A Professional too Valuable to Lose

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Day 1 - 01 April 2014

The Assignment

After some time, we have finally received some details about our assignment, we are hired to offer possible solutions to a company that doesnt want to lose a very destacated worker, he is a highly skilled and successful professional that was involved in a tragic plane accident losing motor capability from the waist down, and sadly also lost his right arm and the left one up to the elbow height; his mental, vocal, hearing and visual capabilities were completely recovered, which means he is still able and willing to work.

The idea is to create a set of possible tools to make his return to work possible and easy as well as to evaluate 2 different approaches, one in which we evaluate the best possible solutions to the specific problems with no regard of the cost of implementation, and the second one in which we should explore the possibility of a "low cost solution" to the problem, this is making the thing a little tricky but we are convinced that more than a problem this can be seen as an opportunity for having a better perspective in the area.

Organizing the work

The first task of the day is the research about the entire subject because we have an almost complete lack of experience in the area, we found some surveys and sociological information about the use and common practices in the area, as well as some interesting technologies that are very promising, nevertheless so far nothing to concrete until we discuss some details about the implementation and some particular conditions with the customer.

The first research round threw some interesting division in the work, basically we can focus only in motor disability, and avoid work in sensor, mental or balance disabilities, then the division was defined to attack the main problems the subject will affront in the work environment:

- *Mobility Limitations:*
  This limitations make reference to the fact that his displacing ability is compromised, and with it the ability to do almost any physical effort, this includes picking up objects, plugging in and out connections, and anything that normally is easily done but requires some level of physical strength.

- *Human-Machine Interaction Limitations:*
  This Item makes reference as the obstacles present to use day to day computer peripherals, for instance a standard keyboard and mouse are absolutely out of discussion, the main limitation here is the complete absence of hands of the subject, due to the fact that any standard peripheral counts with the ability of grabbing and holding.

- *Communication Limitations:*
  Even with the amount of damage the subject received, his communications skills by traditional methods are almost intact, for instance his ability to talk and listen are 100% recovered, and his knowledge about reading and writing also are present, nevertheless he is not able to do the most basic activities to achieve the results under day to day circumstances, for instance he is not able to grab a telephone nor dial a number in a standard keypad, also it is almost impossible for him to handwrite or even to type in standard way.

The work for tomorrow

The stage for new technologies research is almost over, we have to proceed to the next step in which we find ways to apply these technologies to real life problem solvers, this is the moment to give concrete solutions to concrete problems and where the combined use of one more more technologies should be used to propose a way to surpass the limitations of the user, this work will be started during the day number 2 expecting to create a number of possible solutions that can be further discussed with the project leader and the client in order to get an efficient implementation.

Day 2 - 02 April 2014

The other perspective

During this day our team advisor came up with a pretty interesting idea, lets see the problem from a different perspective just in case we are missing something in our original approach; our first attempt to tackle the problem was to go to the theory and find how it has been treated in the past by other people in other circumstances, that and our reasoning capabilities should give a pretty good solution to the problem, right?

Well turns out that even when the original approach was not completely wrong, there were some issues we didn't consider before, luckily the new approach helped us to find at least some of them (we cannot assure that everything was already covered), it was easy, we only had to navigate a day in the life of the job was done and hereby…. some preliminary results:

A typical day scenario

(1) Transportation:

- If the user has a car, it has to be special modified for accessibility. He cannot drive the car, so he'll has an assistant/driver
- a second thought is to take a bus. {low budget scenario}
- maybe, if it is possible/available, he can use a self driving car(Google car).

(2) Office:

- his work environment has to be "disabled - friendly environment "(ramps, elevator,evenfloor) . This means that his parking spot has to be near the entrance door in order to has an easy access in the building.
- His office door should be automatic and it can be open with technology of facial recognition, or with RFID tag, bluetooth etc.
- Due to his disability, it is advisable his working office be in the ground floor in order to avoid the use of elevator. If this isn't possible, then the elevator should be equipped with a speech recognition operation(high budget). Otherwise, he could use the elevator with his prosthetic arm(low budget). Furthermore, another solution could be the use of a lever.
- His wheelchair will be charging wirelessly(like smartphones charge).

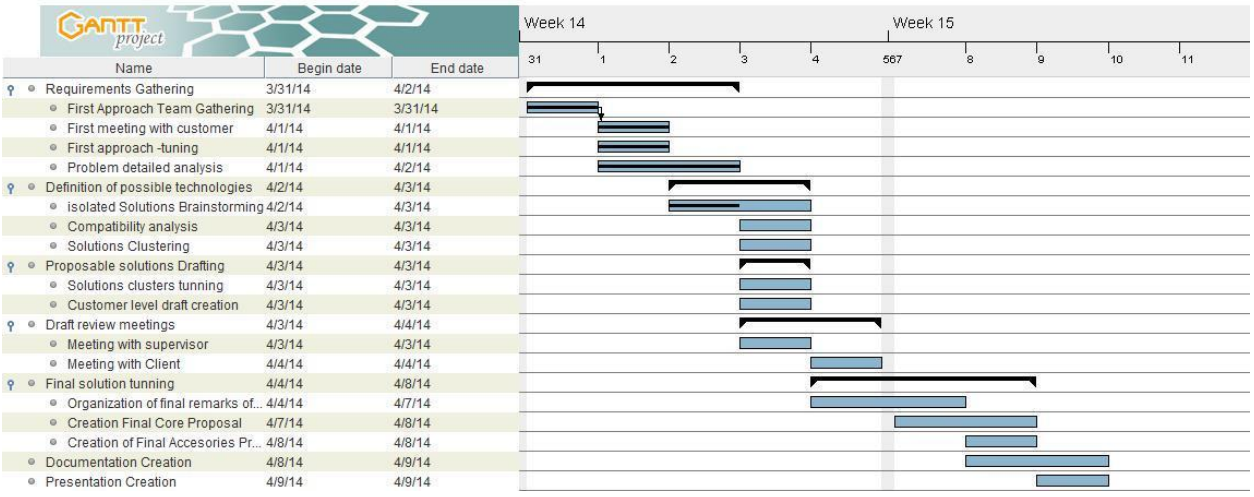
- When he enters in his office, everything, including computer, A/C ,lights, printers for example, should power on automatically.
- Wheelchair should definitely be equipped with wireless and 3G system.

(3) Emergency Situation:

- The whole building should be equipped with several UPS devices and Backup plans for saving his work.
- the building should also be equipped with an emergency exit in case of fire or earthquake.

Day 3 - 03 April, 2014

In day 3, we made a schedule that shows our progress, future work to be done,what we have already done. Also we divided our work into mini tasks in order not to get lost.



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In addition, we found specific solutions with prices to our different problems. To begin with, for Transportation issue, we have three possible solutions. The first one is a bus, the second a personalized van (with a driver) and the third one a automatic driverless Google Car.

Concerning the office, we found that his working building must have ramps and automatic doors in order to get inside the building. As we already said before, it is preferable his office be in the groundfloor. If this is not possible, the elevator must be equipped with the above proposed solutions. For example, bluetooth, RFID tag, voice - speech recognition. In addition, we found the iris scan is a possible solution but it is very expensive. Also, he can use a prosthetic arm to deal with these issues.

When an emergency situation might happen, the building should be equipped with a UPS unit and BackUp plans in order to save his work. It will be a good idea, also, if his wheelchair has an auxiliary battery case

Day 4- 04 April 2014

What we did today was to combine and represent all possible technologies in order to satisfy our client. Basically, we create a table and we combined the proposed solutions we found to make two different solutions according to our client's budget, the low budget and the high budget options. In this table, we wrote down five different scenarios, to have our client the option to choose what he wants depending on his needs. From this five scenarios, we concluded in two final scenarios.
In this table, there are

Electric Chair	**Transportation**	**WorkPlace**	**Office**	
			Entrance Door (outdoor)	***Indoor***
Base Chair	Google Driverless Automated Car	parking spot near the entrance	speech recognition for opening the door	Visual processing that powers on EVERYTHING
Wireless charging	Van Car	Accessibility Ramps for the	retinal scan technique for security reasons(hb)	bluetooth embedded

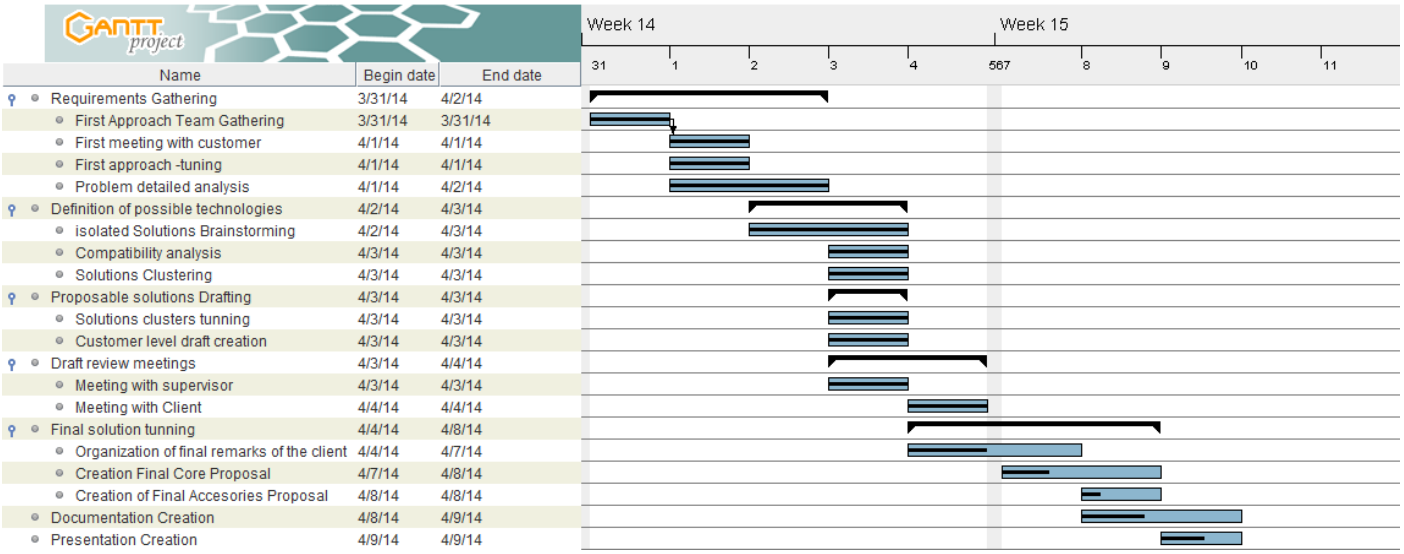
system		building		controlling system
specially designed Charging system	Bus	automatic doors (everywhere)	face recognition	Accessible buttons
Central processing unit		speech recognition for opening the doors	rfid tag (proximety sensor)	Speech processing
Visualization system.		speech recognition for the elevator use	bluetooth	
image capturing system		prosthetic arm		
google glass		an assistant to open for him the doors		
speech rec sys		headset to call or use speech recognition		
trackball		Specially designed Elevator control system**(lever)		
augmented reality pointing sys				
breathing recognition system				

1. In the first option, our client's electric wheelchair will be equipped with a specially designed charging system. He will go to work by bus and when he will arrive at his workplace, the building must have accessible buttons in order to push them with his prosthetic arm to get inside the building. Also, these buttons should be outside of the elevators. When he will be outside of his office door, he can enter the room with the accessible buttons mentioned earlier. In this solution, we rely on his partners reliability. His office is going to be equipped with special interfaces, such as joysticks, trackball buttons etc. Using differents enterprise communication tools, he is going be able to have video calls for his meetings, chat with his colleagues. Also,

he is going to use his operating accessibility tools to open a program maybe, or to type. So, to conclude, this is the low budget scenario.

2. In the second option, electric wheelchair will have wireless charging system, a central processes unit with image processing and audio system. Basically, the wheelchair will have a monitor device and with the use of augmented reality system, he is going be able to aim and select whatever he wants. In this solution, a modified google driverless can can be used in order to take him in his workplace. Concerning his workplace, building should be equipped with automatic doors and with speech recognition operation to access the building and his office's door. Another option to enter his office is a retinal scan technique for security systems. With the use of speech recognition he is going be able to operate his computer. In this scenario - solution, client will be able to save his work with the BackUp plan.

Finally, we update the timechart with the work we did and tomorrow work. The timechart is in the above picture.



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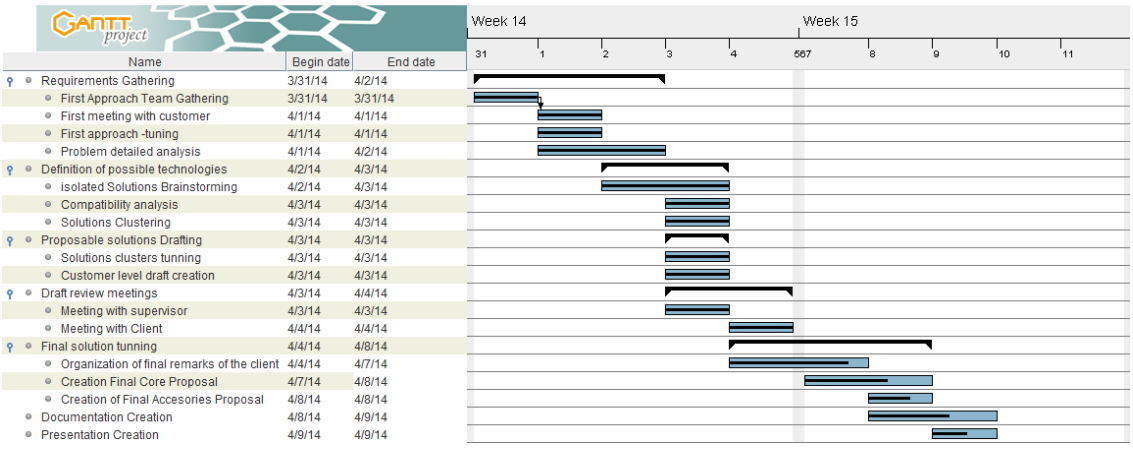
Day 5 - 07, April 2014

The work today started with a follow - up meeting, where we catched up with the point where we left last time, we also discussed how we are going to structure the presentation and how are we going divide the on - stage time. So far, nobody wants to say anything, but we will see how it goes in the end. Then, Martynas created and gathered some drawings that we will use as visual aids to avoid getting our customer bored during the final presentation. Daniel and Greg worked in the final detailed descriptions (each one of the modules) in order to make neatly looking presentation and easier to understand to our higher level managers. Finally, nefeli dealt with the logs to keep you guys updated and updating the final documentation in order to not miss anything in the last moment.

Right now it looks like we are close to the end, our project follow up looks like:



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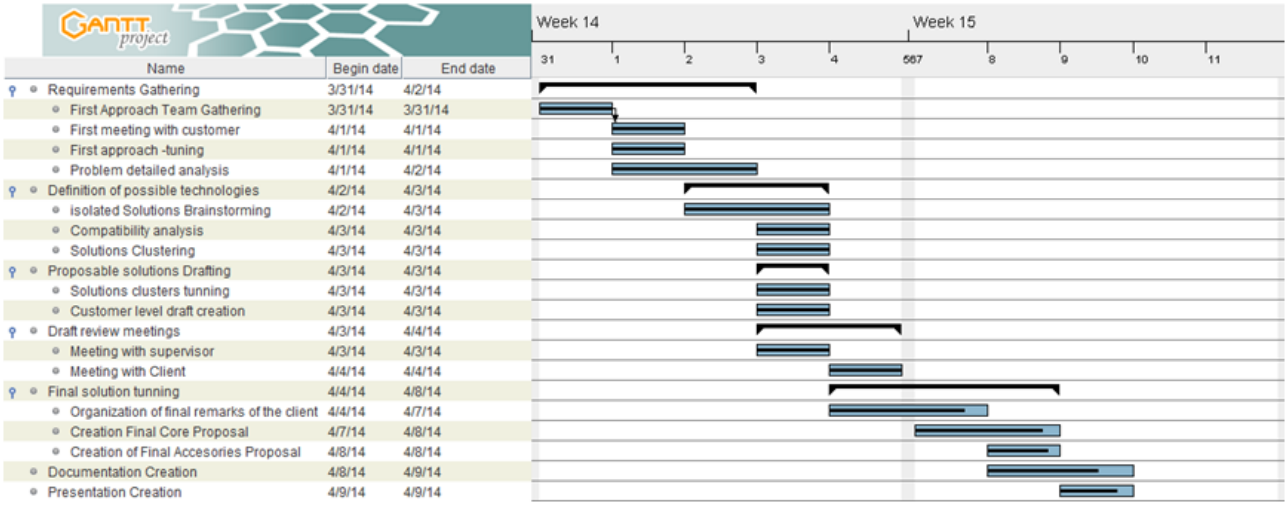
Apparently, the work for the next couple of days is going to be kind of boring, we are going to write a lot and also to create the presentation.

Day 6 - 08, April 2014

Today, we thought that it is necessary to have the Explanations to the technologies we were planning to use in order to be able to write them down in out final documentation, also while we were at it, we defined that it was a nice moment to put the most accurate possible range of prices to start structuring the costs proposals.

besides this we also were doing some work on the slides for our final presentation, damn its hard to write stuff in a nice way with the intention for somebody who doesn't understand you can start thinking: hey… this guy is right, i should give him money…..

Our current project follow up plan looks like this:



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yeah yeah, we know it doesn't look THAT different than yesterdays but it IS different, take a detailed look in documentation and presentation parts!

by now our plan for the rest of today and tomorrow is pretty simple, just keep writing down documentation polishing presentation and making it look nice.

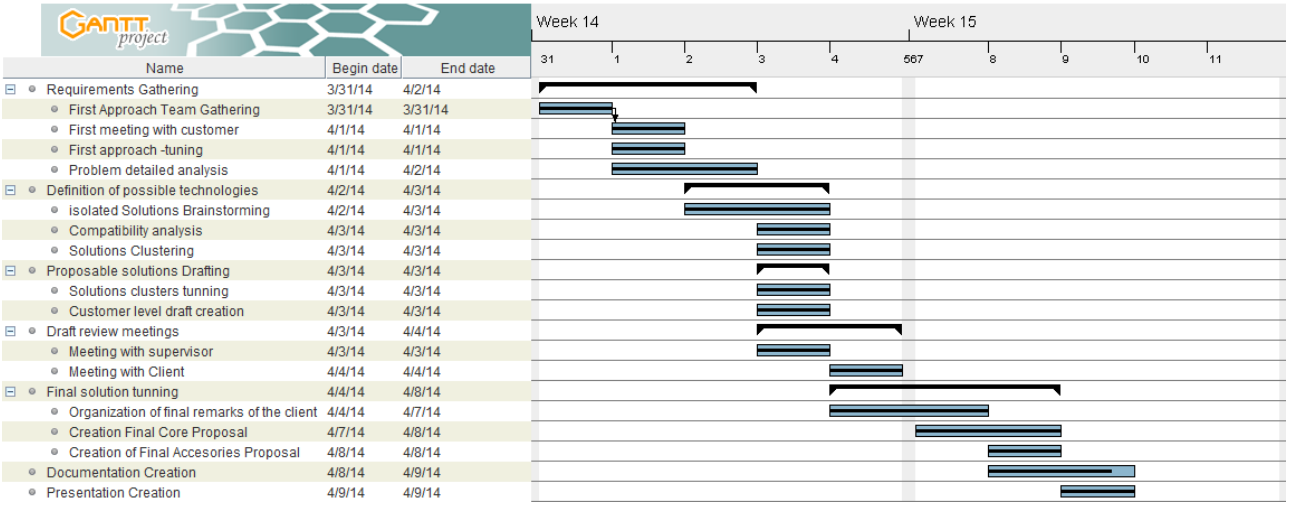
see ya fellas!

Day 7 - 09 April, 2014

Well… this is it, this is the end…

Today its the day we finished our proposals, we made all the requested tasks and we worked in our deliverable document (surprise for presentation), we polished our presentation, and created the speeches, it was a hard long work, but we managed to finish it; besides… we practiced it … A LOT.

finally we can say that our project is really close to its end, only…. take a look at this:



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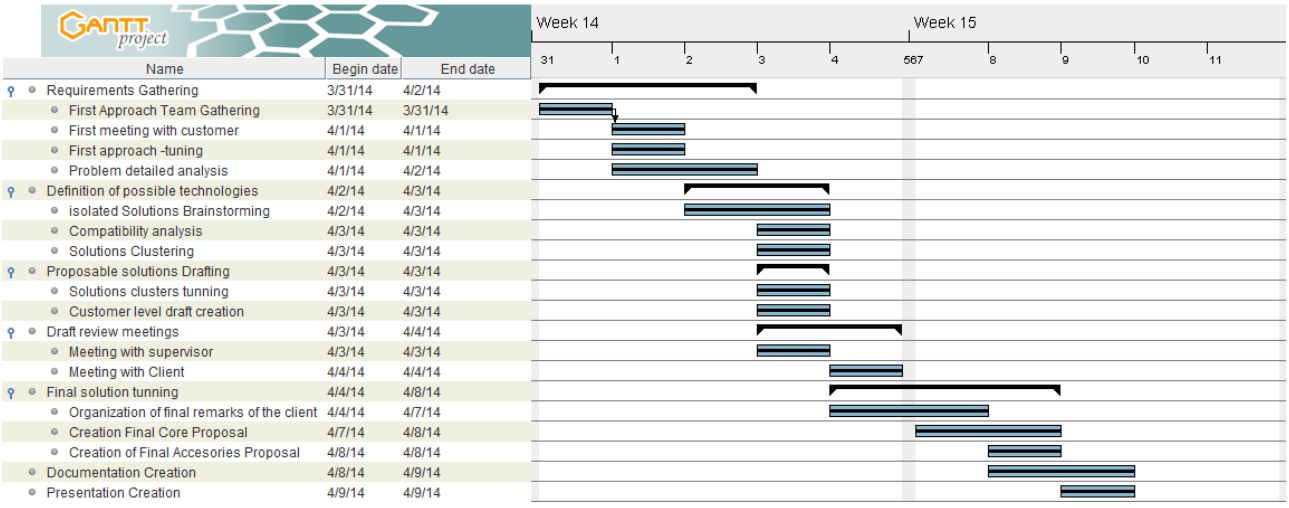
tomorrow will be a new day, we will have to present it TWICE, and then finish documentation, doesn't it sound like fun????

Day 8 - 10 April, 2014

Today was a weird day, even when we worked a lot in presentation, and in the speeches, apparently it didn't have the impact we expected, during the last public rehearsal, we got some comments about the form and the graphical presentation, which made us start over again…. but not with all but with the graphical layout and the images to support the speeches, i the end we managed to do it on time…. BARELY, and according to the lack of comments and the few questions, it was good :)

after the final presentation we had a meeting with our customer, in the end he was happy, which MADE US happy, and instead of correcting problems with the project we had an interesting geeky chat about sci-fi, and some particular ways for the IT college about handling stuff, it was cool for several reasons but mainly… we did a good job!! YAY

final remark:



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Wooohoooo!