U SCIENCE TECH
FACULTAT DE CIÈNCIES
I TECNOLOGIA
UVIC-UCC

Treball Final de Carrera

Quality, security and efficiency improvements of automated translation processes

Carles Jiménez Hidalgo

Enginyeria d'Organització Industrial

Director: Carles Torres Feixas

Vic, setembre de 2016

To my parents, who believed in me and have always been my guide in personal life, as well as inspired me to try my best.

ACKNOWLEDMENTS

I would like to thank all the persons that, in different ways, have helped me during the achievement of this Final Project and also to everyone that made possible that a real project in a company could be presented at Universitat de Vic.

Special thanks to:

- **Carles Torres Feixas**, the project's director, who with his experience and professionalism has advised me and helped me with all doubts I have encountered.
- **Linn Rydahl**, my graphic inspirer and assistant.
- **Juan Aedo**, my colleague in the Translations Systems Team who helped me double-checking some time estimations.
- **Erik Bülow**, my manager, who agreed to my demand of bringing this project to the university and therefore made it possible!

I don't want to forget here all the persons that during all those years of my "Work-plus-Study" experience have been close to me or assisted me in some decisions: family, friends, work colleagues, class mates, professors and administration & services personnel.

Moltes gràcies.

Thank you very much.

Tack så mycket.

MY WORK IN THE COMPANY

Before starting with the project's memory, I would like to make a point for commenting that this project is a real one and it is being implemented in the multilingual service provider company where I currently work, **onwards to be known as "the company"**.

I've been working at the company for more than five years now, first in one of the IT support teams as <u>Translation Systems Specialist</u> (although formerly that position's name has been "Service Operations Technician" and "Translations Systems Developer"), and half a year ago I moved to <u>Junior System Manager</u>, a position that belongs to the IT System Management team. In parallel and since I started in the company, I've been also giving local support in Barcelona office for issues related to client, server and infrastructure (CSI), as there isn't a CSI unit in that office. This role is called <u>CSI Helper</u>. Apart from that, I am also part of the <u>Internal Auditors Team</u>, a unit with an important role in the maintenance of ISO 9001 standard's system requirements to determine whether the Quality Management System conforms to our planned processes.

After thinking during a few months all possible options that I had in order to achieve the Final Project, I discussed with my manager Erik the possibility to be involved in one of the projects that the company had on its projects portfolio and after a couple of weeks we agreed that the process improvement project I'm presenting here was one of the best candidates to do so.

Therefore, at the beginning of 2016 and after a couple of meetings and calls, I decided that my project would be based on that process improvement.

The main part of the project finished in summer 2016. Personally, I'm very satisfied of all the experiences I'm learning and the results we are obtaining. The development of this project's memory has been done after-office hours.

I want to encourage all students who have the possibility of developing the Final Project in connection with their current company to do so, because I feel that at the same time that they will be adding value to the company, they will be also having the chance to present that project as part of their studies in the University.

TABLE OF CONTENTS

INDEX OF TABLES

INDEX OF DIAGRAMS

INDEX OF COLUMN CHARTS

INDEX OF SCATTER CHARTS

INDEX OF IMAGES

INDEX OF PICTURES

U SCIENCE TECH
FACULTATDE CIÈNCIES
I TECNOLOGIA
UVIC-UCC

SUMMARY OF THE FINAL PROJECT

INDUSTRIAL ORGANIZATION ENGINEERING

Title: Quality, security and efficiency improvements of automated translation processes.

Key Words: automatic process, translation process, process improvement, IT project process, project management, investment analysis, quality, security, efficiency.

Author: Carles Jiménez Hidalgo.

Direction: Carles Torres Feixas (Universitat de Vic).

Date: September 2016

Summary:

In the last years, the multilingual translations market has been growing up in a remarkable way but the deadlines are tighter every time and the companies operating in this sector have to include the computer-aided translation, or even the machine automatic translation, if they want to stay competitive. In addition, process improvements are necessary to improve quality by a standardization of processes, to improve security by reducing human mistakes and to improve efficiency by reducing process times.

In this project a pre-study for a translation process improvement project is developed, in order to be able to analyze the impact, in terms of saved costs coming from saved time, of a new solution that will be requested and developed internally at the company so the original processes are replaced by new ones. The quality, security and efficiency improvements that the new solution will bring have to be identified.

Regarding the economical point of view, the liquidity, profitability and risk of the project's investment are analyzed by performing a detailed investment analysis. A conclusion regarding the viability of the project's implementation, economically speaking, is presented as well.

In order to achieve these objectives, the company's internal Project Management methodology will be followed and all its steps will be applied to the project so that we make sure that the project's delivery is reached using a standard work structure to ensure quality and also to ensure that what is delivered is the same thing that was requested.

All important decisions that are made during the project's implementation, as well as all the necessary introductions, are documented in a didactic Project Memory which can be followed by someone who is not an expert in the project-related matters.

1. PROPOSAL FOR THE FINAL PROJECT

The idea of the project comes up from the work of the student in a multilingual service provider company. He's been working for five years there.

One of the production teams in the company asks for some improvements in the whole translation process of a particular type of job from an important Chinese client.

Seeing the needs to implement all those changes in an internal project at the company, a few employees who have team responsibilities discuss about the possibility of reporting the desired changes. A few days after, during an IT Project Prioritization Meeting, the process improvement is accepted as a project candidate and the responsible employees of the teams that are involved in the production process are asked to provide more information so the project can be categorized.

After a few days more, the student asks his manager for a possibility of taking a project as part of his studies program, and they decide together that the project could be based on that process improvement. The main reasons are:

- It's a translation process improvement project. In the past, the student has been normally a resource in similar projects because he has been involved as Translation Systems Specialist with analysis and developments.
- The whole process involves different departments in the company. The Production and the IT departments are the ones the student knows in a better way, thanks to all the time he worked on support and issues troubleshooting happening there. But it's very nice and interesting to discover different tasks and the daily work of other departments as well.
- A few of the different offices of the company are involved on the project. This point is especially important to the student since he wants to work on a project with international character and atmosphere, and using English language if possible.
- It's a big project which involves infrastructure, processes, systems and a lot of different resources. This way the student will have a very good opportunity to apply different tools and methodologies that he's learnt during his studies which, combined to the tools used at the company, will add a very interesting overview to the project and its documentation.

2. INTRODUCTION

IT (Information Technologies) are present nowadays in the major part of daily ambits and professional activities. One of them is the one dedicated to translations. In the last years, that specific industry has boosted and many aspects of the whole translation process have been improved, as well as many new and different technologies have emerged. We're now under a really continuous improvement situation.

We need to recall that just a couple of decades ago, translation companies, as the major part of companies from other sectors as well, were mainly working with papers, folders and conventional files for saving information and data. But bit by bit, computers have been taking over places in these companies offices and databases have become increasingly important.

The emergence of internet, networks, file-transfer and communication tools such as email and video conference has also played a very important role in all this revolution, because having a very good IT infrastructure is crucial if the company wants to succeed in performing all the activities and become a fruitful business.

Related to that latest point, we have to mention that in the last years the computer-aided translation, or even the machine automatic translation, is becoming very important and there's still a lot to do when it comes to these technologies research.

It's a slope which makes possible that for example big companies in the automotive sector receive translated manuals still on time, even if they have tighter deadlines coming from a globalized and competitive market that their suppliers have to achieve as well. Therefore we can say that a new and global way of translation handling has arisen, and terms such machine translation, auto-translation, semi-translation, translation memory, quality-check and localization are part of the daily panorama in our modern and technologically-advanced society.

The objective of this project is to **develop an improvement for a translation process**, in terms of quality, security and efficiency. The applied improvements will let the project administrators **save administration time** in tasks that can be automatically done, and will also **reduce human mistakes**.

Image 2-I. Suggestion of a computer-aided translation

3. OBJECTIVES

3.1   Main objectives

The main objectives that we want to achieve during the implementation of this project are:

- Develop a project pre-study for a process improvement project in a multilingual services provider company.
- Analyze the impact, in terms of saved costs coming from saved time, of a new solution that will be requested and developed internally at the company so the original processes are replaced by new ones.
- Identify quality, security and efficiency improvements that the new solution will bring.
- Conclude if the project's implementation is viable from the economical point of view.
- Analyze the liquidity, profitability and risk of the project's investment by performing a detailed investment analysis.
- Follow the company's internal Project Management methodology and apply all its steps to the project.
- Document all important steps and decisions that are made during the project's implementation, as well as all objectives above, in a didactic Project Memory which can be followed by someone who is not an expert in the project-related matters.
- Put in practice some of the theoretical and practical concepts acquired during the degree and apply them to a real problem.
- Be conscious about the real situation that we are facing and resolve it by ourselves with perseverance, work and maturity.

3.2   Secondary objectives

This Project Memory has been prepared trying to make it clear and understandable. The use of graphical elements and some informative text-boxes (identified with this symbol) has been helpful on this side. Each of the main chapters in the document starts with a short chapter's introduction and a few objectives that should be accomplished by whoever that reads the memory:

- Get introduced to the company's history and business.
- Identify and list the company's offices worldwide.
- Understand a possible way to structure a big organization by departments, as well as the tasks each department is responsible for.
- Describe the departments or sections and how they interact.
- Define the most important aspects of the IT Department.
- Follow and understand the actors involved in the whole translation process.
- Understand the workflow steps in the current translation process that followed in the company by the staff from the Weihua production team.
- Have an idea on how much time a standard translation job takes.
- Get a better understanding of how IT Department works with projects.
- Understand the overview of an IT project's preparation at the company.
- Understand how the project management technique known as "phase-gate process" works.
- Understand all steps that were made during the preparation of the actual project, from the project's idea until it was confirmed as a project to be started.
- Identify the most important aspects of the project's preparation, with special focus on how it was prioritized and classified.
- Calculate and describe, with the help of estimations, how much time and costs the implementation of the project will save.
- Analyze the project's investment to be able to conclude if it's economically viable or not by identifying its liquidity, profitability and risks.
- Understand all steps that are followed during the implementation of the first two subprojects, since they are started until they are finished and closed.
- Identify the most important aspects of the project process with the methodology that has been described.

4. THE COMPANY

4.1   Introduction to this chapter

As a part of a good introduction to understand how the translation process works and what the project's implementation is going to improve on it, here comes a first introductory chapter to get started to understand all the environments that surround the production tasks. In this fourth chapter of the project's memory the company is described: we will learn a little bit more about its history, its business and activity, its worldwide presence and its departmental organization with a focus on the IT Department.

4.2   Objectives of this chapter

The objectives of this fourth chapter are:

- Get introduced to the company's history and business.
- Identify and list the company's offices worldwide.
- Understand a possible way to structure a big organization by departments and which tasks each department is responsible for.
- Describe the departments or sections and how they interact.
- Define the most important aspects of the IT Department.

4.3   Brief history and description

Founded in 1965 in Sweden by a young Catalan and his Swedish wife that were pushing entrepreneurs as well as very charismatic persons, the company is a multilingual service provider giving its customers added value through cutting edge methodology and Computer Aided Support for Multilingual Solutions. The organization has extensive experience in working for the automotive industry and count among its customers some of the biggest companies in the world. The company evolved into today's seven production offices (Stockholm, Gothenburg, Warsaw, Barcelona, Shanghai, Leuven and Detroit) with around 245 employees and two sales offices (Russelsheim and Hong Kong).

The company has 1,900 contracted translators and 5,000 freelance translators, and it translates into over 100 different languages.
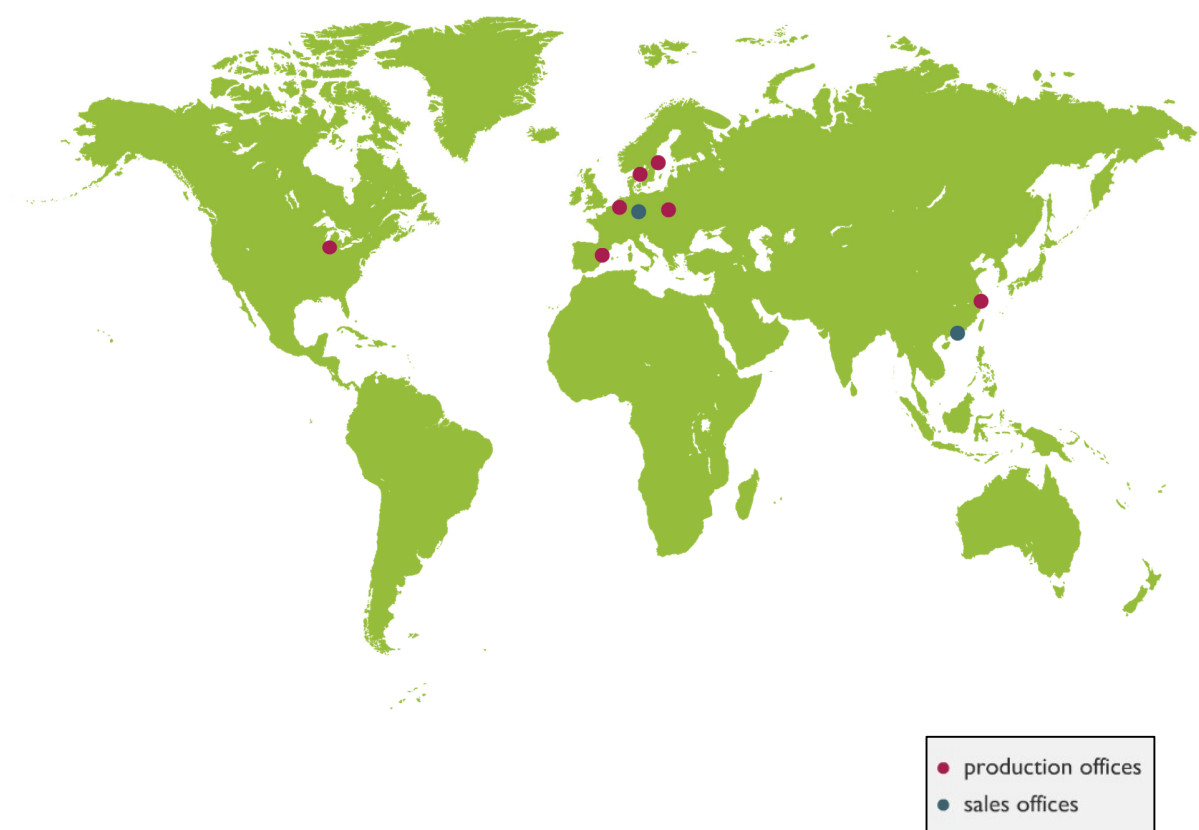
Image 4-I. Worldwide location of the company's offices

Last year, the company turned 50 years old, which makes it unique in the industry. This accomplishment was of course recognized, so during the twelve months of 2015 the staff celebrated the anniversary with different activities.

Below you can also see the special anniversary logotype, which was added to email signatures, presentations, quotations and reports.

Image 4-II. Special logotype for the company's 50 anniversary

4.4   Business and activity

The organization has a well-known reputation for continuous improvement and high return on investment among the customers. Together they have enhanced productivity and reduced lead times while constantly tracking the quality level and maintaining it at a high standard. Its long-term specialization in the automotive field and related businesses gives the company the advantage of maintaining focus on the industry's specific needs and associated problems. For many years now they have been operating in the global arena providing services in a great number of source and target languages to customers spread throughout North America, Europe and Asia. The staff comprises more than 28 nationalities and, backed up by a linguistic network of more than 8,000 individuals, provides services such as Translation, Localization, Terminology Management, Multilingual DTP and Graphic production as well as Project Management, Technical Development and Printing Coordination.

4.5   ISO 9000 certification

One of the main concerns of the company is the quality. During mid-October 2014, the process for the actual **ISO 9001 certification** began. The preparations had been running almost the whole year and at that point they were almost at the finish line!

A month later, in December 2014, the Quality Management System of the company in Sweden was approved by a world leading, independent provider of professional assurance services (including management system certification, validation, verification and training to bespoke and international standards and schemes) to the Quality Management System Standard ISO 9001:2008. The certificate was the result of more than a year's committed teamwork. The changes that the certification process brought are aimed at being beneficial and long lasting. Thanks to all participants – well done!

4.6   International enterprise

The company's organization is based on a global approach where the different sites are responsible for different tasks. All sites in the organization acquire resources and specialists from the other offices. In this way they can present the most efficient and capable organization at all locations.

The company has invested heavily in infrastructure for efficient communication between the offices. All sites are equipped with video conferencing systems and key personnel have their own video conferencing equipment and virtual meeting rooms. This makes it possible for all the sites to support customers locally using the strength of the global organization, and being able to call in specialists and other resources from all over the world in a matter of seconds. With experience, resources and skills they make a reliable partner for any company operating in the global market who wishes to stay ahead on cutting edge technology, time to market and quality assurance.

See the following list of the offices with a brief description of each of them.

4.6.1   Stockholm, Sweden

With currently about 40 employees, the headquarters office is located in Sundbyberg in the Stockholm area since the company started in 1965.

Production, Human Resources, Finance and IT departments are represented: the team consists of Project Managers, Project Administrators, Human Resources and administrative staff, IT Technicians, IT Developers and In-House Translators.

Picture 4-I. View of the Stockholm office. Picture by Linn Rydahl

4.6.2 Gothenburg, Sweden

The office in Göteborg (Gothenburg) is also part of the Swedish company and it was established in 2004. The office is located in the expansive area Norra Älvstranden, close to some of the main customers and their other suppliers.

Today they are about 30 employees and they focus on the automotive clients and IT development: the team works with Production, Translation, IT development, Sales and Customer Support.

Picture 4-II. View of the Gothenburg office. Picture by Leif Ericson

4.6.3   Warsaw, Poland

The office in Warszawa (Warsaw) was opened in July 2005. It's a rapidly growing office focused on production for large projects.

Its team currently consists of more than 50 people that cover project administration and management, DTP production and language review functions, human resources recruitment, IT support, IT development and IT project management. They specialize in the Polish language and give full support to all other offices in terms of project administrations, translation, proofreading, DTP and IT solutions.

Picture 4-III. View of Warsaw office. Picture by Karolina Woźniak

4.6.4   Barcelona, Spain

Barcelona, the capital of Catalonia, strategically located on the coast of the Mediterranean Sea, is the second largest city in Spain and the place of the Spanish division of the company. Due to its inspiring architecture, design, history and rich cultural heritage besides its economic background and tradition, it is considered to be one of the best spots in the southern Europe for both business and tourism.

The Barcelona office was opened in February 2007 and is currently the company's office in Southern Europe.

It's another of its fast growing new offices, and with a local team of 50 people it gives full support to other offices as well as local customers in Spain and other European regions. The staff integrates Sales Managers, Account Managers, Project Administrators, Coordinators, Project Manager Assistants, Translators, Resource Planning Specialists, Translation Systems Specialists, System Managers and Back-Office Administrators.

Picture 4-IV. View of the Barcelona office. Picture by Nicholas Thorp

4.6.5 Shanghai, People's Republic of China

The office in 上海 (Shanghai) is the main office in Asia and provides services to the existing and new clients in the whole region. They are also specialized in the Asian languages and give support to all other offices in terms of translation, proofreading and DTP.

The team currently consists of 30 people: Project Administrators, Project Managers, DTP Specialists, Translators, Freelance Recruiters and Sales and Account Managers.

Picture 4-V. View of the Shanghai office. Picture by Lei Jin

4.6.6   Leuven, Belgium

The Belgian office is located very close to Brussels, the heart of many European institutions. It serves the central European markets and has project management, sales, and DTP production functions.

4.6.7   Troy, Detroit, MI, United States

The North American office in Detroit was established during 2008 and is located in Troy, a thriving center of business, particularly in the automotive and financial sectors, and is home to a number of major companies. The main purpose of the office is to provide services to a big automotive company and it has two employees with focus on project administration, quality assurance and customer relations.

Picture 4-VI. View of the Detroit office. Picture by Kim Scherer / Tom Kurtz

4.6.8   Russelsheim, Germany

Customer relations and communications are the focus for this local office in Rüsselsheim, Germany.

4.6.9   Kwun Tong, Hong Kong

Customer relations and communications are also the focus for the office in 香港 (Hong Kong).

4.7 Organizational structure

The company has a multinational in-house staff of engineers, linguists, coordinators, project managers, DTP personnel, technical specialists, etc. and this will ensure that its problem-solving capacity always includes perspectives from all aspects of the work. This multidimensional matrix is essential in order to understand the complexity of the issues that they deal with. They have built an organization that is optimized to cope with the linguistic, logistical and engineering challenges that they have to confront.

Linguists:

The multilingual staff is backed up by a linguistic network of more than 8,000 specialists with different subject matter expertise and languages. Among there, approximately 1,900 are contracted and involved on a daily basis. All staff are recruited, trained and developed through a well-defined and rigorous process.

Project managers:

The project managers at the company have extensive experience in managing large and complex multilingual projects for our automotive clients. As an example a project could involve several translators per language and up to 30 or 40 languages, and in addition, several project coordinators and DTP staff, so in total there could be hundreds of people involved making the project management a very complex task.

Technical specialists:

Their technical specialists have extensive experience in the translation/localization process, with associated tools, formats, and techniques, such as XML, SGML, Style Sheets, double byte character languages, right-to-left languages etc. This is particularly useful when a customer adds a new language, or a new product is launched, often with a very tight deadline.

Multilingual graphical specialists:

Their graphical specialists handle a wide range of desktop publishing formats on a daily basis in many different languages. This includes layout of Asian double byte languages and Middle East right-to-left languages, as well as the creation and adaptation of multilingual illustrations.

4.8   Sections

The company has a number of different departments or sections. The image below shows a general overview of their processes, and the colors represent the department/section with main responsibility for each process. However, all departments are more or less included in each process. A short explanation of the different department/sections can be found below the image. (Note: the **dark blue boxes** are processes that are for all departments and not for one specifically.)
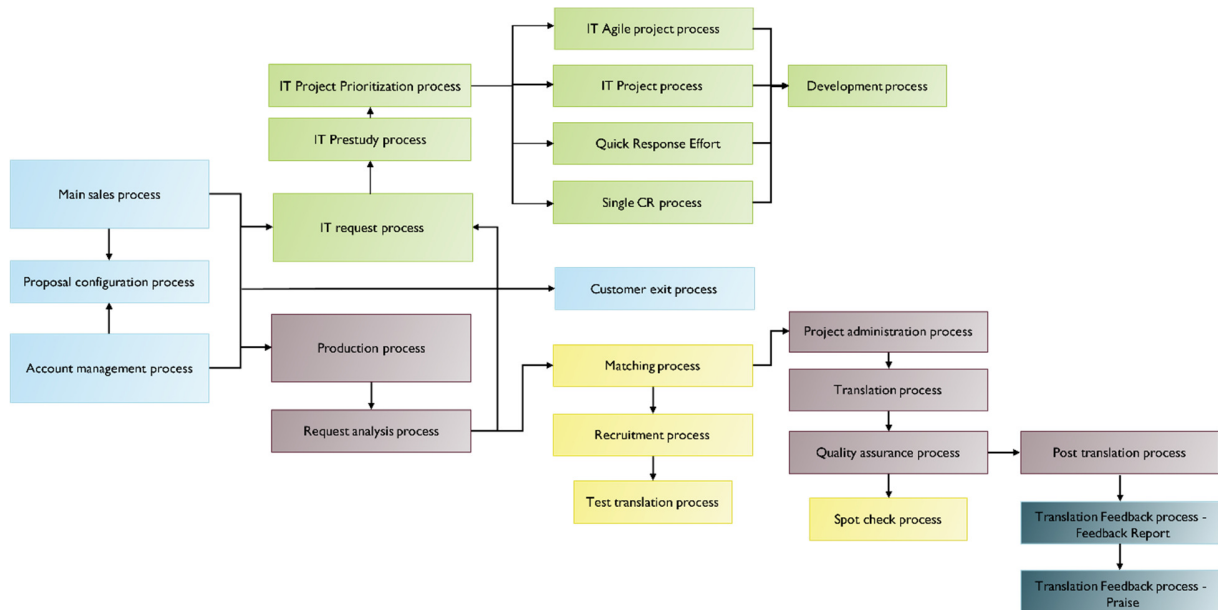
Image 4-III. Overview of processes at the company

4.8.1   Management

The work of the Management Team is focused around their organization, systems and infrastructure. The team meets regularly to work on strategic matters, as well as their daily operations.

4.8.2   Sales Department

The processes in the **light blue boxes** are responsibilities of the Sales Department, which manages the relationships between the company and its customers, both international and national. Their responsibilities include:

- Managing the day-to-day business together with customers
- Proactively generating and identifying new sales leads
- Continuing development with existing customers
- Planning and executing marketed activities

4.8.3   Production Department

The Production Department is responsible for the core business: all the translation jobs. Employees that are part of that department are focused in the processes that are marked with **purple boxes**. Their work in the translation process includes, in short:

- Receiving the translation job
- Handing it off to a translator
- Final layout checks of the translation
- Delivery

4.8.4   HR Department

The Human Resources Department, as we can see in the **light orange boxes**, is responsible for the recruitment of translators and a continuous evaluation of the translation quality, among other translation-related requests. They are also responsible for the recruitment of all in-house personnel and all personnel matters.

The staff working in that department focuses on the recruitment of the best translators and revisers for a given translation task, considering the client, the subject area (automotive, medical, electronic, law, etc.), the document type (sales brochure, owner's manual, annual report, marketing material, etc.), the purpose (publishing, webpage, information only, commercial transaction, etc.) and obviously the source and the target language.

We could summarize all services offered by that department as:

- Payroll administration: produce checks, handle taxes, deal with sick time and vacation time
- Employee benefits: health, medical and life insurance
- HR management: recruiting, hiring, firing, background interviews, exit interviews and wage reviews
- Risk management: worker's compensation, dispute resolution, safety inspection, office policies and handbooks

4.8.5   Translators

Translators are the linguist specialists and are spread all over the world. They receive files for translation or revision and they make progress on them with the use of some of the internal translation tools. They analyze the texts and put them into context by evaluating all related reference material (images, PDF files, paragraph instructions, etc.). Then they work on the translations and they send the files back to the responsible project administrator. The major part of the translators work in their own houses or offices, except the internal ones, which work in-house with long projects. It's also thanks to all of them that the company can provide quality translations!

4.8.6   Finance/Economy Department

This department is the part of the organization that manages the money. The business functions of that department typically include planning, organizing, auditing, accounting for and controlling the company's finances. The Finance Department also usually produces the company's financial statements. Find below a few of the duties of that department:

- Control expenditures and obligations (including operating expenses, debt, payroll)
- Receipt and depositing all revenues
- Manage the investment of all monies
- Account for all assets and capital project expenditures
- Report internal and external

4.8.7   IT Department

4.8.7.1   *Responsibilities*

The Information Technologies Department will be deeply described because is one of the most important ones in the current project. This department is in charge of the processes in the **green boxes** and it has been a very important unit since its creation in the lately 80's when some important computer-aided translations tools were developed internally at the company.

The IT Department's main responsibility is to manage and maintain all systems including translation systems, authoring systems and information systems. It is a global multi-cultural organization which performs a wide range of tasks. They provide, for example, new concepts and designs, new software development, support and testing, as well as system governance.

IT works mainly with handling systems and support of different kinds, and at the same time it handles development and improvements of systems and new functions.

Support

Projects   Systems

What is IT for IT?

Development   Research
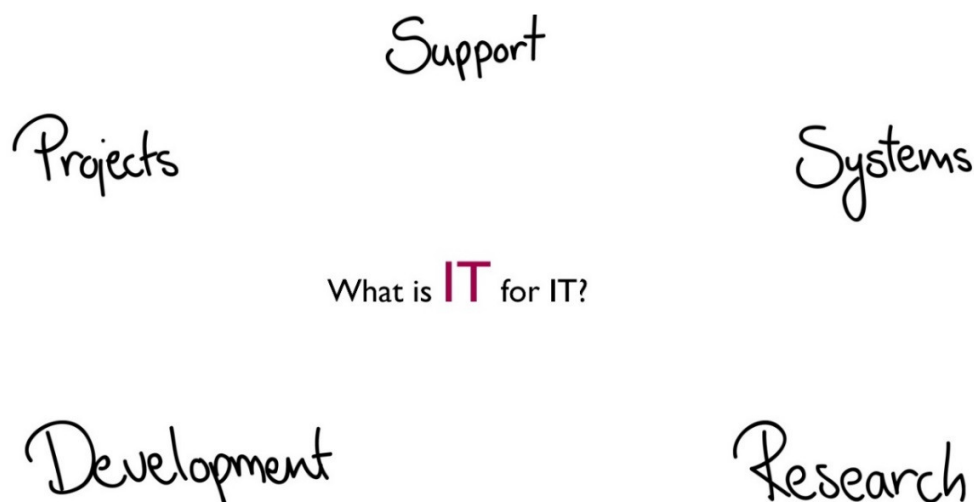
Image 4-IV. Suggestion of what IT works with

4.8.7.2 New requirements for a growing business unit

During the last 6 years the IT department has grown a lot, and from being small and unstructured, it has become its own business unit. Since then, some new requirements have been placed on the department:

1. Service Level Agreement with Support
2. System Managers and redundant knowledge
3. Hardware environment
4. Documentation
5. Dedicated teams and clear organizational structure
6. Professional project management skills

Image 4-V. Suggestion of the new requirements in the IT Department

4.8.7.3 Organization

The IT Department comprises of seven teams. Each of these seven teams has specific responsibilities and work with different systems, projects and tasks. All teams have a team leader who reports directly to the IT Management which is formed by the IT Manager, the IT Portfolio Manager and the R&D Manager.
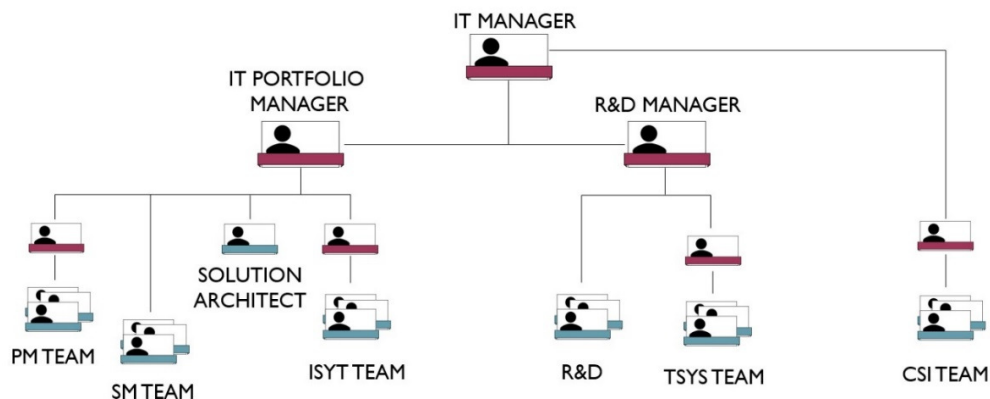
Diagram 4-I. IT Department organization

All team leaders are also part of the IT Board. Find below a brief look of each team.

- IT Board
    - o Its purpose is to exchange information between the different teams.
    - o Set strategies and deliverables for the IT Department
    - o Discuss recruitment
    - o Share information from the teams
    - o Set and follow up IT objectives for the teams
    - o Discuss new ideas and suggestions
    - o Inform the teams of upcoming events/tasks that need the different team's attention

1. PM (Project Management) Team
    - o The IT Project Managers are responsible for internal and/or external projects within the IT Department. An IT Project Manager is the leader of one or several IT projects and manages a project team with both internal and external resources. He or she is responsible for the planning, budgeting and the delivery of assigned projects. In addition, the IT Project Manager is responsible for ensuring that the CBG Project Process is correctly used and that deviations are reported to IT Management.

2. SM (System Management) Team
    - o A System Manager is the responsible person of the seven most important areas of a system:
        1. Projects: budget and plan, business case, choose process, specifications, prioritization …
        2. Planning: resources, budget plan, yearly strategy, objectives, operations plan, releases …
        3. Budget: system budget, licenses, hardware and software costs, KPI's, time, stakeholder communication …
        4. Customer relations: new features, tips and tricks, system updates, support, stakeholders, communication plan …
        5. Support: system support, SLA, resource plan, delegate …
        6. Education: courses, evaluation, training, mentor stuff …
        7. Technical Responsibility: technical benchmarking, new features and upgrades, technical support, architecture, maintenance, technical roadmap, training, identify knowledge gaps …

3. Solution Architect
    - o The team is focused on evaluating external or internal needs, related to IT systems and then defining, together with a System Manager, how the solution's architecture of the mentioned system should look like. This is always done before the actual implementation and testing of the solution.

4. ISYT (Information Systems and Training) Team
    - o It's a second line support team that works with systems that share information (like the ticketing system, the documentation system, the CRM, the ERP) and some of the supported systems are closely connected to translation too.

5. R&D (Research and Development) Team
    - o The team is in charge of analyzing specifications and then developing IT tools and systems based on them.

6. TSYS (Translation Systems) Team
    o It's a second line support team for the company's internal translation processes, including filters, scripts and translation software. The team assists with release management and automated testing, and is involved as resources in ongoing projects.
7. CSI (Client, Server and Infrastructure) Team
    o It's the team responsible for installing, configuring and maintaining clients, servers and the company's infrastructure. The Swedish offices have an advanced infrastructure and there are some CSI Specialists working there. The team is completed with some other CSI Specialists in Warsaw and there are "CSI Helpers" in Barcelona from the TSYS and SM team, assisting with help on site. In the Shanghai office there is one IT intern and one production Project Administrator also assisting as "CSI Helpers".

4.8.7.4   Team work

One of the main philosophies in the IT Department as well as in the whole company is the *team work*: they like it, they put it in practice and it's one of our authentic strong points! The most important advantages of working in teams in the company are:

- Teams have the same type of competence
- Teams create a team spirit
- Knowledge sharing appears; Learning from each other
- Competence development
- Focus
- Professional resources

Image 4-VI. Suggestion of the advantages of team work

5. THE CURRENT TRANSLATION PROCESS FOR WEIHUA JOBS

5.1   Introduction to this chapter

After taking a look at the company's organization and activity, with a focus on the IT Department, it's time to go deeper into the project's topic. In this fifth chapter we will describe the current translation process that the members of a production team at the company follow. This production team is internally known with the client's name they work for. The client is a Chinese company in the mobile telecommunications sector, **onwards to be known as "Weihua"**.

5.2   Objectives of this chapter

At the end of the chapter, one should be able to:

- Follow and understand the actors involved in the whole translation process.
- Follow and understand the workflow steps in the current translation process followed in the company by the staff from the Weihua production team.
- Have an idea on how much time a standard translation job takes.

5.3   Actors in the current translation process

In order to be able to understand the required changes and how the production process will improve in terms of quality, security and efficiency, we need to know how the process looked before the updates were requested. The following image describes the actors who interact with the process and their main tasks or responsibilities within it.

Client's Representative
Weihua company

Functions:

Send a Request For Quotation and associated files
Accept / Decline quotation
Receive translated files

Project Coordinator
Shanghai office

Functions:

Receive Request For Quotation and associated files
Register the project in an Excel file
Send quotation to the client
Delivery and invoice to client

Project Administrator
Shanghai office

Functions:

Check source files and their format
Process source files to obtain a Database and Word Count
Send the Database, Word Count and files to Europe
Reinsertion of translation and layout of files

Project Coordinator
Barcelona or Warsaw office

Functions:

Receive Database, Word Count and files from Shanghai
Register the job in the ERP

Project Administrator
Barcelona or Warsaw office

Functions:

Fill up remaining data in ERP
Send Translation Files to translators
Check translation quality, insert translation to Database
Send Database file to Project Administrator in Shanghai

Translator
Internal / External / Freelance

Functions:

Translate / review from source to target language
Send translated file to Project Administrator

Image 5-I. Actors in the current translation process

5.4   Steps in the current translation process

In this subchapter the current translation process steps are defined. We start with the Activities Diagram.

Weihua files translation process

Weihua	Shanghai office	Europe offices	Translator

New purchase order

Translation package:
XML, XLS, DOC,
Reference PDF, Trados LOG,
TMX

Receive a Request For Quotation
(RFQ)
(download package)

Register the project order
in an Excel file

Check the source files

Process the files to obtain
a new Database and Word Count

Send the job to Europe

Register the job in the ERP

Send quotation to the client

Send Translation Files
to translators

Translation

Send Translation File
back to Shanghai

Reinsertion of translated text

Translated package:
source, translation, TMX

Layout

Job ended

Delivery and invoice

Diagram 5-I. Activities diagram for the Weihua files translation process

36

5.4.1   Step 1.- Receive a Request for Quotation (RFQ)

Weihua is a Chinese company in the mobile telecommunications sector. A client's representative puts a bunch of files in a shared folder in the client's system. The files are zipped in a RAR (.rar) package. The client would like to know the quotation (price) for translating all files into a particular number of languages, and possibly if the company can meet the job's deadline. We estimate that the Project Coordinator at the company needs a **1 minute** to download the files of a standard job. We consider a standard job a package with:

- **10 source files (no matter if they are XML, XLS, DOC, or mixed) to be translated;**
- **100 source words per source file; 10 translation languages per source file;**

With this in mind, we consider that, for each standard job, we will translate 10 files x 100 words = 1,000 words x 10 languages: Total 10,000 words.

Example: We receive 10 source files in English. Each file has 100 words to be translated. This means there are 1,000 source words in English. The 10 target languages are Swedish, Spanish, German, French, Italian, Polish, Portuguese, Greek, Arabic and Chinese.

Request For Proposal versus Request For Quotation:

A **Request For Proposal (RFP)** is a solicitation, often made through a bidding process, by an agency or a company interested in procurement of a commodity, service or valuable asset, to potential suppliers to submit business proposals. It is submitted early in the procurement cycle, either at the preliminary study, or procurement stage.

An RFP is used where the request requires technical expertise, specialized capability, or where the product or service being requested does not yet exist and the proposal may require research and development to create whatever is being requested.

A RFP is used **"when you know you have a problem but you don't know how you want to solve it".**

A **Request For Quotation (RFQ)** is a standard business process whose purpose is to invite suppliers into a bidding process to bid on specific products or services. RFQ generally means the same thing as "invitation for bid". It typically involves more than the price per item. Information like payment terms, quality level per item or contract length may be requested during the bidding process.

To receive correct quotes, RFQs often include the specifications of the items/services to make sure all the suppliers are bidding on the same item/service. Logically, the more detailed the specifications, the more accurate the quote will be.

A RFQ is used **"when you know what you want but you need information on how vendors would meet your requirements and/or how much it will cost".**

5.4.2   Step 2.- Register the project in an Excel file

The company owns its own Enterprise Resource Planning (ERP) system. It is a cross-functional enterprise system driven by an integrated suite of software modules that supports the basic internal business processes of the company. The system tracks business resources (such as cash, services, and production capacity) and the status of commitments made by the business (such as customer orders, purchase orders, and supplier orders), no matter which department has entered the data into the system.

However, **the Shanghai office doesn't use the ERP**. The Project Coordinator downloads the client's RAR files, saves them in one of the project's folders internally at the company, and then by the use of an Excel Macro **all important information about the job's files will be saved in an Excel file**: Purchase Order (PO), Shanghai Customer Order (SCO), files to translate and target languages. The macro unzips the files, creates a template folder and prepares some process scripts. The estimated time of the job registration in the Excel file, for a standard job, is **2 minutes**.

5.4.3   Step 3.- Check the source files

This translation process is currently very stable and it has become more standardized, therefore there's no need for the Project Coordinator to check all files job by job and give the quotation to the client. Instead, after downloading the RAR package and creating the job's folder, she sends the path of the files to one of the colleagues who is Project Administrator in the Weihua Production Team at the company.

The client can send three different format types:

-   Microsoft Word (.doc)
-   Microsoft Excel (.xls)
-   eXtensible Marcup Language (.xml)

All three format types don't have to be specifically sent in a job, therefore the jobs can contain a mixture of all these three file types. Basically, the Project Administrator sees the unpacked files received from the client, opens a few of them with the default applications and checks their format and contents to see if they follow the standard that was agreed with the customer, for example he/she checks that there aren't extra unnecessary columns in the Microsoft Excel file. We estimate that this operation takes around **5 minutes**.

5.4.4   Step 4.- Process the files to obtain a new Database and Word Count

The price charged to the customer is determined by the number of words to be translated into every translation language, according to the following considerations:

Filtering: each file is passed across a sort of filter which extracts only the actual text to be translated, and skips the format (for example images) and the text that is not to be translated (for example metadata).

Segmentation: each paragraph in this job's database will be segmented into sentences using full stops, hard returns or other punctuation symbols that can denote "sentence segmentation".

For example, the text "I walk in the street and I see a car. The car is red." will end up being split into two segments: The first segment will be "I walk in the street and I see a car." and the second segment will be "The car is red.".

Import to Database: Once the text is clean and has been filtered and segmented, it is saved in the job's database.

Digits: if a segment only contains numbers and/or codes and they have no actual words, those will be considered "Digits" and will be not charged to the client.

Exact matches: If a segment has already been translated in the past for the same client, its translations will be found by a matching algorithm in a store called "client translation memory" and they will be re-used so the translation Word Count decreases. This segments are called "Exact matches".

Similar matches: If a segment is not an exact match but at least the 75% of its words appear in a segment that is recorded in the translation memory, its translations will be found, re-used and reviewed so only the 33% of its Word Count will be charged.

Duplicates: If a segment appears twice or more in the same translation job, it will be considered "Duplicate" and will only be charged once.

Similars: If a segment is not a duplicate but at least the 75% of its words appear in a previous segment in the same translation job, this segment will be considered "Similar", and only the 33% of its Word Count will be charged.

New for translation: All other segments are considered "New for translation".

The Total Word Count to be charged to the client is:

WordCount = TotalWords – Digits – ExactMatches – (SimilarMatches/3) – Duplicates – (Similars/3)

Let's see an example of a text, and we will calculate its Word Count to clarify the concepts.

Source text:

I walk in the street and I see a car. The car is red. It looks like my friend's new car, but it's not. His car is blue. I can also see its registration number and valves: 1122B / 16V. It's definitely not his car. I walk a bit more, under the bright sun, and I see a bike. The bike is red. My brother has a bike like that. His bike is red. And he has also a car. His car is blue.

Let's assume that we have a few translated segments already in our translation memory, coming from previous translation jobs. They can be re-used:

English: I run in the country and I see a car.

Spanish: Yo corro en el campo y veo un coche.

English: The car is red.

Spanish: El coche es rojo.

Image 5-II. Translation memories are databases that save previous translated texts

First, we count how many words we have in the source text, which will be the TotalWords. **TotalWords = 83**.

Then, we apply the segmentation. This is the segment analysis:

Table 5-I. Segment analysis to obtain a Word Count

Segment number	Text	Number of words	Type	Reference	Translation
1	I walk in the street and I see a car.	10	Similar match (from Database)	I ~~run~~ in the ~~country~~ and I see a car.	Yo ~~corro~~ en el ~~campo~~ y veo un coche.
2	The car is red.	4	Exact match (from Database)	The car is red.	El coche es rojo.
3	It looks like my friend's new car, but it's not.	10	New for translation		
4	His car is blue.	4	New for translation		
5	I can also see its registration number and valves:	9	New for translation		
6	1122B / 16V.	2	Digit	1122B / 16V.	1122B / 16V.
7	It's definitely not his car.	5	New for translation		
8	I walk a bit more, under the bright sun, and I see a bike.	14	New for translation		
9	The bike is red.	4	Similar (of segment #2)	The car is red.	
10	My brother has a bike like that.	7	New for translation		
11	His bike is red.	4	Similar (of segment #9)	The bike is red.	
12	And he has also a car.	6	New for translation		
13	His car is blue.	4	Duplicate (of segment #4)	His car is blue.	

Segments in green cells will be automatically translated:

- Digits will be automatically copied from source to translation. **2 words**.
- Exact matches will fetch translations from Database. **4 words**.
- Duplicates will fetch translations from previous duplicated paragraphs, once those are translated. **4 words**.

Segments in blue cells will have to be reviewed, as the provided translation differs a little bit from the one corresponding to the current source segment.

- Similar matches will fetch from Database a translation that has to be reviewed. 75% or more of the words are the same in both source paragraphs (the current and the archived). **10 words**.
- Similars will fetch translations from previous similar paragraphs, once those are translated. Again, at least the 75% of the words are the same in source segments. **8 words**.

Segments in yellow cells are new for translation. **55 words**.

It's time to calculate the Word Count of the text.

WordCount = TotalWords – Digits – ExactMatches – (SimilarMatches/3) – Duplicates – (Similars/3)

WordCount = 83 – 2 – 4 – (10/3) – 4 – (8/3)

WordCount = 83 – 2 – 4 – 3 – 4 – 2

WordCount = 83 – 15

WordCount = 68 words

With a simple example, we have seen that the translation costs for a client can be reduced by an **18%**, considering that the Total Words before processing the text was **83**. Imagine how much money a client can save if they send thousands of words for translation every year!

When calculating the time spent for the file preparation and the word count algorithm, we need to consider:

- How many files are sent by the client – we need to pass them through the filters and preparation for database, so the more files we receive, the more time the filtering and preparation steps spend.
- How many source words we have to process – it's not the same to run the process for 83 words like in the example above, than running it for 5,000 words.
- How big the translation memory is – if there are many previous jobs saved, the algorithm takes more time to "visit" all saved segments.
- How many languages we need the incoming job to be translated to – the process takes more time to look for, find and fetch the previous translations for 10 languages than for just 1 or 2.

The following table will help us as a reminder of what will be a standard job for our calculations:

Table 5-II. Characteristics of a standard job

Number of files	**10**
Source words per file	**100**
Translation memory size	**Medium, it's not really big**
Translation languages per job	**10**

Not all filtering processes take the same time. Excel filter for example is a Graphical User Interface tool and very complex. XML filter has a command line distribution which makes it faster. However, we will consider that our standard file with 100 words for translation needs **5 seconds** to be filtered, no matter which filter has to be used, and **3 seconds** to be imported to the Database. A preparation of the files and folder structure is also necessary, estimated in **4 minutes**.

Nowadays, the administrators in this production team estimate that once all texts are clean, segmented and prepared, the matching process for 1,000 words takes around **5 minutes** per

language and it's done sequentially (one translation language after another). Before the actual match, the user has to load an INI file and this load time is estimated as **1 minute**.

5.4.5   Step 5.- Send the job to Europe

Using an internal tool developed at the company, all files (Database, Translation File, reference files, etc) are copied from a folder in Shanghai's file server to a folder in Europe's file servers. This operation is normally done in **1 minute**.

5.4.6   Step 6.- Register the job in the ERP

The Project Coordinator in Europe receives the necessary files and she logs in to the ERP system in order to create a new Production Project there, filling up all necessary information about the order (client, creation date, delivery date, translation languages, etc.). All Supplier Orders, normally one per language, are also created at this point. Each Supplier Order consists of: Supplier ID (translator ID, which is unknown at this point), Translation Language, Work Type (translation or revision), Word Count and some attached files like the Translation File to work with and all reference material.

In addition, a Project Administrator logs into the ERP system and browses to each Supplier Order to fill up some remaining data:

- Word Count for that language: TotalWords, Digits, ExactMatches, SimilarMatches, Duplicates, Similars and WordCount.
- Translation File attachment.

This operation takes **11 minutes** to be finished.

5.4.7   Step 7.- Send quotation to the client

The last step before actually sending the quotation to the client is multiplying the Word Count per the agreed price that the client pays per word. Obviously it's not the same price if we translate from English to Spanish than from English into Javanese, and either than from Spanish into Javanese! Estimated time in process: **3 minutes**.

5.4.8   Step 8.- Send Translation Files to translators

Once the client accepts, the Project Administrator will start looking for available translators to work on that job, mentioning the type of text, word count, deadline, etc. Normally for stable projects under some kind of contract like for Weihua client, there's a list of translators which are commonly used. If for some reason a translator is not available for the job or can't meet the expected deadline, the HR Recruitment Coordinator in charge of this client will start looking for an alternative translator. Either the case, when the Translator confirms, the information is logged in the ERP, under that particular Supplier Order.

Later on, the Project Administrator logs in to the ERP and starts a function that sends each Supplier Order by email to the Translator who accepted the job. This operation takes **2 minutes** at the most.

5.4.9   Step 9.- Translation

The Translator receives an email with the order details and the File. **He or she works with it until an agreed time**, when the translation has to be finished and sent back to the Project Administrator, who checks the quality of the translations.

5.4.10 Step 10.- Send Translation File back to Shanghai

Once the quality of the translation has been checked, the Translation File is sent to Shanghai. It takes **1 minute**, the same time than for sending from Shanghai to Europe.

5.4.11 Step 11.- Reinsertion of the translated text

The Project Administrator in Shanghai receives the Translation File filled with target language texts on it. The file is added to the database, and then a new process starts so the translations are exported from the database and "reinserted" by the filters in copies of the source files. Both processes are done with a DOS command line instructions. The export takes **3 seconds** per file, and the filter's reinsertion **5 seconds** per file. An additional translation memory file, containing all translations of this job, is also created with a TMX format (.tmx), and will also be sent to the client.

5.4.12 Step 12.- Layout

Once all the files have the reinserted translations, the Project Administrator spends some time per file checking that all the contents seem to be there, that there's not any source text in the translated file, and for example if the file is a Microsoft Word document he or she checks that the paragraphs haven't been moved between pages and that the format and fonts have remained the same as in the original one. **This time is hard to be decreased since the process consists on a visual check done by a human**.

5.4.13 Step 13.- Delivery and invoice

The files are delivered to the client by email or FTP, and the invoices are saved in the ERP so the accounting team can later or send the invoice to the client. We estimate **4 minutes** are spent on this phase, since all files have to be manually collected in some kind of compressed package for the client.

6. THE IT PORTFOLIO PROJECT PROCESS

6.1   Introduction to this chapter

Now that we know a little bit more about the company, its organization, its business, the services that offers, the IT Department and the current production process for Weihua jobs, we are readier to start actually with the process improvement project itself.

In this sixth chapter the IT Portfolio Project Process is described, so we will get an introduction to the project process, which steps are important, and who does what.

IT works using a specific IT Project process to ensure both a budget and quality plan for each project. A project can be for internal IT, for another department at the company, or for a customer. A successful project is a project that delivers the desired result within the limits of its resources.

Every new project is unique with its own budget, scope, resource needs and complexity. Because of this, the IT Project Process is a flexible process that can change depending on the project.

When should this process be used? How can it be used by someone outside of IT? And why should it be used? What about the process itself? Here we will also describe the start-up process and the gate process, their most important components and who does what in the process.

6.2   Objectives of this chapter

The main objectives in this chapter are to:

• Get a better understanding of how IT Department works with projects.
• Understand the overview of an IT project's preparation at the company.
• Understand how the project management technique known as "phase-gate process" works.

6.3   IT Project…when, how and why?

Before looking at the IT Project Process and how it's built, it's important to understand **when** it can be used, **how** it can be used, and **why**?

WHEN?

The IT Project Process can be used when bigger changes are necessary or when a group of people are involved and need to be coordinated. i.e. when a task has a beginning and an end.

Example:

- An improvement on a collection of processes involving a customer.
- When something is requested from a customer or needed in a tender.

What is the difference between IT Project and Change Request?

A Change Request is a smaller change made for a specific purpose. A Project is a collection of Change Requests, or a bigger change in the organization, or something completely new.

HOW?

The Project model is a specific approach to ensure that we work in the same way. It gives the project a clear structure, a start and a finish. The customer can easily get the right information, keep up with the project status and be sure to get what he/she asked for.

What happens when an IT Project is placed?

When an IT Project is placed, it will be assigned to the IT Portfolio Manager, who will either accept or reject it. Therefore it is important to be as specific as possible.

IT will take the leading role in the project and push it forward with the help from the requester. IT will be in continuous contact with the requester to ensure that the project will deliver what is expected.

WHY?

The IT Project model is used to ensure that the delivery is reached using a standard work structure to ensure quality and that what is delivered is the same thing that was requested.

If changes are requested, these are both easier and cheaper to complete at the beginning of the project. See the image.
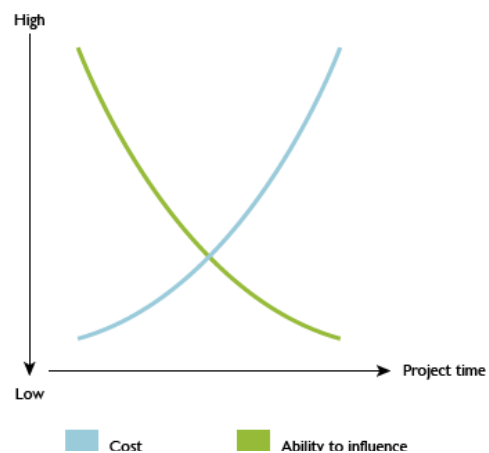
Image 6-I. Project's cost and ability to influence

6.4   IT Portfolio Project Process

Here we will get an introduction to the process, which steps that are important, and who does what.

The process can be split into two parts: **Idea to process** and **The Gate process**.

We will first get a general overview of the preparation before a project starts and then a clarification on the difference between the three different processes a project can have.

6.4.1   Idea to process

Idea to process (see the diagram below) is the preparation before the project has started.
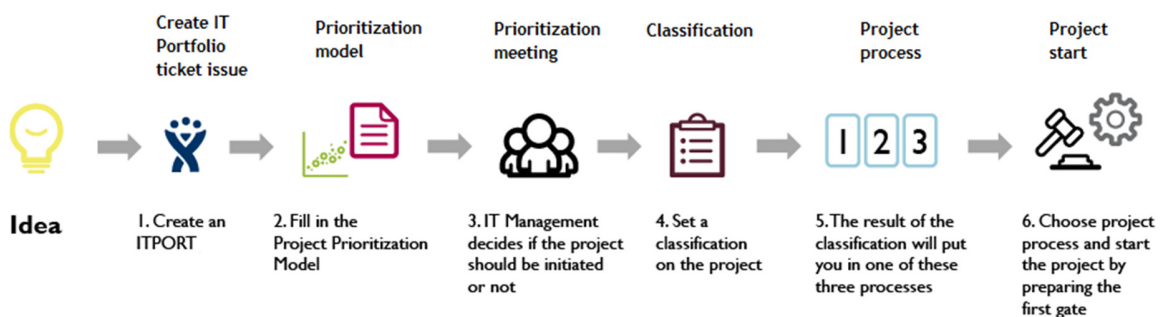
Diagram 6-I. Idea to process

A project starts as an idea. It is created anywhere at the company or with a customer's request. Here the idea/request will be discussed and then placed as an ITPORT ticket issue.

1.- Create IT Portfolio ticket issue. To place an IT Portfolio ticket issue, the requester uses the issue reporting tool. The type of the issue will be "Project Request". He or she needs to add information on both the Project Information and the Business Case. The more these fields are specified, the easier it will be for the IT Portfolio Manager to understand the request and hopefully accept it.

2.- Prioritization Model. When the ticket issue has been created, the next step is to complete the IT Project Prioritization Model and attach the completed file to the ticket.

3.- Prioritization Meeting. Before the project can be initiated, a prioritization of the project must be done. The IT Project Prioritization Model will assist in determining the priority and feasibility of the project. The prioritization is then discussed during a Prioritization Meeting. If needed, the numbers are adjusted, according to what is discussed during the meeting. During the Prioritization Meeting it may be decided if the project should be immediately initiated or not, depending on where in the priority plot the projects ends up and if there are immediate resources available. Otherwise, the Project will proceed to the Backlog of project requests, and will be ranked further by the company management.

4.- Classification. If IT Management decides to initiate the project, the next step for the Project Manager or System Manager will take a few administrative actions (creating a space in the

internal Content Management System / documentation tool and a cost center in the internal tool for time reporting), and sets a classification on the project. The gate requirements are different depending on which process the project follows. To determine which process, a classification of the project must be made. The classification is decided by filling in the <u>Classification Model</u>, which takes into consideration the budget (excluding internal resources), internal resources and complexity level. The Project Manager or System Manager will try to establish the project <u>budget</u> excluding internal resources, the entire amount of <u>internal</u> resources needed to conduct the project, and the <u>complexity level</u> of the project and consider what type of project will be conducted and what kind of interfaces are needed to be handled throughout the project. The model will then weight the parameters and establish a project classification.

5.- Project Process. The result from the classification will determine the project process, see the table below:

Table 6-I. Association of Project Classification and Project Process

Project Classification	Project Process
1-2	1
3-4	2
5	3

6.- Project Start. When this is finished, the project can start.

6.4.2   The Gate process

The Gate process (see the image below) is from when the project is initiated to its finalization.
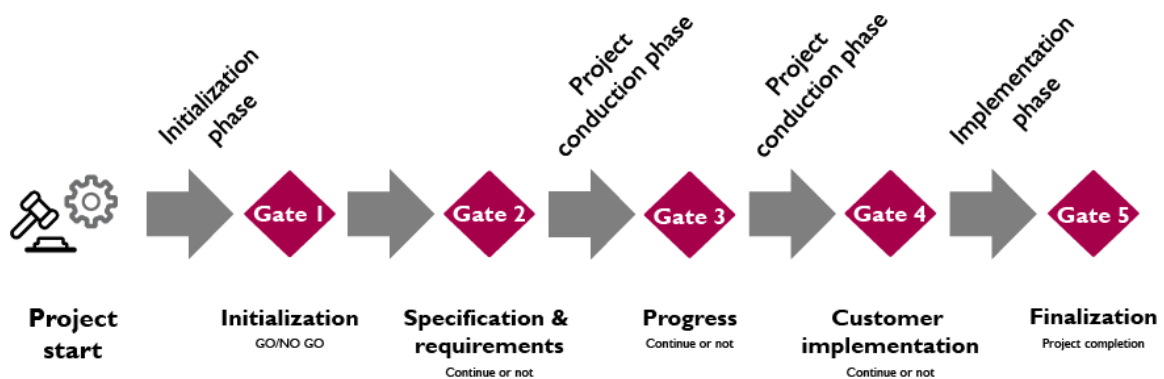
Diagram 6-II. The Gate process

Initialization. The project has a "GO" and can start. This is the first step and will be presented in Gate 1. In this gate the project will get a "GO" or "NO GO", depending on the base for the project. Is is clear enough to continue? Are there any unanswered questions to the need or reason? And so on. Depending on the size of the project (determined in the classification step) it will either go through 2, 4, or 5 gates. Here, a base and an understanding is created for what and why the project is needed.

Specification & requirements. Gate 2 is for approval and review of the project brief. It is about planning and the design of the project details where the time and budget plan must have a 10% accuracy. The project will be broken down into specifications and requirements.

Project conduction phase. When requirements and specifications are approved in Gate 2, it is time for development to start.

Implementation. Implementation and testing of the service/product, and preparing to close the project.

Project completion/closure. The assignment is completed. The service/product is implemented and tested, and the documentation is complete. Once a project has passed Gate 5 the project is permanently closed. If any changes need to be done in the delivered service/product, they must be included in a new project, or treated as single Change Requests.

Process 1:

Process 1 is for smaller and non-complex internal projects at the company. The process is compressed to avoid excessive administration and includes only **Gate 2** and **Gate 5**.

Process 2:

Process 2 is the most common process. For projects that are larger but still not more than averagely complex. It includes **Gate 1**, **2**, **4** and **5**, and is the minimum requirement for customer projects.

Process 3:

Process 3 is for large and complex projects and includes all possible gates: **Gate 1**-**5**. Gate 3, which is a project status gate, is necessary in larger projects. Large projects are often executed during a longer period of time, which increases the time between each gate. The more complex a project is, the more mistakes can happen. Problems are more difficult to fix if they are not detected in time, and frequent meetings will minimize the risk of detecting problems too late. If needed, several Gate 3 meetings can be held during project execution.

The gates are used as checkpoints to be able to find mistakes during the work. The earlier mistakes can be found, the easier they can be fixed before the project is finished. During work, different teams will help out with their specific knowledge, while the Project Manager will steer the project towards its completion.

The following picture shows who is responsible, and who is involved, in each step. The blue colour indicates who is mainly responsible, while the green colour indicates the roles involved. If no System Manager is involved in the project, then the Project Manager has the main responsibility for all steps, from the idea to until project closure in Gate 5.
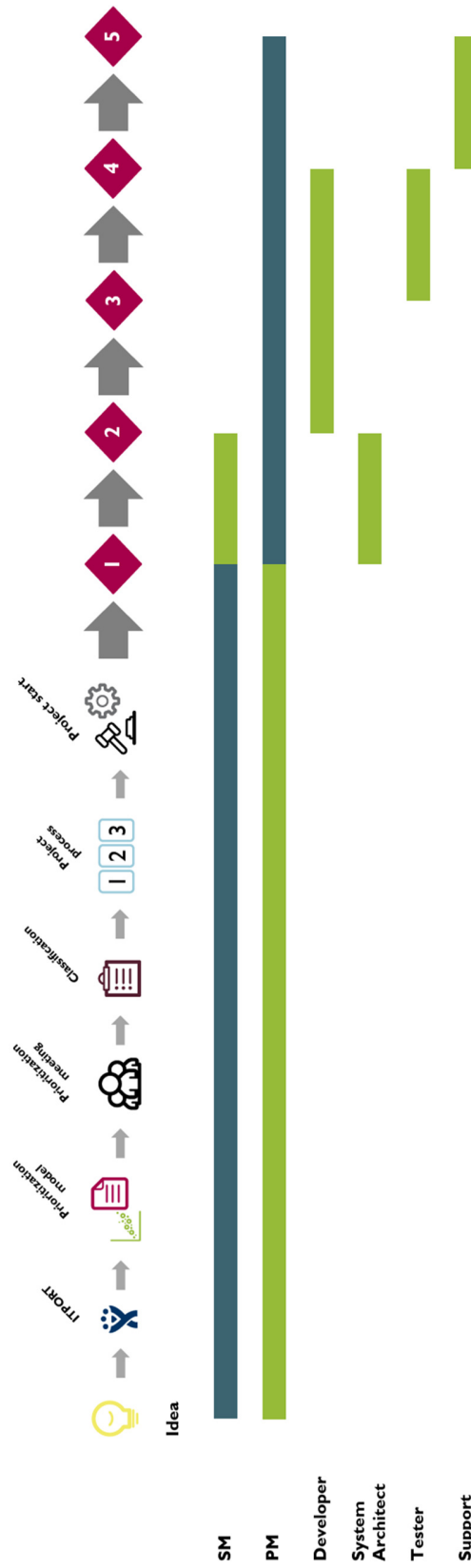
Diagram 6-III. Project resources. Responsible roles and other involved roles

7. IDEA TO PROCESS

7.1   Introduction to this chapter

In the seventh chapter of the project's memory we will describe all steps that were made in the preparation of the project, before it was started. We will go through the "**Idea to process**" part of the project that has been explained in the previous chapter, but putting it in practice in a real project by focusing in our process improvement.

7.2   Objectives of this chapter

At the end of the chapter, one should be able to:

• Understand all steps that were made during the preparation of the actual project, from the project's idea until it was confirmed as a project to be started.

• Identify the most important aspects of the project's preparation, with special focus on how it was prioritized and classified.

• Calculate and describe, with the help of estimations, how much time and costs the implementation of the project will save.

• Analyze the project's investment to be able to conclude if it's economically viable or not by identifying its liquidity, profitability and risks.

7.3   Preliminary steps

In December 2015, the Weihua production team in the company asked for some improvements in the whole translation process, for files coming from that important Chinese client. A ticket was created in the issue reporting tool as a Change Request so that someone could review the current process for this file format, in order to identify possible improvements and implement them.

The following image reproduces the original issue's description that was included in the report:
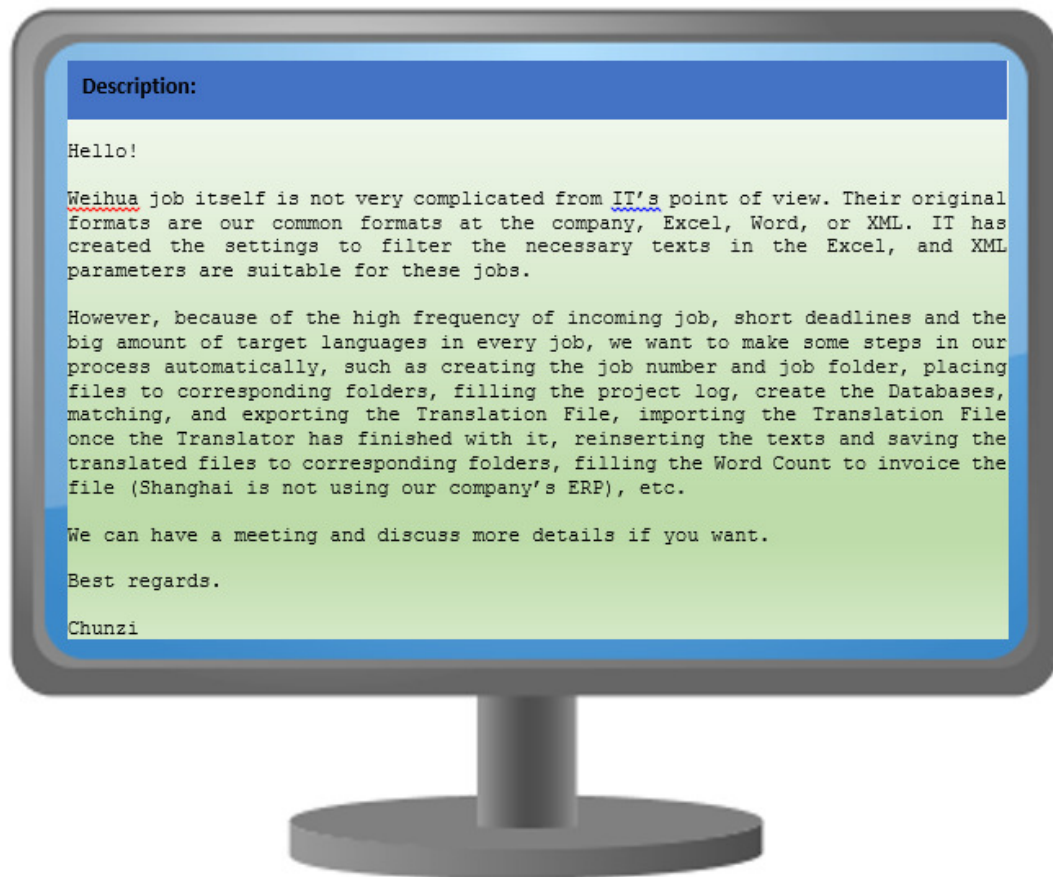
Image 7-I. Suggestion of the original issue's description

After the ticket was received, there were a few process demonstrations, meetings and discussions between the Weihua production team and two Translation Systems specialists, members of the Translation Systems team. These were the main conclusions:

- Shanghai Customer Orders are handled in a simple Excel document.
- There's a high dependency on an Excel macro that we are unable to maintain because its code is password-protected and its developer is no longer working at the company.
- The step 4 "Process the files to obtain a new Database and Word Count" and the step 11 "Reinsertion of the translated text" are run in local computers, not in terminal servers like in the rest of the offices in the company.
- The matching process takes long time because it's done sequentially.
- Only one process in Europe is automatized with DOS scripts, the one in step 6 "Register de job in the ERP" so the Supplier Orders are filled. There aren't any other scripts.
- There is an additional process of quality check (requested by the client) using a software called XBench. This process requires to export content from the Database files and clean the codes, and this is done manually.
- There's one different Database file for each translation language. The process speed could be increased using only one Database file that could contain all translation languages.

After some analysis not only of the proposed changes but also of the global and complex infrastructure evolving the process, it is decided that the improvements should be collected and applied as an internal IT project in the company rather than just a simple Change Request issue to be registered in the ticket report system and to be resolved by the Translation Systems specialists.

7.4   Idea to process in the actual project

7.4.1   Create IT Portfolio ticket issue

As it has been described before, a project starts as an idea. It is identified anywhere at the company or with a customer's request, and then documented and tracked as an IT Portfolio ticket issue.

IT Portfolio tickets keep track of all IT projects and requests. To add a new project request, a ticket must be created there. And the following required fields have to be filled in:

- **Project Name**
- **Project Description**
- **Expected project outcome**

After the meetings and demonstrations with the production team, this process improvement was clearly considered as advanced in many aspects. There are many considerations to take into account, and developing or improving the scripts won't be of help if production staff doesn't use terminal servers or remote runner servers, for examples. The issue is complex as there are many different processes involved between Shanghai and Europe, and some of the issues to be solved need some infrastructure changes, and this is something the Translation Systems team can't solve by itself. There will be a need of different specialists from the company to become an important part of the project resources, and it is decided that the issue will be escalated to IT Management by creating a ticket issue for the IT Portfolio team, that should evaluate the candidature of it.

Project Name: Weihua process improvement

Project Description:

The Weihua production team has requested for automation in their translation processes; it has been already requested as a single Change Request and reported in our ticket reporting system with the issue number TSYS-7557, but due to the complexity of this request, perhaps this should be handled as a project based on the following considerations:

- The process is handled partially from Shanghai and the offices in Europe, both processes are not seamlessly integrated.
- Shanghai is not using the company's ERP, but it is needed and done from Europe.
- Shanghai is not using terminal servers, and a remote runner solution would be the best.
- The process handled in Shanghai is partially automatized, but the solution is not maintainable or scalable.

- The processes handled in Europe are not automatized, all is done manually.
- Receiving translations from external translators is done by email (as in the rest of the company) but it is particularly difficult in this project.
- Indexing servers for matching are not implemented yet.
- The current volume of transactions have been increased year by year, making the current solution unsustainable:
    - 2012 – Number of supplier orders: 352
    - 2013 – Number of supplier orders: 519
    - 2014 – Number of supplier orders: 795
    - 2015 – Number of supplier orders: 1110 (so far in the beginning of December)

Expected project outcome: New automation process defined from scratch, using standard solutions like remote runner solutions and ERP.

7.4.2   Prioritization Model

7.4.2.1   Business case concepts

When the ticket issue has been created, the next step is to complete the IT Project Prioritization Model and attach the completed file to the ticket.

An initial business case for the project request is required. This initial business case identifies:

- **Profit / Savings** – What return on investment will the project lead to?
- **Consequence / Risk** – What will the project consequence or risk be? Can we for example avoid an outage?
- **Quality** – Is the aim of the project to increase quality/respond to a customer complaint?
- **Competition** – Will the project give us a better market position?
- **Work Efficiencies** – Will the project enable a more effective work process at the company?
- **Feasibility** – How easy is it to run the project and fulfill set targets?
- **Budget / Funding** – Who will potentially fund this project?

In order to answer a few of these questions above, we need to identify the investment of implementing the project and also the returns, so we have some estimations about the Profit and Savings the project will lead to. However, it is understood that there are many possible improvements to be applied to the process and therefore we need to split the scope of the project into different parts, called subprojects or even project sprints, in order to be able to give better estimations and have different scopes that can be prioritized.

The best way for separate the scope of this big request is either by priority "Shanghai/Europe" or by system "ERP/Infrastructure", so that we can better decide how to proceed. Obviously there will be considerations with inter-operability and overall design, but we need to be able to prioritize smaller "chunks" of this, to get started.

7.4.2.2   Project split and priorities

The approach for splitting the scope of the project into four subprojects listed by priority is:

1. **Automation in translation process – Shanghai**
    - Scope: Translation process handled by Shanghai team
    - Solution: DOS scripts compatible with current infrastructure (terminal server/local computers)
    - Included: filtering, database insertion, matching, database extraction, database archiving
    - Excluded: handling supply orders and infrastructure revision

2. **Increasing computing capacity**
    - Scope: Translation process handled by Shanghai
    - Solution: Terminal servers, remote runner environments, Database index servers
    - Included: Provision of new servers, adjustment in scripts.
    - Excluded: Infrastructure for improving order handling process.

3. **Automation in translation process – Europe**
    - Scope: Translation process handled by European teams
    - Solution: DOS scripts compatible with current infrastructure (terminal server/remote runners)
    - Included: Creation of Supplier Orders in the ERP, database extraction, Workbench QA
    - Excluded: Unique system for handling Supplier Orders with Shanghai, handling reception of translation jobs from Translators.

4. **Improving order handling process**
    - Scope: order handling process in Shanghai
    - Solution: New process and system for handling Supplier Orders in Shanghai with integration with European systems.
    - Included: Order handling
    - Excluded: Invoicing

7.4.2.3   Activities diagram with subprojects

The following Activities Diagram references each of the subprojects and the process steps that each one involves.
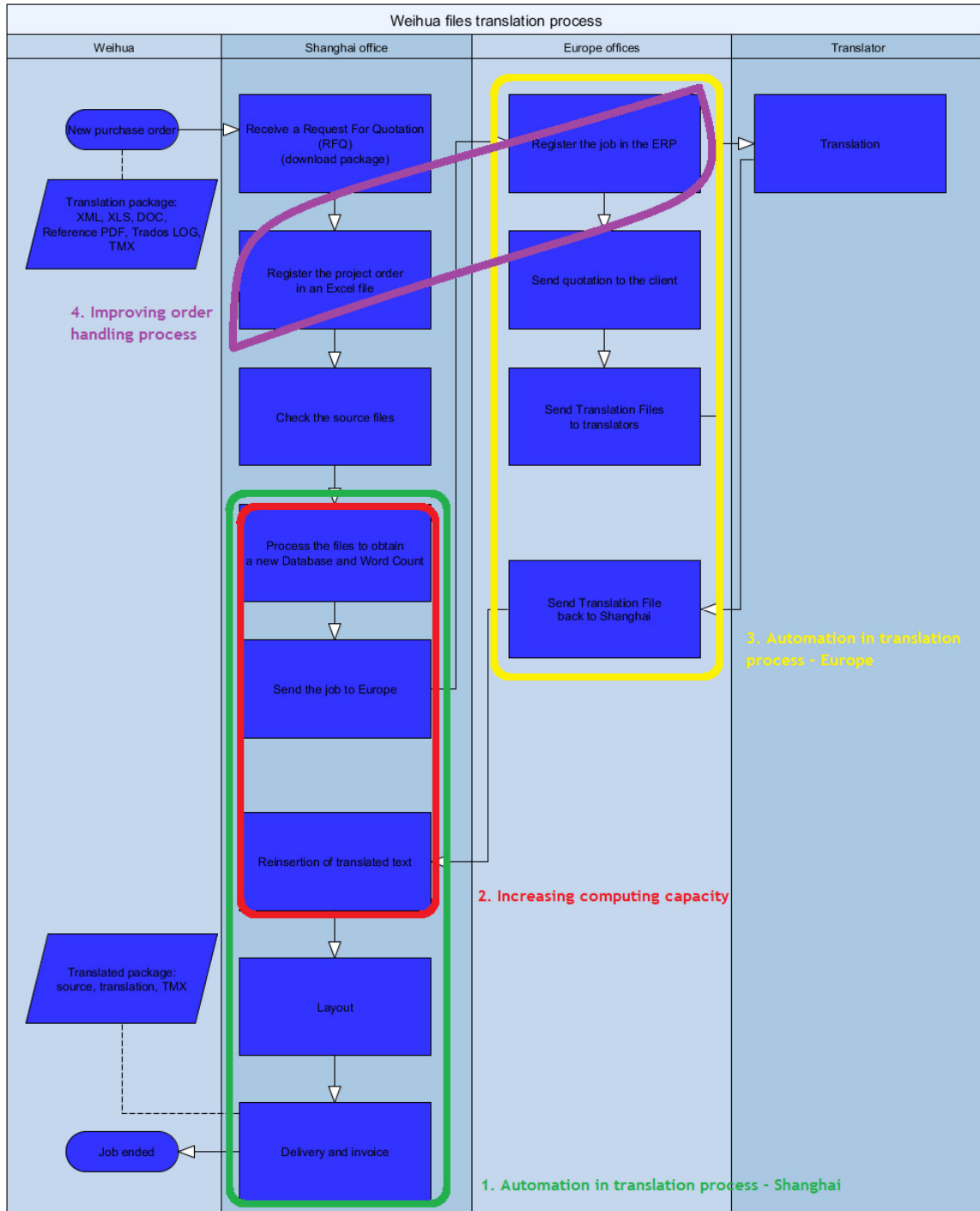
Diagram 7-I. Activities diagram for the Weihua files translation process showing the different subprojects

7.4.2.4   *Processing times and process improvement percentages*

It's time to collect all processing times from the whole original process descriptions and classify them all:

Table 7-I. Estimated processing times in the original process

Process step		Time in minutes	Time in seconds
1.- Receive a Request for Quotation (RFQ)		1	60
2.- Register the project in an Excel file		2	120
3.- Check the source files		5	300
4.- Process the files to obtain a new Database and Word Count	Preparation of files and folders	4	240
	Filter 10 files		50
	Import 10 files to Database		30
	Match: load INI + match process (x 10 languages)	1 + (5x10)	3060
5.- Send the job to Europe		1	60
6.- Register the job in the ERP		11	660
7.- Send quotation to the client		3	180
8.- Send Translation Files to translators		2	120
9.- Translation (not part of internal process)		Translator's time	Translator's time
10.- Send Translation File back to Shanghai		1	60
11.- Reinsertion of the translated text	Export 10 files from Database, for 10 languages		300
	Reinsert translated text from 10 files with the filter (x 10 languages)		500
12.- Layout		Admin's time	Admin's time
13.- Delivery and invoice		4	240
		TOTAL TIME	**5980**

We place all those numbers in a new spreadsheet. Note the percentage of process improvement is 0 so far.

Process step	Original production process (current process)	
	Time (s)	Comments
1.- Receive a Request For Quotation (RFQ)	60	Project Coordinator downloads from client's site
2.- Register the project	120	Register the project in Excel file using a macro
3.- Check the source files	300	Visual check the formats and contents of a few random files
4.- Process the files to obtain a new Database and Word Count	240	Preparation of files and folder structure
	50	Filtering: 5 seconds per file, there are 10 files
	30	Import to DB: 3 seconds per file, there are 10 files
	3060	Match with previous jobs in DB: 60 seconds for loading the DB sources INI file (updated processes will do it automatically) and then processing 1,000 words takes 300 seconds per language, we have 10 languages
5.- Send the job to Europe	60	Transfer of the files using a network tool
6.- Register the job	660	Register the project in the ERP
7.- Send quotation to the client	180	Send quotation to the client
8.- Send Translation Files to translators	120	Send Translation Files to translators
9.- Translation process		It takes the time the translator uses, so it won't be part of the process update
10.- Send Translation File back to Shanghai	60	Transfer of the files using a network tool
11.- Reinsertion of the translated text	300	Exporting from DB: 3 seconds per file, there are 10 files and 10 translation languages (sequential process)
	500	Reinsertion of texts: 5 seconds per file, there are 10 files and 10 translation languages (sequential process)
12.- Layout		It takes the necessary time to check and fix the layout of the file, so it won't be part of the process update
13.- Delivery and invoice	240	Preparation of delivery files and folders to be sent to the client, and send them
Total time	5980	
Percentage of saved time with previous subproject or process (%)	0	
Percentage of saved time towards original process (%)	0	

Table 7-II. Spreadsheet showing the estimated processing times in the original process

We also place the estimated processing times once the subproject 1 will be implemented. Note the times in green cells inform there will be improvements in terms of time-savings and the reasons are explained. We will decrease the time spent on the jobs by an 18,73%.

Process step	Original production process (current process)	Process after Subproject 1: Automation in translation process - Shanghai	
	Time (s)	Time (s)	Comments in the improvement
1.- Receive a Request For Quotation (RFQ)	60	60	-
2.- Register the project	120	120	-
3.- Check the source files	300	300	-
4.- Process the files to obtain a new Database and Word Count	240	60	Automatic script for preparation of files and folder structure
	50	40	Automatic script which in addition uses file lists for filtering: 4 seconds per file, there are 10 files
	30	20	Automatic script which uses file lists for import to DB: 2 seconds per file, there are 10 files
	3060	3000	The import script has an extra stage for matching with previous jobs in DB without manually loading the DB sources INI file: processing 1,000 words takes 300 seconds per language, we have 10 languages.
5.- Send the job to Europe	60	60	-
6.- Register the job	660	660	-
7.- Send quotation to the client	180	180	-
8.- Send Translation Files to translators	120	120	-
9.- Translation process			-
10.- Send Translation File back to Shanghai	60	60	-
11.- Reinsertion of the translated text	300	20	Automatic script for exporting from DB: 2 seconds per file, there are 10 files and 10 translation languages (parallel process)
	500	40	The export script has an extra stage for reinsertion of texts: 4 seconds per file, there are 10 files and 10 translation languages (parallel process)
12.- Layout			-
13.- Delivery and invoice	240	120	Automatic script prepares the files and folders before they are sent to the client
Total time	5980	4860	
Percentage of saved time with previous subproject or process (%)	0	18,73	
Percentage of saved time towards original process (%)	0	18,73	

Table 7-III. Spreadsheet showing the estimated processing times in the process after implementation of subproject 1

Then, we include the estimated processing times once the subproject 2 will be implemented. Again, the times in green cells inform there will be improvements in terms of time-savings and the reasons are explained. We will decrease the time spent on the jobs by an extra 13,37% towards the previous process, and by a 29,60% if we compare it with the original process.

Process step	Process after Subproject 1	Process after Subproject 2: Increasing computing capacity	
	Time (s)	Time (s)	Comments in the improvement
1.- Receive a Request For Quotation (RFQ)	60	60	-
2.- Register the project	120	120	-
3.- Check the source files	300	300	-
4.- Process the files to obtain a new Database and Word Count	60	50	Running the scripts in a terminal server environment or even in a remote server environment increases speed because processors are more powerful
	40	30	
	20	10	
	3000	2400	Indexing server would be prepared so the matching time is significantly reduced: 1,000 words are matched in 4 minutes instead of 5 minutes
5.- Send the job to Europe	60	60	-
6.- Register the job	660	660	-
7.- Send quotation to the client	180	180	-
8.- Send Translation Files to translators	120	120	-
9.- Translation process			-
10.- Send Translation File back to Shanghai	60	60	-
11.- Reinsertion of the translated text	20	10	Running the scripts in a terminal server environment or even in a remote server environment increases speed because processors are more powerful
	40	30	
12.- Layout			-
13.- Delivery and invoice	120	120	-
Total time	4860	4210	
Percentage of saved time with previous subproject or process (%)	18,73	13,37	
Percentage of saved time towards original process (%)	18,73	29,60	

Table 7-IV. Spreadsheet showing the estimated processing times in the process after implementation of subproject 2

Then, we include the estimated processing times once the subproject 3 will be implemented. Again, the times in green cells inform there will be improvements in terms of time-savings and the reasons are explained. We will decrease the time spent on the jobs by an extra 12,83% towards the previous process, and by a 38,63% if we compare it with the original process.

Process step	Process after Subproject 2 Time (s)	Process after Subproject 3: Automation in translation process - Europe Time (s)	Comments in the improvement
1.- Receive a Request For Quotation (RFQ)	60	60	-
2.- Register the project	120	120	-
3.- Check the source files	300	300	-
4.- Process the files to obtain a new Database and Word Count	50	50	-
	30	30	
	10	10	
	2400	2400	
5.- Send the job to Europe	60	60	-
6.- Register the job	660	120	Script will automatically connect with ERP to register the job according to some parameters given by the user
7.- Send quotation to the client	180	180	-
8.- Send Translation Files to translators	120	120	-
9.- Translation process			
10.- Send Translation File back to Shanghai	60	60	-
11.- Reinsertion of the translated text	10	10	-
	30	30	-
12.- Layout			
13.- Delivery and invoice	120	120	-
Total time	4210	3670	
Percentage of saved time with previous subproject or process (%)	13,37	12,83	
Percentage of saved time towards original process (%)	29,60	38,63	

Table 7-V. Spreadsheet showing the estimated processing times in the process after implementation of subproject 3

We include as well the estimated processing times once the subproject 4 will be implemented. Again, the times in green cells inform there will be improvements in terms of time-savings and the reasons are explained. We will decrease the time spent on the jobs by an extra 3,27% towards the previous process, and by a 40,68% if we compare it with the original process.

Process step	Process after subproject 3	Process after Subproject 4: Improving order handling process	
	Time (s)	Time (s)	Comments in the improvement
1.- Receive a Request For Quotation (RFQ)	60	60	-
2.- Register the project	120	60	Use of some connection to Europe's ERP instead of Excel
3.- Check the source files	300	300	-
4.- Process the files to obtain a new Database and Word Count	50	50	-
	30	30	
	10	10	
	2400	2400	
5.- Send the job to Europe	60	60	-
6.- Register the job	120	60	The registration of the job can be already done by the staff in Shanghai
7.- Send quotation to the client	180	180	-
8.- Send Translation Files to translators	120	120	-
9.- Translation process			
10.- Send Translation File back to Shanghai	60	60	-
11.- Reinsertion of the translated text	10	10	-
	30	30	-
12.- Layout			
13.- Delivery and invoice	120	120	-
Total time	3670	3550	
Percentage of saved time with previous subproject or process (%)	12,83	3,27	
Percentage of saved time towards original process (%)	38,63	40,64	

Table 7-VI. Spreadsheet showing the estimated processing times in the process after implementation of subproject 4

The following spreadsheet table summarizes all processing times from the five processes.

Process step	Original production process (current process) Time (s)	Process after Subproject 1 Time (s)	Process after Subproject 2 Time (s)	Process after Subproject 3 Time (s)	Process after Subproject 4 Time (s)
1.- Receive a Request For Quotation (RFQ)	60	60	60	60	60
2.- Register the project	120	120	120	120	60
3.- Check the source files	300	300	300	300	300
4.- Process the files to obtain a new Database and Word Count	240	60	50	50	50
	50	40	30	30	30
	30	20	10	10	10
	3060	3000	2400	2400	2400
5.- Send the job to Europe	60	60	60	60	60
6.- Register the job	660	660	660	120	60
7.- Send quotation to the client	180	180	180	180	180
8.- Send Translation Files to translators	120	120	120	120	120
9.- Translation process					
10.- Send Translation File back to Shanghai	60	60	60	60	60
11.- Reinsertion of the translated text	300	20	10	10	10
	500	40	30	30	30
12.- Layout					
13.- Delivery and invoice	240	120	120	120	120
Total time	5980	4860	4210	3670	3550
Percentage of saved time with previous subproject or process (%)	0	18,73	13,37	12,83	3,27
Percentage of saved time towards original process (%)	0	18,73	29,60	38,63	40,64

Table 7-VII. Spreadsheet showing the estimated processing times in all processes and the percentage of saved time

64

7.4.2.5   Saved time per job

Processing a job with the current solution takes 5980 seconds, while when all four improvements will be finished, it will take 3550 seconds, which is a 40,64% less. Now we need to estimate how many seconds, minutes and hours we will save yearly with the implementation of all four solutions, one after another.

The saved time in every job is:

Saved Time per Job (s) = Original processing time (s) – Processing time after Subproject 4 (s)

Saved Time per Job (s) = 5980 – 3550

Saved Time per Job = 2430 seconds = 40,5 minutes = 0,675 hours.

7.4.2.6   Saved time per year

In order to calculate how much time we save every year, we need to know how many jobs (supplier orders) we receive from that particular client. We can base this estimation in the real information provided by the Weihua production team in the IT Portfolio ticket:

- o 2012 – Number of supplier orders: 352
- o 2013 – Number of supplier orders: 519
- o 2014 – Number of supplier orders: 795
- o 2015 – Number of supplier orders: 1110 (so far in the beginning of December)

We clearly see the amount of supplier orders has been exponentially increasing in the recent years. In addition, we know from the client that right now we're one of the three translation suppliers and we used to be the number one for them. We don't have any sign that we will receive less jobs from now on, but of course we can't base our numbers in such optimistic suspicious, basically because we're living in a globalized and uncertain world and the market opportunities can change from a week to another.

Keeping the above in mind, we could assume that probably in 2016 and 2017 we will receive the same amount of supplier orders than in 2015, which was 1200 approximately (100 orders per month). However, and just to be on the safe side, we will decrease this number by a 15%, and we will presume that we will receive **1020 job orders yearly**.

The saved time every year is:

Saved Time per Year (h) = Saved Time per Job (h) * Amount of Supplier Orders per Year

Saved Time per Year (h) = 0,675 * 1020

Saved Time per Year = 688,5 hours.

7.4.2.7   Saved costs per job

To transfer this saved time into actual money, we will multiply the saved hours by the following prices per hour:

Table 7-VIII. Hourly costs per resource

Resource / Job title	Cost per hour (€/h)
Shanghai Project Coordinator	25
Shanghai Project Administrator	22
Europe Project Coordinator	52
Europe Project Administrator	47

In the next page a spreadsheet table summarizes all process costs from the five processes, as well as the percentage of saved costs.

Table 7-IX. Spreadsheet showing the estimated processing times in all processes and the percentage of saved costs

Process step	Original production process (current process) Time (s)	Hourly cost Price (€/h)	Process cost €	Process cost after Subproject 1	Process cost after Subproject 2	Process cost after Subproject 3	Process cost after Subproject 4
1.- Receive a Request For Quotation (RFQ)	60	25	0,42	0,42	0,42	0,42	0,42
2.- Register the project	120	25	0,83	0,83	0,83	0,83	0,42
3.- Check the source files	300	22	1,83	1,83	1,83	1,83	1,83
4.- Process the files to obtain a new	240	22	1,47	0,37	0,31	0,31	0,31
Database and Word Count	50	22	0,31	0,24	0,18	0,18	0,18
5.- Send the job to Europe	30	22	0,18	0,12	0,06	0,06	0,06
6.- Register the job	3060	22	18,70	18,33	14,67	14,67	14,67
7.- Send quotation to the client	60	22	0,37	0,37	0,37	0,37	0,37
8.- Send Translation Files to translators	660	52	9,53	9,53	9,53	1,73	0,87
	180	22	1,10	1,10	1,10	1,10	1,10
	120	47	1,57	1,57	1,57	1,57	1,57
9.- Translation process							
10.- Send Translation File back to Shanghai	60	47	0,78	0,78	0,78	0,78	0,78
11.- Reinsertion of the translated text	300	22	1,83	0,12	0,06	0,06	0,06
	500	22	3,06	0,24	0,18	0,18	0,18
12.- Layout							
13.- Delivery and invoice	240	22	1,47	0,73	0,73	0,73	0,73
Total	5980		43,44	36,60	32,63	24,83	23,54
Percentage of saved cost with previous subproject or process (%)	0		0,00	15,75	10,85	23,91	5,17
Percentage of saved cost towards original process (%)	0		0,00	15,75	24,50	42,85	45,81

Processing a job with the current solution costs 43,44€, while when all four improvements will be finished, it will cost 23,54€, which is a 45,81% less. Now we need to estimate how many €uros we will save yearly with the implementation of all four solutions, one after another.

The saved costs in every job are:

Saved Costs per Job (€) = Original process costs (€) – Process costs after Subproject 4 (€)

Saved Costs per Job (€) = 43,44 – 23,54

Saved Costs per Job = 19,90€.

7.4.2.8   Saved costs per year

After all the improvements will be in place, the saved costs every year will be:

Saved Costs per Year (€) = Saved Costs per Job (€) * Amount of Supplier Orders per Year

Saved Costs per Year (€) = 19,90 * 1020

Saved Costs per Year = 20298€.

7.4.2.9   Project costs

Every project has an implementation cost which has to be considered in order to know if the project will be viable and it can be realized, and more important, if there will be any return coming as benefits to the investor resulting from an investment of the resources.

At this point we need to estimate how much the project costs will be. This information is really important and will come from the opinions of the specialists who will be resources in the project.

Below are listed the estimated implementation costs, separated by phases or subprojects.

Subproject 1.- Automation in translation process – Shanghai

Table 7-X. Project costs for implementation of subproject 1

1.- Automation in translation process – Shanghai						
Concept	Amount	Unit Price (€)	Cost		Total for this category	
Analysis & Specifications					575	
Hours spent by Translation Systems Specialist	8	32	256			
Hours spent by Project Coordinator in Shanghai	3	25	75			
Hours spent by Project Administrator in Shanghai	4	22	88			
Hours spent by Project Coordinator in Europe	3	52	156			
Development					2400	
Hours spent by Translation Systems Specialist	75	32	2400			
Process Testing					687	
Hours spent by Translation Systems Specialist	15	32	480			
Hours spent by Project Coordinator in Shanghai	3	25	75			
Hours spent by Project Administrator in Shanghai	6	22	132			
Project Management					2360	
Hours spent by IT Project Manager	40	59	2360			
Total Costs Subproject 1				6022		6022 €

Subproject 2.- Increasing computing capacity

Table 7-XI. Project costs for implementation of subproject 2

2.- Increasing computing capacity						
Concept	Amount	Unit Price (€)	Cost		Total for this category	
Analysis & Specifications					1048	
Hours spent by Translation Systems Specialist	4	32	128			
Hours spent by Project Coordinator in Shanghai	4	25	100			
Hours spent by Project Administrator in Shanghai	4	22	88			
Hours spent by Senior Developer	6	58	348			
Hours spent by System Manager	6	64	384			
Development					870	
Hours spent by Senior Developer	15	58	870			
Process Testing					880	
Hours spent by Translation Systems Specialist	8	32	256			
Hours spent by Project Coordinator in Shanghai	4	25	100			
Hours spent by Project Administrator in Shanghai	8	22	176			
Hours spent by Senior Developer	6	58	348			
Project Management					2360	
Hours spent by IT Project Manager	40	59	2360			
Support & Installations					1425	
Hours spent by CSI Specialist	25	57	1425			
Infrastructure					3475	
Virtual Server for Terminal jobs	3	495	1485			
Remote Runner Server	1	1495	1495			
Server for Database indexing	1	495	495			
Total Costs Subproject 2				10058		10058 €

Subproject 3.- Automation in translation process – Europe

Table 7-XII. Project costs for implementation of subproject 3

3.- Automation in translation process – Europe							
Concept	Amount	Unit Price (€)	Cost		Total for this category		
Analysis & Specifications					420		
Hours spent by Translation Systems Specialist	4	32	128				
Hours spent by Project Coordinator in Shanghai	2	25	50				
Hours spent by Project Administrator in Shanghai	2	22	44				
Hours spent by Project Coordinator in Europe	2	52	104				
Hours spent by Project Administrator in Europe	2	47	94				
Development					512		
Hours spent by Translation Systems Specialist	16	32	512				
Process Testing					588		
Hours spent by Translation Systems Specialist	6	32	192				
Hours spent by Project Coordinator in Europe	4	52	208				
Hours spent by Project Administrator in Europe	4	47	188				
Project Management					2360		
Hours spent by IT Project Manager	40	59	2360				
Total Costs Subproject 3				3880		3880	€

Subproject 4.- Improving order handling process

Table 7-XIII. Project costs for implementation of subproject 4

4.- Improving order handling process							
Concept	Amount	Unit Price (€)	Cost		Total for this category		
Analysis & Specifications					1624		
Hours spent by Translation Systems Specialist	2	32	64				
Hours spent by Project Coordinator in Shanghai	4	25	100				
Hours spent by Project Administrator in Shanghai	4	22	88				
Hours spent by Project Coordinator in Europe	4	52	208				
Hours spent by Project Administrator in Europe	4	47	188				
Hours spent by Senior Developer	8	58	464				
Hours spent by System Manager	8	64	512				
Development					1392		
Hours spent by Senior Developer	24	58	1392				
Process Testing					2078		
Hours spent by Translation Systems Specialist	2	32	64				
Hours spent by Project Coordinator in Shanghai	8	25	200				
Hours spent by Project Administrator in Shanghai	8	22	176				
Hours spent by Project Coordinator in Europe	2	52	104				
Hours spent by Project Administrator in Europe	2	47	94				
Hours spent by Senior Developer	16	58	928				
Hours spent by System Manager	8	64	512				
Project Management					2360		
Hours spent by IT Project Manager	40	59	2360				
Support & Installations					456		
Hours spent by CSI Specialist	8	57	456				
Infrastructure					690		
Server for ERP	1	495	495				
ERP connection	1	195	195				
Total Costs Subproject 4				8600		8600	€

7.4.2.10   Plan and organize by quarters

At this point it is decided that the whole project, if finally implemented, can be organized by quarters. In 2016, during the first and second quarter, subprojects 1 and 2 will be implemented. In the third quarter of 2016 there will be a break, and the implementation of the two remaining subprojects 3 and 4 can be for example finished in the first and second quarters of 2017. The following tables summarizes this approach. Note that while the implementation of a subproject "i" is being developed, the process in use is the one after the implementation of the subproject "i-1", so we're already saving some time actually (and therefore costs).

Table 7-XIV. Summary of the project plan, organized in quarters

Period	Year and Quarter	Investment done	Implementation Finished	Process in use
0	2016, end Q1	Initial investment (For Subproject 1)	Subproject 1	Original process
1	2016, end Q2	Investment for Subproject 2	Subproject 2	Process after Subproject 1
2	2016, end Q3	[none]	-	Process after Subproject 2
3	2017, end Q1	Investment for Subproject 3	Subproject 3	Process after Subproject 2
4	2017, end Q2	Investment for Subproject 4	Subproject 4	Process after Subproject 3
5	2017, end Q3	[none, it should be already finished]	-	Process after Subproject 4
6	2018, end Q1	"	-	"
7	2018, end Q2	"	-	"
8	2018, end Q2	"	-	"
…	…	…	…	…

Without entering into more details for now, this is how the project's plan looks at the moment. The orange columns show two investments or implementation sprints can take place in 2016, and two more in 2017. The blue columns show the saved costs, taking into account how much improvements the process will have at that moment. Note the periods are quarters, but we don't know the project's life at this particular moment.
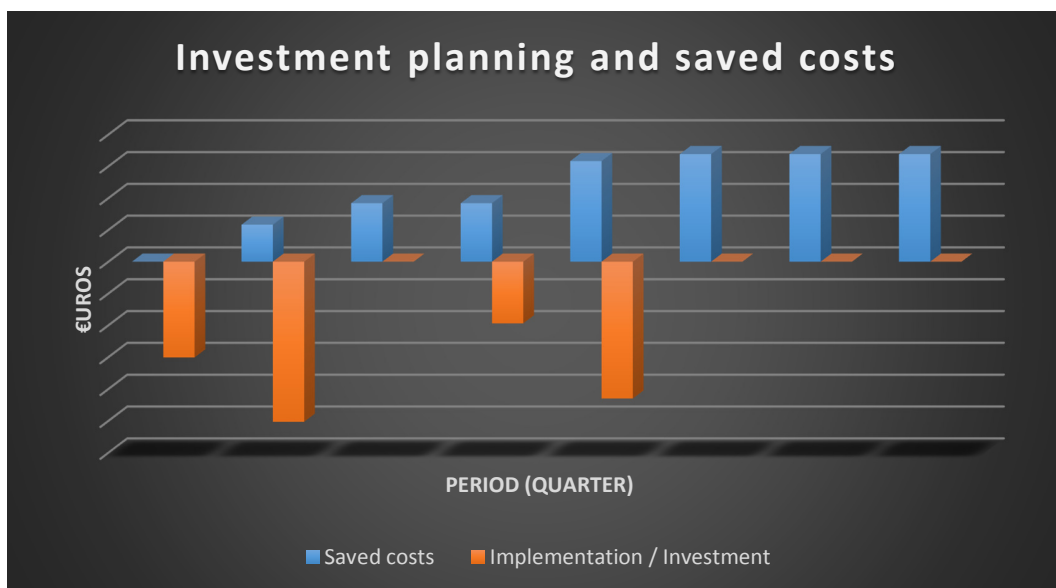
Column chart 7-I. Investment planning and saved costs. Quarterly approach

7.4.2.11   Life of the investment

Life of the investment:

The **life of the investment** or **life of the project** is one of the most important information of an investment. It's the time the investment will take up or generate funds.

This life can be actually only known *a posteriori*, after the event. But if we want to analyze the investment project we need to do an estimation before starting it, *a priori*.

We have three limits for the life of the investment:

1. **End of physical life**
   Once the basic assets of the project have lost performance and efficiency and therefore the quality is significantly decreasing.

2. **End of commercial life**
   Once the main project assets, products or services in production aren't demanded by the market because there's no need that generates the demand or a new product satisfies this need in a better way. Estimating this life might need a market study.

3. **End of technological life (obsolescence)**
   After the appearance of new techniques, processes or systems that develop in a better way the same activity make our asset to be not competitive or obsolete. It's the life period that is harder to estimate because it's difficult to know all the investigation programs in the corresponding fields.

The shortest of the mentioned estimated lifes will be the one to be considered as the life of the investment.

We don't think the **physical life** will be short, because assets like the new servers will have a good performance during **6 or 7 years, or probably more**, if they are well maintained.

The **commercial life** of the product/service is not easy to estimate. Right now we are one of the three suppliers for the client for it, and we used to be the best one. This commercial life could end when the client decides drastically to change the product or supplier, or maybe when the product is no longer giving benefits to the company. There could be even more situations that make this commercial life to be ended due to this changing and global market. However, we think there will be a need to translate this type of mobile communications texts, because new mobile phones and communication systems are increasingly appearing in the market and there is a lot of import/export bureaucracy, norms, legacy and warranties linked to them. We have also to mention that if the client decides to change the format files from XML, XLS and DOC into another, the process

can be adjusted to handle the new format with small efforts. With all in mind and the most important, being cautious, we estimate we can have a commercial life of **4 years as minimum**.

Regarding the **technological life**, the assets and programs will still be working without problems at least **5 or 6 years, or probably more**.

Therefore, the **life of the investment will be estimated to be 4 years**, since it's the shortest of the three values above. A longer life shouldn't be considered at this point, due to the uncertain market conditions. Considering this information, we can start off a new spreadsheet and we add:

Weihua files translation process improvement			
Situation with project:			
Investment life:		4	years
		12	quarters

Table 7-XV. The header of the spreadsheet presents the life of the investment

7.4.2.12   Magnitude of the investment

> ⓘ Magnitude of the investment:
>
> The **magnitude of the investment** is the maximum amount of funds that the project requires, or technically speaking, the maximum value accumulated in negative in the cash flows (including investment).

We don't believe the amounts of the project costs will be a financial problem for the company, especially because they will be split in four periods.

Furthermore, the **investment in new servers will be easily absorbed by the infrastructure of the company**, since they will be used in other processes as well. It's just that we need to include them as part of the project costs because they will be bought and installed from scratch.

Another important consideration is the maintenance costs. Even though we can't estimate how much time the original and new processes take to be maintained, we clearly know that **with the new standard solution, the maintenance costs of the process will be much less**. In the original process, some of the applications that were in use weren't maintainable at all:

- Their creator is no longer working at the company, the hard codes are unfortunately password-protected and we the password is not available.
- Some of the applications don't have a standard source code that is well-known by the support and R&D teams.

A last important point to be considered here is that **the new process is crucial for production staff in the Weihua team, because they have to work after-hours** in order to not send the files late within Shanghai-Europe, or even to the translators or the delivery to the client. It's important to mention here that not all processing times that the new process will safe are actually "waiting times". During the Word Count process, for example, the Project Administrator can do other tasks in other jobs. But it's extremely time-consuming and frustrating when it's already time to leave the office late in the evening and an employee has to wait till a process finishes because the resultant files have to be send to another actor who is waiting for the files or who is working in a different time zone. Hence, it's not really easy to handle all the sending operations when the offices work in different time zones, but we hope that when the new process is up and running, the staff will get a better working atmosphere and hopefully get the smile back in their faces.

7.4.2.13   Secondary investments

Secondary investments:

Secondary investments are the ones normally related to the "working capital", i.e., smaller investments that wouldn't have been needed if the project wouldn't have been implemented. Even if they are secondary, we should pay attention to them because in most cases they represent a similar or even bigger amount that the main investment.

If the situation is stable as it is now, **we don't expect to hire more employees to work on that process**, actually we're just saving some time for them. **We don't expect either to hire more employees on the technical side**, since the process maintenance will be absorbed by the Translation Systems team which, instead of having N processes to be maintained, will have $N+1$.

We need to remind at this point that **there will be three future investments somehow acting as some sort of Cash Flows**: Subproject 2, Subproject 3 and Subproject 4.

7.4.2.14   Cash Flows

> Cash Flows:
>
>   **Cash Flows** caused by the investment are the temporary sequence of funds that are absorbed or generated by the investment.
>
>   This continuous sequence is grouped in periods in order to facilitate the analysis, normally by years.
>
>   Periods are represented by a number that defines the final of the period whom is referring to, i.e., the beginning of the next period. For example, "1" represents the end of the period (normally year) 1, which is the same as the beginning of the period 2.
>
>   It is necessary to "box" every input or output to the beginning or end of a period.

In our project investment we will not consider extraordinary collects nor payments, since we don't think there will be any. But at the end of the 4 years of life of the project, we estimate that the servers will cost 1,000€.

We have to collect this information, as well as some other data, to be added to the spreadsheet.

- Residual values after the life of the investment: **1,000€ (servers)**
- General inflation (yearly): **2,5%, not any special value, just the normal in the environment**
- Cost of the money to the investor (yearly): **6%, being prudent**
- Processing Cost of one job: **as estimated and collected previously**
- Saved Cost of one job: **as estimated and collected previously**
- Amount of Supplier Orders: **as estimated and collected previously**

General inflation:			2,50%	yearly
			0,83%	quarterly
Cost of the money to the investor (r'):			6%	yearly
			2%	quarterly
Process Cost for one job (in €):		Saved Cost for one job (in €):		
43,44	original process		0	original process
36,6	after subproject 1		6,84	after subproject 1
32,63	after subproject 2		10,81	after subproject 2
24,83	after subproject 3		18,61	after subproject 3
23,54	after subproject 4		19,9	after subproject 4
Amount of Supplier Orders:			1020	yearly
			340	quarterly
Residual values after project's life (in €):				
	Servers		1000	

Table 7-XVI. Spreadsheet shows some information that is necessary for the investment analysis

As it was mentioned before, we assume our investments will be split into different quarters during the 4-years life. We collect this information to be added to the spreadsheet as well.

Investments (in €):				
YEAR	QUARTER	PERIOD NUMBER	Description of Investment	Investment
2016	1	0	Initial investment - Subproject 1	-6022,00
2016	2	1	Investment Subproject 2	-10058,00
2016	3	2		0,00
2017	1	3	Investment Subproject 3	-3880,00
2017	2	4	Investment Subproject 4	-8600,00
2017	3	5		0,00
2018	1	6		0,00
2018	2	7		0,00
2018	3	8		0,00
2019	1	9		0,00
2019	2	10		0,00
2019	3	11		0,00
2020	1	12		0,00

Table 7-XVII. Spreadsheet shows the investments in quarters

Regarding the investments, it's good to capitalize them to be able to actually see how much money they will take when their investment period arrives, as well as "accumulate" them. **Our accumulated and capitalized investment is 29031,71€.**

	Without Project - With Project	
Period	Capitalized Investment	Accumulated Capitalized Investment
0	-6022,00	-6022,00
1	-10141,78	-16163,78
2	0,00	-16163,78
3	-3977,77	-20141,55
4	-8890,15	-29031,71
5	0,00	-29031,71
6	0,00	-29031,71
7	0,00	-29031,71
8	0,00	-29031,71
9	0,00	-29031,71
10	0,00	-29031,71
11	0,00	-29031,71
12	0,00	**-29031,71**

Table 7-XVIII. Spreadsheet with capitalized and accumulated investments

After the different process-improvement implementations are done, we will have automatically some saved costs per job. Every saved cost after the implementation of one of the subprojects is bigger than the previous one, because we compare them with the costs of the original process. We multiply this number by 340 jobs, which is the amount of jobs that we prudentially estimated to receive every quarter. The last cash flow includes 1,000€ of the servers residual value.
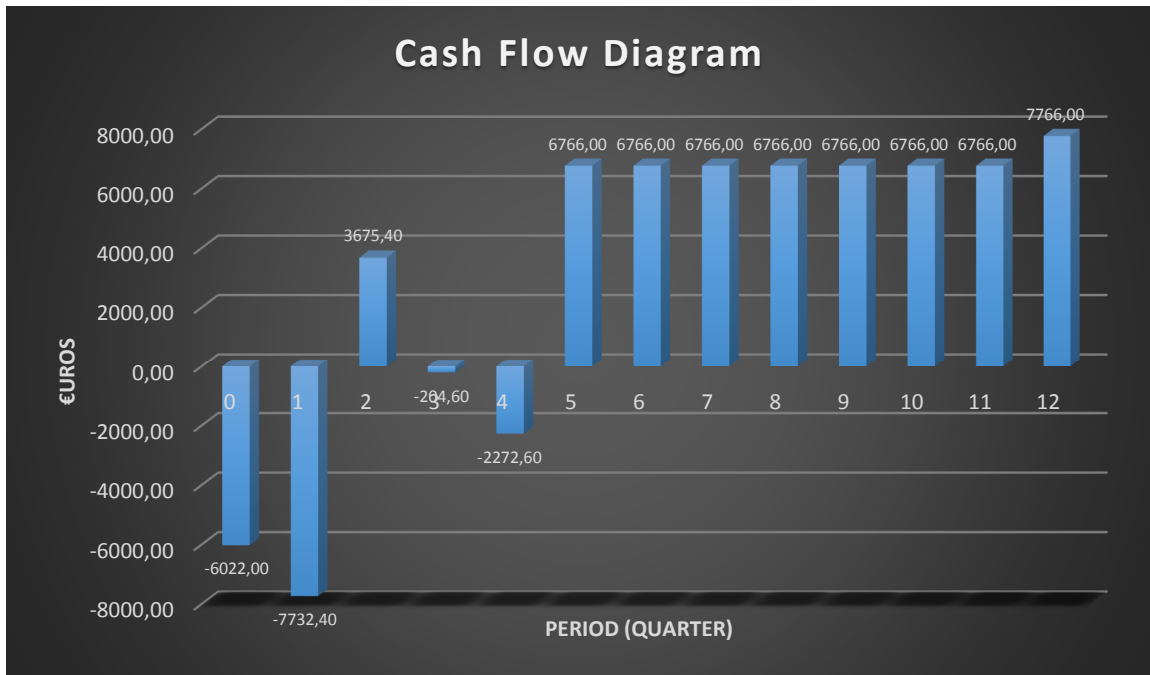
Cash Flows (in €):

YEAR	QUARTER	PERIOD NUMBER	Description of Payment	Payment	Description of earning	Earning
2016	1	0	Initial investment - Subproject 1	-6022,00	-	0,00
2016	2	1	Investment Subproject 2	-10058,00	Saved costs after Subproject 1	2325,60
2016	3	2		0,00	Saved costs after Subproject 2	3675,40
2017	1	3	Investment Subproject 3	-3880,00	Saved costs after Subproject 2	3675,40
2017	2	4	Investment Subproject 4	-8600,00	Saved costs after Subproject 3	6327,40
2017	3	5		0,00	Saved costs after Subproject 4	6766,00
2018	1	6		0,00	Saved costs after Subproject 4	6766,00
2018	2	7		0,00	Saved costs after Subproject 4	6766,00
2018	3	8		0,00	Saved costs after Subproject 4	6766,00
2019	1	9		0,00	Saved costs after Subproject 4	6766,00
2019	2	10		0,00	Saved costs after Subproject 4	6766,00
2019	3	11		0,00	Saved costs after Subproject 4	6766,00
2020	1	12		0,00	Resid. Value + Saved costs after Subproject 4	7766,00

Table 7-XIX. Spreadsheet of the payments and earnings

The Cash Flows will be the differences between the earnings and payments.

Period	Without Project - With Project	
	Cash Flow	Acumulated Cash Flow
0	-6022,00	-6022,00
1	-7732,40	-13754,40
2	3675,40	-10079,00
3	-204,60	-10283,60
4	-2272,60	-12556,20
5	6766,00	-5790,20
6	6766,00	975,80
7	6766,00	7741,80
8	6766,00	14507,80
9	6766,00	21273,80
10	6766,00	28039,80
11	6766,00	34805,80
12	7766,00	42571,80

Table 7-XX. Spreadsheet of the Cash Flows

Column chart 7-II. Cash Flow Diagram

7.4.2.15   Net Present Value (NPV)

Net Present Value (NPV):

The **Net Present Value (NPV)** is a measurement of the profitability of an undertaking that is calculated by subtracting the present (actualized) values of cash outflows (including initial cost) from the present values of cash inflows over a period of time.

If the cost of the money has been conveniently chosen, if the NPV is positive then the project is viable from the financial profitability's point of view. And if it's negative, the project is not viable.

With the NPV we evaluate the absolute profitability of the investment. We find absolute earnings, not an investment's relative percentage.

The above Cash Flows are capitalized, actualized and accumulated and we obtain a **Net Present Value of 37530,72€**.

Period	Without Project - With Project		Present Cash Flow	Accumulated Present Cash Flow
	Capitalized Cash	Accumulated Capitalized Cash Flow		
0	-6022,00	-6022,00	-6022,00	-6022,00
1	-7796,81	-13818,81	-7643,93	-13665,93
2	3736,89	-10081,92	3591,78	-10074,15
3	-209,76	-10291,68	-197,66	-10271,81
4	-2349,27	-12640,95	-2170,37	-12442,18
5	7052,54	-5588,42	6387,70	-6054,48
6	7111,29	1522,87	6314,62	260,14
7	7170,52	8693,39	6242,37	6502,51
8	7230,25	15923,65	6170,95	12673,47
9	7290,48	23214,13	6100,35	18773,81
10	7351,21	30565,34	6030,55	24804,37
11	7412,45	37977,78	5961,56	30765,92
12	8578,86	46556,65	6764,37	37530,30

Table 7-XXI. Spreadsheet with Capitalized, present and accumulated Cash Flows

Net Present Value (NPV):	37530,30

Table 7-XXII. Spreadsheet with Net Present Value

7.4.2.16   Ratio NPV/Present investment

Ratio NPV/Present investment:

This **ratio** indicates the Net Present Value generated by the Present investment, projected by any invested monetary unit. Therefore it measures the relative profitability (while the NPV measures the absolute profitability).

It's especially used when comparing projects of different magnitudes of investment.

The ratio of our project is 1,29€, which means that for every €uro spent as investment, we will obtain, once the project is finished, 1,29€ of profit.

Ratio (NPV/Present Investment)	1,29

Table 7-XXIII. Spreadsheet with Ratio NPV/Present investment

7.4.2.17   Payback periods

Payback:

Payback is measured by the time that takes the investment to be annulled. The Payback value represents the spent time for regaining the initial investment (the time period spent until the accumulated Cash Flows are equal to the investment).

There are two types of Payback:

1. **Simple Payback period** (without making it present)
2. **Present Payback period**

By looking at the previous tables, we clearly see that our Payback periods are:

- Simple Payback period: Period "6", which stands for 1st Quarter of 2018 (**2 years**).
- Present Payback period: Also Period "6", which stands for 1st Quarter of 2018 (**2 years**).

This means that at the end of April 2018 the initial investment will be regained (recovered). This value indicates that the investment is not really risky.

Simple Payback period:	6 Quarters = 2 years
Present Payback period:	6 Quarters = 2 years

Table 7-XXIV. Spreadsheet with Payback periods

7.4.2.18   Internal Rate of Return' (IRR')

Internal Rate of Return' (IRR'):

This measure indicates if the Internal Rate of Return including the effects of inflation is higher or lower than the costs of the money. If it is higher, the project in viable in terms of profitability because it would be like saving the investment in a "bank" that would give us this rate of return.

Our quarterly value of **23,20%** for the IRR' is equal to a yearly value of **69,60%**. This means that investing on this project is profitability viable because it would be like saving this investment in a bank that would give us a 69,60% as rate of return, and nowadays this rate is not higher than a 6%.

Internal Rate of Return' (IRR'):	23,20% (quarterly)		
	69,60% (yearly)		
Increase / Increment	1,50%	Increase / Increment	0,01%
r'	NPV(r')	r'	NPV(r')
0,00%	46556,65	23,15%	32,11
1,50%	39617,41	23,16%	25,83
3,00%	33657,98	23,17%	19,55
4,50%	28524,08	23,18%	13,27
6,00%	24088,09	23,19%	7,00
7,50%	20244,04	23,20%	0,74
9,00%	16903,63	23,21%	-5,52
10,50%	13993,05	23,22%	-11,78
12,00%	11450,43	23,23%	-18,03
13,50%	9223,69	23,24%	-24,27
15,00%	7268,90	23,25%	-30,51
16,50%	5548,87	23,26%	-36,75
18,00%	4032,06	23,27%	-42,98
19,50%	2691,59	23,28%	-49,20
21,00%	1504,54	23,29%	-55,42
22,50%	451,30	23,30%	-61,64
24,00%	-484,99	23,31%	-67,85
25,50%	-1318,79	23,32%	-74,06
27,00%	-2062,61	23,33%	-80,26
28,50%	-2727,22	23,34%	-86,46
30,00%	-3322,00	23,35%	-92,65

Table 7-XXV. Spreadsheet with Internal Rate of Return' (IRR')
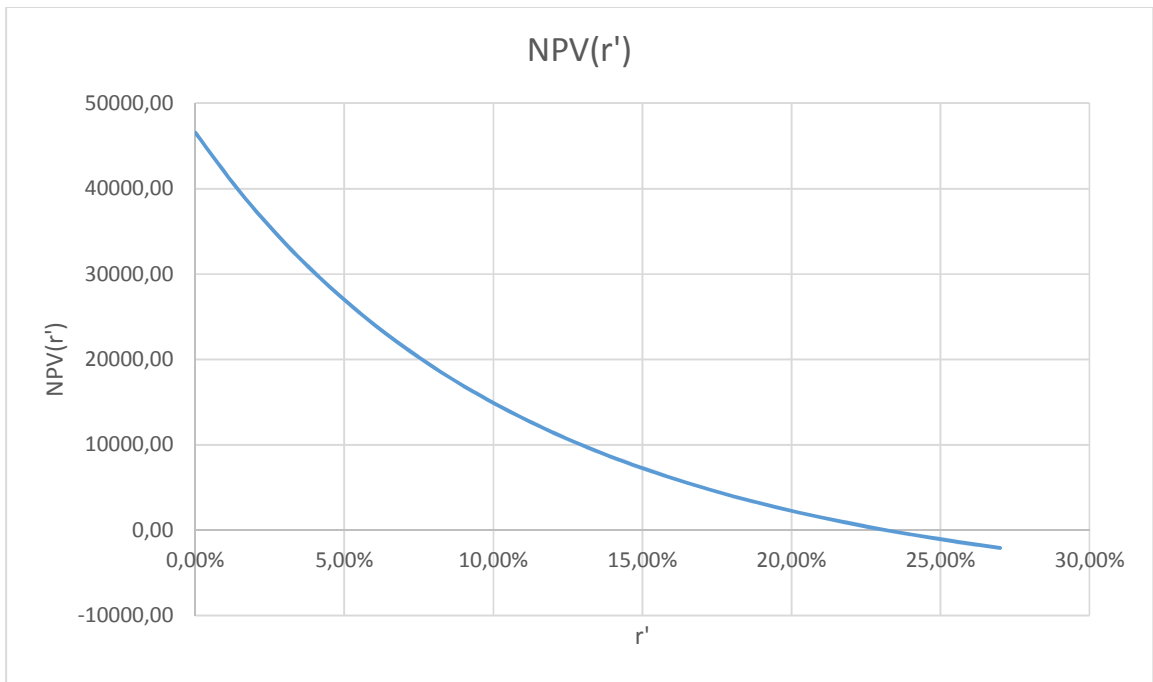
Scatter chart 7-I. NPV(r')

7.4.2.19   Investment Analysis conclusions

After the investment analysis has finished, it's time to summarize all conclusions.

If everything goes as expected, the process improvement project is viable from the economical point of view because the Net Present Value (NPV) is positive. After an investment of **29031,71€,** in the 4 years of estimated project's life the company will obtain funds (after the investment and interests are discounted) by **37530,72€**.

The project is also viable because investing on it would be like saving the investment in a bank that would give us a yearly rate of return of **69,60%**, and nowadays this yearly rate is not higher than a 6%. From this difference (69,60 – 6) the company will obtain our surplus funds.

From my perspective, the investment is recommended. Since it is an incremental improvement, it's not very risky. There is still some margin for the estimated situations to be worse without generating a fund deficit. All estimations have been certainly measured, and for example with the estimated development or testing times we were very cautious, without being really optimistic.

- **Liquidity**:

The project has a high capacity to quickly transform all invested assets in money, without having an important loss of capital. The investment will soon generate funds till recover all initial reimbursement.

- **Profitability**:

The project has a high capacity to generate funds or returns.

- **Risk:**

The project is not very risky. The decision to implement the improvements to the process has not a related uncertainty, partially because the life of the project is not very long, and also because the improvements will be incrementally implemented.

7.4.2.20   IT Project Prioritization Model

After the investment analysis, we also need to collect some information regarding other improvements like the quality, the competence or the work efficiencies. For that purpose, there is an available "IT Project Prioritization Model" that will help us to do so, by taking into consideration all items in the business case described above, as well as additional project-specific parameters. The model has to be downloaded and completed with the project's information regarding products and deliverables. Then, the model has to be uploaded as attachment to the IT Portfolio ticket issue. The project will be then presented at a future IT Project Prioritization meeting.

This is how the IT Project Prioritization Model was completed:

IT Project Priorization Model

Instructions: Please fill out the grey-shaded boxes below. This Excel template is used to discuss and quantify potential business case value, to determine project priority and feasibility.

IT Project

Project Name:	Weihua Process Improvement
ITPORT ticket:	ITPORT-239
Project Description:	Creating new translation process for Weihua including standard functionalities like using scripts, remote runners environments, ERP.

Priorization points

What return on investment will the project lead to?

Profit / Savings	Point Scale	Points
Return on investment > 50%	8	3
Return on investment > 35% < 50%	7	Motivation:
Return on investment > 20% < 35%	6	Some potential return on investment with RemoteRunner solutions
Return on investment > 10% < 20%	5	
Return on investment > 0 < 10%	4	
Already included in sold product	2	
No impact	0	

What will the project consequence or risk be? Can we for example avoid an outage?

Consequence / Risk	Point Scale	Points
Prevent outage	20	6
Improve up-time	8	Motivation:
Increase facilitation of work	4	The project will facilitate the work as well as improving up-time
Improve communication	3	
No impact	0	

Is the aim of the project to increase quality/respond to a customer complaint?

Quality	Point Scale	Points
Prevent loss of a major account	20	8
Prevent severe waste / significantly improve product(s)	8	Motivation:
Prevent significant waste / improve product(s)	6	Reducing the time for processing will give more time for QA and revision steps
Prevent minor waste / slightly improve product(s)	4	
No impact	0	

Will the project give us a better market position?

Competition	Point Scale	Points
Assume the market lead	8	6
Increase market share / open new business solution(s)	6	Motivation:
Improve customers impression of the company	4	We are one of the 3 suppliers working for Weihua, we used to be the best (#1)
Reach same level as competitors	2	
No impact	0	

Will the project enable a more effective work process at the company?

Work Efficiencies	Point Scale	Points
Crucial for personnel	10	10
Save > 60 hrs / week	6	Motivation:
Save > 30 hrs < 60 hrs / week	4	All involved (Shanghai and Warsaw) staff works over time everyday, otherwise we would need to recruit more staff
Save > 5 hrs < 30 hrs / week	3	
Save < 5 hrs /week	2	
No impact	0	

Total Prioritization points	33

Feasibility points

How easy is it to run the project and fulfill set targets?

Feasibility	Point Scale	Points
Easy to conduct, several similar projects have been performed. The project is quick to conduct.	10	6
Straight forward process, some risks but manegable. The project is short to medium in regards to time.	8	Motivation:
Medium difficulty level, major risks can be identified. The project will take medium to long time to conduct.	6	At this stage we are just estimating an average
Difficult to conduct, complex risks, same level as building a space ship. The project will take medium to long time to conduct.	4	
Very difficult, unknown risks, same level as to build a time machine. The project will take long time to conduct.	2	

Project Prioritization

Priorization plot
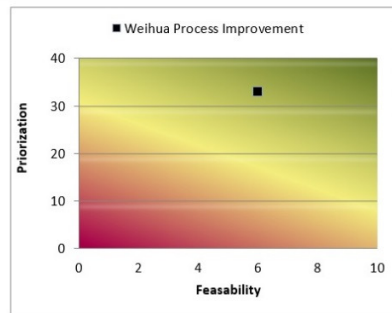
Budget / Funding	
Fully-funded by Customer	
Partially-funded by Customer	
Company-funded	X

Image 7-II. IT Prioritization Model filled

The project will be prioritized according to **33 points in Prioritization** and **6 points in Feasibility**.

7.4.3   Prioritization Meeting

To facilitate the business-customer requirements, with the IT technical aspects, an IT Project Prioritization meeting needs to be scheduler and conducted. Typically, these meetings are conducted every two weeks according to a scheduled placeholder.

Purpose: To gather IT Management and business stakeholders to review and quantify the IT project request in terms of the business case value, expected outcome, priority and feasibility, as to be able to compare this request with other project requests ongoing and in the backlog.

Attendees: Project Requestor, IT Manager, R&D Development Manager, IT PM Team Lead, System Manager (if project request relates to an existing system), Business Stakeholders (optional).

Expected outcome: An agreement on whether or not the project request is a valid IT project request. An agreement of the IT project request's business case value, priority and feasibility, by both IT Management and the business stakeholders, as to update the company IT Project Prioritization Model.

Process for achieving the outcome: The IT project requestor will present the IT Project Prioritization Model (Excel file) for discussion among involved stakeholders and IT Management. This discussion benefits from having both IT and the business owners present to review the initial prioritization and feasibility values, and refine them during the meeting.

After the IT Project Prioritization meeting, the IT Portfolio ticket can be either:

- **Confirmed** as a valid project request and moved to the project Backlog with all other project requests.
- **Rejected** as an invalid project request, based on the business case and meeting discussion.

Our particular project was confirmed as a valid project request! It was agreed that the project should be split into several smaller subprojects, to be prioritized in sprints. The most important parts would be solved first.

7.4.4 Classification

During the IT Project Prioritization Meeting the process improvement was accepted as a project and the responsible employees of the teams that were involved in the production process were asked to provide more information so the project could be categorized with the use of the "Project Classification Model". From that moment on, the project passed for different phases according to the IT Project Management process.

Project Classification Model

A project is classified according to the Classification Model. The model takes into consideration budget (excluding internal resources), internal resources and complexity level. To establish a project classification; start with determining classifications for the three parameters in the model. The model will then weigh the parameters and establish a project classification.

External Budget/Resource classification

Budget	BC
0 - 1 000 EUR	1
1 000 - 5 000 EUR	2
5 000 - 50 000 EUR	3
50 000 - 100 000 EUR	4
Over 100 000 EUR	5

BC: 1

Internal Budget/Resource classification

Man hours (internal)	RC
< one person full time for one week	1
> one person full time for one week	
< one person full time one month	2
> one person full time one month	
< one person full time three months	3
> one person full time three months	
< one person full time six months	4
> one person full time six months	5

RC: 4

Complexity classification

Complexity	CC
internal IT & continuation OR	
internal IT & pre-investigation	1
internal (one office or section) & continuation OR	
internal (one office or section) & pre-investigation	2
internal (multiple offices/sections) & continuation OR	
internal (multiple offices/sections) & pre-investigation OR	
internal (one office/section) & new development OR	
external & continuation	3
internal (global project) & continuation OR	
internal (global project) & pre-investigation OR	
internal (multiple offices/section) & new development OR	
external & pre-investigation	4
internal (global project) & new development OR	
external & new development	5

CC: 4

Project classification: 3

Image 7-III. Project Classification Model filled

7.4.5   Project Process

With a resultant value from the classification that is "3", we will need to follow the Project Process the one named "Process 2". See the table below.

Table 7-XXVI. Association of Project Classification and Project Process

Project Classification	Project Process
1-2	1
3-4	2
5	3

Process 2 is the most common process. For projects that are larger but still not more than averagely complex. It includes **Gate 1**, **2**, **4** and **5**.

7.4.6   Project Start

Now that all previous steps are finished, the Project can have its start. In the next chapter we will deeply see how the project evolves through the Gate Process.

8. THE GATE PROCESS

8.1   Introduction to this chapter

In the eighth chapter of the project we will describe the most relevant steps that have been made so far during the real project's life, as some of the subprojects have already been completed. We will go through the "**Gate process**" part of the project that has been explained in a previous chapter, but putting it in practice in a real project.

8.2   Objectives of this chapter

At the end of the chapter, we should be able to:

• Understand all steps that are followed during the implementation of the first two subprojects, since they are started until they are finished and closed.
• Identify the most important aspects of the project process with the methodology that has been described.

8.3   The Gate process in the actual project

8.3.1   Initialization

All details of the project's initialization are presented in the Gate 1 meeting, which takes place at the end of this initialization phase. Before continuing, it has to be clear that there is enough information to start with the project, and also that there aren't unanswered questions.

8.3.2   Gate 1

In Gate 1 meeting, the Project's information from the pre studies, prioritization meeting and project's classification is officially presented. Discussions regarding business case, project deliverables, time plan and budget take place too. At the end of the meeting, the decision is "GO". See a few images representing the topics for discussion.

Date: January 2016
Project name: Weihua Process Improvement

Agenda:
← Business case
← Project prioritization
← Project classification and charter
← Project deliverables
← Project risks
← Project timeplan
← Project budget
← Decision

Gate 1
Initialization phase
GO or NO-GO

PM: Jason
SM: Nicholas
PO/PS: Erik
Stakeholders: Chenwei

Image 8-I. Slide of the project's presentation

It's important to bring up again all information about the project and present it again, because there could be assistants in the Gate 1 meeting that are not aware of all details, or they need some reminders. In addition, a Newsletter will be sent to all stakeholders to keep everyone informed. The business case is clarified again using short sentences and with the help of colored graphical elements.

Profit	• Save time and administration for Weihua production, both in Shanghai and Europe • Some potential return on investment with new techs like Remote Runner
Consequence/risk	• Automated and easy-to-use tools • The project will facilitate the work as well as improving up-time
Quality/reclamations	• Reducing the time for processing will give more time for quality checks and revision steps • Standarizing automation processes reduces manual steps that can lead to human mistakes
Competition	• We are one of the three suppliers working for Weihua, we used to be the best (#1) • Reducing the time for processing will reduce mistakes as well as any late deliveries
Work processes	• Simplify / Standardize the process • Reduce the over time works, at the same time improve the staff mood

Image 8-II. Business case

The punctuations that we obtained in the project classification model, which lead us to follow a particular project process, are also shown again.

Project classification

Classification	Criteria & motivation	Rating
External Budget/Resource	• Zero external budget, but internal budget	I
Internal (CBG) Budget/Resource	• > One person full time three months • < One person full time six months	4
Complexity	• Internal multiple offices / sections & NEW development	4
PROJECT CLASSIFICATION		3

Project charter

Scope	• **New automated process for Weihua files, handled by Weihua production team**
Purpose	• Time saving and increase efficiency within Production group
Limitations	• Based on existing solution which is non-maintainable

Image 8-III. Project classification

We briefly mention again the project deliverables.

Project deliverables

Deliverable
New automated scripts for the process taking place in Shanghai side, compatible with Remote Runner
New automated scripts for the process taking place in Europe
New Remote Runner server
New Database indexing server to speed up matching
New ERP solution that Shanghai can use

Image 8-IV. Project deliverables

We prepare a project timeplan as accurate as possible. It can be changed or adjusted in the future, but it's better to estimate it.

Event	Planned date	Event	Planned date
Gate 1 *Initialization*	Phase 1 Beginning of January 2016	**Gate 1** *Initialization*	Phase 2 Beginning of May 2016
Gate 2	Phase 1 End of January 2016	**Gate 2**	Phase 2 End of May 2016
Gate 4	Phase 1 End of March 2016	**Gate 4**	Phase 2 End of June 2016
Project event	Phase 1 Release date 20/04/2016	**Project event**	Phase 1 Release date 24/08/2016
Gate 5 *Finalization*	Phase 1 End of April 2016	**Gate 5** *Finalization*	Phase 1 End of August 2016

Image 8-V. Project timeplan, phases 1 and 2

The purpose of the meeting is to review the project information and possible receive a "GO".
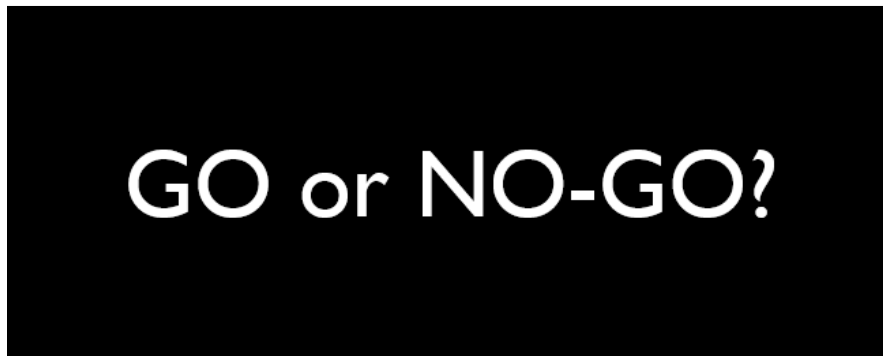

Image 8-VI. End of the meeting. Do we have a "GO"?

92

8.3.3   Specification & requirements

In Gate 2 the approval and revision of the project brief has to be done. It is about planning and the design of the project details where the time and budget plan must have a 10% accuracy. The project will be broken down into specifications and requirements.

Every development in an IT system has as start point a phase where the problem is being localized and where the problem resolution is being well defined by specifying the requirements.

The main objectives in all requirements specifications are:

- Determine all requirements from the organization. A requirement is the user's need for solving a problem or for achieving an objective.
- Describe in a detailed way all the operations of the system, narratively and graphically.

8.3.4   Gate 2

The meeting starts with a follow-up from previous gate: Business case, project classification, stakeholder matrix and communication plan, etc.

The project team is presented, as well as the Work Breakdown Structure. The project timeplan is reviewed and slightly adjusted if needed. The IT Project Manager shows also the budget status with the meeting attendees. He/She shows the Baseline costs and the amount of Baseline that still hasn't been touched at that moment. The hours already spent by the resources are also presented, comparing actual work with baseline work. The project's estimates are revised, according to the deviations. Requirement Specifications and Technical Specifications should be already finished at that time, as well as Test Plans. A "Specifications and Test Plan" matrix is presented. Implementation, Handover and Deployment plans are also discussed. Training and Documentation Plan are described.

Does the project continue? A decision has to be made at the end of the meeting!

See a few images representing the discussed topics.

Image 8-VII. Slide of the project's presentation

1	• Update project documentation • Ongoing
2	• Specifications' establishment and tasks' assignment • Done
3	• Create/send Newsletter project launch • Done
4	• Schedule Gate 2 • Done
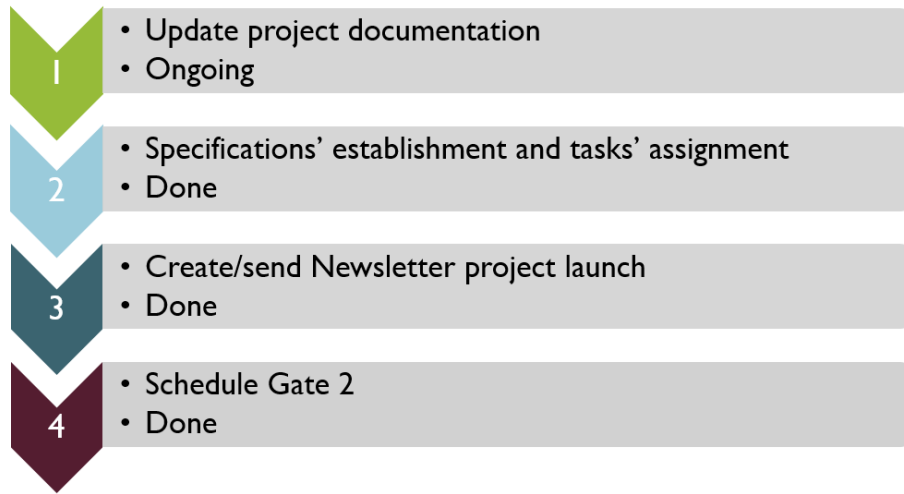
Image 8-VIII. Follow-up from previous gate

Project Manager

• Jason
• Spent: 10 hours
• Baseline: 40 hours

Translation Systems Specialist	R&D	System Manager	CSI (servers)
• Juan / Carles • Spent: 4 hours • Baseline: 16 hours	• David • Spent: 7 hours • Baseline: 27 hours	• Nicholas • Spent: 4 hours • Baseline: 12 hours	• Matts • Spent: 2,5 hours • Baseline: 25 hours
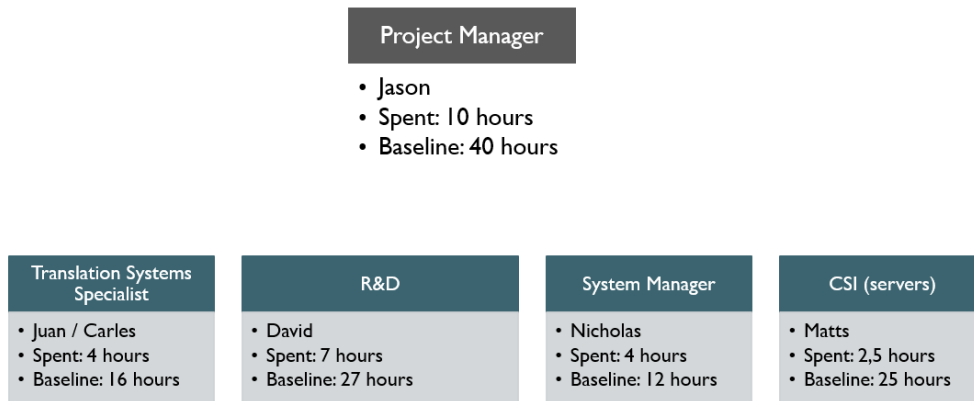
Image 8-IX. Project team and spent hours

Deviations

Scope/deliverables	None
Time	None
Cost	None
Resources	None

Image 8-X. Deviations status

Specifications and Test plan - status

	Yes	Remaining tasks with deadline
Requirement specifications (RS) completed?	X	
RS approved by SM and/or project owner?	X	
RS approved by customer/project sponsor?	X	
Technical specifications (TS) completed?	X	
TS approved by R&D and/or supplier?	X	
Test plan conducted?		
Test plan approved by ISYT/TSYS and/or acceptance tester?		Still waiting for the Test plan

Image 8-XI. Specifications & Test plan status

Implementation plan

Activity	Responsible
Send release information	Project Manager
Production server testing	Project Manager/ISYT
Possible bug fixes	Project Manager/R&D
User acceptance testing	Project Manager/ISYT

Handover plan

Activity	Responsible
Hand-over to support (SM, ISYT SM, ISYT TL)	Project Manager

Image 8-XII. Implementation & Handover plan responsibilities

Continue project?

Image 8-XIII. End of the meeting. Do we continue with the project?

95

8.3.5   Project conduction phase

When requirements and specifications are approved in Gate 2, it is time for development to be done.

8.3.6   Gate 4

The Gate 4 meeting starts with a follow-up from previous gate meeting. Deviations in terms of scope, time, costs and resources are shared and discussed. Hopefully the costs are still below the planned budget. With this Gate meeting we close the development phase if everything is alright, so there are some plans to be discussed: implementation, handover, deployment, training and documentation. We are close to the end of the project, so hopefully we can continue to the implementation phase.

Image 8-XIV. Slide of the project's presentation

1	• Update project documentation • Ongoing
2	• Start the Testing phase • Done
3	• Create/send Newsletters • Done
4	• Schedule Gate 4 • Done
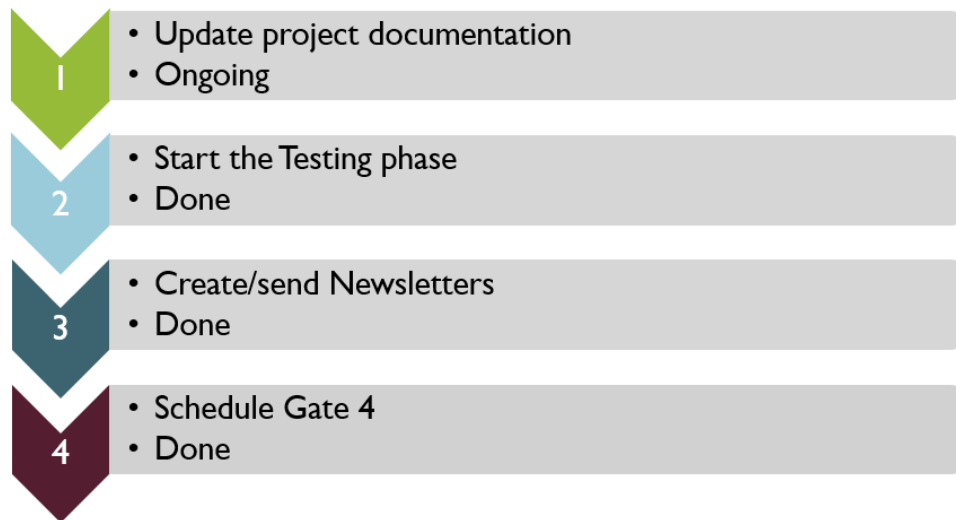
Image 8-XV. Follow-up from previous gate

Deviations

Scope/deliverables	None
Time	None
Cost	More R&D time for bug fixing, but less PM time
Resources	None

Image 8-XVI. Deviations status

Deployment plan

Activity	Responsible
Send out final message that system is available	Project Manager
Inform users where they can find User Guides	Project Manager
Creation of new Component in the ticketing system for support	Project Manager
Send out Feedback survey	Project Manager

Image 8-XVII. Deployment plan responsibilities

Image 8-XVIII. End of the meeting. Do we continue with the project?

8.3.7   Implementation

Implementation and testing of the service/product, and preparing to close the project.

8.3.8   Gate 5

After implementation, testing and deployment, it's time to consider if the project can be closed. Again, it's important to review the handover and documentation plans and make sure they have been applied. A Newsletter is normally used to inform stakeholders about the project status once it has been finished.

Image 8-XIX. Slide of the project's presentation

- **1** • Update project documentation
  • Done

- **2** • Conduct Users' Training Session
  • Done

- **3** • Create/send Newsletters
  • Done

- **4** • Schedule Gate 5
  • Done

Image 8-XX. Follow-up from previous gate

Release plan

Plan	Outcome
Implementation plan	Implementation has been completed according to plan.
Operations hand-over plan	Hand-over meeting with TSYS TL, TSYS & SM was held.
Deployment plan	Deploy happened according to plan.
Training plan	Training was held and mainly conducted by Juan.
Documentation plan	Documentation is updated.

Image 8-XXI. Release plan and outcomes

During the Gate 5 meeting the estimations of the whole project will be analyzed: originals and reviewed. Another important topic is the budget, so the baseline and the actual budget are presented. Regarding the actual budget, some figures are presented to see in which work types it is mostly spent, and for example the actual time spent by each project resource.

As a last revision of the project, the lessons learned meeting is prepared with a list of a few topics that have been so far collected by the project resources, in terms of Technical Aspects, Project Management and Management.

For example, it's very nice to know what makes the developer's life a bit easier, or what has been stopping him to make a good progress. This will help the Project Manager to plan accordingly in future projects.

Documentation, transparency, testing, communication, etc., many aspects have to be considered when preparing a lessons learned meeting. A date for that meeting is agreed so it can be scheduled.

If all topics are satisfactorily achieved and there are no deviations, it's time to close the project!

Image 8-XXII. End of the meeting. Can we close the project?

8.3.9   Project completion/closure

The assignment is completed. The service/product is implemented and tested, and the documentation is completed. Once a project has passed Gate 5 it is permanently closed. If any changes need to be done in the delivered service/product, they must be included in a new project, or treated as single Change Requests.

A very symbolic action is done during the project closure. The IT Project Management team members own a very nice "Wall of fame" which consists on a ball tube for the closed projects. Every IT Project Manager has balls of a different color, and the one who was responsible of that particular project throws one new ball there. The goal for 2016 is to have 75 balls!

Picture 8-I. IT Project Management Wall of Fame. Tube of closed projects

9. DIFFICULTIES

At this point we can mention the main difficulties that appeared during the project's implementation. Actually there haven't been any important difficulties at all, because all handicaps or difficulties that are listed below have been highly overcome and they even become profitable. Anyway, if I had to mention a bunch of them, these would be:

Big process improvement project:

The main difficulty was that many different resources, offices, systems, processes and infrastructure are involved in the same project. This makes the project's scope to be big, with many different things to take into account when planning or estimating and therefore it's hard to communicate with all stakeholders and satisfy them all. Fortunately, the process was correctly split into different parts that were manageable. At the same time, this characteristic of the project makes it unique and more challenging.

Many tools and methodologies were new for the student:

One of the difficulties was that the student was not an expert on all the tools that have been used. Some parts of the project management methodology, for example, have been learned from scratch. So a big amount of time has been invested for consulting this information in order to learn it and document it properly. On the other hand, it's always funny and interesting to learn something new.

Lack of important information:

Another difficulty was that even though the project takes place as a real project in a company, not all the topics that are documented in the project's memory were already available. Sometimes the information didn't exist yet, it was not very detailed or it couldn't be taken out of the company because it was sensible.

Estimations:

It was the student who estimated the major part of processing and improvement times in this project, and it was not always an easy task.

Documentation language:

English language is not the student's mother tongue, so in a few cases it was a little bit harder than usual to clearly express an idea, to find a suitable word, or to document some particular part of the project's memory.

10.   POSSIBLE IMPROVEMENTS

In this section some possible improvements that can be applied to the whole translation process to make it even better will be described. With time and efforts, the process handling can grow with a big amount of new functionalities. It's crucial and very important to consider all requests coming from production since they are the ones who daily use the process.

- Implement and finish the Subproject 3 will provide the users in Europe's side with a first improvement that can save more than 3 hours of administration tasks per week. The changes are not really complicated to be applied: the introduction of some existing technology into some DOS scripts that are compatible with the current infrastructure (terminal server and remote runners). This way, the creation of Supplier Orders in the ERP and the extraction of the translations from the Database will be done automatically by scripts. The implementation of this Subproject is economically viable and the project is profitable, as it was concluded in the investment analysis.

- Implement and finish the Subproject 4 will reduce a little bit more the time spent on the process. In fact, around 45 minutes will be saved weekly. This time, though, the solution is a little bit more complicated, as it implies that Shanghai office has access to the company's ERP or otherwise that a new system is developed to make the Supplier Order handling be integrated with the ERP. The implementation of this Subproject is also planned.

- Another possible improvement would be to develop a platform to connect the file-export system on the client's side with our internal Delivery Control System, which logs and distributes translation jobs, collects source files and delivers translated files to a specific location. It would be a good step so everyone at the company or at the client's side would have access to see the status of a particular job or order, so the information would be unique and potentially shared.

- One of the process steps that takes more time to finish is the visual check of the files. The intention here would be that at least for the XML format, which is very standard, an automatic checker or XML parser is introduced. This parser would go through all received files (or translated ones), check their contents comparing them to a pattern (or DTD) and log in some sort of text file if the structure of all the files is correct, and if not, which ones aren't respecting the structure. This would also save a lot of process time.

- Another improvement can be the introduction of an internal technology called TIGER, which stands for "Translation ImaGE Reference". TIGER is a system which uploads to a server the reference images coming in the client source's package. Then, when the translator is working on the Translation File, the reference image of a given segment is downloaded from the server and displayed by the Translation File. This would really improve the quality of the translations for Weihua, since all translators would have the reference images easily displayed and therefore the translations would be more accurate.

11.   CONCLUSIONS AND RESULTS

Now that the project has finished, it's time to collect and present here all conclusions and results.

The quality of the whole translation process is improved because a standard solution is applied. The new process is much more maintainable than the original one and it also saves maintenance time. Introducing automatic steps leads to a better and stable process where human mistakes are reduced, and therefore the quality of the whole service is higher, with less late-deliveries, better translations and better customer satisfaction, among others. In addition, after the project's implementation the process phases are much better defined and understood by the process-responsible persons in the IT team. The continuous improvement guidelines will have to be followed in order to review the whole process constantly and see if the results are the expected ones or if something has to be improved.

In order to increase the security of the system, some situations that lead to risky scenarios are reduced or totally deleted. For example, the documentation of the new process steps is a "must do" in the project management that we follow, and therefore the users will have available instructions after the project's completion and this will trigger less exceptions. The new process is much more similar to other big processes than the old one is, and by the reduction of lead times we make sure the administrators can plan the project dates accordingly so there will be less human mistakes due to stressful situations with tight deadlines.

The process efficiency is improved because implementing the project saves **688,5 estimated hours** of translation process every year, which correspond to **20298€**. The original process is replaced by a new one which is user-friendly, technologically advanced as well as much faster, for example including parallel processing when it's possible.

If everything goes as expected, the process improvement project is viable from the economical point of view because the Net Present Value (NPV) is positive. After an investment of **29031,71€,** in the 4 years of estimated project's life the company will save funds (after the investment and interests are discounted) by **37530,72€**.

The project is also viable because investing on it would be like saving the investment in a bank that would give us a yearly rate of return of **69,60%**, and nowadays this yearly rate is not higher than a 6%. From this difference (69,60 – 6) the company will obtain our surplus funds.

The project has a high capacity to quickly transform all invested assets in money, without having an important loss of capital. The investment will soon generate funds till recover all initial reimbursement. The project has a high capacity to generate funds or returns, and it is not very risky. The decision to implement the improvements to the process has not a related uncertainty, partially because the life of the project is not very long, and also because the improvements will be incrementally implemented.

During the implementation of the project, the project management methodology has been learned and put in practice. All phases have been followed, from the initial idea till the development and implementation, and this ensures that the delivery is the same thing that was requested.

12.   BIBLIOGRAPHY AND REFERENCES

12.1   University subjects material

- Direcció Financera, 2012-2013. Universitat de Vic.
- Organització del Treball i Factor Humà, 2012-2013. Universitat de Vic.
- Disseny, Planificació i Gestió de Sistemes de Producció i Logística, 2013-2014. Universitat de Vic.

12.2   Websites

12.2.1   Investment analysis and project costs

- http://ingenieriacivil.tutorialesaldia.com/evaluacion-financiera-en-la-gestion-de-proyectos-el-valor-presente-neto-vpn/ (August, 2016)
- http://www.gerencie.com/valor-presente-neto.html (August, 2016)
- http://www.expansion.com/diccionario-economico/valor-actualizado-neto-van.html (August, 2016)
- https://www.moneyadviceservice.org.uk/en/articles/understanding-investment-fees (August, 2016)
- http://www.webopedia.com/DidYouKnow/Hardware_Software/how_much_will_a_server_cost.html (August, 2016)

12.2.2   Vocabulary, syntax and translations references

- http://forum.wordreference.com/threads/picture-or-figure-in-articles.2483299   (July, 2016)
- http://www.thesaurus.com/ (June, July and August, 2016)
- http://www.softconference.com/submissions/AABB08/Director/ObjectiveVerbs.htm (August, 2016)
- https://translate.google.com (June, July and August, 2016)

12.2.3   Icons and diagrams

- https://www.google.es/search?q=icons&biw=1600&bih=775&source=lnms&tbm=isch&sa=X&ved=0ahUKEwj1i4-m0vjOAhWBtRQKHavLDTwQ_AUIBigB (July and August, 2016)
- https://www.yworks.com/products/yed (July and August, 2016)

12.3   Company material

- The information about the company, its history and business, its organization, its office pictures, its processes, etc has been extracted from the company's internal documentation like catalogues, newsletters, CMS articles and CMS spaces.