

Personnel Management System Specification

Project Vision

Hello personnel managers, do you have problems getting your employees ready for a job? Look no further, **PMS** is here to make managing your crew easier, saving you the stress as well as precious time. **PMS**, a Personnel Management System, is a system where certain, not all, companies can manage their personnel human resources. This Application targets firms such as those in the event sector, moving, painting or construction companies, basically any company where there is not a fixed workspace nor time, but companies that send their employees to different locations to complete a task.

Far too often, firms struggle to find employees for a job. They are constantly calling or messaging workers to inquire if they are available to work on a certain day. The hassle of getting workers together should not be that immense. Relax, pay your attention to other tasks and let **PMS** take care of organizing your work force.

The main aim is for the company to have a complete overview of its jobs as well as its workers. With one glance the personnel manager has the ability to see the firms upcoming jobs as well as all the employees available for that job, making it very easy to assign members for said job without the constant messaging and calling.

Main Features and Scope

The features that are in and out of scope for the project will be expressed as user stories seen below. The user stories are described in the roles of the different users who will be using the application. For one, the **tenant**, respectively the personnel manager of a company, as well as an **employee**, a worker within a company. The following stories are those that are **in scope** for the current project release and also entail the application's functional requirements.

Tenant: Register, Unregister to PMS

As a Tenant I would like to register or unregister my company to PMS.

Acceptance Criteria:

1. Possibility to register my company to use PMS's services.
 2. Possibility to unregister my company to no longer use PMS's services.
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Tenant: Invite workers

As a Tenant I would like to invite workers via email to join the company's "worker group" and also have an overview of the workers who accepted the invitation as well as the pending requests.

Acceptance Criteria:

1. Send Invitation button with text field for email address.
2. List view of workers as well as status, accepted or request pending.

Tenant: View and Edit Job Listings

As a Tenant I would like to see a list of all jobs, in order to have an overview of my company's jobs.

Acceptance criteria:

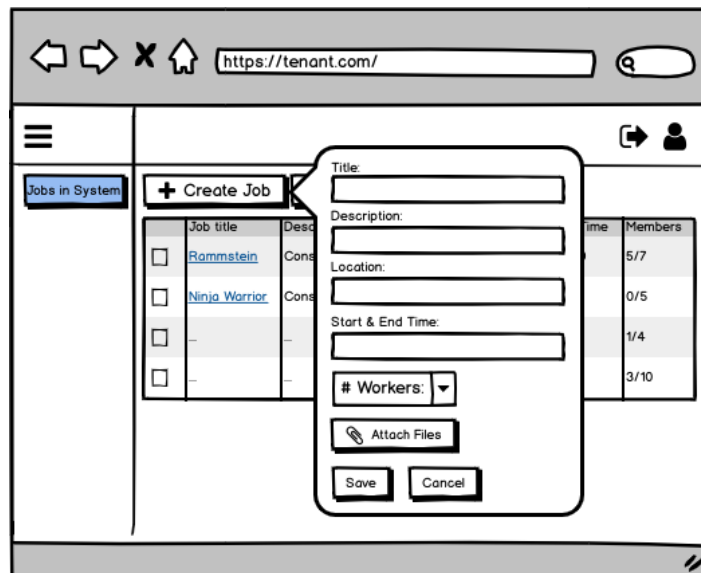
1. A list view of all jobs.
 2. The ability to edit a job's information while selecting a job and pressing the `edit` button.
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Tenant: Create Job Listing

As a Tenant I would like to be able to create a new job listing., in order to add the job to the system as well as for the employees to be able to apply for the new job.

Acceptance criteria:

1. Creating a job is done with the click of a button `Create Job`.
 1. The ability to add the jobs title, location, description, start & end time (either pop-up or new page).
2. The ability to either `Save` the job or `Cancel` creating the job.
3. The newly created job will appear in the list of jobs.



Tenant: Send out Job invites

As a Tenant I would like to send out job invites to my employees, so that they can accept/deny the job

Acceptance criteria:

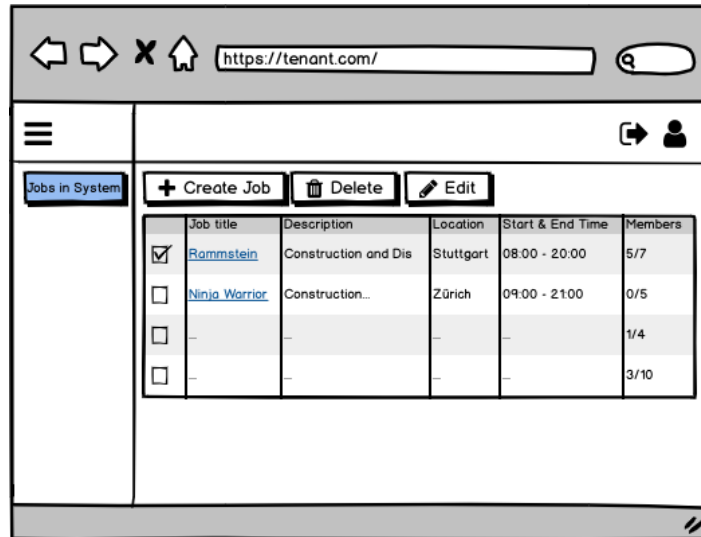
1. The possibility to select works from a list and send out job invitations for the selected job.

Tenant: Delete Job Listing

As a Tenant I would like to delete a job listing, so that employees can no longer apply for the job.

Acceptance criteria:

1. The ability to check mark a Job and delete it.
2. The deleted job is no longer in the list of jobs.

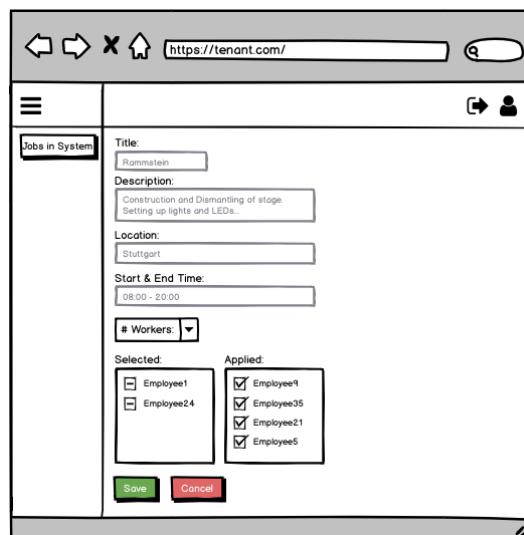


Tenant: View and accept applicants

As a Tenant I would like to see which employees applied for which job, so that i can create a team to partake in the job.

Acceptance criteria:

1. Each row in the job listing gets a new field named **Members**
 1. Example the field will show **5/7** meaning 5 people applied from needed 7 workers.
2. When job is clicked, redirected to another page or display pop up with the job's information and two lists with **applied** and **selected** workers.
3. The ability to move the workers between both **applied** and **selected** workers list.
4. The **selected** workers will be added to the selected workers database for that job.



Employee: Join Tenant's PMS service, edit profile

As an Employee I would like to accept my companies invite to use PMS's services, as well as to edit my profile information.

Acceptance criteria:

1. Fill out profile information with name, address, phone number, insurance number
 2. View and edit profile information.
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Employee: Available Job list

As an Employee I would like to see a list of all available jobs my employing company currently has and the ability to click on them to see all the information, in order to apply for jobs.

Acceptance criteria:

1. See a list of all available jobs under `Available jobs`.
 2. The ability to click on the job's title and see the full job's information.
 3. The ability to apply for a job with an `Apply` button.
 1. This job will no longer be shown under the `Available jobs` list.
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Employee: Applied Job list

As an Employee I would like to see a list of all the jobs I applied to, in order to have a separate overview between all jobs and my applied jobs.

Acceptance criteria:

1. A view `Applied Jobs`
 1. This view contains all the jobs that were applied to in the `Available jobs` list section.
 2. The ability to cancel a job application with a `cancel` button.
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Employee: Accepted Job list

As an Employee I would like to see a list of all the jobs i got accepted to, in order to know my upcoming jobs.

Acceptance criteria:

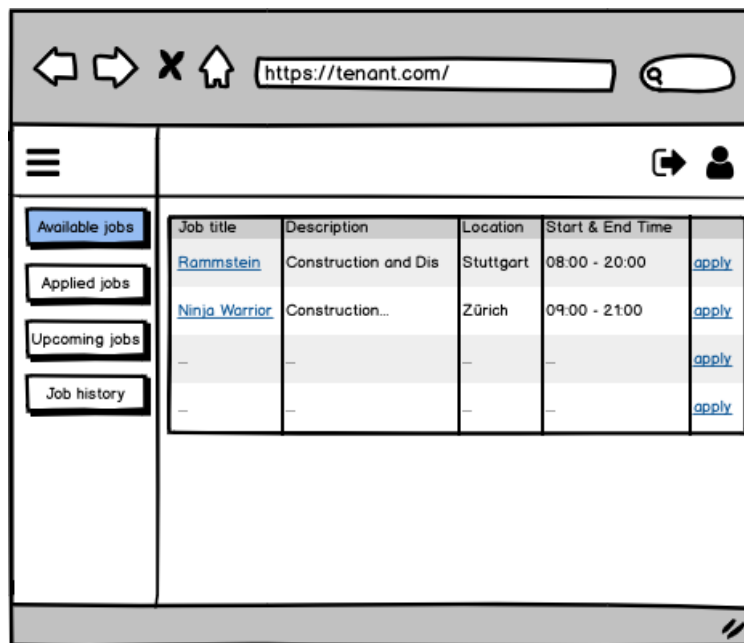
1. A view `Upcoming Jobs`.
 1. View shows the upcoming jobs along with the jobs information.
 2. The ability to `cancel` a job application with a `cancel` button.
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Employee: Job history

As an Employee I would like to see a list of all the jobs I participated in, in order to have an overview of where and when I worked.

Acceptance criteria:

1. A view `Job History`
 1. This view displays all recent completed jobs I participated in.



In addition to considering the 5 Essential Characteristics of Cloud Computing, the most important non-functional requirements for the application are:

- **Availability** The system shall be available 24/7. This means any single point of failures should be avoided to achieve high availability. Any foreseen downtime shall be announced to the tenants in advance.
- **Usability** User friendliness is of big important in the application. It should be very simple to use and easy to understand. A simple design will be used, prioritizing the desired information to be displayed. The information the application's users see shall be up to date. This means any job action (create, delete, edit) done by a tenant, will be directly available to the the employee. As well as and new job applicants or cancellations from employees shall be immediately reflected onto the tenants side.
- **Scalability/Elasticity** The cloud infrastructure should be able to handle a growing workload with the increase of more tenants and their respective employees, both efficiently and effectively. Resources will be added or decreased depending on the systems needs.
- **Security** To ensure a reliable and secure system, data protection, identity management and privacy shall be ensured. As the Cloud infrastructure is not physically present to us, it shall be considered that the cloud provider enforces the necessary data center and network protection.

The following stories are those deemed **out of scope** for the current project release.

Tenant: Automatic chat creation

As a Tenant, I would like when a job has all its members, that an automatic group chat in WhatsApp(or another reliable messaging service) would be created, so that the team can communicate with one another.

Acceptance criteria:

1. Click on button **create chat** when a job listing is full with members.
 1. A group chat will be created with each user.

Tenant: Notification about abrupt leave

As a Tenant I would like to be notified, via email/text when an employee leaves a job he/she has been assigned to within 24 hrs before the job, so that I can have enough time to find another work.

Acceptance criteria:

1. Receive notification via email/text that Employee **x** withdrew from Job **y**.
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Employee: Calender view

*As an Employee, I would like to have a monthly calender view with all jobs (**available**, **applied**, **upcoming**) and each color coded. This will provide a nice overview of the month. Also the ability to export calender data, export to pdf or print the calender.*

Acceptance criteria:

1. Another Burger Menu tab **Calender**
 1. The calender will show the current month by default.
 2. A Month Picker to select another month.
 3. Option to export calender's data, export to pdf or print calender.
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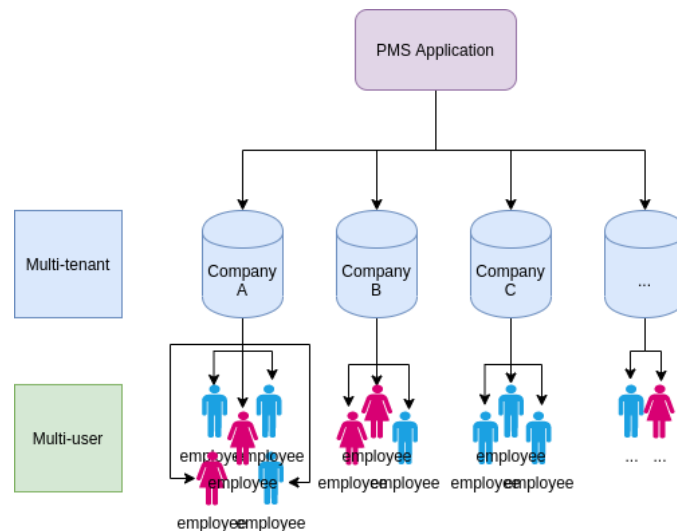
Employee: Salary report

As an Employee, I would like to see my end of month salary with live updates after each completed job, so that I can see how much I would get paid end of month before hand.

Acceptance criteria:

1. A new view **Salary Report**
 1. Within this view, a documentation of jobs completed within the current month along with the current pay for the completed jobs.

Multi-tenancy



The Figure above depicts the multi-tenancy of the application, where each company uses the same instance of the application and each tenant has multiple users. As mentioned in the [Project Vision](#) , PMS targets a vast variety of different tenants in the event industry, moving companies, cleaning companies, supplier companies, you name it.

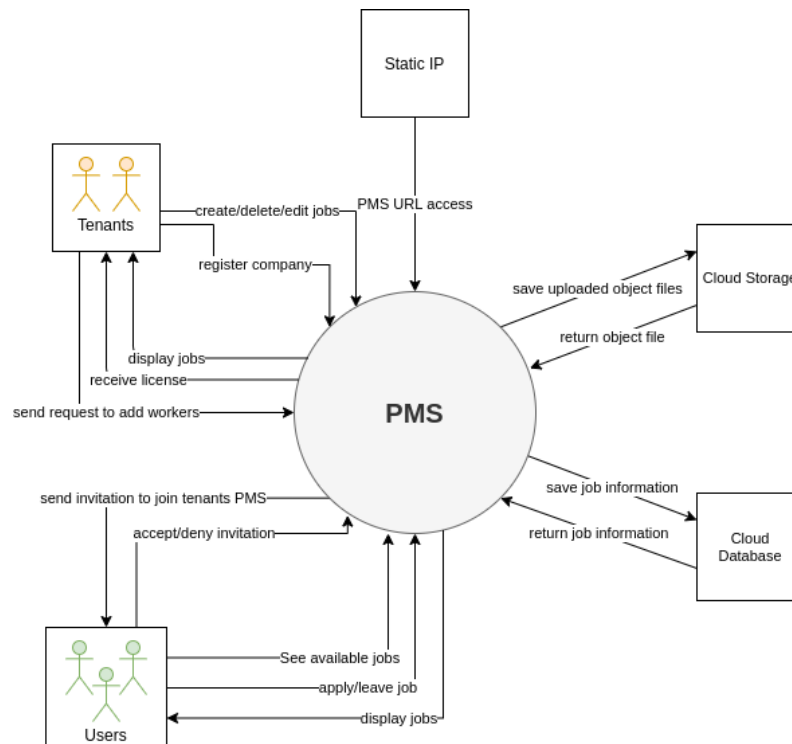
The users of the system are far ranged. Ranging from permanent employees of said firm, students, people looking for a part time or a second job. Within the figure above, they are all depicted as employees of a company .

As a Multi-tenant SaaS provider, the clients will share hardware, computing power, storage and database system resources, whereby the data stored will be kept secure from other tenants. As a SaaS provider, tenants also give up control of their software, meaning they have fewer options for customization. The tenants could however personalize the URL to their company's name, as a second class branding would not be accepted by larger companies.

The charging models for the tenants will be based on an estimated cost from the expenses acquired from the cloud provider's resources, namely Google Cloud. With little capital, the plan is to start small and then maximize to accordance as the business booms. With this said, the service will run on two of Google's General-purpose machines, N1 series which are equipped with 2 virtual CPUs and 7.5 GB memory, which costs roughly \$0.067 /h or \$48.95/month , and thus \$97,90 for both machines. As traffic increases, a Load Balancer will automatically create new instances to handle the vast amount of requests, and also automatically detect when the new instances can be removed.

Google's Cloud Storage is relatively inexpensive for the intended storage needed for the application. A storage size of 10 TB costs \$260 monthly. The pricing for Google's Firestore is roughly \$0.115 per GB per Month. Meaning 1 TB of data will add another \$115 to the costs, resulting in a total of $\$97.90 + \$260 + \$115 = \$472,90$

Cloud Resources



As seen in the System Context Diagram above, the system interacts with **tenants** and **users / employees** in which data can be stored and retrieved, to and from **Google's Cloud Storage** mechanisms. One interacts with the system over a **static IP** which allows the user to see the Application's User Interface.

The application shall be using **Google Cloud** as its Cloud provider. **Cloud Storage** for the object files such as PDFs and images and a **Cloud Database** to store job related information. Google's **Load Balancing** service shall be of significant use as it will be used to distribute the requests over both **Virtual Machines**. The load balancer will be fitted with a **static IP** address so that the service always remains available under the same address.