:

- protection of intellectual property,
- creating partnerships and support mechanisms for implementation of research results and innovation in practice (creation of new business units, incubators etc.),
- applied research supported by partners from practice with direct technology transfer.

This long-term plan could be background to defining the vision for cooperation activities at the USP. However, nowadays there is no vision reflecting the need for cooperation.

4.2 Research interest

The main activities of applied research of the University Science Park are divided into four divisions. Each division represents a separate research unit with own organizational structure and management. Comprehensive supervision of their activities is carried by the director of University Science Park as well as the rector of University of Žilina. The divisions are following:

- Information and communication technologies (ICT).
- Intelligent manufacturing systems (IMS).
- Intelligent transport systems (ITS).
- Advanced materials and technologies (AMT).

The largest division in terms of research tasks spectrum, research infrastructure and staffing is ITS. In the field of road traffic the University Science Park cooperates with its main project partner - Transport Research Institute, Inc.

An individual department of the University Science Park, which is working independently as other divisions, is the Centre for Technology Transfer (CTT). This Centre has its own organizational structure and the direct supervision of its activities is carried out by the director of the University Science Park. The CTT provides its services primarily to divisions of the University Science Park and subsequently to other workplaces of the University of Žilina. It also serves to external subjects. The CTT activities must be conducted in accordance with the overall concept of the University Science Park. Therefore, the activities of the CTT are closely linked to research activities tackled under divisions of the University Science Park.

4.3 Organizational structure of the USP

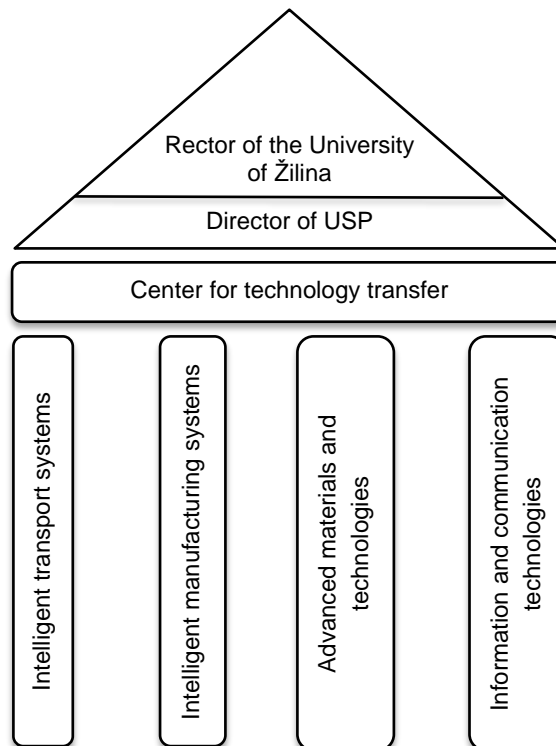


Figure 3: Basic pillars of the USP (USP – Basic information, [ref. 10 March 2016]).

University Science Park is a formal organizational unit of the University of Žilina in Žilina therefore the rector is superior to the director of the USP. USP has no legal personality, only the University of Žilina. Rector is holding the legal rights and obligations within a University as well as USP (such as entering into contracts which is very important when talking about cooperation activities).

The organizational structure of the USP has been constantly changing since beginning. The latest version is presented below. The new entity which is part of the USP is Era Chair holder with its team. Since the Era Chair team is placed in the USP building they have better possibility to cooperate with the team of ITS division which is a big advantage for both sides.

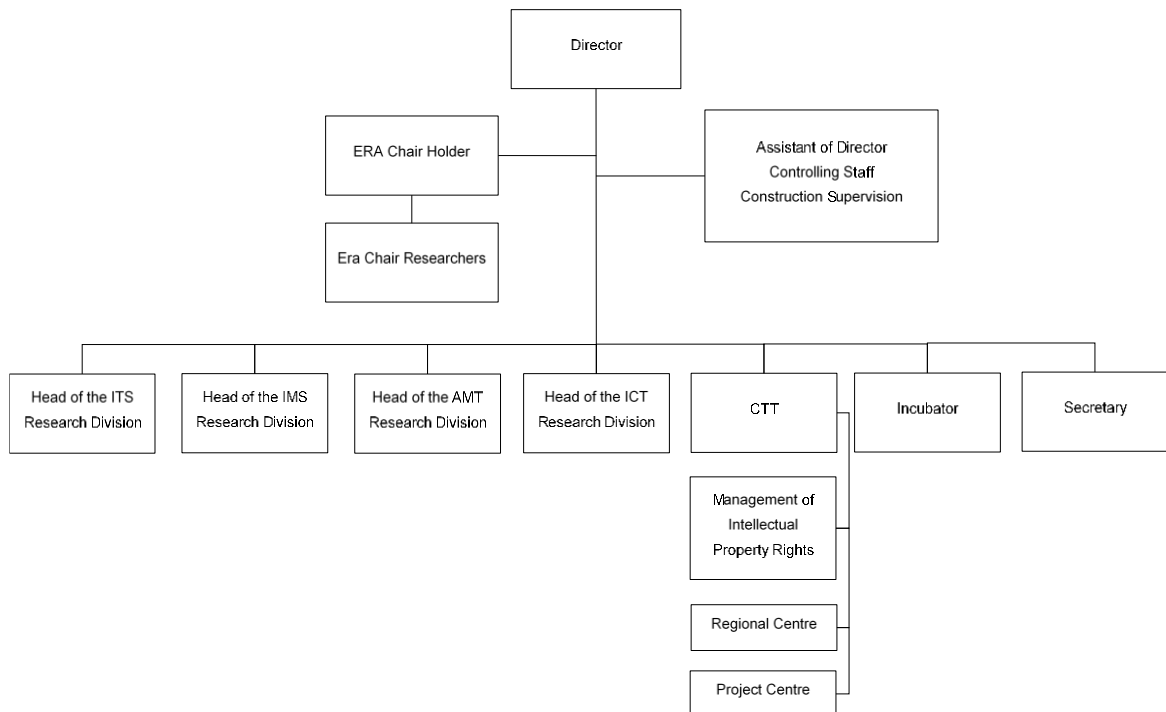


Figure 4 Organizational structure of the USP (USP - Internal documents, [ref. 23 April 2015]).

4.4 Position of the USP in Žilina region ecosystem

Ecosystem is crucial when talking about cooperation. Žilina is critical transport hub. Many industrial cities are reachable within one hour. Žilina has university with decades-long tradition where research in the transport field has been developing since its beginning. Various clusters have been established to support cooperation of local companies in certain fields from IT to tourism. The culture of cooperation is well developed so it should be easy to include USP to these cooperation activities. Below the localization of the USP in the University of Žilina and Žilina region environment is presented. There are represented only those stakeholders which USP is currently cooperating with.

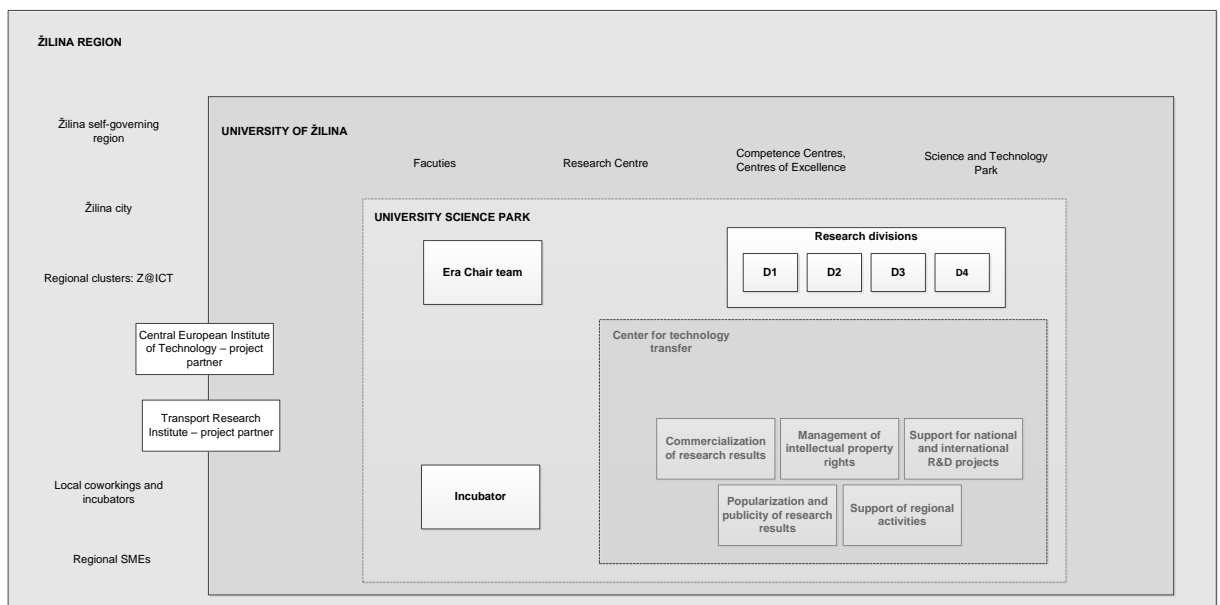


Figure 5: Localization of the USP in the University of Žilina and Žilina region environment (own elaboration).

4.5 Communicational flow while establishing cooperation

The communication flow within USP is complicated due to the fact that USP has no legal personality. All contracts need to be signed and approved by the rector of the University of Žilina. Approval and signature of the rector slows down the process of

cooperation. The communication flow is presented in the figure below. Many times cooperation partners require equipment or capabilities that are not present at the USP. Then University of Žilina and/or Faculties need to be approached and involved in the cooperation process (the decision about cooperation is made by rector and vice-rectors, vice-deans).

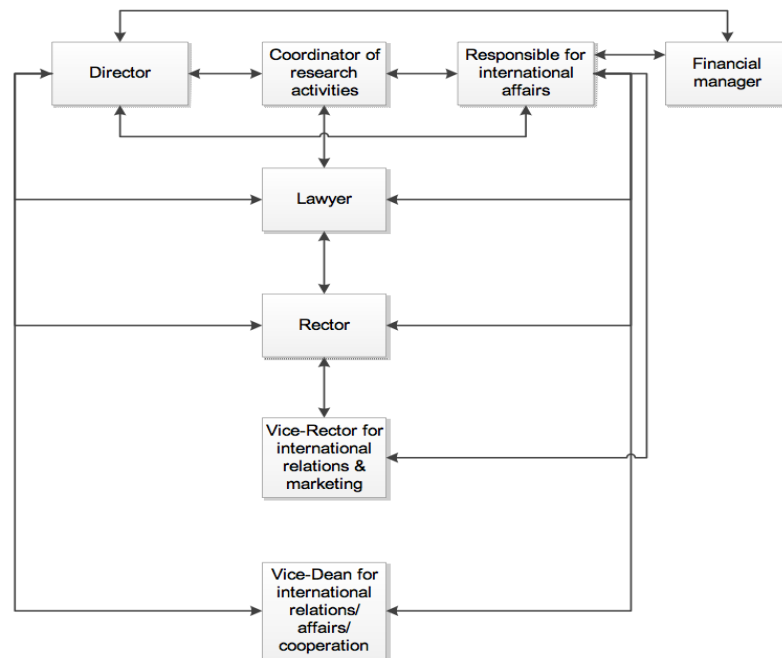


Figure 6. The communication flow within USP (own elaboration).

The most common communication flow within the USP is presented on the Figure 6. There are five people who are always involved in the cooperation process – it is the person responsible for international relations who usually gets the invitation for cooperation from a partner willing to cooperate. The person responsible for international relations is the main communication contact person internally as well as externally. This person needs to ask for permission for cooperation the director of the USP as well as financial manager. They three needs to decide if there is a mutual interest in establishing the new cooperation. Once they agree on consensus, the person responsible for international relations contacts lawyer to prepare contract or bilateral agreement depending on the cooperation partner request. Then the agreement is presented to the rector and she needs to decide if she approves and signs the agreement. After everything is done, the agreement goes back to the person who is

responsible for international relations and sends the agreement to partner for signature. Sometimes vice-rectors are involved in the process if the agreement cannot be signed as agreement of the USP – mainly when we talk about student exchanges or Erasmus programs. It is due to the fact that USP is not an educational institution and cannot have these types of agreements.

Up to now cooperation agreements were stored in the administrative office. There has been no system which could store signed contracts (e.g. in scanned version). Therefore, many of the agreements were hidden and could not be accessible when needed so it was hard to keep track if the partner willing to cooperate already have agreement or not.

4.6 Cooperation management

When talking about cooperation management one needs to realize that defining the cooperation strategy is the first step in carrying out successful cooperation activities. However, USP lack any strategy neither business nor cooperation.

Every cooperation strategy starts with analysis of the internal and external environment. There were several attempts to analyse the external and internal environment. The results of the analysis were never used to define strategy, they only served for defining internal processes in the USP (such as Concept of the operation of the University Science Park under conditions of the University of Žilina, internal regulations, etc.). These documents were written and presented to the management of the USP, however their implementation failed due to many obstacles.

Cooperation activities are crucial in such research institutions as Science Park is. Nevertheless, the USP cooperation activities were not managed at all and therefore not creating any value. Furthermore, USP is not collaborating with external partners enough which is significantly decreasing its possibility to succeed on the market. Due to this fact USP management should re-evaluate its attitude towards cooperation and its management.

The primary role of the USP is conducting superior applied research in the cooperation with researchers and experts from praxis on the national and international level. Below are described several types of cooperation in three major areas of the USP cooperation.

Table 1. Nature of the cooperation in the USP (own elaboration)

Research cooperation	Teaching cooperation	Business cooperation
Knowledge exchange (usually between individual researchers)	Guest lectures (lectures of professional researchers in academic courses)	Contact to potential interns and graduates (recommendation of students with high potential)
Cooperative research projects	Bachelor or master thesis supervision	Consulting
Writing joint papers or books	Cooperative seminars or projects (students work on problems and present their solutions to companies or researchers)	Exchange students internships
Determining technology trends		Employee training (workshops on topics in USP areas of interest)
Conferences organization		Business projects (research of specific technology, applied research)
		Start-up and spin-off incubation

4.7 USP's cooperation strategy

Since there is no **cooperation strategy** defined, cooperation activities are done unsystematically without a clear goal in mind. Cooperation processes are neither defined nor managed. Therefore, I needed to define these activities (via analysis of signed contracts, personal experience and interviews) and consequently to analyse

them. Some of the contracts were done by me personally as I was responsible for the international relations at the USP for about a year.

First and foremost, there is **no clear vision and goal** for cooperation defined. It is due to the fact that there is no business strategy defined from which the cooperation strategy could be derived. Without a clear strategy employees could not establish successful cooperation because they lack vision and overall purpose of cooperation. Everything is based on the belief that researchers have the ability to reasonably assess the potential of cooperation. However **responsibility** is put on each researcher without acknowledging them who is responsible for the cooperation for the whole USP. This way everybody is establishing cooperation individually and the final bilateral agreements are stored in various offices so most of the time it was impossible to find them. Many of the researchers work at two places – USP and Faculty. This is also causing chaos since there is a lack of information from researchers if the agreement was established for their Faculty or for the USP, etc.

Lack of cooperation management also resulted in small number of established partnerships as well as no awareness about the USP in the private sector as well as on international level. This caused problem that potential partners were afraid to establish partnership because they thought that USP is not a professional partner because it lacks experiences since it started its operation only few years ago and there has been any brand built yet.

Below are described cooperation activities of the USP with the goal and expected outcome. Only research and business cooperation is further described because teacher cooperation is not nurtured at all.

Research cooperation

Director of the USP together with an authorized personnel strive to establish cooperation with various universities, research institutions and other Slovak Science Parks. These personnel are largely dependent on contacts acquired in the past on which capitalization are now seeking.

Major international conferences where it is possible to present the University Science Park, its activities and progress are crucial when talking about the acquisition of a network of contacts that might be beneficial for the future activities of the USP. Moreover, it is important to look for advices as well as cooperation possibilities there. The big disadvantage is that it is time-consuming and expensive due to the fact that building a strong and beneficial relationship with foreign universities and institutions requires mainly personal contact, especially at the initial level.

University Science Park is currently mainly focused on foreign research institutions that have potential to collaborate on international projects. Another challenge is to look for the partners to cooperate on projects within the Horizon 2020 Framework Program.

USP has few partners that they intensively cooperate with, e.g. Finland, Chile, Germany, Taiwan, China and Belgium. However, researchers are constantly working on new agreements.

When travelling abroad it is always important to contact universities involved in such projects as we have so they can help with advices on how to build a Science Park. In this particular case the visit of Taiwan was very fruitful. Thanks to contacting of our representative I was able to visit science parks in Taiwan which are otherwise closed to public. From this initiative ministries of Slovakia and Taiwan started to closely cooperate and the USP management is always informed about new steps they are taking.

Below are presented few of the university partnerships that I personally established and I describe the purpose and process of cooperation.

Table 2. University partnerships (own elaboration).

Name of the university	Initial purpose of the cooperation	Analysis of cooperation activities
National University of	Student and teacher mobility	In 2013 two teachers with a dean from NUK came to University Science Park to see the possibilities for initiating a cooperation. The result was signing a

Name of the university	Initial purpose of the cooperation	Analysis of cooperation activities
Kaohsiung (NUK)		Bilateral Cooperation Agreement with primary focus on the student and teacher mobility followed by research and project activities. First step which launched the cooperation with NUK was student exchange in 2015. Since 2015 there were no attempts to continue active cooperation from USP side because the student and teacher mobility is not the primary focus of the USP due to the fact that USP is a research not educational institution. However, this cooperation is fruitful because Taiwan is an example of innovative country where university educational as well as research standards are very high. I suggest to maintain the cooperation in a professional way which will include especially managing of the cooperation with a clear goal – improvement of research. Taiwan has a lot Science Parks that cooperate with universities across Taiwan. USP can be a part of any partnership that they have. Writing joint papers could be a good start for the research activities and getting to know local researchers.
University of Applied Sciences Aschaffenburg (UAS)	Student and teacher mobility	This cooperation was triggered mainly because of the request to sign an Erasmus agreement between our universities allowing future teacher and student mobility. The cooperation started with a clear goal to start with guest lecture of one teacher willing to offer his course at our university. Since this cooperation was purely academic not scientific it was not further maintained from USP side. This university has strong relationship with SEAMK which could be later used e.g. when submitting a joint research project.
Universidad Tecnica	Project cooperation	SEAMK and UTFSM are important partners for USP. In 2015 we submitted EU project together with other

Name of the university	Initial purpose of the cooperation	Analysis of cooperation activities
Federico Santa Maria (UTFSM)		partners. However, it was not accepted by the EU Commission and we have not received any funding to support the activities proposed in this project.
Seinäjoki University of Applied Sciences (SEAMK)	Project cooperation	However, both cooperation are still nurtured because we see strong potential in other areas such as entrepreneurship, knowledge transfer and applied research.

Below are presented few of the demonstrational research partnerships that were established. The purpose and process of cooperation is briefly described.

Table 3. Research partnerships (own elaboration).

Name of the institution	Initial purpose of the cooperation	Analysis of cooperation activities
Other Science Parks in Slovakia	Association of the Slovak Science Parks	There was an attempt to have association which will connect all Slovak Science Parks so they would have better negotiation position in front of the government, etc. Many versions of the agreement have been exchanged among the Science Parks for more than a year, however at the end no association was established. The reasons why vary from each institution. Hopefully, there will be some type of association connecting the common requirements of these parks in the future. Request for association came from the Research Centre of the University of Žilina which is similar institution as USP so it will be in their hands to reopen the communication among Science Parks.

Name of the institution	Initial purpose of the cooperation	Analysis of cooperation activities
Science and Technology Park Milovice	Joint research	In 2014 USP signed research agreement with STP Milovice. It was focused on the joint research for automotive industry. Due to the various obstacles, research was never conducted.

There were several cross-institutional cooperation. Only few were described in the tables above. Any of the cooperation can be described as successful due to various reasons. The most important reasons which led to failure will be described at the end of this chapter in the subsection Results.

Individual cooperation of the USP researchers with foreign researchers all over the world can be described as exemplary. Researchers has been trying to maintain their cooperation they brought from Faculties while they have been working as PhD students or researchers. When they came to the USP, they had possibility to participate at many conferences due to sufficient amount of money the EU approved for travelling and conferences. Thanks to that researchers could be continually establishing new partnerships while networking at the conferences. There was also possibility to visit different Science Parks across the world, analyse and compare them to see how the USP can become successful as other Science Parks which has long tradition.

The UNIZA received funding for ERA Chair in Intelligent Transport Systems. Excellent scientists could apply for the ERA Chair position established at the University Science Park of the University of Žilina within the prestigious European grant awarded to only 11 European research institutions within the Seventh Framework Program. The project aims to enhance research and innovation aspects of the park in the field of Intelligent Transport Systems (ITS).

Nowadays there is a small team of Era Chair researchers led by an Austrian Era Chair holder whose purpose is to start excellent research in the field of ITS at the University and bring many cooperation for applied research as well as improve branding of the

University as well as Science Park where they are placed. The Era Chair researchers are experienced and the grant is so prestigious that it might not only contribute to improving research but consequently bringing cash inflow to the University and USP. This Era Chair grant might be a way for establishing meaningful partnerships.

Business cooperation

Žilina Region as well as the University of Žilina have been closely linked to the area of transport and ICT for decades. There have been number of meetings with representatives of various local and international enterprises held where the new areas of common research interest have been searched in order to start new joint collaboration.

Authorized personnel constantly work on the preparation of materials addressed to foreign enterprises to whom results of applied research of the University Science Park could be presented in order to sign contract research.

In the Žilina Region there are operating many institutions assisting in development of ICT cluster, which was created in 2008. The ICT cluster Z@ict was established with the aim to improve quality of the life of Žilina Region inhabitants, increasing its prosperity and attractiveness as well as promoting the competitiveness of institutions and companies operating in the field of ICT and related services in the Žilina self-governing region. (Z@ICT, [ref. 19 April 2015])

The University of Žilina has been actively cooperating with many companies from the ICT sector for ages, e.g. Scheidt & Bachmann, s. r. o., Siemens, s.r.o., IPESOFT, s.r.o., IBM Slovakia, s.r.o., AT&T Global Network Services Slovakia, EMTEST, a.s., Kros, a.s., etc. This cooperation is also beneficial for students to whom the companies are providing the possibility for an internship or supervision of their thesis (bachelor, diploma, and dissertation) on the selected topic that the particular company provided to these students. These companies also support students in form of providing sponsorship to various non-profit events (e.g. Start-up Weekend, Rails Girls).

This type of cooperation the University of Žilina aims to support in the future and also strengthen through new technologies, equipment, and research activities at the University Science Park.

Below are presented few of the demonstrational business partnerships that were established. The purpose and process of cooperation is briefly described.

Table 4. Business partnerships (own elaboration).

Name of the institution	Initial purpose of the cooperation	Analysis of cooperation activities
International Association for the Exchange of Students for Technical Experiences (IAESTE)	Providing internship possibilities for technical students	This cooperation was very successful when it was established. In few months after signing the contract, one student from Turkey has arrived. Her primary focus was to develop database model for the management of the technical equipment which was procured. The information system was about to be developed and her model was a base for developing this system. The relationship with IAESTE was not prolonged mainly because USP could not pay to these students and they were not interested in job that cannot cover their costs during their stay in Slovakia.
IBM	Contest for students	IBM representatives have visited University of Žilina as well as USP several times. The last visit was focused on the establishment of cooperation with a goal to promote The IBM Master the Mainframe contest. The cooperation will be nurtured for sure because IBM is a strong partner for universities across the world in many areas.
Student	Help with start-up establishment	USP is also helping skilled young entrepreneurs with their innovative ideas. The main help is focused on their intellectual property protection

Name of the institution	Initial purpose of the cooperation	Analysis of cooperation activities
		as well as business model development. In many cases USP is able to provide technology that students can work on with supervision of experienced researchers. Since beginning only one student was able to receive such a help.

USP is mainly focused on the development of business cooperation with the following stakeholders:

- companies,
- public institutions,
- student organizations: e.g. IAESTE,
- students' start-ups,
- researchers' spin-offs.

Many of the cooperation relations were established however any of them have major impact on the USP activities and have not brought any significant benefit yet. The biggest problem was lack of management of these partnerships due to the missing purpose that USP management would perceive as financially beneficial.

4.8 Results

The aim of the analysis of the case of the USP was to find out problems causing ineffective cooperation of the USP with its partners. The biggest problem is that USP is not an independent institution but an organizational unit of the University of Žilina. Moreover, since 2013 it has been EU project (two years plus five years of sustainability). Due to the mentioned factors USP has been experiencing many problems.

First and foremost USP is burdened by bureaucracy. Secondly, as an EU project USP received money “for free” which caused problem with contract research due to the

problem that USP could not make any profit on the equipment which was procured. This resulted in problems with establishing partnerships with companies.

Another problem is slow procurement process that caused many problems: construction of building was finished half a year later than expected and equipment has been still arriving. Therefore, researchers have no place to conduct their research as well as they could not be working on it without proper equipment some of which has not arrived yet.

Since buying any software needs to go through public procurement process, it was impossible to collect and store any data – also about cooperation.

There were no processes defined as well as no business model and strategy proposed. The vision of the USP was not clearly stated and articulated towards employees so the motivation was constantly decreasing. Due to dysfunctional process many employees resigned.

Researchers has been passive for a very long period since there was nobody controlling and supervising them. They felt insecure because nobody knew what is going to happen after the two-year period when the USP had funding from EU. They had no clue what to do and because there were no control mechanisms set, nobody was punished for idleness. This caused problem in monitoring period when management found out that there is a lot of outcomes missing. The measurable criteria were strict and it was problem to fulfil them without motivation and hard work of employees. One of the measurable criteria was also number of projects submitted. This was an important criteria which should be managed by project department however it was neglected for a long period. It resulted in financial problem due to the lack of grants received.

There are many stakeholders which has crucial impact on the Science Park: students, academics, researchers, commercial companies, region and regional authorities, regional clusters, other universities, other science parks, associations, alliances, etc. All of these stakeholders have different requirements on the USP. Nowadays there has

not been any rule for choosing a cooperation partner or any purpose that should be achieved when deciding about cooperation partner. The cooperation process was done intuitively. Therefore, many of the relationships have failed. Evaluation of the cooperation was not done at all. Many of the cooperation partnerships were established however they were not managed. Some of the partnerships were established only for certain period so it is necessary to define control mechanisms to make sure that beneficial partnerships are still maintained.

The cooperation was done not only intuitively but by many people which caused problems with its monitoring. Nobody has the overall view on all partnerships. Agreements were stored in many offices (financial manager, director, researcher, responsible for international relations, etc.).

The communication flow was slowing down all processes. The need of so many approvals and signatures could slow down some processes to one year. Meanwhile partners have already forgotten about their willingness to cooperate.

There has been huge problem with perception of Science Parks in Slovakia since the beginning of the projects and their medialization. They all have negative image built in front of the private sector. Companies perceive park as an entity that got money for free and therefore it caused deformation of the market and it is taking contracts to companies because they can offer lower prices as they procured "free equipment".

There were many other problems that lack of cooperation management has caused. Only major strengths and weaknesses which has positive or negative impact on the cooperation are briefly recorded in the table below.

Table 5. Analysis of the University Science Park's strengths and weaknesses in cooperation process (own elaboration).

Strengths	Weaknesses
<ul style="list-style-type: none"> • New premises with unique laboratories • Attachment to university resulting in wide range of possibilities of cooperation • Era Chair team with prestigious grant • Existing networks and contacts of researchers • Uniqueness of the research specialization • Key division of intelligent transport systems is based on UNIZA tradition and its focus on transport – could attract more EU projects • Exceptionality of Science Parks attracting publicity 	<ul style="list-style-type: none"> • Passivity of researchers • Orientation on basic more than applied research which is harder to sell • Missing research capacity because of brain drain, fluctuation • Public procurement process and its complexity and lengthiness • Huge administrative burden, strict control by public institutions • Negative image of USP in private sector • Missing cooperation strategy, missing motivation to establish partnerships

5 PROPOSALS

Cooperative strategy is about simultaneous competition and cooperation among rival partners for mutual benefits. The phrase “mutual benefits” is the key phrase in any cooperation. When setting cooperation goals companies must take into consideration the nature of cooperation which is the same as it is in nature. Like a pack of wolves companies have to have common goal in mind and thus they can become stronger and more successful in achieving their goals. Looking for win-win situation while defining cooperation means looking for value that is advantageous to both of them. This can be achieved only through co-creation of value therefore this theory was chosen as key theory in proposing cooperation strategy for the USP. After all, cooperation is primarily about reciprocity and altruism. With this in mind any cooperation will be successful.

Framework for defining strategy for the USP has the following steps:

- a) Defining vision and goals for cooperation.
- b) Defining main cooperation stakeholders and their prioritization.
- c) Setting up relations between stakeholders that have the most beneficial impact on the USP.
- d) Setting up an organizational matrix – organization structure and its role in cooperative relations. These settings should ensure dynamics in possible organization structure changes, ad-hoc connections with partners in limited time, time limited participation on single projects, etc.
- e) Standard management tasks: duties and responsibilities; control mechanism, etc.

When the framework is defined, we can propose a model for cooperation which has all of the frame recommendations included. The model should reflect on current cooperation relations of the University Science Park. It should also reflect on future tasks, park’s vision and strategic goals. This model is a tool for park’s management to plan and manage cooperation activities. Therefore, the model should be dynamic by its nature. This dynamics will ensure the environment adaptation to new tasks or to market change, etc.

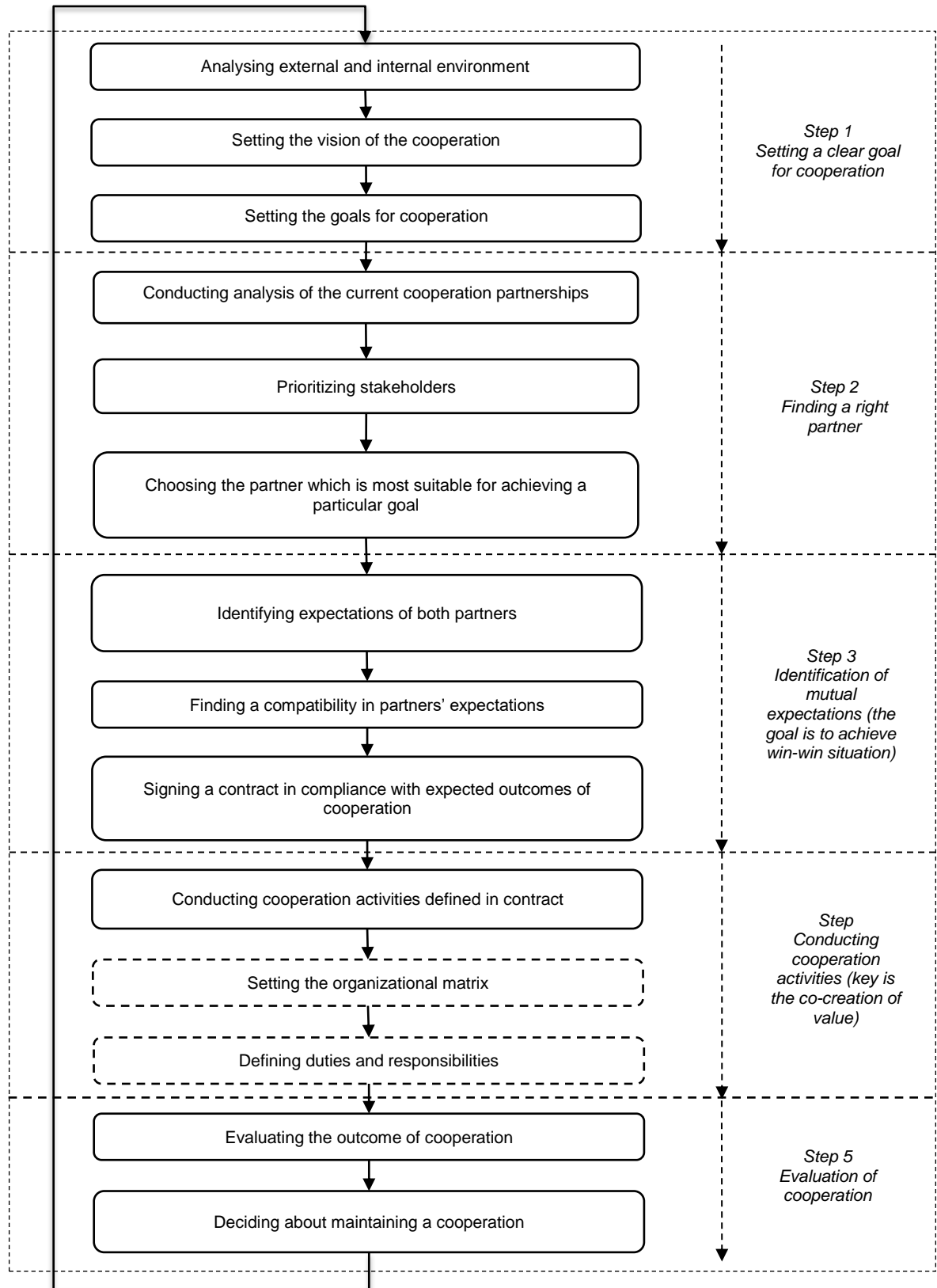


Figure 7. Proposed cooperation management model (own elaboration).

Having the primary purpose of cooperation in mind, the cooperation strategy for the USP was proposed. The vision for the cooperation is defined as follows: *To constantly thrive to achieve effective cooperation with different stakeholders by co-creating of value by both partners.*

Having the vision for cooperation defined, goals for cooperation can be identified. Since I have been part of the USP for more than two years and currently I am working for the Research Centre, I know all the problems that these institutions are facing. Based on my knowledge I proposed several cooperation goals (together with tasks) for these institutions:

- Increase the effective cooperation inside the USP.
 - Implement the cooperation model until the end of the 2016.
 - Promote research collaboration within the organization.
 - Support knowledge exchange by providing employees various events they can participate so the knowledge can be shared.
- Improve international image of the USP.
 - Promote Science Park at more conferences.
 - Invite and welcome international delegations.
 - Become part of the Associations which interconnects Science Parks from all over the world.
 - Give guest lectures.
 - Conduct more visits to foreign Science Parks and acquire knowledge about building innovation ecosystem, exchanging know-how in building support structures related to the commercialization of research results as well as IP rights management.
- Gain more applied research contracts.
 - Approach industrial partners and offer them a proposal based on the co-creation of value.
- Gain more prestigious grants.
 - Approach excellent researchers and research institutions to partner with them.

Effective cooperation can bring several impacts on the Science Park. Below I present some of the potential impacts which the implementation of the proposed model can bring. They are divided into few areas:

Financial impact:

- Ensured sustainability of the USP.
- Increased prosperity of the USP.
- Ensured survival without money from EU.

Cultural impact:

- Improved culture of the organization. Employees will not be afraid that they will lose their jobs since the collaboration culture will be promoted.
- Increased motivation to establish partnerships.
- Increased motivation to share knowledge.
- Increased drive to share contacts.

Marketing impact:

- Improved international image of the USP.
- Increased brand awareness.

Research impact:

- Increased exchange of knowledge, contacts, experiences in particular field.
- Increased number of applied research contracts.
- Increased number of EU grants as well as prestigious international grants.
- Improved relations with industry by providing top-notch research with partners.

When the vision and goals are defined, we can smoothly pass to the next step. This step is about finding the right partners for cooperation. The best approaches that can be used in order to identify the best partner for each cooperation goal is to use stakeholders' management matrix. Before we use the matrix, it is very essential to know all the partners that can be approached. Therefore, I proposed Figure 8 where all the possible stakeholders are captured. Based on the goal of the cooperation we need to assess the best partners for cooperation. After seeing the whole picture, it is much easier to choose all the relevant stakeholders. After the selection of the crucial partners that can be approached, we can use two approaches. First approach is simpler, it is about defining the criteria for selection of the partner. The criteria will be chosen in

relation to the cooperation goal. Then we can evaluate each partner based on the criteria we selected as important for decision.

The second approach is to use the stakeholders' management matrix. This approach is more complicated but at the same time more effective since we see not only the partner we want to cooperate with based on the goal, however we see all the potential partners and strategies that we need to take to manage them effectively.

This stakeholders' management matrix can be seen on the Figure 9. There are four strategies how to manage chosen stakeholders. It is monitoring partners, informing partners, cooperating with partners to make them satisfied and managing closely those partners who are crucial for us.

This proposed stakeholders' management matrix should be implemented into the Science Park's cooperation activities management. The recommendations for its implementation are as follows:

- a) Conducting systematic analysis of stakeholders to catch the dynamics of the relations with various stakeholders in time.
- b) Using theoretical knowledge and realistically set goals for identifying the management criteria for single matrix positions.
- c) Effectively managing single stakeholder's positions.
- d) Obtaining feedback based on experience with single stakeholders.
- e) Proposing new setting of the matrix according to gained feedback and/or management goals.

The proposed matrix should be implemented on a strategic level into the Science Park's processes in order to ensure that the goals defined for management of a single stakeholder in matrix are in line with strategic objectives of the USP. The director of the USP should use this draft and give competences to each employee to properly work with it. The director should also provide his strategic point of view on the draft. Science Park employees should provide analytical work in order to keep the matrix up to date and execute single steps following the matrix.

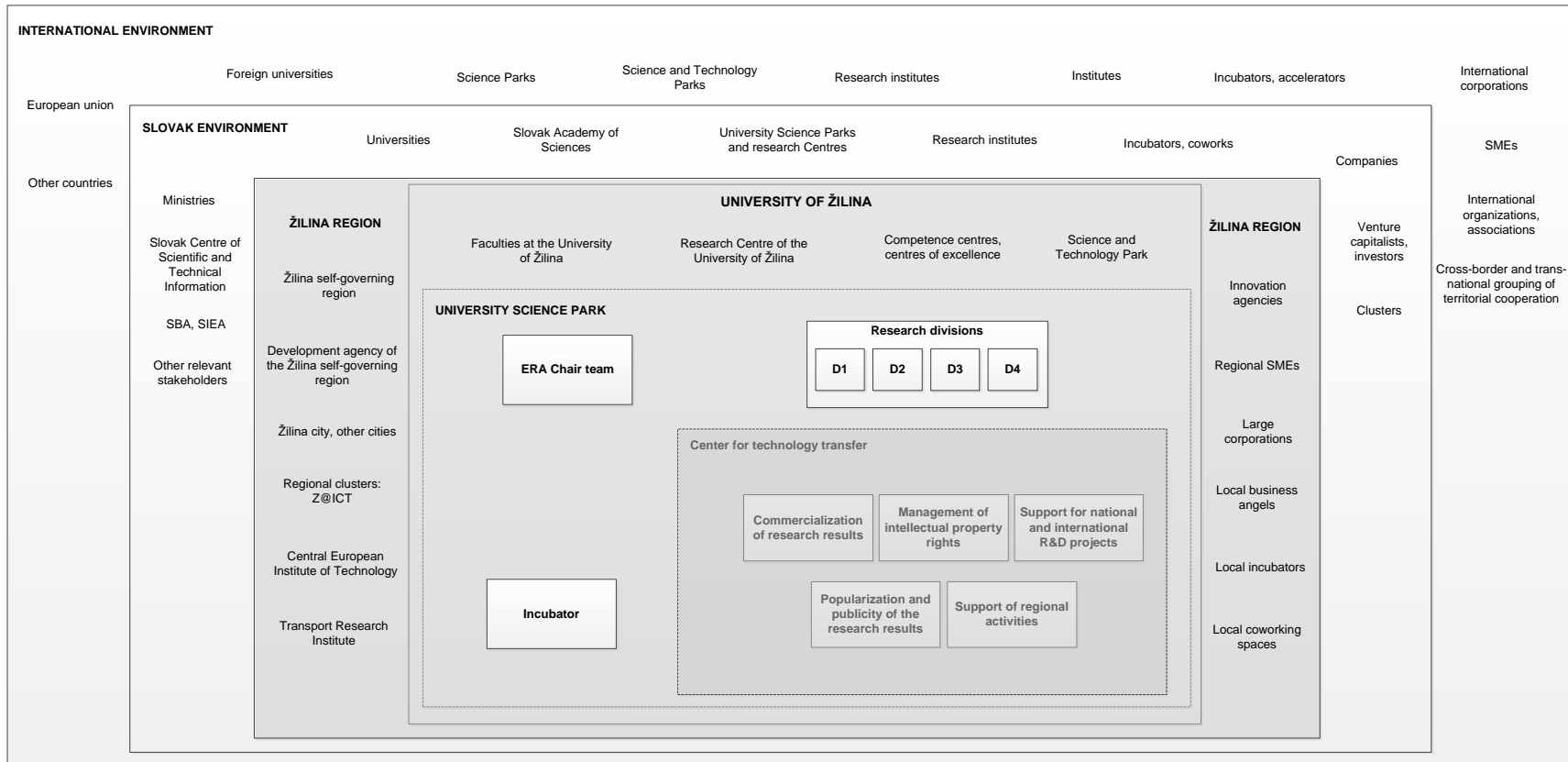


Figure 8. Possible partners for cooperation (own elaboration).

Importance of stakeholder contribution	<i>Crucial importance</i>	Keep satisfied <ul style="list-style-type: none"> - Potential partners for cooperation: companies, clusters, R&D facilities... 	Partnership – manage closely <ul style="list-style-type: none"> - International projects (Horizon 2020, etc.) partners - Foreign partner universities - Cooperating companies - Cooperating clusters
	<i>Important but not crucial</i>	Monitor – minimal effort <ul style="list-style-type: none"> - Žilina self-government region - Žilina city - Slovak universities - Selected conferences - State of the art in the selected areas of scientific research 	Keep informed <ul style="list-style-type: none"> - University of Žilina - Ministry of education, science, research and sport of the Slovak republic
		Low	High
		Stakeholders level of interest	

Figure 9. Stakeholders' management matrix (own elaboration according to Robbins and Coulter 2004).

Below is presented description of each stakeholder's management matrix column. Each of the column represents strategy that should be used for each group of stakeholders belonging to that column.

Keeping satisfied the stakeholders

Stakeholders are characterized by high importance but low level of interest. Here are potential partners for cooperation. Science Park management must actively identify

them and develop future relations with them. The key is to keep them satisfied. This part of the matrix is primarily focused on marketing activities.

Monitoring the stakeholders

Stakeholders situated in this area are not crucial but it is necessary to monitor their operation on the market and/or in selected environment. Park's points of interest like scientific conferences and overall state of scientific research, etc. are also in the monitor part of the matrix. Management activities are oriented on gathering and processing of actual information considering selected stakeholders. Primary function is to have relevant information for decision making process.

Partnership with relevant stakeholders

In this area are situated stakeholders which are in a close relationship with the University Science Park. There are common projects, common research activities, Science Park business partners, etc. Management main activities in this area must be focused on: serious work on ongoing projects; satisfying of customer's needs; building of mutual trust based on previous positive experience, etc.

Informing the stakeholders

Not very important but very interested stakeholders are in the last area of the matrix. Here are situated stakeholders which are strongly connected with the University Science Park and have most significant effect on its operation. They could affect also complex decision making processes, and are able to modify them. They are able to be a part of Science Park's strategic planning, etc. Main role of the USP management must be oriented on building of strong and effective relationships with these stakeholders.

For bringing the proposed stakeholders management matrix into life it is necessary to follow basic common management principles (Robbins and Coulter 2004) as well as co-creation of value, basic principles of knowledge management (Nonaka and Konno

1998, Nonaka et al. 2008, Schwartz et al. 2006) and also possibilities created by its application (Soviar and Závodská, A. 2011).

When the cooperation partners are chosen, we need to approach them. When approaching a stakeholder one needs to have in mind the crucial principle which is mutual benefit. When attracting stakeholder with this attitude it is most likely that he will respond positively to the offer for cooperation.

Once the partner agrees to cooperate, details of the cooperation need to be agreed on as well as proper contract needs to be signed. It is very necessary to think about all the issues such as IP protection, etc. while signing contract. When talking about industrial or research partner, the mutual benefits that can be offered are: collaborative research efforts, exchange of the innovative ideas, determining technology trends, training company personnel, etc.

To conduct the cooperation activities mutual benefits and satisfaction has to be always implemented. These can be achieved by the co-creation of value. When having the principles of the value co-creation in mind, the result could be multiplied. There was a white paper published which presented 4 types of value co-creation (Pater 2009). One of the following approaches should be considered when conducting the cooperation activities.

- **Club of experts:** A very specific challenge is needing expertise and breakthrough ideas. Contributors are found through a selection process. Quality of input is what counts (e.g. Nokia).
- **Crowd of people:** Also known as Crowdsourcing. For any given challenge, there might be a person out there having a genial idea that should be given a podium. It's the Rule of the big numbers (e.g. Threadless).
- **Coalition of parties:** In complex situations parties team up to share ideas and investments. Technical breakthroughs and standards often happen when multiple parties collaborate (e.g. IBM).

- **Community of kindred spirits:** When developing something for the greater good, a group of people with similar interests and goals can come together and create (e.g. Linux).

The implementation of the cooperation strategy will require a **change of an organizational structure** – somebody needs to be in charge of cooperation with all duties and responsibilities. He or she needs to be accountable to the responsible for international affairs. The new proposed organizational structure can be seen below.

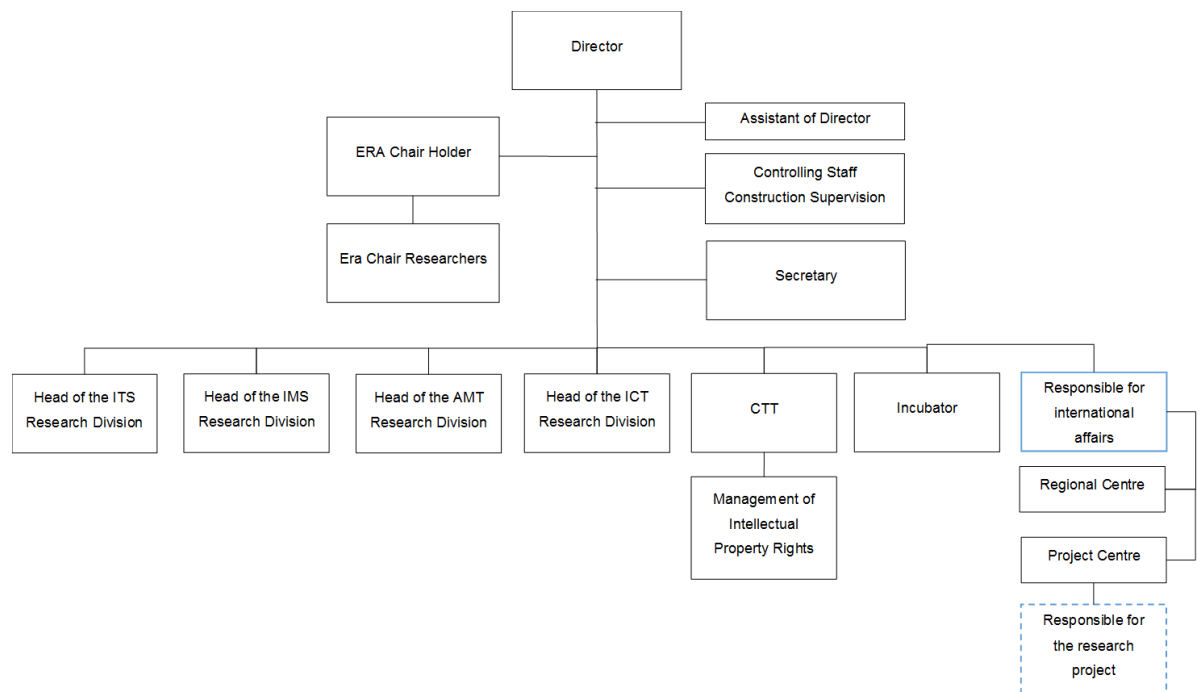


Figure 10. New organizational structure (own elaboration).

There are two new job positions that need to be created. First is the responsible for international affairs which is the full-time position for a person who will be responsible for management of cooperation activities. This person will talk to all stakeholders – potential as well as current. This person should have supervision of the regional and project centre activities since these activities are closely linked to cooperation activities. Once the bilateral agreement or contract with industrial partner is signed, person responsible for the research project has to be assigned. This person does not need to be new person, it can be researcher responsible for the project. It will be only project position.

The main areas of work of the person responsible for international affairs include following:

- The implementation of the cooperation strategy, and the creation of an action plan. This includes providing support for all researchers helping to implement the strategy.
- Developing strategic alliances and managing institutional partnerships and collaborations including our membership of the IASP.
- Working with research departments to develop their international agendas. This includes international agreements, funding opportunities, information on foreign student internships, participation in visits and profile-raising.
- Managing an ongoing schedule of visits by USP delegations to institutions in other regions of the world.
- Hosting visits by delegations from international universities and other research institutions and public bodies to USP in Zilina.
- Building international profile for USP through visits, media coverage, events and conferences.
- Developing and managing international opportunities for young doctoral students working at USP.
- Internationalizing the USP and its services to staff, students, partners and stakeholders.

Besides the change in the organizational structure the change in processes is also required.

A crucial factor contributing to effective optimization of processes and management of cooperation activities is an **information system**. In this case I proposed a complex information system for the Science Park with a help of few colleagues from ICT department.

My proposal was mainly concentrated on the international relation activities. Therefore, various features to ensure effective cooperation were proposed to the USP Share Point platform on which the new information system will be implemented. These were mainly:

management of documents related to international cooperation (agreements, invitation letters, etc.), warnings about the end of cooperation agreement, interconnection with project indicators, business trips organized in order to make new cooperation agreements, database of contact persons at institutions we cooperate with, mentions in the media about USP, events organized by the USP, etc. I believe that this information system will be a crucial change in the management of various types of cooperation activities in the University Science Park.

Below, there is a picture which shows the cooperation activities as a process. I optimized the processes and included the information system into the processes. This new information system will provide:

- First of all, *optimization of communication flow*. Currently, everything was based on personal meetings where details of the agreements were discussed. These cannot be excluded however can be decreased. Everything that does not need to be done personally will be sent through this information system and notification about need of decision will be sent to the recipient.
- *Everything will be stored in the system*. All agreements and contracts will be scanned and stored in the system. This way everybody who can access these documents will be allowed to see them. There will no more be a problem with finding out who has the agreement or if we have agreement with particular partner.
- *We can track in which phase every agreement is*. If it is already signed, stored or if its validity is about to expire. System will automatically track the final date of the expiration of the agreement and will send the notification to inform the responsible person about it. Then, the responsible person can decide if they want to further cooperate with this partner and if yes, the process of contacting the partner will start.
- *Most processes are fully automated* so it is not necessary to track everything. The system will inform about everything in advance so there will be time to react on every problem.

Same processes were proposed for other not less important areas, such as marketing area which is connected to the cooperation as well. There is a system proposed for keeping track of the information about events that has been organized to promote the

USP, or brand mentions in various media, projects signed and grants received, visits of delegations welcomed, etc.

Everything which is directly linked to the cooperation should be taken into consideration. Any system cannot work separately but it has to be connected with all areas which influence it.

At the USP the proposed system was programmed and it is being implemented. The results will be seen in the near future.

If the Research Centre where I work now would like to implement the system, it has to buy it from the USP or can also use various systems to manage the process or complex systems such as JIRA Software which offers flexible issue and project tracking with best-in-class agile tooling for software teams. The USP also started with JIRA, however this system does not reflect every uniqueness which is in the USP processes so it was required to completely program new software build on Share Point platform. Until then, JIRA will provide an essential replacement.

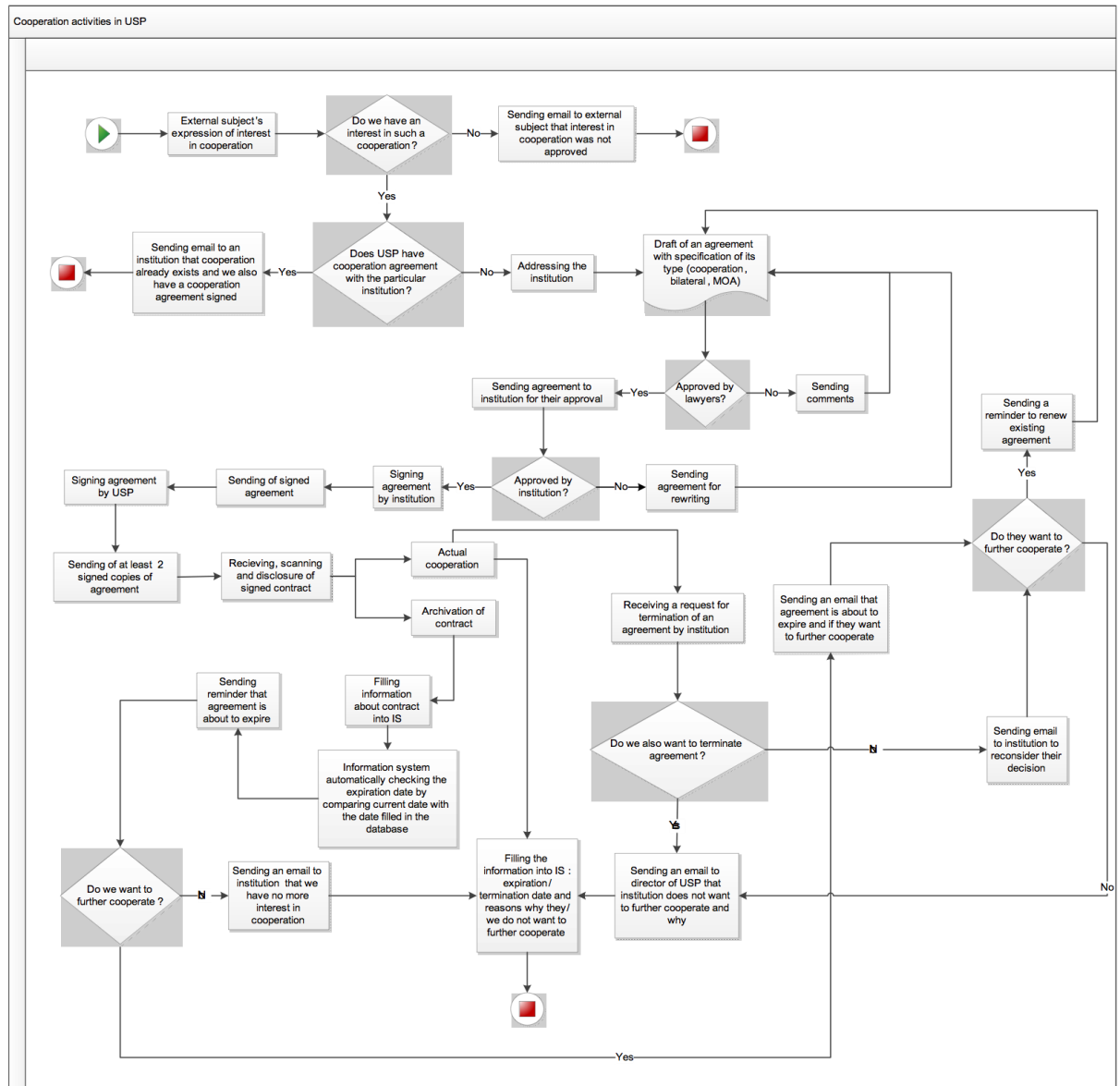


Figure 11: Proposal of the cooperation process model including information system and its implementation to this process (own elaboration).

Besides optimization of processes, there is one key issue which needs to be considered and it is creating budget for cooperation activities, such as travelling, welcoming delegations, etc. Below I propose what need to be involved in **budget** for the cooperation activities of the USP as well as related activities:

- **Formal creation of department** (lawyer, person responsible for international affairs, etc.) as well as promotional materials created.
- **Active promotion** in relevant media which is crucial when talking about cooperation. Brand awareness is very low and it needs to be improved if the USP

wants to attract better cooperation partners. Others needs to know that there is the USP and it is looking for partners for cooperation, what it has achieved, what kind of cooperation it has, etc.

- **Minor change on the USP website**, mainly information about international affairs department: its description and all activities listed, cooperation opportunities, and possibilities to contact the USP in case that the potential partner would like to visit the premises of the USP, etc.
- Databases of the universities, agreements scans, etc. on the **Share Point information system**.
- **Administrative costs**: such as creating and printing agreements and contracts, sending them abroad to partners.
- **Visits** to other Science Parks, research institutions, universities, etc. to acquire knowledge on how to manage Science Parks and establishing cooperation with the most beneficial partners.
- **Visiting international events** for networking as well as direct promotion of the USP.

Surely, there will be more expenses related to the cooperation activities. They will all depend on the nature of cooperation. Therefore, the budget needs to be revised as well as spent carefully.

Because the research problem was chosen mainly because of the USP problem with **sustainability**, I would like to also address this issue. My proposed strategy takes place in the context of the USP future commitment to sustainability.

This means building sustainable relationships and collaborations around the world, ensuring that the USP work makes important contributions to society, that help the researchers become globally known, and having a strong ethical dimension to the work because this is one of the key elements in cooperation: ethic, altruism, and reciprocity. All of the factors are strongly ethical and I believe that by their implementation and embodying by researchers and managers of the USP, effectiveness of cooperation and resulting sustainability of the USP will be ensured.

6 CONCLUSION

The overall purpose of presented master thesis is to develop cooperation strategy for the University Science Park of the University of Žilina in Žilina (hereinafter referred as USP). USPs in Slovakia are different in their nature comparing to the world's best known Science Parks. The difference is caused by the lack of one crucial element - renting spaces - which makes the foreign Science Parks rather being Science and Technology Parks. Slovak Science Parks are designed to be partially Technology Parks as well however their primary purpose is to conduct advanced research and transfer of the research results into practice. The spaces are offered for rent only to those who belong to the University or Science Park. Tenants can potentially be academics or students. This missing element causes financial problem due to the lack of flow of revenues from tenants.

Other problem is caused by the legislation as well as strict EU conditions under which the Universities obtained funds for building their Science Parks. Due to the lack of tradition in building Science Parks in Slovakia there is overall problem with the proper management of Science Parks inter alia due to the lack of skills in managing such institutions.

The biggest problem that I was addressing throughout my thesis was lack of cooperation which resulted in financial as well as other problems. USP as well as Research Centre which is the similar project the University of Žilina (together with other Science Parks in Slovakia) are experiencing comparable problems, mainly with their sustainability as the money run out and second round of financing has not arrived yet.

Therefore, I proposed a solution in form of a cooperation management model which will be applicable to all Science Parks across Slovakia, not only the USP. The main theory which supported my proposal was the co-creation of value. I also used knowledge management theory to propose solutions for internal cooperation and knowledge sharing. Co-creation of value theory has one parameter in common with the

cooperation management theory and that is mutual benefit for both partners (followed by other not less important parameter such as altruism and reciprocity).

The proposed model contains of several steps from initiation of a cooperation to its establishment and conducting while having in mind effective management during the whole process. This model brings several benefits to both partners of a cooperation relation, mainly: improved communication, clear purpose and outcome of cooperation, decreased financial waste, increased motivation of employees of both partners, and more importantly sustainability (not only financial). All of the benefits will be achieved only by the implementation of the model with all of the suggested recommendations and principles.

I also suggested information system which will support the whole administration of the cooperation process. This information system is key in optimizing the processes which will support the effectiveness of the cooperation.

The change in organizational structure was also required. Therefore, I proposed the international affairs department which will have head of the department, the person responsible for all international affairs as well as two units – project and regional centre. Lawyer is also required if the responsible person is not a lawyer itself.

Nowadays the model is being implemented in the Research Centre. I believe it will bring many positive outcomes in the future. The implementation might require some changes throughout the process, however it is essential in order to see some obstacles which can be subject for the future research.

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