Agile Java Development

Code Camp

By Capgemini

GROUP - 2

Team,

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1. Introduction:

Project Name:

Work Load Forecast System

Project Description:

The main objective of this project is to develop an application to emphasize the work load forecast of a consultant to utilize the consultant to a maximum possible way. Currently Capgemini is using work load forecast system which has it disadvantages in using that. For example Capgemini is using Microsoft excel to calculate a consultant work load, which has its own difficulties like understanding, comparing two consultant forecast system which is big problem in work load forecast.

In code camp we are mainly focusing on to make the process simplify and also to make it easy to calculate the forecast and also to compare the forecast between two or many users to easily compare their usage.

As a team we come up with a good solution which makes the process easy and also the comparison between the consultants makes easy to the company with our application.

2. **Sprint Backlog:**

As a team we decided to use Google docs to update the Sprint backlog which is more efficient and effective way to update the sprint backlog.

https://docs.google.com/spreadsheet/ccc?key=0AoktH7zaynG9dDJmUTZ6Y2pUWU1FUXlHckNBSlJnQ3c#gid=1

Prioritized List:

Before preparing sprint backlog we prepared a prioritized list, in order to know which item to be developed first. Based on the priority list we prepared sprint Backlog.

Priority(1-3)[5]	User Stories[6]	Story Points (1-5)[7]	Acceptance Tests [8]
1	I want to register to the workforecast system to use it	2	
1	As a user I want to log into system to use it	3	--
1	As a user I want to logout	1	--
1	As a manager I want to create activity	2	
1	As a manager I want to create project	2	
1	As a consultant I want to input forcast of project	4	--
1	As a consultant I want to list forcasts I entered	4	--
1	As a consultant I want to update forcasts	3	--
1	As a consultant I want to delete forcast	1	--
1	As a consultant I want to add TimeLine to forecast	3	--
1	As a consultant I want to update timeline	3	--
2	As a consultant I want to delete timeline	1	--
2	As a consultant, director, manager, controller, resource representative I want to view timeline	3	--
2	System should log these user activities: date, username and changes made	2	--
2	As a controller I want to make instruction	2	--
3	As a director I want to view the total revenue of consultants	2	--
2	As a manager I want to view availability of consultants	5	--
2	As a director I want to view projects	3	--
3	As a director, manager, resourcing rep. I want to compare consultants forecasts	3	--
3	System should allow simultaneous user updates	4	--
	As user I want to print report of forecast	2	--
3	System supports browser and mobile	4	--
		--	--
--	--	--	--

Sprint Backlog Logs are shown below:

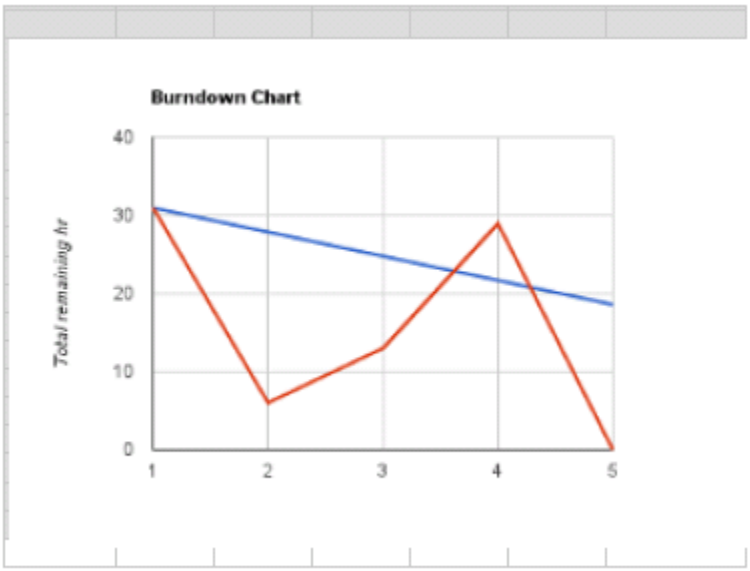
User Stories[1]	Tasks[2]	Status	Owner(s)[3]	Remaining hours at the Beginning of day:					Week 2 Forecast				
				1	2	3	4	5	6	7	8	9	10
				31 [4]	6	13	29	0					
As a user I want to register to the work forecast system	Design register view	Done	CC			1	0						
	Create domain and controller classes for registration	Done				1	0						
	Code the registration logic	Done				2	0						
As a user I want to log into system to use it	Make the related classes(domain,controller)	Done	JAT & CC	1	0.5	0							
	As a user I want to register to the work forecast system	Done		2	0								
	code login logic	Done		2	0								
	Test login	Done		0.5	0								
As a user I want to logout	Design Logout interface	Done	SK	1	0								
	Code logout logic	Done		0.5	0								
	Test logout	Done		0.5	0								
As a consultant I want to input forcast of project	Make the related classes(domain,controller)	Done	SM	1	0								
	Design Forcast interface and create view	Done		3									
	code forcast logic	Done		2									
	Test project forecast	Done		0.5									
As a consultant I want to list forcasts I entered	Add the list action to controller	Done	JAT	1									
	Add list link to interface	Done		1									
	Test list	Done		0.5									
As a consultant I want to update forcasts	Add the edit action to controller	Done	CC	1									
	Add edit link to list interface	Done		1									
	create edit page	Done		2									
	Add update action to controller	Done		3									
	Add update button in interface	Done		1									
	Test update	Done		0.5									

User Stories[1]	Tasks[2]	Status	Owner (s)[3]	Remaining hours at the Beginning of day:					Week 2 Forecast				
				1	2	3	4	5	6	7	8	9	10
				31 [4]	6	13	29	0					
As a consultant I want to delete forcast	Add the delete action to controller	Done	SK	2									
	Add delete link to list interface	Done		0.5									
	code delete logic	Done		2									
	Test Delete	Done		0.5									
As a consultant I want to add TimeLine to forecast	Make the related classes(domain,controller)	Done	SM	1	0.5	0							
	Design Forcast interface and create view	Done		1	0								
	Connect Forcast to Timeline interface	Done			3	0							
	get related forcast id and connect to TimeLine code , and complete logic of Timeline	Done			3	0							
	Save timeline	Done			1	0							
	Test timeline	Done			0.5	0							
As a consultant I want to update timeline	Add the edit action to controller	Done	CC		3	2	0						
	Add edit link to list interface	Done			0.5	0	0						
	create edit page	Done			2	0	0	0					
	Add update action to controller	Done			2		0	0					
	Add update button in interface	Done			1	0	0	0					
	Test update	Done			0.5	0	0	0					
As a consultant I want to delete timeline	Add the delete action to controller	Done	JAT		1	0	0	0					
	Add delete link to list interface	Done			1	0	0	0					
	code delete logic	Done				2	0	0					
	Test Delete	Done				2	0	0					
As a consultant, director, manager, controller, resource representative I want to view month timeline	Add search action to controller	Done	CC			4	3.5	0					
	Create list month timeline interface	Done				3	2	0					

User Stories[1]	Tasks[2]	Status	Owner (s)[3]	Remaining hours at the Beginning of day:					Week 2 Forecast				
				1	2	3	4	5	6	7	8	9	10
				31 [4]	6	13	29	0					
	Calculate total days and revenue and fomular (ARVE, URVE, COR, availability)	Done					2	0					
	Test month timeline	Done					0.5	0					
As a manager I want to create activity	Design activity view	Done	SK				1	0					
	As a manager I want to create project	Done					2	0					
	Code the activity creation logic	Done					3	0					
As a manager I want to create project	Design project UI	Done	SM				2	0					
	Code project logic	Done					4	0					
As a manager I want to edit timeline	Create edit view	Done	CC				4	0					
	Code the logic	Done					5	0					

[1]	[2]		Remaining hours at the Beginning of day:					Week 2 Forecast				
			1	2	3	4	5	6	7	8	9	10
User stories	Tasks	Status	31 [4]	6	0	0	0					
As a director, manager, resourcing rep. I want to compare consultants forecasts in graphical view		Pending										
System should allow simultaneous user updates		Pending										
System should log these user activities: date, username and changes made		Pending										
System support browser and mobile		Pending										
System should allow simultaneous user updates		Pending										

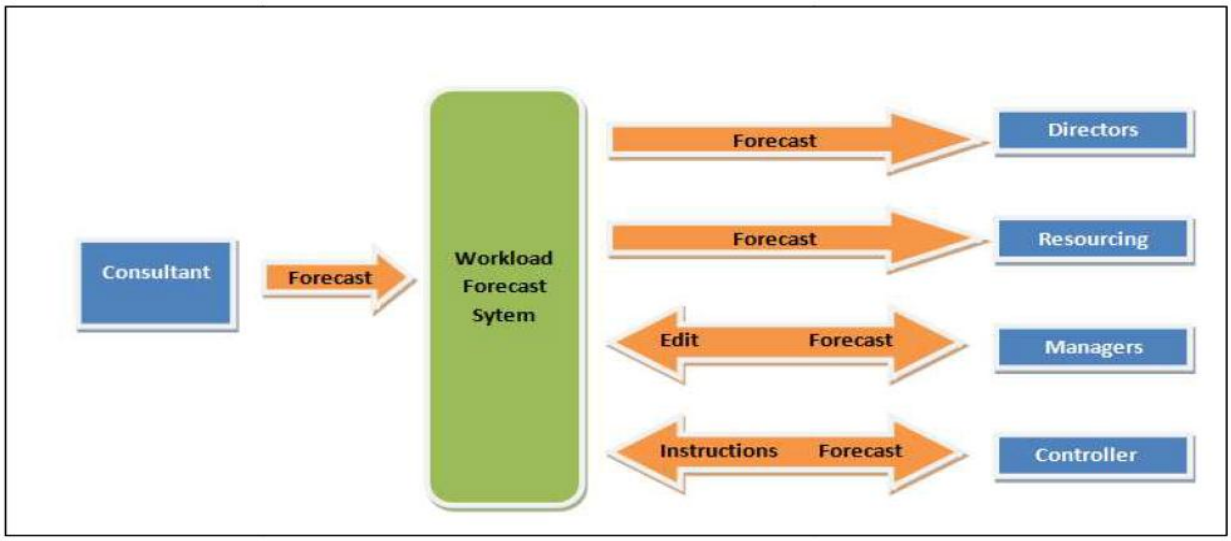
Burn Down Chart:



Burn down Chart shows the amount of time between the actual time and the total remaining hours.

3. **User Stories:**

WORKLOAD FORECAST SYSTEM CONTEXT GRAPH



Workload Forecast System Context and Information Flow [Source: Capgemini]

The system is designed based on the above picture how information or system design flows.

We have designed the user stories based on the above system flow.

Priority : 1	User Story: I want to register to the work forecast system to use it

As a consultant if you want to enter the work load forecast data you need to register as a consultant before start using the Application to access the complete functionalities as a consultant.

Priority : 1	User Story: As a user I want to log into system to use it

As a consultant once you registered, you need to login the system to start using the application. For this we have developed login module. It provides authentication and helps to prevent unauthorized users to enter into the application.

Priority : 1	User Story: As a user I want to logout

As a consultant once you completed with the work, you need to logout of the system to make sure no one can able to use/access your profile.

Priority : 1	User Story: As a manager I want to create activity

As a manager I want to create activity to the consultants who are going to work in the project to estimate the consultant work load.

Based on the activity user forecast is calculated

Priority : 1	User Story: As a manager I want to create project

As a manager I want to create a project so that consultant can choose the project / assigned to project, which they are going to work.

Priority : 1	User Story: As a consultant I want to input forecast of project

As a consultant I want to provide input to the system to calculate the work load. It helps to calculate myself the workload i am carrying and also to plan my future assignments

Priority : 1	User Story: As a consultant I want to list forecasts I entered

As a consultant I want to list out all the forecasts I entered on single screen, it helps me to easily estimate my workload and avoids unnecessary clicks.It also helps me to plan my future projects and workload.

Priority : 1	User Story: As a consultant I want to update forecasts

As a consultant I always wanted to have an update facility to update my forecast inputs, as there will be more changes on the forecast system once the project started. With update facility we can avoid creating new forecast every time when there is a change in forecast and it is easy to mage and understand the forecast system.

Priority : 2	User Story: As a consultant I want to delete forecast

As a consultant I want a delete option, in case there is drop in the project or entering wrong entries in the system which shows impact on my forecast.

Priority : 2	User Story: As a consultant I want to add TimeLine to forecast

As a consultant I want to have timeline in my forecast system, because as a consultant we work on hourly/weekly/monthly basis on the project. It helps us to calculate the revenue and also the time I spent on the project.

It helps me to estimate total time that I spent on this project or number of hours I spent on the project

Priority : 2	User Story: As a consultant I want to update timeline

As a consultant I want to update timeline. In project development always there will be extension/delay of time as there will be changes in customer needs while development is going on, which causes lot of changes in the forecast system.

Priority : 2	User Story: As a consultant, director, manager, controller, resource representative I want to view timeline

As a consultant I want to view the time to analyze the forecast.

As a director I want to view the time line of consultant to analyze the utilization level of the consultant.

As a manger I want to view the time line to know the current status of consultant, in order to know is there any availability of the consultant to assign another project to make sure he is 100% utilized to know how much revenue the consultant generated and so on.

As a controller I want to view the time line of a consultant to know which and what project he is currently working on.

Priority : 2	User Story: System should log these user activities: date, username and changes made

As a consultant I want the system to log the activities in order to have future reference

Priority : 3	User Story: As a consultant I want to delete timeline

As a consultant I want to delete the time line in case of wrong entries created

Priority : 3	User Story: As a controller I want to make instruction

As a controller I want to make instruction to consultant about the project, company, he/she is going to work.

Priority : 3	User Story: As a director I want to view the total revenue of consultants

As a director I want to calculate the total revenue of the consultants to estimate the revenue generating from the project by the consultant

Priority : 3	User Story: As a manager I want to view availability of consultants

As a manager I want to view the availability of the consultants, to make sure he is used up to 100% of his skills

Priority : 3	User Story: As a director I want to view projects

As a director I want to view the project going on in the company to estimate or to analyze the organization process/status.

Priority : 3	User Story: As a director, manager, resourcing rep. I want to compare consultant's forecasts

As a director, manager, resource rep I want to compare the forecast between the consultants to know how the consultants perform is effecting or achieving the organization goals. It helps to analyze the efficiency and skill set of an consultant to utilize them up to full scope.

Priority : 3	User Story: System should allow simultaneous user updates|

As a director, manager, consultant I want the system to allow simultaneous user updates, to make sure we get the constant updates about the consultant work.

Priority : 3	User Story: System should log these user activities: date, username and changes made

As a consultant want system to log all the changes, activities, username and date modified in the system, it helps for future reference and to identify unwanted changes later,

Priority : 3	User Story: As a user I want to print reports of forecast

As a user I want to print the forecast reports

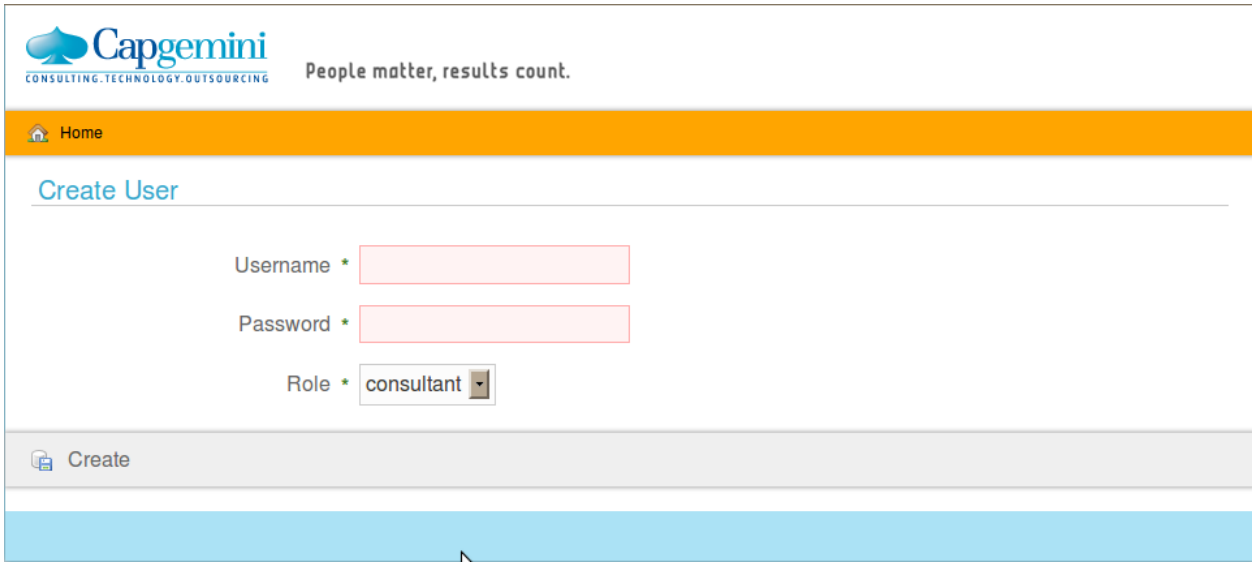
Priority : 3	User Story: System support browser and mobile

As a user I want system to support both browser and mobile, as it helps in mobility of using the system and easy to update forecasts system.

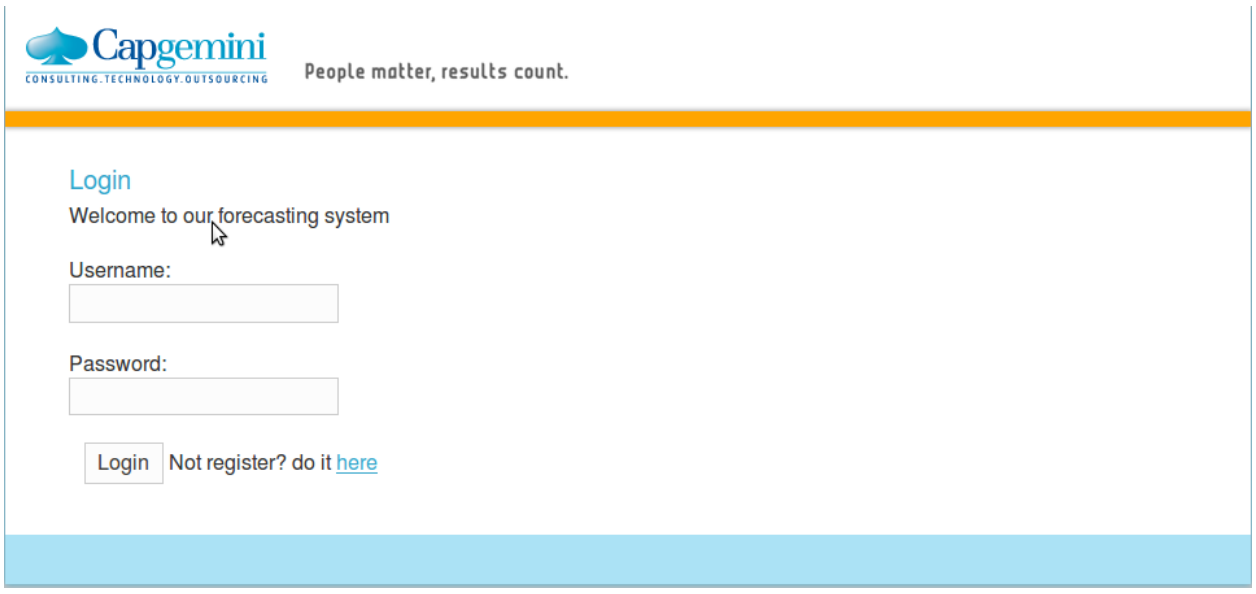
4. Accurate Description of Functionalities:

The system has user account creating feature. With this feature, user accounts can be created. Users are categorized as manager, controller or consultant. Depending on their role their interfaces are different and there are different tasks they can carry out.

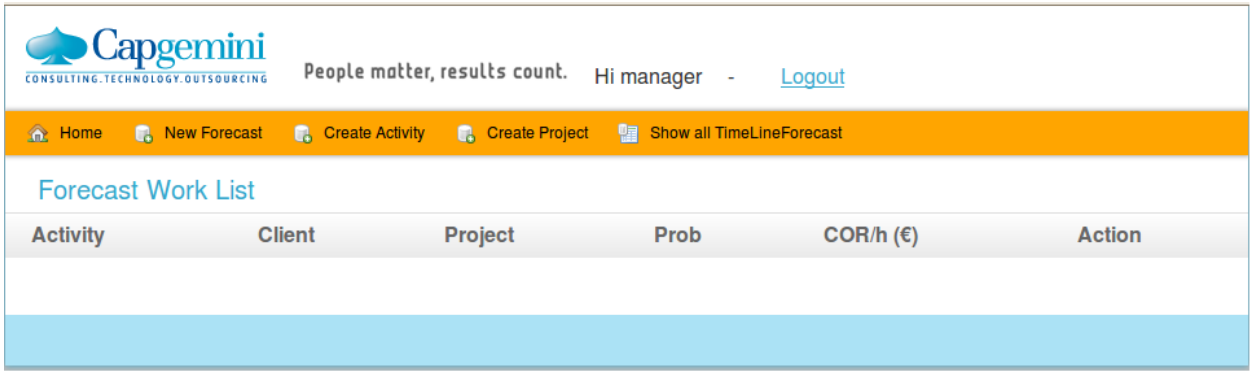
Below we added screen shots to explain accurate functionalities and how the interface looks like in the project with small description about the screen.



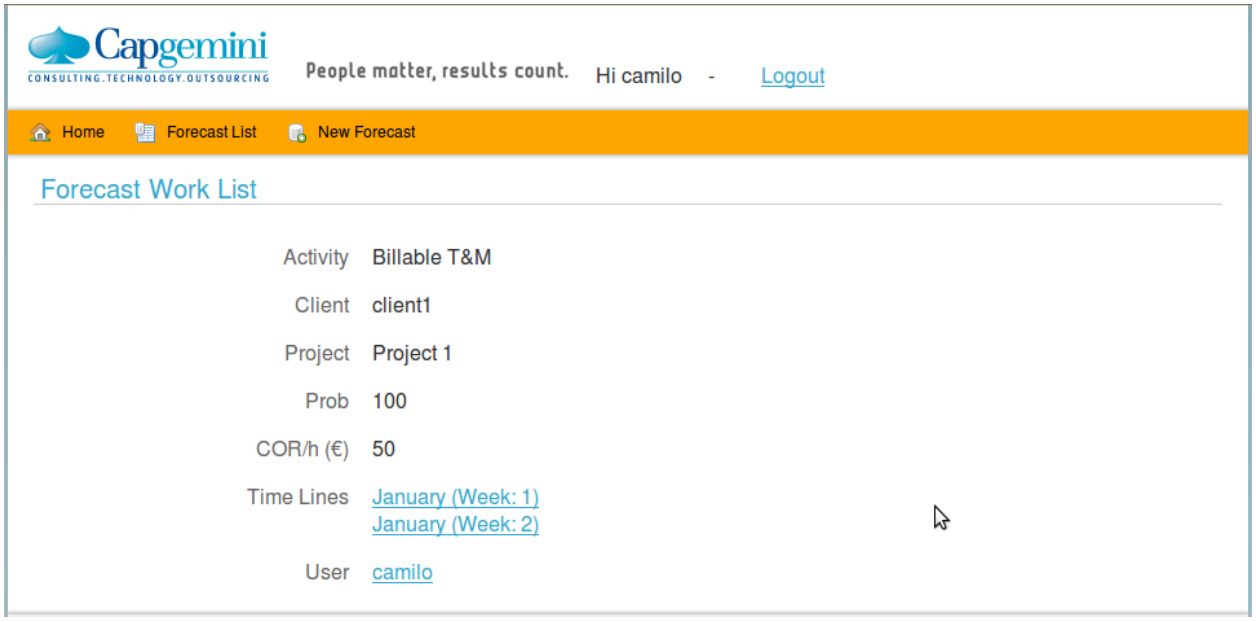
User accounts can be created in above screen, with different roles. Depend on the role their interfaces will be different.



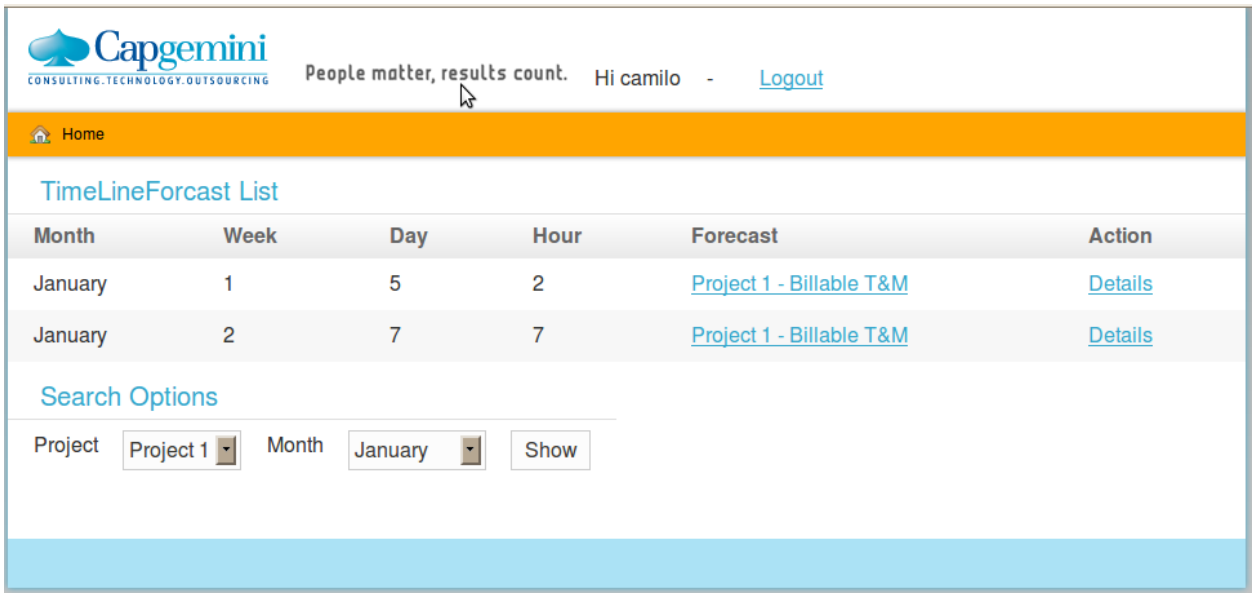
Once user account is created user can login to the system in the above screen.



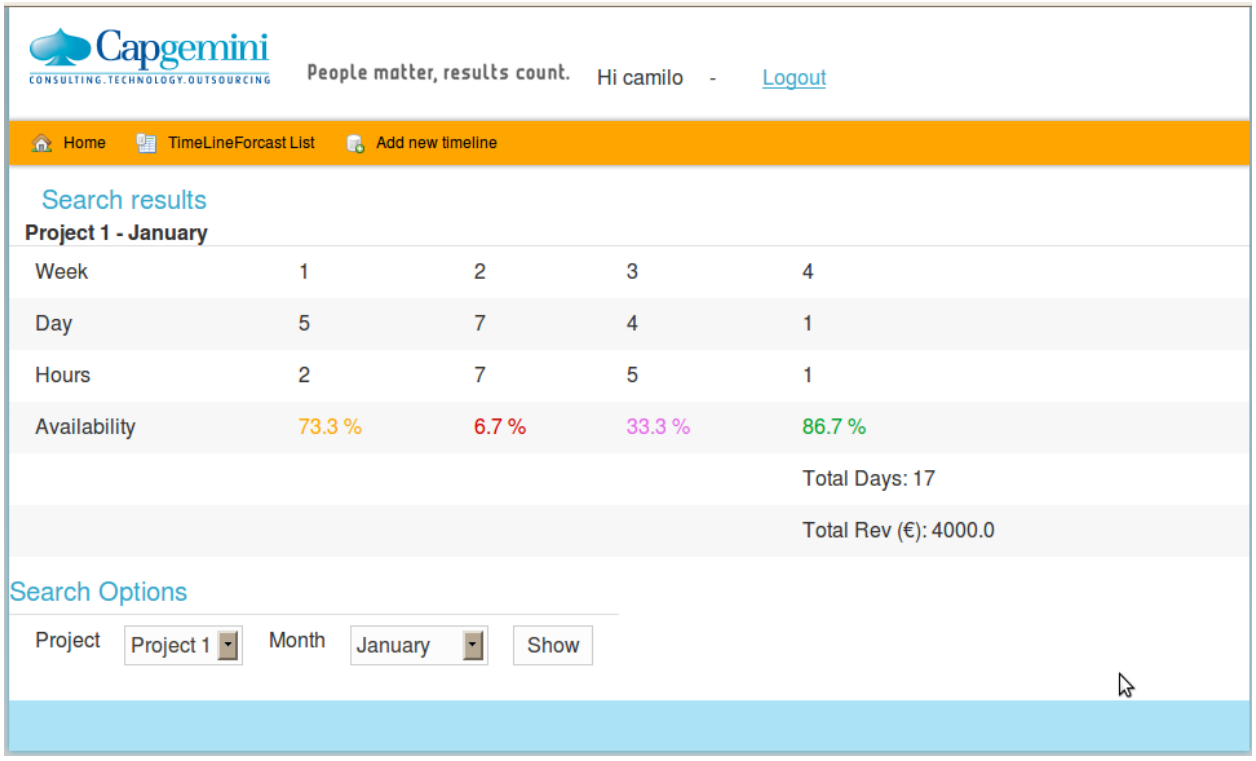
If manager login to the system, he can create activity, create project, and he can view the consultant time line forecast. Above picture shows how the interface of manager looks like.



In the above screen user can check the forecast work list, also he can create the new forecast work list.



User can view the complete details about the timeline forecast in the above screen



In the above screen User can search his/her timeline forecast based on his/her project / month options.

User can add new time line forecast

5. Development process:

As a team we have discussed about the project and came up with an idea how to make the process easy to company to calculate the work load forecast system. We came up with a plan to use SCRUM process in our project development so that it is easy to estimate the time to develop the project, following the project development regarding the implementation and time to complete the project.

We used one of the fastest growing agile methods called Scrum to develop our application.

Scrum is an iterative, incremental framework. Scrum structures product development in cycles of work called sprints, iterations of work which are typically 1-3 weeks in length and which takes one after other. Sprints are fixed duration, they end of specific date whether project is completed or not. At the beginning of each sprint a cross functional team selects item from prioritized list of requirements and commits to complete them by end of the sprint, during the sprints the requirement deliverables cannot change. Each work day, the team gathers to discuss briefly about the each other work progress and update them and to know the work remaining. At the end of the sprint the team discusses about the completed sprint gets feedback and incorporated in the next sprint [1].

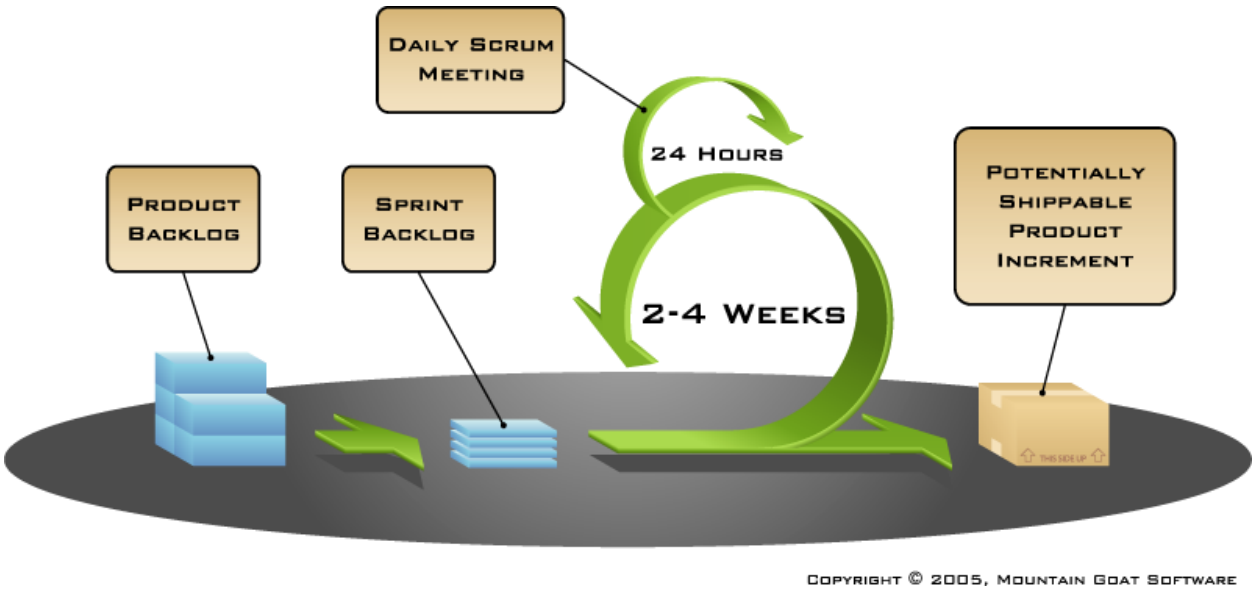
The first step in scrum is product backlog this takes the prioritized list of what's required, ranked in order of value to the customer and business, with the highest value items at the top of the list [1].

The next step is sprint plan meeting, in sprint plan meeting the product owner and team gathers and discusses about the product backlog, discuss the goals and context for the items on product backlog and providing the scrum team with insight into the product owners thinking [1].

The next step in a scrum team is to select the items of the product backlog and complete it by the end of the sprint [1].

Once the team starts working on the products they divide the task into individual tasks, which are required in a document is called sprint backlog. Once the sprint has started team engages in another of the scrum process called daily scrum. This is a 10-25 minutes stand-up meeting that happens at every workday at an appointed time and everyone in the team attends to have a briefs of what's done and what's going on in the project development. After the meeting team update the time

remaining to develop the tasks in the sprint backlog. After the sprint completion we do sprint review as a team to check the project development and how the development came [1].

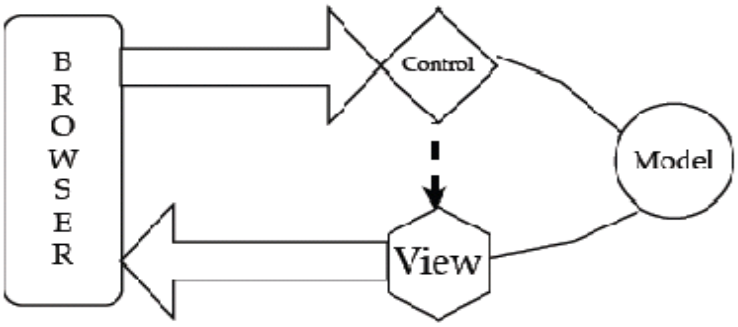


SCRUM PROCESS [Source: Mountain Goat Software]

As a team we learned about most of the scrum process and how to carry develop and manage the project and team in a systematic way. We learned about how to divide the project in a individual tasks, how to make effective communication between the team while project is running.

6. MVC pattern in Grails:

Grails built on the concept of MVC.



The grails framework is built around model-view-control (MVC) design pattern which is supplied by the Spring framework. As a starting point of the implementation, we created sample grails project which auto generated the controllers classes, views and the domain classes, plus some configuration files. Note that in grails, the model is rather called domain.

We created our controller classes; we also had to create the user view from where user can interact with the system. At the same time we had to create the domain class which generates the database tables for the application and maps our data objects to the database tables (ORM).

The MVC was very helpful because we didn't have to manually create database tables and field during implementation. In addition the application tree was better structured than without grails, supported teamwork as we had to work on different components of the same application. As a consequence, lesser debugging effort was required.

7. Reflections and Conclusion:

Most of the core functionalities of the system are implemented included creating forecast, estimating time availability and comparing and viewing reports of forecasts. In its current state, reports are generated in tabular for. Future improvements will concentrate on improving user experience by implementing graphical report generation capabilities, logging capabilities, and seamless navigation in the system and support for mobile devices.

The organization of this code camp was a new experience to most of us in the team as we had to work on the same task as other teams. In addition the various lectures given in between were helpful in our implementation especially because the learning curve of the grails framework was steep. We also gained better understanding of software consulting business

The SCRUM process was helpful though we had to customize it for our needs. Meetings were more frequent than SCRUM recommendation and inter teams corroboration was helpful tool.

References:

1. http://www.rallydev.com/documents/scrumprimer.pdf