Prepare a CMMI-conformant plan for your study activities from now to the end of term. Explain how this plan satisfies the (specific and generic) requirements of CMMI. Which requirements are relevant ? How can you track your work based on this plan ? The plan should be realistic and actually be used.

Introduction

CMMI's aim is to improve the organizational processes occurring while developing software. Nevertheless, it can be applied to other areas such as security engineering or even workforce assessment. The Software Engineering Institute (SEI) at the Carnegie Mellon University, Pittsburgh, is the driving academic force behind CMMI.

Currently, I am enrolled at the Hasso Plattner Institute, Potsdam / Germany, and this assignment will propose a CMMI based plan for my summer term 2003. The lecture "CMMI and Software Processes" gave my an introductory view on the topic so far and on the following pages I will concentrate on a realistic and concrete realization of CMMI.

Requirements Management (REQM)

Specific Goals

SP1.1

SP1.2

There is one essential requirement: I long to get the Master's degree within at most four terms or semesters. Although the common time span is just three semesters, my vision is to cover much more subjects than needed in order to be some kind of an "advanced" Master student. Thus, this summer term does not only consists of software engineering lectures but, as you may guess, some external lectures such as an English course. To be more specific, I have to collect 54 points during my Master's degree. This term alone covers 36 points (hopefully, the external courses are accepted, so the number will rise) which is quite a lot. Hence, the next terms are not that demanding anymore, there are only 18 points left to gain. A non-trivial problem that may occur is that I cannot spend more than 72 points all in all. Therefore in the remaining terms I am not able to do that much software engineering lectures; instead I will have to concentrate on a Studium Generale.

One has to enrol in few lectures since they are restrictions concerning the fields of study to be covered. An example is "CMMI and Software Processes" which serves for six out of twelve points in software management.

SP1.1, contd.

In addition, my grades should be optimal. That does not mean that my aim is to get a bunch of A+'s – I rather seek to gain knowledge and to show in the exams everything and anything I learned. The average grade must be better than D (e.g. I must not fail), my final goal is at least B+. A fact even more important to me: the personality, not only the brain, should develop or, better to say, mature because most things in our daily life, including business, is about human factors, so-called soft skills. These are neither taught nor graded, these are attributes of your behaviour and your social status. As an example, I am part of the student's association, actively participate in three sport clubs and run a well-known web site.

SP1.3

Obviously, things always keep on changing. Not only my personal view on the world is in motion, there are some external factors I cannot influence, e.g., the lectures offered next term (winter term 2003/2004). The steps I may possibly take to react on these changes are rather limited. There is a fixed date (Belegungsfrist) and once this day is over there is no way to change the lectures I like to attend. What I am able to do (and definitely should do !) is to talk to the tutor, give hints on the subjects taught and read additional literature to get a deeper insight on things.

SP1.4, SP1.5

Ms. Annett Seidler guides me when assigning lectures to the different fields that needs to be covered. She is always very helpful and willing to give useful hints when one is not sure how to handle the complex enrolment process. By being such an "angel", she prevented a lot of harmful mistakes to be done. She even writes e-mails if she detects discrepancies and tracks all changes of enrolment.

Generic Goals

Gathering the Specific Goals was an ad-hoc process without any explicit structure. There is no chance to change these goals fundamentally since they are the vital part of the Studienordnung / Prüfungsordnung or belong to my attitude, something you should never alter if want to be someone who is filled up with self-esteem and proud of trusting the instincts.

Project Planning (PP)

Specific Goals

The summer term lasts from April 1st, 2003, to September 30th, 2003. The core weeks, these are the ones where lectures are actually held, begin on April 7th, 2003, and end on July 11th, 2003.
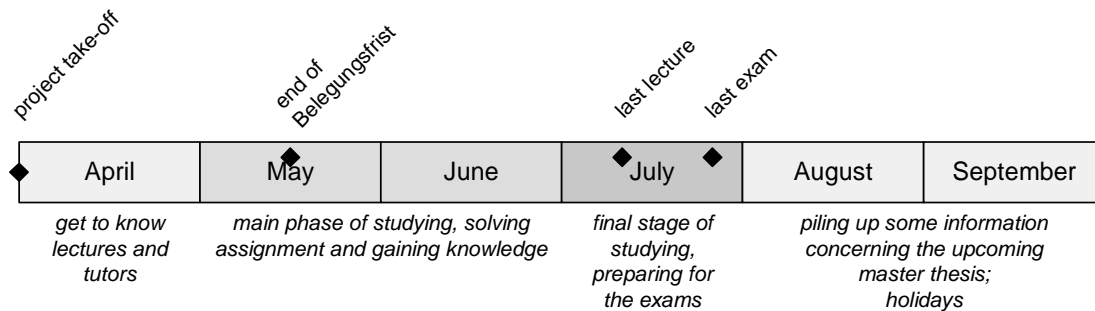

Figure 1: Overview of the term

The term can be broken down into 15 weeks (roughly four months). These weeks' structure is more or less constantly the same: four lectures on Monday, one lecture on Tuesday, four lectures on Wednesday and bi-weekly seminars on Thursday and Friday (each lecture lasts 90 minutes, the seminars are usually "nine to five", see Figure 2). I do not travel throughout the summer term and hope to stay healthy. My parents provide enough shares of a miraculous resource called money. They support my education by buying the most expensive books or paying my incredible internet bills. The ability to achieve an extra-ordinary performance is definitely not limited by an insufficient resource.

During the last seven semesters at the Hasso Plattner Institute I learned that one should never enrol in the minimum amount of subjects. An average workload of five up to six subjects seems to be optimal. So my current timetable looks like this:
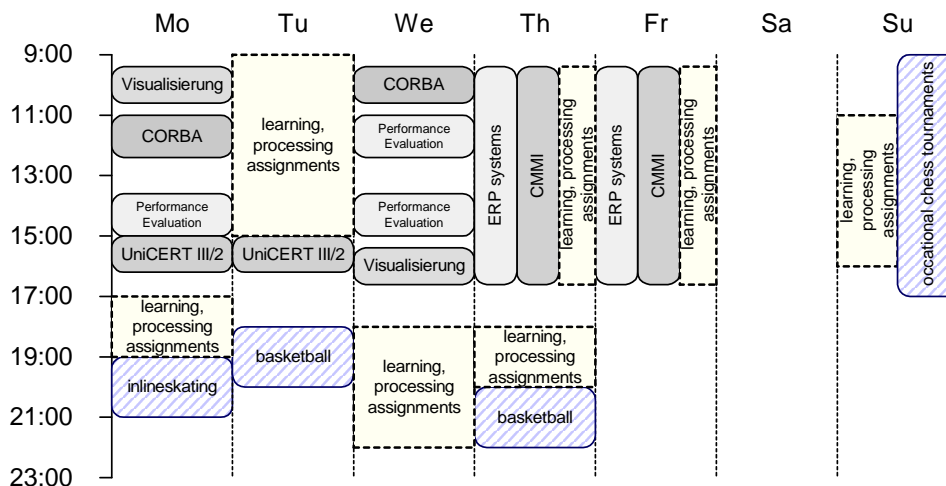

Figure 2: Timetable

Each student is required to enrol until a fixed date, called the "Belegungsfrist". For me, that date does not play an important role because I tend to enrol very early, this term's enrolment was finished in late April. I chose these lectures due to different reasons: my own plans of the future, suggestions of friends/family/lecturer and requirements of the modern industrial software development.

SP1.2

There are two groups of attributes: the boolean attribute of either failing or passing an exam and the grade. To get the degree "Master of Science in Software Engineering" I just need to pass enough subjects while the grade may be essential when applying for an interesting job afterwards. In first instance you may treat it as a "bonus".

This paper already mentioned that grades sustain a good and valuable instrument to track a student's success. Another interesting measurement are assignments, such as this one, which are evaluated by the lecturer. My aim is to achieve at least 50% (otherwise I would not be permitted to take part in the exam) and to attain an average of 80%. It is not desirable to perform best and get always 100% because as a consequence you would spend too much time for university's stuff and forget about the aforementioned soft skills. After all, an overworked student is not the smartest one.

SP1.3

Setting up a separate process to estimate the size of the plan seems to be quite superfluous to me. The main reason is the linear structure of the process, there is only a single model that *may* fit: the waterfall model. I do not go into detail – the reader should look up the phases in Figure 1.

Subject	Hours of lecture (per week)	Expected workload at home (per week)
Visualisierung	3 + 1	4
Architecture of the CORBA Component Model	4	4
Performance Evaluation Techniques	4 + 2	6
CMMI and Software Processes	4	4
Konzepte und Technologien für ERP-Systeme	3 + 1	2
UniCERT III/2 English	4	2
	Σ **26**	Σ **24**

Table 1: Workload during summer term 2003

SP1.4

These estimations (Table 1) base on the experiences I gained throughout the Bachelor's degree's studies. They seem to be quite realistic: the last five weeks showed that they actually reveal the expenditure. Nevertheless, I usually spend extra time for university when preparing for an exam. Hence, in the last weeks there may be a peak workload of about 60 hours or more (Figure 3).

SP2.1

The priorities of my subjects (Figure 2 and Table 1) are neither steadily nor equally distributed. E.g., the exercises or assignments of Performance Evaluation Techniques and CMMI contribute to my final grade. Therefore, I insist on spending some further time while processing them in order to get an optimal result. Up to now, that strategy worked out fine and will be continued.
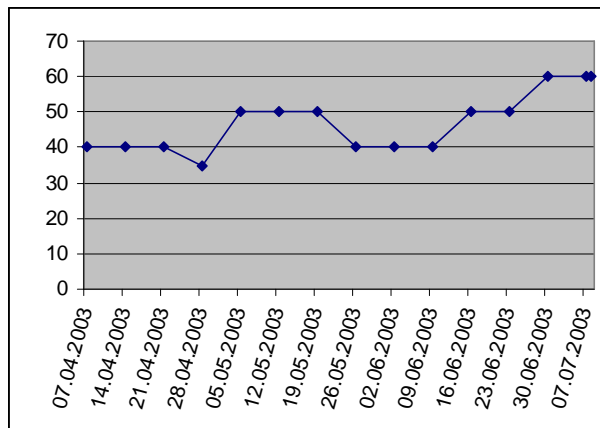
Figure 3: Weekly workload

Depending on the so-called "Blockseminare", my workload in May and July is slightly above the average (see Figure 3), while April and June are quite comfortable. One thing to note: several oral and some written exams take place after the last lecture. I like that because in these weeks I can solely concentrate on the exams.

It is not feasible to evenly distribute the workload all over the summer term 2003 as the amount of assignments is unfortunately very closely related to the amount of subjects per week. The only thing left is to try to partly prepare for some exams in June: under the assumption that I do not forget too much until July.

I expect to buy books for about 250 € all the way through the term. So far, I already spent more than 150 € for two books on CORBA, one book on CMMI and one book on Performance Evaluation. Monthly expenses, such as the rent, telephone/internet bills, insurances, etc. are paid by my grateful parents.

SP2.2

I do not take into account the possibility, or better to say risk, of getting sick or ill. In a even more realistic plan that fact should be considered of course. Indeed, I am currently injured: my left knee hurts a lot due to a sport accident but the pain does not obstruct my studies on software engineering.

My father's job, he is a civil servant, ensures that there will be enough money throughout the term. Because I do not want to exclusively rely on his income I saved some money while serving in the army and working in companies (mostly internships).

Running out of time seems to be a true risk. If you take a look at the timetable (Figure 2) there is not much spare time left. Especially hot temperatures and delicious barbecues can prevent me from actually attending each lecture. I never failed in any subjects while achieving the bachelor's degree. This fact empowers me in my strong believe that I will not fail in the future (and the current term !), too.

SP2.3

A collection of all handed-in papers gives me a good overview of my semesters. Since I prefer to create them digitally they are always available to me and can be copied arbitrarily – something extremely useful when discussing topics with students while preparing for the term's exams. These documents are available online, too (see the internet address on each page's lower left corner). The receipt of enrolment is kept secure at home like any other official paper received from the university and/or the Hasso Plattner institute.

SP2.4

My computer offers more than enough disc space, speed and external equipments be a supportive companion, too. Any other investigation on the consumption of resources, such as paper, may be omitted. Besides, I revealed something I am not quite sure whether one could call it a true resource: motivation. I will cross my fingers that I never run out of it.

SP2.5

The admission to the Master program is closely coupled to many requirements. Their most significant intention is to chose only the best and most appropriate students. I satisfied all prerequisites because of holding a Bachelor of Science in Software Engineering from the Hasso Plattner institute with very good grades.

SP2.6

Many persons are involved in the Master program: first of all myself, my family, the mentor, the tutors, their assistants and finally the staff at the Hasso Plattner institute and the University of Potsdam who organize a lot of things (enrolment, housing, cafeteria, …).

SP2.7

All the figures and tables sum up to a good plan. It may be written down on a separate sheet of paper in order to gain a more suitable access to the core aspects. Nevertheless, the previous pages contain enough information – in fact they *are* the plan.

SP3.1

My mentor at the Hasso Plattner institute did not have the time to review my plans so far. Unfortunately, the Belegungsfrist passes by tomorrow and huge parts of my plan are fixed then.

When arriving at home, my parents talk to me on the lectures although they never studied something like computer science. What they present to me are invaluable experiences: gathered while studying some years ago and now working in the "real world" out there: indeed, it widens my view. Last but not least, I review my plans on a regularly basis with an emphasis on the four milestones (Figure 1).

SP3.2

As mentioned earlier, the main resource is time. Its availability and usage can be derived from Figure 2. I like to highlight Saturday, the only day not devoted to my studies. The recreational aspect is of high importance in order to significantly boost my motivation for the next week.

SP3.3

All decisions that lead towards the Master's degree have to be made by myself. Various persons may provide hints or express concerns but in the end my – and only my – signature is the one and only legal authorizing element. Of course, most persons in close relation to me bear the burden of moral support.

Generic Goals

GP2.1

The process cannot be applied to all students in the Master program. It is merely a plan that organizes *my own* academic career. Of course, one can claim to extend the plan to all terms and not only the current one (which is the summer term 2003). You can even go even further and develop ideas how to plan the whole life. But according to Sheryl Crow: "Life is what happens while you're making plans."

GP2.2 - GP2.10

There is no process for creating the plan and thus that process cannot be planned. Furthermore, there were no resources used, I am fully responsible for the whole plan, no education was requested, …

Anyway, there is a commitment of mine that I will finish the Master's degree in the time span with the grades (as stated above). No restrictions were detected that may limit the abilities (SP1.1), I showed that all main resources are available to a sufficient degree. In-between all these Specific Goals I gave many hints and revealed interesting ideas which persons influence me in what manner by directing the process. Finally, guidelines on how to verify the progress and success were presented.

Conclusions

My CMMI based plan seems to be on level two of the staged representation, hence it is "managed". Many companies reside on that level, too. In my eyes, there is no explicit need to improve any further: the bureaucracy will be skyrocketing. A single person, that is what I am, will not gain much progress from a more comprehensive process model. The successes of my past, which I achieved without establishing any process, prove me right.

I had big trouble identifying the Generic Goals. When the SEI defined them, they were intended to be applied to an organization consisting of many employees, etc.. Therefore, they are likely to be disused in this document. When talking about the remaining process areas, such as Project Monitoring and Control, Measurement and Analysis and so on, it should turn out that even a one-man-organization needs to establish them.

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