Mendel University in Brno
Faculty of Business and Economics

Management of grant projects at Mendel University in Brno

Diploma Thesis

Supervisor:
doc. Ing. Pavel Žufan, Ph.D.

Author:
Jan Mikulášek

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ABSTRACT

MIKULÁŠEK, J. Management of grant projects at Mendel University in Brno. Master thesis. Brno: FBE MENDELU, 2016.

Project management in university environment is a very complex problematics, bringing numerous difficulties. However, participation in international funded projects became necessary for most of recognized universities. Therefore, the main aim of this final thesis is to formulate proposals for possible improvements in university project management. This work presents an analysis of projects solved at faculties of Mendel University in Brno. Analysis provided grounds for formulation of recommendations and possible improvements in particular stages and university cooperation within project management for interested parties at Mendel University in Brno.

Keywords

Project Management, European projects, funded projects, university, Brno, Czech Republic

ABSTRAKT

MIKULÁŠEK, J. Management grantových projektů Mendelovy univerzity v Brně. Diplomová práce. Brno: PEF MENDELU 2016.

Projektový management v prostředí univerzit představuje komplexní problematiku, přinášející nejrůznější obtíže. Účast v mezinárodních projektech se však stala pro většinu významných univerzit nezbytnou záležitostí. Z toho důvodu je hlavním cílem této závěrečné práce formulovat návrhy potenciálních zlepšení univerzitního projektového management. Práce přináší analýzu projektů řešených na fakultách Mendelovy Univerzity v Brně. Analýza sloužila jako základ pro formulaci doporučení v jednotlivých fázích projektového řízení a univerzitní spolupráce v projektovém managementu pro zainteresované skupiny Mendelovy university v Brně.

Klíčová slova

Projektový management, Evropské projekty, grantové projekty, Univerzita, Brno, Česká Republika

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1 Introduction

Contemporarily, most of one-time works within enterprises and other organizations are carried out as projects, which are often part of strategic management. Although we may recognize many types of projects, they are all a kind of organized effort aiming to goals fulfilment, being it small or big projects, short-term or long-term ones (Rosenau, 2010, p.1).

Project management is no more being described as a sequence of steps needed to complete the project on time. From contemporary point of view, we should rather speak about incorporation of consumer´s preferences, creation of unambiguous way of priority effort, equilibrating trade-offs and simultaneous work on all project aspects in complex project teams (Maylor, 2003, p. 2). Development of managerial information systems made it possible to eliminate many middle managerial tasks, helping organizations to reduce or eliminate function of middle management. Current project manager works within a team composed or professionals from multiple fields, aiming to fulfil the predetermined project goals in given time limit (Rosenau, 2010, p.1).

Universities are generally very complex environment, full of rigid rules. At the same time, they often take advantage of participation in different national or international projects to gain recognition and prestige, contact with other universities and organizations or to develop their facilities and field of expertize of its workers. European projects funded by funding agencies often follow very specific and strict rules created by these agencies. This makes project management at the university level totally unique discipline. Not only has the project manager to keep an eye on fulfilment of specified goals, it is also necessary to fulfill them in compliance with the rules of these two institutions.

In the theoretical part of the work, I will give an overview of the basic terms such as project, its types and goals or research and development organization and related project specifics. Special attention will be considered to project management, which is the essential part throughout the work. There will be explained particular stages of project management with each of these stages described in terms of European project management.

In the practical part of my diploma thesis, I´m going identify problematic stages of project management in the situation of Mendel University in Brno, and formulate proposals for possible improvements. Firstly, there will be analyzed ways in which different university units cooperate in the field of project management. Secondly, individual stages of project management will be identified within the project carried out at Laboratory of Metallomics and Nanotechnologies, Department of Chemistry and Biochemistry, Faculty of AgriSciences, supported by project carried out at other faculties of Mendel University. Generally, project management issues will be analyzed within all the chosen projects through the content analysis. Inclusion of these data sets will give the base for formulation of proposals.

As was mentioned above, project management at the university level is a very complex discipline and one may find it unclear and ambiguous, when dealing with particular problems. Nevertheless, not a lot of literature has been published in this area. My work, founded on description of individual steps through real solved projects, can therefore come in handy to those, who are new to university project management, or think about getting involved with it as well as to university representatives in order to try to adapt the environment to be more “friendly” for project management.

2 Objectives

The main aim of this thesis is to identify problematic stages of project management in the situation of Mendel University in Brno, and formulate proposals for possible improvements.

Partial goals are:

- to identify stages of project management for selected grant projects solved at Mendel University;
- describe the cooperation of particular units of the university in project management based on experience of project managers from different faculties of Mendel University;
- identify the issues connected with project management at Mendel University with utilization of content analysis and elaboration of recommendations.

The most important benefit of this thesis should is the intention to address particular project management issues, founded on author´s personal experience with funded university projects while working at the Faculty of AgriScience. Solved projects, different in their budgets, focus or duration provided many kinds of problems throughout different stages of project management. Thesis provides "step-by-step" description of individual phases from project initiation to the termination. In order to even widen the range of potential project management issues and perhaps confirm the experienced ones, there will be mentioned opinions of project managers from all Mendel University faculties. These managers, people with high level of expertize gained through many years of project solving are supposed to give valuable advices to anyone managing funded projects.

Second important benefit, especially valuable for Mendel University in Brno is the objective to uncover the ways in which university units cooperate in project management and detect the potential barriers and pitfalls in order to enhance the cooperation. There is no doubt, that organization of such magnitude as a university needs a smooth cooperation of more units for many processes flowing between faculty and rectorate level. This thesis should assess the current state of this cooperation. At the same time, advices for improvements will be written in cooperation with project managers making use of this cooperation.

3 Literature survey

3.1 Project

There exist many definitions of the term "project". It can be characterized as an effort in which all the needed resources are organized in a new way, to undertake a unique scope of work, which is highly specified, constrained by costs and time, in order to achieve beneficial change defined by quantitative and qualitative objectives (Turner & Muller, 2003, p. 4).

Some authors define projects rather from the time point of view. Thus, projects can be perceived as temporary organizations with inherent uncertainty. Clear time definition of the project also indicates that it has definite beginning and end (Nistor & Muresan, 2012, p. 535).

We can generally recognize four basic characteristics, when it comes to projects:

- Three-dimensional goal.
- Uniqueness.
- Include resources.
- Realized within and organization.

Projects usually have main and partial goals. The main ones can be called „triple imperative", and they include requirements on their realization, time plan and budget proposal. They will be further discussed in the chapter „Goals of projects". Every project is also unique in a sense that there is no other at the same time and place, done by the same group of people. Therefore, the work related to it is genuine and unrepeatable. Every project includes resources of three types – human, material and financial, which are necessary for its realization. Every project is also being solved by certain organization (Rosenau, 2010, p. 5). Shenhar & Dvir (2007, p. 40) rather speak about environment, which includes business environment, market, available technology, but may also involve external environment (economical, geographic), where the project is solved.

From the perspective of funded projects, we should mention following features (ec.europa.eu, 2004, p. 8):

- Clear identification of stakeholders, primary target group and beneficiaries.
- Definition of coordination, management and financial arrangements.
- Presence of monitoring and evaluation system.
- Sufficient level of financial and economic analysis, ensuring prevalence of project benefits over project costs.

3.1.1 Types of projects

There exist many kinds of project categorizing. Perhaps most important for the purpose of this work will be the division according to the output form and source of financing (Rosenau, 2010, p.10).

Output type

When the project is finalized, we may have different types of project outputs. First is material, where the output can be in form of certain hardware, building and many others. Immaterial project usually results in writing some report and other documentation, software or intellectual property (Rosenau, 2010, p.10). Maylor (2003, p. 25) adds changed people as other form of output. This result is achieved by receiving a new knowledge through transformation process like training.

Research conducted by Schwarz et al. (2012, p.365) confirmed previous studies, that design of a R&D consortium can be an important predictor of the project output, where involvement of large private firms generally tends to create more patents than projects without large partners. The same was, however, not true in cases when publications were meant as the output. Ling and Ma (2014, p.330) study was focused on particular factors, determining project outcomes in cities of China. They found significant correlation between communication and competency of team members and project outcomes.

Source of financing

We can distinguish between the projects according to the subject, which provides the finance for running the project.

1. Personal (family) project - financed by the individual him/herself.
2. Company´s inner project – assigned and usually fully financed by the company.
3. Project assigned by customer – paid by customer, who can be commercial or governmental subject.
4. State assigned project – financed by the governments.

Several researches were also made in the field of project types according to team size. Results of Ahonen et al. (2015, p. 212) showed positive correlations of bigger team sizes (bigger projects) and higher project management effort. The same held for duration of the project (longer projects). An interesting research was conducted by Shin and Yun (2014, p. 1076) in the field of “stage” and “upfront” financed projects. Study confirmed, that “stage financed” projects, meaning that they get funding during their implementation, reduce the uncertainty of the project return comparing to the “upfront financed”, which are funded in advance.

3.1.2 Goals of projects

Most of the related literature, such as Rosenau (2010, p.19) or Shenhar & Dvir (2007, p. 22) harmonize in 3 basic goals of projects:

Performance

Requirements on project realization or specification are very important attributes of project performance. Performance can be disrupted due tu various reasons like miscommunication between project stakeholders, bad quality specification and many other.

Time plan

Every project is inescapably defined within certain time period. Time delays can be caused by off balancing this so called "three imperative", excessive efforts into project performance can for example make the project last longer. Other reasons can be unavailability of needed resources or employees lack of interest into project fulfilment.

Costs

Second limit of all projects is budget. Problems with time plan can often bring problems with costs, since the inputs are no longer effectively used.

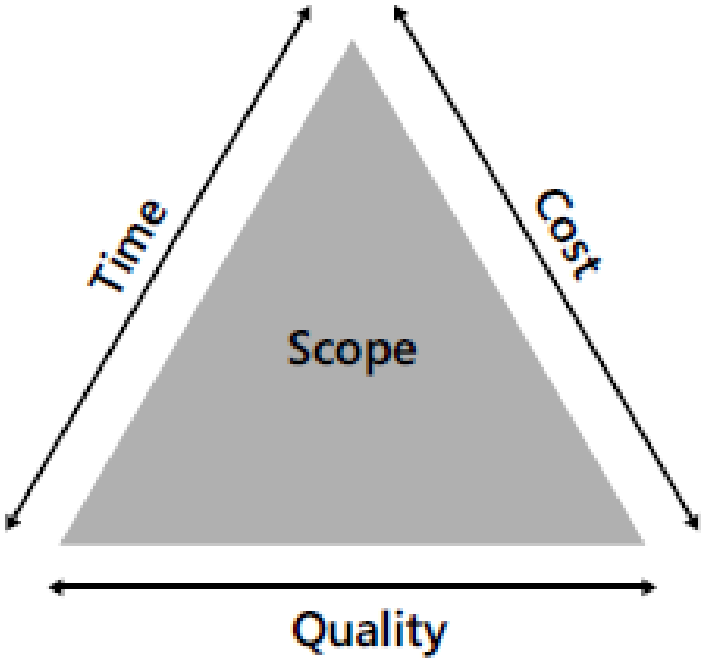

Fig. 1 "Trade off" triangle, Maylor (2003, p. 63)

Maylor (2003, p. 63) swapped "Performance" for "Quality" in his definition of project goals. What remains the same, however, is that just like at the above mentioned there is a "trade-off" between the three dimensions of project goals.

In other words, if we want to increase the quality of the product and keep the time plan, we have to increase the project budget. This phenomenon, described in Fig. 1, has been studied for about last 50 years. First mathematical programming models, which assumed that the direct cost of an activity vary with time, were developed by (Babu &Suresh, 1996) to minimize the project's direct cost. Razavi et al. (2015, p. 99) considered time-cost trade off problem (TCQT), which is mostly a subject of uncertainty, since it's difficult to determine the exact time, cost and quality of task prior to its completion. They proposed a two stage method algorithm to solve this problem. Optimal solution of the problem, which was determined under the best and worst modes of activities, was tested by the goal programming model in the second stage. Thus they were able to minimize the total deviation from the solutions of stage one.

Success

Shenhar & Dvir (2007, p. 27) noticed, that although project goals are fulfilled, success of the project doesn´t have to be secured. They mention the importance of short as well as long-term goals. As a result of their research they introduced five dimensions of short/long-term success:

- Project efficiency.
- Impact on the customer.
- Impact on the team.
- Business and direct success.
- Preparation for the future.

3.2 Research and Development

As was characterized by Gleadle et al. (2012, p. 164), the field of research and development (R&D) exemplifies the work, which is focused on knowledge creation and diffusion through the creative endeavors of greatly skilled and motivated expert workers and scientists.

3.2.1 R&D projects

Keller (1995, p. 155) describe research and development projects as an interpersonal process, which involves scientists and engineers, usually working in project groups or teams with a project leader. While referring to project groups, he mentions a research groups, which tend to focus on radical innovation and development groups that are generally concerned with modifications and incremental innovations. In terms of this kind of projects, it is very essential to look inside the research group, conducting a project. Groups are usually consisted of particular mix, bringing together scientists, engineers and other specialists, who focus their work towards technological innovations. Groups are in most cases

led by a project leader or manager, who bears all responsibility for the project (Elkins & Keller, 2003, p. 588)

In general, the related literature including Elkins & Keller (2003, p. 588) or Nagesh and Thomas (2015, p. 357), mention important distinctions of R&D projects from other ones. These projects, carried out within academic and R&D institutions, are usually funded by the governments and therefore don´t directly address the market as the commercial projects. Other feature is long-term orientation of the outcomes, which can sometimes be intangible, sporadic or serving solely as a basis for some future projects. This is connected with great deal of risk, which is even enlarged by potential new breakthroughs and ideas, which can reduce the scientific importance of the project. All the points summarized, we speak about the projects requiring big amount of time, money, whose results can be very uncertain.

Part of the literature focuses on success factors of R&D project. While Khang and Moe (2008, p. 72) accounts the success rate only to the acceptance of final outcome, Nagesh and Thomas (2015, p. 358) speak about three separate categories of project success – project management success (target, schedule, budget), product success (consumer satisfactions, functional and technical requirements) and market success (prestige, profit, market share). Some research was also conducted in the field of R&D project leadership qualities. Results of Shim and Lee (2001, p. 401) or Elkins & Keller (2003, p. 601) point out to connections between leader´s influence style and project performance, with numbers of variables, like project group membership and rate of technological change that differentiate leadership in R&D organizations from other ones.

Nagesh and Thomas (2015, p. 357) mention three types of R&D projects:

- Basic science.
- Applied science.
- Products development.

Basic scientific research refers to fundamental experimental investigative research, which enhances the knowledge of particular topic without any direct application. Therefore, we rather speak about exploration of unknown. As shown in the Figure 2 below, basic science represents the initial phase of scientific research, which is, however, not clearly demarked from the applied research. The reason is that they pretty much depend on each other. Basic science is further considered important not only for boosting the innovations and economic development, but also as a base for education and training or within the framework of policy development [icsu.org, 2004]

Fig. 2 Types of research and development projects (Nagesh and Thomas, 2015)

Science has a dual purpose for the human society – to know and to do. While basic science serves as a foundation for the knowledge, applied research is an action of implementing the results of basic research. Therefore, applied research aims to use basic research in solving real world problems. Contrast is evident also in the presence of formulated problem, which the scientist has to solve.

Last phase starts when the applied research finds concrete solution to scientific problem. Solution needs to be refined up to the extent when it is effective, safe, appealing and cost effective (acs.org, 2015). Product development studies are usually very narrow and focused on evaluation of particular material or device. That's why papers of this kind of research aren't generally well known nor frequently cited (ncbi.nlm.nih.gov, 2014).

Research focused on how do the research funding agencies integrate science into policies and development, conducted by Smith and Denis (2015, p. 14) presents Initiation, Development and Synthesis as steps in innovative projects. Matt et al. (2015, p. 885) focused their research at the question whether European Union funded inter-firm collaborations differ from general, spontaneous inter-firm R&D collaborations. "Results show that EU-funded collaborations primarily concern peripheral activities of an exploratory nature, whereas the spontaneous collaborations tend to be strategic projects closer to the core competencies of the involved firms". This points out to conclusion, where EU funded cooperation complement with other cooperation and are actually very important, although they aren't generally of strategic importance.

3.2.2 Stages of R&D projects

Initiation

During the first phase projects are initiated. Simultaneously, there are established connections between decision makers and researchers and topics of interest are developed.

Development

Second stage involves the actual solving of innovative project. While the project is developed, particular research is being conducted and gathered data are collected and analyzed. Specific scientific branches include different approaches.

Synthesis

Synthesis represents the end of the grant. R&D projects results are presented to the public through conferences accompanied with written diffusions like reports.

Results of the research of Matt et al. (2015) showed, that only minority of funding agencies provide the applicants with funding of all three stages. It is rather common, that projects are funded for the development and synthesis stage.

3.3 Project management of European projects

Project management is one of the most important fields in business and industry. The purpose of the project management is to foresee or predict as many dangers and problems as possible and to plan, organize, and control activities so that projects are completed successfully in spite of all the risks. The eight knowledge areas in project management are project integration, time, cost, quality, human resources, communication, risk and procurement management (Razavi et al., 2015, p. 93).

Tascu and Constantin (2015, p. 228) describe structural funds as European financial instruments granted while following the convergence objective, whose purpose is the mitigation of discrepancies in the level of development between the European regions and the harmonization of the European Union in economic and social terms.

Their research focuses on management of marketing mix of projects financed by EU. For the establishment of the parameters of a project and in order to highlight its needs, they see necessity to define the management plan of the project. Its elaboration takes into account the time and costs of the project activities. Results of the research refer to the importance of analysis of external environment, where the beneficiaries carry out project activities, and analysis of internal environment, which defines organization´s human, financial and technical resources.

General textbooks related to project management like Rosenau (2010, p. 12) mention five different managerial tasks, which are necessary for project management-defining, planning, managing, monitoring and termination.

3.3.1 Defining

Throughout the definition stage, project manager and his/her team develop specific goals for particular project. Main types of project goals and problems connected with their implementation were mentioned above.

Strategy

First important element of defining stage is project strategy. In short, it is important to concentrate on perspective projects able to compete and win the con-

tract, since the preparation phase requires a lot of effort, which could be wasted Rosenau (2010, p. 27).

Process of proposal preparation

Overall process according to Rosenau (2010, p. 31) doesn't solely consist of making the paper proposal, it includes many other:

- Authorization for working on proposal.
- Selection of dominant theme.
- Preparation and definition of project goals.
- Making of plan abiding all "three imperative" conditions.
- Editing or removal of discrepancies and deficiencies.
- Approval.
- Submission.
- Presentations, negotiations on contract.

In terms of European funded projects, it is particularly needed to analyze the project purpose – consistency and relevance of the project with partner and EC (or other agencies) priorities, feasibility and sustainability of the project (ec.europa.eu, 2004, p. 30).

Project calls

Aims of the agencies are usually defined within so called "Calls for Proposals", which state the particular goals and topics to be covered. By Calls for Proposals approach, the EC or other agencies establish the broad objectives they wish to achieve, the required scope of projects, their willingness to fund, the application and assessment procedures, and eligibility criteria for applicants. The responsibility for identifying, formulating and implementing projects is thus passed on to the applicants (ec.europa.eu, 2004, p. 17). Ludlow (2014, p. 33) mention following criteria, while choosing the best fitting agency and call:

- Starting with a creative solution responding to need.
- Searching out for funding from multiple sources.
- Selecting a good match between the project and agency's priorities.
- Careful reading of requests for proposals.
- Analyzing the whole application process to funding of particular. Agency.
- Analyzing potential competitors.
- Identification of key and support personnel as soon as possible.
- Planning of the work.

3.3.2 Planning

Basically, project planning describes the stage where we are now, where we want to be in the future and how are we going to get there. Rosenau (2010, p. 56) assigns following features for effective project plan:

- Identification of all that is needed for successful termination of project.
- Schedule of all tasks and milestones timing.
- Defines needed resources, guarantees their availability in particular time, regards usage and managing of these resources.
- Budget is defined for every task.
- Contains financial reserve for unpredictable events.
- Is trustworthy for management and other stakeholders.

Ahonen et al. (2015, p.205) mention two important steps during project planning, which include estimation of the required effort for the project implementation and the creation of the work breakdown structure (WBS). Breaking down all the large activities into smaller, easily comprehensible and manageable units is the key of the whole project management. It makes it far easier to assign responsibilities for particular activities (Shenhar & Dvir, 2007, p. 88). The importance of the WBS has been stressed in standards such as PRINCE2, PMBOK, and ISO 2150. The importance of the estimation of effort has been noted especially in the software development field, in which projects are often late due to problems in effort estimation (Ahonen et al., 2015, p.205).

Applicants solving European funded projects deal mainly with writing of project proposal, specifying objectives, costs, work program, project partners, coordination and other project features. Detailed financial plan is usually also required (ec.europa.eu, 2004, p. 36). According to Ludlow (2014, p. 34), project writing proposal includes following stages:

1. Establishment of well-defined goals and objectives.
2. Preparation of action plan supporting goals attainment.
3. Preparation of reasonable budget.
4. Development of strong arguments.
5. Securing additional letters and institutional permissions.
6. Obtaining additional documents of project documentation.

Blanco and Lee (2012, p. 451) also mention following the directions as often omitted. For that reason, they propose checklist following in their research. Proposal usually mentions applicants of the projects, i.e. leading partner and project partners. Partners state particular information like reasoning for their cooperation or division of budget (eacea.ec.europa.eu, 2013, p. 9).

It is important to mention, that stages of defining and planning don't necessarily have to be present in all the projects separately. Sometimes they merge in together, or appear in reverse order (Rosenau 2010, p. 13).

3.3.3 Management of the project

First important part of project management is organizational form establishment. Most frequently mentioned are functional, project and matrix structures. Another crucial task is assignment of project team. Researches on project teams made by Barnwell et al. (2014, p. 7) show that excellent written skills and strong relationships are needed for management of virtual teams. Research conducted among real project teams by Salvesbergh et al. (2015, p. 413) show positive relation of person-oriented and task-oriented leadership to team learning behaviors in project teams. Averweg and Addison (2015, p. 25) mention the importance of cultural diversity awareness when managing the project team. These results were confirmed by Scarlat et al. (2014, p. 175), adding that diversity adds new obstacles to life-cycle of project team. Employees can basically be assigned to project while following three factors – whether the employees are subordinated directly to manager or elsewhere, whether they work on project part time or full time, and whether they work on project for the whole period or just certain part. Assignment of support groups, mainly technical and administrative parts is also essential for smooth continuation of the project. When the project groups are assigned and tasks passed, manager needs to coordinate all the groups work.

When managing the European project, we rather speak about implementation period. This stage is in many ways the most critical, because it is the time, when the project results are delivered. Other stages of project solving are, therefore, only supportive (ec.europa.eu, 2004, p. 17). Research made by Muresan and Crisan (2013, p. 78) suggest more effective management at the level of fund providers of European projects. Reducing bureaucracy in the application for financing phase and in the project implementation phase, promoting a partnership relationship between the intermediate authorities of management and the funding recipients are the main fields to be improved.

3.3.4 Monitoring

In order to avoid excessive bureaucratic burden, project managers can impose alternative controls at different levels of the project, reflecting desired objectives. Maylor (2003, p. 271) named 6 basic requirements for effective control system:

- Definition of system characteristics of importance.
- Definition of variation limits.
- Measurement of those characteristics.
- Ensuring the visibility of progress.

- Giving feedback on performance to the project team.
- Implementation of corrective measures if needed.

Rosenau (2010, p. 239) rather emphasizes the importance regular project meetings, which reveal potential deviations from original plan. Regular cost sheets, serving as a base for meetings, are the most important element of project control. Finally, reporting is generally very important, concerning either results of performance (quality), progress of works in time, or cost reports. Research made by Tache and Ispatoiu (2013, p. 634) unstructured mix of monitoring and evaluation tools is not recommended, as this process is time consuming, and in most cases human resources and financial consuming. Tache (2011, p. 390) reveals close interrelation between monitoring and evaluation, requiring them to be performed essentially at the same time.

European projects are generally less flexible, due to rigid monitoring rules, which are nevertheless crucial to the projects' success (Matt et al., 2015, p. 885). We can basically see three stages of European project controls, as depicted in Figure 3below.

Fig. 3 Stages of learning and monitoring process based on Matt et al. (2015, p. 885)

Regular reviews are part of internal management responsibilities, regularly carried out by project manager. Monitoring can also be executed in form of an audit. Depending on the project development, original plans may be changed during the implementation. These are the decisions that can be made either by project manager alone, or by joint decision with governing body/committee. Physical and financial progress is further reported to the stakeholders, especially those providing the financial resources (Funding Agencies) for continuing support (ec.europa.eu, 2004, p. 17).

3.3.5 Termination

If there is an incentive for the project to be finished, project manager must ensure that all the activities were completed. It means especially providing documentation of the process for review, closing down all project systems (accounting systems), appraisal and relocation of staff, satisfaction of shareholders (Maylor 2003, p. 271).

In case of European projects we speak mainly about technical and financial reports. Technical report usually contains information on progress of activities, project results; project impact; justification of modifications; or project achievements. It generally follows the structure of the reporting template. Second important document- financial report- describes project costs in (usually) standardized table format. Additionally, copies of supporting documents and copies of time-sheets are often requested. Funding agency is then able to check the financial reports against the contract and the supporting documentation (tasco.org, 2011, p. 78).

4 Methodology

At the beginning of practical part, there will be introduced projects chosen for analysis for the purpose of the thesis as a part of Methodology. Practical part itself will begin with the description of particular university units engaged in project management at Mendel University in Brno. Units will be briefly characterized using university web pages as a source of information. Consecutively, there will be introduced particular ways in which these units cooperate, in order to successfully manage university projects at different faculties.

Practical part will be further devoted to analysis of different stages of project management at Mendel University. To accomplish this, there will be used project management stages described in the theoretical part (Defining, Planning, Management of the project, Monitoring and Termination), compared with real-life practice – content analysis of three funded projects solved at Laboratory of Metallomics and Nanotechnologies, Department of Chemistry and Biochemistry, Faculty of AgriSciences.

Both of these parts will be done through analysis of projects funded at Mendel University. Information on projects will be gathered and written into the template, focused at different aspects of projects. First part of the template, dealing with gathering the basic information on projects, such as description, costs and duration will be filled by the author using the Content analysis, successfully implemented in the researches of Bauer (2000, p. 135) or Patankul et al. (2016, p.454) - starting with a blank frame of mind. Second part of the template, focused at assessment of cooperation of different Mendel University units within the project management, will be executed using the In-depth interviews with representatives of each faculty at Mendel University, who had personal experience in solving GAČR funded projects and participation and cooperation of different university units.

Basic information of all the projects selected for this thesis is depicted in the tables below:

Tab. 1 Together for Research, Development and Innovations (Společně pro výzkum, rozvoj a inovace - SpVRI)

Solved by	Mendel University – Faculty of AgriSciences (FA)
Project partner(s)	Observatory in Valašské Meziříčí, Slovak Organization for Space Activities
Project duration	4,39 months
Budget (EUR)	33277,77 EUR
% of funding	60,10 %
Funding provider	Region Bílé Karpaty
Project description	Development and flight of stratospheric platform

Source: Own elaboration based on project application

Tab. 2 Metallomic Scientific Network (MSN)

Solved by	Mendel University – Faculty of AgriSciences (FA)
Project partner(s)	Wroclaw Medical University, University of Debrecen, Slovak Technical University in Bratislava
Project duration	4,39 months
Budget (EUR)	7648 EUR
% of funding	78,45 %
Funding provider	Visegrad Fund
Project description	Establishment of Metallomic Scientific Network

Source: Own elaboration based on project application

Tab. 3 Applications of Nanoparticle Complexes to Reduce Bacterial Infections and Aid Repair of Cutaneous Lesions (SENAWOUND)

Solved by	Mendel University – Faculty of AgriSciences (FA)
Project partner(s)	Paris Lodron University of Salzburg
Project duration	-
Budget (EUR)	183 700 EUR
% of funding	100 %
Funding provider	Grantová agentura české republiky (GAČR) Der Wissenschaftsfonds (FWF)
Project aim	Development and application of nanoparticles non-toxic to human cells

Source: Own elaboration based on project application

Tab. 4 Metodologické přístupy k ekonomické analýze podniku

Solved by	Mendel University – Faculty of Regional Development and International Studies (FRRMS)
Project partner(s)	-
Project duration	2 years
Budget (EUR)	40667 EUR
% of funding	100%
Funding provider	Grantová agentura české republiky (GAČR)
Project aim	Outline of set of measures for economic analysis of company.

Source: Own elaboration

Tab. 5 Veselí nad Moravou - středověký hrad v říční nivě

Solved by	Mendel University – Faculty of Forestry and Wood Technology (LDF)
Project partner(s)	ARCHAIA Brno o.p.s, Geologický ústav AV ČR, v. v. i., University of West Bomehia
Project duration	5 years
Budget (EUR)	184704 EUR
% of funding	100%
Funding provider	Grantová agentura české republiky (GAČR)
Project aim	Assessment of multidisciplinary research conducted at the site.

Source: Own elaboration

Tab. 6 Finanční krize, depreciace a credit crunch v zemích střední a východní Evropy

Solved by	Mendel University – Faculty of Business and Economics (FBE)
Project partner(s)	-
Project duration	3 years
Budget (EUR)	73222 EUR
% of funding	100%
Funding provider	Grantová agentura české republiky (GAČR)
Project aim	Identification of connections between macroeconomic shocks, institutional environment and influence of financial crisis on finance sector.

Source: Own elaboration

Tab. 7 Kondenzované anthokyaniny - analýza, příprava, (bio)transformace a možnosti využití

Solved by	Mendel University – Faculty of Horticulture (ZF)
Project partner(s)	Palacky University Olomouc
Project duration	3 years
Budget (EUR)	77037 EUR
% of funding	100%
Funding provider	Grantová agentura české republiky (GAČR)
Project aim	Identification of connections between macroeconomic shocks, institutional environment and influence of financial crisis on finance sector.

Source: Own elaboration

Different parts of documentation will be used for analysis of individual project management stages. For the Defining stage, including project call analysis, project proposal preparation and partner selection will be, in particular, used funding agencies´ project call documents and application forms of selected projects. Planning stage will be composed mainly of application process itself, which means analysis of individual project application forms and their attachments. Management stage will describe most important processes coming with project implementation, such as project team assignment, general administrative tasks or organization of project events. Final project reports will be primarily used for obtaining this data. Monitoring stage section, focused on budget controls, project reporting and project publicity, will be mainly fostered by documents attached to final report. Termination stage, describing the process of project submission, will rather be based on final reports themselves.

In order to keep the opinion diversity, project management problems experiences by the author at the Faculty of AgriSciences will be enriched with the project management problems mentioned by project managers from other faculties solving their GAČR projects to reach more objective conclusions. Single funding provider – GAČR, will be chosen for the coherence and comparability of mentioned examples at different faculties - one GAČR project solved at each faculty will be analyzed. Again, the content analysis combined with the In-depth interviews will serve as a tool of analysis.

Each part (cooperation of university units and project management) will be summarized in the section of “Other faculties”, with a single table containing intersection points of more faculties. Other issues, experienced at only one faculty will be described only in the text.

All the important insights will be pointed out as formulations of issues and proposals for possible improvements in the final section of practical part. Proposals, composed of own as well as other faculties’ manager project experience, will be structured into individual sections of the practical part, addressing con-

secutively: Initiation stage; Application stage; Implementation stage Submission stage; some general points, Faculty project centers, Economic department and Department of Science and research.

The whole work will be summarized in the Conclusion part and the list of sources will cover all the sources used throughout the thesis. Some important parts of above mentioned project documents will be stated in the Appendix and all used abbreviations will be explained in the List of Abbreviations.

5 Practical part

Due to deeper analysis of projects solved at this workplace, Laboratory of Metallomics and Nanotechnologies (LMaN) will be introduced separately at the beginning of the practical part. Laboratory legally belongs under the Faculty of AgriSciences, Department of Chemistry and Biochemistry. Scientific institution, situated on the grounds of Mendel University in Brno, employed 85 people, most of which were young researchers. It seeks cooperation within Mendel University, Czech Republic and European Union. Since LMaN maintains international relationships with other universities and laboratories around the world, internships or employee exchanges are no exception. Foreign scientists mainly come from Spain, Serbia, Albania, Slovakia, but also from Jordan, India or Taiwan.

LMaN is also an excellent scientific workplace, involved in many national and international projects. Most importantly, it takes part in Central European Institute of Technology (CEITEC), the first and biggest research center in the Czech Republic. Amongst other long-term projects we can mention League Against Cancer, or projects carried out within European Cooperation in Science and Technology (COST) or Horizon 2020. In total, there were solved 14 projects in 2014.

There are basically five fields of focus, held in 4 different laboratories under Laboratory of Metallomics and Nanotechnologies:

1. Modern electrochemical methods employing different types of working electrodes for space research.
2. Synthesis of quantum dots and magnetic nanoparticles and modification of their surface for barcoding and targeted bioconjugation.
3. Nanomedicine for diagnostics (in vivo imaging techniques) and targeted therapy of serious diseases.
4. Molecular biology profiling of patients with tumor diseases.
5. Miniaturized systems – nanoelectrodes and nanopotentiostats and 3D chips.

Although very small in size, LMaN is very important part of Mendel University in Brno (MENDELU). Data from years 2007-2015 show that sum of publications written at Department of Chemistry and Biochemistry reached to 22 % of the whole university and sum of times cited without self-citations was even higher – 35 % of all University citations. Publication activities come in hand with exceptional revenues. Out of all so called RIV points (points for publication activities), it gained nearly 40 % of Faculty of AgriSciences, which resulted in revenues over 16 million CZK.

5.1 Individual workplaces and their cooperation

5.1.1 Faculty Project Centers

Currently, there exist bigger or smaller project centers within most of the faculties of Mendel University in Brno - Faculty of Horticulture (ZF) being the only exception. These centers are the only units at the faculty level to cooperate within the project management. The basic idea behind the establishment of such centers was to smooth and ease the administrative process for the project managers. Centers are also theoretically supposed to supervise the financial aspect of the project.

Personal experience of interviewed managers generally refer to ability of the project centers to gather information on particular project calls, securing basic administrative documents (attachments) and handling the document signatures by university representatives.

Some experience with faculty project centers (LDF), however, are rather negative. Since the establishment of "signatures circle", where documents are passed on from faculty project center, to the rectorate one, to the statutory representative and back to project manager, the whole process takes a long time. Project centers brought in even bigger administrative burden (cover letters demanded for signatures) throughout different stages of project solving, which again slows down its realization. There is also no ability of Faculty Project Centers to overlook the project accounting. Experience of Faculty of Business and Economy (PEF) and FRRMS are generally positive, with the exception of lack of experience in cooperation on particular types of projects. Very little cooperation is maintained with the project center within the Faculty of AgriSciences (FA). Project manager from Faculty of Horticulture (ZF) complained that that project managers receive no support from project center at this faculty.

Project manager from PEF advised, that there should be established an accounting project manager at individual departments of the faculties to help project managers with projects´ accounting.

5.1.2 Rectorate Department of Science and Research

Department of Science and Research (OVaV) is a body formally shielding all the projects solved at Mendel University. Workplace, operated by 5 employees is directed by Vice-rector for Science and Research. Main competences of the department are enhancing of quality of projects solved at Mendel University and creation of implementation structure for absorption of external funds for research, development, investment and pedagogical activities (ovav.mendelu.cz, 2015).

Cooperation was maintained between Laboratory of Metallomics and Nanotechnologies and Department of Science and Research in basically every project. The most valuable is the OVaV´s experience with different funding agencies, which is especially useful during the application and implementation phase,

when the University is required to provide particular documents, e.g. statutory declaration, foundation deed or other confirmations.
Other important role of Department is communication facilitating. Most of project documents like contracts, appendices, and also any project changes usually have to be signed by the Statutory Representative – Rector – before being sent to the funding agency. Help of the Department can save a lot of time and enable reaching the deadlines. Since some of the documents and requirements of funding agencies are sent to Rectorate, Department also serves as a fast connection point between individual project teams and University.

Experiences at other faculties differ from one to another. LDF and ZF faculty project managers pointed at great time-consumption of administrative procedures held through OVaV. LDF cooperation with OVaV is generally very limited and focused mainly at proceeding the document signatures. Other faculties experience refer mainly to the same degree of cooperation as AF, meaning that cooperation dwells more in the Defining and Planning stage, where OVaV secures the related documentation required by the funding agencies and information on project calls. During the Termination stage, OVaV helped with project submission according to certain project managers.

Project managers from PEF and ZF highlighted the need to establish a central register of submitted projects in order to increase the speed and quality of supply of information and documentation needed for particular projects to project managers. Project manager from ZF further mentioned the merit of passing the information on new project calls. As a matter of fact, development of such register has already started and it is supposed to smooth the workflow of university projects in the future. Agreement throughout the faculties remained in that OVaV´s competencies cannot surpass the administrative borderline, due to inability of its employees to grasp subject from the technical point of view. Manager from FRRMS advised to establish educative courses of project management from OVaV to individual project applicants to raise the awareness of general project problems, like processing the administration, submitting projects etc.

5.1.3 Economic Department of Mendel University

Another very important unit is the Economic Department of Mendel University (EO). Solving European projects at Universities requires knowledge of particular funding agency rules as well as University rules and regulations, both of which have to be obeyed in every case. Economic Department is, therefore, very useful in relation to the knowledge of budgetary rules and solving financial problems, such as paying off and reimbursing of particular items in project budget.

Managers of all faculties agreed that cooperation with EO is essential throughout the implementation stage and mainly regards the topics concerning project accounting. The cooperation with all faculties was generally assessed as non-problematic and good.

In terms of GAČR projects, manager from LDF faced the problem of late payroll terms of MENDELU in relation to final project accounting balance. His advice was to enable sooner payroll terms so that the salaries could be implemented into the accounting balance. Project manager from PEF mentioned the problem of exchange rate difference in project accounting, where EO accounts only project losses, whereas it keeps the FX gains. Managers sometimes face the responsibility problems at the end of the year, when EO accounts different articles or amounts than were originally promised at the application. Therefore, certain part of accounting responsibility should be transferred from project managers to EO. Project managers from PEF agreed that many project managers aren´t well prepared to account for the project, since they lack the accounting background. EO, on the other hand, doesn´t understand the projects from technical side. This discrepancy could be solved by mutual trainings between EO and project managers.

Tab. 8 Summary of insights of cooperation of university units

	Faculty
OVaV serves for mainly administrative purposes (documentation, information flow)	All faculties
Excessive time consumption and bureaucracy of administrative procedures through OVaV and Faculty project centers	AF, LDF, ZF
Need to establish faculty accounting project manager	PEF
Need to establish central register of solved projects	PEF, ZF
Need to start educative courses of OVaV to project applicants	FRRMS
Cooperation with EO needed mainly through implementation stage	All faculties
No accounting responsibility of EO	PEF
Need to educate project applicants from accounting perspective	PEF
Faculty project center provides very little support to faculty managers	ZF, LDF, AF

Source: Own elaboration

5.2 Project management at Mendel University

5.2.1 Defining

First necessary thing in project planning of scientific academic project is selection of the topic. Laboratory is focused at several research fields, most of which were described above. In general, projects carried out in Laboratory of Metallomics and Nanotechnologies were mostly focused on chemical and biological experiments, being its main fields of expertise.

Project call

In terms of project preparation, it is always necessary to think about the best suitable call regarding the focus of project, since different calls cover different scientific areas. Chances to succeed in funding of a project can therefore be very different. At the same time, European project management is a continuous way. Applicants should, therefore, choose the size and complexity of project call based on their level of experience. Project calls on all three selected projects provided information on deadline for application (validity of call), maximal project budget, maximal project duration and nationality of project partners (with specification of legal form preference in case of SpVRI project). Closely attached

to the project call or visibly next to it were placed all necessary documents for application phase, such as guidelines, applications and other forms and sheets.

Furthermore, SpVRI call was specific in other issues, like maximal amounts of investment expenses, particular areas and activities of support, supported regions of cooperation and terms of application delivery.

MSN call also stipulated the length of evaluation period, maximal amount of overheads the maximal amount of fund contribution.

Generally, most important information could be found in project calls. However, project manager always has to gather additional information from agency´s guidelines.

Project proposal preparation

When the topic is decided, project proposal needs to be written. Successful proposal consists of expert topic knowledge combined with interesting and innovative idea of using it towards development of science. All these information need to be written in language as simple as possible, so that project evaluators assigned by the funding agencies can understand the point.

The ultimate goal of every proposal is description of project aims. MSN´s project main goal was to establish scientific consortia for some future metallomic projects, SpVRI project was oriented at release and analysis of stratospheric platform, which measured effects of solar activity on DNA, and SENAWOUND project was focused at development and analysis of nanoparticles for medical treatment.

In this point it is important to mention cooperation with expert scientists, which was perfect in all LMaN projects and is generally necessary for writing technically feasible proposal.

Project partners selection

Following the project guidelines, leading applicant has to establish so called consortium. Choosing the right number, nationality or expertize of project partners is crucial for the project success. Thanks to its numerous international contacts, LMaN had no problem with finding the right partners immediately. There were some other project cases, however, when Laboratory had to use so called „partner searches“, which serve as a storage of project ideas of single institutions, which look for international support. At the same time, it is also important to pick the leading applicant, which is usually the partner with greatest expertise in particular field (MSN), eventually partner coming from the country, where the agency is based (SpVRI).

In case of selected project, participation of 4 different Visegrad countries was required in MSN project, one Czech and one Austrian partner had to apply to SENAWOUND joint proposal, and cross-border partnership of Czech and Slovak partner was required in case of SpVRI project.

Most important part in this step was getting the knowledge of agency´s preference about structure of project consortia, which are described in the pro-

ject guidelines and determines, up to certain extent, the success of future proposal.

5.2.2 Planning

Stage of defining and planning was very much joined in one step in case of all three selected projects, because while writing the project proposal, it is very important to plan most of the things.

Project Application

First and most important element of documents submitted to the funding agency in the application process is the application form. Forms are always prepared by fund provider. Applications of all three selected projects consisted of four integral parts: general information; project proposal; project aims; and budget plan.

General information

Basically, every application form start with introduction of leading applicant and project partners. In particular, it means name, address, legal representative, contact information and ID of each partner involved. MSN and SpVRI project application contained also information about VAT payment and compensation and link to partner websites. SpVRI application further required stipulation of tax ID, legal form, accounting type, and legal confirmation of the existence of the institution.

Project proposal

Expert information in project application are abstracted from project proposal, which is usually longer. It is very essential to pick up only the most important information in order to increase the chance to get the project funded. This part usually formed no longer than one paragraph of text in each of selected projects.

Project aims

In order to get to the main goal of the project, it is usually essential to develop few partial goals, coming out of the particular agency preference and rules and technical feasibility.

The SpVRI´s project application contained in total 4 goals: create cooperation stratospheric network STRATO-NANOBIOLAB; organize common educational and motivational events; organize a student event supporting new scientific talents; test and release a stratospheric platform. All of these diverse goals were further divided between Czech and Slovak partners, since (as written in the project call and other guidelines) the funding agency evaluated active cross-border cooperation.

MSN was designed to establish further cooperating scientific network. Therefore, partial objectives were set to organize meetings in all partner coun-

tries to deepen the relationships and, based on revealing individual partner´s expertize, develop possibilities of future cooperation.

SENAWOUND was purely scientific project, so its goal were: synthesis and characterization of nanoparticle conjugates; In vitro testing; Research of interactions of compounds added into wounds in vivo and cell prototypes; carrying out in vivo studies on mouse in connection with evaluation in vitro nanoparticle induced reactions; and usage of in vitro models on cells with active inflammation reaction.

When setting the project aims, the project team often had to specify their time-line within the implementation period in the application. MSN application thus specified phases between the meetings and exact dates of project meetings, while SpVRI´s main activities were set within different periods. Keeping the time-line turned out to be problem in SpVRI project, because the construction of stratospheric platform was accompanied with technical complications and the original dates of some educational activities proved impossible to follow. It is therefore crucial to think carefully through the possibilities, when implementing the project time-line.

Budget plan

Structured budget was part of all three applications. While in MSN and SENAWOUND case, budget was a direct part of the application, it formed first appendix of SpVRI. In case of SENAWOUND, budget had to be provided for individual years also.

Two of three applications (MSN and SENAWOUND) contained the time plan as well. This means that individual activities, related to particular goals, had to be approximately estimated in the time schedule of project. This information is vital for funding agencies, which need to be assured of continuous works on project during the full implementation period.

SpVRI application was rather demanding on description of particular activities within cross border cooperation and its impacts. These fields in the application form were given much bigger space than expert information on experiment itself.

During the stage of planning, problems frequently occurred in the part of general information of application form. We made mistakes in filling the information like tax ID (SpVRI), statutory representatives of partner universities (MSN). Further specification was also required in case of SpVRI in fields of project aims, where the agency required estimations of number and nationality of potential visitors of educational activities and place of project impact. Although funding agency of Region Bílé Karpaty worked rather on principle of sending its requirements as objection letters until all the mistakes were corrected, it is very important to hand in correct applications, since these mistakes can in some other agencies lead to elimination of application due to formal mistakes.

Attachments

Along with the application form, it is always necessary to provide all the required attachments within the stipulated deadline. Overview of all required attachments is depicted in the Table 4 below:

Tab. 9 Attachments required by funding agencies on selected projects

	SpVRI	MSN	SENAWOUND
1.	Structured budget	Original letters of intention	Academic abstract
2.	Documentation of leading applicant	Copies of ID or registration documents	Confirmation of eligibility
3.	Documentation of cross-border partner	Copies of confirmations about co-financing	Ethics committee opinion
4.	Evidence of appointment of statutory representative		Informal consent of the patient
5.	Confirmations about co-financing		
6.	Electronic version of application on CD/DVD		

Source: Own elaboration based on project guidelines

As can be seen from the table, the least demanding in terms of required attachments of the three selected projects was MSN. Every partner had to write a confirmation letter of intent, expressing partner´s willingness to cooperate with the leading applicant. Further, there were required registration documents – for the purposes of this project were used foundation deeds. Leading applicant had to provide consent of statutory representative over project co-financing. Relatively low amount of required documents was perhaps caused by the fact, that the particular project was submitted within the "Small grant" scheme, which serves for small projects with lower budgets and short term of implementation.

SpVRI project was a bit more demanding. Aside of the structured budget, agency required documentation of leading applicant – confirmation of appointment of statutory representative, foundation deed, copy of ID assignment and certificate of incorporation. In case of project partners it was necessary to submit foundation deed, copy of ID assignment and certificate of incorporation. All these documents in notarized copies plus application had to be sent in hard-copy within the given deadline. Agency later further required all amendments to foundation deeds.

Attachments of SENAWOUND application were mostly oriented at expert confirmations and opinion, since there were conducted some animal tests, followed by tests on patients (therefore consent of patients was needed as well).

As for the attachments correctness, project team had to deal with problems regarding project budget (SpVRI). Corrections of specifications had to be done

in its particular fields due to incorrect plan of length of project. In the same project, agency required also further parts of documentation of applicant and project partners, such as foundation deeds or excerpt from register of universities. In case of MSN project, communication mistakes were done while processing the original letters of intention regarding the signature of statutory representative. Due to the length of the process of getting all attachments, the project team got into a time pressure when submitting the application. Most of the attachments for SpVRI project had to be signed by the statutory representative, or notarized, which took longer than expected.

Although some agencies already computerized the application process, so that applicant submits the application through the online portal (Visegrad Fund), or just sends electronic versions (GAČR) most of them (Visegrad Fund, Region Bílé Karpaty) still insist on sending the hard copies by post as well. Whole application, consisted of project proposal, other application forms and all other related documentation (e.g. certified copy of statutory declaration, license, foundation deed) were thus usually required in hard copy.

5.2.3 Management of the project

For the purpose of the thesis, there will be mentioned only two of the projects – MSN and SpVRI, where the author personally participated in management.

Assignment of project team

When the project is accepted for funding, the first necessary thing to do is project team assignment. In case of projects solved within LMaN, teams were composed of administrative and scientific workers, with the proportions dependent on demand of project. Further details are provided in Table 5 below.

Tab. 10 Number of assigned workers

	SpVRI	**MSN**
Administrative	7	6
Scientific	7	0

Source: Own elaboration based on solved projects

Communication

One of the most important tasks of project manager is communication and sharing the communicated problems among more people at the same time.

Very essential is communication with the fund provider, especially in relation to signing of treaties or applying any changes in the project. According to

guidelines of SpVRI and MSN, any changes had to be written on letterhead paper and signed by statutory representative. This happened in both projects with changes of dates and venue of organized events. Agencies were also addressed in issues connected with the use of the assigned budget.

As was mentioned previously in part dedicated to cooperation of University subjects, lot of communication was done with Rectorate Department of Science and Research and Economic Department of Mendel University. Department of Science and Research was especially useful in gathering additional knowledge of rules of funding agencies, dealing with email communication addressed to Rector from funding agencies, or help with different administrative tasks, such as getting statutory representative´s signature in all documentation.

Basically any communication held with other mentioned subjects had to be first communicated with and approved by the Heads of Laboratory. On regular meetings dedicated to each of the projects, information on project advance (administrative and scientific) was communicated and coming tasks were distributed among the project team members and partners.

Due to simultaneous works on multiple projects, it was sometimes uneasy to call the meetings so that all the expert workers, project partners or Heads of Department had the time to participate and talk through all necessary things.

Administration

There are many different administrative tasks connected with the work of project manager. Laboratory of Metallomics and Nanotechnologies has been developing its own information system, to ease the administrative work a bit. System helps in particular with keeping general and financial information about the project or filling out the time sheets of team members.

It was further necessary to archive all related project documentation (in the information system as well as in hard copy-for the case of audit control). Another important part is finance – this meant especially establishment of project financial account, invoicing any item purchased for the purpose of project, reimbursements of travel costs and travel order processing, processing of wages and so on. Financial operations were handled via SAP university system.

Main part of problems associated with general administration was connected with finance. In order to account for any payment on project managed through Mendel University in Brno, there has to be established so called Specific Element of Project (SPP element), which serves as an identification of particular project account. This element is established by Economic Department after receiving signed project contract. Processing and sending contracts took quite a lot of time to the funding agencies in MSN and SpVRI project, so many invoices and transactions had to be accounted retrospectively. This caused delays in both projects accounting. All transactions had to be also confirmed by Economic Department, which usually took additional time, so the project team had problems with keeping the schedule of submitting financial proofs within given deadlines. Other financial problems were caused, when Economic Department didn´t know how to account for certain fields of budget according to

university rules. This involved subsequent communication with funding agency in order to process all the problematic parts.

Organization of events

Project manager has to also tackle duties connected with organizing of events. Table 6 below shows events organized within both selected projects.

Tab. 11 Total organized events

	SpVRI	MSN
Seminars	13	0
Workshops	4	1
Conferences	2	3

Source: Own elaboration based on solved projects

As can be seen from the table, especially SpVRI project was very demanding in terms of event organizing. When organizing a seminar, it was particularly necessary to arrange a room for presentation – secure running of all electronic devices, arrange project publicity (which is mentioned lower in the section devoted to monitoring). Workshops were organized in Brno, Valašské Meziříčí, Spišská Nová Ves and Žilina, so there was a necessity to arrange accommodation as well. In general, it was also necessary to keep the attendance list of all events, photo documentation and presentations for the purpose of final report.

In Metallomic Scientific Network project (MSN), there were organized only two live meetings – conference in Brno and workshop in Debrecen. These events were secured in a very similar way as those of SpVRI. Furthermore, it was necessary to think up a complex program, since the event lasted for three days. Activities were split up between guided tours in the laboratories and presentations of invited speakers. Two remaining events of MSN project were teleconferences, which were from the organizational point of view least demanding, since we arranged only the time of Skype conference.

Organization of events was in case of LMaN problematic in availability of appropriate space. Most of the appropriate places are actually classrooms, where regular lessons are held. It was, therefore, difficult to plan the events. Other important step was to ensure effective PR for the events, where the participation was necessary (attendants of educational events were set as indicator in SpVRI project).

Generally, the situation of refunding the travel expenses was very difficult due to rigid university´s rules like that every person taking a car to the event had to have a driver´s training of Mendel University. Another rule to get the fuel refunded is to show the bill from the gas station with date prior to starting the journey.

It proved very important to keep all bills and invoices related to events (accommodation bills, travel orders, food bills, gas bills) for later proving of project

costs. First, some of the bills couldn´t be gathered later anymore, or it was difficult to process it with the foreign project partners.

Publication activities

Part of so called project indicators, which help to attain partial and main project goals, are also publications issued within a given project. In both of the projects, conference proceedings had to be published for every organized conference. These consisted mainly of scientific articles. Furthermore, there were written several press releases within SpVRI project, concerning project initiation, initial conference, results of student competition, release of experimental platform, results of stratospheric flight, and success of young researchers in their joint work. Presentations from conferences were also transformed into banners and scientific articles.

Just like in any other activities, it was very important to keep the time schedule. Regarding the publication activities, one has to keep in mind that it takes time to publish press releases or proceedings. In both SpVRI and MSN project, there were faced problems with tight deadlines for submission of final versions of documents is order to publish them up to date.

5.2.4 Monitoring

In order to make sure, that project runs as desired, project manager has to monitor the activities carried out. Amongst the general administrative tasks of monitoring in all projects were securing, that time-sheets of all project workers were filled, project indicators and thus goals, fulfilled and many other.

Budget

Fund providers are usually very strict when it comes to budget expense. It is very desirable to spend the money exactly as was envisaged in the project application. In case of spending over the budget, there is a possibility of getting fine. The other case decreases credibility of applicant for getting some future funding in other projects. It is, therefore, necessary to keep an eye on the budget expense very frequently to be sure spending it right. Monitoring of all other financial documents comes along, covering receipts for purchased items, travels expenses and so on.

Spending all the budget in every field was not always an easy task, since the planned expenses were sometimes different from reality. In case of MSN project there had to be transferred amounts between budget items, and some unused sources had to be returned at the project report submission and termination.

Reporting

Activities carried out within a project have to be reported to the interested parties – funding agency and heads of Laboratory.

Aside of final report, which serves as the overall report for the whole project duration, funding agency sometimes requires some continuous reports. In case

of SpVRI project, funding agency required summary of continuous works on project. In example they were interested in already organized events and their documentation (photos, presentations), accomplished project indicators (number of people attending the educational activities) and budget state (realized purchases) up to particular date. During the implementation of MSN project, we had to send documentation of project conference in Brno. Main reason for these actions is, that funding agencies need to be assured of continuous works on project and realization of all agreed activities.

Second, no less important party to be reported to, were the heads of LMaN. They were informed about fulfilling the project goals on regular meetings, where the past and coming tasks were talked over. They were also those ones, approving all necessary project changes.

Small reports were also prepared as minutes from the meetings. Basically any meeting held within the project was recorded as one or two pages long minutes.

Publicity of project

Assuring and monitoring of project publicity is very essential task in all project activities. Rules for publicity come out of guidelines for fund receivers and differ from one agency to another.

Publicity rules for SpVRI projects were quite strict. Agency wanted all banners, presentations, press releases, anthologies and any other materials and items published within the project to carry fund´s logo, logo of euro-region Bílé Karpaty and logo of program through which project was funded. At the same time, logo of applicant or partner institutions cannot be bigger than the one of the region. Publicity elements couldn´t be blurry and they had to be visibly placed during all meetings, educational activities and in the registered office of all partners. This implied that even all submitted photos documenting educational activities had to be controlled, whether presentations and banner on the photo contain all the logos.

Visegrad fund, funding agency of MSN project was much more benevolent in this regards. All project materials had to contain only Visegrad fund´s logo, no matter the size or placement.

Many problems could have been prevented, if the uniform templates for presentations and other materials were created at the beginning of the project. Since all project partners created their own template, when presenting, or writing a report, materials had to be transferred into a unique ones when submitting the project. Another “first thing to do” when making the project publicity is creation of project banner, additionally other publicity materials required by the funding agency (in case of SpVRI and MSN we had to make also project tables). MSN´s project banner and tables weren´t processed with sufficient time advance, which resulted in imperfect graphical design and time pressure.

5.2.5 Termination

European project is deemed terminated at the moment of receiving final payment from funding agency. Since payments of funds are usually reimbursed after the implementation period, applicant has to find own sources of financing and hope he´ll get repaid this investment. In the Table 7 below, there is presented an overview of required attachments to the final report.

Tab. 12 List of required attachments to final report

	SpVRI	MSN
1.	List of declared costs	Financial settlement
2.	Declaration of project termination	Transportation cost reimbursement sheet
3.	Proof of receipts	
4.	Proof of publicity	
5.	Declaration of no indebtedness	
6.	Documentation to realized tenders	
7.	Declaration of VAT eligibility	
8.	Costs on foreign partner	

Source: Own elaboration based on final report

Form of the first required attachment was a list of declared costs, which contained all project costs (personal costs, material costs, travelling costs and services), was provided by the funding agency. Forms of Declaration of project termination, Declaration of no indebtedness and Declaration of VAT eligibility were also provided. Another attachment, Proof of receipts, contained documentation of personal costs over the period, list of analytical accounting of all project costs and invoices of material costs and travel costs. Proof of publicity attachment contained information assuring, that publicity rules were obeyed within all invitations, press releases, anthologies, photos, attendance lists, and other materials. Attachments No. 6 and 8 were not relevant for SpVRI project.

Termination of SpVRI project was conditioned by submitting final report within 30 days after the end of implementation period. Agency took another 45 days to make the control. Afterwards, first set of objections arrived from the agency. After appropriate reaction to the objections, funds were reimbursed.

Termination of MSN project was again much simpler. Excel form of Financial settlement was provided by funding agency. It contained only information on costs funded by Visegrad Fund, accompanied by copies of relevant financial documents (invoices, receipts, bills, contracts), printout of complete bank statement or petty-cash vouchers in case of cash payments. Transportation cost sheet provided by the funding agency had to be provided with copies of relevant transport documents, copy of vehicle registration documents, invoices or copies of tickets or boarding passes.

Final report with all attachments had to be sent to the Visegrad fund within 20 days after the end of implementation period. Visegrad Fund reserved 30 days to control the documents, until the final tranche of funding was sent.

In general, applicant can face problems of getting the full promised contributions reimbursed. Some of the travel costs weren´t proved eligible when submitting the final documentation of SpVRI project, which decreased the reimbursement. Parts of MSN project budget weren´t finally spent, so there was a smaller refund. As it was proved in previous sections, Region Bílé Karpaty funding agency was rather strict when it came to following their rules. After submission of final report with attachments, five pages long letter of objections was received from the agency. Most of the points were addressed to incorrect documentation of incurred project costs.

Last important point to mention is that many European projects do not finish, when the final report is submitted and all covered funds are reimbursed. Many of the projects must be maintained for the period of project sustainability, ensuring that the funds weren´t wasted. Rules concerning sustainability can differ, but in case of SpVRI project, there had to be published at least one publication from a joint meeting of project partners for five consecutive years following the project termination.

Other faculties

Opinions of other faculties' project managers mostly merged in that the problems at the initial stage of project result mostly result from the level of applicants readiness and previous experience with the funding agency. In terms of GAČR projects, LDF manager mentioned the budgetary restrictions, for example salaries, where associate professors or professors sometime cannot be wholly paid from the project, since their table salary is higher. ZF manager saw the main problem in impossibility to account for investment budgetary articles in GAČR project during the planning stage of his project.

Problems experienced while implementing GAČR projects concerned tracking of the project costs (PEF), where EO doesn´t monitor the situation properly. They advised possible cooperation of OVaV on this matter. Managers experienced with projects involving partners mentioned the hardship of making partners fulfilling their work in given deadlines, making this an important source of project delays. LDF project manager mentioned the problem of discrepancy between the actual project accounting and getting the funds, resulting in prefinancing at the beginning and problems in accounting (salaries) at the end of

the year. Another problem during the implementation stage (FRRMS) arises from inexperience with project accounting of project managers, which could be solved by training courses held by EO.
For the final stage, other faculties' managers mostly underlined the need to write the final report in advance (PEF), in order to keep leave some space for activities, such as language corrections or getting the documentation, during the last days before the deadline. Project manager from FRRMS had technical difficulties connected with working at GAČR electronic system.

Tab. 13 Summary of insights of project management at MENDELU

	Faculty
Need of keeping an eye on correct project accounting (in harmony with application)	AF, PEF
Need to frequently communicate with important stakeholders (EO, funding agency)	All faculties
Problems with lack of accounting knowledge of project applicants	PEF, FRRMS
Exchange rate differences in foreign invoices	PEF
Discrepancy between time of costs arising and getting funds	LDF
Need to keep the time advance in writing final reports	AF, PEF
Technical problems with funding agency electronic system	FRRMS

Source: Own elaboration

5.3 Recommendations

The last part is related to the recommendations for project managers, applicants for project funding or university representatives, interested in enhancement of project management at Mendel University in Brno. It is important to realize, that university project management is very complex environment, where many mistakes can easily be made.

Recommendations will be proposed based on the analysis and comparison of project documentations from the above mentioned sections. They will be structured into the elements of project stages for easier comprehension and uniformity with the previous work. Last part of recommendation will be addressed to individual university units and enhancing their cooperation.

5.3.1 Initiation

1. When creating a **strategy** for future proposal, **evaluate your strengths** and fields of expertize.
2. Preparation of project **proposal** requires mainly two elements: easy **readability** of the proposal and clear **definition of** project **aims.**
3. It is important to search through the project **calls**. Only **careful reading** of their conditions and selection of the most **relevant and** adequately **feasible** call can lead to further success.
4. At the point of **partner selection**, it is important to **maintain** the existing **network** of partners, or search through the **partner searches**. More **support** could be provided **from university** in this are - financing networking travels or active searching by OVaV for beginning, internationally unknown university project teams.

5.3.2 Application

5. **Project application** determines the project success. Think about implementing **attractive and feasible aims**, estimate **project costs** as **accurately** as possible. There can be delays, so keep the **time reserve** in project timeline. Whole application has to **comply with the guidelines**.
6. **Communication** between **OVaV** and project teams is essential at the application stage. Sometimes it was difficult to follow the deadlines. It is important to **read the guidelines** carefully to include all necessary documents and avoid being sorted out.
7. While submitting the application, keep some **time reserve**. There can be delays in getting signed documents by Rector, or post delays. University representatives should think about **redistributing competences**, so that some of the project documents could be signed by someone else than Rector alone, which often causes delays.
8. **Experience** with funding agency is essential. Think about the individual budget lines and carefully read the **restrictions** imposed on them by funding agency.

5.3.3 Implementation

9. Ensuring that everybody knows his/her **responsibilities** is important from the very **establishment of project team**.
10. It is very important to **create unified templates** for all documents related to the project as soon as possible to keep the rules for publicity.
11. There should be some changes made to **university assignment of SPP element**, which is necessary for project accounting. As getting the project contract usually takes a long time, SPP element should be ascribed in different way. At status quo, it is only advisable for project managers to **urge**

getting contracts from the funding agencies as soon as possible to get SPP element.

12. It is important to **communicate with EO** from the very beginning on how to account for particular **budget lines** in university accounting.
13. **Keeping all bills and invoices** is vital for future submission of financial statements.
14. **Project budget**, eligible and ineligible costs need to be **regularly checked** by project manager in order to use the funding efficiently and appropriately, because EO doesn´t trace them. When encountering any **changes** needed to be done in the budget, **read** the project **guidelines** on the ways how to do it and **communicate with funding agencies** promptly.
15. Need to **pre-finance** the project or problems with **accounting salaries** at the end of the project due to late payroll terms might are sources of potential **accounting obstacles.**
16. Successful project management requires making **regular meetings with the whole project team**. All interested parties need to be assured of project advance.
17. **Organizing** of the **events** can at the university level be accompanied with **lack of** appropriate **places and** their **availability**, remaining a field for future improvement. Project managers should plan all such events in advance. It is also important to plan **PR** of these events **in advance**. In relation to refunding of travel expenses, university should think about changing its rigid rules.
18. When **issuing publications** within the project, **take** into account the **time** publishers need to print it. Take advantage of the established **publishing center within Mendel University,** which is usually very flexible to your needs.

5.3.4 Submission

19. **Intensified communication** is needed with the whole project team in order to get the **documentation** for the final report.
20. Writing the final report is a continual task and shouldn´t be postoponed. Last days before the submission deadline need to be kept for **general administration** and revision of final report, such as **language corrections** etc.
21. **Extreme attention** need to be paid **to** following the **project guidelines**. All documents need **to comply** with different rules made by funding agencies.

22. When summing up the **attachments** communicate with **ED** correct accounting of expenses and **pair the invoices with** different **budget lines**. **OVaV** on getting the documents signed by Rector.
23. Prepare for potential **technical difficulties** connected with submission into the individual (online) systems of funding agencies.
24. Prepare for having to **justify** funding agencies **objections** before getting the finance.

5.3.5 General points

25. Project tasks often pass through **many units** and people at the **university**, which slows down the workflow.
26. There is **low substitutability** between university workers. Unavailability of key persons can stop the tasks from being done. Responsibilities should be divided between more persons. Statutory representative shouldn´t be the only one to sign all project documents, ED personnel should be able to substitute themselves for project accounting, etc.
27. European project **funding agencies**, especially the Czech ones, require **excessive administration**. Many projects are thus, sorted out for formal mistakes. Examples should be taken from the foreign agencies in order to use grants efficiently.

5.3.6 Faculty project centers

28. There is no **generally defined scope** of Faculty project centers **competencies** throughout the faculties.
29. Project center at the faculty level should be established at the Faculty of Horticulture (ZF)
30. Since the establishment of "**signature circles**", where documents are passed on from faculty project center, to the rectorate one, to the statutory representative and back to project manager, the whole process **takes a long time**.
31. Project centers brought in even **bigger administrative burden** (cover letters demanded for signatures) throughout different stages of project solving, which again slows down its realization.
32. There should be greater ability of Faculty Project Centers to overlook the project accounting. There should be established an **accounting project manager at individual departments** of the faculties to help project managers with project accounting.

5.3.7 Rectorate Department of Science and Research

33. There is a **great time-consumption of administrative procedures** held through OVaV.

34. Cooperation is generally very limited and focused at administrative procedures, such as signatures processing and gathering the required documentation.
35. There is a need to **establish a central register of submitted projects** in order to increase the speed and quality of supply of information and documentation needed for particular projects to project managers at MENDELU.
36. Establishment of **educative courses** of project management from OVaV to individual project applicants is essential to raise the awareness of general project problems.

5.3.8 Economic Department of Mendel University

37. For the purpose of managing particular projects, there should be solved the problem of late payroll terms in order to account all eligible costs into the final accounting balance.
38. There should be solved the **problem of exchange rate** difference in project accounting, where EO accounts only project losses, whereas it keeps the FX gains. EO should share the **accounting responsibility** of the projects.
39. Many project managers aren´t well prepared to account for the project, since they lack the accounting background. EO, on the other hand, doesn´t understand the projects from technical side. This discrepancy could be solved by **mutual trainings between EO and project managers**.

6 Discussion

This thesis tries to provide some further understanding to project management in the university environment, particularly at MENDELU. Its main aim was to describe certain problematic stages of project management in order to give the practical insight and provide university representatives with relevant recommendations.

Described projects are fitting the related literature in numerous points, like that European project management is often connected with excessive bureaucracy and rigid rules, or that research projects are usually funded in the stage of synthesis Matt et al. (2015). Most of the projects personally managed at LMaN also contained typical pitfalls of R&D projects described by Elkins & Keller (2003) or Nagesh and Thomas (2015) – working in mixed teams of scientists and administrative workers, non-market purpose and long-term orientation of outcomes.

As was mentioned above, main benefits of the thesis should be found in the description of funded projects management within universities, which is difficult to find in other literature. Therefore, some points remain unsupported with other academic papers. Personally managed projects at LMaN were analyzed into individual project management stages, supported by opinions of experienced project managers from all the faculties at Mendel University. Second important benefit is the analysis of cooperation of university units engaged at project management, which brought other important insights and recommendations for possible improvements.

Despite the input of considerable effort, analysis of mentioned projects still has many weaknesses. There were chosen only few projects from different faculties, which differ in their nature and focus, which on one hand delivers the reader wider insight into project management. On the other, however, brings incomparability and to certain extent insufficient support. Analyzed projects at LMaN were the author´s first experience with project management, which makes it harder to prove that the steps and decisions taken were made efficiently and correctly. Individual approaches followed within different research funded projects or funding agencies make it very difficult to grasp this "market" for generally applicable analysis.

This implies that there is a vast area for future researchers in the field of university project management. Due to the fact, that there was analyzed only one GAČR research project from each faculty, future research could be done in joint analysis of projects funded by different funding agencies from all faculties and perhaps more universities, which would definitely possess different features and problems. Degree of efficiency and importance of EU-funded collaborations, researched by Matt et al. (2015), couldn´t be analyzed in the framework of this thesis, since described consortia at projects managed at Laboratory of Metallomics and Nanotechnologies just started to cooperate. This is, however,

also an important knowledge for future decisions about EU budget and deserves further analysis.

7 Conclusion

The main objective of this master thesis was to identify problematic stages of university project management- to elaborate a list of recommendations for project managers at Mendel University in Brno. The aim was chosen on the basis of presumption of insufficient supply of memorabilia on this market and willingness to support future managers – enhancing the level of project management at Mendel University and prevent them from repeating the same mistakes.

To accomplish this objective, it was necessary to perform the partial objectives. First one was to describe the cooperation of particular units of the university in project management. Based on own experience with described projects of LMaN, cooperation was subjected to deeper analysis in order to provide relevant recommendations. There were described ways in which project managers cooperate with Faculty Project Centers, Rectorate Department of Science and Research (OVaV) and Economic Department (EO) of Mendel University. Faculty project centers and OVaV help with general administration and their support is mainly used in the stage of project preparation and submission. On the other hand, EO support is needed during the implementation stage in finance related problems. Since it keeps the general university accounting, its participation is necessary.

Second partial objective was to identify the stages of project management for selected grant projects solved at Mendel University in Brno. Content analysis of the selected projects was carried out to gather the core data, and in-depth interviews with university project managers were held to support the findings. There were analyzed the applications and reports submitted to the funding agencies at the end of project implementation and project calls and guidelines issued by the funding agencies for applicants.

Thirdly, project management issues were composed through the content analysis and in-depth interviews with project managers.

Together, these partial goals resulted in formulation of generally applicable remarks and possible improvements for potential project managers and university representatives.

Firstly, project managers should read carefully the guidelines in each step of project management. Knowledge of university rules is also vital and managers should prepare for potential clash of these two sets of rules. Second, processing of different tasks is often connected with time delays, which sometimes result from rigid university environment. Another important rule is, therefore, to plan ahead and keep the time reserves throughout the whole implementation of the project. Thirdly, project managers need to communicate with different stakeholders. In different stages of project management, cooperation is needed with Economic Department, Department of Science and Research or Faculty project centers. Fourth, project managers should be prepared to keep the track of thorough project accounting.

Universities are a very complex environment, which makes project management perhaps more difficult than necessary. Firstly, different parts of the project are solved jointly by different university units, pass through many people and require confirmation of several other people, which slows down the workflow. Second, there is lack of substitutability between university workers. Unavailability of particular person in work can cause impossibility to move the whole processes further. Thirdly, there are some rigid rules complicating the project work. They are often connected with accounting rules on different budget lines, reimbursements, or general administrative tasks like signing documents.

At Mendel University, Faculty project centers (with few exceptions) work only within the general administration sphere, which should be changed. Accounting project managers should be established at faculties´ level to keep better track of project costs. Faculty project centers contribute to increased complexity of university procedures bureaucracy, which results in greater time consumption.

Rectorate project center (OVaV) needs to develop the central register of solved projects to make the cooperation with individual managers more effective. Such register would enable managers to know instantly, which documents will be required by the funding agency and kind of project they apply to. There seems to be low awareness of project administration within university project applicants, which should be resolved by establishing educative courses by OVaV.

Economic department should establish accounting trainings for project applicants, as there seems to be low awareness of accounting problems, which might be encountered at the implementation stage. On the other hand, EO should have higher knowledge of individual projects from the technical perspective, which could again be solved by mutual trainings. EO should also bear partial responsibility for project accounting and address better the problem of exchange rate differences.

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9 Appendix

A Project application – MSN

Serial number: **11440027**	Project category: **Scientific exchange, research**

Please note that the electronic application must be submitted on-line by 12:00 noon CET on the day of the respective deadline, and the printed version accompanied by the required documents must be either hand-delivered to the IVF by 16:30 CET on the day of the deadline or sent by post on the same day (postmark will be decisive).

APPLICATION FORM FOR THE SMALL GRANTS PROGRAM

1. Applicant

Mendelova univerzita v Brně

Name of the organization in English:	Mendel University in Brno
Faculty:	Faculty of Agronomy
Department:	Department of Chemistry and Biochemistry
Address:	Zemědělská, 1, Brno, 61300, CZ
Name of the statutory representative:	prof. RNDr. Ladislav Havel, CSc.
Identification No. of the organization:	CZ62156489
Registered VAT Payer:	Yes
VAT Compensation:	No
Phone:	+420 545 131 111
Fax:	+420 545 211 128
E-mail:	xmikula7@mendelu.cz
URL:	http://mendelu.cz/
Coordinator of the project:	Jan Mikulášek
Coordinator's e-mail:	xmikula7@mendelu.cz
Coordinator's phone:	+420 775 220 807

Represented by: **prof. RNDr. Ladislav Havel, CSc.**
Metallomic Scientific Network
Project output : Conference, Research, Workshop & training

2. Project partners

Partner No. 1.

Name of the organization in its native language: Uniwersytet Medyczny im. Piastów Śląskich	
Name of the organization in English: Wroclaw Medical University	
Address: Wybrzeże L. Pasteura 1, Wrocław, 50-367, PL	PL
Statutory representative: Vice-Rector for Scientific Affairs, Professor Zygmunt Grzebieniak MD, PhD	BIN: PL8960005779
Registered VAT payer: Yes	VAT Compensation: No
Phone: 48 71 784 10 11	Fax: 48 71 784 10 13
E-mail: preknauk@umed.wroc.pl	Website: www.en.umed.wroc.pl
Role of the partner: Organization of workshop in Wrocław. Cooperation in preparing future research project.	
Previous cooperation with project partner: Under Erasmus trainings, researchers from both universities visited each other. Collaborative research on metallothionein were performed. Transfer of experience in metallothionein-metals interactions.	

Partner No. 2.

Name of the organization in its native language: Debreceni Egyetem	
Name of the organization in English: University of Debrecen	
Address: Nagyerdei krt. 98., Debrecen, 4032, HU	HU
Statutory representative: Gabriella Emri MD PhD	BIN: 15329750-2-09
Registered VAT payer: Yes	VAT Compensation: No
Phone: 36-52-255-204	Fax: 36-52-255-736
E-mail: gemri@med.unideb.hu	Website: dermatologia.deoec.hu
Role of the partner: Organization of workshop in Debrecen. Cooperation in preparing future project.	
Previous cooperation with project partner: Papilloma Virus Networking - sharing ideas of innovative research Metallothionein immunohistochemistry - transfer of experience	

Partner No. 3.

Name of the organization in its native language: Slovenská technická univerzita v Bratislave	
Name of the organization in English: Slovak University of Technology in Bratislava	
Address: Radlinského 9, Bratislava, 812 37, SK	SK
Statutory representative: Jan Labuda	BIN: SK2020845255
Registered VAT payer: Yes	VAT Compensation: No
Phone: +421 (2) 59 325 277	Fax:
E-mail: jan.labuda@stuba.sk	Website: http://www.fchpt.stuba.sk/
Role of the partner: Organization of workshop in Bratislava	
Previous cooperation with project partner: Papilloma Virus Networking - sharing ideas of innovative research	

3. Short project description

Main aim of the project is to create a Metallomic network, which will continue to work together in the future projects-in particular we want to participate in V4 Standard Grant and COST project. Under the Small Grant, we are planning to organize a conference in Brussels, which will be hosted by the Czech Liaison Office For Research Development and Innovation (CZELO). Apart from this main conference, we are planning to organize 4 workshops in all member countries.

4. Detailed project description

Metallomics is a novel and highly perspective research field aiming at the fast and non-invasive method of determination, location and treatment of the cancer.

Our Laboratory of Metallomics and Nanotechnologies (LMaN) is situated in Brno, which contains more than 80000 students and thus it disposes with very wide scientific base. Laboratory is mainly focused at metallomics, where it has reached excellent scientific results and gradual reputation over the past years.

During these times we were able to create strategic partnership with our Polish partner Wroclaw Medical University and we worked together with its Department of Biomedical and Environmental Analysis in the collaborative research on metallothionein (MT) which resulted in

publishing in FEBS Journal Supplement, "Analysis of human and rabbit metallothioneins by Brdicka reaction and mass spectrometry" 2014. Two publications concerning comparison of human and rabbit MT and MT binding analysis with quantum dots are prepared ("Fluorescence tagged metallothionein with CdTE quantum dots analyzed by chip-CE technique" and "Characterization of human and rabbit metallothioneins by Brdicka reaction, capillary electrophoresis and mass spectrometry analysis").

We also started the project about formation and disintegration of MT-proteins complexes, that could be crucial in the transfer and release of metal ions. The explanation of how MT transmits and thus regulates the availability of Zn may be crucial to understand the mechanism of regulation of life processes at the molecular level.

Due to the organization of the international conference, V4 countries would be considered as the leaders in this field of research and will play the important role in the further development of Metallomics in the world.

5. “Visegrad feature” of your project

Due to raising importance and recognition of our field of work, we feel a strong need to establish a functioning metallomic network not only in the V4 countries but in countries of Central Europe in general. Laboratory of Metallomics and Nanotechnologies has a long-term experience in the field of metallomics, which can be further contributed with the experience of our partners from the Visegrad countries. The main "Visegrad feature" therefore remains in the complement of these four organizations, dealing with the problematics from different points of view. The outputs of the network will be available to all the member countries of V4. In the future we plan to remain very open to all new potential incoming partners.

6. Target groups and groups benefiting from the project

Due to multi-application and spillovers of metallomics there are many potential beneficiaries.

1) Patients - metallomics deal with mechanisms of metals, metalloids and trace elements in health and disease such as cancer. Our research combines these particles with cancer antidotes, which can help in cancer determination, location and treatment of the cancer.

2) Students - all the partner institutions are excellent workplaces under different universities employing the top students from related branches. To stimulate and enable these students to evolve into top-class scientists we need to secure them with appropriate environment and connect them with other scientists in order to create synergic effects.

7. Events

Event	City	Country	From	Until	Number of participants
Conference	Brussels	BE	4/3/2015	8/3/2015	14/50
Workshop	Wroclaw	PL	10/4/2015	11/4/2015	14/70
Workshop	Debrecen	HU	8/5/2015	8/5/2015	14/70
Workshop	Bratislava	SK	5/6/2015	6/6/2015	14/70
Workshop	Brno	CZ	3/7/2015	4/7/2015	14/70

8. Phases

From	Until	Description of the phase
02/2015	03/2015	preparatory works for the kick off meeting at the conference in Brussels
03/2015	04/2015	preparation for the COST domain submission discussed in Brussels
04/2015	07/2015	working on the COST domain submission, preparatory works for workshops

From	Until	Description of the phase
07/2015	07/2015	Closing the project

9. Expected outputs

Expected output of the project is the Conference in Brussels in the beginning of March creating our network, followed by 4 workshops in April, May, June and July in all partner countries. Output from the conference will be the Anthology of 50 pages.

One publication will be the ouput from each of the workshops. Furthermore, all the workshps will be digitally recorded, so the output will be one video from each.

10. Planned PR activities

1) Metallomic conference in Brussels 4.-8.3.2015 - will be composed of expert presentations given by the project partners working in the field of Metallomics and special guests from European institutions.

2) Workshop in Czech Republic 10.-11.4.2015- will be focused at the submission of the COST domain and negotiations with partners.

3) Workshop in Poland 8.-9.5.2015- aimed at the professional discourse of Metallomics

4) Workshop in Slovakia 5.-6.6.2015- main goal is to give a professional discourse of Metallomics and management of the project

5) Workshop in Hungary 3.-4.7.2015- main point will be the evaluation of the project and its sustainability.

6)Own homepages (five partners)

7)Local university media (e.g.: email groups, posters, lectures etc.)

B Final report – MSN

FINAL REPORT

Project No. :	11440027
Name of the project:	***Metallomic scientific network***
Grantee (name, address)	***Mendel University in Brno, Zemědělská 1, Brno, 613 00, CZ***
Name of the person responsible for the project, telephone number, e-mail	***Vojtěch Adam***
Participating Partners:	***1. Wroclaw Medical University***
	2. University of Debrecen
	3. Slovak University of Technology in Bratislava
	4.
	5.

1. Short description of all events (incl. number of participants: performers, lecturers, organizers, visitors etc.)

Teleconference 10. 4.:

Project "Metallomic scientific network" was launched on the teleconference held through Skype on 10. 4. 2015. This teleconference was organized by the Grantee through e-mail communication with the partners. Although the Grantee previously cooperated with all the participating partners, this Skype session was the first contact of the partners between each other. Therefore, main aim of this session was to introduce the project, outline its objectives and to introduce all the partners.

Session was attended by representatives of each partner – Vojtěch Adam and Jan Mikulášek from Brno, Marta Kepinska from Wroclaw, Gabriella Emri from Debrecen and Ján Labuda from Bratislava. The session´s character was purely informative, so we didn´t invite any other visitors.

Teleconference started with opening words of Vojtěch Adam, who introduced the project and Mendel University. Subsequently all the partners (Marta Kepinska, Gabriella Emri and Ján Labuda) gave 5-10 minutes introduction of their workplace. Last remarks related to administration of the project were given by Jan Mikulášek

Teleconference 5. 6.:

Second Skype conference was organized only few days before the conference in Brno, therefore, during this session were mainly discussed problems related to the upcoming event like transport, accommodation and program. Session was attended by representatives of each partner – Vojtěch Adam and Jan Mikulášek from Brno, Marta Kepinska and Anna Bizoń from

Wroclaw, Gabriella Emri from Debrecen and Ján Labuda from Bratislava.

Conference, Brno, 14. – 18. 6.:
The main event, **organized** in Brno was "Metallomics Technology Conference 2015: Recent Advances and Strategies". This conference was organized by the Grantee in the premises of Mendel University in Brno and Masaryk University. Main aim was to discuss recent developments in the field of Metallomics and to confirm the cooperation of newly created consortia.

Official program of the conference started on 15. 6. There were invited two Metallomic experts from Germany and Spain, who shared their exceptional experience. Afternoon session followed with presentations and discussions of scientists from Masaryk and Mendel Universities in Brno. Among the lecturers there were Michal Masařík, Monika Holubová, Jaromír Gumulec, Vojtěch Adam, Branislav Ruttkay-Nedecký, Ondřej Zítka and Vlastimil Sochor) Breaks between the seminars were networking oriented and they also contributed to information and knowledge exchange. In the end of the day, laboratory tours were held to show the Grantee´s equipment disposal.

Second day of the conference was dedicated to presentation of project partners. The aim was to briefly introduce each workplace and to give a technical presentation of results in the field of partner´s specialization. Presentations were followed by roundtable discussion, where project partners started to consider future opportunities for this consortia.

Last day of the conference was held and organized in laboratory of Masaryk University, which is cooperative workplace of Grantee. Technical presentations of **lecturers** (Michal Masařík, Monika Holubová, Markéta Sztalmachová, Jan Balvan, Jaromír Gumulec and Kristýna Hudcová) of leading scientists from Brno were accompanied with practical workshop, which gave all the partners even higher awareness of this field of science in Brno.

In total, coference was attended by 68 participants, of which 19 were lecturers.

2. Description of achieved aims (compared with expected results from the application, changes against original plan)

Main aim of the project was to establish a functioning consortia. This was mainly secured by organization of the conference, which was finally held in Brno instead of Brussels. This step was taken due to much lower costs of organization, which enabled us to enhance the quality of the event. These changes were part of letter on event changes from 4. 3. 2015. Just as was promised in the application, anthology as the output of the conference was elaborated.

Workshops mentioned in the application were mostly transformed into the teleconferences. Reason was again to save some money to enhance the conference in Brno. The only workshop which remained was the one in Hungary. These changes were part of letter on event changes from 4. 3. 2015.

We also kept the rules of publicity in all the materials issued within the project and the event (information tables, banner, leaflet).

Main aim – establishment of functioning consortia – was fulfilled. Conference in Brno enabled the knowledge and information transfer, which built the underpinnings for many future projects – standard/strategic grant, H2020, etc.

The events were visited by many students, who were the direct target group. Information transfer and spreading of knowledge have enhanced the level of education in this field and it should help to increase student´s interest in the field of Metallomics. Project partners are rea-

dy and willing to give the chance to young students and scientists within the future projects of consortia. Countries of V4 are therefore considered to play a crucial role in future development of Metallomics in Europe.
Second targer group, patients, was influenced indirectly, since finding a way to treat diseases is always a long-run. However, we believe that the newly created consortia laid a solid foundation for the future work in order to fight cancer and other types of diseases.

C List of Abbreviations

SpVRI	Společně pro Výzkum, Rozvoj a Inovace
MSN	Metallomic Scientific Network
SENAWOUND	Applications of Nanoparticle Complexes to Reduce Bacterial Infections and Aid Repair of Cutaneous Lesions
EO	Economic Department
OVaV	Department of Science and Research
MENDELU	Mendel University in Brno
EUR	Euro
CZK	Czech koruna
GAČR	Grantová agentura České republiky
FWF	Der Wissenschaftsfonds
LMaN	Laboratory of Metallomics and Nanotechnologies
VAT	Value Added Tax
ZF	Faculty of Horiculture
PEF	Faculty of Economics and Business
LDF	Faculty of Forestry and Wood Technology
FA	Faculty of AgriSciences
FRRMS	Faculty of Regional Development and and International Studies