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MASTER THESIS

IMPLEMENTATION OF A PROJECT MONITORING TOOL

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Abstract

In a context of growing need of efficiency and reliability, the companies and more specifically the nuclear specialized ones are now using project-monitoring tools to ensure the on time delivery of their projects, their quality and the control of their costs. Following these objectives, the ASSYSTEM E&OS Company, one of the world leader in the consulting in the nuclear field, has decided to implement the ORACLE's solution: PRIMAVERA. ASSYSTEM E&OS has chosen to carry out one of its pilot project in the technical department of Tours in order to assess the difficulties of changing their processes and the added value of such a tool. My mission consisted in being the bridge between the operation realization team and the pilot unit in Tours both in the technical and change management aspects.

As for any job, my first task was to understand the specificities of the company and master the tools that were to be implemented. Moreover, I had to be also trained to the project management by learning the PMBok (Project Management Body of Knowledge) in order to be more aware of the major tasks performed by the management teams. A second step of tool specification followed this first one of subject appropriation. In this step, it was paramount to understand the needs of the teams and decide which projects were in the scope of the pilot phase. To do so, several meetings were organized. The main goal of these meetings being the clarification of the definition of the specific requirements of the Tours' agency. Besides, those meetings have secondary goal of assessing the tools' abilities and their adequacy with our requirements. Following this specification phase, we had to organize a course for the different software including the preparation of methods handbooks.

The last, but not the least, part of the process was to carry out the pilot project. I focused on scheduling the projects on PRIMAVERA P6 and monitor them all along the pilot phase. As a relay between the implementation team and the pilot one, I continuously needed to accompany the change process, help in the technical appropriation the different team leaders, and project managers. During that while, I was improving my skills and sharing the results with my tutor and the implementation team. It helped developing my capacities of listening to the needs and my adaptability to any situation including the troubled ones. Because of the dates of my internship, I could not follow the pilot until the end. However, a new trainee who especially focused on the implementation of the UNIFIER software is currently continuing my job. I will accompany him all along his internship and provide him guidance to successfully implement this tool.

Key notions

- Project-monitoring
- Schedule
- Nuclear
- Change management
- Resource Management
- PRIMAVERA P6
- PRIMAVERA Team Member

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1. Introduction

The new needs of the companies in terms of efficiency and reliability in their projects have led to the wild spreading of the project monitoring tools. Especially in the nuclear field, where the constraints in terms of cost and reliability, such tools seem now to be vital. Therefore, the ASSYSTEM E&OS Company, one of the world leader in the consulting in the nuclear field, has decided to implement the ORACLE's solution: PRIMAVERA. Four different software compose this solution: PRIMAVERA P6 for the scheduling of the projects, Team member that allows the workers to inform in real time the progress of the projects, UNIFIER for the contract monitoring and BI publisher for the reporting of the projects. ASSYSTEM decided to carry out one of the pilot project in the technical department of Tours. The aims of this pilot are multifaceted: define precisely how the tools can be adapted to the processes of the company, assess how much those processes have to change to improve the practices, assess the added value of the tools and the ratio between cost of the solution and expected economic benefit.

The company hired me in order to follow the implementation of the tools in the technical department of Tours and help carrying out the change management especially by helping all the stakeholders to master the different software and show how it can benefit them. My job inside the company is being a relay between the execution team that has the knowledge upon the PRIMAVERA solution and Tours' agency. In a first phase, I will focus in the mastering of the tools that are to be implemented and the learning of the project management knowledge through the reading of the PMBok. After this phase will come the main part of the work: the requirements definition, the formation of the users and the scheduling and monitoring of the projects beforehand chosen according to their pertinence with the pilot purpose.

To report the work effectively done and the conduct of this internship the following document will begin with a presentation of the host company, ASSYSTEM E&OS. This part will be followed by a description of the objectives of the internship and the tools implemented. After this description, we will focus on the conduct of the project and the activities performed in this time. Finally, we will conclude this report by an assessment of the economic investment and forecast return on investment and an observation of the results obtained and the remaining efforts to be engaged.

2. The host company

ASSYSTEM E&OS (Engineering and Operation Services) is an independent engineering company specialized in engineering counseling. Preferred partner of several of the biggest industrial groups of the world and especially in Europe, ASSYSTEM's favorite areas are the conception and development of services products like engineering deliverables but not only. They can also act as project managers on industrial projects in a wide range of fields.

2.1. Description of ASSYSTEM E&OS

Historically created in 1966 under the name ATEM, the company's activity focused on the commissioning of industrial units, especially the commissioning of nuclear power plants. The initial growth of ATEM was thus due to the investments in the nuclear field of the French government after the first oil shock of 1973. In order to continue the process of growth, the company diversified its activities in the project monitoring since 1981, in the computing tools since 1989, etc... The fusion between ATEM and ALPHATEM (subsidiary company of COGEMA, nuclear specialist company) resulted in the birth of ASSYSTEM, as it is known today. The company was introduced in the stock market in 1995.

ASSYSTEM, directed by Stéphane AUBARBIER, employed in 2017 more than 12,200 workers, engineers for most of them, all around the world with offices in 20 different countries. The wild spreading of ASSYSTEM is shown in the *figure 1* below. In 2016, the company achieved a turnover of 955 million euros with a sectorial repartition that we can see in the *figure 2* below. The diversification of ASSYSTEM's activities was a fundamental decision for explaining the rise of the company that we know today.

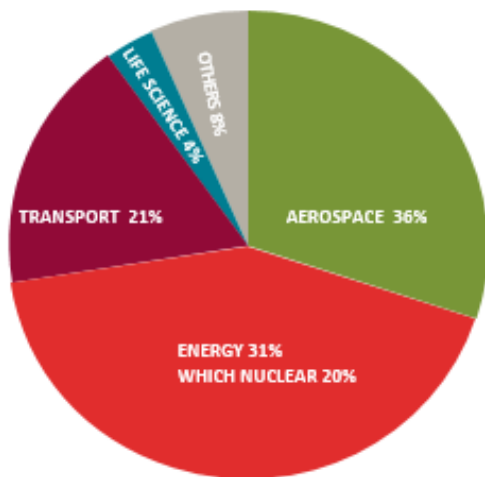


Figure 2: Main activities of ASSYSTEM in 2016

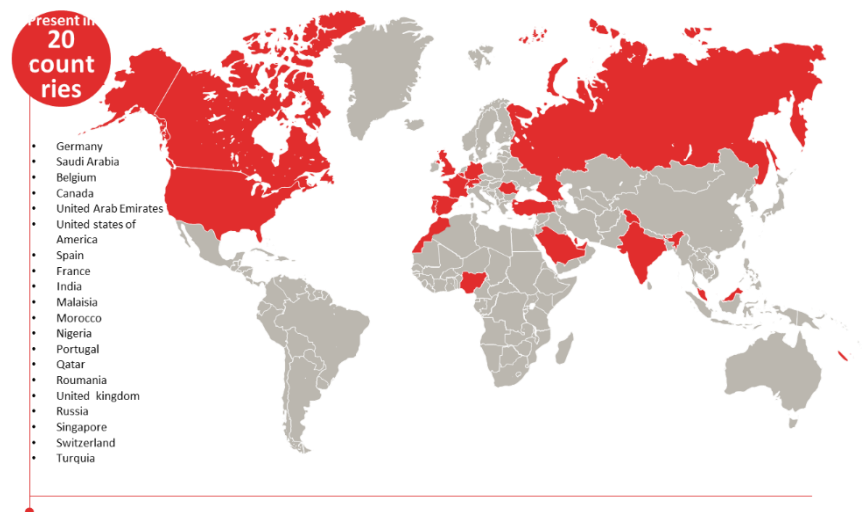


Figure 1: Countries where ASSYSTEM is present in 2017

The internal decomposition of ASSYSTEM is done in so called Business Units (BU), which are linked to a specific activity field. For instance, the BU, which has the highest weight in economic terms, is the nuclear one. The division between several Business Units has the aim of being as fit as possible according to the demands of clients. Indeed, every client, depending on its field of activity has different requirements on the projects and deliverables. To give them this flexibility ASSYSTEM has been divided

in those BU which can be seen as poles of the company. Every agencies worldwide depends of a BU. For instance, the agency that is located at Tours, where I was hired for my internship, is one of the agencies of the nuclear BU.

2.2. Description of global ASSYSTEM's activities

2.2.1. Internal politics of ASSYSTEM

The activities of the group are diversified as shown in the *figure 2*. However, in 2017 the enterprise split in two:

- ASSYSTEM E&I (Energy and Infrastructure) which gathers the activities around the energy fields: nuclear, other energies, buildings, oil & gas, life sciences, project monitoring (see *figure 3* below)
- ASSYSTEM Technologies which gathers the activities around the transport and the aerospace

For my internship I am integrated in ASSYSTEM E&I, that is why I will focus my statements on this particular division. The aim of ASSYSTEM's politics is to have a continual growth in the nuclear field but not only. Indeed, to grow and become a top-tier plan engineering consulting company all around the world ASSYSTEM must widen its activities and clients. To achieve this aspiration, the company has invested in several fields of energy like renewables, oil and gas, infrastructures construction, but also in other fields like the life sciences and more recently in the project monitoring. The percentages of these activities in the turnover are presented in the *figure 3* below.

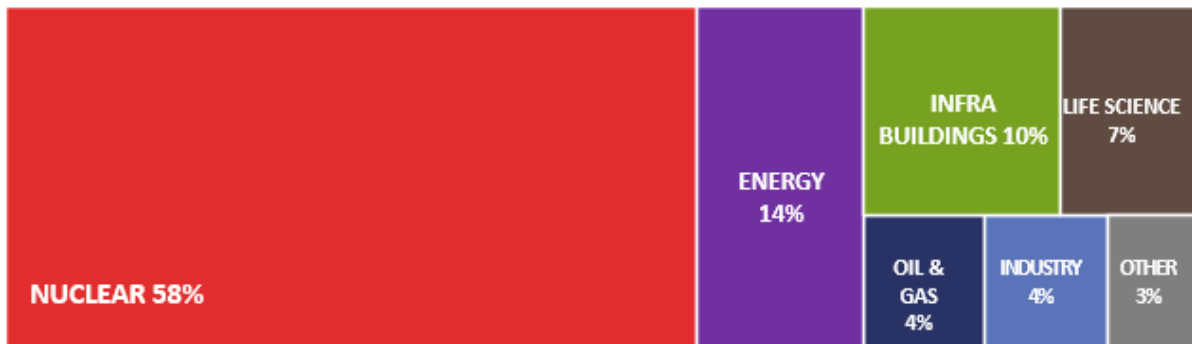


Figure 3: Percentage in term of turnover of the activities of ASSYSTEM E&I

2.2.2. Major contracts and clients of ASSYSTEM E&I

The major clients of ASSYSTEM E&I are major groups such as EDF (Electricité De France), ITER, "Société du Grand Paris" etc... With those companies, we can quote some of the major contract of ASSYSTEM in the previous years such as:

- With EDF, ASSYSTEM acts as a key partner and intervene in both France and England on the different nuclear power plants. The major activities of ASSYSTEM consist in: the management of the decommissioning of several plants, the design modifications and

- realization of those modifications, the management of the radioprotection and nuclear safety, the elaboration of safety reports, the maintenance of the systems, the tests and commissioning for new power plants etc... These contracts enter in the nuclear activity.
- With ITER (and more precisely with F4E (fusion for energy)), ASSYSTEM won seven contracts since the beginning of the project in 2005. The principal activities of those different contracts being the nuclear safety, the design of several elements such as the remote control of the divertors, the management of the construction and the procurement or even the commissioning of the buildings. These contracts enter in the nuclear and other energies activities.
 - With the "Société du Grand Paris", ASSYSTEM (leading PROXEMYS consortium) was chosen to monitor the construction of new stations for Paris' subway. More precisely PROXEMYS was selected to develop and optimize computing tools of document management, ensure the environmental sustainability, the spreading of the knowledge over engineering systems and in management of complex projects. These contracts enter in the Industry and others activities.
 - With the Saudi royalty, ASSYSTEM was chosen to finish all the design studies for Jubail Industrial City, to carry out the executions studies, make a technical synthesis report. This contract is an example of the infrastructure BU.

Finally, I wanted to come back on one of the specificity of the company: the continuous formation of its employees thanks to seven internal institutes. These latter focusing on the major works of the society such as the:

- Aerospace institute: it trains in the subjects of products, methods, specific tools of the company and the major customers in Aerospace.
- Automotive institute: it trains in the subjects of development of products and systems, the customer service...
- Project management institute: it gathers the knowledge of all the ASSYSTEM's project managers around the world and try to widespread the good practices of the art.
- Nuclear institute: it serves as discussion platform between recently graduated engineers and experimented ones.

2.3. *The agency of Tours*

The agency of Tours is part of the nuclear business unit, which is the main reason of my will to work in that agency. Since its creation in 2000, the main activities of this agency are the production of engineering deliverable documents for the CNEPE (Centre National d'Équipement de Production d'Énergie), subsidiary company of EDF which is in charge of the conventional part of the nuclear power plants. Moreover, the other main purpose of ASSYSTEM is to help ensuring the project management of the CNEPE's activities. To do so the agency and its 100 collaborators is divided in two great activities: project management on one hand and consultancy studies on the other hand. This consultancy work includes both existing power plant of generation II and EPRs (European Pressurized Reactors) of generation III+, which are being built in Flamanville, FRANCE (FLA 3), in Hinkley Point, England (HPC) and in Sizewell, England.

To be as fitted as possible for those activities, the agency is divided in several technical groups such as mechanics, safety, maintenance, electricity, and commissioning or project management. For every division a responsible monitors a team composed by 10 to 30 collaborators (engineers and technicians). Project managers dedicated, whether to generation II power plants or EPRs, request the

help of these team leaders in order to efficiently monitor all the projects. Of course, at the top of the agency we can find a Branch Manager, Cédric SCHREIBER. All this organization is summarized by the figure 4 below.

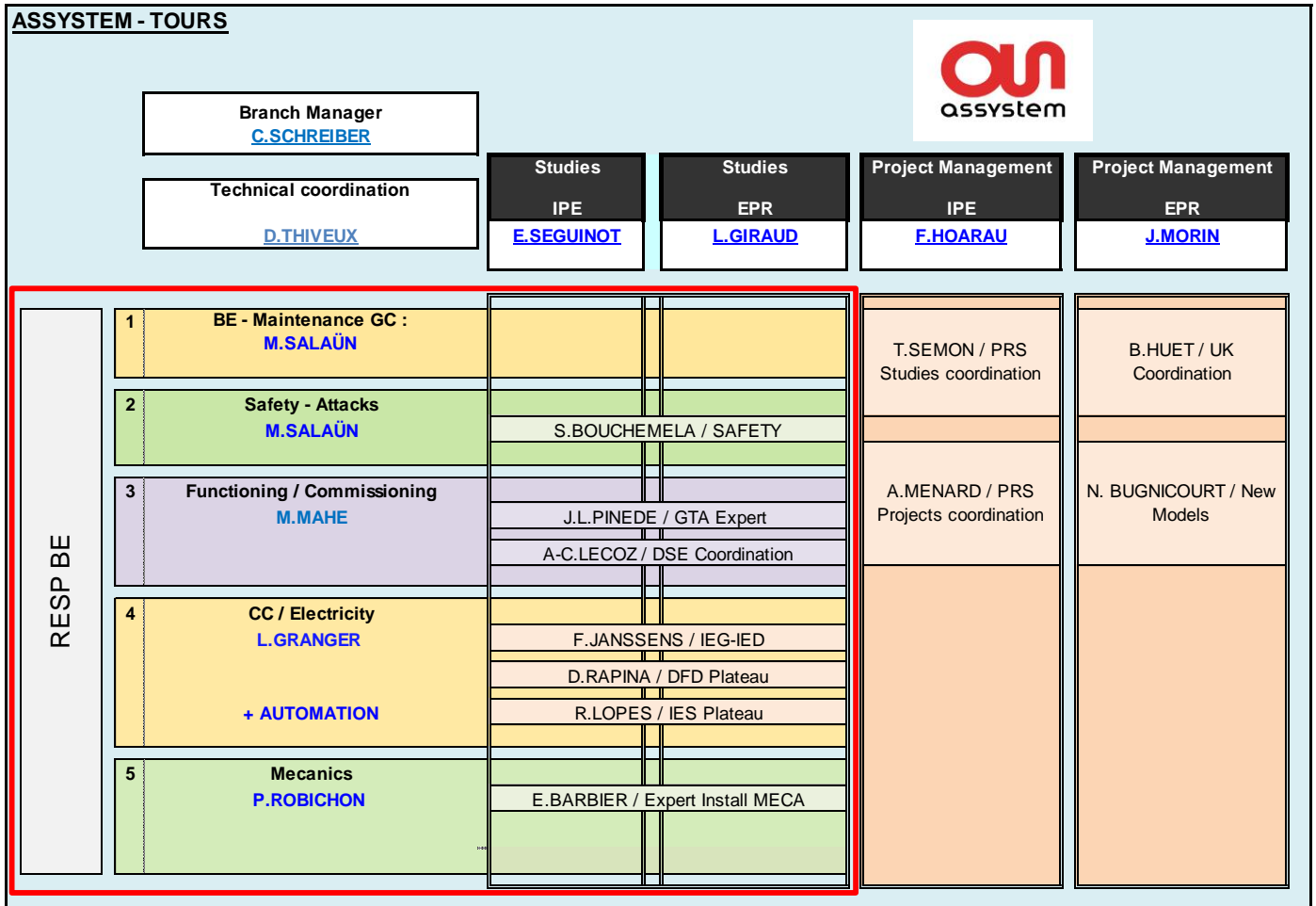


Figure 4: Organization of the agency of Tours

For my part during my internship, I was attached to the project management unit, under the authority of Jérémie MORIN, project manager for the new nuclear. He was the person in charge of the pilot project in Tours' agency and thus the person with who I worked most. In addition, in order to have a better view of the functioning of the different projects I spent time with every team leaders and project managers. Those meetings were fundamental for me in order to understand the expectations of the workers and to adapt the settings of the different software to their needs as far as possible. Those meetings were besides great opportunities to assess the quality of the changing of processes that we intended to make.

3. Objectives of the Internship

In the following part, we will present the main objectives of the implementation of the PRIMAVERA solution: the scheduling and monitoring of the projects of Tours' agency. Before that presentation, we will introduce in details the four software of the PRIMAVERA solution that are chosen by ASSYSTEM: PRIMAVERA P6, UNIFIER, Team Member and BI publisher.

3.1. Description of the different software of the PRIMAVERA solution

For the project management, workers are using scheduling and monitoring software to facilitate their daily lives. ASSYSTEM E&OS chose to implement the solution from ORACLE, PRIMAVERA. Between the two world leaders in the field of project monitoring software PLANISWARE and PRIMAVERA, ASSYSTEM chose the second solution to match the solutions used by its principal clients such as EDF.

Four software composes the PRIMAVERA solution selected by ASSYSTEM:

- PRIMAVERA P6, a quite complete software for the scheduling of a portfolio of projects and the resources management. This is the first software that I have studied and the first to be implemented in the different pilot projects as we can see in the *figure 5* after. The goal being to plan the major part of the Portfolio of the intern affaires in the three pilot projects. There are two ways of accessing the software: directly on the computer itself by the version "P6 pro" and online by the version "P6 online". The two being interconnected when there is an internet connection available.
- Team Member, a web interface for all the collaborators of the projects. It is a complement of PRIMAVERA P6 as far as it permits the collaborator to register its progression on his different allocated tasks. By consolidating these information, it becomes easy to determine the percentage of completion of every affaires and the related EVM (Earned Value Management) indicators.
- UNIFIER, a web software that aims to follow the contracts and the different deliverables. This software can also work as a document manager but this function will not be implemented in the pilots. I did not spend a lot of time on this software according to his late implementation (at the beginning of March 2018).
- BI Publisher, a web software that works in complement with PRIMAVERA P6 and UNIFIER. Its main goal being the summarization and compilation of the different information by the creation of graphics and reports especially for on time and on quality delivery. As for UNIFIER I couldn't work a lot on this software because of its late implementation in the pilot.

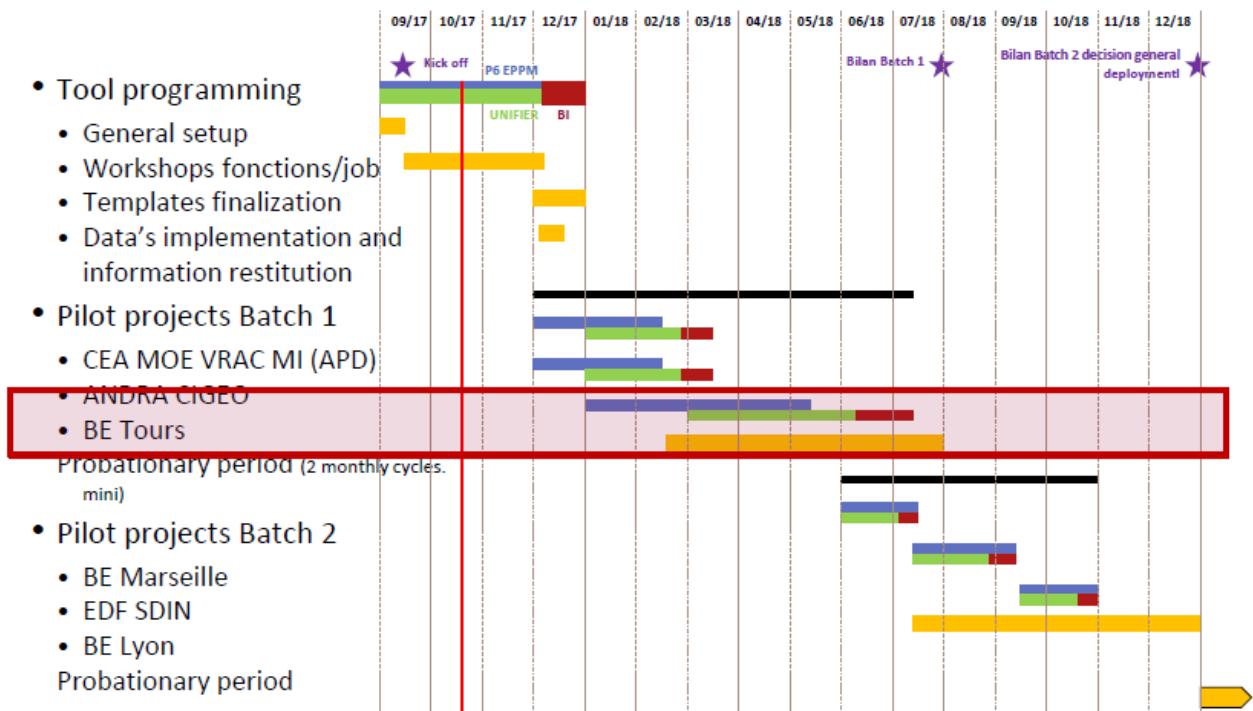


Figure 5: Schedule of the deployment of the PRIMAVERA's solution

My further analyses will therefore be more focused on both PRIMAVERA P6 and Team Member that I have closely helped to put in place in the Tours' pilot project. The next trainee will be in charge of the implementation of UNIFIER and I hope that I will help him in his task at the beginning of my job. Indeed, after my internship I will stay as an employee in Tours' agency with the first aim of continuing this pilot project and successfully carrying it out.

3.2. Main objective: scheduling and monitoring several projects using the PRIMAVERA solution

The aim of the pilot project, in which my internship is inscribed, is testing the different software of the PRIMAVERA solution that have been described in the previous part. As one can see in the figure 6 after, the main skills of PRIMAVERA P6 are the scheduling of the projects and the resources monitoring (the phase pilot project do not include the implementation of the risk-monitoring tool). The P6 Team Member software is designed to collect the physical advancement of the different projects by being informed by the employees working on the projects. Even if its interface and its process are really simple, this function is paramount for the project monitoring. Indeed, the worker who has the best view upon is own work can directly report his advancement. Without this software, the planner should talk with every employees and collect their progress. This way of acting is time-consuming and not effective. The two operation ways will be explained in the part 4 of this report.

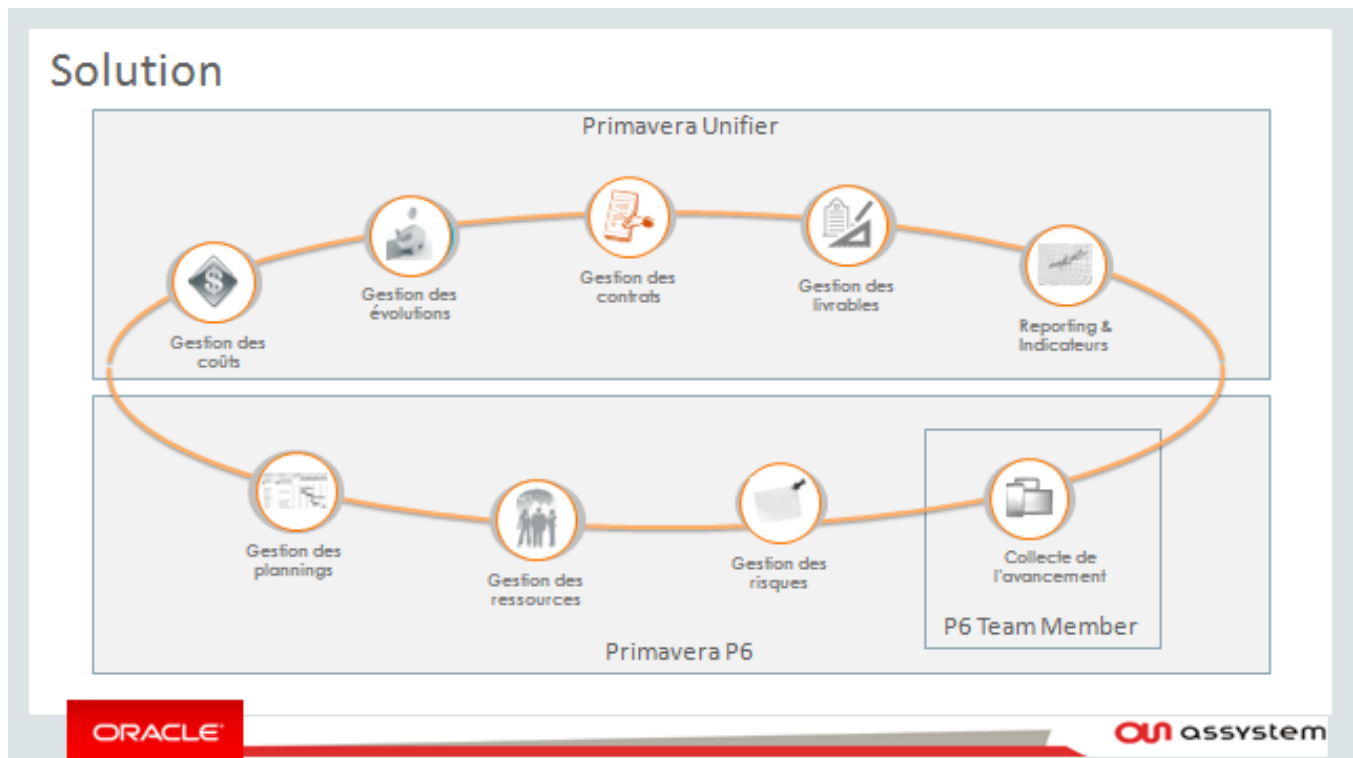


Figure 6 : Main capabilities of the PRIMAVERA software

To test the different software abilities the enterprise decided to choose the technical department of Tours and especially the ones of technical studies. However, testing the different software required more than just the two essential but basic actions of scheduling and monitoring the projects.

3.3. Requirements to achieve the main objective and the secondary ones

In every projects, the technical aspect is not the only one that must be followed. Indeed, the major problem that can be faced by the implementation team is the lack of support from the employees. This reluctance can become a counter power against the implementation of the software and “kill” this project. In order to avoid those inconveniences a change management must be carried all along the project. A multifaceted work begins with the inclusion of the workers inside the process by organizing meetings and listening the needs of the workers towards the tools. Considering this, we created a requirement matrix that can be seen in the *annex 2*. We will explain more in details this matrix formation in the next part of the thesis. This requirements recapitulation must be integrated in a phase of tool programming

In addition, to be more efficient and follow the advancement of the pilot phase, I built, using P6, the schedule of the implementation phase all along the project. This schedule can be seen in the *annex 1*. Of course, this planning has been modified all along the project. The goal of this schedule being to minimize those drifts to keep up to date the project. It has helped me not to forget any mission of the project and I will continue to follow it even after the end of my internship. Moreover, this schedule was a good mean to experiment the different skills of PRIMAVERA P6 and improve my handling.

4. *Schedule of the implementation and work effectively done*

Before anything else, as for every project, I started by a period of transition where I needed to learn how operated the enterprise. In addition, as I had only a little knowledge on the project management I also needed to deepen my basics. The following part presents this learning. After this explanation, the report will focused on the work on the project itself.

4.1. *Preliminary phase: learning of the project management and ASSYSTEM's internal processes*

During the week following my integration in the company, I benefited of something very unusual for an internship: I participated to an integration week which purpose was to introduce to the new hired employees the main problematics of the project management and their importance in the ASSYSTEM E&OS company. This week was the first step for me to understand the spirit of the company and the main aspects of the project monitoring. Following this week, I had also the luck to have access to great tools: the PMBok, which is the reference for the methodology of the project management all around the world, and the ASSYSTEM PM (Project Management) Handbook, which is the PMBok adaptation inside ASSYSTEM for instance. I really appreciated this event insofar as it permitted me to acquire the compulsory knowledge to start my internship and more broadly a job in project management. It took me another two weeks to read the entire documents and others like PMPs (Project Management Plan) in order to understand the main aspects of the project management, which are the project monitoring, the cost control, the quality management and the resource management.

Of course, my search of learning and the growth of my knowledge was continuous all along the pilot project. However, as the internship progressed I had less time to study because I spent more time in the action. It appeared to me that during my formation a really few notions of project management were taught whereas this discipline has become fundamental in a great number of companies. Maybe it's a trail that has to be deepened to improve the contents of the engineering school courses.

4.2. *Understanding the needs and setup of the tools*

As we can see in the *figure 5* on page 14, before the implementation of the solution in the pilot projects, there is a phase of tool programming, which contains a general set-up, several workshops and the realization of templates. The first action that we have made is to create a document summarizing the needs of the different agencies and in particular, Tours' one.

4.2.1 Creation of the list of requirements and communication tools

Before every project start, a list of requirements must be defined. Indeed, if it is not done from the beginning, it can cause major disorders when it comes to the pilot phase. However, this work was not clearly done by the enterprise when I joined the project. Then we decided with my tutor, Jérémie

MORIN, to make this list. It took us a long time but it was very useful to establish a perfect knowledge of the scope. Of course, the establishment of such a list was not a job that we could do alone. We organized several meetings with the different project managers and team leaders of the agency in order to summarize all their needs and expectations. Indeed, to successfully implement a new tool, a change management must be put into action. Part of this management is to involve every leader to prove that the change is for the best even if the beginning can be difficult. This difficulty often comes from the change of habits. Every worker has progressively built his own tools. Therefore when a standardization of the tools comes, a feeling of uselessness appears. The implication in the process of change is thus primordial. I found out that in the agency of Tours, the workers were not reluctant to change but during the different meetings a need of added value was predominant.

After several weeks, the requirement list was over and was used as a basis for the work to be done by the implementation team. One can see this list in its last version at the end of this report, in the *annex 2*. During several workshops that were performed in collaboration with the agency of Marseilles and the implementation team, we have been able to modify some functions and add others to the requirement list in order to be prepared best as we could for the pilot phase. Of course, some needs were missing or others ill formulated but the time lost to reprocess the list was negligible before the time we would have spent if we had not prepared this document.

Meanwhile the creation of the list, in order to show what could be the new processes once the software are implemented, I created two new documents. First, a timeline representing the new planning process. This timeline is very important because it underlines the different moments where an error can occur and the way to prevent them. On the other hand, it also serves as a methodological reference, which can be consulted at any time. Of course, the document that I made is just a draft model, which is being reprocessed, yet it was important to initiate its creation. One can see this timeline in the *annex 5.2*. Furthermore, in a projection state of mind I also created, before the launching of the pilot, a presentation that summarized at the different points of a project (offer, realization...) the usefulness of the PRIMAVERA P6 and Team Member software and the way to use them. Even if a document like this one was hard to create because it involved a projection, it revealed its usefulness in the way that we have been able thanks to it to forecast some prospective problems and for me to anticipate the preparation work that I had to carry out.

4.2.2. Setup of the different software

As I mentioned in the previous part, several workshops were organized in order to procure to the implementation team, the different data and input to setup the tools. Indeed, the software required a programming to fit with the specificities of the company. As a relay between the agency of Tours and the implementation team, part of my job was to collect information on the structure of the enterprise (different abilities of the workers, level of responsibility...) to create on PRIMAVERA P6 a structure of roles which is a categorization of the different workers very useful for scheduling in an offer phase. As for the software PRIMAVERA P6 and Team Member the major of the programming is already done, the job for me was to understand the different functions and run a bunch of test to make sure the fact that the different requirements were satisfied. This work implied a common action with the implementation team who mastered the software. One of the major issue I faced was to succeed the accommodation with everybody's schedule and find moments for meeting in order to ensure that all the stakeholders of the project agreed on the different documents.

For UNIFIER and BI Publisher, which are more flexible, a special programming needed to be carried out. However, according to the time required to master those software and their late

implementation in the pilot, I was not taught to program but only to use them. Yet I worked on the setup of those devices in other ways. For instance, I helped reviewing all the UNIFIER's business processes and made sure that they fitted with the functioning of the agency. As for BI publisher, which is dedicated to the establishment of indicators and more generally to the conception of reporting figures, I summarized the information that were required for all the project manager and team leaders.

Of course, the setups made before the pilot phase had to be modified during the pilot projects because new issues had appeared. To make those changes following a methodological way, I prepared also a "receiving matrix" which summarized the expected functions according to the types of users. One can see this matrix in the *annex 3*. The main goal was to ensure the good functioning of the software according to the needs and formulate observations to improve them when it is required. This document was useful for both the implementation team because it summarized the work to carry out in the future, and for the agency because it helped bring closer the processes and the expectations.

4.3. *The pilot project in Tours' agency*

The principal reason for the creation of my internship was to help the teams during the pilot project in Tours' agency and to be a relay between the local collaborators and the implementation team. First, I will talk about the ultimate part of the preparation for the pilot and after I will detail the accomplished job during this leading phase.

4.3.1. Preparation phase for the pilot project

The pilot project in the agency of Tours is focused on the scheduling and the management of the activities of the type "technical studies". In order to create an added value for every team and involve the major part of the collaborators we carefully chose the activities added to the pilot and make different batches to smooth the workload all along the pilot phase. We also needed to prepare the different templates of schedules and the information upon the different workers to be ready to start from the kick-off.

In addition, I had the opportunity of working before the pilot project with one of the team leaders, Marc SALAÛN, to elaborate two schedules for two different affairs. This work has been more than useful for me to face the difficulties caused by the real projects, such as the deadlines and the time to allocate to the preparation in comparison to the benefit. Moreover, it has been the opportunity of developing an excel Tool which permitted the automatic extraction of the schedules' information, in particular the affectation of the resources and the allocated costs that we can easily obtain. This tool permits the team leaders and the project manager automatically filling the cost effectiveness analysis in order to avoid a double entrance of the information. It was also a good opportunity for me to make a programming exercise and improve my skills in this field.

During this preparation phase, we also created a forecast of the progress of the different scheduling batches in time and a clear definition of the projects included in these batches. One can see this forecast progression in the *figures 7 and 8* below. Following those expectations of timeline, I progressively scheduled all the projects of technical studies type even if sometimes the progression was slowed by exterior factors. The precise description of the tasks during the batches will be explained in the two following parts.

What ?	Who ?	January	February	March	April	May
Training	Planner + PMs + RGM					
Kick-off	Planner + PMs + RGM					
Creation of the schedules BATCH 1	Planner + PMs + concerned RGM					
Creation of the schedules BATCH 2	Planner + PMs + concerned RGM					
Creation of the schedules BATCH 3	Planner + PMs + concerned RGM					
Creation of the schedules BATCH 4	Planner + PMs + concerned RGM					
Cycles of schedules updating	Planner + PMs + RGM + Team Members					

Figure 7 : Forecast scheduling of the different projects

BATCH 1							
SOP	Resp.Proi.	Project	Description	Start	End	Mnt CDE	RGM in charge
02013	SEGUINOT,ERIC	73646	Etude thermique CCL	13/11/2017	31/05/2018		Pierre ROBICHON
02013	GIRAUD,LIONEL	74445	MISTUB SIZEWELL	20/12/2017	28/02/2018		Marc SALAÛN
02013	GIRAUD,LIONEL	OFFRE	Firestudies 2018	01/02/2018	31/12/2018		Marc SALAÛN
02013	SEGUINOT,ERIC	OFFER : Waiting	Vérif support VD3	29/01/2018	31/05/2018		Pierre ROBICHON
02013	SEGUINOT,ERIC	OFFER : Lost	Etude ATEX	08/01/2018	-		Marc SALAÛN
02013	SEGUINOT,ERIC	OFFER : Lost	MAJ jalon J6 incendie	08/01/2018	-		Marc SALAÛN
02013	SEGUINOT,ERIC	74763	MAJ DES ECC	01/02/2018	31/07/2018		Mathieu MAHE
02013	GIRAUD,LIONEL	72439	Appui systèmes HPC	01/02/2018	01/02/2019		Mathieu MAHE
2013	SEGUINOT,ERIC	OFFER : Waiting	MAJ risques inondation	01/03/2018			Marc SALAÛN

BATCH 2							
SOP	Resp.Proi.	Project	Description	Start	End	Mnt CDE	RGM in charge
02013	GIRAUD,LIONEL	00072869	ETUDE AGRSSIONS UK LOT 1 & 2	01/08/2017	31/12/2018		Marc SALAÛN
02013	GIRAUD,LIONEL	73330	DETU/CIS/UK/DFD GE	01/09/2017	31/12/2018		Ludovic GRANGER
02013	SEGUINOT,ERIC	70184	DSE PPR PEE SEG tous sites	01/02/2017	31/07/2019		Mathieu MAHE

BATCH 3							
SOP	Resp.Proi.	Project	Description	Start	End	Mnt CDE	RGM in charge
02013	HOARAU,FLORENT	00067898	PILOTAGE IES NOG	21/09/2016	31/12/2018		Thibault SEMON
02013	SEGUINOT,ERIC	00071208	CALCUL FORFAIT GRAND CHAUD N°7	01/03/2017	31/12/2018		Pierre ROBICHON
2013	HOARAU,FLORENT	72035 continuation	Etude pôle PRS	01/04/2018	31/12/2018		Thibault SEMON

BATCH 4							
SOP	Resp.Proi.	Project	Description	Start	End	Mnt CDE	RGM in charge
02013	GIRAUD,LIONEL	00068710	UK - PLATEAU DFD	02/01/2017	31/03/2022		Ludovic GRANGER
2013	SEGUINOT,ERIC	67981	NAA DDS				Marc SALAÛN
02013	SEGUINOT,ERIC	00067081	BPU Réalisation SCCD	01/09/2016	31/12/2019		Ludovic GRANGER
02013	SEGUINOT,ERIC	00073011	SMNGC A VT SCHEMAS ELEC MECA	01/09/2017	31/03/2018		Ludovic GRANGER
02013	SEGUINOT,ERIC	00062829	PEE Source Froide	15/11/2015	30/06/2025		Mathieu MAHE



Figure 8 : Information upon the projects of the different batches

4.3.2. First phase of the pilot project: Batch 1

After the programming phase, we started at the beginning of January 2018 with the scheduling of the projects from the Batch 1 that we can see in the *figure 8* before. We chose in this batch to integrate projects that seemed to be quite easy to plan and the ones that were in a rush. With this batch, I also started to work closely with two of the team leaders in order to integrate them as much as possible to the scheduling process. I was positively surprised of their reaction and the time they granted me to help my progresses. The scheduling of this batch was a starting point for the establishment of a precise methodology. Indeed, when I began to create schedules in order to represent the projects progresses I quickly understand I should standardize all the projects' representation in order to be able in order to easily maintain the portfolio. Moreover, I started the writing of a "Good practices handbook" for the creation of the different schedules. This handbook has been ended at the beginning of the batch 3 but I tried as much as possible to respect these rules in the first schedules (and if I did not, I updated every projects when the rules were established). One can see in the *annex 4* the summary of the good practices that I used as a communication tool.

The specificity of this batch resided in the fact that the team leaders and the project managers had not received the course upon PRIMAVERA P6. I was thus the only one with a relatively good knowledge of the tool. This situation led to the fact that I needed to schedule in their integrality the schedules of level 2 and 3 without the handling people able to correct me. I spent then a lot of time with them creating and updating the different schedules. Moreover, the software Team Member being forecast to be implemented in a second time, I had to collect the advancement of the different deliverables alongside the collaborators. The schedules of this batch were quite short. The majority were composed by five to fifteen deliverables, representing between 100 and 200 lines in the schedules. With the right methodology and a rigorous way of working schedules of this size were no problem at all to conceive.

At the end of the batch took place the PRIMAVERA course for the team leaders and the project managers. The preparation of this course required the establishment of a methodological handbook and a user guide. The implementation team was in charge of the writing of these documents and I reviewed it before the course to make sure the contents met the requirement list that we created before. All the documents were good enough and the course was successfully achieved. However, major rapidity problem of the different tools appeared which represented an impossible hurdle to overcome. Those problems were concentrated on the Web interface of PRIMAVERA (both for the software P6 and Team Member) delaying the GO decision for both software. I then had to work on my local database in order not to take delay in the scheduling of the projects but the use of Team Member was impossible during quite a long while. Those problems were ORACLE's responsibility and were solved later during the Batch 2.

4.3.3. Following of the pilot phase: Batches 2 and 3

After this event of delaying the "GO" decision, I followed the scheduling of projects with the Batch 2. With this batch appeared projects more difficult, with more deliverables and often already begun. From this batch on the length of the schedules significantly increased and could reach near 1000 lines. It was then paramount to follow a clear methodology without deviation and check every line carefully. It was however more difficult to schedule those projects because a good reporting of the progress of every deliverables is required if you intend to effectively represent the project. Moreover, we chose the projects belonging to this Batch 2 in order to work with every team leaders and include them in the process of change. For these reasons it was more difficult to schedule the projects of this batch but it was eventually done except for the project "DETU/CIS/UK/DFD GE". This project had the specificity of being already scheduled and its adaptation to the methodology of the pilot project would take a lot of time for the team leader and the project manager, time they could not spare on February. We thus postpone the integration to the pilot of this project and then focused on the Batch 3.

At the end of the Batch 2, the rapidity problems were solved by ORACLE and all tools became again usable. I then ran several tests between the Batches 2 and 3 to check if the projects that I scheduled on my internal database could be uploaded in the global database. After some minor modifications and a standardization required by the implementation team (especially in the IDs naming, the activities and projects codes...), I could upload every schedules on the global database. This uploading implied that the use of Team Member was possible and the preparation of a course to be followed by the collaborators working on the scheduled projects for Batches 1 and 2. These collaborators will be the first to follow the course and therefore the first to report their progress on

every deliverables. Before that phase I needed to actualize every projects already scheduled to simplify the task of progress reporting for the workers.

Finally, the scheduling of the Batch 3 took place at the end of February and the beginning of March following the expected timeline presented in the *figure 7*. With the finalization of the methodology after the Batch 2, the scheduling of the Batch 3 appeared to be easier even if the complexity of the projects was increasing. The only difficulty was to gather the information and have meetings with the different team leaders. The importance of this problem decreased all along the Batch because the scheduling cycle that one can see in the *annex 5.2* was being implemented and all the actors participated to the project at this step of the project. Here is raised one of the main difficulty faced all along this project: involve the different workers who mostly have no time to spend in other fields than their own. Fortunately, in the ASSYSTEM E&OS Company the workers were not reluctant to change and we succeeded the scheduling of every batches and the following of the projects through P6 and team member for at least the three first batches.

4.3.4. End of the scheduling phase with the Batch 4

At the time when I write this report, I have not schedule the projects of the Batch 4 yet. I began the scheduling of only one of these projects and faced no more difficulty. I extrapolate that at the end of my internship (16/03/2018) half the projects will be scheduled on P6 and able to be followed on Team Member.

4.4. *The late implementation of Team Member and the beginning of the implementation of UNIFIER*

Because of the rapidity issues presented in the previous part, the arrival of Team Member first expected in parallel with P6's eventually happened at the beginning of March. This delay affected the conduct of the pilot project and notably my internship. Indeed, the reporting of the progress of the different projects expected to be done through Team Member became one of the tasks that I needed to perform on P6 by collecting the progress alongside the team members. It was time-consuming but necessary for the reporting of projects. By the time that I am writing this report, I am testing the software that appears to be effective and do what we expected. Moreover, the implementation team has settled dates for the course upon Team Member for the 20 first collaborators. After this launch, the real scheduling cycle presented in the *annex 5.2* becomes possible which implies a great amount of work for me.

Finally, concerning UNIFIER, during this first phase of the pilot, the implementation team devoted a full time resource for the parametrization of the Tool. The implementation in Tours' agency has been delayed of 1 week with a "Go no Go" decision expected on March 09. According to this late date the implementation of this software will be, as expected, mainly done by the new trainee that I will help as much as I can. In particular, I will need to introduce him all the work did for the requirement definition and the settings of UNIFIER. This implementation of UNIFIER will be of top priority but difficult. Indeed, this implementation will take place in parallel with Team Member's one. This will require a lot of time for both the implementation team and the workers of Tours' agency. It will be a real challenge during the weeks to come but it's a situation that can be hurdled with an adequate self-investment!

5. Results effectively obtained and efforts still to be engaged

In this part, I will present an analysis of the project of implementation of the different tools of the PRIMAVERA solution. This analysis contains an economic review for both the Tours' agency and for the company. According to this investment, a benefit is expected which I will present in the second paragraph. I will follow by an analysis of the remaining work to carry out the pilot phase. Finally, I will come back on how much the pilot project was affected by the nuclear specificity, influence less important than expected.

5.1. A double aspect in the economic impact

In this part, I will make a quick economic analysis relying on the prices communicated by ORACLE for the public and medium wages. Indeed, I am not allowed in this document to reveal the real prices of the different licenses paid by ASSYSTEM to ORACLE and the real wages of the collaborators. I will then take hypotheses that I think are not too far from the reality.

5.1.1. Economic impact at the Tours' agency's scale

The first economic analysis that I will perform will be at the scale of the Tours' agency. Indeed, ASSYSTEM has chosen this agency to be part of the pilot but it has to pay a part of this pilot project. Roughly, two parts in the expenses are predominant:

- The prices of the different licenses that can be seen in the *figure 9* thereafter. For this pilot project are involved: 12 licenses for P6 web and pro, 40 licenses for Team Member and 41 licenses for UNIFIER.
- The wages of a junior project engineer who will be hired as a local administrator of the different software of the PRIMAVERA solution from April 2018.

	Monthly Subscription Fee	Metric	Minimum
Products: P6 (Cloud Service)			
Primavera P6 Enterprise Project Portfolio Management Cloud Service	125	Hosted Named User	200
Primavera P6 Analytics Cloud Service	90	Hosted Named User	25
Primavera P6 Progress Reporter Cloud Service	12	Hosted Named User	
Primavera P6 Enterprise Project Portfolio Management Web Services Cloud Service	20	Hosted Named User	
Products: Unifier (Cloud Service)			
Primavera Unifier Project Controls Cloud Service	150	Hosted Named User	25
Primavera Facility Management Cloud Service	80	Hosted Named User	25
Primavera Real Estate Management Cloud Service	80	Hosted Named User	25
Primavera Unifier Portal User Cloud Service	2	Hosted Named User	100
AutoVue 2D Professional Cloud Service	13	Hosted Named User	1

Figure 9 : ORACLE PRIMAVERA Global Price List

Taking the hypothesis that ASSYSTEM managed to get a 20% discount the price of the solution over one year (2018) can be calculated by the formula below:

$$P = 0.2 * Nb_{months} (N_{P6} * P_{P6} + N_{TM} * P_{TM} + N_{UNI} * P_{UNI}) + 0.75 * W$$

With:

- P price of the solution over the year 2018 (in €/year)
- Nb_{months} number of months in the year
- P_{P6}, P_{TM}, P_{UNI} respectively the prices per month per users for P6, Team Member and UNIFIER (in €/month/user)
- N_{P6}, N_{TM}, N_{UNI} respectively the number of licenses for P6, Team Member and UNIFIER
- W the average wages of a junior engineer including all taxes (in €/year)

Numerically we obtain:

$$P = 0.2 * 12 * (12 * 125 + 40 * 12 + 41 * (150 + 13)) + 0.75 * 59000 = 65041,2€$$

This has to be compared with the turnover of the agency, which is approximatively ten million euros. This represents a loss of margin of 0.6%. This loss has to be balanced by the potential return on investment presented in the next part.

5.1.2. Economic impact at the global scale

The second economic analysis that I will perform will be at the scale of the global ASSYSTEM Company. For this part, I will neglect the prices of the licenses that I supposed to be assumed by the different agencies of the pilot. The only expenses that are representative are the wages of the different members of the implementation team. This team being composed by four members:

- A senior engineer of ASSYSTEM with an estimated cost of 80000 €/year
- A consultant for the parametrization of UNIFIER with an estimated cost of 125000€/year
- A consultant for helping the parametrization of P6 with an estimated cost of 100000€/year
- A senior engineer of ASSYSTEM gathering the different activities of project management, management control and general contractor with an estimated cost of 95000€/year

A global cost of 400000€/year can be estimated. This is to compare with the gross result of ASSYSTEM which was 955M€ in 2016. It represents a loss in the margin of 0.4%, which is quite the same percentage as in the agency case.

5.2. *A progress in quality and potential return on investment*

The costs explained in the previous part are to be compared with the potential return on investment that were expected at the beginning of the project. The company has forecast three points of return on investment:

- A project delivery improvement for the On-time delivery and the on quality delivery, which could bring up to 10% increase of the revenue of the enterprise due to the increase of the project award especially for the most difficult projects

- A cost savings, which is the easiest way of measuring the influence of the tools. This cost savings is expected to be targeted on the allocated time by the project managers on the project monitoring. The tools should permit the reduction of the hours spent.
- An efficiency increase due to the harmonization of the processes

If one looks at these objectives one can see that they are global and blurred objectives difficult to assess. Indeed, it is difficult to measure the efficiency increasing especially when the projects were well run without the tools. Moreover, as we have seen in the previous part the cost of the tool implementation is quite high at the beginning. After a discussion with the responsible of Tours' agency, Cédric SCHEIBER, it appears that at the beginning the investment will not be refunded and there will be a money loss.

However, the main improvement will be the capacity of the quite small agencies to grasp huge projects. Indeed, before the implementation of the project monitoring tools it was not possible for the small structures in order to properly monitor huge project. Now the agency can schedule and monitor all type of project even if that implies the hiring of a full-time planner.

To summarize this cost and return on investment analysis, it appears that it is quite difficult to directly measure the increase in the efficiency and the cost savings as it was announced first by the company. However, the investment in this project monitoring solution is an essential phase for the growth of the company and its capacity to grasp all types of projects even the most difficult ones. Then at a long-time scale, this investment will be profitable for the company even if it will be almost impossible to directly assess the return on investment.

5.3. Future perspectives and jobs to fulfil this pilot

At the time when I write this report, the implementation of P6 is on time and I am currently scheduling the projects of the Batch 4. However, the implementation of the two other tools has been delayed:

- The implementation of Team Member is five weeks late and has just been done this week. We will now focus our work on this tool in order to catch up the delay taken.
- The implementation of UNIFIER is one week late but this delay is negligible. Indeed, the specification of the tool is now finished except for one or two points still pending and no problems are foreseen. I am thus really optimistic for the "Go" decision that will be taken the March 09. Moreover, the next trainee that has just arrived will be devoted to this software and the advancement should quickly increase.

The last software, BI Publisher is currently being parametrized and no problems are forecast for now. To summarize the work done at the Tours' agency is on time and all the work has been done to respect the finish date for the phase 1 of the project: July 31. We just hope that no more problems due to the tools themselves will happen in the following months.

Finally, the last point that I want to tackle with is the future of the solution. Indeed, in the last part, I presented the expected cost in 2018 but the price of the solution is still to take into account for the next years. At the enterprise scale, the cost will decrease in the future years because the implementation team will finish its work for the end of 2019 and only one or two global administrators will remain. However, at the agency scale the expenses will not decrease and even increase. Indeed, the price of the licenses will sensibly stay the same but more and more collaborators will need the

software and therefore the expenses will increase. Moreover, the need of a local administrator will remain as long as the solution is in place. The cost calculated for 2018 is then a cost that seems to be relevant for the next years. This investment is a long last one and the results has to be assessed on the long term, which for the moment I cannot predict.

5.4. A nuclear specificity which appeared to be less binding than expected

If I did not talk a lot about the specificity added by the nuclear field in the deployment of the PRIMAVERA solution it is because this specificity was less constraining than expected. The nuclear specificity was paramount for the decision of implementing a project-monitoring tool, but after this observation, we need to think in what extent the nuclear specificity changed the way of implementing the PRIMAVERA solution. When we think about it, we can assess the impact of this specificity in the requirements list that is shown in the *annex 2*.

The only requirements that are directly linked to the nuclear field is the need of protection of the data upon the projects. Indeed, the projects in the nuclear field have a high strategic value and we must ensure that all data are only accessible by the company. This was done by the creation of a devoted protected cloud with the best protections.

6. Conclusion

The project that I carried out in the ASSYSTEM E&OS for my end-of-courses consisted in the implementation of a project monitoring solution: PRIMAVERA developed by ORACLE. Four software composes this solution: P6, Team Member, UNIFIER and BI publisher. According to the time boundaries of my internship, I focused my efforts on the implementation of P6 and Team Member the two tools for the project scheduling and resource monitoring. Three phases comprised the project. First, the learning of the project management theory through the reading of the PMBoK and the ASSYSTEM handbook but not only. I also needed to study the functioning of different software especially PRIMAVERA P6 and Team Member. Once this learning done I had the mission of being a relay between the implementation team and the teams of the pilot projects in Tours' agency. We then needed to define the requirements toward the tools with all the stakeholders of the different pilot agencies. This phase lasted for about two months and resulted in the writing of the requirements matrix and a cycle of scheduling. Finally, I helped carrying out the pilot phase in Tours' agency. I focused on the scheduling of the projects that we previously selected and the change management. Even if we faced a software problem that delayed the "GO" decision for both PRIMAVERA P6 and Team Member we can now use every tools without problems and I am optimistic to catch up the delay and be back on track.

The main objective of scheduling the target projects has been fulfilled. Indeed, as explained all along the report, the scheduling of the project is on time and the project monitoring is possible through both PRIMAVERA P6 and Team Member. Initially, the most feared point was a lack of adhesion of the different workers who could slow the project and threaten it. However, the change management was successful and the involvement of the different stakeholders was even better than expected. However, we must continue our efforts according to the fact that still two software are being implemented. In addition, the economical investment is far from negligible and therefore a particular caution should be taken for assessing the return on investment.

Even if my internship is ending, the project itself is far from achieved. Tours' agency will focus now on the implementation of the remaining software and ensure their administration in time. This first pilot phase has to be completed for the end of July, which will represent the most important milestone of the Tours' pilot. I will now devote all my efforts for ensuring the accomplishment of the pilot project for every software in my new responsibility of local administrator of the PRIMAVERA solution for Tours' agency.

7. Bibliography

In the two following parts are notified all the reference documents that served as a basis for the different ideas and arguments presented in this report. Those documents are classified in two types: internet websites and books.

7.1. Internet websites

- [1] <http://www.gestimum.com/actualite/erp/differentes-phases-projet-erp>
- [2] https://en.wikipedia.org/wiki/Project_management
- [3] <http://www.oracle.com/us/corporate/pricing/primavera-pricelist-2196983.pdf>
- [4] <https://www.thesparkcontest.org/>

7.2. Books of interest

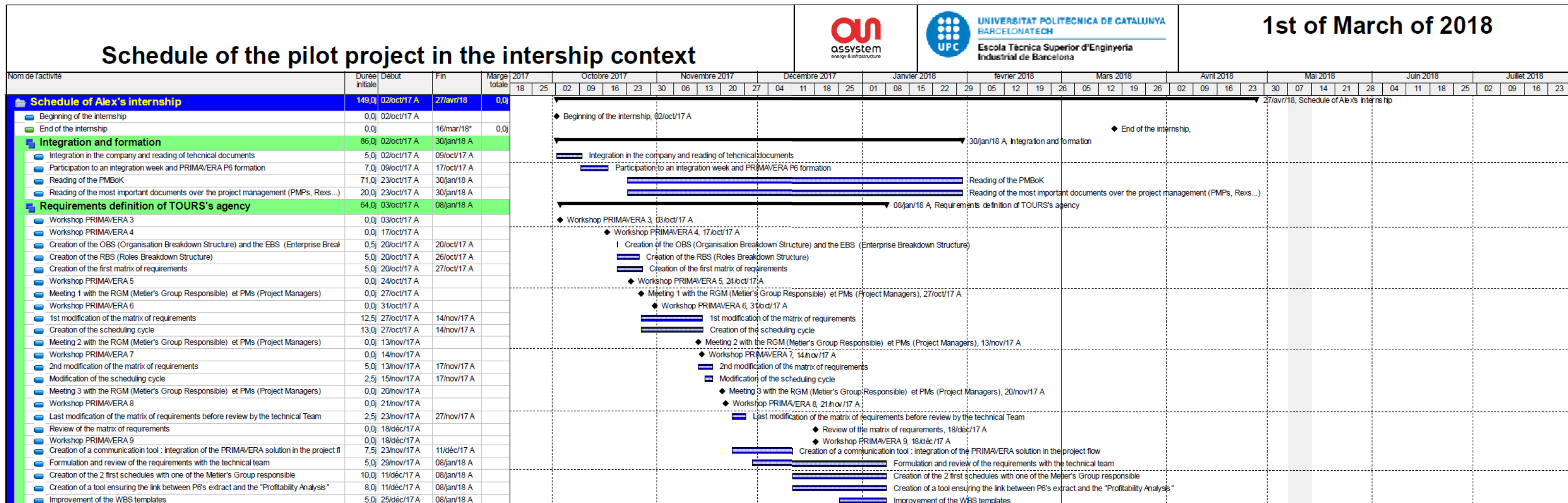
- [5] "A guide to the project management body of knowledge (PMBok guide) 5th edition", Project Management institute, 2013.
- [6] "ASSYSTEM Project Management Handbook Issue 11", ASSYSTEM company, 2012.
- [7] "P6 Professional User's Guide", ORACLE, May 2012.
- [8] "UNIFIER Users Guide", ORACLE, December 2012.

8. Annexes

In this part I reported the major part of the documents of interest that I built during my internship and that I presented all along this report. As much as possible I translated those documents from French into English but sometimes the time required was too important in comparison with the added value and I let the document in its French original version.

8.1. Annex 1: schedule of the PRIMAVERA implementation in the pilot project of Tours

I decided here to present the last version of the schedule of the work I did during my internship. It represents my best view now that I write this report of the job achieved and what remains to be done. I only represented the most meaningful activities actualized at March 01. This schedule is an example of what I did all along my pilot project in term of presentation and way of proceeding.



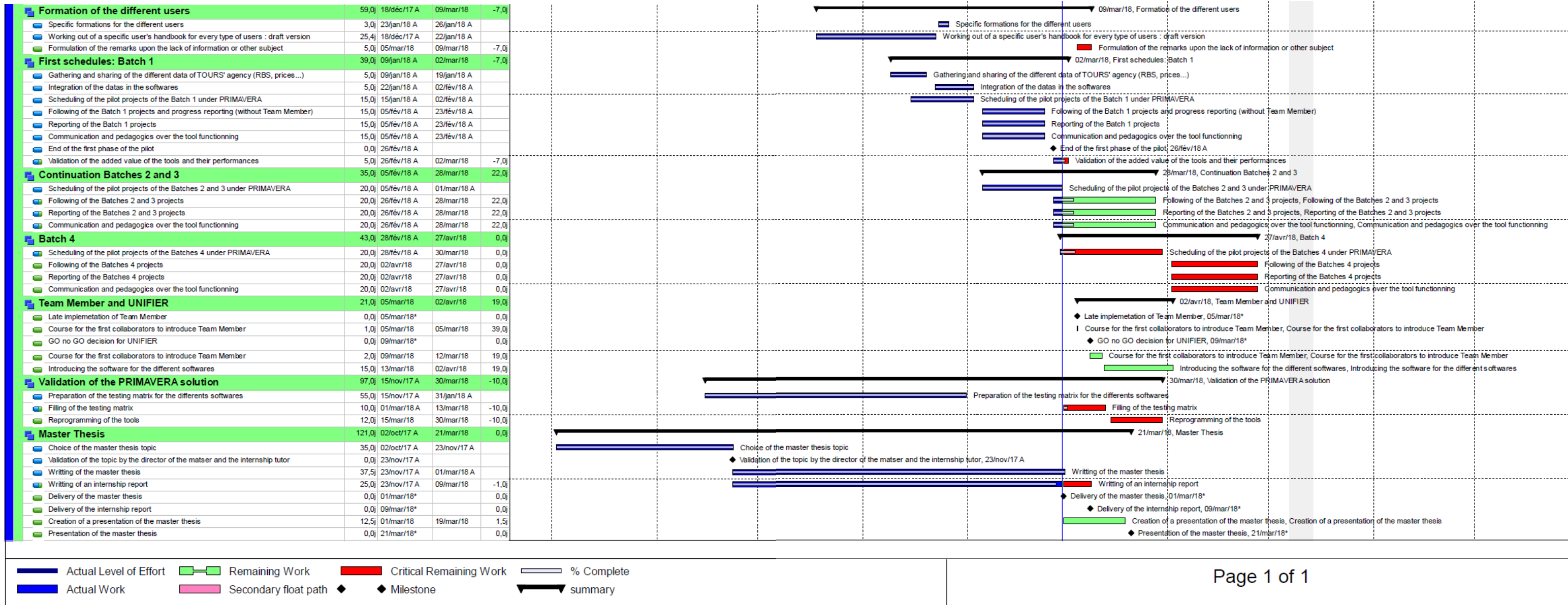


Figure 11 : Schedule of the pilot project included in the internship context 2/2

8.3. Annex 3: receiving matrix

In this part, I presented the receiving matrix for the PRIMAVERA solution. It sums up all the required functions, presented in the previous annex, and all the tests that I think useful to perform for each type of workers.

Matrice de reception de la suite PRIMAVERA

		Partie Chefs de groupe					Partie Chefs de projets					Partie collaborateurs					Partie MOE	
		Test CGO 1	Test CGO 2	Test CGO 3	Commentaires (Valeur ajoutée, praticité...)	Test CdP 1	Test CdP 2	Test CdP 3	Commentaires	Test collaborateur 1	Test collaborateur 2	Test collaborateur 3	Commentaires	Statut de la résolution	Propositions de la MOE			
Représentation du planning directeur dans un nœud spécifique à l'offre	A011																	
Représentation du planning opérationnel dans un nœud spécifique à l'offre	A012																	
Affectation de ressources génériques sur les tâches du planning opérationnel	A021																	
Rapporter les informations fournies par le planning opérationnel (notamment le nombre d'heures par ressources génériques) pour restituer les informations dans l'interface de visibilité. Intervention possible pour visualiser les informations	B011																	
Représenter l'évolution de la charge de travail sur le projet et sur un métier précis ou une sélection de métiers	A041																	
Possibilité d'ajout d'un planning dans le cadre d'un plan de charge (même que l'affaire soit numérotée), par métier et par sélection de projets PRIMAVERA. Cette fonction permettra d'inclure dans le planning les offres ayant une forte probabilité d'être gagnées	A052																	
Vérification de cohérence entre planning directeur et planning opérationnel (détection des clashs)	B011																	
Prendre en compte les données de baselines en particulier utiliser la planification d'un projet en phase d'offre comme base à un projet en phase de réalisation	B012																	
Affectation de ressources nominatives en lieu et place des ressources génériques déjà présentes	B111																	
Visualiser la charge en fonction de la capacité des ressources au niveau de la ressource / du type de ressource / d'un métier / de l'agence. Cette visualisation permettra une facilitation de lissage sur un horizon de 3-4 semaines ou plus	B112																	
Prendre un suivi des données d'entrée de type jalons commentées sur dans Team Member. Possibilité de décaler les jalons suivant leur date réelle d'entrée	B121																	
Renseigner l'avancement, possibilité de mise à jour des dates de début et de fin sur les différentes activités ou livrables de l'affaire	B131																	
Harmonisation de l'avancement physique en proposant un menu déroulant au collaborateur résumant les correspondances entre tâches accomplies et avancement physique. Ce menu démontre deux autres plus une proposition au collaborateur qui une obligation. Il pourra toujours remplir un pourcentage tel qu'il le souhaite	B132																	
Alerte sur possibilité de non respect des dates de début et de fin dans les temps impartis. Proposition d'une nouvelle date de fin d'activité rendue par la ressource. Cette date devra être soumise à une autorisation du N+1 des autres concernés (responsables de l'activité) sur ordre	B133																	
Gérer les différentes publications hebdomadaires remises afin de savoir quel est le planning officiel (source des KPI et des Affichages officiels)	B141																	
Afficher à tous les collaborateurs leur planning de travail (liste de tâches avec nom du projet, libellé de la tâche, nombre d'heures alloué pour la tâche, date de début et date de fin de la tâche) sur une période de 5 jours/semaines. Les tâches en retard de mise à jour doivent être "flaguées" (sur fond en rouge par exemple) pour éviter l'accumulation de retard	B151																	
Prévoir un module imprimable pour le planning directeur et le planning opérationnel. Ce planning sera présenté sous forme de diagramme de GANT. Différentes mailles pour le planning opérationnel: métier, projet, projet/métier, agence	B152																	
Modifier le planning prévisionnel: modifier l'affectation des ressources, modifier, ajouter ou supprimer des tâches, modifier les liens entre les activités	B161																	
Prendre en compte les absences (congés et formations) des ressources à périodicité hebdomadaire	B162																	
Restituer par projet, projet/activité (BEZ), métiers, de l'avancement physique, de la valeur acquise et des indicateurs de TVM. Les valeurs prévisionnelles doivent être saisissables afin de pouvoir faire une revue des indicateurs consolidés dans le temps	B171																	
Comparaison entre planning de référence et planning actualisé. Possibilité de rajouter une référence au cours du projet	B172																	
Remonter les différents indicateurs fournis actuellement par la LOD (liste des indicateurs)	B173																	
Analyse des marges (financières) restantes par rapport à la date de livraison	B174																	
Analyse des marges en terme temporel (marge totale) sur les jalons (indicateur BEZ ou ABEZ). Visualiser de ces marges sur un projet, un métier, ou un lot de projets	B175																	
Remonter les principaux indicateurs utilisés à l'heure actuelle par les chefs de projet et responsables de groupes métier. Conserver l'historique des valeurs passées en terme d'avancement et d'indicateurs de TVM pour analyser les tendances des différents projets	B176																	
Analyse des clashs plannings opérationnel et directeur par projet, métier ou groupe de projets	B177																	
Prendre un export de l'avancement physique des dates de fin prévisionnelles, afin de pouvoir compléter la LOD sans faire de doublons de saisie	B178																	
Rapporter les actuals (costs mensuels) et cumulés par code activité de l'affaire	B181																	
Corriger et mise en forme des frais annexes de projet pour l'activation au client	B181																	
Assurer les fonctionnalités actuellement intégrées dans le FFR	B181																	
Création automatique de BL suivant les documents devant être envoyés. Ces BL reprendront la présentation actuellement utilisée	B119																	
Gestion des indicateurs QDD externes	B119																	
Automatiser toutes certaines fonctions depuis l'éditeur de l'agence. Vérifier entre autre la compatibilité avec tous les équipements internet ainsi que la compatibilité des outils avec les différents réseaux internes et externes	B119																	
Performance de l'outil en terme de rapidité, fluidité d'accès, utilisation des données sur tous les membres et UNIFER	B121																	
Checkage des tâches de BEZ	B121																	

Figure 14 : Receiving matrix for the PRIMAVERA solution

8.4. Annex 4: good practices document for the schedule creation

In this part, I reported the recapitulative document created for wild spreading the good practice over the creation of schedules of both level 2 and 3. Even if it is a short document, it was a powerful tool of communication.

Global explanations upon the schedules created on PRIMAVERA P6

- For every projects 2 schedules will be created:
 - A level 2 (in project management sense) schedule handled by a Project Manager or the planner, with a precise WBS:
 - WBS 1 (mandatory) : Invoicing milestones decided in agreement with the customer.
 - WBS 2 (mandatory) : Performing tasks that correspond with the CBS of the project.
 - WBS 3 (mandatory) : Mandatory end milestones for the different deliverables, decided at the beginning of the project with the client
 - WBS 4 (optional) : A large scale schedule with only macro-tasks that the Project Manager can create
 - A level 3 schedule handled by the team leaders or the planner. In this schedule, the WBS can be chose (however with a model that has to be integrated) with some tasks and milestones which are mandatory (see next slide)
- In order to obtain a good interface with UNIFIER the level 2 schedules will have to be tagged through different project codes :
 - « PMA » code equals to « BE Tours » ; « Criticité » code depending of the classification of the projects (N1, N2...) ; « Interface UNIFIER » code equals to « Yes »

Figure 15 : Good practices document page 1/3

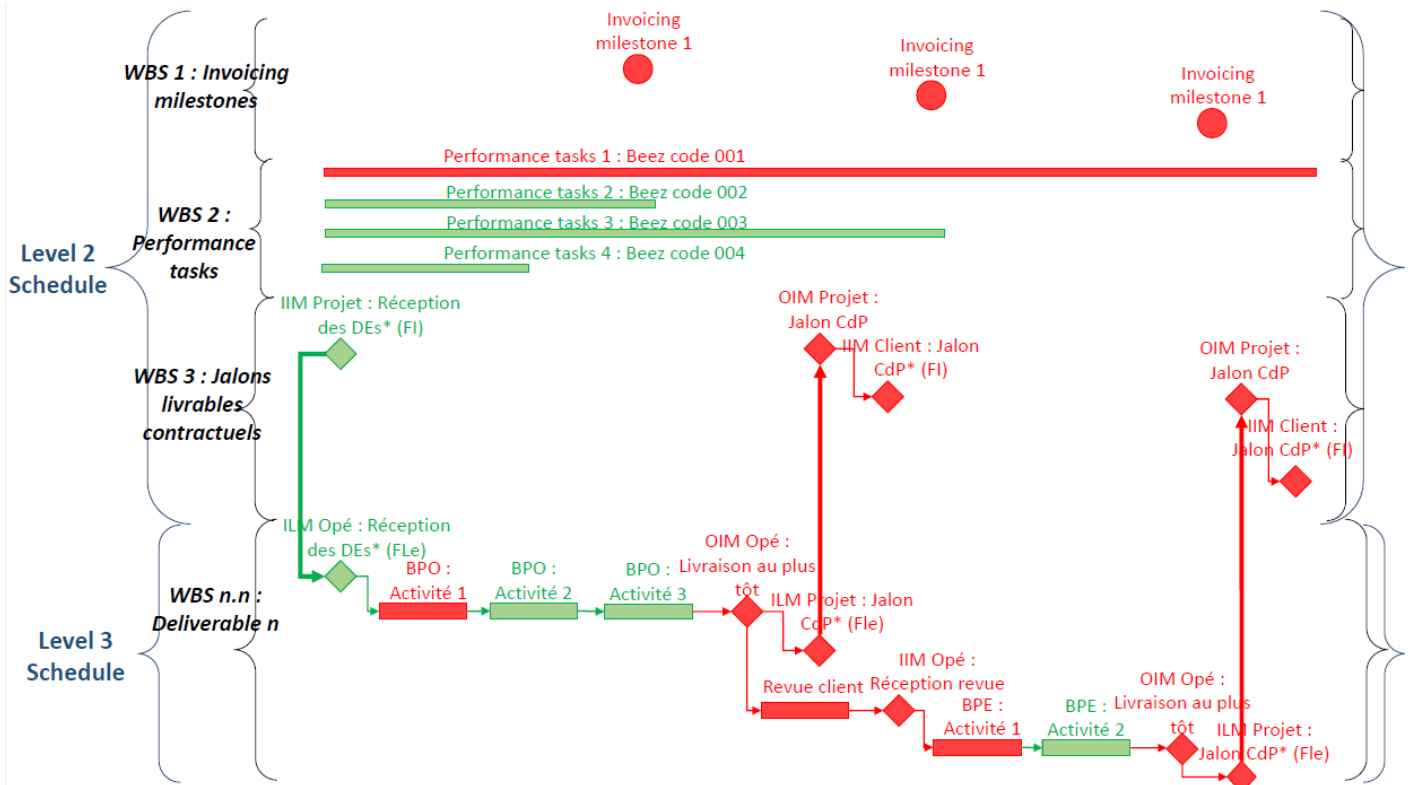


Figure 16 : Good practices document page 2/3

Legend and good practices

On the previous document the milestones and the tasks represented in red are mandatory in the different schedules. The ones in green are represented at the discretion of the person in charge of every schedules under the authority of the project manager or the team leader. If the non-compulsory activities are added, they are submitted to the same rules of codes explained in the following table. In particular the contractual deliverable have to be tagged with the activity code "UNIFIER Activity" equals to "Contractual deliverable Milestone".

Pattern	Explanation
Invoicing milestone ●	Milestones decided with the client. Activities of type « End Milestones » mandatory tagged with the activity code "UNIFIER Activity" equals to "Invoicing Milestone".
Performance tasks n : Beez code 00X —————→	Activity describing the CBS (Cost Breakdown Structure) . Activities of type« level of effort » mandatory tagged with the activity code "UNIFIER Activity" equals to "Performance tasks".
—————→	Link between activities of different level of scheduling (here between level 2 and 3)
—————→	Link between activities of same level of scheduling
Name of the task ■	Activities of type « Task dependant » taht can be found in the level 3 schedules or in the WBS 4 of the level 2 schedule. On several of these tasks, one will load some resources. In order to be able to consolidate the charge upon the different tasks, they will be tagged with the activity code « BI activity » equals to « Planned workload »
Name of the milestone ◆	Non-constrained milestones as the milestones named OIM (Output Interface Milestone)
Name of the milestone* ◆	Constrained milestones. Two types of constraints are to be find here : Mandatory finish (FI) where the milestone will not move even if a delay exists (as the milestones named IIM (Imput Interface Milestone)) and Finish on (Fle) where the milestone could mive in case of delay (as the milestones named ILM (Inter Level Milestone))

Figure 17 : Good practices document page 3/3

8.5. Annex 5: following the scheduling of the projects

8.5.1. Annex 5.1: projects' schedules dashboard

After the elaboration of the Batch 2, it became paramount to register the progression of the project scheduling and the following of the progresses. To communicate to every team leader and project manager, we thus created a recapitulative dashboard updated every week. You can find below the last version of this dashboard with its caption.

Numéro de l'affaire	Lot de l'affaire	Nom de l'affaire	Date de début prévisionnelle	Date de fin prévisionnelle	CdP en charge	Etat du planning directeur	Date de dernière mise à jour du planning directeur	Disponible sur le Cloud	RGM ou RLM en charge	Etat du planning opérationnel	Date de dernière mise à jour du planning opérationnel	Disponible sur le Cloud2
73646	1	Etude thermique CCL	13/11/2017	31/05/2018	SEGUINOT,ERIC	Réalisé et revu	14/02/2018	oui	Pierre ROBICHON	Réalisé et revu	02/02/2018 (revue annulée le 20/02/2018 car changement de cadre). Revue lorsque l'avancement sera plus grand.	oui
74445	1	MISTUB SIZEWELL	20/12/2017	28/02/2018	GIRAUD,LIONEL	Réalisé, attente de revue	19/02/2018	oui	Marc SALAÜN	Réalisé et revu	19/02/2018	oui
75479	1	Firestudies 2018	01/02/2018	31/12/2018	GIRAUD,LIONEL	Réalisé, attente de revue	19/02/2018	oui	Marc SALAÜN	Réalisé et revu	19/02/2018	oui
OFFRE	1	Vérif support VD3	29/01/2018	31/05/2018	SEGUINOT,ERIC	A réaliser si affaire gagnée	-	oui	Pierre ROBICHON	Réalisé et revu	29/01/2018	oui
74763	1	MAJ DSE ECC	01/02/2018	31/07/2018	SEGUINOT,ERIC	Réalisé, attente de revue	22/02/2018	oui	Mathieu MAHE	Réalisé et revu	22/02/2018	oui
72439	1	Appui systèmes SEO, SEH, SEK	01/02/2018	01/02/2019	GIRAUD,LIONEL	Réalisé, attente de revue	23/02/2018	oui	Mathieu MAHE	Réalisé et revu	23/02/2018	oui
OFFRE	1	MAJ risques inondation	01/03/2018		SEGUINOT,ERIC	A réaliser si affaire gagnée	-	oui	Marc SALAÜN	Réalisé et revu	19/02/2018	oui
00072869	2	ETUDE AGRSSIONS UK LOT 1 & 2	01/08/2017	31/12/2018	GIRAUD,LIONEL	Réalisé, attente de revue	19/02/2018	oui	Marc SALAÜN	Réalisé et revu	19/02/2018	oui
73330	2	DETU/CIS/UK/DFD GE	01/09/2017	31/12/2018	GIRAUD,LIONEL	A décider	-	non	Ludovic GRANGER	Importé, à révoir	-	non
70184	2	DSE PPR PEE SEG tous sites	01/02/2017	31/07/2019	SEGUINOT,ERIC	A réaliser	-	non	Mathieu MAHE	Réalisé et revu	23/02/2018	non
00067898	3	PILOTAGE IES NOG	21/09/2016	31/12/2018	HOARAU,FLORENT	A réaliser	-	non	Thibault SEMON	En cours de réalisation	-	non
00071208	3	CALCUL FORFAIT GRAND CHAUD N°7	01/03/2017	31/12/2018	SEGUINOT,ERIC	A réaliser	-	non	Pierre ROBICHON	Réalisé, attente de revue	07/02/2018	non
72035 continuation	3	Etude pôle PRS	01/04/2018	31/12/2018	HOARAU,FLORENT	A réaliser	-	non	Thibault SEMON	En cours de réalisation	-	non
00068710	4	UK - PLATEAU DFD	02/01/2017	31/03/2022	GIRAUD,LIONEL	A réaliser	-	non	Ludovic GRANGER	A réaliser	-	non
67981	4	NAA DDS	01/09/2017		SEGUINOT,ERIC	A réaliser	-	non	Marc SALAÜN	Réalisé, attente de revue	-	non
00067081	4	BPU Réalisation SCCD	01/09/2016	31/12/2019	SEGUINOT,ERIC	A réaliser	-	non	Ludovic GRANGER	A réaliser	-	non
00073011	4	SMNGC AVT SCHEMAS ELEC MECA	01/09/2017	31/03/2018	SEGUINOT,ERIC	A réaliser	-	non	Ludovic GRANGER	A réaliser	-	non
00062829	4	PEE Source Froide	15/11/2015	30/06/2025	SEGUINOT,ERIC	A réaliser	-	non	Matthieu MAHE	A réaliser	-	non

Légende :	Activité à retard conséquent : à faire en priorité par Alexandre	Activité à retard modéré : à faire au plus tôt par Alexandre	Activité à retard conséquent : à faire en priorité par CdP ou RGM concerné	Activité à retard modéré : à faire au plus tôt par CdP ou RGM concerné	Activité dans les temps
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Figure 18 : Projects schedule and last updating recapitulative dashboard

8.5.2. Annex 5.2: scheduling cycle for the different types of workers

In order to have a certain rigor in the processes of scheduling, it quickly appeared the need of creating a regular monitoring and scheduling cycle. This cycle was dependent on the average duration of the projects and we decided to create a weekly cycle that one can see below.

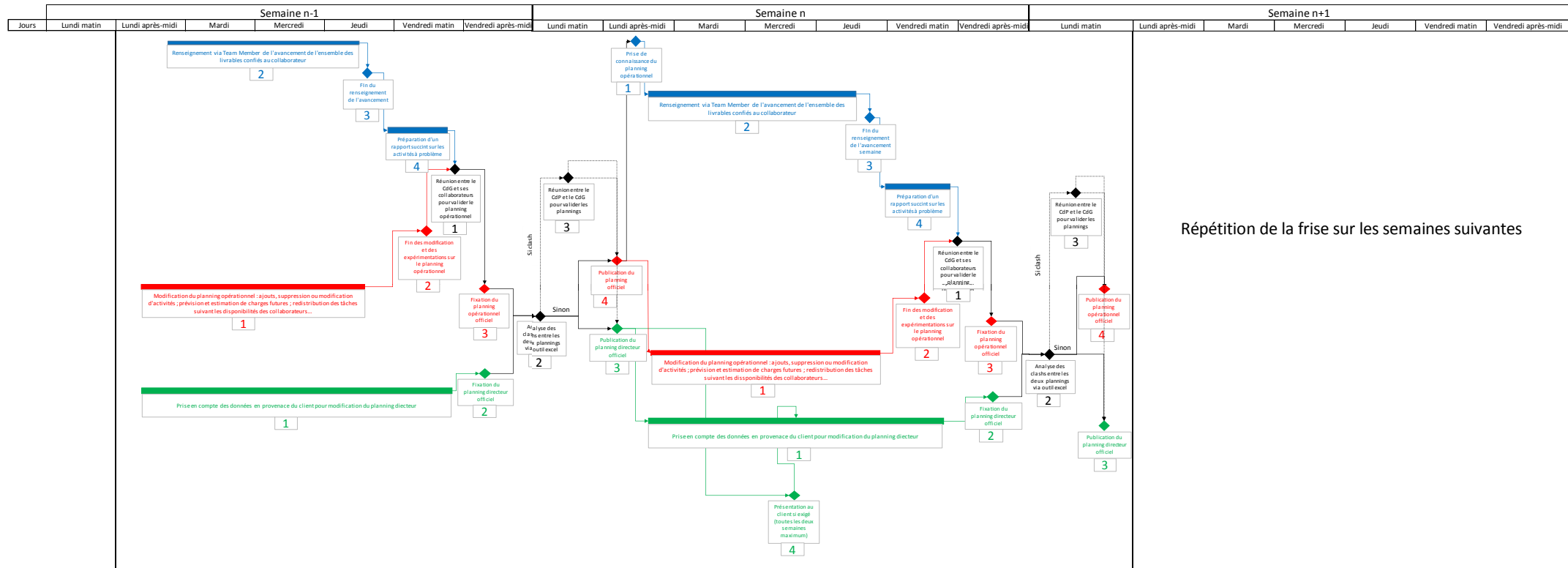


Figure 19 : scheduling cycle for the different types of workers