

Czech University of Life Sciences Prague

Faculty of Economics and Management

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Diploma Thesis

**Raiffeisenbank CZ Core Banking System
Transformation Project – Potential for adoption of
unconventional collaboration technologies**

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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DIPLOMA THESIS ASSIGNMENT

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Thesis title

Raiffeisenbank CZ Core Banking System Transformation Project – Potential for adoption of unconventional collaboration technologies

Objectives of thesis

This thesis was written in order to provide readers with comprehensive research on project management and how Raiffeisenbank CZ incorporated project management methods and tools in Everest Transformation Project. Furthermore, the aim was to investigate current situation in distant mediated collaboration for distributed teams and potential of employment of unconventional collaboration technologies for geographically dispersed teams. This will be demonstrated on the background of collaboration technologies used in RBCZ during the Everest Transformation Project.

Methodology

The author employed several methods to follow the aim of this Master Thesis.

Literature review was conducted mainly based on thorough and comprehensive literature research using both internet resources and printed materials.

The Empirical Part of the thesis was developed using several methods. Firstly it was description of personal work experience in RBCZ and mission of the author in the company, the tasks and achievements related to project management and collaboration technologies.

Moreover, the author carried out interviews with relevant professionals in order to gather feedback on application of collaboration technologies they encountered in their lines of work. This was to compare their insights and remarks with the research in literature review to disclose whether there is potential for adoption of unconventional technologies for distant collaboration. To accompany this, author personally experimented in 3D Virtual environments in order to acquire the hands-on experience in this kind of platform.

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Recommended information sources

Project Management Demystified: Today's Tools and Techniques, Geoff Reiss, 1995

Successful Project Management, Trevor L Young, 2013

Project Management For Dummies, Stanley E. Portny, 2013

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Google Scholar Literature

The Contexts of Knowing: Natural History of a Globally Distributed Team, Baba, Marietta L., Julia Gluesing, Hilary Ratner, and Kimberly H. Wagner, 2008

Managing Distance and Differences in Geographically Distributed Work Groups, Armstrong, David J., and Paul Cole, 2002

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Declaration

I declare that I have worked on my diploma thesis titled “Raiffeisenbank CZ Core Banking System Transformation Project – Potential for adoption of unconventional collaboration technologies” by myself and I have used only the sources mentioned at the end of the thesis.

In Prague on 16/12/2013

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**Projekt Transformace Core Banking Systému v
Raiffeisenbank CZ – Potenciál použití nekonvenčních
kolaboračních technologií**

**Raiffeisenbank CZ Core Banking System
Transformation Project – Potential for adoption of
unconventional collaboration technologies**

Souhrn

Tato diplomová práce se zaměřuje na komplexní prozkoumání projektového řízení a toho jak Raiffeisenbank CZ začlenila různé projektové koncepty pro potřeby Transformačního projektu Everest. Je očividné, že projektové řízení je velmi obsáhlý obor s vlastními normami, standardy a procesy. Dále cílem bylo prozkoumat momentální situaci na poli konvenčních kolaboračních technologií (telekonference a videokonference) v moderním projektovém řízení. Dohromady s výhodami nekonvenčních technologií (3D Virtuální prostředí) tvoří část práce s teoretickými východisky. Bylo zjištěno, že jak telekonference, tak videokonference mají určité nedostatky v porovnání s 3DVP a tím pádem dosahují horší úroveň sociální prezence.

Empirická část byla navržena tak, aby se zabírala třemi hlavními oblastmi. Zaprvé pojednává o autorově vlastní pracovní zkušenosti na pozici Junior Change Managera zapojeného na Projektu Everest. Tato část demonstruje jeho praktickou zkušenost s interními kolaboračními technologiemi a také to jak dosáhl jejich optimalizace.

Následné neformální rozhovory s autorovými bývalými kolegy z Raiffeisenbank potvrdily, že teoretická omezení pro konvenční technologie jsou opodstatněná, stejně jako navržené výhody 3D Virtuálních Prostředí. Dále, praktické interní zhodnocení ukázalo, že 3D Virtuální prostředí jsou schopny simulovat adekvátní prostředí pro projektové řízení a tím dosahovat vysokých úrovní sociální prezence a reality. Na základě tohoto můžeme tvrdit, že je zde jistý potenciál pro rozmach 3D Virtuálních prostředí v projektovém řízení, nicméně otázky jako bezpečnosti normy potřebují ještě zdokonalit.

Klíčová slova:

Raiffeisenbank CZ, Transformace, Projekt, Projektové řízení, Řízení změn, Everest, Globální práce, Rozmístěné týmy, Sociální presence, Spolupráce, 3DVE

Summary

This Master Thesis is aimed to provide its readers with comprehensive research on topics of project management and how Raiffeisenbank CZ incorporated various project management concepts for purposes of the Everest Transformation Project. It is clear that project management is a very complex professional field with its specific norms, standards and processes. Furthermore, the goal was to investigate current state of conventional technologies (teleconferencing and videoconferencing) in modern project management. Accompanied by advantages of unconventional collaboration technologies (3D Virtual Environments) it compiles the in-depth literature review. It revealed that both teleconferencing and videoconferencing have certain limitations in comparison to 3DVEs and thus attain lower levels of social presence.

The empirical part was designed to address three main areas. Firstly, it aims at authors' professional experience as a junior change manager allocated on the Everest Project. This demonstrates his hands-on experience with internal collaboration technologies and how he achieved their optimization.

Furthermore informal interviews with authors' former RBCZ colleagues confirmed that both the theoretical limitations of conventional technologies and respective advantages of 3DVEs are legitimate and based on correct assumptions. In addition, the personal assessment showed that 3DVEs are able to simulate adequate project management environment and attain high degrees of social realism and presence. There is a definite potential for widespread adoption of 3DVEs in project management, however issues like security standards need to be resolved.

Keywords:

Raiffeisenbank CZ, Transformation, Project, Project Management, Change Management, Everest, Global Work, Distributed teams, Social presence, Collaboration, 3DVEs

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1 Introduction

Approximately two years ago the author was offered the opportunity to get on board of a major international transformation project and so he was employed by one of leading banking institutions in the Czech Republic. Given the global nature of the project the team held regular conference calls with overseas project contractors, mostly via teleconferences and videoconferences. The more the author became included in such distant collaboration sessions, the more he started to realize that the technology, which our team employed to mediate the conference calls, evidently indicated various kinds of specific drawbacks, e.g. impersonality leading to low levels of social presence etc. It simply did not work well enough.

Soon after the aforementioned internship term came to an end the author enrolled for a renowned business school programme in France. What he genuinely appreciated there was the more hands-on orientation of the entire study form. The international community would regularly engage in challenging group project assignments on variety of different topics. One of the offered courses, which especially drew author's attention, was named Global Work. It entailed project work in cooperation with overseas students from Stanford University. As the group's topic the team picked modern distant collaboration technologies and their potential for widespread adoption. The outcomes of our investigation basically suggested that unconventional collaboration technologies (e.g. 3D Virtual Environments) simulated highly realistic collaboration space enabling geographically dispersed teams to arrange regular meetings with their counterparts.

When the author later that year started to contemplate the general topic of his Master Thesis he soon reached to a conclusions that the latest professional experience supplied a specific problem and the foreign study endeavor offered an idea for a potential solution. Therefore the author decided to investigate whether 3D Virtual Environments (Second Life, Kately etc.) would in fact facilitate better distant collaboration for distributed project teams in the real-world business sphere. The fact that the author was allocated on a large scale global project granted him a unique opportunity to collect valuable feedback from field professionals, thus it is believed that the outcomes of the thesis will attain high degrees of validity and legitimacy.

2 Objectives

This section outlines the goals and general objectives of this Diploma Thesis, which the author tried to reach. The reason why this thesis actually exists is following; based on comprehensive literary analysis and research, actual interviews with former workmates in relevant positions, personal professional experience acquired during author's internship mission at Raiffeisen Czech Republic and some practically oriented assessment (e.g. use of Kately/Second Life technologies), this thesis is designed to detect limitations of conventional collaboration technologies (both related to Raiffeisen Czech Republic and in broader context), offer suggestions for improvement and lastly, to advocate the potential for upcoming unconventional technologies and their adoption for today's virtual/distributed teams in business environment.

This thesis is written in order to provide readers with a comprehensive research on project management and how Raiffeisenbank CZ incorporated project management methods and tools in Everest Transformation Project. Furthermore, the aim is to investigate current situation in distant mediated collaboration for distributed teams and potential for an employment of unconventional collaboration technologies for geographically dispersed teams. This will be demonstrated on the background of collaboration technologies used in RBCZ during the Everest Transformation Project.

By the end of my thesis the reader should be able to get a sense of orientation in topics around collaboration technologies and their limitations regarding social presence, problems of collaboration technologies related to the author's internship experience, potential of modern technologies to enhance social presence for distributed teams and barriers of their widespread adoption at the same time.

3 Methodology

As was mentioned in previous chapter describing the objectives, the methodology employed for purposes of this diploma thesis had a rather heterogeneous nature. As far as the very basic classification of methodology is concerned it is to be said that, given the topic, the author decided to incorporate a combination of qualitative methods, thus no quantitative method was ultimately applied with respect to the fact that the topic did not require it. Methods used in order to compose the empirical part are presented in this chapter.

The comprehensive literature review that is practically opening the body of the thesis was designed to provide a sufficient knowledge base so that readers will be able to follow the subsequent empirical part, where the theoretical findings were applied in a real context. In order to gather and consolidate the required information and data the author employed several resource pools. Initially, he resorted to engage in an in-depth literature research and for this purposes it was deemed suitable to use both internet and printed materials, i.e. for instance Google Scholar, Google Books and others.

Fortunately, the personal professional experience provided the author with a valuable knowledge and information in a sufficient volume to be incorporated to outline how project management work was handled and organized in Raiffeisenbank Czech Republic.

The outcomes of certain sections from the literature review were based on an Internship report that was composed as one of graduation requirements at Grenoble Graduate School of Business (e.g. Project Management or Change Management chapters). Combination of the literature (printed material, Google Scholar), internal knowledge and the academic work compiled this fairly complex literature review

The Empirical Part of the thesis was developed using several methods. Firstly, it was the description of personal work experience in RBCZ and the mission of the author in the company, the tasks and achievements related to project management and collaboration technologies. Again, this was based on a combination of the hands-on knowledge and the Internship Report.

Moreover, the author carried out interviews with relevant field professionals in order to gather feedback on application of collaboration technologies they encountered in their

lines of work. This was to compare their insights and remarks with the research in literature review to disclose whether there was a potential for adoption of unconventional technologies for mediated distant collaboration.

In addition to offer a more realistic perspective the author employed and internal 3DVE assessment either individually or with help of former university colleagues. These experiments were located directly in the virtual space (namely in Kitley and Second Life) and were intended to verify whether the theoretical assumptions discussing the advantages of 3DVEs over conventional collaboration technologies were valid. In the very last section of the empirical part readers can find another internal assessment of 3DVEs. In this instance it was aimed at testing of one of the virtual worlds to determine whether it provided distributed project management teams with all required attributes of PM work as the author experienced them in his line of work at RBCZ. This also helped to indicate potential barriers for widespread adoption of 3DVEs in a modern business world.

4 Literature Review

This part of my thesis is focused on presenting the comprehensive theoretical knowledge-base that is important to illustrate key concepts of project management, change management or today's situation in the field of collaboration technology and its potential for business application. This all is crucial for further understanding the points and discussions in the succeeding section of this work, i.e. the 'empirical part'. As it is written in the general topic of this thesis the potential of adoption unconventional collaboration technologies will be linked to a large scale international project dealing with transformation of a core banking system at Raiffeisenbank Czech Republic. The reason behind this choice has been already mentioned in previous chapters, i.e. the personal allocation on the project that allowing to profit from the hands on experience with project management work and regular use of conventional collaboration technologies. Thus, it is considered a great personal benefit that is desirably supposed to bring solid and subtle findings and suggestions at the end.

Raiffeisenbank CZ Transformation Project



Prior the actual description of what the Transformation project represented for the company and what it practically entailed let me provide the readers with a brief factual overview about the company and its beginnings in the Czech Republic and also with a comprehensive introduction to project/change management key concepts and principles.

Raiffeisenbank International (RBI)

The origins of RBI can be traced in 1862. It is the year in which Friedrich Wilhelm Raiffeisen established his first private banking association. In Austria, Raiffeisenbank gradually expanded and became the number one private financial institution as far as the size is concerned. The home market of RBI is Austria and Central and Eastern Europe (CEE). In this region RBI runs an extensive direct subsidiary network and other related providers of financial services. RBI operates in 17 national markets within the CEE region, including Czech Republic, Slovakia, Poland, Hungary, Croatia or Russia. [1]

RBI employs around 60,000 workers and its clientele accounts for approximately 14.4 million customers. RBI is a subsidiary of Raiffeisen Zentralbank Österreich (RZB). RZB holds around 79 % of common stock and the rest is a free float. RZB falls under the wings of Raiffeisen Banking Group (RBG), Austria's largest banking group. RBI offers its services to variety of customers. Its product range covers corporate and private customer segments as well as investment banking. [1]

Raiffeisenbank Czech Republic (RBCZ)

Raiffeisenbank commenced its operations in the Czech Republic in year 1993 and as in every national market it offers a wide selection of financial services for both private and corporate clients. In 2006 it started its merger with another locally established banking institution – eBank. The integration process was finalized in 2008. Currently, Raiffeisenbank operates approximately 125 outlets and client centers and is one of the strongest players in the banking market segment. [2]

Raiffeisenbank Czech Republic group consist of numerous sub-entities in order to provide as complete portfolio of products to its clients as possible. Another reason behind it is diversification of its businesses in order to expand its client base potential and to mitigate eventual risk. Such sub-companies are following:

- Raiffeisen Leasing Company
- Raiffeisen Housing Insurance Company
- Raiffeisen Pension Company
- Raiffeisen Investment Company
- UNIQA Insurance Company [2]

Project Management

In this chapter the author would like to introduce the determinants and aspects of project management work and initiatives as it is an area of expertise that by all means represents immense challenge and opportunity for modern organizations, including Raiffeisen Bank.

Project management is an emerging profession and thus projects endeavors are being incorporated as means for reaching desired goals and objectives by companies and organization all over the world. One can see the increasing trend of project management professionals transferring from an industry to industry resulting in the fact that project management as such becomes applicable many distinctive areas of business and services. It is then more about the tools, principles and techniques that are applied rather than in which company or industry you use them. Below I offer several examples of the sheer broadness of the project management field scope. It should help to better illustration of how flexible project management techniques can be. [3]

- **Software**

There is a great buzz around IT and software projects and project managers in many business areas and industries nowadays. It is a SW-project manager's responsibility to coordinate the work of software designers, analysts or consultants to deliver the product in assigned specification and quality. SW-project management can range from transformation to a new system (case of Raiffeisen bank CZ) to installation of new technology or programming a whole new solution for a certain customer. In the case of SW/IT project management there are certain stages, which should be followed, e.g. realization, implementation or testing. [3]

- **Construction and Engineering**

Among professionals from this sphere we can imagine contractors building bridges, hotels, apartment buildings or general infrastructure. Such projects have, usually unlike the previous group, direct impact on the society and sometimes it can be said that we have to rely on them. [3]

- **Facility managers**

Once a factory manager is assigned an uneasy task to set up/install a new production line facility it will represent a great challenge to him/her that is definite. This job would entail a lot of analyzing, planning and negotiating in order to select the best option for the least amount of money. Not an easy task. [3]

- **Designer projects**

Let us imagine a designer who is expected to come up with a new car design for example. A big team of workers need to consider many factors, such as engines, ergonomics, market research, competition or new technologies for their respective industry. And logically their managers build up pressure by strict deadlines and budget, as the whole car designing process tends to be immensely expensive. [3]

- **Scientific Projects**

To develop a piece of a hi-tech scientific device is by all means a very complicated and complex process. It involves organization and management of pricy specialists, physicists or computer professionals. And again, in most cases such projects are expected to result into reasonable profit, hence the pressure from the top again. [3]

- **Sport events**

Organization of Olympic Games or World Hockey Championship involves such an immense number of people starting from fast food service staff to state officials awarding athletes with medals. This all combines with event-to-venue allocation or accommodation for national teams. Everything needs to run like a well-oiled machine. [3]

After this little presentation of how transferable the concept of project management in fact is, let me move to the actual project management facts and theory. What actually is a project by definition? It is not easy to find a perfect and comprehensive definition, but in my opinion the one which sums it up in appropriate manor would be the following:

'A project is a human activity that achieves clear objective against time scale.'[3]

The hallmarks of basically any project are the definite goal, the schedule of a project and the resources allocated for the project. The complexity of the path to reach our predefined goal is what makes a good project manager such a valuable commodity on job market nowadays. Achieving the goal can be affected by many factors, mainly by the time plan, the dimensions of execution and the budget. These three factors should ideally be in equilibrium, e.g. when a project is finished before predefined deadline, we can expect some shortcomings on the quality side of the same. Each component has either direct or indirect impact on the other two (Figure 1). [4]

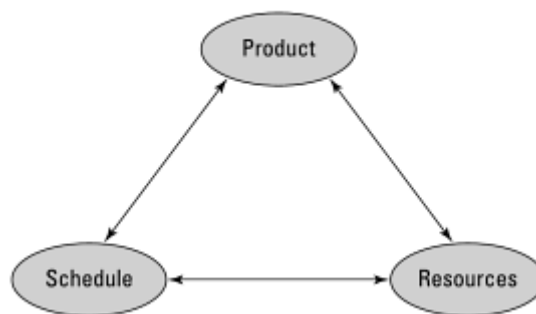


Figure 1 Three key project components' relationships

Proper planning and specification of a project are of course the most substantial conditions in order to succeed.

Planning and specification process may entail:

- Clients, customers
- Contractors, vendors
- Technology
- Legal regulations and norms
- Internal policies
- Scope
- Budget
- Human capital [4]

Project management is the process of coordinating a project initiative from its start through the realization to the final closing stage. A project manager should follow certain sets of processes, which are following (Figure 2):

- *Initiating processes*: Explaining and clarifying of business needs, defining potential resources and budget and also analyzing the stakeholders who will have to be addressed due to the project impact
- *Planning processes*: Detailing the project scope, time scale, risk assessment of project impacts or evaluation of communication means
- *Executing processes*: Establishing of the project team, communication with all stakeholders and subsequent management of the same, implementation of project plans
- *Monitoring and Controlling processes*: Tracking and monitoring of project progress and performance and executing actions to facilitate successful implementation of project plans and achieving the predefined goals and quality
- *Closing processes*: Finalizing and closing procedures, e.g. project output evaluation and result assessment. [4]

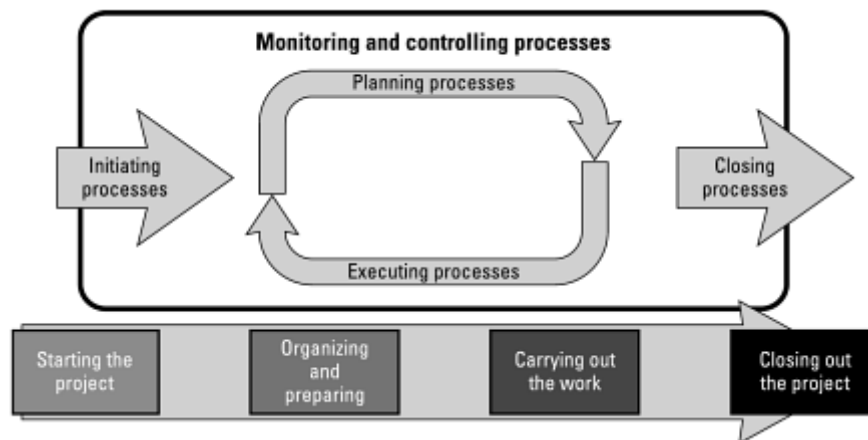


Figure 2 Project management process

To achieve the desired performance of processes illustrated above it is required to address following aspects of project management practices:

- *Information:* Gather valid and accurate data to be used for matters of planning, progress monitoring and final project evaluation.
- *Communication infrastructure:* Establishing an efficient and well working communication infrastructure to share data, knowledge and to communicate important tasks and milestones of the project.
- *Commitment:* Stimulation of a long term commitment of allocated human capital so that workers deliver results within time and budget by using their best practices and effort. This can be achieved in many ways; however, probably the most effective mean that ensures an enduring commitment would be adequate motivation, regardless whether it is financial or nonfinancial type of the same. Motivation factors of the Raiffeisenbank Transformation project will be presented in later point of this thesis. [4]

Project management norms and standards

Mr. Milton D. Rosenau (a highly esteemed project manager) once said that:

'Project management is such a complex topic that there is no possible way to simplify it by any kind of lecture or presentation'.

The field of project management is so complex and variable that it is not deemed entirely possible to precisely lay down one set of universal rules that would be applicable on any kind of project regardless its nature or industry for that matter. As was mention earlier we nowadays encounter project based work in wide variety of industries and businesses. It can be generally stated that there is endless number of guidebooks and standards that are mostly founded on an actual experience of authors with project management as they in majority possess some sort of a highly esteemed project manager status. Such standards and norms obviously require continuous actualization and updating due to constant project management sphere's changes and development.

Several institutions and associations provide project managers (PM's) with various certificates and offer prep courses so that PM's are instructed and trained in project guidance and diversity. These standards and norms are not binding nor are they mandatory; however every competent PM is expected to be at least fundamentally aware of their existence.

PMI – Project Management Institute

An independent institution founded in 1969 in the USA which over time evolved into world's largest not-for-profit membership-based organization for project management professionals. PMI is the owner of 'Project Management Body of Knowledge concept', an internationally acknowledged standard administering practical training in fundamentals of project management and project governance. As a member you acquire a variety of choices of different sorts of certifications and credentials. Quite a large

emphasis is put on ethics and professional responsibility as substantial share of the whole methodology is regulated by a strictly defined ethical code. [5]

OGC – Office of Government Commerce

This body operates under the government of the United Kingdom and is the owner of the PRINCE2 (Projects in Controlled Environment). This methodology was established by more than 150 British companies with a proved long term expertise in project management. It is the most widespread project management methodology in Europe. [6]

PRINCE2 is built on seven basic principles and seven themes amongst which we include:

PRINCE2 Principles	PRINCE2 Themes
continued business justification	business case
earn from experience	organization
defined roles and responsibilities	quality
manage by stages	plans
manage by exception	risk
focus on products	change
tailored to suit the project environment	progress

Figure 3 PRINCE2 Principles and Themes

These principles and themes are later applied in a predefined set of processes including Starting up a project, Initiating a project or Directing a project. Therefore PRINCE2 methodology is referred to as a process-driven management method. In contrary to the ‘Project Management Body of Knowledge’ concept, PRINCE2 is rather focused on the process from the perspective of role and process coordination combined with document and knowledge management. [7]

IPMA – International Project Management Association

It is a non-profit Swiss institution, which is by some considered the leading authority on competent and responsible project management. It is a federation of 55+ Member associations. These Member associations strive to develop a healthy project management environment in their respective geographical locations by establishing relationships with local companies and practitioners. IPMA is focused on the promotion of project management profession. Of course there are numerous possibilities for certifications. IPMA takes however a slightly different approach regarding the perspective on project management, because this methodology is in a bigger extent focused on the manager's point of view and is sorted into three zones of project management competencies, i.e. contextual, behavioral and technical competencies (Figure 4). [8]



Figure 4 The Eye of Competencies

ISO 10006 Guidelines to quality in project management

It is an international standard developed by International Organization for Standardization. It provides guidance on application of quality management practices in projects. However, once applying this standard we might need to consider some adjustments so that it suits the project in question. [9]

Raiffeisenbank Czech Republic and Project Management

In general terms, Raiffeisenbank Czech Republic is a quite project oriented institution, i.e. majority of new initiatives and changes have the form of a project. RBCZ Project management office (RBCZ PMO) can easily run around 20 parallel projects within one year and as such its operations are designed to assist the individual project managers with control and coordination of hard data and their reporting.

RBCZ PMO structure

In general terms there are numerous roles and bodies within the RBCZ PMO. The top level body in the structure is referred to as the Project Steering Committee and it is basically the link between board of directors and project management office. It approves or rejects new projects and defines controlling milestones.

Another important body is the Steering Committee and it is characterized by its allocation to a specific running project and its direct subordination to the Project Steering Committee.

A Project sponsor is usually responsible for the actual implementation of a RUNNING project and in most cases is the main owner of the service or process that is affected by the project change initiative.

The hands-on project work is performed by a Project Manager, who DEFINES the governance and operations of a project, i.e. prepares project plans, assigns tasks to project staff or monitors the project progress and development.

Project life cycle in RBCZ

Projects in RBCZ are focused on the realization in the alignment with their scope, time plan and budget. What drives RBCZ into the project based work is one/or more of the following:

- Profit maximization
- Market share growth
- Enhanced productivity
- Cost minimization
- Efficient resource utilization

Project management in RBCZ followed a certain project life cycle model, which consisted out of five phases of development:

- Start (basic ideas, aim, impacts, lucrativeness, estimation of budget and time plan)
- Preparation (client expectations, process definition, assessment of current state)
- Realization (feasibility testing, implementation and testing)
- Go-live (pilot deployment, training and communication)
- Assessment (evaluation of the real project impact and results against plan control)

Everest Transformation Project

By the code name of the project itself it is easy to assume that this initiative in particular was not just another process change or modification, it represented something more. Everest project was a complex, complicated, large scale and extremely demanding mission; similarly to an effort of climbing to the peak of the Everest mountain, thus the name of the whole project. I would describe the Everest project in a few sentences like this: A transformation of the entire banking system (Core Banking System – CBS). This would result in the full implementation of brand new CBS. One of the reasons justifying such idea was the unbearable situation in IT systems post the merger with eBank in 2008.

Now, the state before the integration of RBCZ and eBank from the technological point of view will be briefly described. RBCZ incorporated a system called MIDAS as their primary banking system. EBank used different Core Banking System called Transaction system. After the merger these two systems were at first integrated into one platform, however this was not quite the sustainable model, as the compatibility of the two proved to be rather problematic. Two core systems used simultaneously to execute transactions linked to numerous data warehouses and applications and as such the overall operation was rather ineffective and in a sense even chaotic.

Global goals of Everest

- Consolidation and simplification of the application architecture
 - Cost effective maintenance of the architecture
 - Cost effective IT research and development
- Create predispositions for future development in RBCZ's services and products
- Higher efficiency of RBCZ's business processes due to the enhanced functional support
- Overall enhancement in the workforce efficiency

Motivational factors

As long as the staff allocated to the Everest Project was concerned, one of the biggest challenges was to select experienced people with a decent willingness to cooperate, utilize their skills and competencies and most importantly to stay on board to the final phase of the entire project. Without a reasonable motivation of human resources there was only a slight chance of the overall success.

So how was the staff motivated in case of Everest?

- Financial motivation
 - Special remuneration at the finish line of the project
 - Employee of the months benefits
 - Annual bonuses in case of a solid project progress
- Non-financial motivation
 - Know-how, experience, training
 - Guaranteed appropriate job offer after the roll-out of the project
 - Appliances provided– e.g. personal notebook or smartphone
 - Respected international company environment

Everest Team

This chapter is dedicated to the explanation of the project team composition and how the competencies of various parties were set. The start of the first phase of the project dates back to May 2009. Of course it had to be analyzed and assessed by the RBCZ headquarters located in Vienna, Austria. It was then decided that for the purposes of the CBS transformation in RBCZ an Indian IT Solutions Company called Infosys would develop and deliver the technology, and this very complex solution was called Finacle.

A wide variety of different IT and business consultants arrived to the Prague's HQ's from many countries, e.g. India, Scotland, Great Britain or Slovakia. Together with the internal full time staff, the total workforce allocated to the Everest Project accounted for around 200 people. Project work force was then organized into 14 business tracks and 6 IT tracks. One track represented the areas of bank's operations which had a substantial importance in the entire process. Tracks were in essence composed of the bank's internal specialists who were highly skilled and competent in given area of expertise. In general terms the overall structure had the form of a classic matrix organizational structure with track leaders, stream leaders and project managers overseeing their respective areas and the resources/staff allocated under their supervision. It combined project and functional structures and was designed to avoid problems associated with the two structures individually. Everest project used basically the usual form of matrix structure involving project managers and functional managers who shared their subordinates (specialists) who were answering to both the project and the functional managers at the same time. Of course this whole model was under control of the top manager (head of the project/CEO). It is used to cope with the complexity of large scale projects and to facilitate the cross communication and interaction, easier management and supervision, better distribution of competencies and probably the most important aspect would be the ability to share the limited amount of resources allocated to the whole project, e.g. the specialized staff (Figure 5).

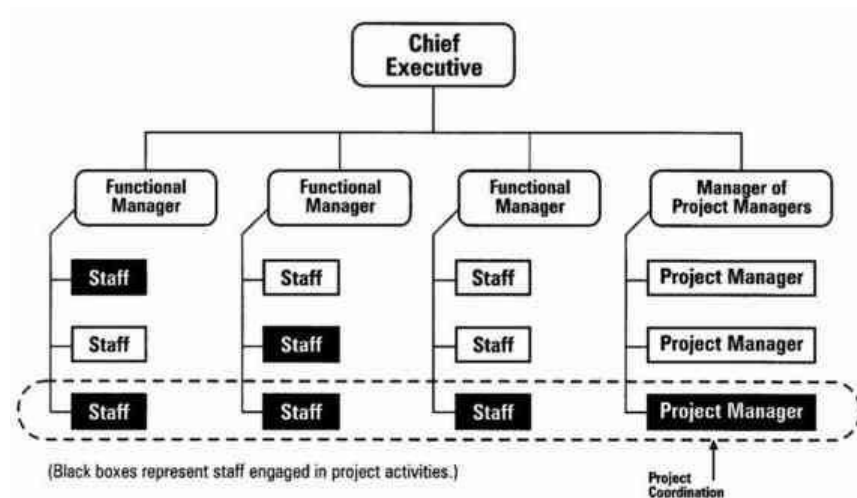


Figure 5 Matrix organization

According to Mr. Stanley E.Portny the biggest benefits of Matrix Structure in project are:

- *“Teams can assemble rapidly: Because you have a larger resource pool from which to choose your project team, you don’t have to wait for a few people to finish current assignments before they can start on your project.*
- *Specialized expertise can be available for several different projects: Projects often require a small amount of effort from a person with highly specialized knowledge or skills.*
- *Getting buy in from team members’ functional units is easier with the matrix structure than with the functional or projectized structures: Unit members who work on a project or who are affected by its outcome are more likely to support the project if they’re confident that the team hears their concerns and issues.*

At the same time the potential challenges might be:

- *A matrix environment introduces the following challenges, which the project manager must successfully address:*
- *Team members working on multiple projects respond to two or more managers. Each team member has at least two people giving her direction — a project manager and a functional manager. When these two managers are at similar*

levels in the organization, resolving conflicting demands for the team member's time can be difficult.

- *Team members may not be familiar with one another's styles and knowledge: Team members may require some time to become comfortable with one another's work styles and behaviors.*
- *Team members may focus more on their individual assignments and less on the project and its goals: For example, a procurement specialist may be responsible for buying equipment and supplies for all her projects. In such a case, the specialist may be less concerned about a project's target date for the purchases and more concerned about correctly following her department's procurement procedures.' [4]*

Change Management

This thesis will be later addressing author's personal internship experience with this area of expertise, as he was employed as a Junior Change Manager at RBCZ and thus he performed various activities from the sphere of change management and coordination. Later in the empirical part it will demonstrated how the author personally engaged in order to improve one of the internal collaboration technologies used for change management.

There are numerous definitions of available in various literature sources, journals and magazines, but the one that well captures the true meaning was stated by John Kotter, a Forbes magazine contributor and he describes change management in these words:

'The world basically uses change management, which is a set of processes and a set of tools and a set of mechanisms that are designed to make sure that when you do try to make some changes, A, it doesn't get out of control, and B, the number of problems associated with it—you know, rebellion among the ranks, bleeding of cash that you can't afford—doesn't happen. So it is a way of making a big change and keeping it, in a sense, under control. Change management tends to be more associated—at least, when it works well—with smaller changes.' [10]

This explanation of the change management discipline very well matches the principles of what author's line of work at Raiffeisenbank entailed. When we consider an IT related change management discipline it would normally be composed of raising and recording of changes; assessment of impacts, benefits and risks of proposed changes; development of business justification and obtaining approval; management and co-ordination of change implementation; monitoring and reporting of implementation and reviewing and closing of change requests. ISO 20000 defines the objective of *change management* (part 1, 9.2) as:

'To ensure all changes are assessed, approved, implemented and reviewed in a controlled manner'. [11]

Global Work Problem

Today, many companies from all sorts of industries show certain signs of problems with achieving the desired levels of quality and efficiency in their global project initiatives, because they are struggling to adopt and adapt to the multinational environment, which require new techniques, tools and practices related to distant communication and perception of cultural differences of distributed teams. As was mentioned in the section on norms and standards, there are several sets of techniques and tools (PRINCE2 etc.) that can be efficiently incorporated into project management work and they proved to have reached quite a satisfying level of maturity. A good project manager should stick to such principles and apply them as effectively as possible. The significance level of the effectiveness rises even higher when we engage into a global project endeavor. However, this fundamental knowledge of universal project management principles would not be enough. The management style has to be adjusted for the global environment in order to succeed with a project. [12]

When we consider international or even global projects there are of course major concerns amongst the workers and specialists allocated on such project, because it is a novelty in project execution for their companies. A survey from 2010 showed that over 56% of respondents claimed that they were aware of the raising trend of distant

collaboration and global work, but on the other hand majority of them did not possess positive attitude towards global work and in their eyes it represented only ‘necessary evil.’ [13] The respondents felt uneasy about the potential challenges, which this new way of work could bring along. The biggest concerns arose with regard to the distant communication issue. It is said that a poor level of communication and social presence may significantly compromise the overall productivity and performance of distributed teams. Moreover, matters of geographical distance and seldom interaction lead to obstacles in reaching common goals and the feeling of a team spirit. It is highly important for distributed teams to develop certain levels of social presence, because it provides the teams with a sense of community and creates better personal relationships. [14]

How to define a global project?

According to Jean Binder, ‘*Global projects involve team members from various cultures and organizations, spread in locations across countries and time zones, and speaking different native languages.*’ (Figure 6)

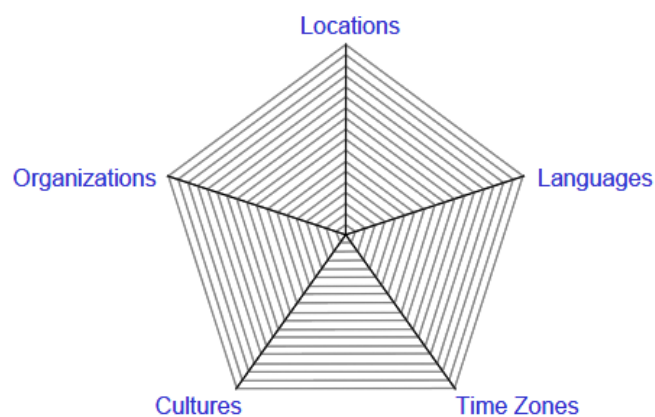


Figure 6 Dimensions of Global Projects

Each of these dimensions can contribute to the success of the team and the quality of the project deliverables, while adding challenges to project and programme managers, PMOs and team members.

It is said that multinational teams can deliver higher level of innovation, more variable perspectives and wider selection of ideas. Skilled project manager may organize productive brainstorming sessions to gather ideas from their team members. Similarly,

this approach can be adopted for problem solving or decision making situations. Project managers, however, in majority of cases experienced difficulties and challenges arising from miscommunication or misunderstanding resulting from conflicting views on culture, values or behavior, i.e. ‘socio-economics issues’. Such obstacles can lead to significant delays and wastage of valuable resources. [12]

Social presence

The aforementioned notion of social presence is one of the key determinants of well-functioning project management. Short, Williams and Christie (1976) presented the idea that one of the critical preconditions of a good project management practices is social presence in a communication medium and they defined it as the ‘degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships...’ [15] In other words, the level of how an individual is perceived as a real human being in mediated communication within distributed teams. Social presence is here considered as a property of the medium itself and thus media can differ in quality based on the degree of social presence. The capacity of a medium enabling its user to exchange information about facial expression, gaze direction, outfit and all kinds of nonverbal cues, this all positively affects the level of social presence of a communication/ collaboration technology. [16] The higher level of social presence we achieve the more realistic the impression of distant communication becomes. The highest possible degree of social presence is generated of course by face-to-face interaction. Textual communication on the other hand offers the lowest level of social presence. [17]

A model introduced by Lombard & Ditton (1997) proposes a framework for further investigation and definition of distinct aspects of social presence, such as *social richness*, *social realism*, *social transportation* and *social immersion*. [18]

Social richness is used to measure the level of richness of verbal and nonverbal information that can be reached through a medium. Social richness determines the medium’s ‘capacity for immediate feedback, the number of senses involved, personalization and language variety.’ [19]

Today's high-tech multimedia, HD resolution screens and recording devices together with high-speed internet all contribute to elevated levels of social richness.

Social realism evaluates the probability that contents of mediated communication will transfer into real world environment. [18]

Social transportation measures the perception of involved teams with regard to their feeling of location in the virtual environment. It deals with the effects of actual entering the virtual environment and its impact on engaged individuals. [18]

Social immersion measures 'the degree to which a virtual environment submerges the perceptual system of the user.' [18] High level immersion basically means that the virtual environment (mediated by collaboration technology) is less distinguishable and thus the users feel like real parts of the virtual environment. [20]

Collaboration technologies

Every company that decided to start an international project needs to assess what kind of tool or technology they will employ in order to mediate the communication and collaboration for distributed teams. Distributed teams require high quality and reliable collaboration technology to achieve smooth and effective distant cooperation as will be demonstrated in the empirical part of my thesis. The collaboration technology adopted in the case of Raiffeisenbank Everest Transformation Project indicated limitations and drawbacks, and thus it did not fully deliver high levels of social presence once applied to mediate long distance collaboration. During my internship period at RBCZ the collaboration technology types employed were:

- Internal collaboration technologies at RBCZ
 - JIRA, MS SharePoint
- External collaboration technologies at RBCZ
 - Teleconferencing, Videoconferencing,

This work will address their limitations and potential of adoption of new technologies (3D virtual environment) later.

On the continuum of collaboration technologies there are several conventional possibilities that can be employed for international projects as the external collaboration platforms.

Conventional Distant Collaboration Technologies

Amongst the most widely used technologies for distant collaboration certainly belong teleconferencing and videoconferencing.

Teleconferencing

Let us start with teleconferencing. As a short definition can be used this formulation: “Teleconferencing is interactive group communication (three or more people in two or more locations) through an electronic medium. In general terms, teleconferencing can bring people together under one roof even though they're separated by hundreds of miles.” This technology is the single most frequently employed solution for mediated communication for needs of distributed teams [21]. There are of course advantages of this technology. The biggest advantage that is common for all distant collaboration technologies is by all means the reduction of travel costs otherwise required for face-to-face meetings. Teleconferencing shows definite signs of a simple and reliable solution; however it is the simplicity of teleconferencing that limits it at the same time.

Videoconferencing

An advanced solution compared to teleconferencing. In comparison to basic audio conferencing, it provides the participants with the visual dimension, so it in a way imitates the face-to-face factor of a meeting. It is defined as ‘the use of a multimedia application that combines audio, video, text, and graphics to support real time transmission and sharing of information among a distributed group of people cooperating in a common activity’[23]. Despite the fact that videoconferencing is widely used to facilitate distant collaboration of distributed teams, it still cannot fully nurture the social and cultural components of communication amongst geographically dispersed teams [24].

Drawbacks of Conventional Collaboration Technologies

This section outlines the shortcomings of conventional technologies used by distributed teams in ordinary business activities. Provided that international corporations need to engage in distant communication on daily basis, there are therefore logical requirements for effective and reliable communication technologies that facilitate smooth collaboration of distributed teams and therefore enable them to reach given goals and objectives. Among the conventional collaborative technologies belong teleconferencing and videoconferencing. Given that the goal of this master thesis is to explore unconventional collaboration technologies (3D virtual environments) as next generation tools for distant collaboration in project management (RBCZ) it is now necessary to point out where are the limits of conventional tools?

Teleconferencing

Background noise

A teleconference may involve people who are located in various kinds of office spaces and this can negatively affect the quality of the transmission due to the background noises from their respective environments. Acoustical flaws of the teleconferencing technology and extraneous noise in teleconferencing meeting rooms threaten the effective communication. [21]

Misunderstandings/Miscommunication

Participants in a teleconference have to rely solely on verbal means of communication and thus sometimes a miscommunication may occur just due to the fact that without the physical presence and possibility to meet the counterparts face to face our verbal signals are misunderstood. Facial expressions, eye contact and physical contact (handshakes etc.) eliminate these issues. Moreover, the lack of personal attributes makes the overall impression from such meeting in a way peculiar and less social/human. Therefore the level of social presence in this case is impaired due to the lack of aforementioned attributes of F2F interaction. [25]

Impersonality

Without the chance of actual visual dimension the teams that use only teleconferencing experience troubles with establishing personal relationships and the gap between the distributed teams can subsequently expand. [25]

Lack of visual familiarity with the project model/design/object

Clearly it is not possible to hold a teleconference that would facilitate a creativity nurturing environment that is crucial for e.g. engineering project teams, which are working on a new design or solution that requires a physical/visual dimension. [25]

Language barriers

Distributed teams are likely to include individuals from different countries and in most cases there is one common language used for long distance communication. Meanings of phrases and expressions might get occasionally lost in translation and without the visual dimension, it could be quite difficult to tell whether the counterpart understood and received the message correctly. [25]

The moderator effect

In a conventional face-to-face meeting it is customary that a designated participant serves as a moderator and as such he/she steers the meeting in a desired direction and tries to prevent the discussion from going off-topic. During a teleconference, participants are less likely to respect such person and as a result of that the meeting can get quite difficult to manage and control. Furthermore, as the moderator sets in a sense certain limits and constraints, other participant are prevented from informal activities such as brainstorming etc. [21] [25]

Videoconferencing

Alike the previous technology, even videoconferencing has its specific drawbacks.

Communication

Even though this technology enables the participants to see each other, there are still limitations with the presence in comparison to usual face-to-face meeting, e.g. handshaking etc. Also according to an “Information Week” article, in many ways it is not the technology, but social factors that limit videoconferencing. For example, many people may find themselves feel uneasy and uncomfortable on camera and therefore may behave differently in comparison to a traditional F2F meeting. [29]

Security

Security is a big issue in videoconferencing, because this technology is not natively developed for high level security use [26]. Communication is transmitted through a standard internet connection, and thus is a subject to threats by computer hackers. It is essential to ensure security and confidentiality of information that are transferred through the videoconferencing network. A security test executed in 2012 scanned the internet space for certain amount of time and as a result it acquired access to the conference rooms of approximately 5,000 companies and institutions. The testing software was able to detect sensitive documents placed on the conference table, read PPT presentation etc. [27].

Technology concerns

Logically, this technology is more demanding in terms of the technical compatibility and internet connection quality and stability. It is crucial to make sure that you practice the use platform in advance to avoid potential errors during an actual meeting. It is very important that the staff operating the equipment is adequately trained and sufficiently skilled with the technology. [29]

High Price

There are of course many types videoconferencing equipment, but in general it is quite expensive to acquire a high quality solution appropriate for the needs and size of your company. For a large scale business it can reach hundreds of thousands of dollars. Considering the cost we potentially save on travel expenses it can still turn out to be a benefit in a long run. Figure below lists various ways of distant collaboration and their approximate annual costs per user. [28]

	Annual Cost per User	Comments
Audio Conferencing	\$500 to \$1000s	<ul style="list-style-type: none">▪ Benefits: Familiar, easy to use, ubiquitous▪ Challenges: More expensive than perception, poor participant attention span, challenges following discussion context, no display of data
Web Conferencing	\$30 to \$100	<ul style="list-style-type: none">▪ Benefits: Familiar, easy to use, ubiquitous, inexpensive▪ Challenges: Typically pay extra for conference call or audio VoIP services, poor participant attention span, challenges following discussion context, limited to one media file presentation at a time
Virtual Worlds (Forterra's OLIVE)	\$60 to \$167	<ul style="list-style-type: none">▪ Benefits: Face-to-face like experience, multiple media file presentation, appeals to Internet generation▪ Challenges: Larger client download, proven effectiveness, easy entry for employees
Video Conferencing & Telepresence	\$1000 +	<ul style="list-style-type: none">▪ Benefits: Face-to-face like experience, integrates with IP Phone system for easy meeting scheduling and launching▪ Challenges: High up front investment often \$Ms for network infrastructure and equipment, users required to visit installed sites
Travel	\$1000 +	<ul style="list-style-type: none">▪ Benefits: Face-to-face meeting provides best overall experience▪ Challenges: Highest ongoing cost, lost productivity due to travel time to destinations▪ Assume 2 trips per year, \$500 per trip

Figure 7 Technology Cost Comparison

Audio clarity

While videoconferencing it is very important to be in proximity of the microphone, otherwise it can be quite difficult to understand what you are trying to communicate to the counterpart. Therefore high quality audio equipment (microphone, speakers) is essential. [28]

Learning curve

Videoconferencing requires its users and operators to be familiar with the platform before they start actually using it in practice. The learning curve of videoconferencing is rather steep compared to a regular teleconferencing platform. [28]

Unconventional Collaboration Technologies

This section presents the two types of unconventional collaboration platforms (3D Virtual Environment and Augmented Reality), their potential for adoption for distributed team as well as the factors possibly impairing the same.

3D Virtual Environment

3DVE have been invented as a platform to facilitate social interaction of individuals with one key aim, i.e. to nurture higher levels of social interaction of distributed teams compared to conventional technologies (teleconferencing, videoconferencing). We can as well refer to distributed teams as to ‘virtual teams’. Simply put, virtual teams involve members who are located in various geographical locations. Companies and organizations have been looking for appropriate platforms in order to engage in virtual world environment activity. [30] 3DVEs can provide ‘realistic economic zone that enable users to exchange services as well as virtual objects that are created and maintained exclusively within the virtual environment.’ [31]

Companies like Sony BMG, IBM or Toyota entered one of the virtual environments (Second Life 3DVE platform) to experiment in conducting business activities, event organization, new design presentation etc. [31]

3D Virtual Environments are defined as environments ‘created entirely from a computer database consisting of objects modeled by computer-aided design (CAD) software that are programmed to behave in certain ways as the user interacts with them.’ [32] Users of virtual worlds are represented by ‘avatars’. We can see avatars being subjects to physical laws, e.g. gravity. Avatars can transport themselves by walking, flying or even teleporting to other locations. [33]

Advantages of 3D Virtual Environments over conventional technologies

Based on thorough literature research I indicated a couple of key advantages of 3DVEs over conventional distant collaboration technologies (teleconferencing and videoconferencing) and these shall result in higher degrees of social presence in distant cooperation of geographically dispersed project teams.

3DVEs as a better platform for informal interaction

There are several attributes that can be used in order to outline how informal interaction is characterized. For instance: unscheduled interaction, an unarranged agenda, interactivity of the platform, rich content or informal language. These aspects can considerably enhance social presence in distant collaboration.

Geographically dispersed project teams show one major problematic issue, which is the fact that they cannot engage in any sort of proper physical interaction. Once entered some sort of a 3DVE platform users are naturally encouraged to join debates and conversations without any need for formal planning or scheduling. Such a spontaneous interactions nurture more comfortable and convenient communication and thus helps to build closer relationships and trust among its virtual users.

Furthermore, users of 3DVEs can act unpredictably, because they can control their avatars free mindedly and do not have to follow any predefined ways or directions. The virtual environment stimulates random ‘behavior’ and activity. Together with free movement of avatars throughout the virtual space we can see that information is transported in the same fashion. Yet again, this builds a fertile ground for better social interaction. [34]

As was mentioned in previous paragraphs, social interaction in 3DVEs shows hallmarks of spontaneity and randomness. This provides users with the possibility to cooperate with other team members without any necessary formal planning of such potential meeting or conference. [35]

3DVEs are, in comparison to conventional technologies, very interactive platforms allowing their users to engage into brainstorming sessions or to employ tools for document creation and sharing. [36] Users can for instance create interactive charts linked to the topic they are presenting in real time.

With the rich interaction of users we can achieve high levels of social presence. Our avatars enable us to facilitate interpersonal contact through our personalized ‘physical forms’ with other human-like avatars around us. Avatars allow real time communication using voice, body language or even just simple eye contact.

3DVEs can offer better sound quality

This chapter is focused on another drawback of conventional collaborative technologies. Specifically, it is the low quality of transmitted voice in teleconferencing and videoconferencing. One of the factors of virtual presence is the ability to communicate verbally with other distributed teams and the more realistic and vivid the transmission of sound is, the more real the virtual presence seems to be. Low quality of voice in teleconferencing/videoconferencing is caused by the use of only basic audio equipment and many distractions due to the background noise etc. Therefore with top level 3D acoustic solutions the communication in 3D virtual environment would possess higher level of realism, because it would have similar characteristics to sound as we hear it in the real world. [37]

Sound is a useful tool that has many advantages. Mainly, sound serves as a feedback to some actions and leads to better immersion. Even music helps to manipulate user’s emotions, including happiness, sadness etc. The use of sound is mentioned in many studies concerning human-computer interaction.

3D sounds means that a listener hears sounds from all directions. This sound is generally simulated by a computer. 3D sound has many characteristics that can provide advantages in virtual environments. [37]

Reasons for incorporation of 3D sound into 3DVEs:

- 3D sound provides extra help for the user to find objects when he is navigation, because the hearing system can determine the location of the sound source
- The 3D sound produces a high immersion level in virtual environments
- 3D sound helps to interpret distances among objects
- 3D sound facilitates a more natural interaction because it is similar to the sound in the real world

Sound can provide additional information to a graphic world, by helping users to understand extra information without extra effort. [37]

Use of 3DVEs

Nowadays there are many platforms offering the users various 3D virtual environments. Amongst the most popular solutions are Second Life and Kitley, the two virtual worlds that possess many similarities ranging from the graphics to the way avatars can communicate with one another. Given the interactivity and the virtual presence dimension, these platforms have undeniable potential to be used in many areas of normal life including business, scientific or educational spheres. In this chapter I will focus on several ways, in which I see the most promising potential of using 3D virtual environments.

Business activities

In virtual worlds, i.e. digital simulated realities where people interact between each other using avatars and virtual personalities customized to their best preference, we can see a very promising tool for establishing a virtual marketplace, where companies offer their services to potential virtual customers.

Of course it is a long term mission to implement business activities of a company to a virtual world and subsequently set up a revenue generating operation that would increase the actual value of the company. The initial issue for a company is to determine the business potential and value of virtual world to themselves. Logically, not every company has the nature to be operating its business activities in virtual environment, so companies need to identify this aspect followed by understanding the benefits of virtual worlds. [38]

Once a real-world company or a startup organization pins down the issues mentioned above there is a realistic opportunity for them to establish a virtual presence in a 3D virtual environment and start generating real profits.

There are two basic aspects that in fact allow them to conduct a real business in a virtual world. Let us take Second Life as an example. There are the Linden dollars, i.e. the official virtual currency tradable for U.S. dollars. Secondly, in-game business creators can secure their companies by a legitimate copyright. Factors like these are what make it appealing for potential virtual businessmen. And what is probably the most attractive factor is the fact that people are only limited by their own imagination when it comes to designing a business in a virtual environment. Possibilities range from design of a new

real estates to tailoring new outwear for Second Life residents. Below is a list of examples of virtual business activities:

- Party and wedding planner
- Pet manufacturer
- Tattooist
- Automotive manufacturer
- Fashion designer
- Custom avatar designer
- Jewelry maker
- Architect
- XML coder
- Freelance scripter
- Game developer
- Tour guide
- Real estate speculator
- Publicist [39]

A relevant success story of a profitable business network created directly in Second Life is the case of Anshe Chung (real name Ailin Graef). She is a former teacher who later focused all her energy on establishing a proper business empire in a virtual world, namely in Second Life. In fact, some CNN journalists call her the “Rockefeller of Second Life” as she is the first virtual world millionaire in history. [40] Ailin started her business venture with a purchase and development of virtual land. She resells and rents lots including such issues like zoning rights etc. Among other services, her network offers Second Life startups the assistance package to help them to get established in the virtual world. She also founded a company called 3D Avatar School offering language courses using customized virtual environment. [41]



Advertisement and Marketing

Conventional media today attract less attention from the younger audience; therefore companies like Coca-Cola expanded their presence even beyond the boundaries of real world. Places like Second Life provide a unique opportunity for marketers and advertisers to present their products and brands in factually unlimited number of shapes and forms. The aforementioned aspects of Second Life, e.g. the ability to design clothes or real estate provide an extensive operational radius for marketers and advertisers, who are convinced that their service or product can acquire more attention in 3D virtual environment. Especially in case of the younger generation this could be a very viable idea. [42]



Figure 8 My Coke platform

As a good example can be used the case of Coca Cola Company. In 2002 they came up with the virtual environment project called My Coke-Coke Studios, where the youngsters were enabled to create music mixes and ultimately share them with other members of the society. For well rated mixes there were rewards in form of ‘decibel’ points, with which the participants could buy for example new equipment for their music studios. Of course on every new item obtained there was a logo of Coca-Cola Company. In this way the users directly interacted with the brand, which was logically better for the marketing purpose. [42],

A Brand Channel article offered another example of how to market a new mobile device:

'Your company produces a new mobile device that enables the user to do far more than is currently available. Traditional media channels targeted to the younger market are highly congested and commoditized. Due to the technical nature of your offering, you will need consumers to spend time learning these features in a fun and interesting manner. As a result, you build a technology center in a virtual world to showcase capabilities in a game format. For example, to educate users on a GPS feature, you build an Amazon jungle and have them navigate their way while avoiding quicksand and predators. By completing the game, they have "learned" how to apply these features and become more encouraged to try other offerings.' [42]

For marketers and advertiser, the virtual worlds provide an environment where they can present their products in unimaginable ways enabling consumers to experience situations that are unrealistic in the real world. Virtual world advertising offers the combination of interaction, enjoyment and brand marketing.

Virtual World Education



Figure 9 Virtual classroom

Virtual worlds nowadays offer a very useful tool for education. There are many benefits of a 3DVE for educators resulting in an effective learning environment. Such type of education enhances the level of students' participation as there is a certain degree of immersion due to the fact that avatars are used.

The simple ability to customize and control one's virtual persona raises the attractiveness and overall investment of a student in a virtual class. Also it enables the participants to work on tasks that would be complicated to handle in the real world. [43]

'For example, teachers of architecture bring their students to SL to build things that would either be too expensive or physically impossible to create in the real world. The students can see each other while they're building and work collaboratively around projects' [43]

According to the outcome of an interview with Marc Humbert, who is a collaborative technology expert at Grenoble Graduate School of Business, there were many positive aspects in his attempt to organize classes in Second Life Environment. The motivation behind this experiment was mainly the innovation of the educational process to increase satisfaction of students with new technologies. As he said, the creativity and freedom in the class in a sense cut barriers experienced in normal life. Students could adopt different behavior, which enabled shy students to better interact with one another and the teacher at the same time. Also the way of control and movement increased their interest in the class. As for the teachers, they used conventional tools for presentation of the class materials like projectors and slide presentations. [44]

Virtual worlds give opportunity to shift from teacher-centered to student-centered model of learning. In this way students are more involved and possess a constructive and collaborative approach, rather than just absorb information presented to them by teachers.

Students engaged in educational games and simulations are interpreting, analyzing, discovering, evaluating, acting, and problem solving. This approach to learning is more consistent with constructivist learning, where knowledge is constructed by the learners as they are actively problem solving in an authentic context, than with traditional instruction. [44]

Virtual Workplace

A good exemplar of a virtual workplace is the Sun Microsystems' virtual workplace implemented in the Project Wonderland Toolkit. In this 3D world, the workers were enabled to accomplish their work tasks from the real world, as well as to share documents and meet with their workmates. Team members were therefore capable of keeping track of the progress of the project regardless of their location. Workers could also collaborate on tasks in form of editing and updating of contents of whiteboards and other virtual materials. This tool in particular could very well be a sound solution for distant project work for distributed project teams, given that project work requires constant updating and up keeping of various knowledge management systems or monitoring the progress of the project development. [45]



Figure 10 Project Wonderland

Augmented Reality

One plausible future development of 3D Virtual Environment technology, which is considered by the ‘tech crowd’, is the augmented reality. Augmented reality (AR in short) is referred to as *‘a live, direct or indirect, view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data. It is related to a more general concept called mediated reality, in which a view of reality is modified (possibly even diminished rather than augmented), by a computer. As a result, the technology functions by enhancing one’s current perception of reality’* [46]

Another, slightly shorter definition describes augmented reality as *‘a technology that superimposes a computer-generated image on a user’s view of the real world, thus providing a composite view’* [47]

Once we engage in the use of a modern AR device we experience the whole new perspective on world around us. Our environment turns into an interactive place where the digital data and information about our surroundings are combined with the world that is actually around us.

AR technology can be based on various platforms:

- Hardware
- Eyeglasses
- Contact lenses
- Tracking technologies
- Video mapping [48]

5 Empirical Part

As was outlined in the beginning of my thesis, the empirical part is composed out of several sections that are based on distinct approaches or better said, distinct methods employed to achieve the desired goals. The first part is devoted to the author's personal hands-on working experience in change management (project management) at Raiffeisenbank Czech Republic. The specifications of the Everest project including its purpose, organizational structure or project life cycle were covered in the literature review. At this point the thesis will tackle the question of author's personal mission and tasks followed by an analysis of the primary internal collaboration technology with relation to its imperfections and imposed need for optimization.

The Internship Mission

During the job interview with the future supervisor we joined into a discussion about my potential future mission and tasks that will define my position in Raiffeisenbank Czech Republic. As was already aforementioned the author was assigned to the Project Management Office together with the Head of Administration, the Head of Budget and Forecasting and the direct superior, the Head of Change Management. The competencies in the initial phase of the term had more or less a form of an assistant position of my supervisor, Mr. Imrich Tyrpak, who was an experienced and respected project and transformation manager with a long record of successful project work from past, both from the Czech Republic and abroad.

The subsequent 'field of operations' was Change management, that was designed to facilitate successful progress and development of change requests initiated by different streams and tracks of the project in order to implement necessary changes generated out of the original scope of the project. What change management is and what such work entails was addressed in the literature review.

At this point, it would be reasonable to actually disclose the details of the role within the RBCZ Change management process. Here is the list of the day-to-day tasks and activities I performed during my internship in the company accordingly to my LinkedIn profile:

- Project Head Office member, Coordination of change process within an international project (Implementation of new core banking system)
- Organized and chaired various regular project status meetings
- Coordinated tasks and activities between project streams and units
- Facilitated deliverables in terms of deadlines, resource allocation and scope
- Tracked the overall status and progress of the project
- 'Go-to person' in issues around the primary change management status tracking software
- Right hand of the Head of Change Management
- Organized change board meetings, provided inputs and consolidating outputs of the meetings
- Held F2F meetings and conference/video calls with the Indian project vendor. Costs analysis, consolidation and reporting [49]

Everest Project Collaboration Technologies

RBCZ Everest - Internal Collaboration Technologies

For internal project management purposes the main tools used in regular fashion were software solutions names JIRA and Microsoft SharePoint. They both posed as genuinely convenient platforms for knowledge management and collaboration of the project team and various affiliated parties participating on Everest project. I will only briefly introduce SharePoint to readers as it is rather considered a knowledge management platform, thus not entirely a collaboration technology.

Microsoft SharePoint

The primary solution used for knowledge management and data warehousing was a tool developed by Microsoft Company called SharePoint. It provided Everest staff with a very efficient and convenient platform to share and manage content or documents. Its design was rather simple and operation quite straightforward. Microsoft SharePoint 2007 facilitated management of documents so that its users were able to store, locate, update, trace, and restore documents and other content (Figure 11). I personally, from the position of a change manager would create and manage dashboards, folders and files as places to upload and store various sorts of documents and data sheets, including financial reports, consolidated outputs of management meetings or project progress tracking sheets. SharePoint 2007 allowed its administrators to configure refined compliance criteria with accordance to internal governance policy, such as access rights etc. As a regular user of this solution I must admit that for simple content management purposes it mediated collaboration on sensitive project documents and files very well; however there were indications of obsolescence arising from its occasional instability and limited connectivity with project's third parties, or in general terms it did not nurture social interaction among its users. Moreover it was rather incapable to attain any significant degree of mobility and flexibility.

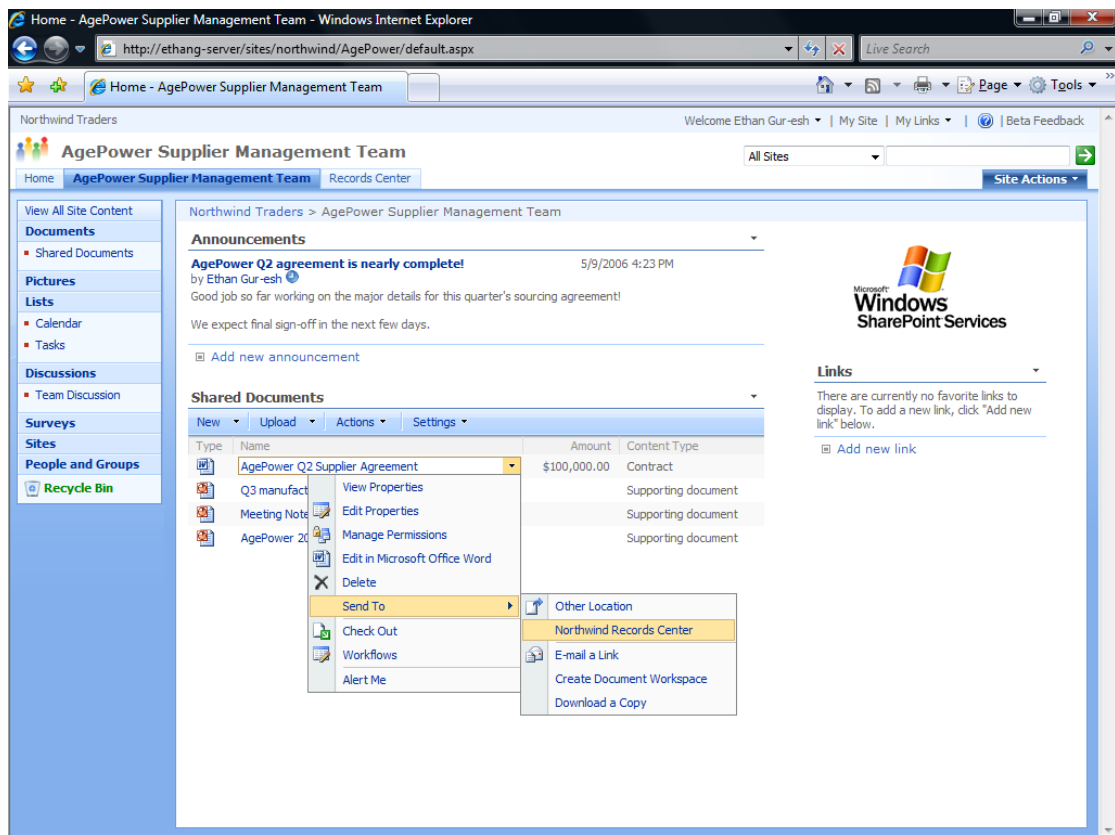


Figure 11 MS SharePoint 2007 Document Management

However at this point, Microsoft has already released a new version; the MS SharePoint 2013 based on the Office 365 platform offering number of new options and service enhancements for document management and internal collaboration (Figure 12). The new version brings much higher degree of direct interaction among project teams and encourages involved colleagues to communicate and collaborate on assigned tasks in regular fashion and larger extent. Given that MS SharePoint 2013 stimulates its users to share ideas, look for answers and follow activities of their colleagues (arising from the social network based design) it promises higher level of social interaction, therefore social presence. Another enhancement is its mobility. By using inbuilt Office 365 Cloud features, project managers are able to cooperate on long distance either by using their personal computers or even mobile phone devices. [50]

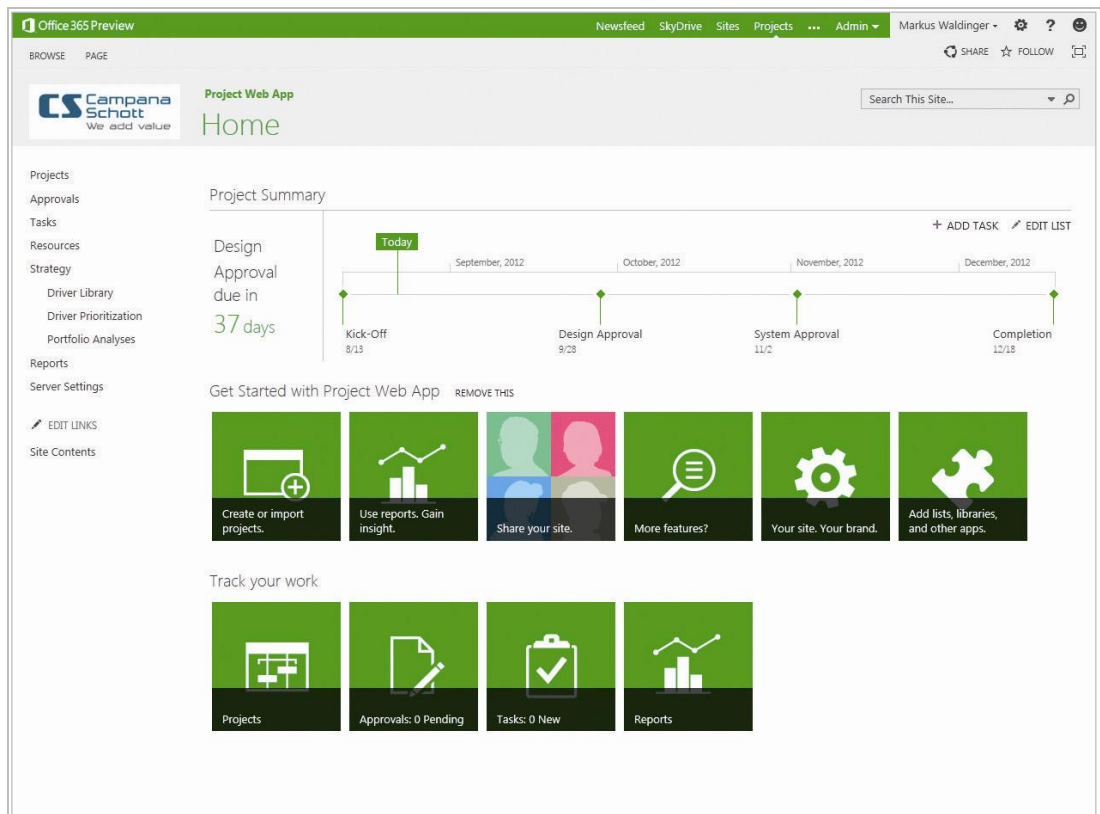


Figure 12 MS SharePoint 2013

The overall design of work environment and interface is genuinely comfortable and attractive for daily operation with this tool. Therefore based on my hands-on experience with MS SharePoint 2007 and theoretical knowledge of the new possibilities of its latest version I would highly recommend upgrading to MS SharePoint 2013. As a result project work will attain a whole new dimension of interactivity, personalization, social presence and mobility.

JIRA

One of the key parts of my job was to operate the main internal change process monitoring system, which was a software called JIRA. It is basically a software solution for tracking and coordination of change processes and as such is an ideal tool for project management. Users can organize issues, assign work and follow the activity. More importantly they can track the progress of change requests. It facilitates the overall change request development and helps project and change managers to reach their goals within assigned time, quality and resource capacity.

A change request can be opened and defined by many specifications and possible determining attributes, such as risk, priority, assignee, impact or urgency. All these attributes are essential for further progress and workflow orientation of the change request. You can see the screen for creation of a new change request below.

Field Tab | Details Tab

Description: User wishes to have a new report that shows Invoices sorted per vendor.

Requesting User: Lady Gaga
enter last name, first name

Priority (ERP): Medium
for use by Oracle ERP

Category(Size): Trivial
Category (size)

Risk: Low

Impact: Low

Urgency: Low

* Reporter: ir1
Start typing to get a list of possible matches.

Originator Dept: Accounting Department
Originator Department

PS Module Endorser: Mr. Debit
Professional Staff who endorses request

User Reference: ACC-1002-10-2010
User Reference Number

PTN #: PTN-200
Cross reference to Main PTN

Figure 13 JIRA Change request form

When a change request is created in is then reviewed and moved forwards to a responsible person in the next step of the workflow. At each stage in the workflow there is either an individual or a team that performs actions necessary in order to shift the change request to the next stage. By default the workflow would look like this:

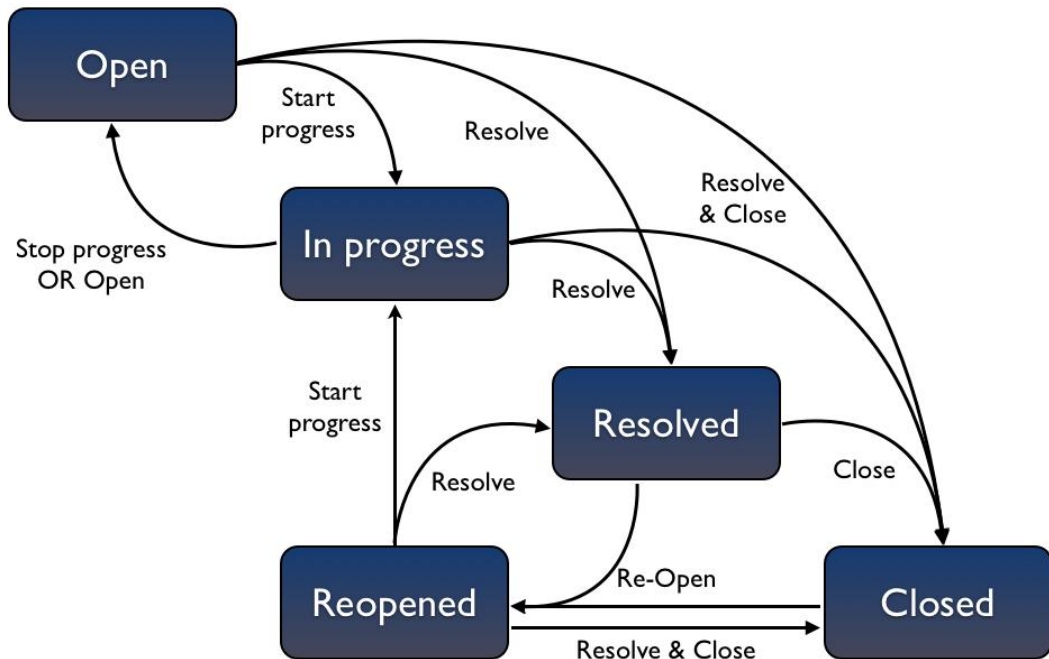


Figure 14 JIRA Change Process Workflow

Firstly, following lines will explain what some of the steps in the default workflow represent:

In Progress- Change request is undergoing feasibility and content reviews

Resolved – Feasibility and content reviews are completed

Closed – Change request is functionally implemented and finalized.

However, the default workflow proved to be quite basic and it did not satisfy the needs of our change management process, therefore it had to be modified to meet the strict requirements and policies of RBCZ Project Management Office. In order for a change request to be released for the actual development and deployment, the official process required it to be a priority approved by the so called Change Board Committee, which I also organized. People involved were the initiators of given change request, Head of

Change Management, Head of the Transformation Programme, Me and other consultants and specialists when necessary. If we take a closer look at the Figure 14, we can instantly notice that the ‘Change Board Committee’ step was clearly omitted from the default work flow configuration and thus it was not in compliance with the formal Change Request process and internal RBCZ approval policy.

Therefore it was my responsibility to come up with a workflow design modification that would enable the project team to recognize that all the change requests that underwent feasibility and content reviews successfully progressed to a state where they were ready to be presented to Change Board for approval and subsequent actual functional development. After a couple of internal meetings with the team I proposed a simple, yet effective solution to this problem. It involved inserting three more steps in the JIRA Change Request workflow. For these purposes I used the JIRA workflow designer. (Figure 15)

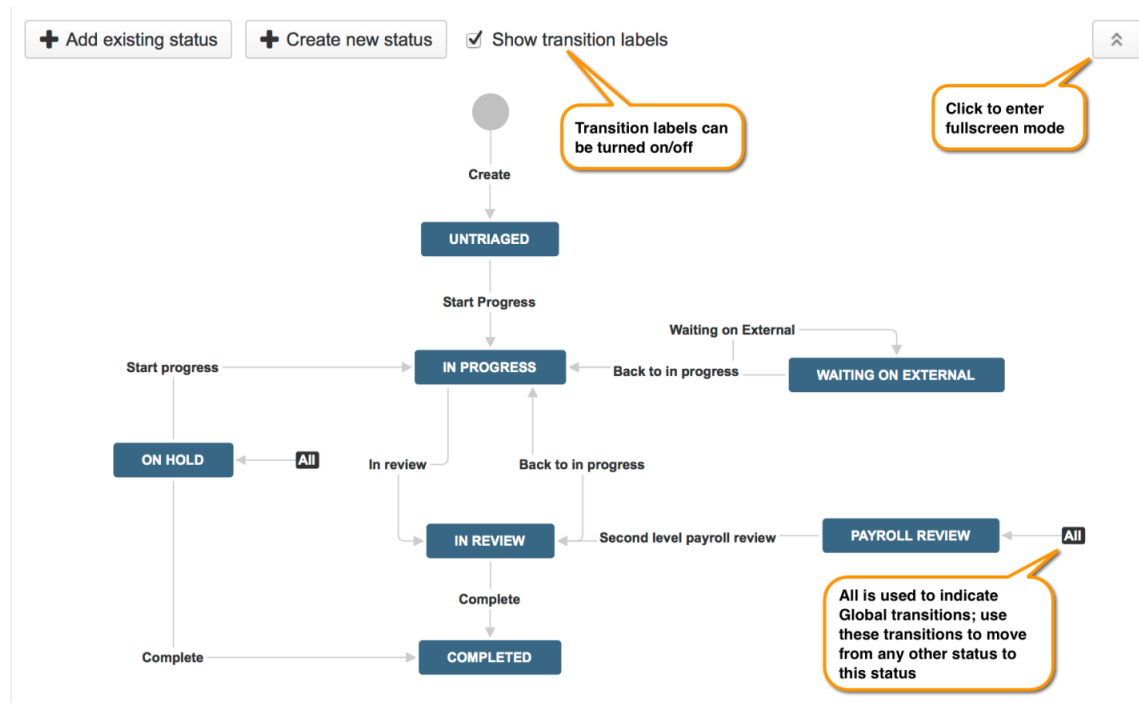


Figure 15 JIRA Workflow Designer

The author proposed the following steps to be implemented in the workflow:

Ready for Change board – Change request is awaiting the verdict of Change board committee, which needs to be properly planned and documented.

Approved by Change Board – Change request was approved by Change Board Committee as far as the risk/impact/budget issues were concerned and the CR was shifted for functionality implementation and subsequent deployment.

Rejected by Change board – Change request was rejected by Change Board as it was not deemed necessary/reasonably priced etc. It is possible to be reopened and reworked from the initiators. Accordingly, the modified JIRA workflow would look close to this. (I used MS Word to illustrate).

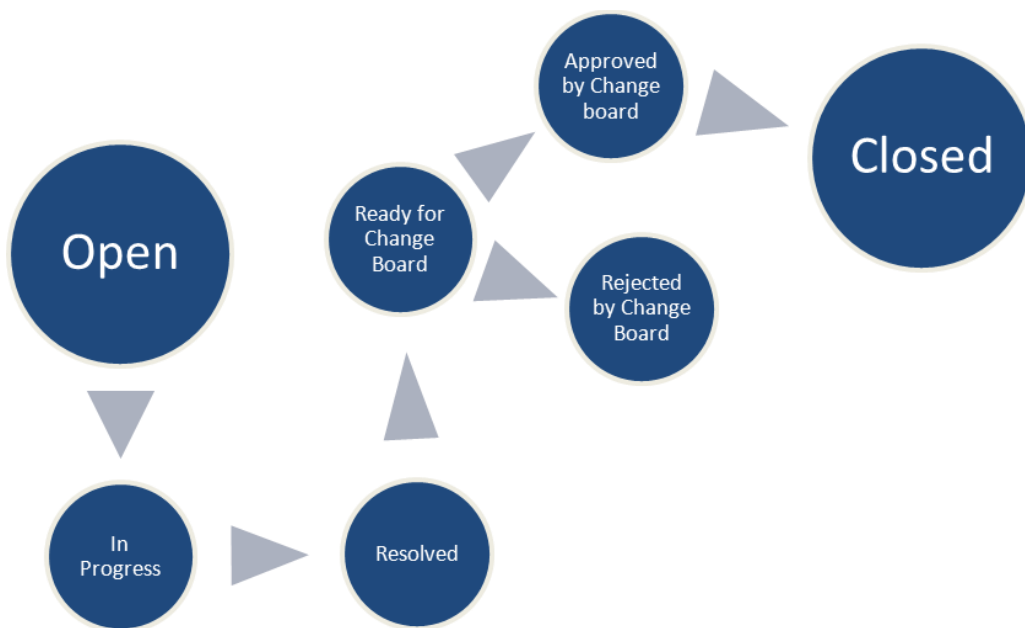


Figure 16 JIRA Change Process Optimization

Based on the chart above it is obvious that the issue of missing Change Board Committee section was handled, and as a result of this everyone involved in the Everest Change Management process could instantly observe and orientate in the change

request development process and tackle potential problematic issues with relevant responsible specialists more efficiently. I believe that my contribution to the team and the change management in RBCZ in general posed a certain positive value.

Internal process optimization is a major challenge for most companies in today's business world and it certainly can enhance the overall efficiency of business operations. On the continuum, when we consider project management, and that its well running and efficient processes are essential (RBCZ Everest project, just like any project was specified by its predefined deadlines, budget and scope) it was therefore very important to track the progress precisely and have the possibility to gather valuable information at a specific point in time.

RBCZ Everest - External Collaboration Technologies - Interviews

Amongst the conventional external collaboration technologies used as means of distant communication and collaboration for RBCZ Everest Project belonged Teleconferencing and its advanced successor, i.e. Videoconferencing. This section of the Empirical part, which is devoted to teleconferencing and videoconferencing, will be organized in following fashion (as was already explained in 'Methodology' part): Thanks to the practical experience as an actual employer allocated on the RBCZ Everest Transformation Project the author managed to consolidate both the personal reflection and remarks of his former colleagues in attempt to assess the two collaboration technologies from the users point of view. In accordance to the theoretical findings from Literature review on drawbacks of teleconferencing and videoconferencing, the same will be addressed from hands-on practical perspective. In order to attain a certain degree of research legitimacy the author contacted some of his former Everest project colleagues with whom he used to be in day-to-day interaction and who regularly participated in distant cooperation meetings, i.e. in teleconferencing/videoconferencing sessions. The author intentionally interviewed colleagues who occupied higher ranks in the Everest Project hierarchy, because from these positions their presence in conference calls was defined by a high degree of activity and inclusion. Their competencies and expertise undoubtedly represented a vital share of the whole top project management's knowledge pool.

In RBCZ we would engage into conference calls on regular basis, in most cases such event involved a significant number of internal staff members together with various third parties participants and external contractors. As far as the topics of such conferences were concerned, it covered a wide range of issues including weekly project status calls, sponsors calls, change process status calls or vendor delivery status calls. These meetings were held in accordance to the project plan and the internal scheduling principles.

The three Everest Project staff members I interviewed were following persons:

- Mr. Imrich Tyrpak – Head of Change Management (my direct superior)
- Mr. Mark Griffin – Head of Budget and Forecasting
- Ms. Marketa Dolezelova – Administration Specialist

The reason that led to involvement of these three individuals in particular was twofold; the first condition was sort of essential, i.e. the assumption of their regular applicative adoption and usage of RBCZ external collaboration technologies. The second factor that motivated me into this action regarded our rather close personal relationships thanks to the fact that we occupied one office space. Moreover, we would together participate in conference calls on regular basis. This allowed me to attain broader level of mutual perception and social interaction.

Conventional Collaboration Technologies

Aforementioned informal interviews with experienced project management experts (allocated on RBCZ Everest Project on long term contracts) delivered valuable outcomes. It can be stated that the theoretical findings of the literature review were confirmed namely with regard to presented drawbacks of conventional collaboration technologies and also the advantages of 3DVEs over conventional collaboration technologies (namely teleconferencing and videoconferencing).

Teleconferencing

In the literature review, the aim of investigation was to define the limitations of mediated collaboration via teleconferencing. A thorough literature research indicated that the most commonly proclaimed drawbacks of this technology are following:

- Background noise
- Misunderstandings / Miscommunication
- Impersonality
- Lack of visual familiarity with the project/model/design/object
- Language barriers
- The moderator effect

Background noise

In accordance to the RBCZ interview outcomes we can assume that this problem of teleconferencing platforms is indeed considered enduring and bothersome. The communication flow of such conferences can be severely impaired. According to Mark Griffin, *'The noises coming in from the surroundings of the meeting room were often quite irritating and they worked as quite a sneaky distraction factor.'* Moreover he pointed out that most of the time it was not any sort of a loud noise, but instead it was the constant *'rustle'* in the background that had the disruptive effect. My next former colleague, Marketa Dolezelova expressed a very similar view on the issue of background noise. She confirmed that on some occasions the extraneous noise had impairing effect on her concentration in such a way that *'She lost the track of the point of the discussion and struggled to come up with a reasonable impromptu response when such a moment came around'*. This of course can easily lead to a misinterpretation of such incident for one's momentary lack of focus and engagement in the teleconference call, which is by no means desirable to occur. Therefore based on these outcomes it is clear that background noise impairs the quality of teleconference calls with undeniable negative effect on focus and concentration of participants involved. It can cause lower efficiency of the attending staff as a problem solving group.

Misunderstanding / Miscommunication

My former colleagues also confirmed that it was not very convenient to fully rely on verbal means of communication. Marketa raised a notion that it is '*Common to use our visual observation to size up the counterpart*' in order to create some '*fundamental idea about other persons in a meeting*'. My supervisor, Mr. Imrich Tyrpak pointed out that teleconferencing lacked the physical attributes of human interaction and therefore '*What was communicated in a teleconference had to be very well prepared, clear and thought through*' as our counterpart did not possess the possibility to receive our verbal expressions accompanied by any physical dimension, i.e. facial expressions or body language. On the other hand, Mark Griffin suggested that without the visual dimension participants '*tend to avoid stereotyping*' and '*should not resort to the halo effect etc.*'

Impersonality

This issue is again linked to the lack of physical contact and very limited level of social presence. In fact all three respondents replied more or less identically. They '*did not feel the personal connection with their teleconferencing counterparts*' and did not relate on '*the human level.*' However, that allowed them to stick strictly to '*professionalism and to focus on the core matter of the meeting.*'

Lack of visual familiarity with the project model/design/object

The scale of this drawback of teleconferencing is closely tied to the nature of a project. The more physical and tangible the final project outcome is expected to be, the bigger stress is laid on the mediation tool for distant collaboration so that it nurtures hands on approach to the product development. Given that RBCZ Everest Project was of an IT nature, at certain points the lack of visual element would have assisted to better imagination and coherence. Mark Griffin offered his point of view on this matter, '*It was sometimes quite complicated to fully comprehend what the other party suggested over the phone when they described new work flows or new IT architecture design.*' Imrich Tyrpak confirmed Mark's point and replied that at certain points it was '*practically impossible to sync up our minds without the chance to actually see what either of the two distributed teams was proposing.*' This is considered as one of the substantial limitations of teleconferencing platform.

Language barriers

RBCZ Everest project was an international mission involving various parties from many countries of the world. As was already explained, the main IT solution contractor was Infosys, a multinational large scale corporation with offices all around the globe, but predominantly in India. A fraction of the Infosys staff was located directly in Prague; however the remaining majority of IT specialist and top management resided in Bangalore, India. The common tongue for distant collaboration was of course English and I can honestly claim that on the RBCZ end the vast majority of the workers participating in teleconferences spoke very advanced level of English. On the other hand, the situation turned out to be slightly different on the Indian end. Locals attained quite satisfactory level of word register, but their spoken language and pronunciation came out as rather difficult. Mark Griffin stated that *'The low quality of transmitted voice together with very strong Indian accent occasionally created a genuinely incomprehensible verbal flow'* so that the RBCZ team got accustomed *'to request a repetition of incoming communication from the Indian side.'*

The moderator effect

In majority of the teleconferencing session at RBCZ there were two team leaders participating on each end of the line. In case of RBCZ this position was usually dedicated to the Head of Transformation Programme (in other words the Head of the entire Everest project). Analogously, the same function of course existed in India. These two persons simultaneously represented moderators of the conference call. Imrich Tyrpak said that *'without any strict rule who would act as a lead moderator it would become unclear and chaotic to determine who was effectively steering the session.'* Marketa pointed out that *'due to the unclear concept of teleconferencing moderator position, other participants sometimes inclined to lowered attention to the moderators'* thus the overall control of the meeting was in this way impaired.

Videoconferencing

Similarly to the case of teleconferencing my literature investigation revealed that even videoconferencing has its imperfections. On the next couple of pages I will try to demonstrate that the theoretical findings of these limitations are in compliance to the practical experience of RBCZ Everest Project staff members. For this purpose I again incorporated informal personal interviews with the identical set of my former colleagues to find out how they perceived videoconferencing as a distant collaboration tool with reference to proposed list of drawbacks. In comparison to teleconferencing the RBCZ project team employed videoconferencing in significantly smaller number of occasions; approximately only in 20% of cases of all distant collaboration meetings.

My literature investigation discovered following negative aspects of videoconferencing technology:

- Communication
- Security
- Technology concerns
- High Price
- Audio clarity
- Learning curve

Communication

My former colleagues from Raiffeisenbank Everest project repeated their concern towards videoconferencing, i.e. for instance Marketa said that *'even videoconferencing meetings at RBCZ lacked physical elements like handshaking etc.'* Mark Griffin on the other hand stated that given the visual dimension of videoconferencing he sensed that some people acted *'in a slightly different way.'* For example some of those conference participants who would express themselves easily and clearly via teleconferencing terminal, indicated *'slightly higher levels of nervousness and their level of communication activity diminished.'* They simply stopped being an incognito voice and transformed into a real character with a face.

Security

As was already explained security is a big issue of videoconferences. This results from the fact that data is transmitted through a conventional internet connection, which did not adopt any high standards for securing videoconferencing content. As long as our project team employed videoconferencing as a technology for conducting distant collaboration involving sensitive topics, it posed a severe threat to the security. This was in fact confirmed by Imrich Tyrpak who stated that *'the mediocre technical level of our videoconferencing platform did not evoke any impression of security for our data and thus I personally did not trust it that much.'* Actually I can claim this from my personal experience from RBCZ. Wajih Mohamad, who worked in a position of the Head of the entire Everest project, imposed a regulating security policy for the videoconferencing content. In advance of every videoconferencing session he personally requested all materials prepared for such meeting in order to approve their sensitivity level.

Technology concerns

Obviously the technology for videoconferencing consists from more advanced elements in contrast to teleconferencing. Imrich Tyrpak stated that *'every time we had to make sure that all the equipment and broadband connection were configured correctly'* to avoid malfunctions during videoconferencing sessions.

High Price

Videoconferencing technology in general accounts for a significant expense for big companies. In case of RBCZ it never reached any considerable level, because the company relied in vast majority on teleconferences. Due to high price and demanding technology RBCZ and the whole Everest project favored teleconferencing.

Audio clarity

In teleconferencing both the microphone and speakers were located in the middle of a table and was laid approximately in equal distance from every participant. However in videoconferencing the microphone was not built in the central communication terminal and as such it was crucial to arrange a precise microphone layout so that the participants could communicate *'loudly and clearly.'*

Learning curve

In comparison to teleconferencing in RBCZ the users were required to be formally trained in videoconferencing solution employed for Everest project purposes. Mark Griffin commented this in following words, *‘Videoconferences were more demanding to operate as the technology was way more sophisticated compared to the simple teleconferencing devices in RBCZ.’*

Unconventional Collaboration Technologies

On the continuum of acquiring feedback from the trinity of my former colleagues I also imposed a questing regarding unconventional collaboration technologies and their potential for widespread adoption in project management as one of the professional spheres of business. After having briefed them in the theoretical findings on 3D Virtual Environment, 3DVs’ advantages and social presence, my former workmates offered their remarks on the same.

3DVEs and social presence

All of my respondents collectively expressed their appreciation towards elevated level of social presence in 3D Virtual Environments. Marketa Dolezelova especially appraised the virtual physical dimension of 3DVEs. Marketa said that, *‘Even though I am aware that it is only within a digital and artificial world, I would really enjoy the simulated human contact, which I truly miss in teleconferencing. Shaking hands, body language or eye contact could in my opinion nurture closer human interaction.’*

Mark Griffin and Imrich Tyrpak took into consideration more specific task-execution related aspects. Mark replied with following words, *‘Where I see the big advantage of 3DVEs is the opportunity to collaborate on visual project materials in real time and real digital space. This would allow all participants to naturally contribute to the discussed problem or task. Also it would simplify decision making.’* In addition, all three agreed that the possibility to engage in less formalized and more spontaneous interaction would be a promising step towards deeper social relationships of project professionals.

3DVEs and better sound quality

My respondents already provided their comments on indicated sound quality and background noise problems of conventional collaboration technologies. The proposed notion of the potential for implementation of 3D sound into the 3DVE platform met with quite positive reactions from the interviewees. Mark Griffin suggested that, *‘An advanced 3D audio technology would maybe eliminate the issue of low voice transmission clarity and it would definitely contribute to the ability of spatial coherence within the virtual meeting space.’* Marketa Dolezelova added another remark, *‘Given that the actual collaboration would be simulated in the virtual environment in form of avatars, I would say that real world users could wear good-quality headphones while operating their avatars at their PC workstations. This would tackle the problem of such annoying background noise.’*

3D Virtual Environments personal assessment

The most wide-spread virtual world technology nowadays is by far Second Life. It was the first one out there trying to attract users to conduct business activities in simulated digital environment. However, there is a serious competition for Second Life. It is called Kately. In attempt to put these two 3DVE-turf rivals to a test, I personally assessed both technologies by having entered these virtual worlds embodied in my customized avatar. The goal was to determine whichever of the technologies would serve as a more feasible solution for 3DVE mediated project collaboration. My personal user experience revealed that Kately would be a preferable technology due to two main factors:

- Speed and Stability
- User-friendliness

Speed and Stability

During my ‘in-game’ experience with both Second Life and Kately I soon indicated serious issues with stability and overall speed of the first named technology, i.e. Second Life.

The author feels obliged to state that his PC is not necessarily the latest model on the market of laptops; however its configuration is more than sufficient for performance requirements of Kately and Second Life. Similarly, my broadband internet connection’s capacity exceeds the minimal required speed by rather a lot. Therefore it struck me by surprise how lengthy the loading time in various situations turned out to be in case of Second Life. It took the console almost 1min and 15 seconds to load up the Second Life startup screen. Not only had it taken plenty of time to enter the starting Second Life Menu screen, but after attempting to enter a particular SL World the rendering processes of the physical world, map or even clothes of my avatar took a mind-numbingly long amount of time. Should have the moment occurred when I for some reason decided to change my location by the Second Life in-built teleporting mechanism, I again had to wait a considerable amount of time. Kately offered much swifter logging and loading. In addition my avatar was ready practically instantly once having entered a virtual location.



Figure 17 Second Life Speed Issues

Furthermore, the author also encountered numerous moments when Second Life suddenly froze and an error window appeared on my screen preventing me from taking any further action except restarting the entire system (Figure 18). Such system breakdowns were caused by Second Life's highly intensive engine CPU and memory exploitation. Thanks to Kately's cloud-based engine architecture, the whole system's operation was smoother and more stable.

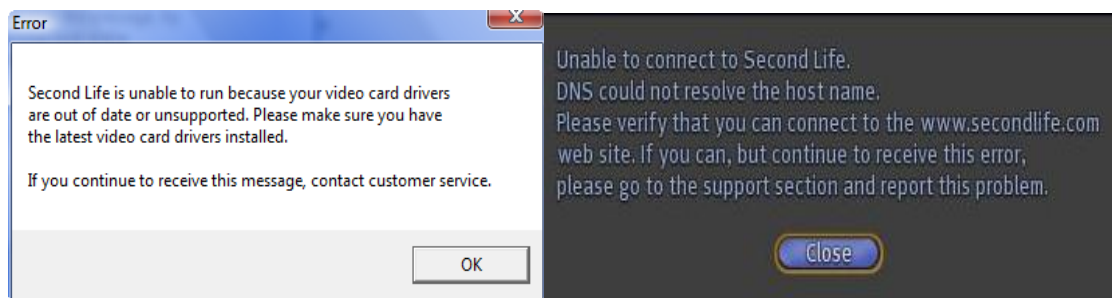


Figure 18 SL Error Screens

User-friendliness

It is safe to state that the more user-friendly software is, the bigger the potential for wide-spread adoption it attains. When the author initiated this practical assessment of Second Life and Kately he did not possess any noticeable knowledge of their control or operation. And yet again I have to express my appreciation of Kately's user friendly nature. In the beginning of my 'journey' I was guided through a series of in-built tutorials so that I instantly adopted the fundamental sense of control and orientation (Figure 19). Unfortunately Second Life 3DVE platform lacked such an intuitive assistance for new virtual incomers thus it would probably fail at fast and easy adoption for businesses. Employees allocated on a project in most cases do not have any extensive amount of spare time to invest in learning how to work in a 3DVE.

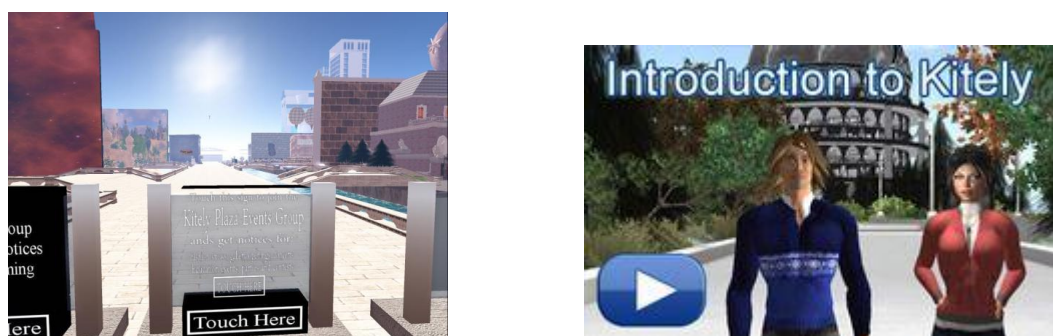


Figure 19 Kately Tutorial

3DVEs and Project Management

Succeeding the personal assessment of Second Life and Kitley in a form of constructive comparison, in this chapter I actively engaged in team cooperation with my former project team members from the Grenoble Graduate School of Business Global Work Class, where we explored ability of virtual worlds to simulate collaborative environment for project work. We concentrated on following areas, which closely cohere with my project management experience in RBCZ:

- Meeting arrangements
- Avatars and physical attributes
- Communication
- Collaboration tools

Meeting arrangements

After having determined that Kitley was the preferable 3DVE platform, I and my teammates conducted several virtual ‘project meetings’ in one of Kitley’s themed virtual worlds. Kitley offered appropriate meeting places that addressed usual demands of a generic project team, i.e. a well-sized table with ‘comfortable’ seating. Kitley virtual world presented us with several convenient office-like venues where we then organized and conducted our simulated project meetings. We all agreed that Kitley’s environment for formal ‘business’ meetings exceeded our expectations and fully satisfied our needs.

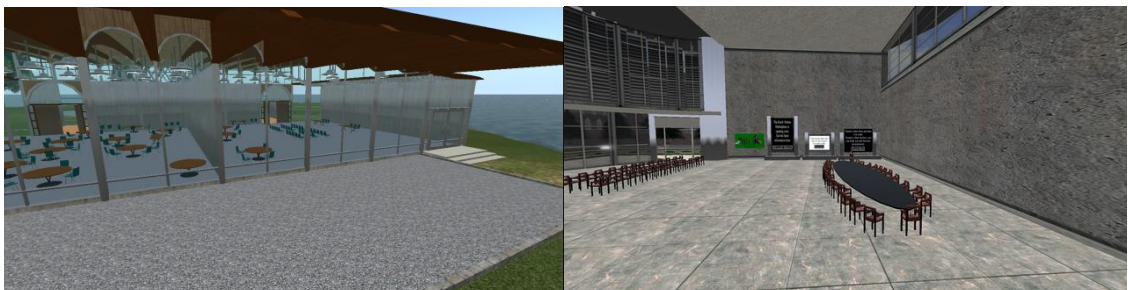


Figure 20 Kitley Meeting Venues

Avatars and physical attributes

Avatars in Kitley were easily customizable to one's exact personal preference, which genuinely helped us to identify ourselves with our avatars. Level of our immersion was in addition enhanced by exclusively human physical attributes like handshaking. Moreover, Kitley virtual world allowed us to engage in many styles of body language expressions, ranging from dancing to shyness. All of those elements were emphasized by my former RBCZ colleagues in their interviews as factors impairing the level of social presence.



Figure 21 Kitley Physical attributes

Communication

Communication is the key to a productive and efficient project meeting. Likewise, the question of an adequate and well working means of communication raises concerns in case of today's 3DVEs. In majority of 3D Virtual World platforms we interacted with other users either by voice chat or instant messaging. In case of Kitley we appreciated the smoothness and relatively satisfactory sound clarity compared to Second Life.



Figure 22 Communication

Interactive collaboration tools

Teleconferencing and also, in lesser extent, even videoconferencing both lack fundamental instruments for interactive collaboration for distributed project teams. RBCZ Everest project interviewees complained that relying only on audiovisual dimension is insufficient for high level project collaboration. In Kately we were able to set up our own personalized workshops and interactive meeting rooms incorporating presentation boards, chart creators and other content management tools. This enabled interactive and real time collaboration on our digital materials and content. Such features motivated us to share and exchange our ideas in more natural fashion.



Figure 23 Interactive collaboration tools

Potential barriers for widespread adoption

3DVEs offer undeniable advantages in comparison to conventional collaboration technologies commonly used for project management. However there are two areas, due to which such platforms have not yet succeeded in their mass implementation.

Firstly, it is again the issue of *security* and the risks of displaying and sharing sensitive data in virtual space. During our experiments all environments lacked any refined content security standards or processes.

Secondly, it would be the *learning curve*. Despite the fact that Kately was less demanding to adopt in comparison to Second Life, it still required a considerable effort and concentration in order to attain a satisfactory level of operational capability.

6 Conclusion

This Master thesis aimed at a comprehensive investigation of the potential of unconventional distant collaboration technologies with regard to their adoption in today's business environment, specifically in project management linked to Raiffeisen bank and the Everest project in particular. On the basis of a thorough literature review accompanied by an in-depth empirical phase, there are several well-founded conclusions to propose.

Firstly, let me point out that the field of project management is immensely broad and complex. Moreover it represents a rapidly emerging profession that is being employed as means for reaching desired goals and objectives under the strict budget, time or resource restraints. Project management practices are transferrable to many specific industries; therefore project management professionals are employable in a vast variety of business areas, including all sectors of economy. Three hallmarks of basically any project are a definite goal, schedule and allocated resources. Reaching of these three factors should be attempted in equilibrium to avoid potential discrepancies.

It is crucial to design and plan a project accordingly to established processes and norms. Such standards and norms are not legally binding, but every potentially competent project manager is expected to be sufficiently aware of them.

Raiffeisen bank Czech Republic is a project oriented institution, and as such it is able to execute numerous projects simultaneously. Project Management office in RBCZ follows standard project management principles, including project drivers and life cycle. Everest Transformation project is designed to transform the entire core banking system of RBCZ into a refined and efficient platform enhancing overall productivity of the company.

Furthermore, the problem of Global work was also investigated and it was discovered that many companies today struggle to achieve the desired level of productivity in their global project initiatives. Generally speaking, such companies fail at adapting to distant collaboration technologies and practices, including new tools or cultural difference

awareness. Their management style needs to adjust to global dimension of project management work. In fact, researches showed that multinational teams can bring more innovation and more variable perspectives. As one of the causes is considered the low level of social presence. It tells us how much is an individual perceived as a real human being in mediated collaboration among distributed teams. Different platforms offer different levels of social presence. The highest possible degree of social presence is generated by face-to-face interaction. Textual communication on the other hand offers the lowest level of social presence.

Companies engaging in a multinational project must properly design their distant collaboration infrastructure. With regards to this matter the author carried out a theory-based analysis of drawbacks of current distant collaboration technologies, namely of teleconferencing and videoconferencing. They both indicated limitations in areas like background noise, moderator effect, sound clarity, language barriers, impersonality or security. All of these aspects are posing limiting factors in achieving high levels of social presence and thus they impair efficiency and convenience levels of such technologies.

On the continuum of the collaboration technologies the author investigated 3D Virtual environments and their advantages compared to conventional solutions (teleconference, videoconference). 3DVEs are expected to facilitate better social interaction with higher levels of social presence for cooperation of distributed teams. The key pluses of 3DVEs were the ability to engage in spontaneous gathering and unscheduled interaction. 3DVEs facilitate a more realistic virtual space where users (in form of customized avatars) are able to act unpredictably. In addition, 3DVEs enable users to employ interactive tools for document management, i.e. charts or presentations.

Moreover 3DVEs can offer an enhanced sound quality. With the implementation of sophisticated audio equipment we can attain higher realism of virtual presence.

As far as the empirical part of the thesis is concerned it also provided valuable outcomes.

From the interviews with author's former RBCZ Everest Project colleagues it is evident that all the theoretical assumptions defining the disadvantages of conventional collaboration technologies were legitimate. The interviewees in fact confirmed that the aforementioned drawbacks of teleconferencing, like for instance background noise, the moderator effect, impersonality or miscommunication, were based on solid foundations and that they truly impair levels of comfort and social presence in mediated long distance collaboration.

Interviewees provided similar results in the case of videoconferencing. Their statements affirmed that issues like security, audio clarity or learning curve indeed raised regular concerns and were perceived as the negative influences diminishing the convenience of videoconferencing as an efficient collaboration technology.

Literature review indicated that enhanced informal interaction and better sound quality represent the two key advantages of 3DVEs over standard collaboration technologies. Again the author interviewed his former Everest Project workmates and they confirmed that the possibility to engage in an informal and spontaneous interaction remarkably improved the social immersion. Furthermore they truly appraised that the 3DVE space would allow them to use simulated human physical attributes like handshaking or body language. Also the fact that a certain level of collaboration interactivity can be achieved met with very positive remarks. Using the virtual collaboration tools would immensely help to attain higher levels of social realism and efficiency of RBCZ project meetings.

On the continuum of 3DVEs and their potential for project management adoption the author conducted an internal assessment of authentic virtual world solutions (Kitely and Second Life) in order to determine which of the two works as a more feasible platform.

This virtual world experiments revealed that Kitely would be more adoptable for project management because it proved to be the smoother and more stable tool more or less eliminating the sudden error pop ups and lagging. On the top of that, Kitely also assisted the new users with basic orientation and control of their avatars. Unlike Second Life,

Kitely is quite a user-friendly platform guiding its user through a series of in-built tutorials and therefore its learning curve is not as steep as in the case of Second Life.

With regard to project management and potential adoption in RBCZ Kitely was also tested in the areas of meeting arrangements, avatars and physical attributes, communication and also collaboration tools. These tests revealed that Kitely is able to facilitate satisfactory venues for project team meetings, resembling real-world meeting rooms. Avatars in 3DVEs are indeed capable of human-like contact and expression of their emotions. The means of communication used in these little experiments were of course instant messaging and voice chat. Kitely surprised me with rather satisfying sound clarity. One of very promising features of Kitely and 3D virtual worlds in general is the possibility to incorporate interactive collaboration tools. Author and his teammates tested presentation boards and so called chart management tools. Both posed as quite effective and convenient instruments for the interactive virtual collaboration.

However there are still two factors that represent figurative barriers for the widespread adoption of 3DVEs for project management, including Project Management Office in Raiffeisenbank CZ. The fact that current 3DVEs offer either very limited or none security standards to protect sensitive data, compromises their otherwise undeniable qualities. During my real-world Everest Project Team meetings we often discussed confidential matters and the same would be expected in the virtual space. Secondly it is the learning curve that could block integration of 3DVEs into daily project management operations.

To sum up, there is a certain apparent potential for 3DVEs to be adopted in today's dynamic world of global project management. Due to the limitations of conventional collaboration technologies and the promising advantages of 3DVEs it is believed that virtual worlds have what it takes to be fully employed as a new platform for distant collaboration. However, there are issues of security and learning curve that still require a further attention. The author honestly believes that in a couple of years it will be an ordinary fashion to enter a virtual world meeting room and discuss key project affairs with remarkable levels of social presence, immersion, productivity and efficiency.

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