meetyourIT

TECHNISCHE UNIVERSITÄT CHEMNITZ

Faculty of Computer Science

Prof. Dr.-Ing. Martin Gaedke

Planspiel Project Final Report

Team name: **meetyourIT**

Chemnitz, 28.03.2019

Team members

Aditya Chaudhari	485258
Anubhav Gupta	486044
Karan Shukla	484516
Paurush Vishnoi	486789
Shyam Agrawal	479026

Table of Contents

Abstract

In a very initial stage of the Planspiel project, the aim of our project is to build an impeccable team having diversified knowledge for a common goal. We have conglomerated here to create pertinent ideas with IT along with the passion of building an environment of collaboration and quality.

To expound the face of our team, we have developed a website called “MeetyourIT.com”. Through the medium of our website, we basically look forward to provide quality and modernity to our customers and endeavor ourselves to achieve the pinnacle.

We envision to work over the product provided in the Planspiel and will try our best to engender the quality of work at every milestone of this project.

meetyourIT

Work Sheet

(10/10/18 – 01/03/19)

Week No.	Responsible Member	Tasks
01	Team	Team formation and goals
	Team	Conformation of team availability for the respective semester.
	Paurush, Karan	Sharing ideas about the team name and an adequate logo for it.
	Team	Voting for the team name/logo.
02	Anubhav	Creating the story and the message that the team name/logo broadcasts.
	Team	Developing the team mission and vision.
	Aditya, Paurush	Writing them down, making them shorter and clearer and refining them.
	Team	Defining a website template that fits our team name and logo and that displays our technical abilities.
	Shyam	Development of the initial segment of the website using template.
03	Paurush, Shyam	Creation of database and email links for queries.
	Team	Discussions over more website features enhancement
	Karan	Creation of social pages and social media promotions.
	Aditya, Anubhav	Enhancement of the website.
04	Team	Implementation of Agile-Scrum in the project
	Anubhav, Aditya	Implemented Chat box and enhanced some features of website
05	Team	Researched about BPMN
	Team	Discussed about BPMN elements which can be applied to our project
06	Team	Researched about CAMUNDA
	Paurush	Explaining the Camunda project creation for the implementation of BPMN worflow
	Karan, Anubhav	Created dummy CAMUNDA prototypes to get a better understanding of topic

07	Shyam	Researched about different Problem statement
	Paurush, Aditya	Created Presentation for the first Pitch in meeting
	Team	Prepared for the presentation
	Team	Presented our first pitch in in front of professors
08	Team	Problem Statement discussion (Thesis workflow)
	Paurush	Rough BPMN workflow for process
09	Anubhav	Theoretical Description of the Problem Statement
	Aditya, Shyam	Hands-on for deploying the process on the Camunda Server
10	Karan	Paper Prototyping of the process workflow.
	Team	Creating the BPMN modeler which can be run on local host
	Team	Enhancements on the website
11	Karan	Created Business Canvas Model
	Anubhav	Created Login page and sample UI which was used for displaying first prototype
	Paurush	Implemented Rest API for connectivity between UI and Camunda Server
12	Aditya, Anubhav	Created Presentation for the first Pitch in meeting
	Team	Prepared for the presentation
	Team	Presented our first prototype in front of professor
13	Aditya	Designed a raw User Interface
	Shyam	Integrated Server flow
	Paurush	Created BPMN process flows for all the processes
14	Shyam	Implementation of Controller for moving process forward
	Team	User Authentication Module
	Paurush	Database storage for all four workflows
15	Team	User and Controller Dashboard
	Aditya, Anubhav	Connecting database with UI and Camunda
	Karan	Preparation for the Presentation
16	Shyam	Created front-end for Professor dashboard
	Karan	Explained Business Canvas Model more briefly
	Anubhav	Created brief explanation of demo of product with the help of video

17	Paurush	Created functionality to display the data dynamically on the Professor's dashboard
	Aditya	Prepared instruction manual
	Team	Deployed the code on Github along with the instruction manual.

Introduction

The ideation and implementation of the idea to build a startup and proffering it to the real industry is carried out in the Planspiel project under the Faculty of Computer Science – Technische Universität, Chemnitz. The whole work structure of Planspiel is interesting as it empowers an individual with entrepreneurship abilities. It makes learning fun as it puts students into the corporate shoes and makes them strong in both management and technical aspect of building a prosperous and dwelling IT company in the upcoming future.

The workflow of Planspiel contains various challenging activities like team building, creation of team website, creating a logo for the team which accurately resembles the characteristics of team and its aim followed by various managerial and technical activities which at the end will result in a unique product development experience for each individual of the team in a different manner and allow each individual to polish their existing knowledge and also acquire new during this entire Planspiel phase.

Team

To provoke the entities mentioned above, it is necessary to build a team which has the potential to take the ideas to the next level and work over them methodically and with full efficacy. The other important thing in team formation was having members who understand each other and prove to be a good support in the time of need. Team bonding always proves to be a prime success factor and it also makes the working environment comfortable for every member of the team. The primary goal of creating our team was communication.

Team Formation

To engender any small work, it is necessary to discuss it. Every organization which is successful or is on the path of achieving success seeks a friendly work environment where discussions and conflicts are considered as a part of learning. Discussions should be done in a way which always produce positive results for the product and group and such discussions can only happen in an ego free environment where every member is considered important and equal and their thoughts and ideas are taken into consideration, where every member is timely appreciated for the work that he/she contributes towards the journey of success of this small startup. Nothing can be better than a team whose members share their daily life with each other, where communication barrier is a non-existing element and things can work flawless without any impairment. The idea of having such strong bonded team was the first basic idea which came in our minds when team formation took place and this is the reason we came up with team which is filled with members who live together and share all their daily activities among each other.

Team Work

We believe in building up a product in short phases i.e. dividing the goals into fragments and summing up all together in the end. For this, we adapted Agile methodologies so that the product can be divided into sprints and within each sprint the estimated stories can be covered. For past two weeks, we conducted estimation meeting in which we decided the stories, pull them in to do tasks and worked accordingly. Meetings accommodate lots of brainstorming sessions and discussions over ideas and at last we conclude with a final story to be done.

Team Name and Logo

When a meteorite enters the Earth's atmosphere it leaves its trail behind and lightens up very brightly. Getting an idea from this, we thought of building a name which can leave an impression in the market and fabricate solutions in the field of IT. Hence, the name meetyourIT (sounds like Meteorite) came up in our mind. The idea took lots of wins and fails after which we finally clinched the name. We envision to take meetyourIT to the apogee in Planspiel and if possible, to a global level in future. And as the name was kept according to its resemblance to a meteorite, same was for the logo. Hence, we ended up deciding the logo should show the meaning of our name and also be clean enough to elucidate an IT startup group.

Vision, Mission and Values

MeetyourIT started as a mess of batch mates of TU Chemnitz, endeavoring to deliver an innovative business to IT in a form of Planspiel project. The cluster believes that the quality can be taken to pinnacle not only on the basis of hard work but also incorporates the attitude towards the market and the way we entertain our clients.

Vision - Bringing in the existence of a pre-eminent path to quality, innovation and success by offering a gem to the IT world.

Mission - With the rapid technology changes in IT, every problem statement is hurrying to find an impeccable solution. MeetyourIT exerts to bring the best among all. We provide solutions considering the extent of your wait and look forward to attain the standard that you dream of.

Values –

- **Integrity** - We maintain the uprightness of the work, even after knowing that others might not even know what you did.
- **Creativity** - Innovation is something that keeps you alive and makes you noteworthy in all.
- **Passion** - A famous quote states "Don't stop, until you are proud". We believe in it and work for it

Website

When it comes to build a website which is going to be an identity or a face of the team it has to be clean, usable, professional and the most importantly simple. Keeping these points in mind we chose not to take up stress to hardcode a website from scratch rather we discussed upon bootstrap templates and selected a clean and professional looking template which perfectly suited our requirements. To flourish the website, we tried our level best to put unique content and elaborative description. Apart from bootstrap reference, there are few additional features that has been implemented within the box. We created a database for queries sent through contact form and link it with the mail box of our company.

Domain & Hosting

Now that the website was built and ready to go live we had to meet and discuss about buying a domain and also a hosting account through which we can make our website live and accessible to everyone over internet. To buy a domain we chose a trustworthy domain provider, godaddy.com which provides domains at a very low cost and for a good amount of time.

1. The first thing we did was creating a godaddy account.
2. Then we entered our website name in the domain buying page and checked for all the available domains.
3. We selected .com domain as it is a common domain and accessible worldwide.

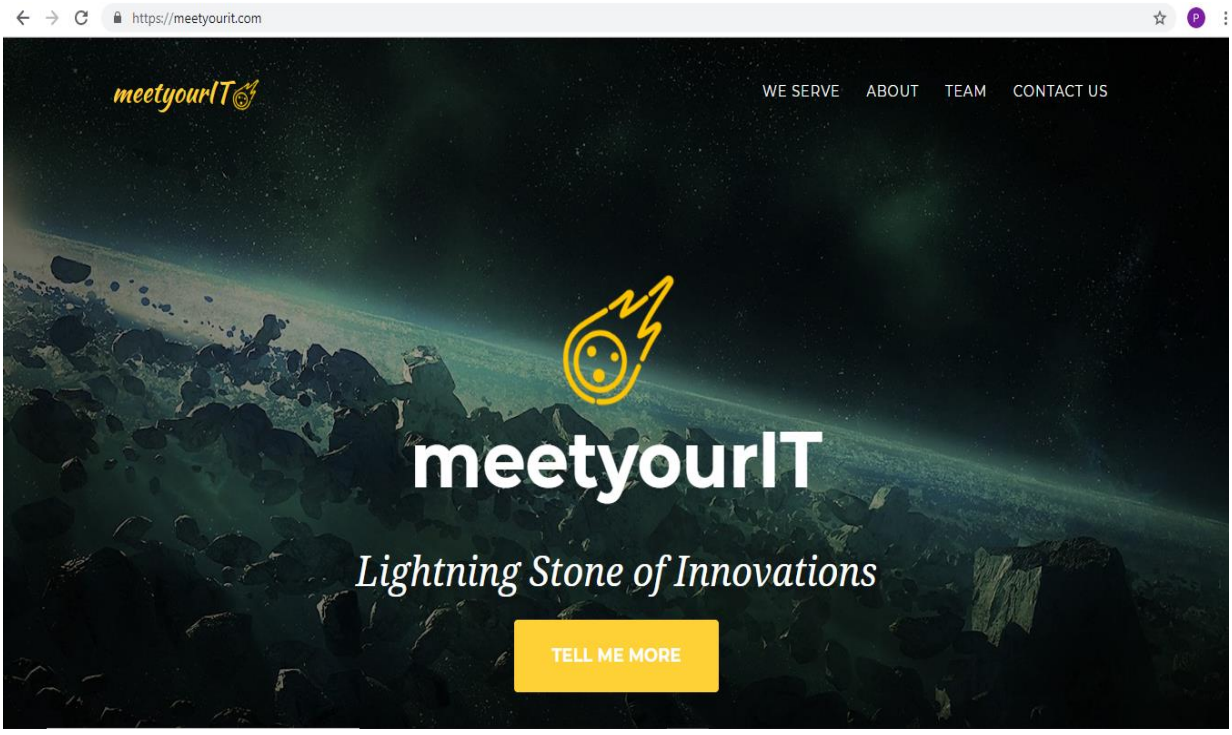
After buying the domain we had to go for hosting the website and make it live on 21.10.2018. For that task we chose Hostinger as one of the team member already had an account on that website. The steps of hosting are mentioned below:

1. Pointed out DNS from godaddy to our hosting server on Hostinger.
2. Created an account and added our website domain to Hostinger through their GUI.
3. Uploaded the version of website developed by the team using their File Manager.
4. Implemented SSL to make website secure using “Let’s Encrypt Authority X3”
5. Forced https to our website so that every data exchange is secured.

Social Media Promotion

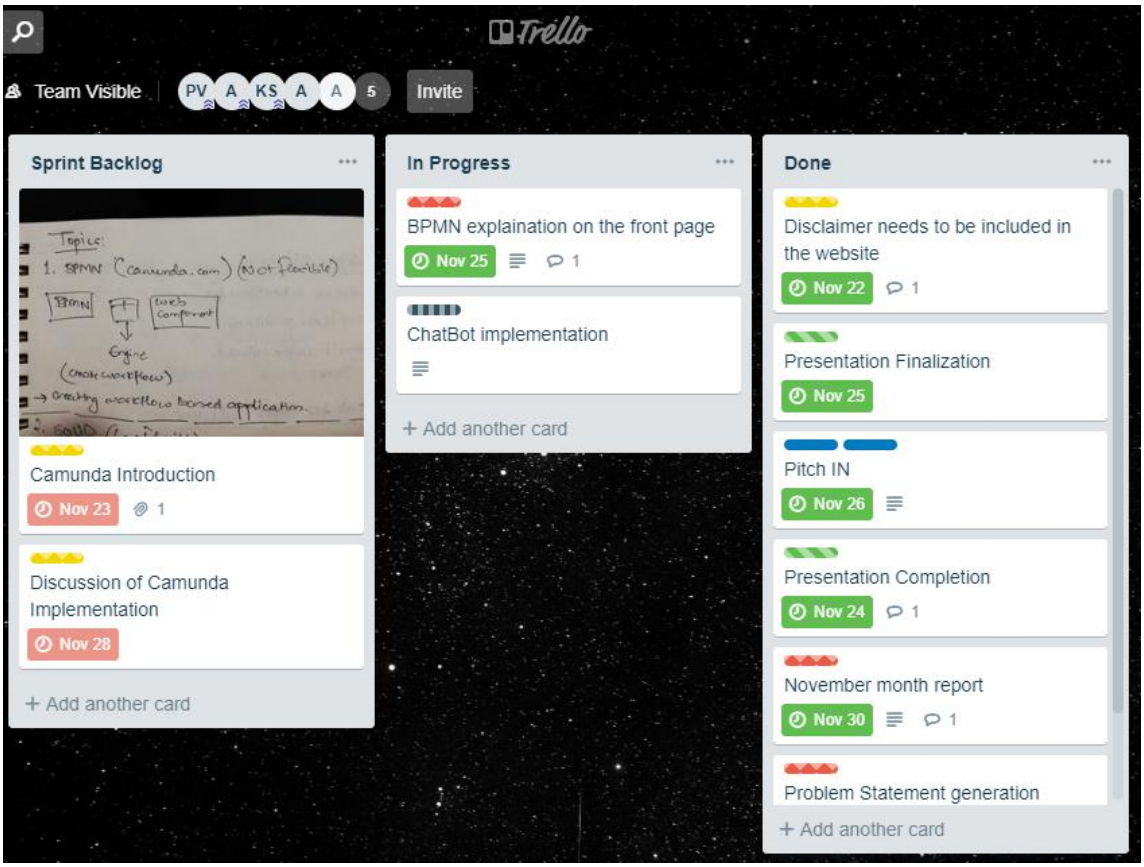
To reach out to people we also made ourselves available on the social media by making a Facebook page of our team and also a Twitter account. This kind of social media promotions helped us to reach out to people in different parts of the world. We are also working on Google Analytics to keep a track of website traffic and to keep record of hits on our website. The link to our website and all social media accounts and pages are mentioned below: -

Website URL: https://www.meetyourit.com
Facebook: meetyourIT
Twitter: @meetyouritsoln

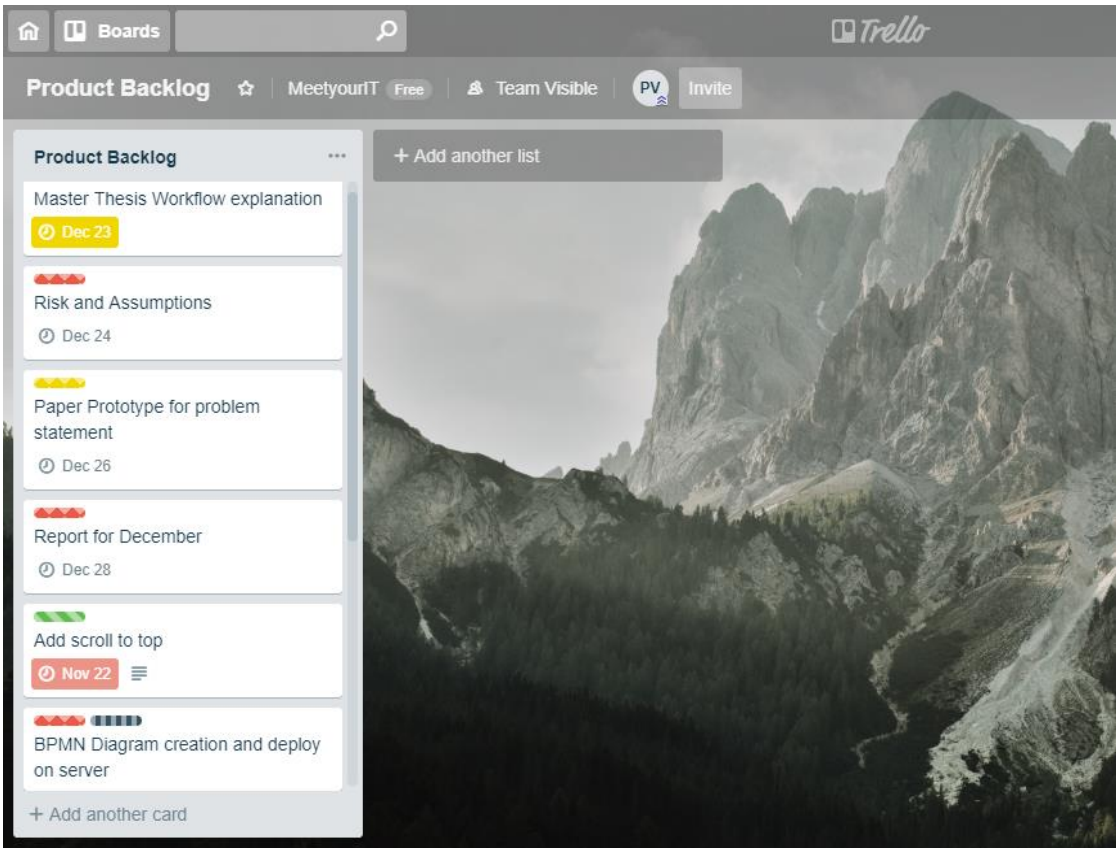


Scrum in MeetyourIT

Scrum is an Agile approach that helps an organization to schedule their work in shorter frames of time and getting it done in a more non-formal approach while learning and working faster. We have been succeeded in implementing the Scrum artifacts in our project keeping in mind the methods and practices in Scrum. The tool we are using for maintaining Sprints is **Trello.**



The project work has been distributed in the form of User stories. Each task has been created as a User story. All the user stories have been listed in the Product Backlog. The Product Backlog is updated as per each Sprint is over.



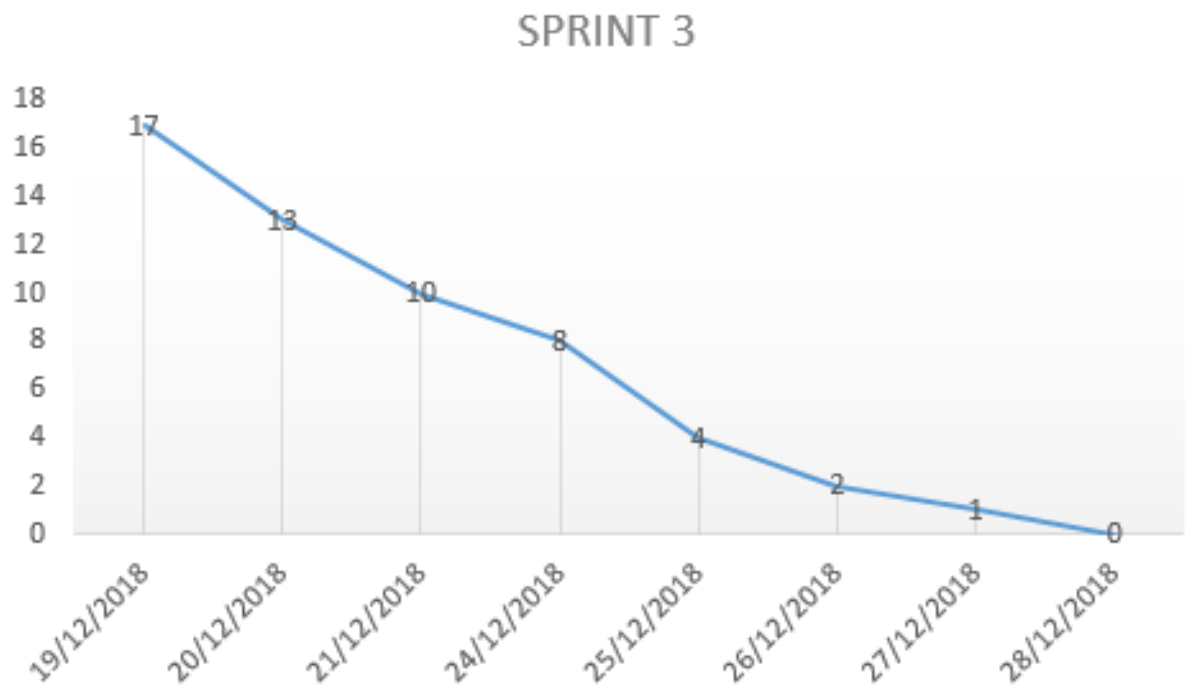
Generally, Sprint is defined for one week. The tasks are basically divided into three sections Sprint Backlog, In Progress and Done. Each story has a due date along with the priority defined for each task. The whole process is carried in following phases: -

Estimation Meeting

With the start of the Sprint, Estimation plan meeting is scheduled where priority values and number of stories need to be taken in a Sprint are decided. The estimation measure which is used is “Story Points”. Each team member suggests Story points for each story for e.g. 1,3,5. The maximum vote for a number is considered as final story points for that particular story.

Sprint Planning and Execution

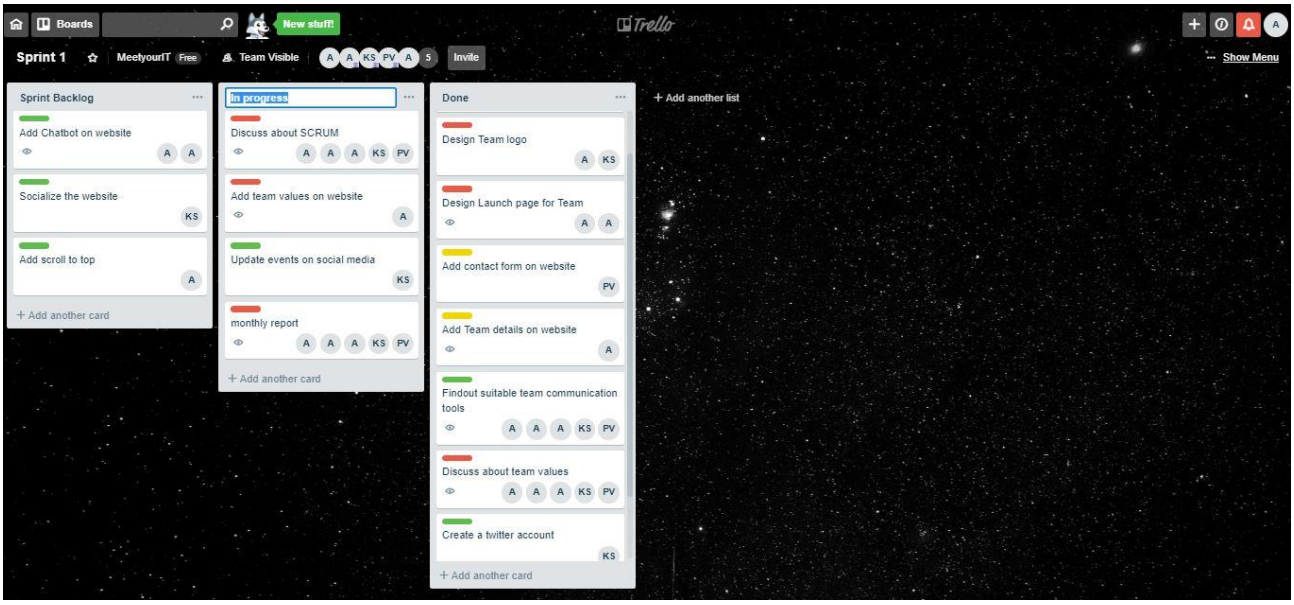
After the estimation and priorities of the stories is done, tasks for the current Sprint are pulled into Sprint backlog and execution is started. For each sprint, Burn Down Chart is created which actually keeps a record of amount of work completed and how much has been left. Here is the example of Burn Down Chart for the second Sprint: -



Review and Retrospective

After the execution of tasks is completed, the Sprint Review and Retrospective is done where the team discusses about the experience in doing the work and improvements which further need to be implemented in the next sprint.

Sprint 1 for meetyourIT



Sprint Backlog

New Stories are added to the Sprint Backlog from the Product Backlog. Product Backlog consist of various User Stories of the whole product. The Development Team meets and decides which User Stories should be prioritized and developed according to the Business Requirements.

As shown in the above figure, We didn't had any high priority task in our sprint backlog after the completion of first sprint. The task which were in the sprint backlog were "Add chatbot on website" and "Add scroll to top".

In Progress

In Progress consists of processes on which the team is currently working. The team on their own takes a task from the Sprint Backlog and starts working on it.

As shown in the above figure, "Discussion on SCRUM" and "Implement Team Values on webpage" was the highest priority so the team is determined to implement this in the current Sprint. Several other low priority tasks are also taken up in account which so that we can also focus on them for out next sprint.

Done

Once the task on which the team is working which has been placed in “In Progress” is completed, then that particular task is shifted to the “Done” state. Now the team decides to integrate that task to the final product in the product release.

User Stories like “Find team name”, “Design Team logo”, “Design launch page for team”, “Discuss about team values” and “contact form” as shown in the above figure were completed and will be integrated with the next release of the product.

Sprint 2 for meetyourIT

We had to scrap our work done in second sprint as we had initially focused on banking sector but after a talk with our professors we were mutually agreed that we can build a product for university which can prove helpful to both professors and students to reduce their work load and minimize the effort needed to find the ways for doing tasks.

Sprint Backlog

New Stories regarding new problem statement needs to be entered. The old bank sector has to be replaced with the new 'Workflow related problems'. Tasks like BPMN basics and getting and overview of Camunda needs to be done.

In Progress

Since everything has been implemented and modified completely, all sorts of backlog tasks will be pulled to in progress.

Done

Now the team decides to complete the 'In Progress' tasks and finally put them in the done section.

Next Planned Sprint

For the next Sprint, Team has decided to start implementing the BPMN concepts, create a new implementation plan for the new problem statement and start practicing the deployment of tasks and processes on Camunda platform.

Sprint 3 for meetyourIT

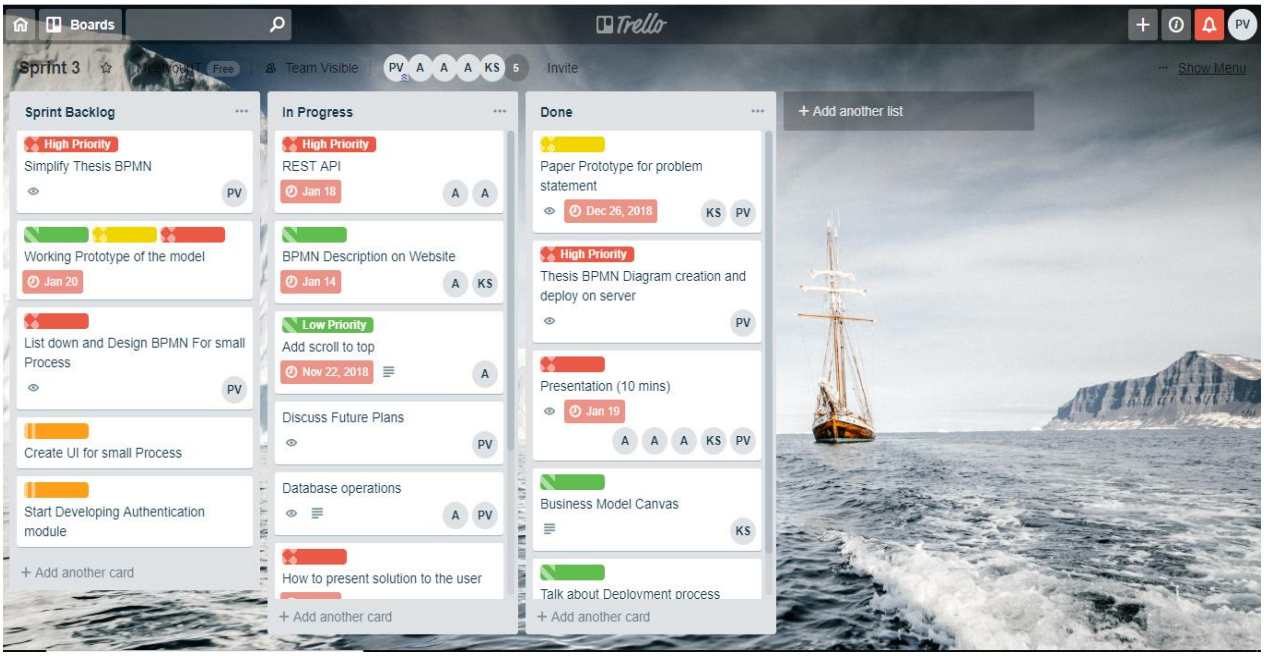


Figure : Sprint 3

In the 3rd Sprint, meetyourIT has covered around 20 Story Points. In this particular Sprint, meetyourIT has accomplished major important processes in order to develop very basic prototype to present it in the Pre-Pitch Session.

Sprint Backlog

New Stories are added to the Sprint Backlog from the Product Backlog. Product Backlog consist of various User Stories of the whole product. The Development Team meets and decides which User Stories should be prioritized and developed according to the Business Requirements. As shown in Figure X, Highest priority task “Simplify Thesis BPMN” as well as Medium priority task like “Create UI for small process”, “List and Design BPMN” has been taken on board in Sprint Backlog.

In Progress

In Progress consists of processes on which the team is currently working. The team on their own takes a task from the Sprint Backlog and starts working on it. As shown in Figure X, “REST API”

has the highest priority so the team is determined to implement this in the current Sprint. Several other low priority tasks are also taken up in parallel.

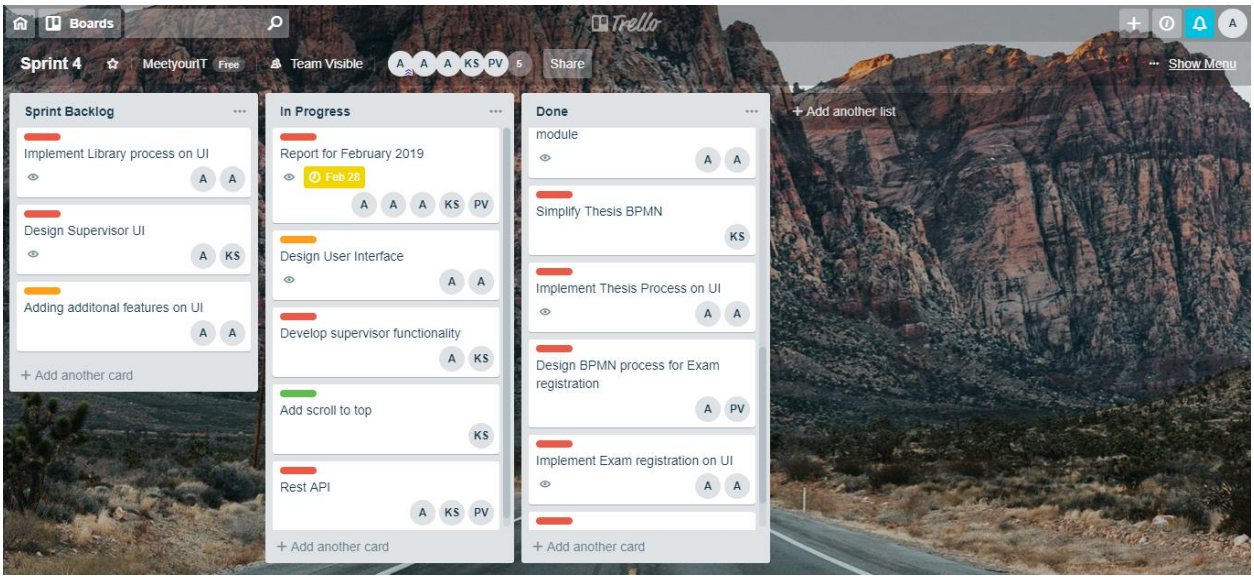
Done

Now the team decides to integrate that task to the final product in the product release. User Stories like “Creation and Deployment of BPMN”, “Business Canvas Model” as shown in above figure will be integrated with the next release of the product.

Next Planned Sprint

For the next Sprint, Team has decided to take Stories “Simplify Thesis BPMN” as highest Priority task start working with. Apart from this more focus will be on complete the ongoing tasks in order to complete the current release.

Sprint 4 for meetyourIT



In the 4th Sprint, we meetyourIT have covered around 20 Story Points. In this particular Sprint, meetyourIT has accomplished important modules such as complete design of all BPMN process and implementing them on User interface as well implemented the supervisor module.

Sprint Backlog

New Stories are added to the Sprint Backlog from the Product Backlog. Product Backlog consist of various User Stories of the whole product. The Development Team meets and decides which User Stories should be prioritized and developed according to the Business Requirements. As shown in Figure above, highest priority task “Implement Library process on UI”, “Designing UI for Supervisor”, as well as Medium priority task “Adding additional features on UI” has been taken on board in Sprint Backlog.

In Progress

In Progress consists of processes on which the team is currently working. The team on their own takes a task from the Sprint Backlog and starts working on it. As shown in Figure above, “REST API”, “Developing supervisor functionality” has the highest priority so the team is determined to implement this in the current Sprint. Several other low priority tasks are also taken up in parallel.

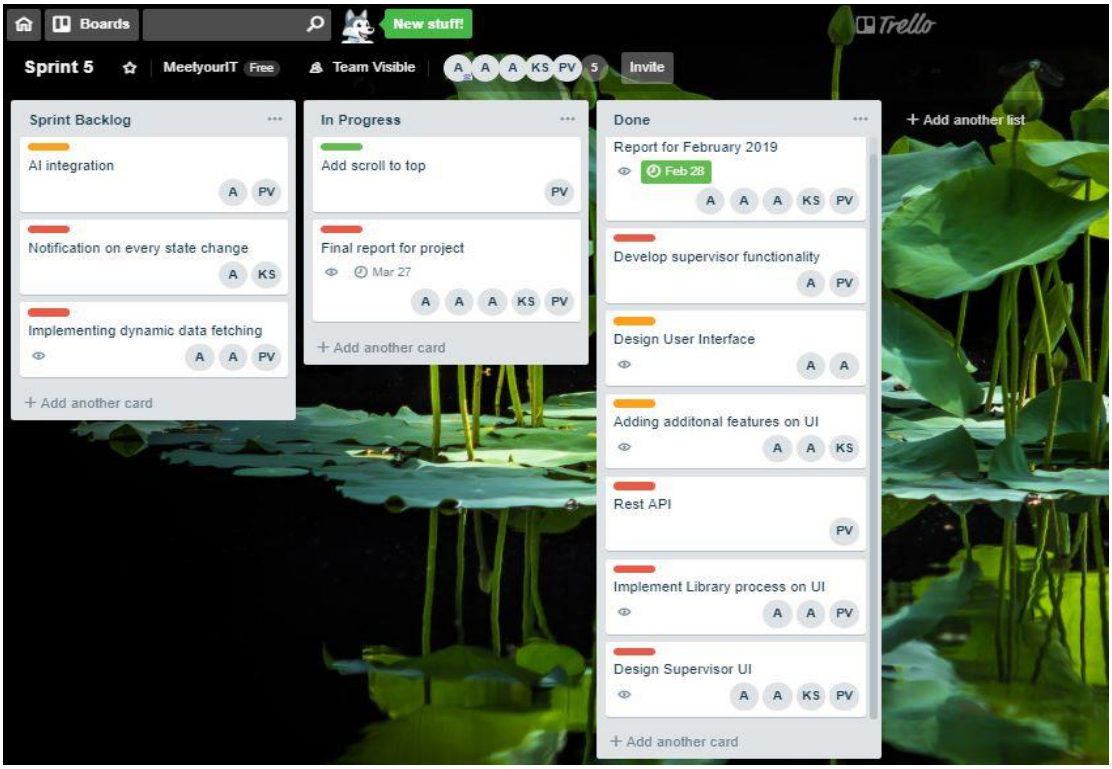
Done

Now the team decides to integrate that task to the final product in the product release. User Stories like “Creation and Deployment of all BPMN processes”, “Implement processes for User”, “Storing data in database” as shown in Figure above will be integrated with the next release of the product.

Next Planned Sprint

For the next Sprint, Team has decided to take Stories “Designing Supervisor UI” and “Develop functionality of supervisor” as highest Priority task start working with. Apart from this more focus will be also focusing on ‘In progress’ tasks in order to complete the current release.

Sprint 5 for meetyourIT



In the 5th Sprint, we meetyourIT have covered around 12 Story Points. In this particular Sprint, meetyourIT has accomplished important modules such as finalizing the design of product and finalizing the release with small changes.

Sprint Backlog

As shown in figure above, highest priority task “notification on every state change”, “Implementation of dynamic data fetching”, as well as Medium priority task “AI integration” has been taken on board in Sprint Backlog.

In Progress

In figure above, as most of the tasks have been completed before the first delivery the only major task remaining was to submit the detailed report of product by end of February.

Done

User Stories like “Developing supervisor functionality”, “REST API” and “Finalizing UI before the release” as shown in figure above will be integrated with the final release of the product.

Next Planed Sprint

For the next Sprint, Team has decided to take Stories “Implementation of dynamic data” and “Notification on every state change” as highest Priority task start working with. Apart from this more focus will be also focusing on ‘In progress’ tasks in order to complete the current release.

BPMN

Business Process Model and Notation (BPMN) is a standard style of displaying Business processes using graphical notations. BPMN provides the solutions in such a way that the graphical representations can be understood easily by both technical and business experts. BPMN diagrams ensure that businesses can easily understand their process flow as well as the participants in their business with the help of developed solutions and will enable organizations to adjust to new situations by providing the relevant solutions quickly.

Basically, the goal of BPMN specification is to make the process definitions portable. This implies, that a solution created in a particular environment can also be accessed in some other environment. The latest version of BPMN is BPMN 2.0, which following advantages over the previous version BPMN 1.2: -

- Refines event connection.
- Allows more interaction with humans.
- Standards like XML Schema, XPath, and WSDL are utilized by the BPMN specification to define the data types.

BPMN Elements

Elements of the BPMN v2.0 helps the reader to easily understand the process and recognize the gist of the diagram. Following are the five main elements of the BPMN: -

- Flow Objects
- Data
- Connecting Objects
- Swimlanes
- Artifacts

Swimlanes

Participant is the style of grouping the elements of primary models into lanes which are called Swimlanes. Basically swimlanes are elucidated into Pools and lanes which are explained as below:

Swimlanes	Symbol	Description
Lane		A Lane is a sub-partition within a Process, sometimes within a Pool, and will extend the entire length of the Process, either vertically or horizontally
Pool		A Pool is the graphical representation of a Participant in a Collaboration (see page 112). It also acts as a "swim lane" and a graphical container for partitioning a set of Activities from other Pools, usually in the context of B2B situations

Flow Objects

These are the backbone of a Business Process. They are represented as the main graphical elements of the diagram. There are three main flow objects:

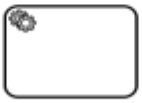
Event -

This is something which generally represents the initialization of an activity or the result of the activity. Events can be classified as Start, Intermediate or End event. Some of the common examples of events are shown below:

Event	Symbol	Description
Start Event		Start the process without any condition to fulfill.
Interrupting -Message start event		Event which denotes the process as soon as a message is received.
Interrupting -Time start event		Timer handler event
Interrupting -Conditional Start Event		Process flows further only when one of the conditions satisfy.
Catch - Message Intermediate Event		Resume a process as soon as message arrives.
None End Event		End the process.

Activity -

Activity is basically the type of the task performed within the process. Activities are represented with rounded rectangles. The tasks can be manual, service or user defined. Sub processes and Call activities are also considered as types of Activities. Following are some of the commonly used activities: -

Event	Symbol	Description
Task		Defining a simple task or an activity.
Manual Task		Task performed by the user manually.
User Task		Task performed by the user with the help of machine or software.
Service Task		Automated task in which human effort is not included
Sub process		When a process activates a new subprocesss.

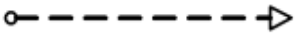
Gateway -

These are the elements which defines the sequential flow of the process. They determine which path needs to be joined, branched or forked with an another one. Representation of gateways is done with the rhombus with internal markers indication the behavioral control of the process. Few of them have been explained below: -

Gateway	Symbol	Description
Exclusive Gateway		Divide the flow into one or more mutually exclusive routes and execute only one of them
Parallel Gateway		Can execute two concurrent task at the same time.
Inclusive Gateway		Executes when all the joined processes are fulfilled.
Event Based Gateway		Starts new process is a subsequent process is occurred.
Complex Symbol		Only used when the process is more complex. Ideal use is when there are multiple flows.

Connecting Objects

For connecting one or more Flow objects we use connecting objects in order to show the direction of the process flow. They are classified as shown in the table: -

Event	Symbol	Description
Sequence Flow		Connecting the normal events and tasks within a process
Message Flow		Shows the connection of process flow within the participants (pools and lanes)

Artifacts

Artifacts actually allow you to describe the elements which are outside the process. Some of them have been described as follow: -

Artifacts	Symbol	Description
Annotations		Describe the process in a text format with greater elaboration.
Data Storage		Store the data which is associated with the business model.

Camunda

Camunda is an open source workflow system that brings automation in the business system and helps the developers doing the work more rapidly. Camunda is basically designed in JAVA. This free workflow system has been developed by a Berlin- based Camunda based on Activiti.

Camunda with BPMN

This workflow engine is able to execute almost all the functions and symbols of the BPMN. The engine can be accessed by using REST API. The user can build the workflow in the BPMN creation software of Camunda known as Camunda Modeler. Then the workflow engine can be added as Maven dependency and further can be called using JAVA and REST API.

```
POST /process-definition/key/invoice/start
Request Body:
{"variables":
     {"creditor" : {"value" : "Nice Pizza Inc.", "type": "String"},
      "amount" : {"value" : 12, "type": "Integer"}}
}
```

Camunda REST-API

```
Map variables = new HashMap();
variables.put("creditor", "Nice Pizza Inc.");
variables.put("amount", 12);
ProcessInstance instance =
runtimeService.startProcessInstanceByKey("invoice", variables);
```

Camunda JAVA

Advantages of Camunda BPMN

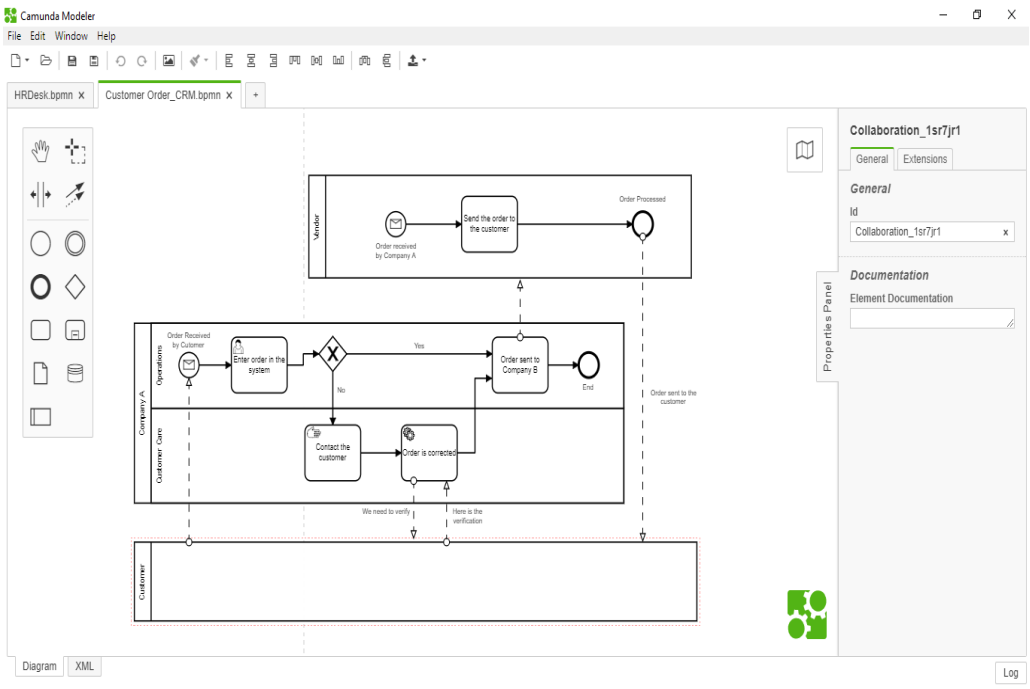
- Camunda can work both as a standalone application as well as embedded with other applications.
- Camunda can be operated in a cluster which engenders its availability and scalability.
- Camunda presents itself in such a way that the models can be understood both by technical and no-technical users.

With Camunda, process can be monitored live, so that technical issues can be detected during the ongoing of the process.

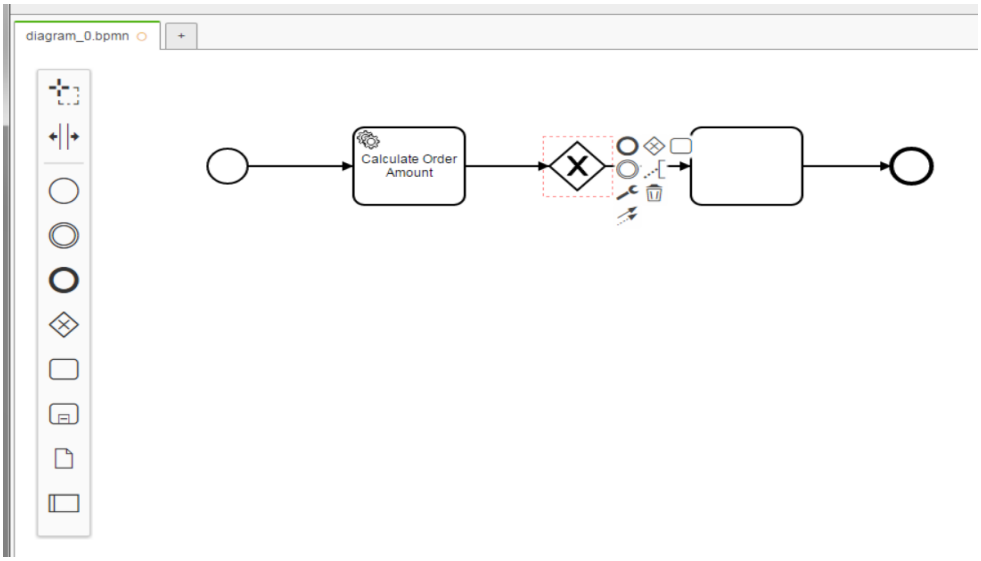
Camunda Modeler.

Just like many other BPMN workflow tools, Camunda Modeler is also a desktop application used for designing various small and big BPMN diagrams. Camunda Modeler supports version BPMN 2.0. Since Camunda can directly work with BPMN, it is easy for the developers to synchronize the Modeler with the IDE.

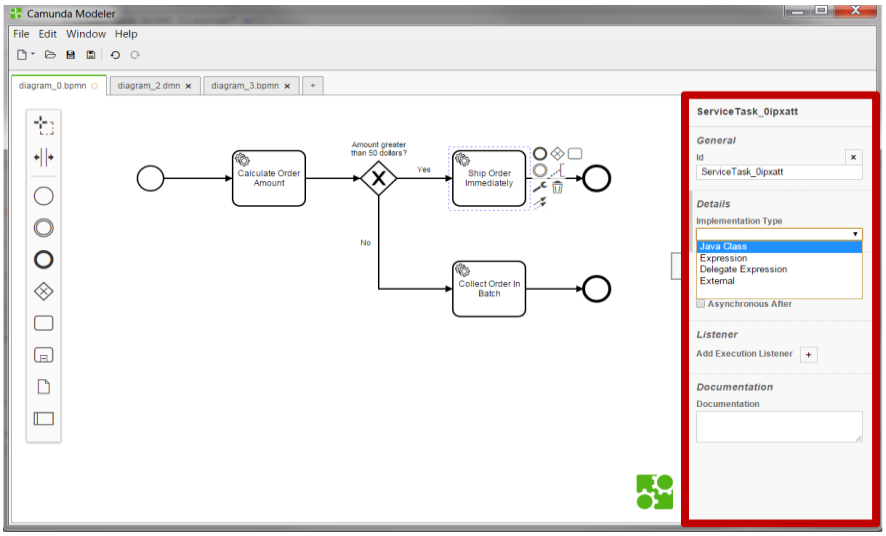
Here is a sample BPMN in Camunda Modeler for the Customer making an order in a company. The order is processed either by the Company or it forwards it to the Vendor. The model can be seen as below: -



To create a new BPMN, select ‘New File’ under ‘File’ option. The new .bpmn file is ready to edit now. User can use all modelling notations for a palette on the left-hand side. The events and tasks can be used by just dragging and dropping on the main screen.



For the execution of the BPMN , there is a panel on the right-hand side where the definitions and functions of the tasks or flow statements can be defined.



Furthermore these BPMN diagrams can be deployed on the Camunda server which can be further used to track the process dynamically.

Problem Statement

A student who is pursuing a master program from the university, he or she needs to acquire sublime knowledge of the processes well as the procedures related to the program. One of the most important segment of this program is Master Thesis. The main focus of the thesis is that a student should be able to think scientifically and technically on the topic being assigned as a part of the program.

The problem arises when the student comes across new queries related to decisions on methods, implementation of solution to the problems and formulation.

In order to make the process easy and hassle free, certain workflow or diagram needs to be developed which in turn could help the students taking the decision wisely. We will generalize the process with the help of detailed instructions in the form of BPMN (business process model and notation), optimize the queries in the current workflow and find out the process that can be automated, which helps the student to successfully enroll in master thesis program. Similarly, there are various other important workflows or processes in the university the student finds difficult to understand when he/she enter fresh into any of the university program. Our system not only focuses on the Thesis workflow but also other simple or complex workflows of the university which help the user tackle these kind of problems arriving in daily life.

For our system as mentioned earlier the prime focus being the Thesis workflow we concentrate on other workflows too like Subject Enrollment, Exam Registration, Library System. These are the most common workflows among any group of users and are not limited to any department or course in the university. These systems and there BPMN model will be well defined in our product description where we will provide a detailed view of how and what problems our product addresses.

Risks and Assumptions

Implementation of BPMN for the description of Thesis application and completion process does come along with some risks. It is obligatory to focus over prospects of some perils but before that it is more necessary to make some assumptions over which risk can be calculated. Following points have been discussed by the team which can be undertaken as risks and assumptions into consideration: -

Assumptions

Following are some of the points which have been assumed to make the process scrupulous: -

- Student responsible for putting up the query should be a part of TU Chemnitz. He or she should be enrolled in any of the Master courses offered by the University.
- Every information of the process has been cross-verified with the University Thesis department and then the workflow has been provided.
- The run-time server which is running the instances of BPMN processes needs to be capable enough to re-execute already committed tasks.
- Student will start applying for the Thesis only after he has successfully attained the eligibility criteria for writing Master Thesis.

Risks

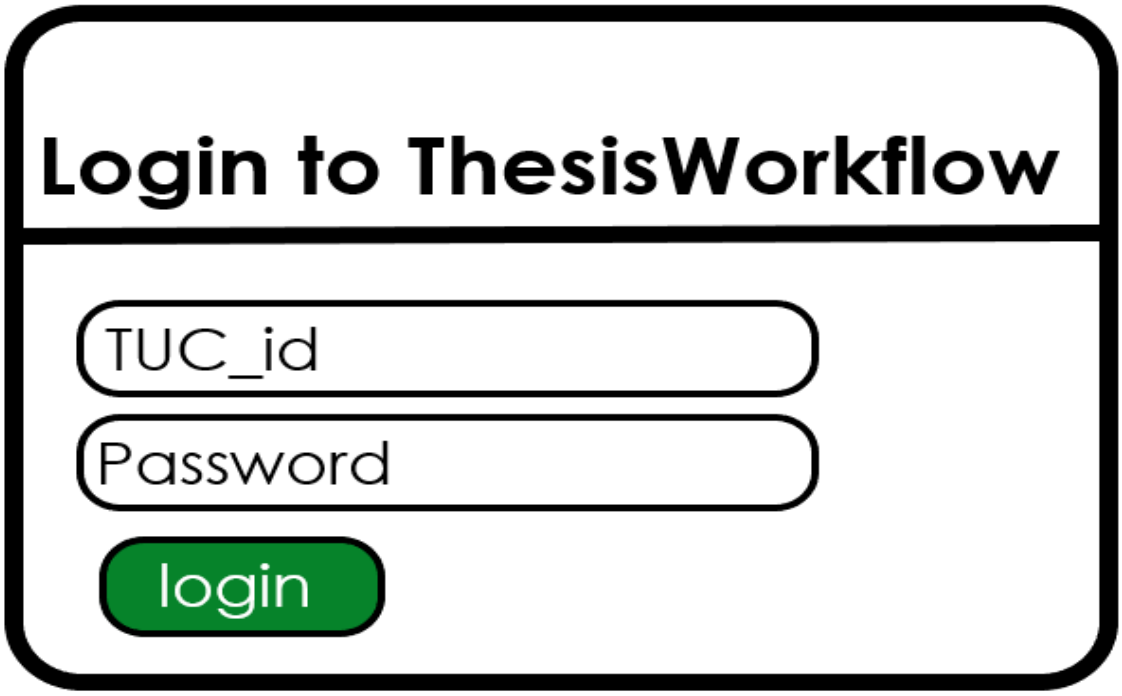
Enhancing BPMN with risk data empowers a procedure driven risk demonstrating approach that supplements risks assessment and attack situations. Some of the calculated risks management strategies have been mentioned below: -

- Requirement Analysis of the registered query by the student needs to be understood aptly. Miscommunication with the query process may lead to a different workflow as a result.
- The events having the probability of risks can be documented within the explanation attach to that event.
- Absence of providing the process information over internet servers might gain external access. Cloud Deployment can be taken into consideration for this.

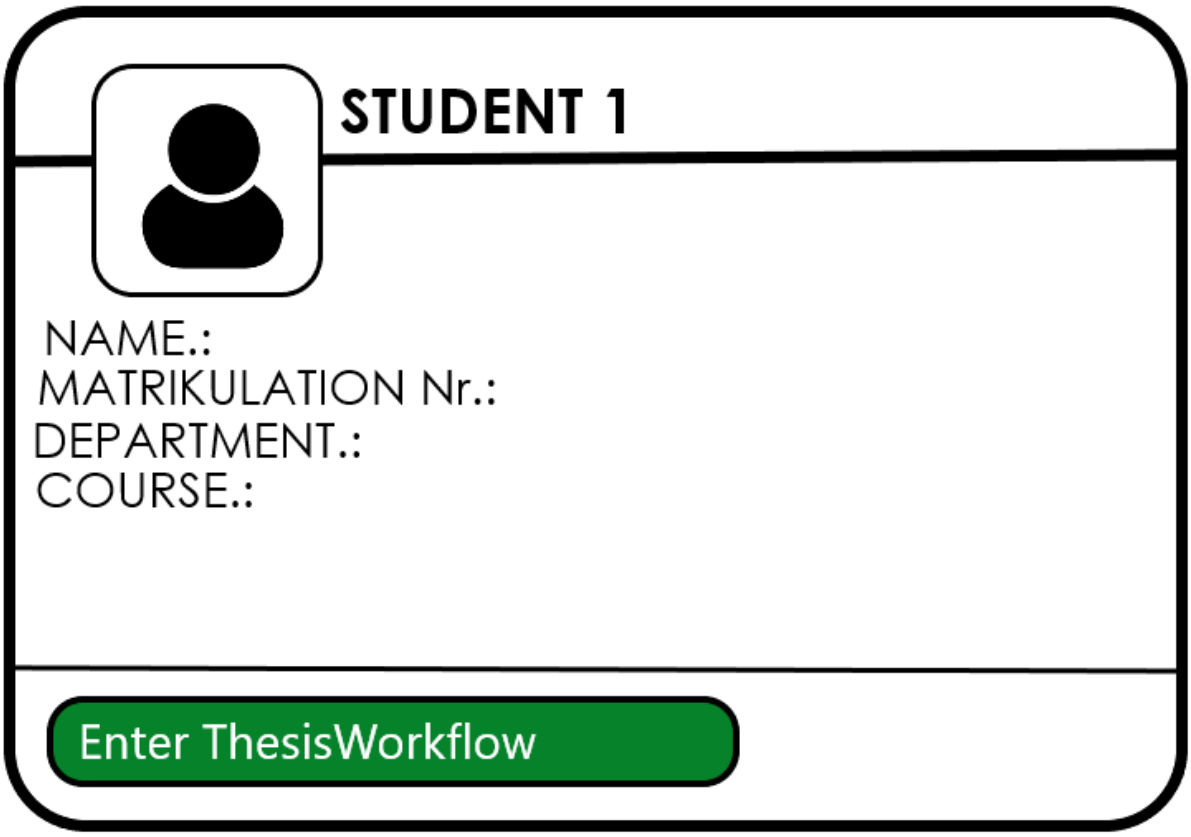
Paper Prototype

The solution website has been planned in such a way that a student who is already a part of TU Chemnitz can easily register his or her query on the website. We can then store the query in our database and prepare a BPMN workflow for the related process that has to be followed by the student in order to complete his thesis. The process can be shown on the website along with the detailed explanation.

Student can directly go to the website and login using his TUC ID and his SBservice password.



Once logged in, student can enter other relevant details, most importantly the department so that the solution can be provided on the basis of the process of thesis followed in that respective department.



After all the details have been mentioned, the solution will be generated and student can see a final page where the solution BPMN workflow along with the relevant details and explanation of the process. Camunda server is used for the deployment of BPMN process on the server.

meetyourIT

ThesisWorkflow

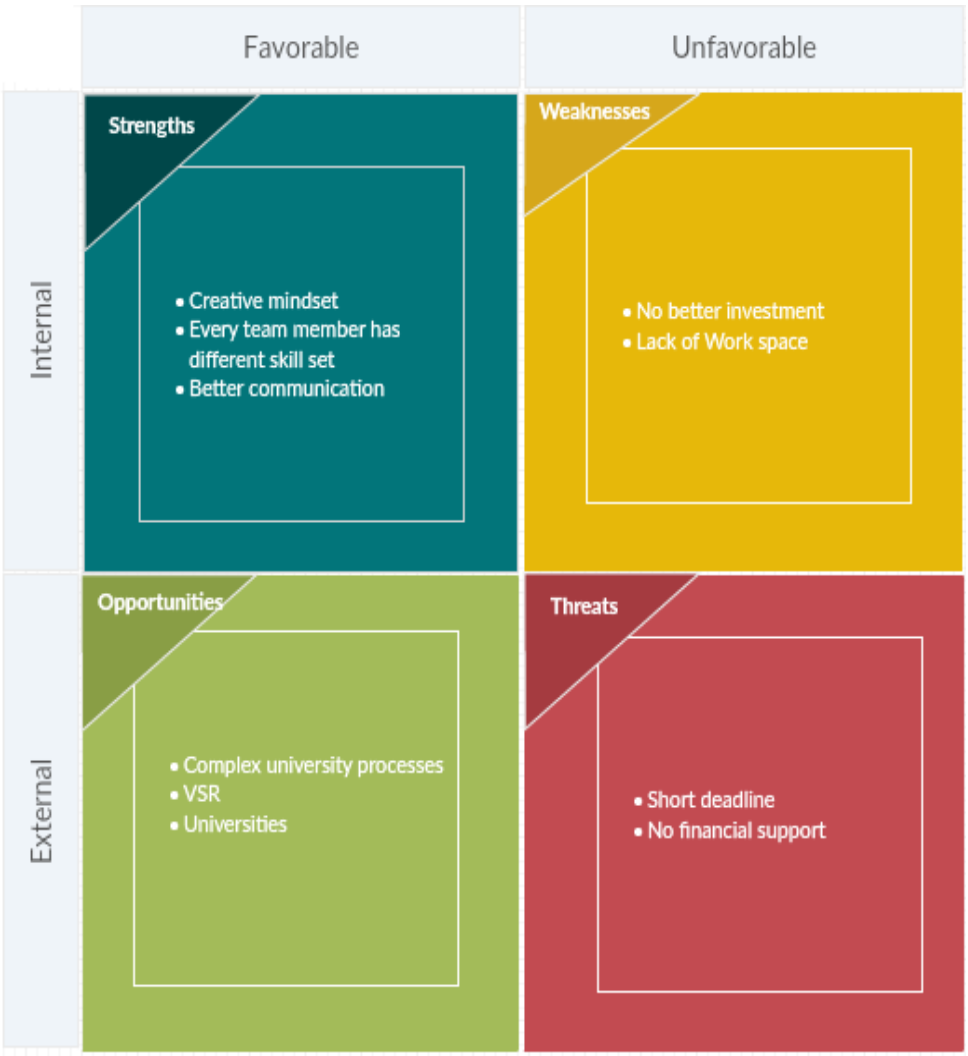
Welcome to ThesisWorkflow. Below you can find the steps of workflow related to your thesis project and other important details.

Preparation	**SOLUTION PAGE**
Working on Thesis	
Final Defense Presentation	

SWOT analysis

SWOT analysis in the stages of the project is a very useful technique to understand and get a better understanding of the Strengths and weaknesses which team possesses, Opportunities lying ahead and the threats which can hamper the product.

Strengths, Weaknesses, Opportunities and Threats and written in 4 different columns and all the needed details are filled after a brainstorming session with the team.



Strengths

Normally in strengths we consider “What are our strengths?”, “What do we do better than others?”, “What unique capability and resources we possess?” and “What do others perceive as our strengths?” based on these questions we point out the strengths of the team.

Considering out team our strengths are as follows: -

- Our product provides a vast and more elaborated platform to the university to handle the status of the student. At any instant of time, university can handle more students as compared to that they can handle now. Engendering the efficiency of the university, we provide more business to them which makes our product peculiar.
- Because the product focuses on providing the market to universities to attract more and more students timely, and education is a never-ending entity, the product promises to last long for at least few decades.
- We have better communication within the team as we stay under the same roof. This makes the communication easier and gaps in transferring the tasks to one other are very ephemeral.
- Every team member from our team has one or two unique skills which will be needed time to time product development and marketing.
- The last is we have creative mindset and we also try to do things creatively.

Weaknesses

In weaknesses we ask, “What are our weaknesses?”, “What do our competitors do better than us?”, “What can we improve given the current situation?” and “What do others perceive as weaknesses?” depending on this we make out what all weaknesses a team have.

- We currently don’t have any investment right now, so it would be difficult for us to globally acclaim our product.
- Every successful organization has an acclaimed workplace, which helps it to operate centrally from a point where everyone can communicate easily. Currently, we are lacking such workplace. It is very necessary for a team to create a sublime impression in the market to withstand top in the competition.

Opportunities

For opportunities the points are “What trends and conditions may positively impact us?” and “What opportunities are available for us?”

- The global world of university admissions and student guidance is surely to expand in the future with time. This provides us an opportunity to expand our product not only till TU Chemnitz but also to other universities.
- Since, the process thing is not only confined to only universities. If success knocks the door with the desired target achieved, same concept can also be offered to the professional organizations for better improvement of their process.
- As the current process flow in university is very complex and is unclear to students our product can help us make it easier over that we are focusing mainly on VSR and University workflows as those are the most challenging areas and most complex to understand for a student.

Threats

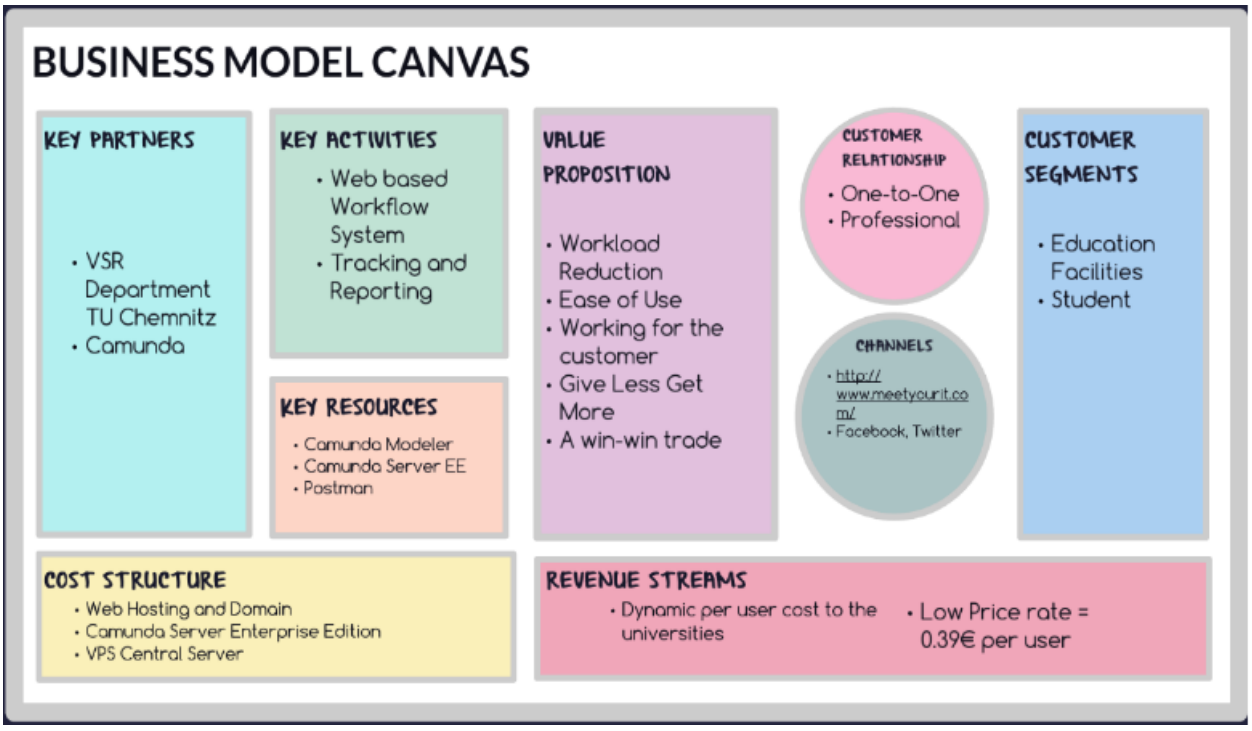
Generally for Threats we consider “What trends and conditions may negatively impact us?”, “What are your competitors doing that may impact us?”, “Do we have solid financial support?” and “What impact do your weaknesses have on the threats to us” so based on this 4 points we can point out what are the future threats for a team.

Considering our team, we have a very short deadline which is our biggest threat and over that we also we have shortage of funds.

Business Model Canvas

Business Model Canvas is a strategic management tool used by lean startups for modelling their business aspects on to a single canvas or single sheet which can cover everything related to their business planning. This is a tool or template which helps startups and organization to create and modify business plans and strategies in a very easy, sophisticated and formal way covering all the aspects which are important to the growth of business in an organization. Similarly learning about the ease of this template and sorted view provided as the representation of business aspects made us keen over using the BMC as tool to define our business plans and strategies.

Using the BMC made business planning not just easy but also formal and sophisticated in terms of segregating the faces of developing the business in and around the organization. It helps describing the firm's as well as product's value, efficiency, finances, partnerships, customer and infrastructure and showing an overview of all the potential trade-offs the organization plans to make during making business and growing in the market.



This Business Model Canvas is designed by in meetyourIT which was put forward to VSR department of TU Chemnitz which are our persistent clients. This BMC depicts the business we are carrying out in meetyourIT from all directions by showing various aspects of our business methods and sections we are focusing on. The primary points are mentioned below in detail. The points follow like:

Key Partners

Our Key partners in this business are Distributed and Self Organizing Systems (VSR) department of TU Chemnitz and all our work is directed towards simplifying the processes of VSR department and letting down the workload on the department related to administration tasks.

Camunda being a direct provider of the software handlers becomes the second key partner in this business. We operate on specifically Camunda software's like the Camunda BPMN Modeler and also the Camunda Server for deploying our BPMN Models for process flow activities.

Key partners play an important role as they are the prime support for various resources that are required in building of any project. Thus, our key partners also play an important role in making our project reach success.

Key Resources

As mentioned above we are using two Camunda software's,

Camunda Modeler

The Camunda Modeler is basically a canvas on which we have designed various processes which we aim to execute in our portal. The modeler can be used to design a complete BPMN while covering each and every notation describing a process flow with complete details and also being simple and understandable. It allows process designer to manipulate the values mentioned in a single process so that the designer can have a complete control over operations and sequence of the processes.

Camunda Server

The Camunda Server is a workflow engine on which all the BPMN Models will be deployed to get them in action and running according to the flow designed in the diagram. It also provides a dashboard which shows the current processes running on server and also the history processes

which have been already executed. Server also helps in moving through various events, tasks and gateways.

Postman

The other key resources is Postman software, which provides a dynamic frontend to the user working with REST API's. This software allows user to pass all kind of REST calls for example GET, POST, DELETE, etc. The user does not has to hard code REST API's and REST calls, he or she can just provide an endpoint through a link to the endpoint and choose a particular REST call and the Postman Software executes it automatically.

The last key resources is TU Chemnitz websites which provides information on the various processes the university has to carry out for achieving various tasks like exam registration, student plan formation, student thesis workflow, etc.

Customer Segments

This section shows the customer type we aim on targeting for our project. We decided upon the two main customer segments we need to focus on, which are Universities and students as we are building this portal system for VSR department of TU Chemnitz currently this system can also be brought into action for another universities around the world.

We choose these customers as they include mass by which we mean there are lots of universities around the world and even more students. This system can prove to be a solution to similar problems of various another universities and students around the world. This mass customer bracket can help our business grow at quicker pace and growing our business in various parts of the world.

Key Activities

The Key activities are the primary tasks we aim to work on during this journey of Planspiel project. In this section of our BMC we focus on the actual working model. The main focus lies on developing an administration portal for VSR department and students of the university where both the faculty and students can administer their own tasks which we aim to achieve using BPMN

technology by designing simple and efficient workflows for processes that the student has to undergo while progressing towards his/her Masters or Bachelor's degree.

This portal will act as a frontend to both the parties where each of them will have specific work tasks. These work tasks will be defined in the BPMN model. This portal will also provide a dashboard where on the faculty side they can have a specific count of students in a particular process and similarly on the student side it can show what all process are currently running and what tasks the student has to perform to complete that particular process.

Our secondary focus is partly automating the process of sending status reports to student about their progress. By this, the student will have a track of his/her progress by receiving notifications regarding particular tasks and events the user has to undergo in a particular workflow.

Value Proposition

Value is the most important term if one wants to grow a particular business in any sector. Customers always have their eye over what value a business is providing and they can always shift to another provider if your business is no longer providing the required value. Value being the most significant aspect of business we in our business focus over very simple but efficient value which we aim at providing to our customers.

We are having our primary focus on really simple but essential values of providing ease of work to our customers where the customers can have a flawless experience in working with our portal. We are working on this value by providing very easy progress tracking for both face of our customers i.e. faculty and students. Quick and easy status report can prove to be helpful to our customers which will keep our customers updated with the latest information about their particular workflow in which they are currently working. Our specified values allow us to reduce workload burden over our customer which will be well liked by our customers as no one wants a heap of burden over their shoulders in daily working life. We focus on reducing workload on both sides where faculty can have access direct student tracking and also access complete information on a particular student progress and on the other hand students can access their progress and also

contact required personnel via the portal helping the customer to have a single system to carry out maximum work with minimum hassle.

Our values which we aim to provide to the customers have been created keeping the customers in mind. As customers are the soul of a business, we in our team directed our thoughts towards thinking like a customer, focusing on points which we will notice if we are on the customer side. This method of Human Centered Design has helped us to understand the customer better and we have designed our ways of working and providing best value to the customer accordingly.

Customer Relationship

Relationship towards customers are also an important aspect of business as good relations lead to a good outcome in business. As for our product we have focused upon customer segments like students and we are dealing with universities and departments we decide to have an ethical and professional relationship with our customer as the communication between our team and our clients and potential clients will be a very formal communication then professional relation proves to be the best mode of relation.

Professional relationship with the customer automatically makes the communication channel more organized and linear making it convenient for both, us and our clients. This mode of communication and this type of relationship brings an aesthetic in the system. We become available for our clients not just via communication channels but also for a one-to-one chat. And this way of customer interaction helps us operate in a smooth fashion and also allows work transparency between us and customers.

Cost Structure

This area covers the various cost incurred in our business and what should the investor pay us for. At our level of project, we do not have much cost incurred as we are working on university department level and also working as a group of individual under the Planspiel project. But as the business moves ahead and starts growing we will need more funds for more resources and components which will be essential at that point of time.

Currently our prime investment falls into software section. We are operating over Camunda Servers Enterprise Edition which requires monthly payment subscription. For the pricing list according to personal requirement we can contact the Camunda team and get the pricing for the same. We have invested in Website maintenance and hosting tasks which includes payments for web hosting and domain name. We wanted to approach towards this project in a complete professional fashion so we are not compromising over investing in the best required products hence we agreed upon buying some of the paid services of Trello which is a software through which we are administering our work using Scrum Agile Methodologies. It contains Calendar integration and Slack integration which falls under paid services. These mentioned costs are the most basic costs which can be considered at this stage of the project. As we mentioned these costs will gradually grow as our firm grows into business in near future.

Another share of our current investment also includes the cost of a VPS Server which is currently acting as a central server of action. This server is handling all the communication between the different parts of the product which are the camunda server, front-end system, and the database. The future cost structure may include various necessities of the organization when the organization starts to grow it has to not just have a great product every time the market demands for but a strong base setup through which the organization operates so investments like a place of work which may include monthly rental of the office setup, good and efficient hardware for work, payment to the employees which will work for our organization which requires a good amount as when our organization will grow there will be a requirement of a good number of employees to handle the operations of organization and last but not the least the extra cost per month which goes into any office setup which can include food facility, workplace cabinets, electronics, bill payment of electricity and internet and more miscellaneous cost that increases gradually with the organization.

Revenue Streams

Revenue or cash flow is important to keep the business up and running. Revenue flows acts as food to the entire business system which keeps the business strong enough to sustain in current markets. Our revenue stream is very simple as we are creating a product for the universities then our revenue depends on how well we can sell it to our initial primary client the VSR department of TU Chemnitz and gradually move to other universities too. These sales depend on the quality of our product and in future we can generate different revenue stream from this single stream which can bring us more profit according to our position in the market.

Revenue is a technical term for making money out of the product built by the organization and directly points towards the term ROI (Return on Investment) which is a measure that acknowledges the organization with the amount of profit they are achieving through sales which is calculated by taking a ration of the money gained to the money invested in building that particular product. Here our organization aims on a very high ROI rating and currently if we calculate immediate future stats of the investment made to the money we gained will be relatively high.

Channels

Channel cover the current modes of communicating with our team. We have our own website with a feedback and query form where potential clients can approach us to do business and we are also on major social media platforms like Facebook and Twitter. These social media promotions helps business to reach to more people which is required to increase the business. The links to these platforms are mentioned in our business model canvas and in the report respectively.

Channel becomes a very useful medium to reach future customer groups and potential investors too so we have to keep all our communication channel up-to-date on daily basis as it also becomes a medium of increasing opportunities as investors and customer may visit the website of any communication medium where these channels become the face of your organization and also becomes a medium of first impression towards the incoming customers or investors.

UNIQUE SELLING POINTS

As the name goes USPs are the key points or key values you promise to deliver to your customer but unlike any other values these values are claimed to be unique in the market and being unique means how differently and uniquely you approach towards giving these out in market to your end users or consumers. The terms which you mention to be your products USPs are not suppose to unique words or terminologies but the way of you provide your customer with these values. Our company is entirely focusing three main Unique Selling points which goes as the following: -

KISS (Keeping It Super Simple)

This point comes out from the core principles of software engineering. As our product is built keeping in consideration the software engineering methods and ethics similarly we have to focus on what core principle we can deliver and focus on from the software engineering world.

Our KISS principle is slightly different than the one from software engineering concept. Our KISS means Keeping It Super Simple, i.e. the base of our product is that it is very highly simple in operating making it into an environment which can be used by any kind of user.

The user does not have to necessarily have technical knowledge or background to know and get along with our system. Any kind of user can learn how to flow through different operations of our product in few minutes without any hassle of knowing the background technology running the system. It is a system for everyone and is built accordingly considering the fact of being a flexible

system in the context of user or target consumers. Our system is not bound to any group of users but to everyone who desires to have our system onboard.

All the hassle of bringing in new features or functionalities is for the team not the user the user just needs to demand, and that feature can be ready provided right to their desk.

VVVC (Very Very Very Cheap)

This is a mind-blowing and astonishing part of our product, i.e. the pricing that we promise to provide to our consumers. This pricing plan was developed keeping in mind the dynamic nature of the education facilities around the world. Our pricing plan moulds according to the amount of requirement that consumers are having at their end.

This dynamic nature of pricing helps us provide our consumers with an assurance that they are always winning in every deal they make with our company for our product. This helps us grow around the market rapidly as when our consumers know that their requirement is fulfilled with the fact of having a pricing plan that allows them to transparently see the pricing segregation and allowing them to notice that they are not paying anything above and extra their needs they surely will tend towards having a deal with us.

To understand our dynamic pricing scheme is very easy at the initial stage taking in consideration a real-life example of two different universities in two different cities which want to have access to our services and want to implement our system at their universities for having a daily track of student activities and allowing their student to have a track of personal progress. Here the universities will first meet us and learn about our pricing plan.

Dynamic Price Scheme: The consumer should pay as per the number of user it will have working on our system or our service.

So, University A has 10000 users which will require access to our services and University B wil have only 3000 users and here when applied a rigid payment scheme with a non flexible amount it may happen that University A profits in the deal but University B has to pay much higher than required.

But in our case both the universities will pay only the amount depending upon the number of users it has so as a result we came upon a price that is very cheap for our consumers and also ends up acquiring cumulative profit margin for our organization.

Hence, we came up with a price tag of 0.39€ per user, which is a really cheap deal any end user or consumer can get in today's market. So in our mentioned example,

University A has to pay 10000 x 0.39€ = 3900€.

University B has to pay 3000 x 0.39€ = 1170€.

With this example we can learn that the work required from our side at our consumer side will be equally less depending upon the number of user the consumer wants to accommodate our system with and also the consumer pays less resulting into a win-win trade between us and our consumers. This at the end results in satisfying us by acknowledging us with the fact that we are indeed satisfying our value proposition mentioned in our business model.

Single Point Platform

It is very important that the consumers find everything they need at one place and do not have to go around searching for the required data. For example, imagine a situation when you go to the market and have buy some stuff and you do not get everything that you need at one place and you have to travel around different shops searching for every item. This generally frustrates the user and user starts to be searching for alternatives to the existing solution and tends to leave the existing solution to his problem when they find a new and better one.

This is the perfect example we considered while preparing our product that we need to build a complete system that will satisfy all the information needs of our consumers. This is a prime factor as we do not want any of our consumers to have an alternative. Here our consumers should not worry about anything as everything is ready provided by us on their desk and up and running as expected by our consumers. Currently our product is focused on universities and other education facilities where the workings involved to carry out any course programs is very necessary and our system deals in the exact same area where students are get known with their education

environment and professors are provided a system which operates with lesser headache of work where one system provides with all the essential information required of any particular student.

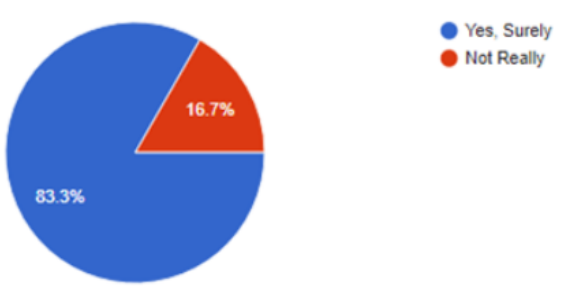
The information needs include various type of information which are essential for hassle free journey of any student or professor in the education facility where starting from the flows of work environment to providing essential information about progress and additional features to make students and professors life easy all are provided under one single system.

The namely feature currently included and running in our system include these following features,

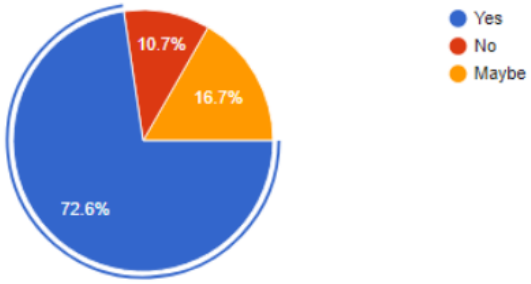
- Workflow information.
- Mailing service on student side.
- Tracking information.
- Progress information.
- Tabular data related to students with sorting.
- Admin level control to the professor.

Consumer Research

Consumer research is a very important aspect to be covered while building something new or updating some existing technology. This research method helps the organization understand the potential impact of any product in the market and also helps derive the estimation related to the project. There are many techniques through which you as an organization can reach out to customers like advertising of product, one to one talk sessions of potential customers, common survey form, etc. These techniques help to know the consumer better and allows any organization to know what the consumer needs.



Do you think our product is a good solution?



Will you as a customer prefer using our product over traditional/current means?

This above mentioned image shows the results of our consumer survey where we asked our mass potential consumers some simple but necessary questions to know what the consumer wants from us and hence as the image shows we created a common survey as we had to reach out to many potential consumers at the same size in this big market. The questions mentioned in the image are two main question that answer us that whether the product has a survival in the market or not and also the answer to our question “Should we really build this product or not?” and the pie charts show very promising results as both of them show a maximum number of share of positive responses where almost on an average 75% of our respondents think that this product is going to be a good solution over the traditional means that currently are in fashion. These responses were not taken from different groups of peoples which included our targeted consumer group where

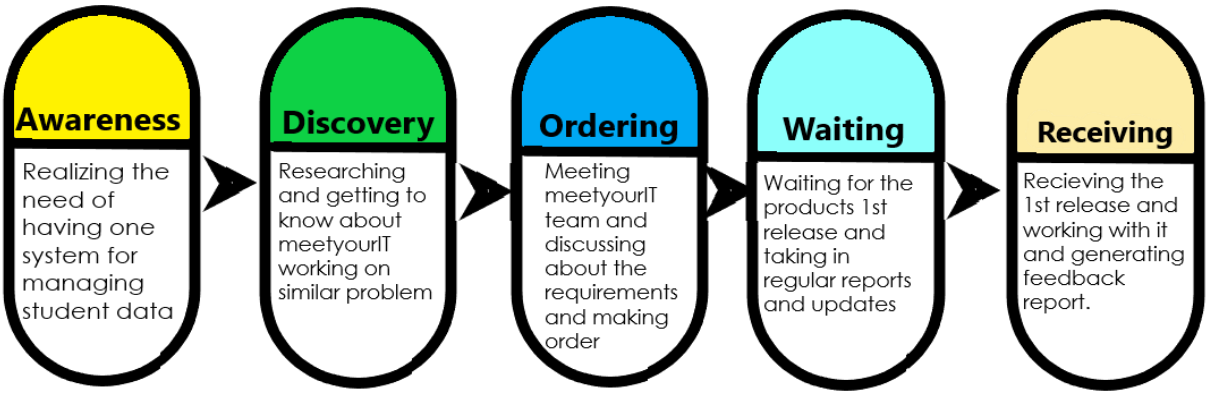
responses came from people living in different countries and working in different industries and education facilities.

These consumer research also help the product to be built according to the users who will in the end use the product making the design of the product work on the basis of Human Centred Design principles where consumer is the requirement giver and and also the one who explains what should be included in product as features and functionalities.

Customer Journey Map

Customer Journey Map is a tool which realizes the interaction between customer and provider which can be any kind of organization does not particularly has to be a technology provider it can be as simple as selling an ice-cream on the street. So this tool is so flexible and expandable that it has no limitation or a minimal mark of requirements to use it and can be used by any kind of company or provider.

This idea just proves to be perfect decision for a startup like meetyourIT to use this simple and yet formal way of depicting our customer journey map which explains the journey of creating and delivering the product we created and efficiently says everything about the connection our customers have with our product. This tool explains how our startup team walked along the journey of creating a product which will be helpful to a a great number of people who play out to be our potential customer by knowing what a customer needs and how to make these aspects and requirements possible till the end of delivering the first complete version of our product to learn about our customer experiences with our products and also taking in feedbacks to keep upgrading the team, tools, technology and product so that our startup can sustain in the market.



Our primary clients and customers seems to be the VSR department of TU Chemnitz, Germany and our customer journey map speaks about their requirements that they had before handing over

the project to us till the end of a 6 month long project when the time comes of receiving the first release of product for reviewing and letting us know the feedback so that we can make further required upgrades to the product as feature and functionalities updates. The stages are explained below depicting the various stages of customers journey with our startup. The points are explained below as follows,

Awareness

This stage explains the time when a customer realises about the problem that a customer is facing with the traditional running system or ways of working out of daily operations. This cannot just be a problem over current system but also a new system an innovation which can result in betterment of the future generation of people.

As per our current scenario our clients were facing problem a problem of handling student data and did not have a proper front-end system where they can have all data sorted and ready from where they can access and operate upon student data rather than accessing multiple types of files and multiple entries from various files for the information required. So this leads to an awareness or realisation to have a system which can replace this traditional system of working and have a new one set platform for getting the work done.

Discovery

This stages tells about the story where a customer tends to search for potential service providers or solution givers which can work on the customers problem and provide a healthy and efficient solution to the problem. The customer in this stage can browse through various potential providers as the customers has the right to choose what is best for them.

For this scenario the VSR department went on to find potential organizations or startups they can work with for resolving their problem. This led the VSR department to our startup meetyourIT which works with BPMN technology which suited VSR department best as they had a problem related to their daily business flow in the face of handling student data.

Ordering

Here the customer has already found out a problem resolver and has spoken about the problem or idea that the customer is having for creating a product. The customers then in this stage makes the order for the product according to their preferences of requirements and the problem resolver teams takes in consideration the taste and requirements of the customers and gets acknowledged with the tasks they have to do.

For meetyourIT, the VSR department had clear vision about the product they wanted us to build and about its functionalities they require so they put forward all the requirements to us and expected an interactive work nature from us where they are equally involved in the development of the product.

Waiting

This stage is all about the time it takes to create the product required by the customer and the customer waits for the 1st release of the product where the customer will get a hands-on experience with the product.

In our case meetyourIT team had a time bracket of 6 months to work over the specified requirements and develop a product which will prove to be helpful and reliable to our customers. This time of 6 months includes working over the technology, building prototypes and getting in touch with our customers on daily basis to get immediate feedbacks on the current stage of development and if there are any changes required. The waiting period ends when the products 1st build is ready to be deployed on client side and can be used by the clients to provide further feedbacks and reviews.

Receiving

This stage explains the time when the client receives the first build of the product and is now the time when the client starts to work with the system and learns through the system. Here the customer works over the system and generates feedback report as and when any updation is required in the system. In our scenario, we have shown the 1st build of our product to our clients and is now in final deployment phase where the customer with get along with the system and contact us as and when any help will be required regarding problems or upgradation of the system.

These 5 stages will end in making our clients happy about the product and and result in growth of our company as our clients will share this solution with other departments and universities which will in turn benefit us as we will gain more clients and grow gradually to the top in market world.

This customer journey is specific to one type of our customers which is the professorship or VSR department and hence has them in focus our another type of customer that happen to be students will have different set of problems and potential solutions to those problems and our team aims at targeting these issues too in future and as of now we have created this journey map depending on our first and primary clients.

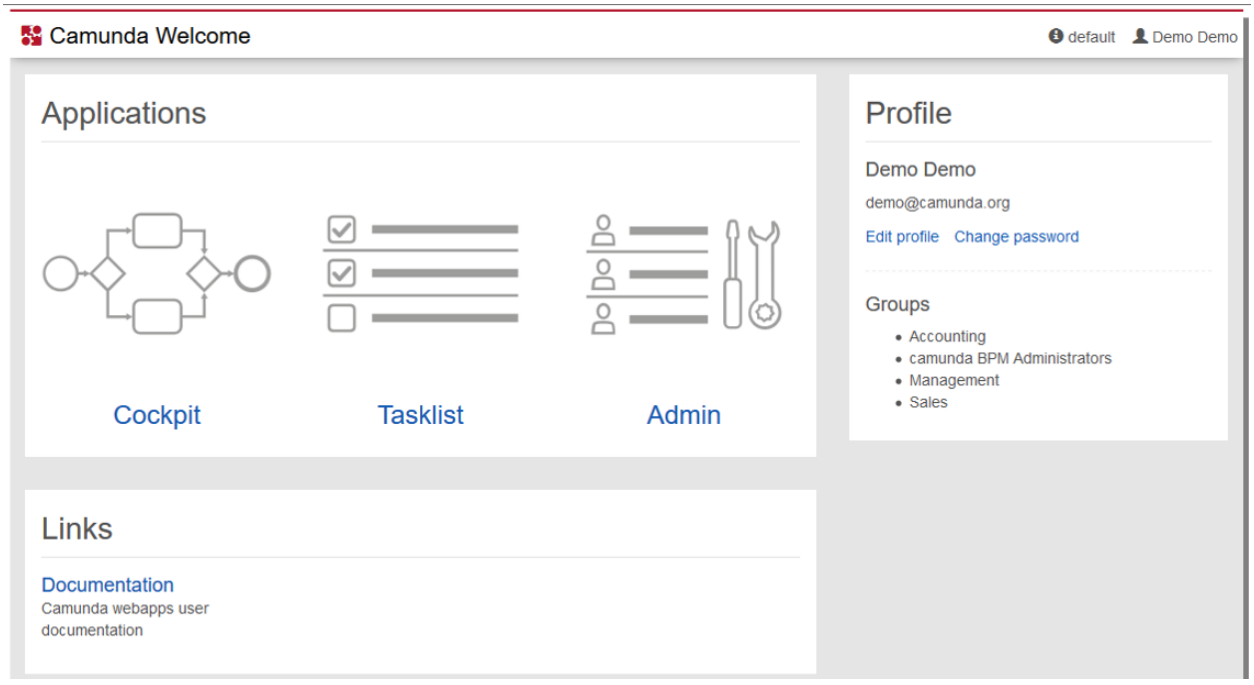
Camunda Server

Once the BPMN is created via modeler, we are using Camunda Cockpit to view BPMN 2.0 workflow definitions in the deployments section. Camunda BPM Cockpit is a web application for monitoring and operations. There are two versions of Camunda server that are currently available, precisely "Community edition" and "Enterprise edition". Unfortunately, the Camunda Community version is not fully featured so we are using Enterprise edition instead in order to deploy and run the process.

With the Enterprise edition you can:

1. Watch the traces of the tasks being executed.
2. Look at the processes and its sub processes i.e. in running mode with its ID.

Welcome Page



This is the welcome page of the server where user can see their profiles as well as use the services of the server like Cockpit, Task list and Admin tab.

Logging In

On executing the batch file in windows i.e. start-camunda.bat, you can log in to cockpit by browsing to the URL as mentioned below:

http://*dockerhost*:8080/camunda

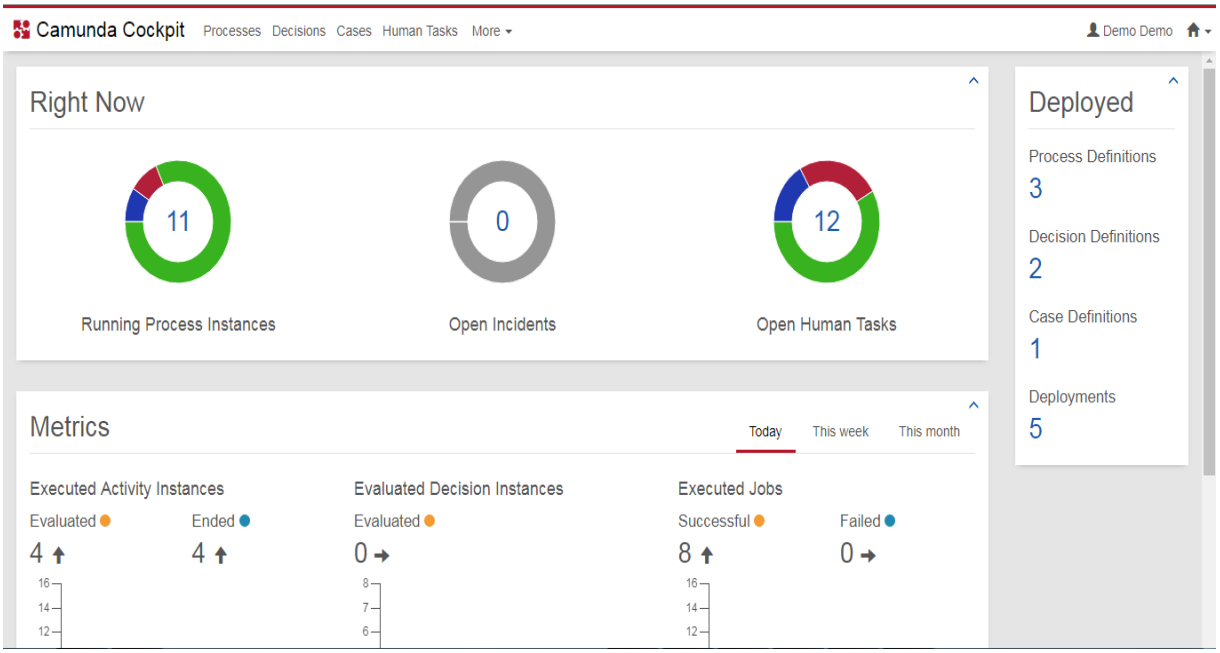
Where dockerhost is the docker host system. In our case it is "localhost".

http://localhost:8080/camunda/app/cockpit/default/#/dashboard

The login page will look like as shown below:

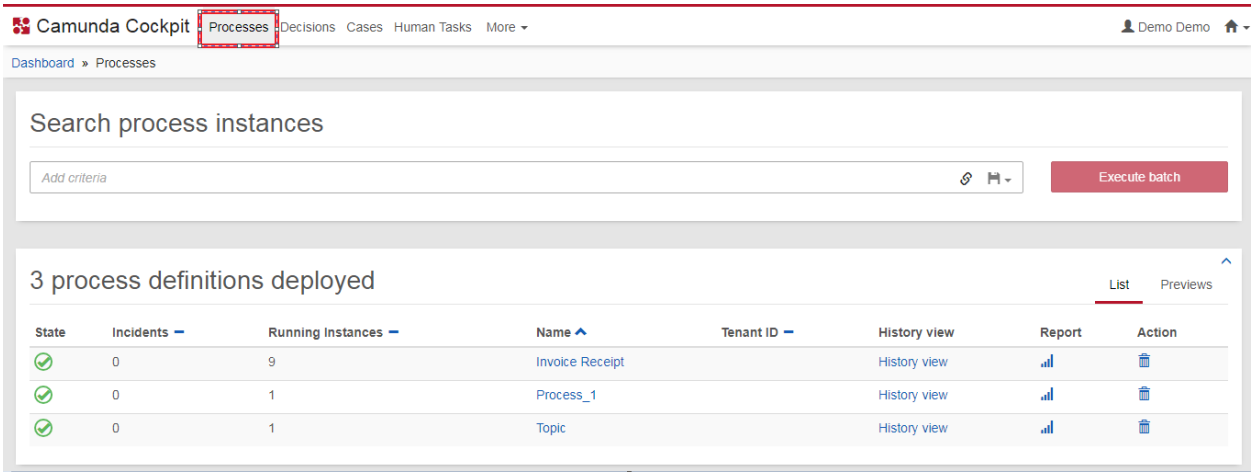
Cockpit Dashboard

The number of running process instances is displayed by clicking on it, On the right of the dashboard there is a section named as "Deployed". From the image below there are total of 5 deployments being deployed in the cockpit currently. We can deploy the whole BPMN 2.0 processes on the server and it can be used to define the workflow of the particular task.

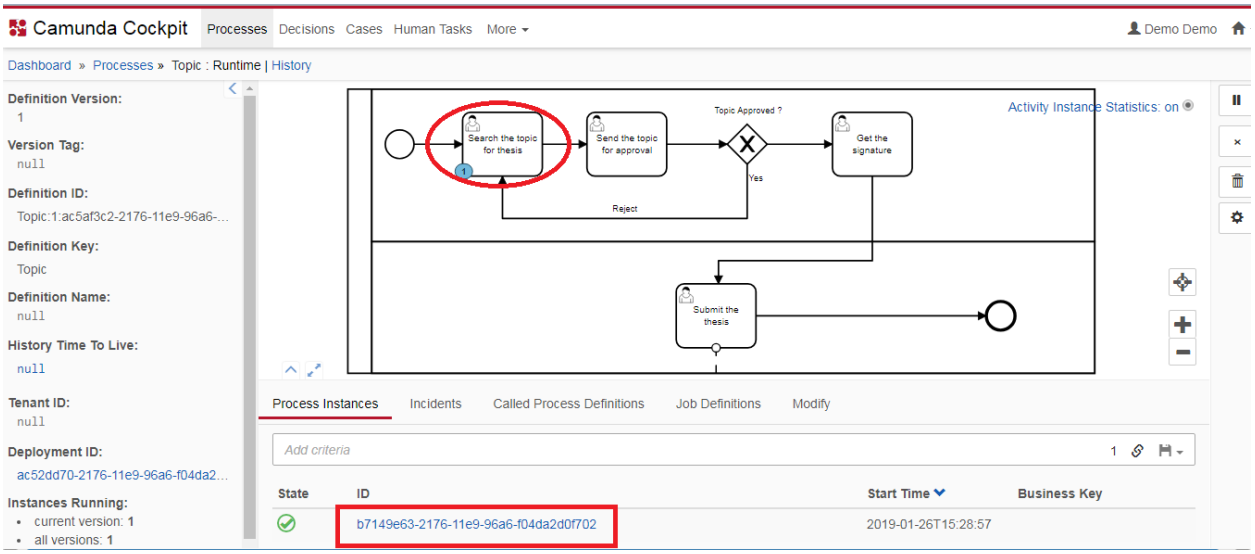


From the Metrics tab we can fetch the running jobs that are completed successfully or failed, detailed statistics about Executed Activity Instances and Evaluated Decision Instances can be fetched too.

Now you can see the Process definition by clicking on "Processes" tab on the top.



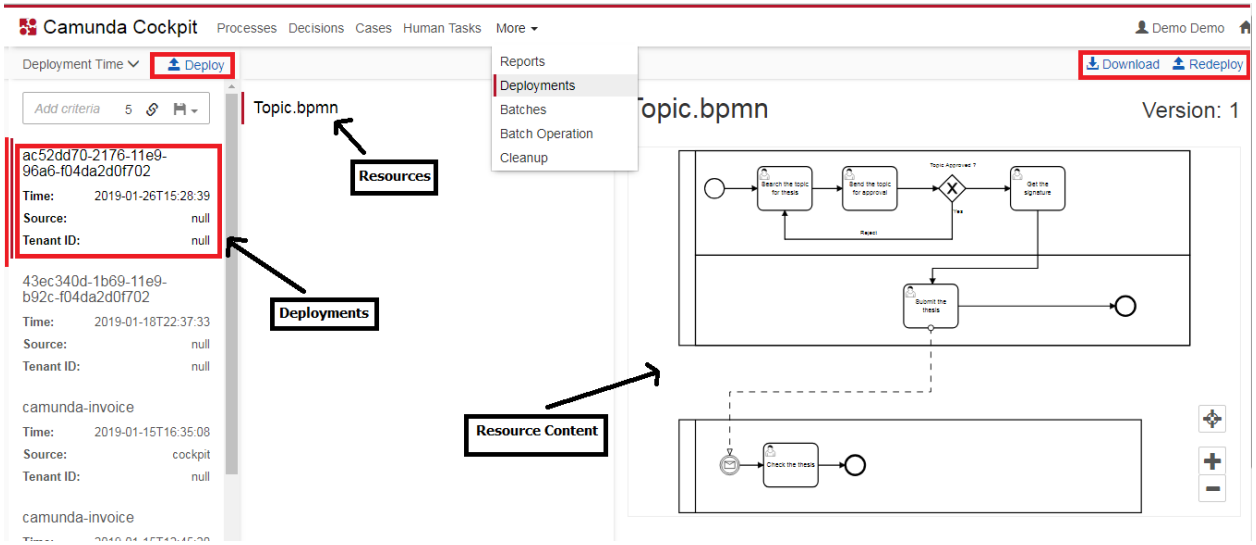
We can also search the particular process tab and manually execute its batch as shown in image above. We are able to see the process running at the runtime by clicking on any of the deployed process. For example, Topic, Process_1 or Invoice Receipt etc.



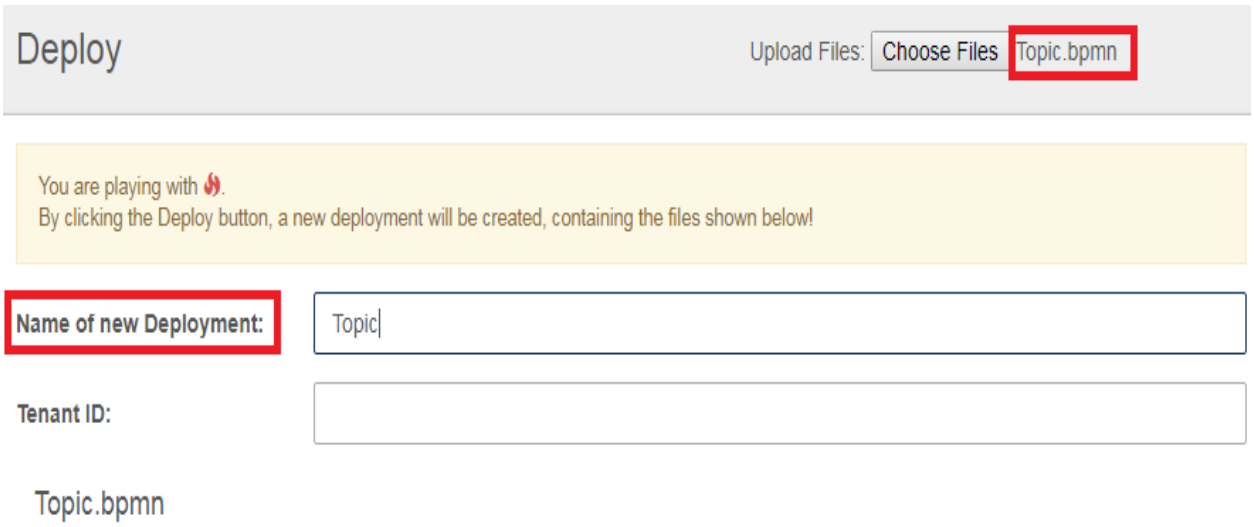
From this dashboard, we can directly see where the process is lying exactly at which notation. On the bottom the unique ID for a particular task is shown which can be used further to execute the tasks.

Cockpit Deployment

BPMN 2.0 workflows can be deployed by using proper REST API endpoint on the server. You can see whether it is deployed correctly or not. We can also download and make the changes to the existing workflow directly from the server. Another option to redeploy the workflow is also available to us on the server. The deployment can be deleted according to our usage too.



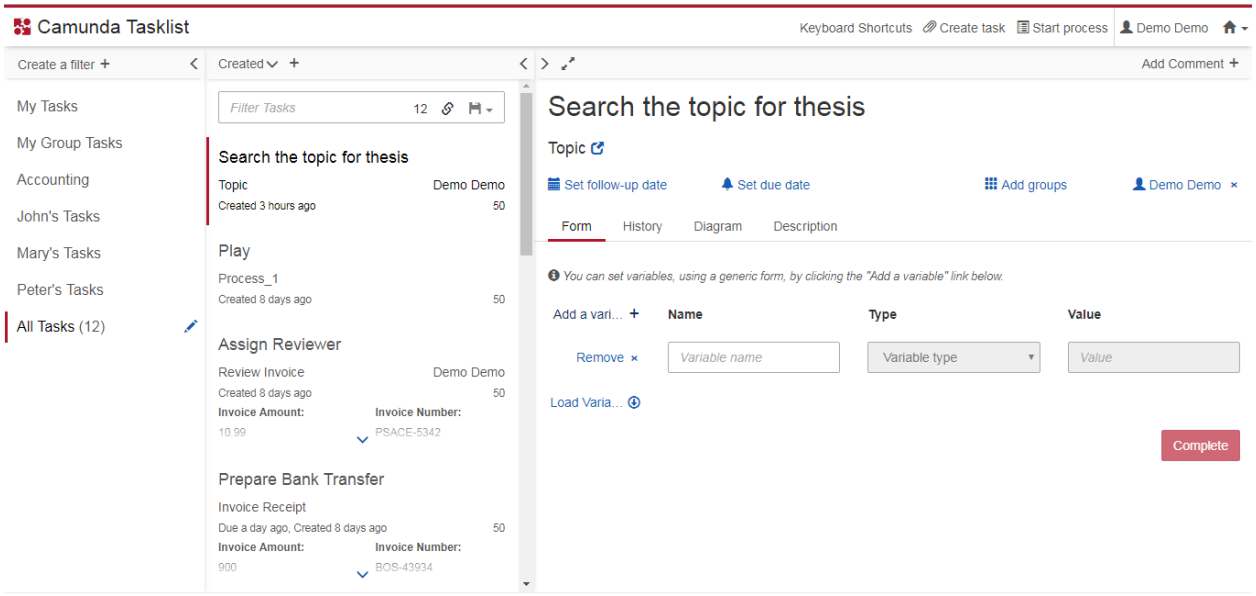
There is another way of deploying the workflow manually by selecting Deployments option under 'More' tab. On the Top left side click on Deploy option.



Cockpit Tasklist

Tasklist is a web application which allows the user to work on user tasks. It can be executed directly by going to the URL mentioned as below.

http://localhost:8080/camunda/app/tasklist/



We can do several sub tasks like starting the process, setting the due date, creating the filters, commenting on the tasks and many more.

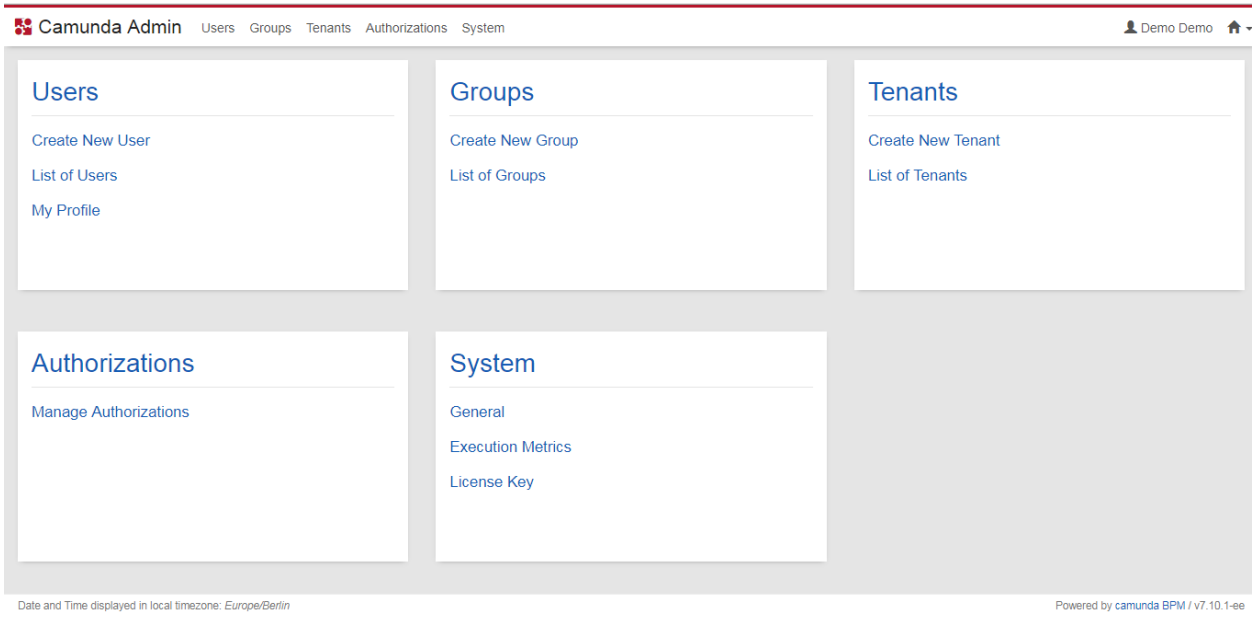
On this tasklist dashboard you can see the overview of the pending tasks, on the right side of the screen you can claim, unclaimed and reassigned the tasks.

Cockpit Admin

The admin panel can be accessed via URL as mentioned below.

http://localhost:8080/camunda/app/admin/

Admin panel allows to configure users and groups and also the authorizations of different IDs, you can provide special privilege to the user by giving them necessary rights also users can be assigned to different groups according to the requirements. We can grant members visibility as well and also restrict the process permissions etc.


Camunda Admin
Users
Groups
Tenants
Authorizations
System
Demo Demo
Users
Create New User
List of Users
My Profile
Groups
Create New Group
List of Groups
Tenants
Create New Tenant
List of Tenants
Authorizations
Manage Authorizations
System
General
Execution Metrics
License Key
Date and Time displayed in local timezone: Europe/Berlin
Powered by camunda BPM / v7.10.1-ee

REST API

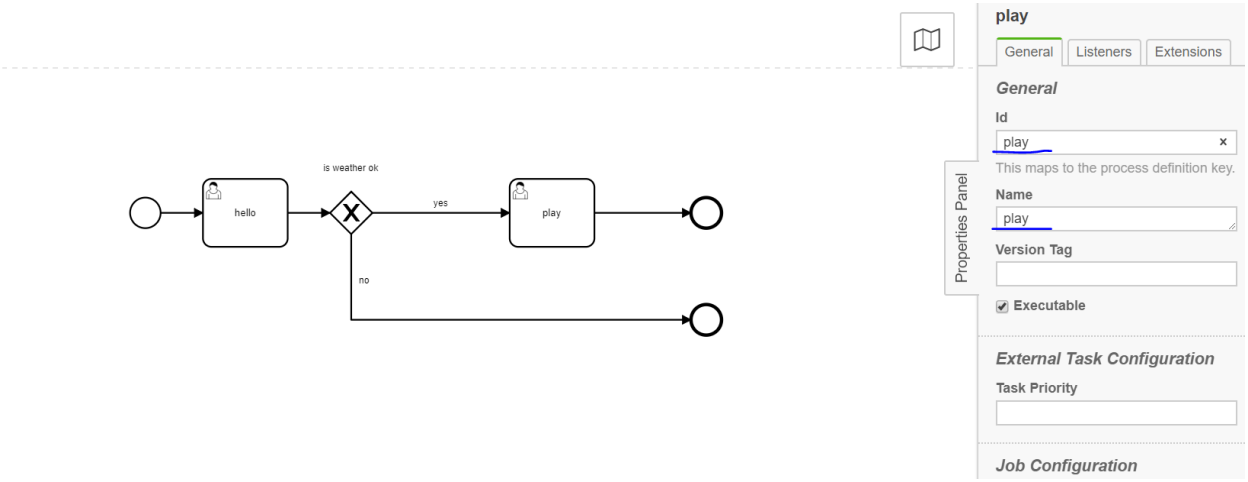
Representational State Transfer (REST) is an architectural style of creation of web services by defining a set of constraints. A RESTful API basically uses HTTP formats to communicate as a web server. Standard HTTP methods are: - GET, HEAD, PUT, PATCH, POST and DELETE.

REST API with Camunda

Camunda Server provides access for all interfaces of the engines present in order to run the process. The processes can be monitored on the server once they are deployed on it. REST is used to create different endpoints for carrying forward a process by completing it and generating a new process ID to start the upcoming task. Some of the endpoints used for controlling the process are explained below:

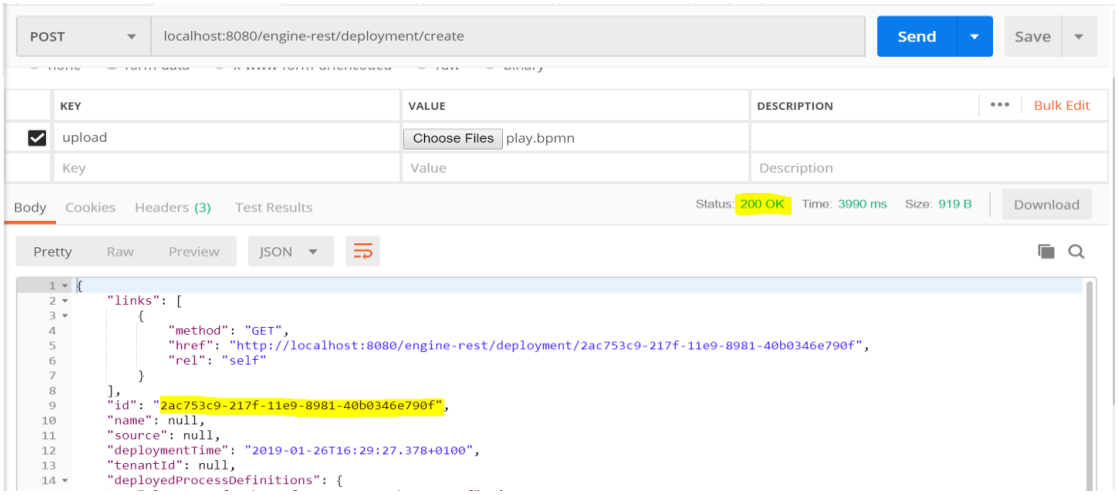
Deployment

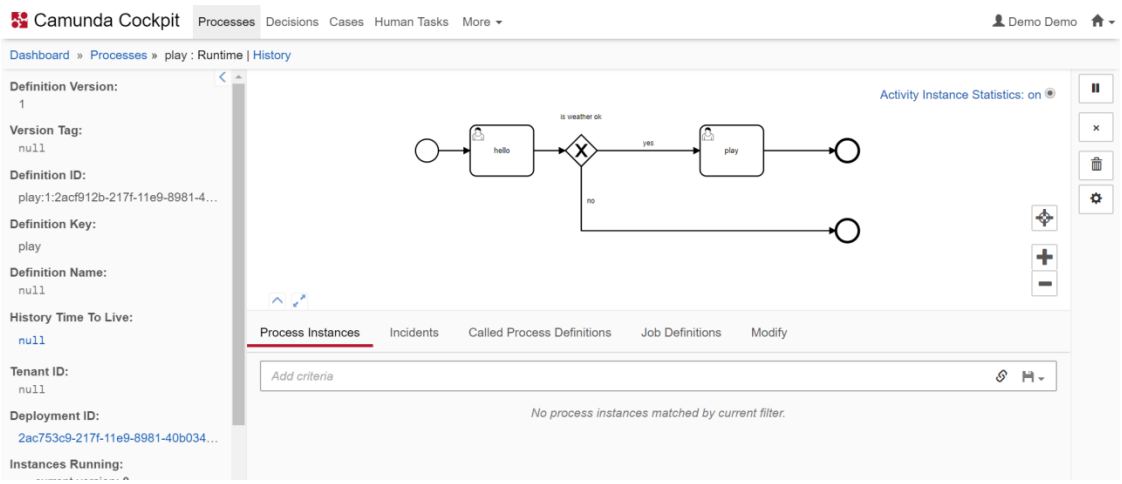
The process is created on the Camunda server where the ID has been generated and further used to deploy the process on the server.



This process is first of all deployed on the server by uploading it along with the explaination of 'body' with "Content-type" as "multipart/form-data".

Endpoint – http://localhost:8080/engine-rest/deployment/create



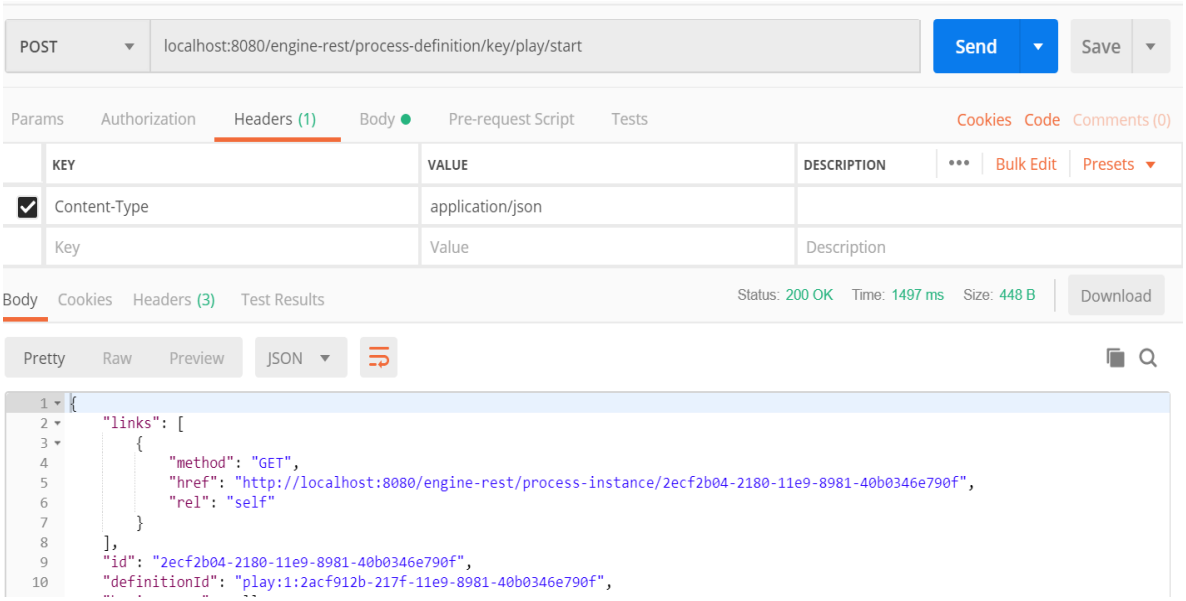


Start the process

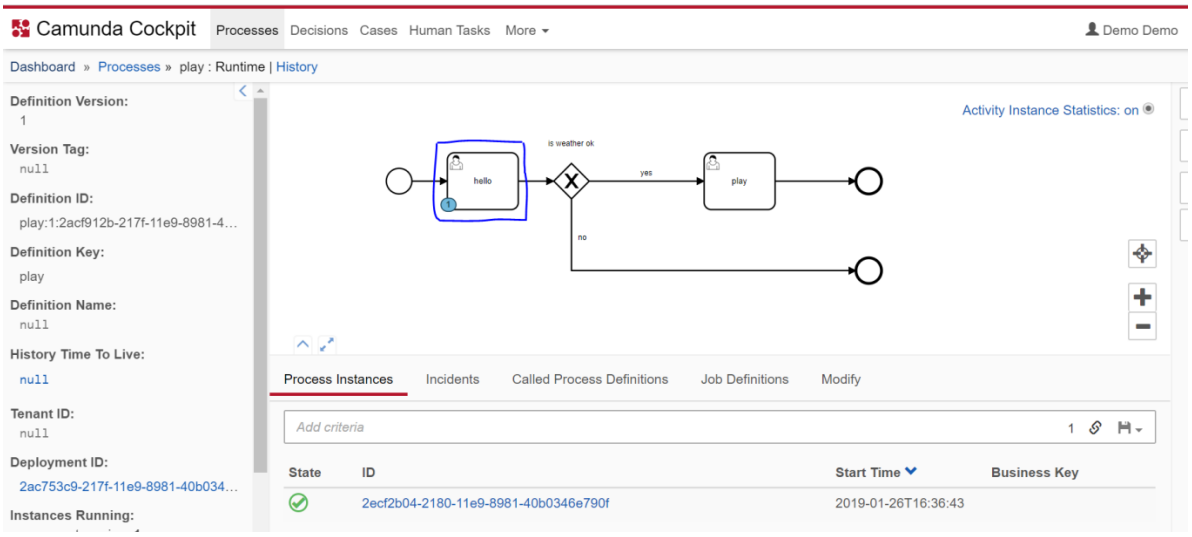
Once the process has been deployed, an endpoint is passed as a REST API to call the process and trigger the start event. For this, it is necessary to use the processID which has been defined in the Camunda Modeler during the creation.

Endpoint – http://localhost:8080/engine-rest/process-definition/key/(process ID)/start

Content-Type: application/json



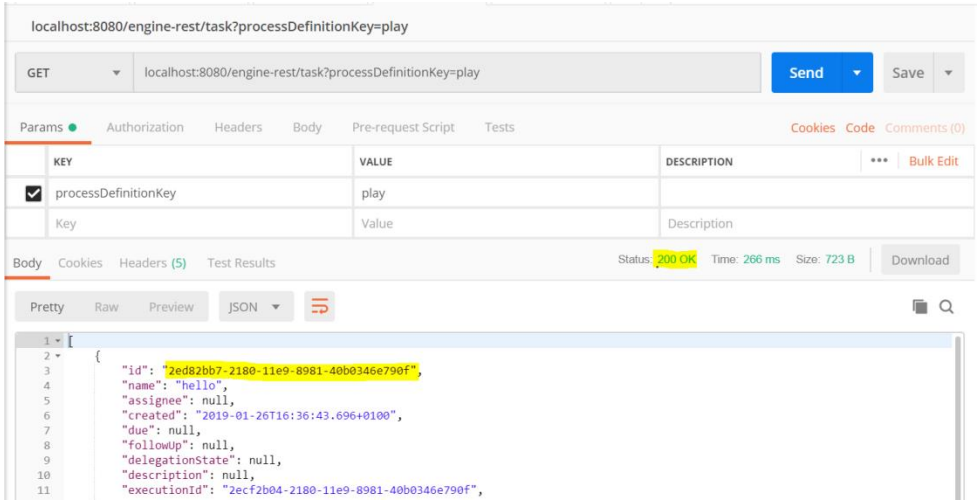
This endpoint starts the process on the server with the first event containing a “1” as an indication of the current active task.



Running the Process forward

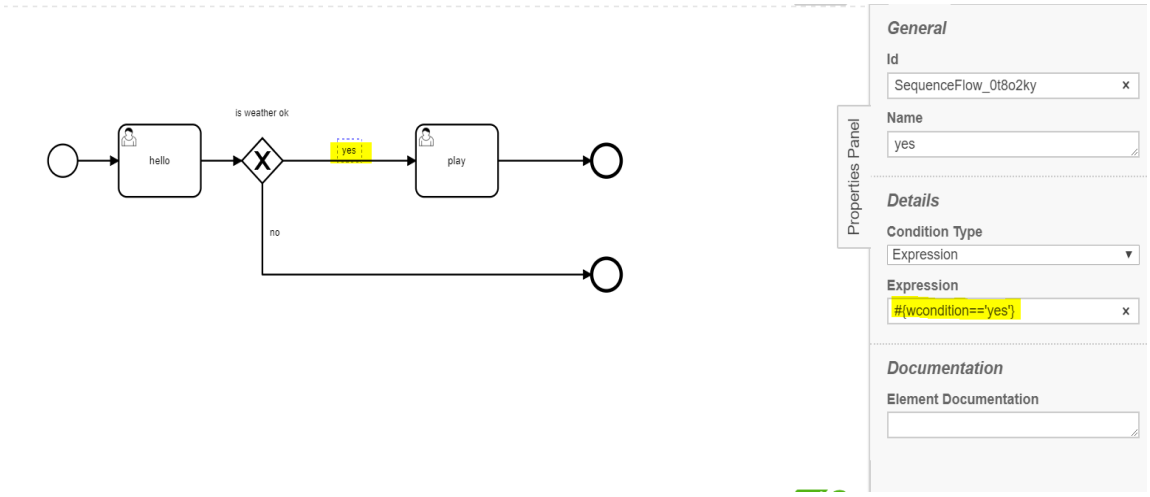
Every process when started with the endpoint creates an id which is further used to move the process forward. A GET request is used to determine the id

Endpoint – http://localhost:8080/engine-rest/task?processDefinitionKey=play



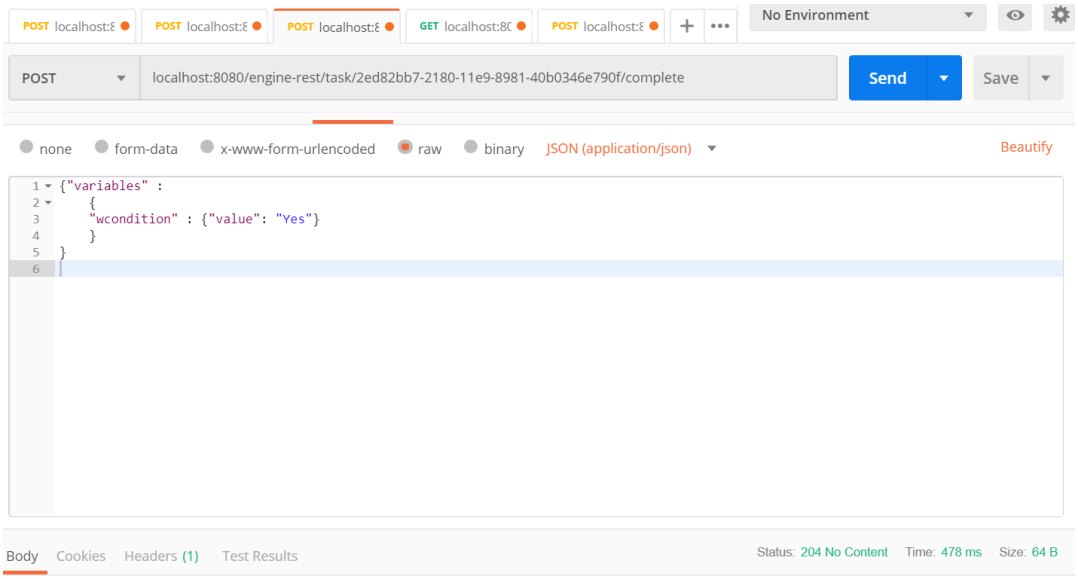
This id is used to complete the task and move on to next one. Most important is , to identify the upcoming notation. If the notation is an event task the endpoint ‘Complete’ with no body can be directly described to move the process ahead. In case of gateways, it is necessary to pass the “body” with the condition which is needed to be executed.

The Exclusive gateway in this case has two conditions. For both conditions, an id has been assigned in the Camunda Modeler.



This id is passed in the body of the post request to move the process ahead.

Endpoint - localhost:8080/engine-rest/task/2ed82bb7-2180-11e9-8981-40b0346e790f/complete



Enhancements

As per our current work we have focused on Thesis workflow and designed a process flow for the Thesis from the student application till the defense of thesis using BPMN and deployed it on Camunda modeler using which we linked it to our user interface which the students can access and progress further in the process.

Our future plan for the next one month is to add more process flows using BPMN, enhance our User Interface according to the BPMN process flow and in user friendly way, as well set up connection between the UI and Camunda server using REST.

BPMN processes

As discussed above we have mainly focused on thesis workflow but now as per our plan we are also going to implement three more processes in our project. Following is the detailed explanation of all the four tasks we are planning to cover: -

Thesis workflow process

In this process we have designed a detailed workflow from initial step where student applies for thesis till the defense of his thesis. The next task is to design a User Interface and add a connectivity between both of them.

Exam registration process

For this process we have planned to design a workflow where user can search for their respective branch and then apply for subjects which user is thinking of appearing for the current semester and the updates if there is any change in the examination date or process.

Subject Enrollment process

In this process we are going to design a process flow to enroll for a particular subject.

Library process

User will be able to the steps of how to issue a book from the library

User Interface

User Interface is nothing but where the user interacts with the computers system. So we are planning to design our user interfaces in a user friendly was as much as we can, so that a user having low computer IQ can also interact with our product easily.

We are planning to divide our User Interface into three main sections which are listed below:

Authentication & Authorization

- In authentication system we are planning to authenticate user into our system by user id and password which is stored in the database which registering.
- For Authorization we are planning to give different set of rights to students and the professors who are accessing our product so that user should not be confused between professor and student profile as well professor will have some rights like accepting thesis, posting updates while students will just have rights like applying for thesis, applying for examination, asking queries there will be more rights than this which are under discussion with the team.

User profile

- User profile is a display of data which is associated with respective user, so in our product we are also designing the same where user can view a profile of specific student/ professor and can directly contact them which reduces the time and effort to search for respective user contact info on different web channels.
- In User profile we are planning to implement as much functionality as we can so that user will not have to access different servicesfor different processes, for example in current condition a user will have to access Web mail service differently to contact University staff, SBservice to apply for examination, VSR/ Facebook for checking lecture schedule etc.and he can do all this task just by accessing our product.
- Other than the process flows we are also implementing the email functionality on user profile which will reduce user efforts and time needed to search for email id of specific useras well we are also planning to add up notification section where all the notifications which user receives will be displayed under notification section.

- There will be an option called “Processes” where user will be able to see all the process workflows which user has already applied as well as process which user has permission to apply for.
- Another addition to this is that we are planning to implement it on Android platform.

Processes Workflow

- The process workflow can be accessed by clicking on processes option on top right corner of the screen in user profile screen.
- Here user will be able to see all the current processes which has already applied as well as process which user has permission to apply for.
- There are different options for each process through which user will be able to view the details of it.
- Currently there will be four different processes initially, later on the number of process can be increased or decreased depending on the needs of user.
- The four processes are:
    - Thesis workflow
    - Exam registration process
    - Timetable update process
    - General queries process

Database

We will be using database to store the user’s information who will be registering for the Workflow project as well we are also going to keep track of progress which user has completed till the respective date so that professors will be able to sort the users accordingly and can plan his future tasks.

For database we will be using MYSQL as it is an open source database management system which uses SQL and it performs well with PHP for web applications. MySQL comes with two different versions: the open source MySQL Community Server and the proprietary Enterprise Server. MySQL Enterprise Server is different as compared in terms of proprietary extensions which install as server plugins, but built from the same code base, hence shares the similar versioning system.

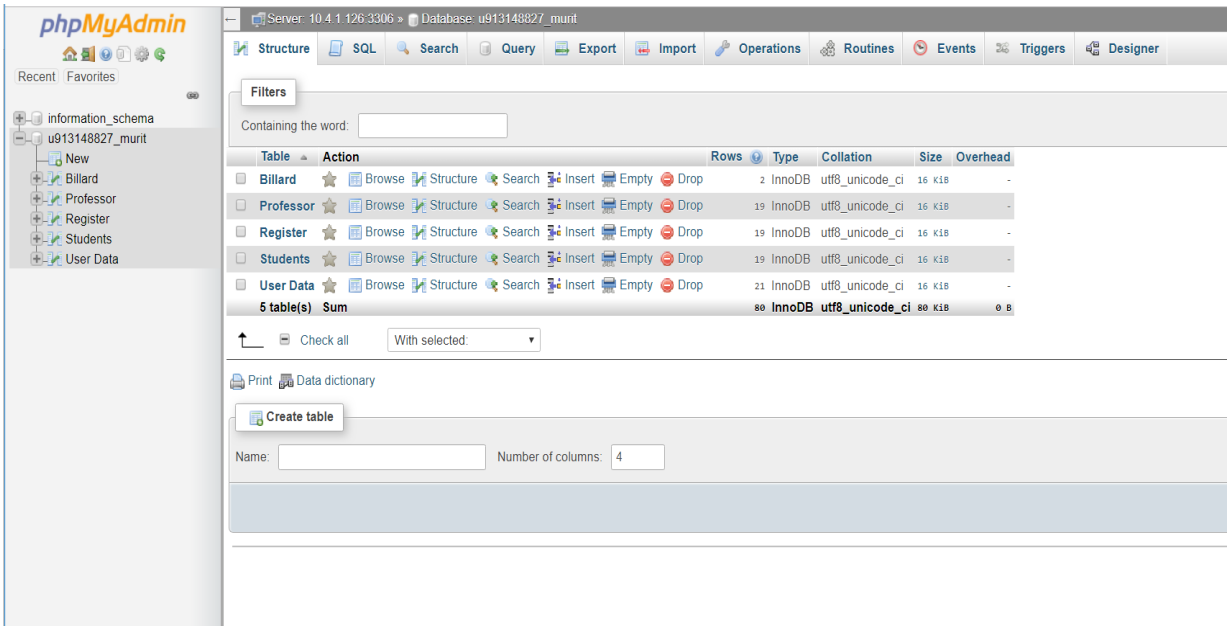
For complete coverage of functionality, we have used MySQL Enterprise Server. The information schema is named as **u913148827_murit** consisting of four main tables:-

Register
Information regarding who all students have registered for any of the processes.

Students
Information regarding which student is standing currently at which process.

Professor
Table helps professor to see the status of the processes for any number of students.

User Data
Data of any kind of query put by the student is stored in this table.



phpMyAdmin is one of the free administration tools of MySQL. It is quite popular when it comes to web hosting services. Few of the features we have used in our project are illustrated as follow: -

- Administration of different students and professor.
- Populating the table results on the front-end
- Importing the data from the front-end to the tables.
- Queries like JOINS functionality to retrieve the results which are common for both students and professor.

meetyourIT

WorkSoft: Meet your workflow software

WorkSoft is a child of meetyourIT solutions available on our website. It is a client side frontend web-based software system running to solve issues related to business workflows. This software is currently in its development phase and working on an university problem statement. Current operations being implemented include optimizations and simplification of university's common student related workflows like Thesis Project, Exam Registration, Subject Registration, Library system and etc. The main idea behind this system is that both type of users in an university i.e. the students as well as the professors can have an easy access to information related to any of these flows and can keep a track of their progress in any particular workflow. On the other hand the professors can have information available on their end about the students and their associated workflows, keeping track of students' progress, have tabular information helping the professors to have a pre-sorted view of categorized information. This systems will work in accordance with our values we promise to provide to our customers i.e. this workflow software system will be a win-win situation for both the parties working with our system. The students will have a single place where they can have their progress efficiently tracked and also selection of multiple workflow choices between all simple or complex processes he/she has to undergo in the entire curriculum of university degree program. Similarly, the professors can also have one place where they can have all necessary information of students available and allowing professor to have control over the progress of students and administrative control over student workflows.

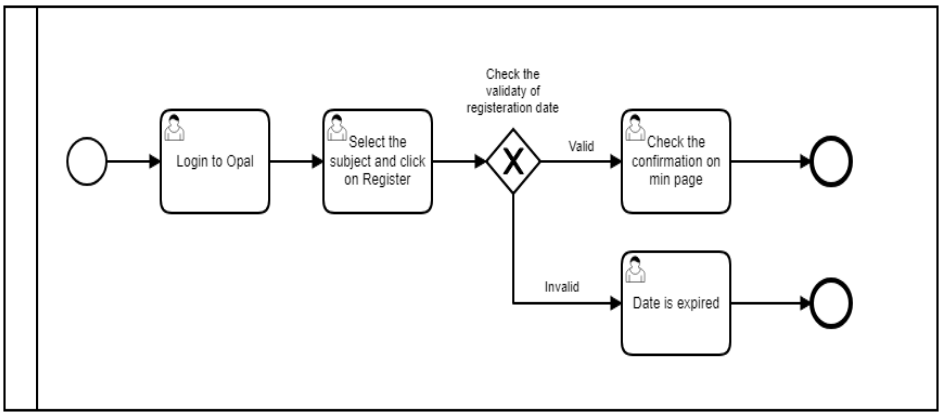
The current working functionalities of WorkSoft include the basic operation where the frontend system is able to connect to the backend database and Camunda Server for displaying workflow related information for a user and also a separate controller implemented having the administrative right over the workflow of that particular user like forwarding the user process after proper review of the forward request.

We have implemented two workflows as of now. First is the Thesis workflow which is still in making where more simplification is under try and error type of development and second is the Exam Registration which has been implemented on to the system till now. The next BPMN which is going to get included in this list is the Subject Enrollment BPMN which will allow students to have access to the flow information about enrolling to a particular course or subject in his/her stream of studies.

The current two BPMN's are having admin control over their set of operations where some of the operations in process flow need administrator permission to move forward in the workflow. The third Subject Enrollment flow will also have administrative permissions required for allowing a student to get enrolled in that particular course of choice or not.

Now as we have an idea how WorkSoft works and we have had an overview of its current development details we will move forward to the explanation of the BPMN models we have designed till now for our system. The following BPMN models are:

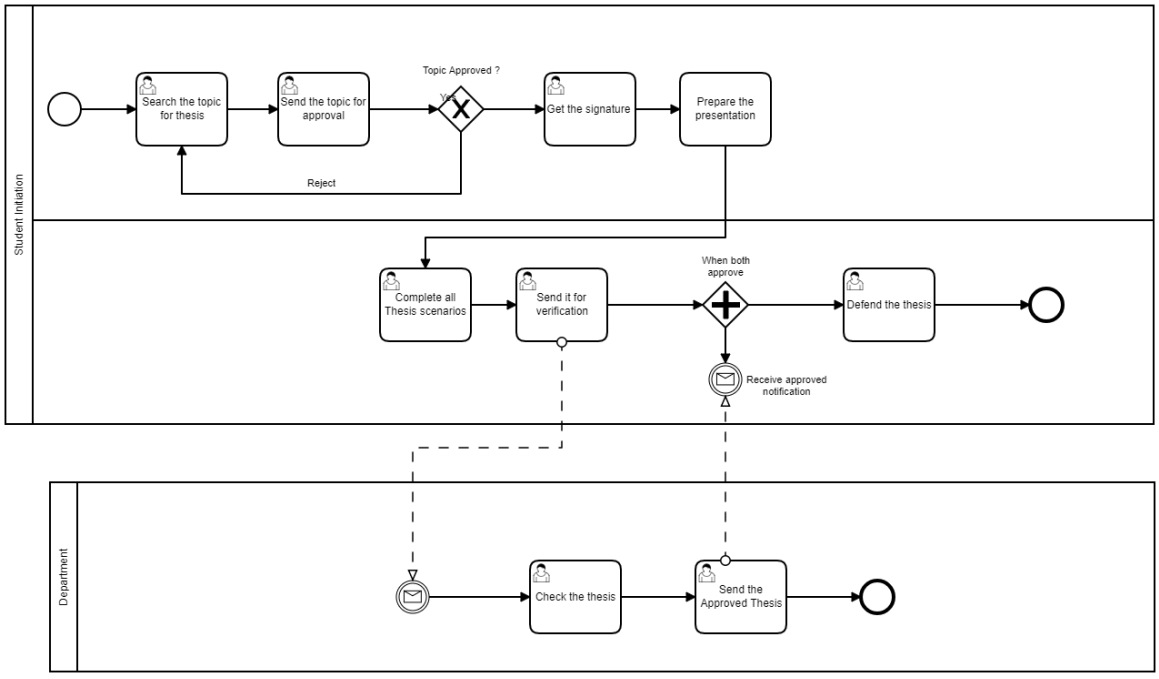
Exam Registration



The above BPMN model describes a process flow of the exam registration process for a student. Any student undergoes this process at the time of university exams and is a simple but time bound process where a student can register desired subjects he/she wants to complete in a particular semester till a certain date given by the university. This BPMN includes steps given below:

1. The student has to Log in to Campus Management System with his/her student login credentials.
2. The student then selects exam section and enters registration page for exam. After this the student selects subjects from the list of subjects and clicks on register button.
3. The registration undergoes an OR condition where it checks if the date for registration is valid or not.
4. If it is valid the student is redirected to a page which shows list of registered subjects in tabular form, if not then the user is shown message that “Date is expired” and exited from the process flow

Thesis Workflow



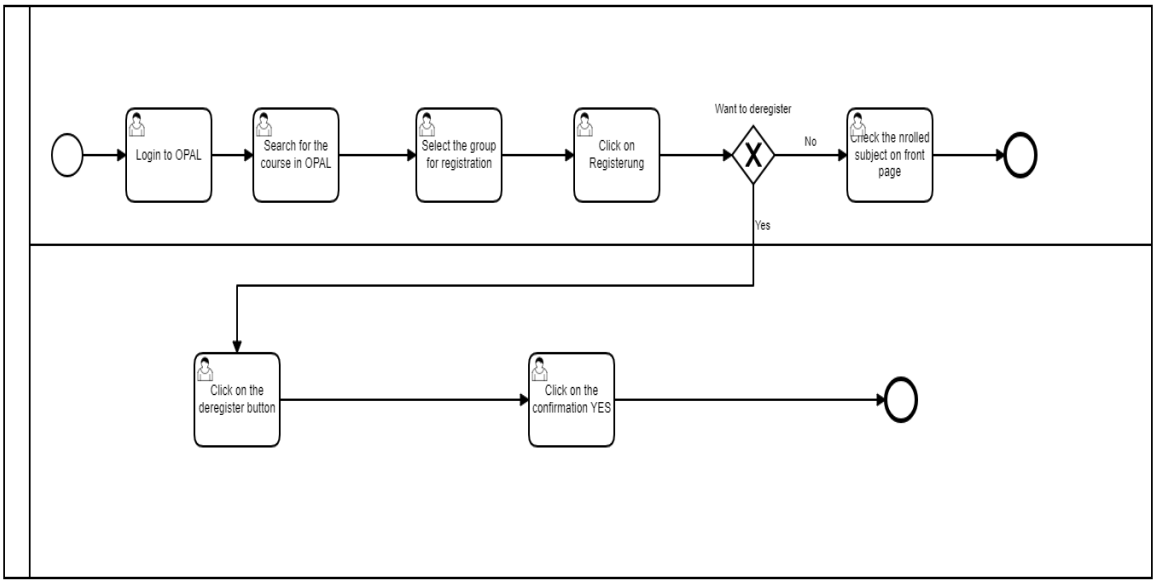
The above given BPMN model describes a basic process flow of Thesis project for the students of the university. This process flow is yet not the final workflow but gives an overview of the actual scenario and some additions and modification in this process model are yet to be done. The

students always find it difficult to get a thorough understanding of “how to start the thesis and what are the processes involved?”, so our aim of easing off this work for the students comes into picture when this process workflows and their information becomes easily available to a student via our software with a few clicks. This workflow works in the following fashion:

1. The student decides to start his/her thesis project and requests professorship to begin this process. The professorship either has a particular topic of research available or it asks the student to search for a topic.
2. When the student decides upon a topic for his/her thesis the next step is to get it approved by the professor. If the professorship approves the topic the Thesis projects moves ahead a process or reverts the student back to search another suitable topic.
3. Once the topic is approved the student has to go to the examination department and get a document signature by the professor in charge and the guide and also the examination department.
4. Once the formalities are done actual work phase starts and student has to prepare for a concept presentation which is like a synopsis presentation on the understanding of the topic.
5. When concept is presented student works for around 4 months on thesis and prepares for final presentation. This involves completion of task and completion of the thesis report and submitting the same for verification.
6. Once approved and verified the student in that course of time gets a date for defense of thesis project and when both approval and dates are scheduled the student defends his/her thesis and gets graded according to the work, report, defense and cross questioning.

As mentioned above this BPMN model will undergo a lot of specifications related to the activities specific to TU Chemnitz as our prime or key partner is the VSR department of TU Chemnitz but it will be flexible enough to incorporate and adapt changes if for the future purpose it needs to be done for another university around the globe as well.

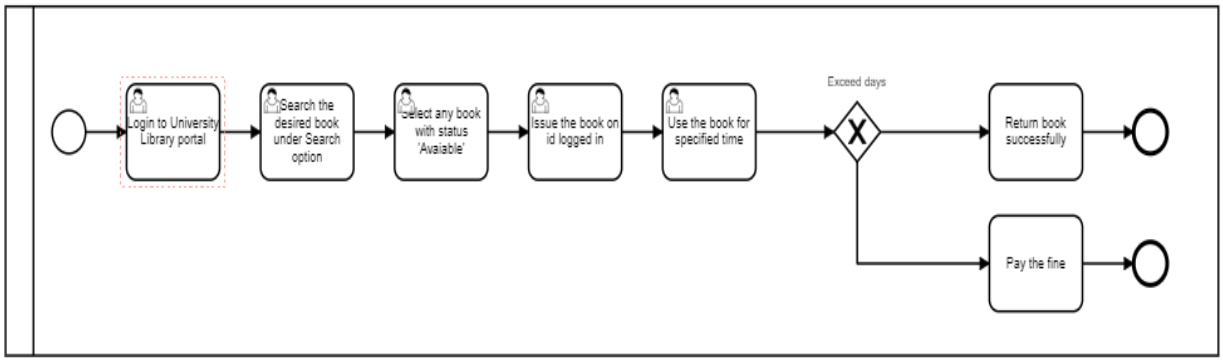
Subject Enrollment



The above shown BPMN model describes an efficient and yet simple process of enrolling or registering to any course the user wants to opt in for the sake of the degree program. The flow has pretty simple set of sequential operations with provided conditional statements. In this BPMN the user has to go through a certain set of processes in 2 swimlanes depending on the conditions. Below mentioned are the steps involved in this complete flow:

1. Log in to university web portal called OPAL which is portal which consist of all the courses taught in university.
2. Then the user searches for the course the user desires to register for by traversing through the departments and major courses of curriculum.
3. After the user gets to the subject of desire he/she can choose the options of time slots or groups if available in the course for registration.
4. Then the user clicks on registration and he/she is then enrolled to the course.
5. Maybe in future the applicant or user wants to leave that subject for any reason the user moves to the ‘OR’ condition and clicks the deregister button to deliver their name from that course.
6. Hence, the model has two end state either the user is permanently registered or if he deregisters the course the process moves to end state of next swimlane.

Library Workflow:



The above BPMN model describes a Library Workflow for online book issuing process. This process instructs the user stepwise procedure of issuing any book from the university library. The user can have a track of him/herself about the returning of the books via our system. It is designed as an informative flow like the subject enrollment model. The steps can be explained as follows:

1. The user has to login to the online library portal with the help of the user id and password provided by university library for our case it's given on ID card.
2. Search for the book required and check whether it is available or not.
3. If the book is available, then issue the book by clicking on the issuing button that can vary from university to university and get the book for usage.
4. The user has to return the book in 30 days back to the Library or the Library is obliged to issue a fine to the user as per the norms of the fine payment of the Library.

These BPMN model are included currently in our system and are under development to make them efficient and more useful for the user.

WorkSoft aims at providing best user experience for all kind of user hence a smart UI design is the most important thing for our team and we are focusing on the same. This was the overview of our product and what it has for it users. And with this product we make sure that we provide exact value to our beloved customers as promised. Hence we say "Meet your workflow software" as it is a product of the user and for the user and also by the user. This is not just a quote or tagline but a never ending promise of high value proposition to the customer as we meetyoutIT and our

customers go hand in hand. By building this system we ensure the user or customer feels comfort of use and feeling of self-dependence.

USER INTERFACE

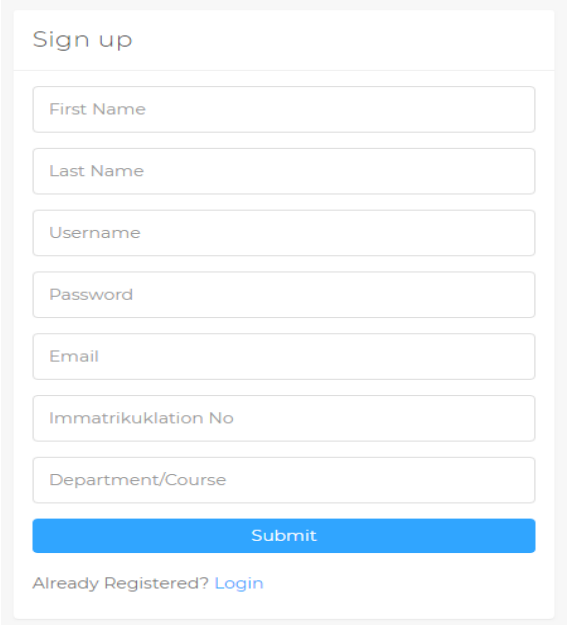
We have made a user friendly and easy UI for users who will be using our product Worksoft, where in users with having low computer IQ can also register themselves and then login to the portal respectively.

Authentication

We have built an authentication system by which users can authenticate themselves in our system with their user ID and password. The credentials are being stored in our database table. We are using "phpMyAdmin "as our database. We have created 2 modules for authentication i.e. Registration portal and Login Portal.

Registration Portal

This portal allows user to enter their personal details while registering themselves on our portal like First name, Last name, Username, password, Email, Immatrickulation Number, Department/Course Fields. In Database we have created a table named as "Register", The connection from UI to our Database is taking place via Server Side Script being written in PHP.



We have also created a functionality like if any of the user details fields are empty specifically the username field the data will not be stored in the DB in that condition. The error message "No Arguments Provided" will be popped out to the user.

Showing rows 0 - 7 (8 total, Query took 0.0003 seconds.)

```
SELECT * FROM `Register`
```

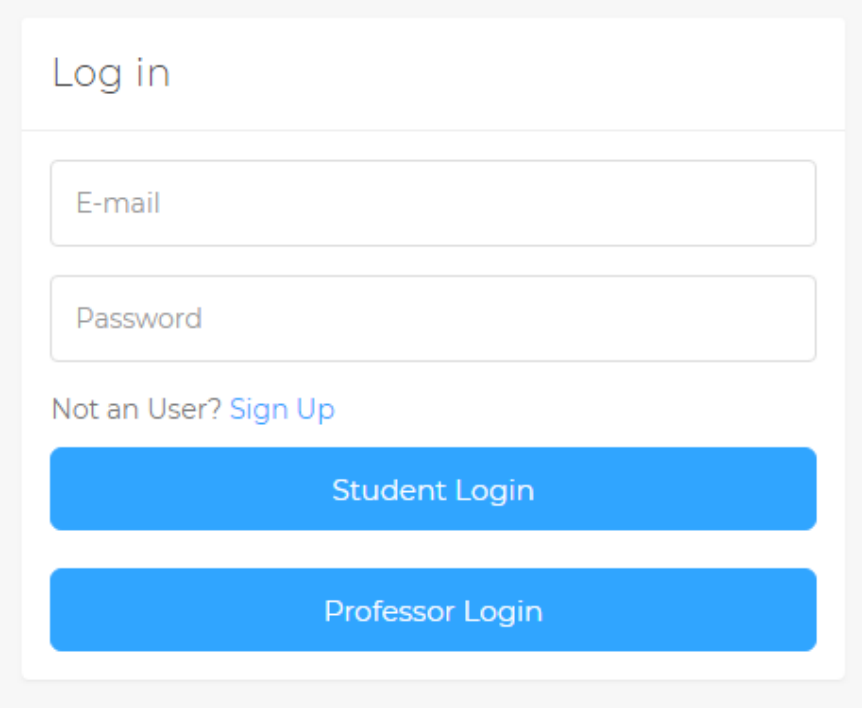
Show all | Number of rows: 25 Filter rows: Search this table

+ Options

MatriNum	FirstName	LastName	Department	email	username	password
486789	Paurush	Vishnoi	Web Engineering	Masters	paurush	12345
486044	Anubhav	Gupta	IT	Web Engineering	ganu	Linux@25
5156	anubhav	gupta	web	web	anu	123456
57940	Shyam	Agrawal	Informatik	Web	shyam	123456
434354	PAUR	YCXBC	fe	ggd	pau	1234
123456	Shyam	Agr	Web	a@gmail.com	Shyam1	123456
546654	Pau	vish	wb	a@gmail.com	vpau	651651
6651	Karan	Shukla	web	a@gmail.com	shuk	123456

Login Portal

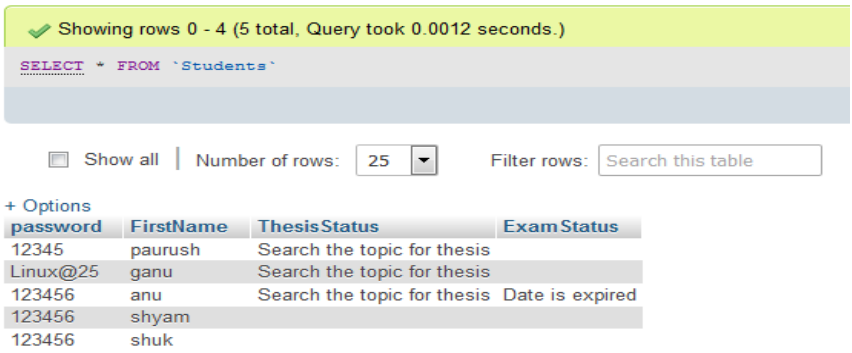
Once the user is successfully registered to our portal they can login themselves from this portal and can see their profile dashboard. We are using table name "Students "in our database which checks the authenticity for the genuine user.



The functionality of this portal is simple as the user will enter his Username and password and then the database will check for that ID and its particular password with the help of PHP script. Another functionality that we are using in our product is that we have given special rights to our professors and all the Mentors to specifically see the status of the different users. Status here means that there are many users which will be using our product and they might be landing on particular step in the BPMN workflow. So by using this portal by our professor they can get the brief idea about the users which are currently standing on which step.

We are storing the status for each user in the Database table and from above screenshot you can see that the entries are directly getting fetched from the Database.

Kindly find below the Status table of the Different Users who are standing on different Camunda workflow.



Showing rows 0 - 4 (5 total, Query took 0.0012 seconds.)

```
SELECT * FROM `Students`
```

Show all | Number of rows: 25 Filter rows: Search this table

+ Options

password	FirstName	ThesisStatus	ExamStatus
12345	paurush	Search the topic for thesis	
Linux@25	ganu	Search the topic for thesis	
123456	anu	Search the topic for thesis	Date is expired
123456	shyam		
123456	shuk		

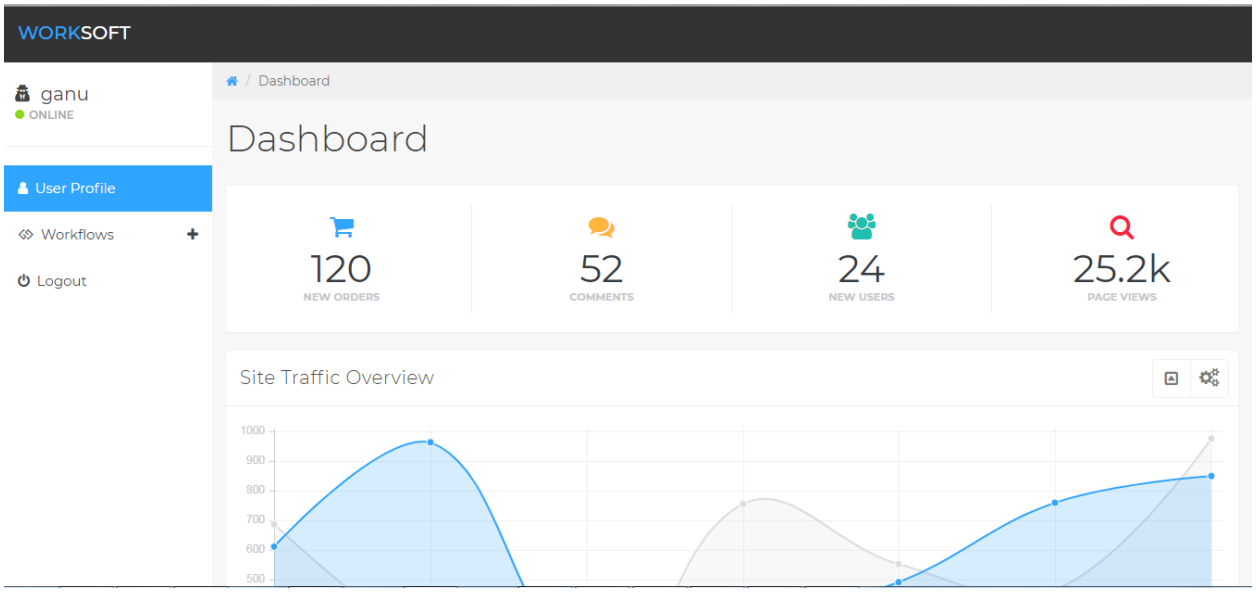
Authorization

For Authorization we have developed a Control Admin panel to give different set of rights to students and the professors who are accessing our product so that user should not be confused between professor and student profile as well professor will have some rights like accepting thesis, posting updates while students will just have rights like applying for thesis, applying for examination, registering for a subject in Opal, booking an appointment from our portal etc. There will be many more features through which the user can login to our admin portal and decide the workflow.

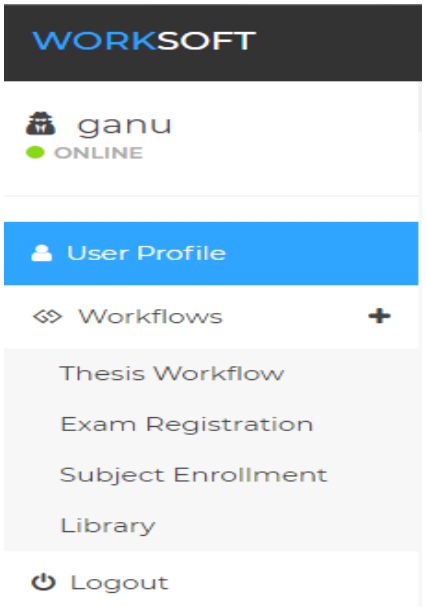
The control Admin have various functionalities like starting the workflow, executing the workflow and terminating the workflow etc. The request has been designed in AJAX JavaScript calls for our Control frontend.

User Dashboard

Kindly find below the screenshot of the user dashboard panel. Once the student will enter their correct credentials, the credentials will then get verified from our database and they will land up to the below landing page.

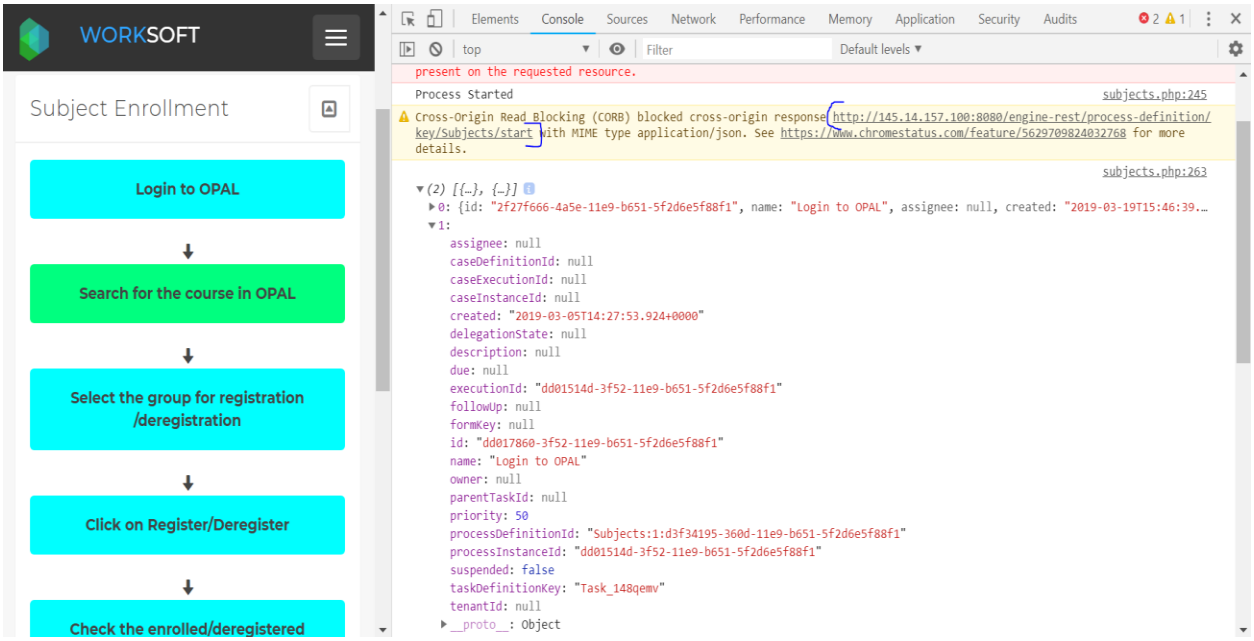


On the left panel you can see the "Workflows" tab. It consists of different BPMN process as mentioned in the below screenshot.



Data Fetching from Camunda

There is a certain execution that is being taking place during our AJAX call which in turn further fetching, executing the Data from the Camunda. Every time a process button is clicked, the AJAX request is executed which brings the data from Camunda server. On the same hand, the button also calls the respective PHP file to update the status of the student in the database for that particular process. Since, Camunda creates a unique process ID for every new task, that's why AJAX request is sent taking with it that dynamic unique process ID to fetch the status.

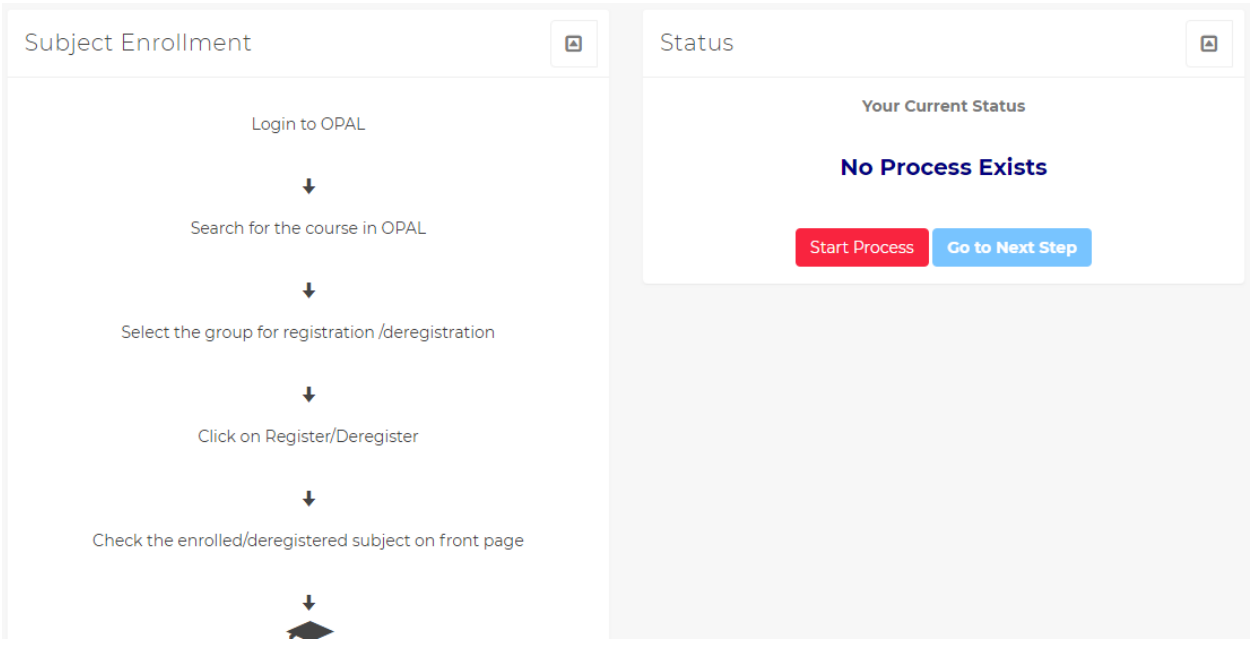


Since, multiple processes can be deployed at the same time in Camunda, for same process different users can be identified using different execution id's of the processes.

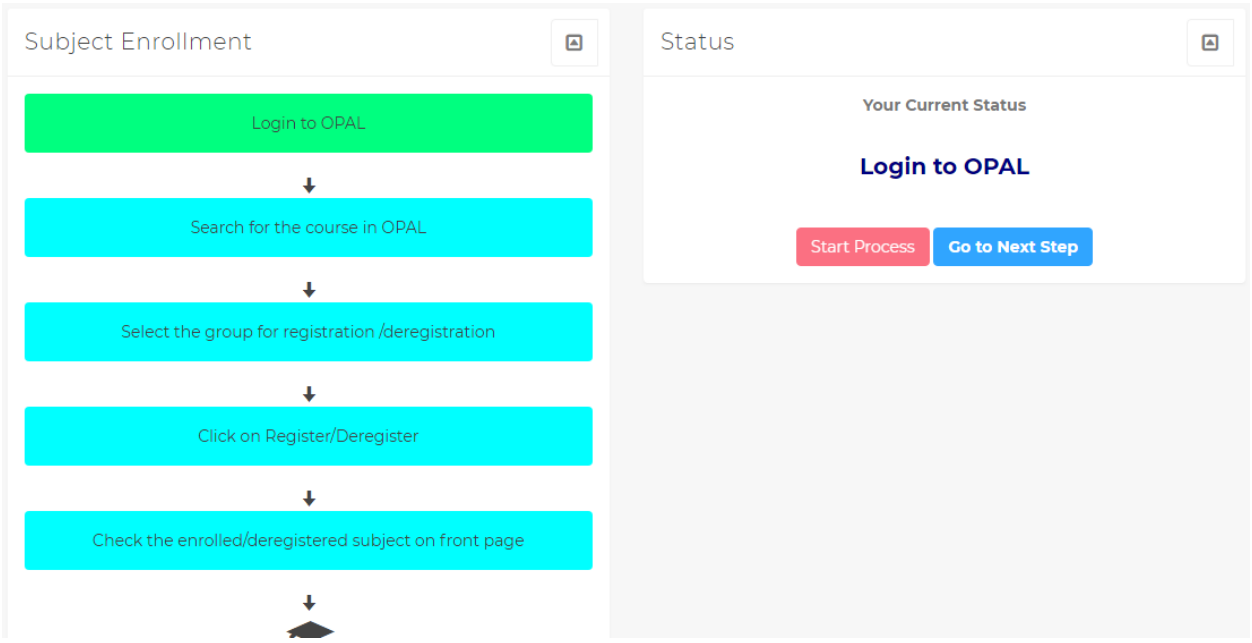
Workflow - Subject Enrollment

This is the example from Workflow "Subject Enrollment" where the process is pretty simple and do not need any difficulty understanding of the process.

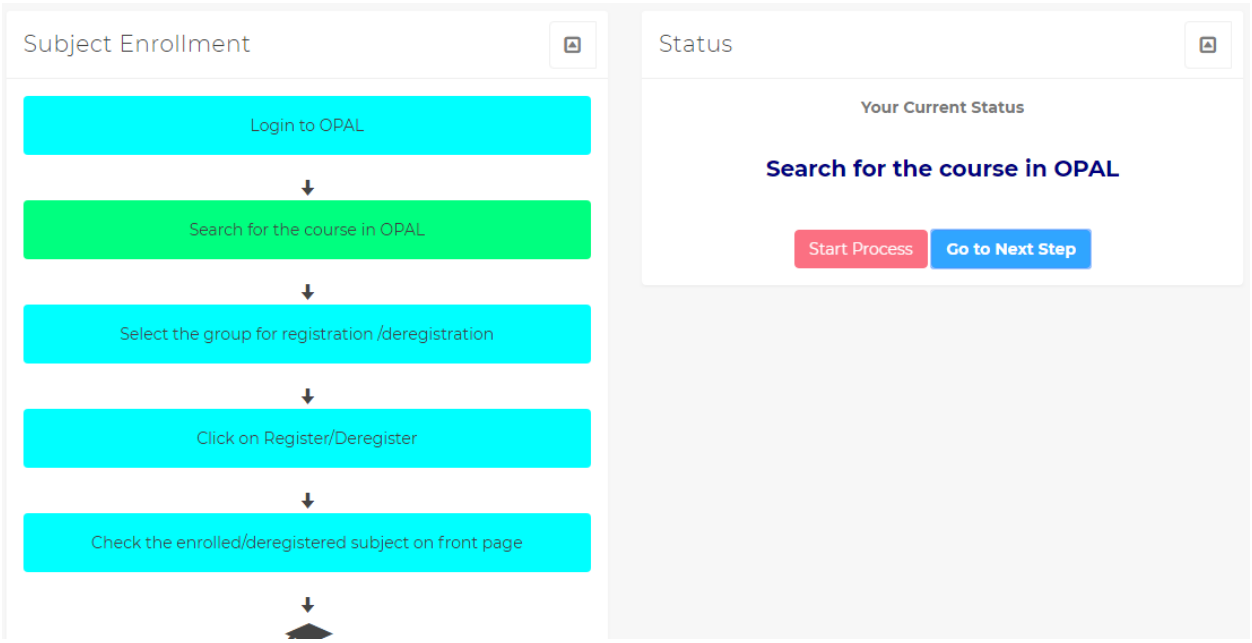
Start the process from the controller: A POST request is being triggered while choosing the "Start Process" red tab option from the controller which will directly start the Camunda process on our server.



The status will then be displayed to the User Admin. This is the status where the user will be at the starting point in their respective workflow. As you can see from the below screenshot mentioned, the green tab is showing the status of the user where he is standing right now in the BPMN workflow process.



Click on Next from the controller: Again the POST request will be triggered while choosing the "Go to Next Step" blue tab option which fetches Process ID from the AJAX call and then process in the Camunda workflow on our server.



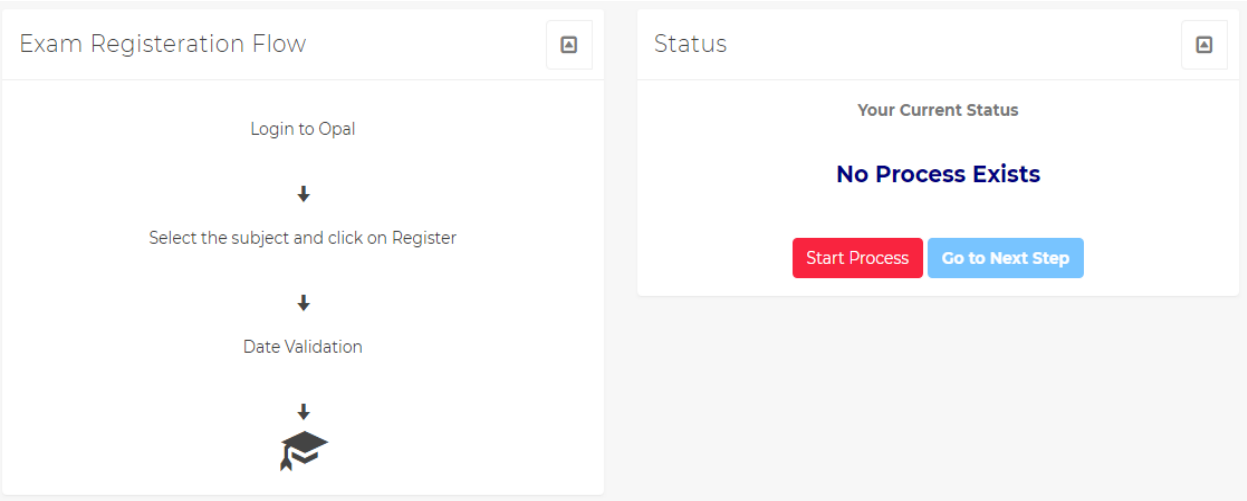
As you can see from the above screenshot that the status has now being changed to "Search the course in Opal" from "Login to Opal". As soon as the process will move on to the next phase or user task on Camunda side the latest status will be fetched on the same portal for the admin.

All in all, this admin portal will help the administrator to look out the latest update for the users. This is overall a very good functionality for the administrators.

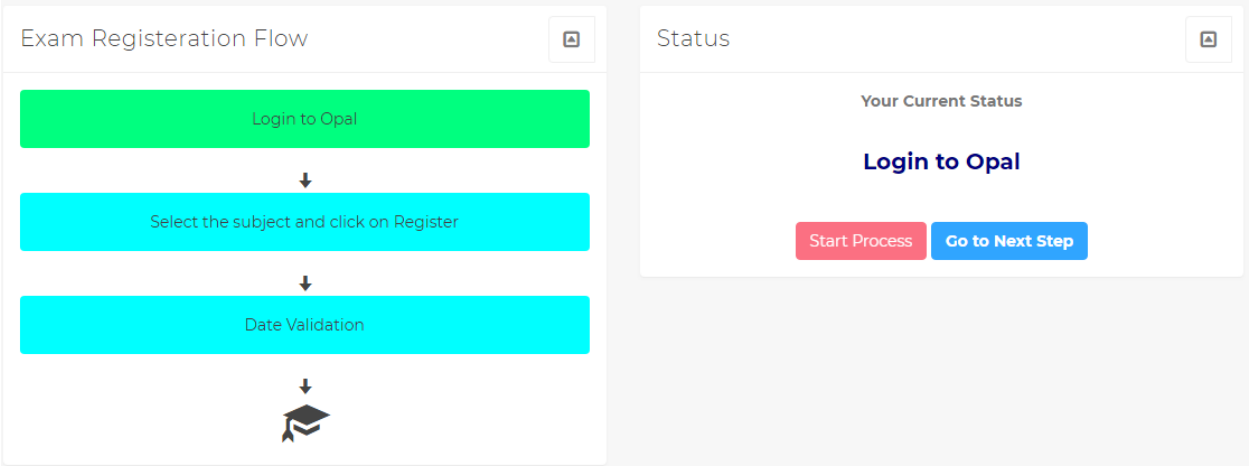
Workflow - Exam Registration

This is the example from Workflow "Exam Register" where we have implemented workflow which in further takes the decision from the Camunda end.

Start the process from the controller: Again the student will start their processes while clicking on "Start Process" red tab option.

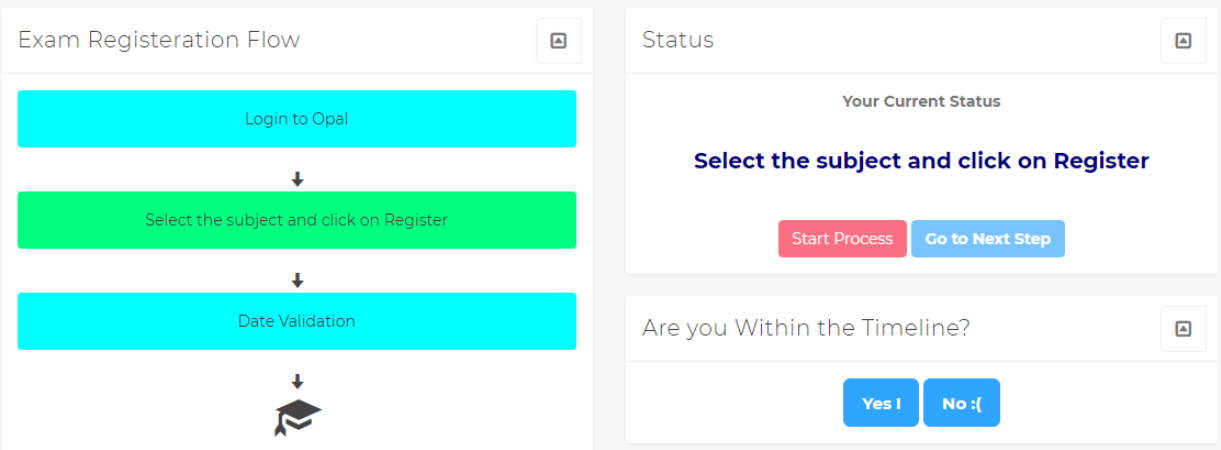


As can be seen from the below screenshot the student is currently standing on "Login to SB service" stage.

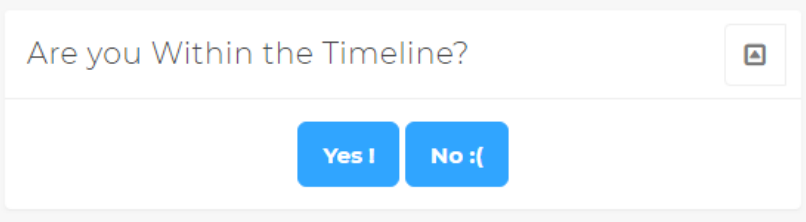


Their status has become green and directly getting fetched from our Camunda server and being getting displayed on the "Status" panel on the right.

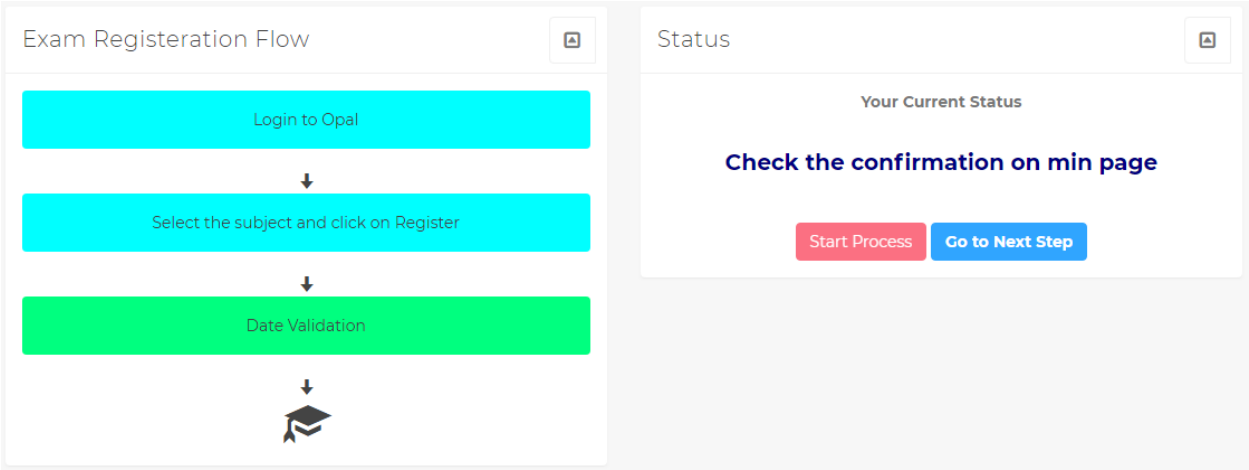
Click on Next from the controller: Again while clicking on "Go to Next Step" option the user will then move to next stage. i.e. "Select the subject and click on Register". Kindly find its screenshot below.



The tricky part here comes as from the above screenshot you can see the decision panel automatically popped out as soon as student lands on "Select the subject and click on register" stage. Now the users will make the decision whether he is within Timeline. Based on his correct judgment he will use either "Yes!" or "No :(" option from the decision panel.

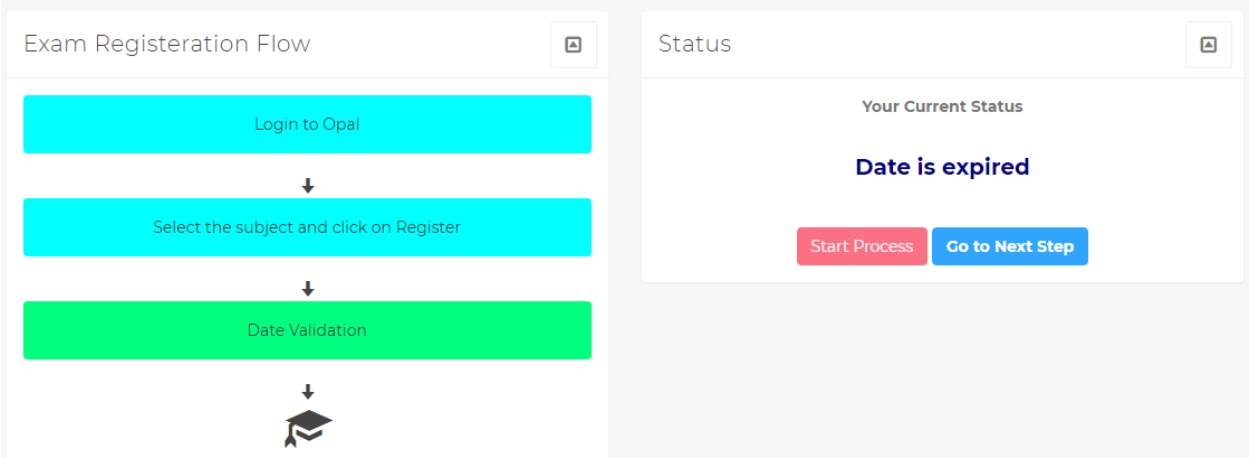


The user will land to below decision once he clicks on "Yes!"



This means that user has successfully passed the Date Validation stage and landed up to the process "Check the confirmation on min page". which is the end of the process syntactically.

Another possibility is that the user will be choosing "No :(" option if he is not within the timeline to know the process further so as to which step he / she needs to follow next in order to get the things right.

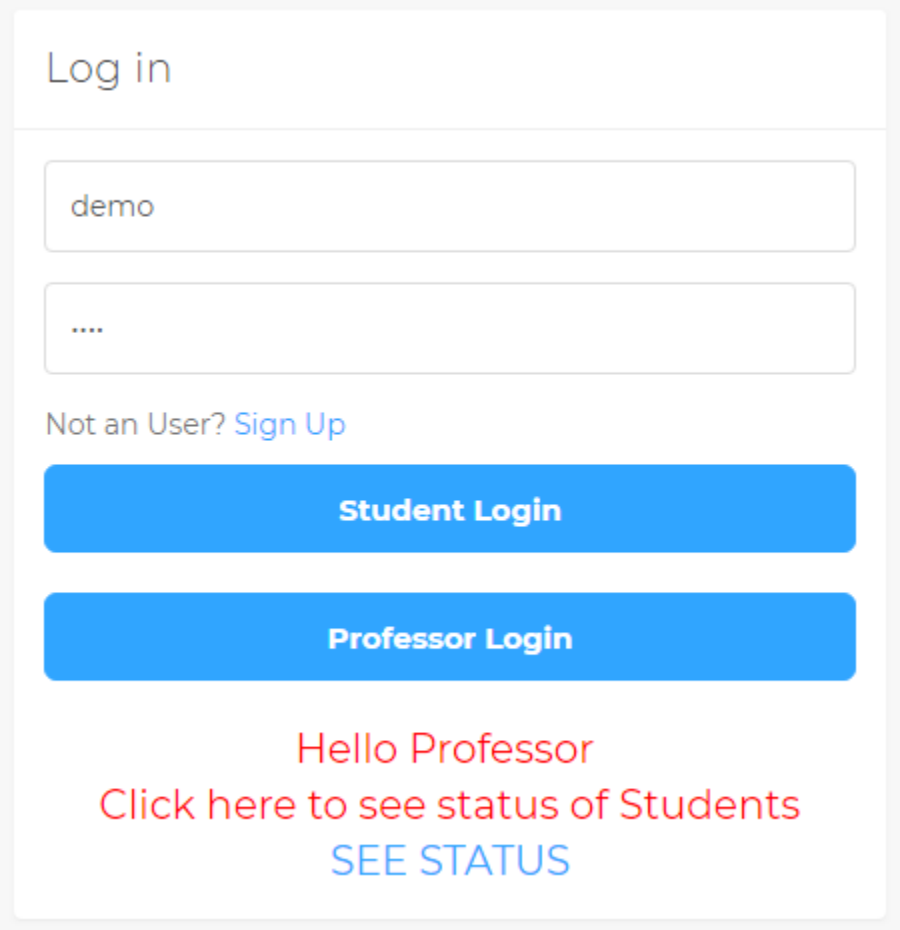


He will land up at "Date is expired" stage. So this shows how our data is automatically getting process on our Camunda server end and helps the user to take the decision respectively.

Professor Dashboard

We have provided the professor with the same login form but with different button as described in the below screenshot. Here we have created a "demo" username for the professor. Once entering these details, it will directly check for the professor table and after getting authenticated the professor will directly get redirected to its portal.

This portal can also be used to give administrator rights to the faculty members those are working under the professor, so that they can also login the portal and perform the tasks on behalf of the professor.

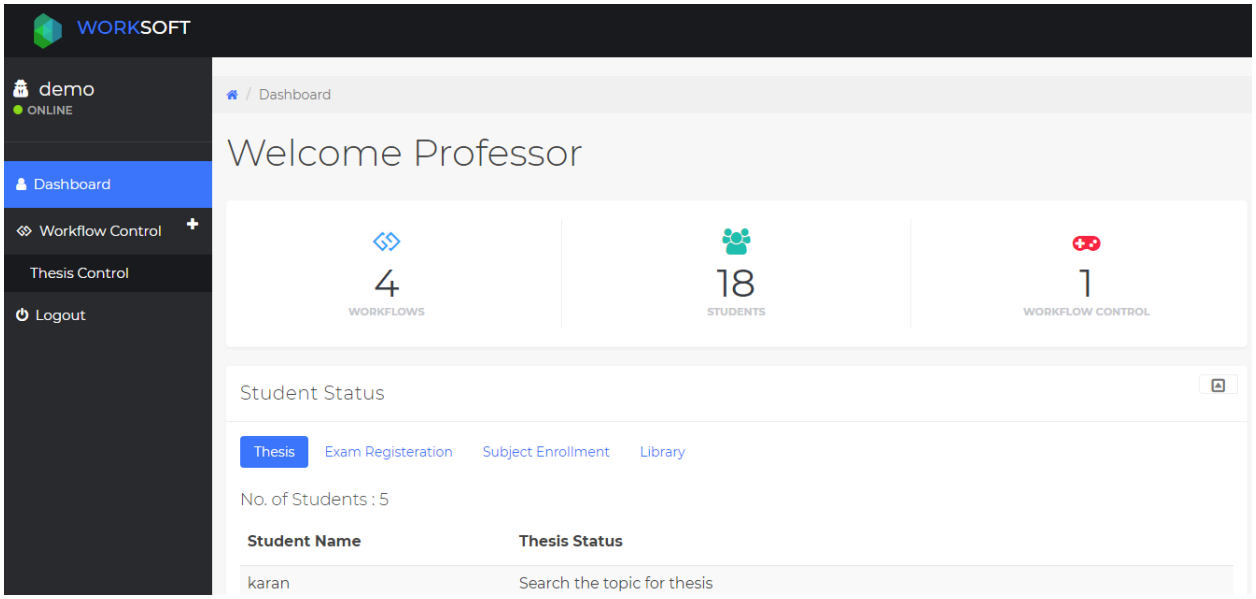


This is like a controller dashboard for the members. Let's say for an example VSR members wants to login to this portal and get the things done as per advised by the professor for a student, they

can simply login with having proper administrative rights and can perform the task as per requested.

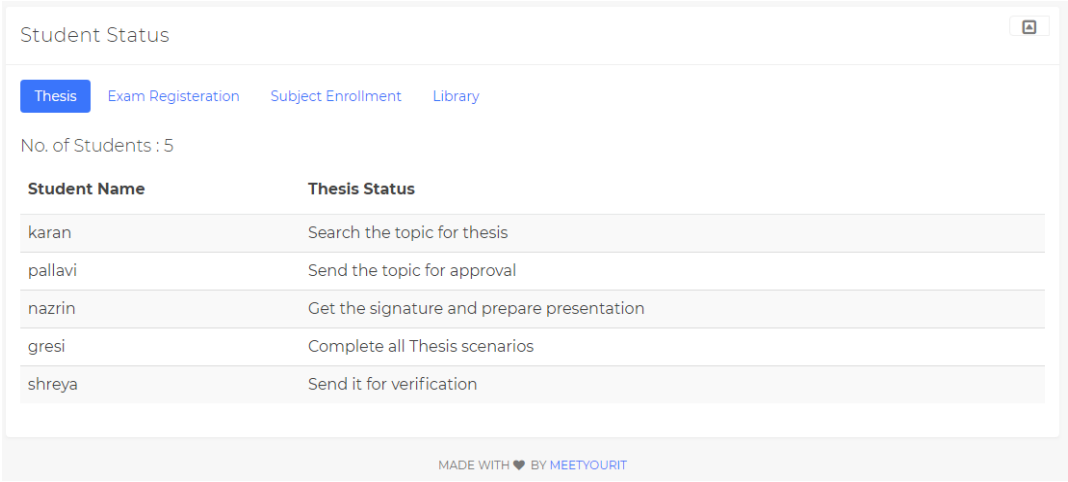
A simple and a very easy to use interactive portal being provided to the faculty of the university so that they can have a easy and a hassle free process running down the line.

Kindly find the screenshot of the professor dashboard.

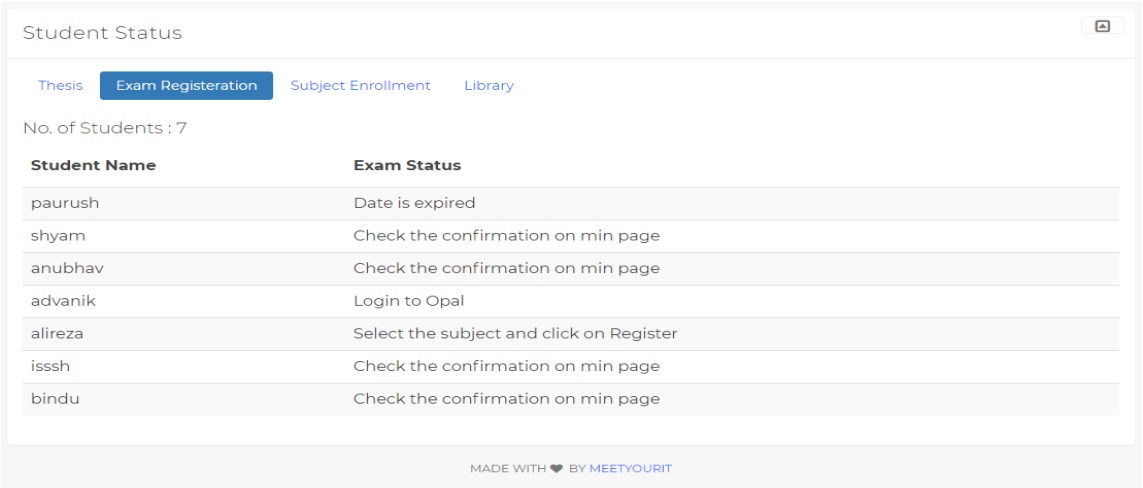


As you can see from the above screenshot on the left hand side he has the privilege to see the controller addressed to them, on the right side of the dashboard he will be able to see the total number of workflows that are currently active under him, apart from that he will be able to see the total number of students enrolled or seeking information from him. As can be seen from the bottom of the dashboard currently our product is focusing on 4 workflows and this area is specifically mentioning the total number of students who are working in the different domains with their names and their current status so as to which step they are standing on the different workflows. This all process can be customized further depending on the need of the professor.

This proves to be an interactive portal for the professors who wants to know the status of different students explicitly. For example, if he wants to know as How many students are currently pursuing masters under him then he can look out on the Thesis tab as mentioned below:



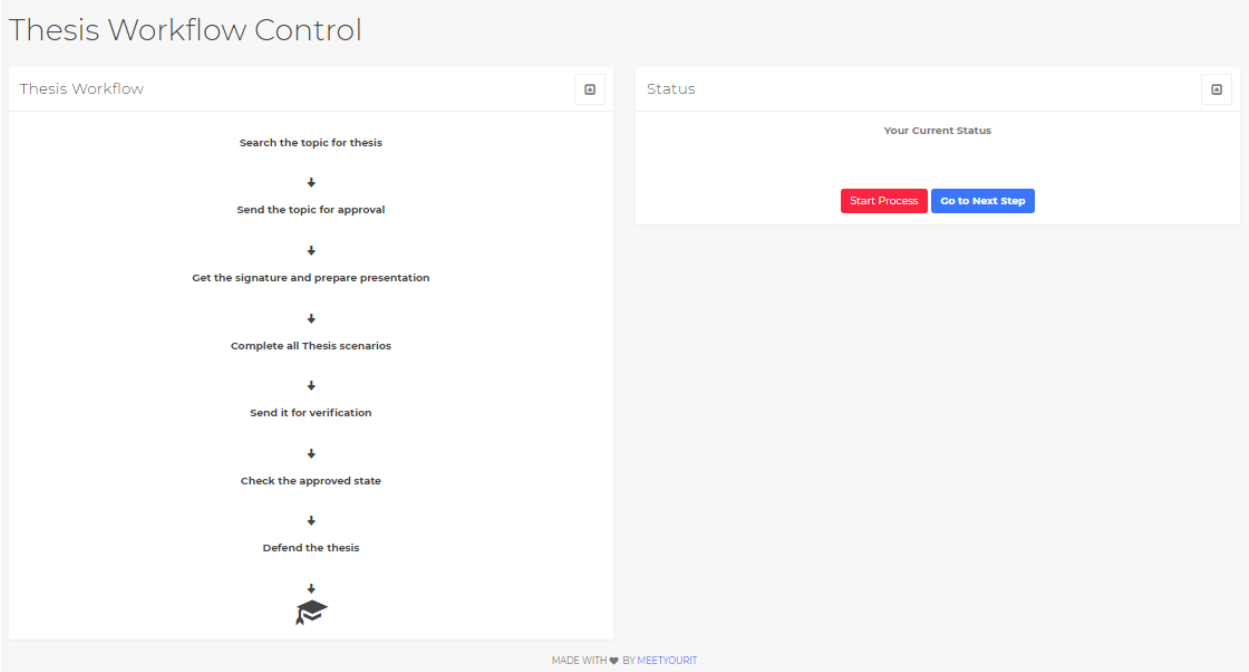
So there are 5 students who are currently pursuing masters under him and the professor can also check the status of each student. If he wants to check the status of the student who has appeared for the examination registration, he can visit Exam registration tab as described below:



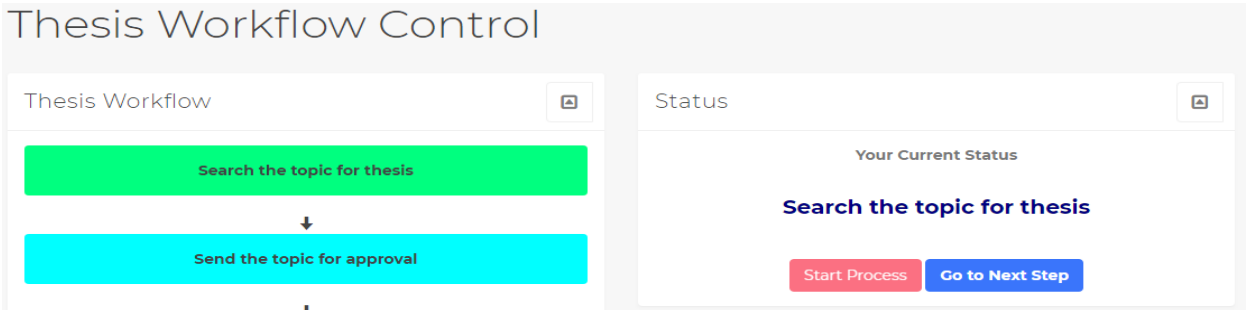
So, there are 7 students who have appeared for the exam registration under him and so on. And as described earlier this process can also be optimized in future if the professor wants to add the status tab for some different workflow.

Workflow - Thesis Workflow Control

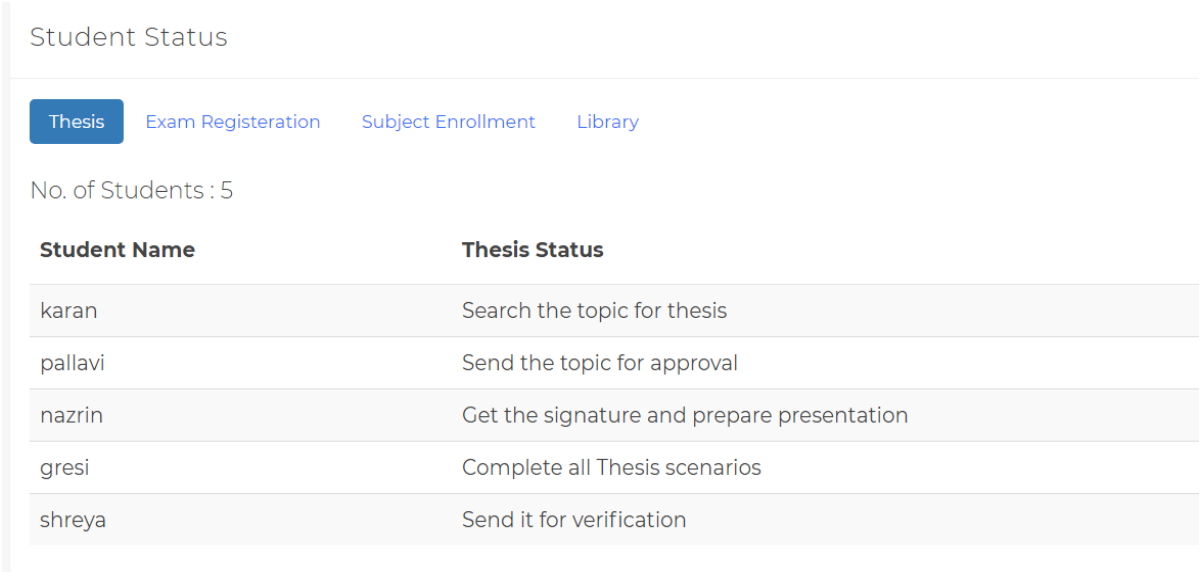
As described it earlier that the professor has the rights to manually start the master thesis project for a particular student we have created a workflow control functionality for the professor which is described as per below screenshot:



He can simply click on "Start Process" tab as can be seen on the right with the red tab option. And then the thesis process will get started from the Camunda backend. The status will then become green so as the same status will be reflected back to the student portal, so he/ she might get the idea about what needs to be done next in their course of action.



Also, the Professor can see that at any instant of time, how many students are currently standing at any process. Also, how many students have actually started the particular process (Thesis Workflow, Exam Registration, Subject Enrollment and Library book issue).



Future Work

Many different works and developments have been left for the future enhancements due to lack of time that we could have invested on our product. The experiments with real data like running the product with multiple users having different IDs is usually a time taking process as it needs more work to be done on the Camunda server end. This is generally very time consuming, requiring even days to finish the single task. Future work generally concerns deeper analysis of the task that needs to be finished in the next course of action.

There are still some ideas left that we would like to implement in our product, right now our product is focusing on delivering the output for the students who is seeking information under a professor or in the university and on the other hand there is a portal for the administrators / professors so that they can keep the track of different students. The following ideas could be tested as well:

1. The way our product is constructed could be changed: Multiple users can login to our portal at the same time and then we have two IDs that we are receiving from the camunda end one is Execution ID and other is Process ID. So, the users have the rights to start their process of their current scenario is only focusing on the fact that once the user will start the process and as soon as other user logins to our portal he is able to see the status where Camunda process is currently standing and not the new one. So, this was the real challenge that we were not able to implement in the short span of time. We will be focusing over implementing the status update keeping execution ID as a primary key. Moreover, we will try to fetch the execution ID at runtime so that it would be easier to store the data of the student based on the execution ID attached with him.

2. We have created user space for Calendar in the student dashboard: The calendar can be extended further to provide few functionalities as well like we are thinking to integrate Alexa with our calendar. Alexa runs on Amazon AWS cloud and by integrating the Alexa so that it should directly communicate with our calendar in future, this will help in two ways firstly the student can directly ask Alexa for their status of the workflows without login to the portal

manually and they can schedule the meetings from the professor by giving the commands to the Alexa BOT like "*Hey Alexa, Kindly schedule my meeting from Professor Gaedke*".
On the other hand, the professor can ask Alexa directly the status of the students on each workflow and he can also get the information about the appointments that he has given to the students. There can be many enhancements that can be done with the help of Alexa environment.

3. Implementation of different and more elaborative workflows: We have used Camunda modeler to develop our BPMN workflows. There are many decisional statements / events like Message events, Timer events, Escalation events, compensation events etc., gateways like Exclusive gateway, Event-Based gateway, complex gateway etc., concepts of swimlanes and pools which could in turn defines the better understanding and clarity of the process workflow. We will be developing our workflows with use of all possible symbols that we can use it for a BPMN which will provide the student with 100% accurate results including several decisions that a student can make of its own.

4. For different kinds of events, user needs to define the body (usually JSON format) which is usually dependable on the type of flow or event been used. We will be taking into consideration, the definition of such kind of flows or events to be passed as a functional or sequential metadata as well as providing a list of 'body' along with the parameters that need to be passed for each kind of event or flow to execute any decision or task. Things like property extensions can also be defined which in turn can help as a source of additional information for any service task. For better understanding, some of the examples of few preexisting tables of Camunda which contains respective metadata will be taken into consideration in future: -

ACT_RE_PROCDEF	Process Definitions	Information regarding version details and resource name
ACT_RU_EXECUTION	Executions	Information related to execution state
ACT_RU_TASK	Tasks	Creation time, due date and assignee related information

5. On the theoretical side, the analysis of the complexity of this present approach is still informal. Additional work will be getting an insight of more process related requirements within the university so that more services can be delivered through the product. The focus will be provision of more process tracking so that the university's task to handle more students at a time becomes easy and they can think of expanding more admissions every year as they would be having a better software to handle information of mass at the same time. If the business within our university that is TU Chemnitz gets successful, other universities can also be taken into consideration for the same treat. Their processes can further be adapted so that the same expansion of business can be provided to them as well. The idea for expansion will only work if we endeavor enough for that. To achieve this goal, it will be requisite to have enough resources and for that we would be looking forward for more employees having similar or greater skills which will further be munificent for us as well as for the organization.

   This future work hopes to be another major step in developing our product 'Worksoft' better and more efficient. We look forward to accomplish what we are seeking in a right and efficient way.

Conclusion

MeetyourIT is motivated and excited as our 6 months of complete product lifecycle comes to an end. Our team has been on continuous improvement phase right from the introduction of problem statement to the complete deployment of the product. Right from the creation of company website moving towards BPMN Camunda to deployment of our product Worksoft we have accomplished our goal. The team has faced many ups and downs while delivering the milestones from every sprint but that didn't break our confidence and belief in the product as it based on simplified process flows developed with the help of BPMN.

BPMN is an outstanding technique which has helped us to model our process flows. Camunda framework played a major role in automating our BPMN processes which further provided a decent automated product. It also provided support in eliminating major part of our problems, reaching our goal at the end. Camunda and BPMN together are the future of modelling and we assume in future most of the companies will be using this excellent combination.

MeetyourIT has endeavored to provide a workplace for university employees and students. Our product Worksoft is a complete One Stop Shop for all our stakeholders targeting majorly the student community. Students are no more needed to be dependent on anyone as Worksoft guides them all. Worksoft also eliminates the mail trap between professor and the students. With flagship product Worksoft, We have solved 80% of the problem and this is our assumption that implementing the remaining 20% will create many more opportunities in future.

References

[1] Object Management Group Business Process Model and Notation. Available: https://www.omg.org/spec/BPMN/2.0/

[2] Camunda - Workflow and Decision Automation Platform. Available: https://camunda.com/

[3] Max Semenchuk (2017-06-09) ; Using BPMN diagrams- pros and cons. Available: https://medium.com/practical-blockchain/benefits-of-bpmn-b154904e7468

[4] Rest API and Java API images. Available: https://camunda.com/products/bpmn-engine/

[5] Trello Management Board. Available : https://trello.com/b/3q3JE7r2/sprint-1

[6] Ken Schwaber and Jeff Sutherland (2017-11). The Scrum Guide. Available: https://www.scrumguides.org/scrum-guide.html

[7] Per Håkon Meland, Erlend Andreas Gjære (2012-10-11). Representing Threats in BPMN 2.0. Available : https://ieeexplore.ieee.org/document/6329229