Software Requirements Specification

for

Travel Allowances and Bill Reimbursement

Version 1.0

1st February, 2022

Course: CS253

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
Draft Type and Number	Full Name	Information about the revision. This table does not need to be filled in whenever a document is touched, only when the version is being upgraded.	00/00/00

1. Introduction

1.1 Product Scope

In most of the government colleges and government departments, people need to travel to different cities/countries for higher studies/projects/seminars. In such cases, Travel Allowances are provided to the students and employees by the Institute/Department which include the cost of travel, food, and accommodation. After the return of the concerned person, and verification of the application, the expenditure is dispensed into his/her Bank A/C.

Currently, this process involves an offline submission of the application along with the required bills/tickets. But this process takes a lot of time and paperwork. Also, it requires them to preserve the copies of bills to present them with the form. So, we plan to design a portal where the user will directly submit the copies of all bills and tickets combined as a pdf. Then after the verification of the pdf, the Accounts Cell will transfer the appropriated amount to the user's bank A/C.

1.2 Intended Audience and Document Overview

The document is intended for:

- **Software Developers** who will design the software as per the requirements of a particular institution/company, in this case, the group members.
- **Project Managers** who will supervise the planning and execution of the software development procedure, in this case, the TAs and the instructor.
- **Testers** who will perform a quality check of the designed software and give their feedback on the interface, areas of improvement, etc.
- **Users** who will be the customers of the software, in this case, students, faculty members and staff.

1.3 Definitions, Acronyms and Abbreviations

- **A/C**: Account
- **HOD**: Head of Department
- **PF:** Provident Fund
- **PI:** Project Incharge
- **R&D**: Research and Development
- **TA**: Teaching Assistant. We've tried to avoid using TA for Travel Allowance.
- **TCP/IP**: Transmission Control Protocol/Internet Protocol
- **UNIX**: UNiplexed Information Computing System
- **D.A.** : Dearness Allowance

1.4 Document Conventions

<In general this document follows the IEEE formatting requirements. Use Arial font size 11, or 12 throughout the document for text. Use italics for comments. Document text should be single spaced and maintain the 1" margins found in this template. For Section and Subsection titles please follow the template.

TO DO: Describe any standards or typographical conventions that were followed when writing this SRS, such as fonts or highlighting that have special significance. Sometimes, it is useful to divide this section to several sections, e.g., Formatting Conventions, Naming Conventions, etc.>

1.5 References and Acknowledgments

References:

- DORD| Main Site
- IITK - OA Portal

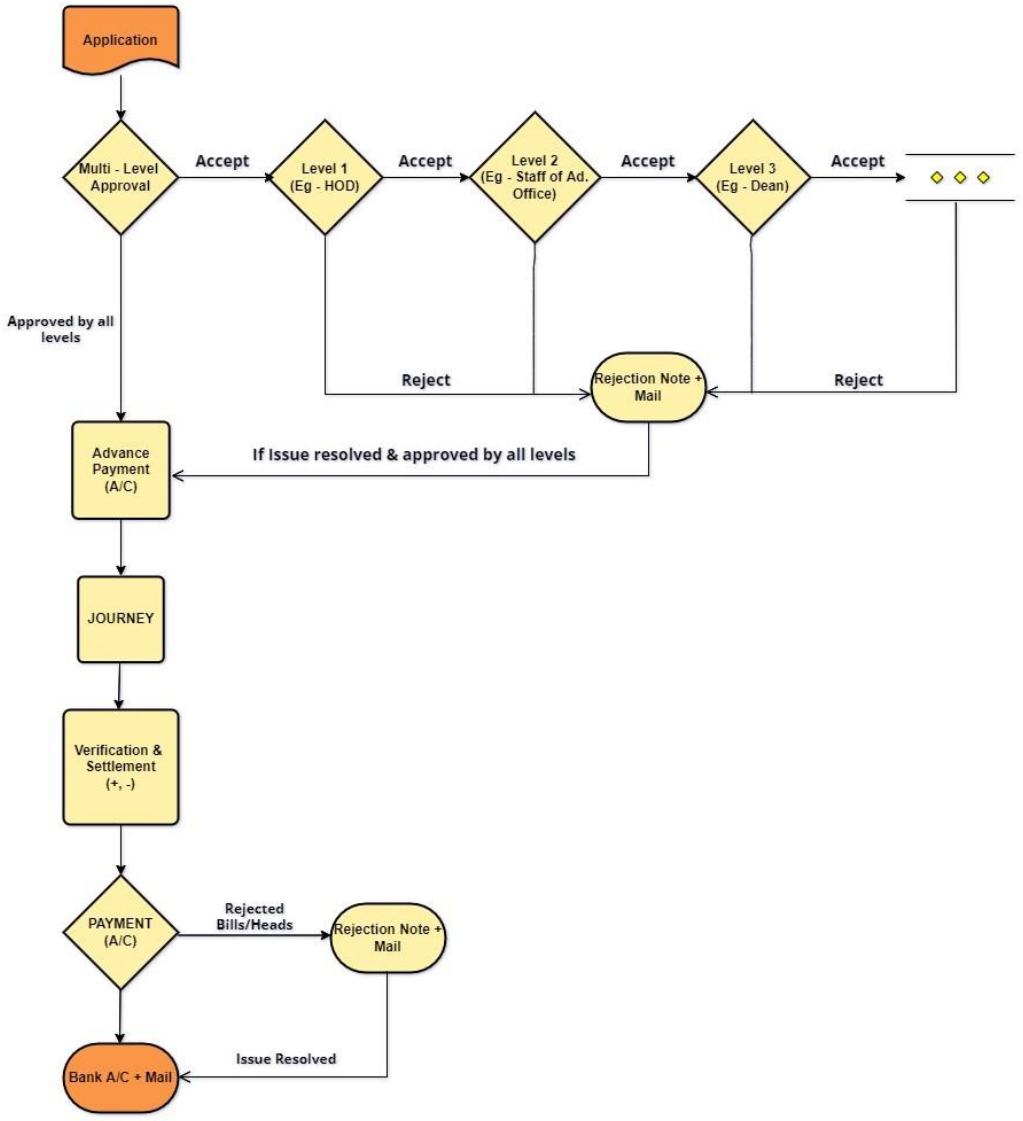
2. Overall Description

2.1 Product Overview

This project aims to automate the existing process of Travel Allowance reimbursement. Currently, the process is quite cumbersome as it requires a lot of paperwork at each stage of the process, i.e., application, approval, settlement, and payment.

So, we propose a software that would do away with the existing offline process consisting of the paperwork. This software would act as a bridge between the concerned authorities and the claimant. Various forms like application form, advance application, etc would be available on the site and the validation will be done by the concerned authorities (like the HOD, admin office, etc) and an email will be sent to both the claimant and the authorities.

The operations to be done by the user are illustrated in the diagram given below.



2.2 Product Functionality

Listed are some of the major functions of the system in brief (for details, refer to Section 3.2):

- An **Application Portal** with all the required fields (which includes an option for advance).

- **Approval** of the application: As soon as the application gets filed, an email will trigger to the first approval level (mostly the HOD). If it gets approved by the HOD, then an email will trigger to the next level(mostly the Staff of Admin Office) and the user. If it gets rejected then an email will trigger to the user with the appropriate reason. If the application gets approved by the top-most authority, then an "Application approved successfully" will trigger the user.

- **Settlement:** After the journey is over, the user may upload all his bills of Accommodation, food, main travel, and local travel on the portal. Then these bills will go to the Accounts Cell for verification.

- **Payment:** After the verification of all the bills, the compensation will be transferred to the user's linked bank A/C directly.

2.3 Design and Implementation Constraints

Hardware Limitations:

i) Timing Requirements:
We expect that the whole procedure of verification of the documents (before the Journey) shall get completed within 3 working days of application and a mail will trigger to the applicant with the "successful-approval information" or the reasons for rejection of his application.
After completion of the Journey, we expect that the user will get the applied amount credited to his Bank A/C within 4 working days.

ii) Space Requirements:
We expect a maximum of 50 MB of data from each applicant including all the uploads in the whole procedure. As per the yearly working population of IIT-Kanpur, we need a database for about 11,000 people. Thus, we require about 500 GB of Hard-Disk space in the IITK server.

iii) Interface:
We will design a separate website for the application. But, it will directly fetch the data of the user from the OA Portal using his Roll No./PF No.

We will use SQL for accessing the database. The software will handle 50 people at a time. We plan to use JAVA for the back-end development. TCP IP will be the communication protocol.

iv) For security considerations:

The user shall not be able to access the data available at the Admin Portal/Accounts Cell. Also, the data of one user shall not be visible to any other user except the Administrators and people in Accounts Cell. The customer's organisation will be responsible for maintaining the delivered software.

2.4 Assumptions and Dependencies

The first assumption is that the user has a login on OA Portal, because our software will fetch the user data from OA Portal. Another assumption is that not more than 50 people use the software at some time.

Also, the user should provide legitimate scanned copies of the bills which should clearly display details like the amount, date/time, name, etc in a suitable format so that the validation of the bills can be done easily by the Accounts section.

The size of all uploaded files should be less than a maximum value (eg - 300 KB for an uploaded bill). More technical assumptions and dependencies will be added as we proceed with coding up the software.

3. Specific Requirements

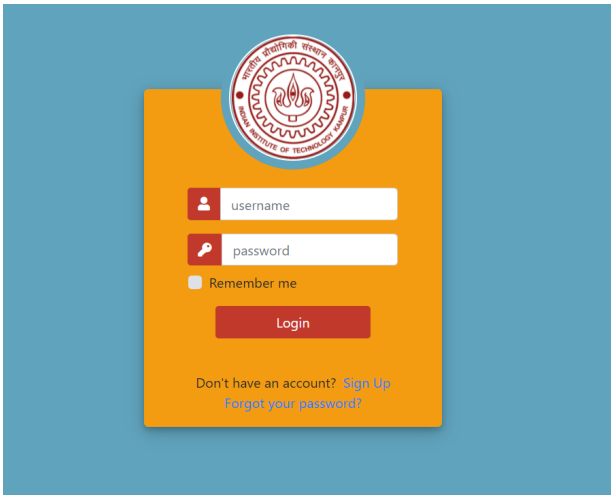
3.1 External Interface Requirements

3.1.1 User Interfaces

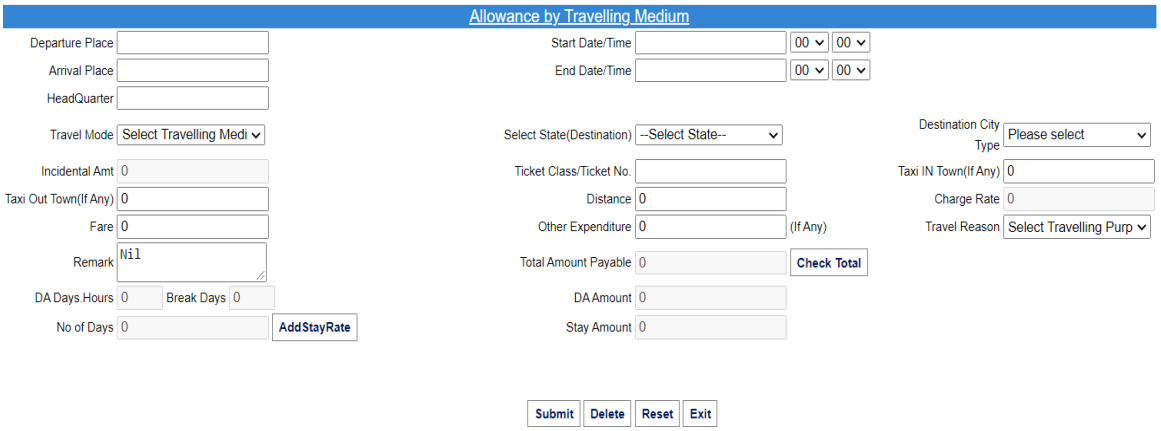
- Every user will have its own unique login credentials.
- Once logged in the user will be taken to a dashboard
- The operations in the user dashboard include :
    - Approval and advance application portal
    - Current Bill Status portal
    - Settlement application Portal
    - Document upload and Bill Forward Portal
- Every journey will be assigned a unique Bill-ID at the time of approval application which will be used for further processing of the reimbursement.

Below are some prototypes of how the above mentioned portals will look like:

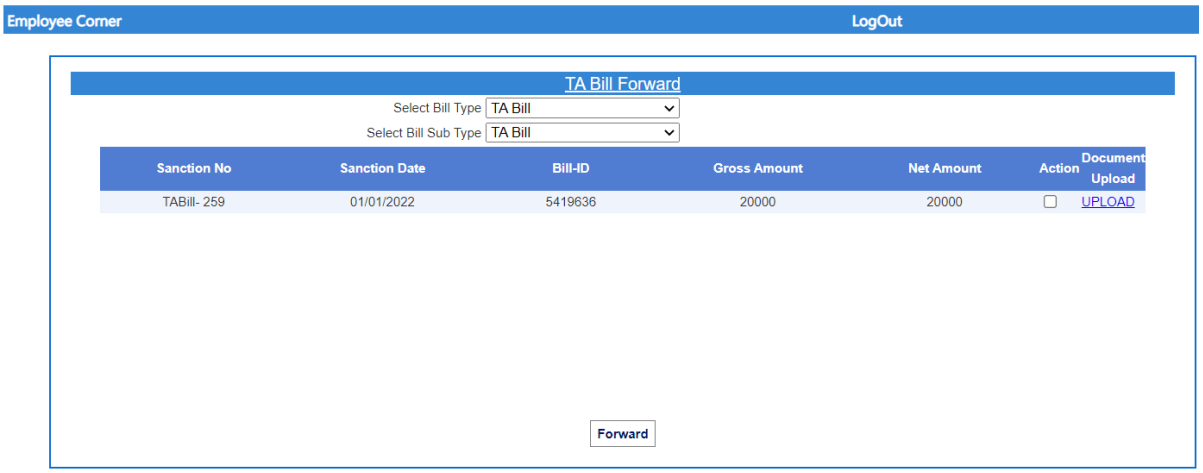
Login Portal:

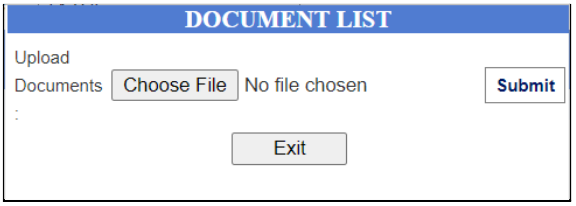


Settlement Portal:



Document Upload and Bill Forward Portal:





3.1.2 Hardware Interfaces

We will be needing a server to keep the database to store the information of every individual.

3.1.3 Software Interfaces

Data of each individual will be fetched from the OA portal everytime an application is triggered.

3.2 Functional Requirements

Continuation of 2.2 Product Functionality

3.2.1 **Application Portal:** Portal to register and apply for travel bill reimbursement.

Details fetched:

- PF/Roll number
- Name
- Age
- Date of birth
- Destination
- Duration
- Email
- Purpose
- Aadhar number
- Details of family members(if accompanying)
- Payment mode
- Project details (if applicable) like -project no, budget head, project name, project title, PI name,project type

Details for application of Advance Payment :

- PF/ roll number
- Amount of advance asked for
- Destination
- Duration
- Travel category
- Payment mode

3.2.2 Approval of application:

As soon as the application gets filed, an email will trigger to the first approval level (mostly the HOD). If it gets approved by the HOD, then an email will trigger to the next level(mostly the Staff of Admin Office) and the user. If it gets rejected then an email will trigger to the user with the appropriate reason. If the application gets approved by the top-most authority (usually the dean), then an “Application approved successfully” will trigger the user.

3.2.3 Settlement:

After the journey is over, the user may upload all his bills of Accommodation, food, main travel, and local travel on the portal. Then these bills will go to the Accounts Cell for verification. In this step the amount of advance already given will also be taken into consideration before allowing more reimbursement.

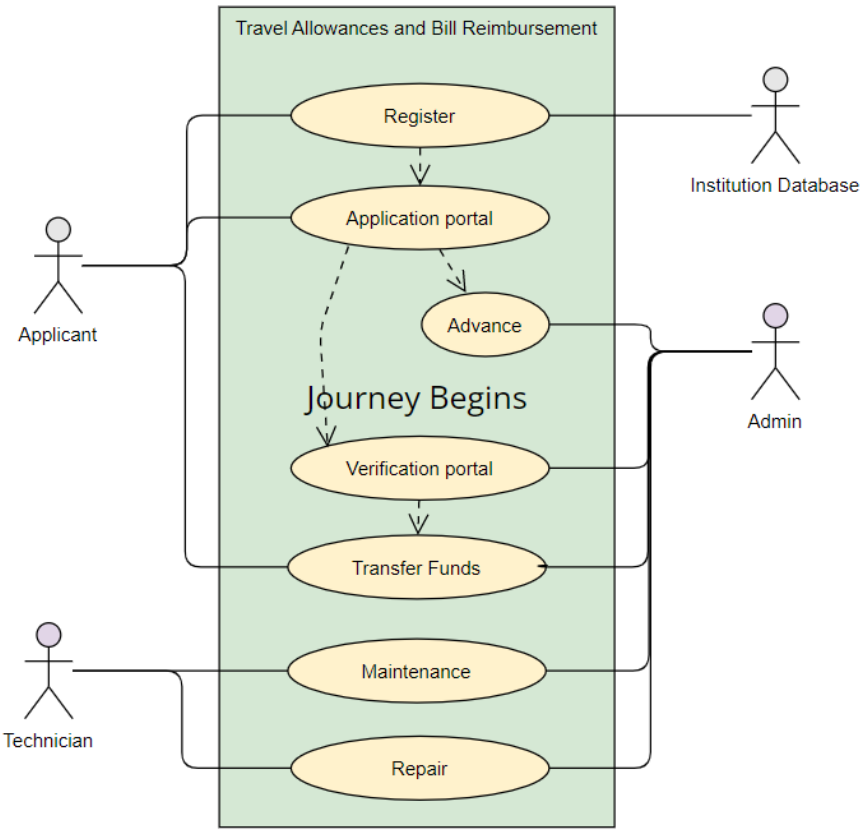
Required documents:

- Photo uploads options for bills
- Details of local journey
- Particulars of accomodation and food
- Particulars of journey and halts, [departure, arrival, sate, time, station]
- Details of local journey
- A column for other expenses

3.2.4 Payment:

After the verification of all the bills, the compensation will be transferred to the user’s linked bank A/C directly. This would be done by the accounts section, only after proper verification of the form.

3.3 Use Case Model



3.3.1 Use Case #1 (Registration Portal #U1)

Author – Naman Singla

Purpose - Provide registration portal for applicant

Requirements Traceability –

- Name
- Roll No. / PF No.
- Age
- Date of Birth
- Aadhar No.
- Email ID

Preconditions -

- Applicant must be registered in Institution database

Postconditions -

- Applicant is validated as a valid user

Actors -

- Applicant
- Institution Database

3.3.2 Use Case #2 (Application Portal #U2)

Author – Naman Singla, Akhil Jain

Purpose - To provide online application portal for Bill Reimbursement

Requirements Traceability –

- Valid registration of applicant in portal
- Leave application
- Total expected travel cost
- Verification of documents by admin

Priority -

Listed in decreasing priority:

- Faculty
- Staff
- Student
- Project Employe

Preconditions -

- Applicant must be a registered member in portal
- Provide purpose of journey
- Provide total expected travel cost
- Provide a leave application from institution

Post conditions -

- User application is registered in system and applicant is ready for journey
- Applicant is provided some advance money if necessary

Actors –

- Applicant
- Admin that approves the documents
- Authority/Court that receives the applicant

Exceptions -

- In Medical Emergency, some conditions may change

Includes #U1

3.3.3 Use Case #3 (Verification and Settlement Portal #U3)

Author – Naman Singla

Purpose - To verify documents provided by applicant

Requirements Traceability –

- Money Receipts/Tickets numbers of travel
- Valid application form from institution

Priority -

Listed in decreasing priority:

- Faculty
- Staff
- Student
- Project Employee

Preconditions -

- Bill must be properly prepared and submitted within 7 days of completion of the journey. Failure to do so may entail recovery of advance, if any drawn, in a single instalment.
- Money Receipts/Tickets numbers should be furnished along with the Travel Allowance Bill.
- Hotel Bills should invariably be enclosed when D.A. is claimed at Hotel rates.
- A certificate of attendance given by the court or authority should be attached to the bill, if travelling is drawn for attending a Court under Summons or otherwise

Postconditions -

- User is verified and application is transferred to account section
- Statement is sent to Organisation's account section

Actors –

- Admin for verifying documents
- Application Portal for verifying application
- Organisation’s Account section

Exceptions -

- Documents verification may be delayed if admin is not available
- Application may be rejected if bills are not properly maintained

Includes #U1, #U2

4. Other Non-functional Requirements

4.1 Performance Requirements

- **Response time:** The system should be interactive and the delays involved should be fewer**.** The average response time should be less than 2 seconds at the time of launch and less than 5 seconds otherwise.
- **Workload:** The system should be able to handle 50 people at a time efficiently.
- **Platform:** The system shall be compatible with the UNIX platform**.**

4.2 Safety and Security Requirements

- Proper login mechanism should be used to avoid hacking.
- Information transmission should be securely transmitted to the server without any changes in information.
- The system shall not execute a command embedded in data provided by users that forces the application to manipulate the database in an unintended way.
- All payments should be done with a certified gateway like Atom.
- Backup for the database should be updated, should be done hourly and the database should be behind a firewall.

4.3 Software Quality Attributes

- **Reliability**: The system should be reliable in giving correct results consistently.
- **Availability**: If the internet service gets disrupted while sending information to the server the information can be sent again for verification.
- **Usability**: The interface should be easy to learn and allow users to accomplish their goals without errors.
- **Maintainability**: The application should use continuous integration so that features and bug fixes should be deployed quickly without downtime. The database should be distributed to prevent outages.
- **Reusability**: The application should be divided into modules so that modules can be reused across the application.

5. Other Requirements

<This section is **Optional**. Define any other requirements not covered elsewhere in the SRS. This might include database requirements, internationalisation requirements, legal requirements, reuse objectives for the project, and so on. Add any new sections that are pertinent to the project.>

Appendix A – Data Dictionary

<Data dictionary is used to track all the different variables, states and functional requirements that you described in your document. Make sure to include the complete list of all constants, state variables (and their possible states), inputs and outputs in a table. In the table, include the description of these items as well as all related operations and requirements.>

Appendix B - Group Log

16/01/2022: Zoom Meet with Dr. Indranil Saha, Instructor

We discussed some of our ideas (like a mess automation system, health information management system, Travel Allowance bill reimbursement system) with the Professor in charge and finalised upon the current one. Since he is also one of the facility's users, he gave us valuable insights. He also explained the cumbersome application process and approval for the travelling allowances. He felt the paperless way could really help the campus community.

16/01/2022: Zoom Meet with Swastik Maiti, Teaching Assistant

Mr. Swastik gave us inputs on the working and implementation of our proposed software. He resolved some of our doubts and gave us his opinion on what we should majorly be focussing on for our project. He advised us to brush up on our database skills and learn SQL.

25/01/2022: In-person meeting with Prashant Kumar Sahu, Office Staff, CSE dept

To have in-depth knowledge about the existing process we got in touch with Mr. Prashant Sahu. We visited him at the department building and he was glad to explain to us the complete functioning of the current system. He informed us that the DORD (users: project employees) portal has an online application for Travel Allowance. On the other hand, other users (faculty, staff, and students) need to go through the paper drill. He also mentioned the levels of approval for different types of users. He provided us with the application form and some other documents for our ease.

25/01/2022: In-person meeting with Anil Kumar Bhatia, Sr. Supdt., Advance & Cash Management Cell, R&D Office

He elaborated the brief procedure of TA Reimbursement in the DORD. He said that the bill submission still has to be done in offline mode. This ensures that the bills aren’t fabricated or reused.

25/01/2022: In-person meeting with Sudhakar Mourya, Asst. Project Manager, R&D Office

He gave a demo of the current portal used for reimbursement in DORD and explained to us how the applications are processed. He elaborated on the procedure that happens after the user has filled out the application form. He told us how the team verifies the submitted bills.

29/01/2022: Zoom Meet with Nikhil Kumar Singh, Teaching Assistant

He gave a reading to the document and advised us in the cases of confusions at different places in the Document.
He advised us about the fine details in Section-3. He described more about the database that we will need to use and the languages in which we can do the coding.