Information Technology Service Management System

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Abstract: *ITSM (Information Technology Service Management System) is a Cloud-Based Web App that is designed to handle the workflow of various IT projects that are undertaken in an organization. The workflow includes the commencement of the idea of the project from the Business Department to the Central Technical Surveillance Department, which monitors the entire workflow, and the IT Department which handles the development of the project. There are various stages from the Initialization of the project, Documentation, and Validation. The Validation stages are divides into various sub-stages where the idea is presented to each department for assessment and for providing a rough estimation of the cost that would be incurred while working on the project. The members of various Departments may hold meetings to discuss and to infer upon the changes or modifications that are necessary to incorporate in the project. The goal of Web App is to serve as a platform where the information can be stored, and shared centrally, to ensure a smooth workflow.*

Keywords: Cloud-based, Documentation, Validation, IT, Surveillance

I. INTRODUCTION

"The Airline Group" or "TAG" is a consortium owning a group of airlines in Europe. The company has around 50,000 employees across the airline is up. TAG has its own IT division with its branding – "TAG tech". "TAG tech" handles all the IT operations across the airline group.

TAG tech has 3 major functions:
- Managing Business-As-Usual (BAU) operations of the various applications running on its infrastructure
- Track and fix issues and bugs
- Programs / Projects to align with the company's strategy/vision

1.1 Managing Business – As – Usual (BAU) Operations

The functioning of business applications that support day to day operations is critical to the very existence of the organization. They are also called business-critical applications. The IT infrastructure (servers, networks, support, etc) are the backbone of these applications. This function too1ls/agents the present IT infrastructure can support the optimal running of these applications. This function can include application end users, helpdesk support teams, application maintenance teams, monitoring tools/agents.

1.2 Track and Fix Issues/Bugs

IT systems (hardware/software) need to have efficient issue tracking and fixing mechanisms to ensure business continuity. This function continually monitors bugs/issues reported by the users or system monitoring tools and tracks them to completion/issue resolution. The organization has employed ample resources to ensure any issues in its business-critical systems are promptly investigated and fixed.

1.3 Deliver Programs / Projects to Align with the Company's Strategy/Vision

Every organization needs to keep up with the changing market conditions and rapid technological advancement. To cater to this, TAG tech has this major function of initiating, managing, and delivering software projects that would keep the organization aligned to its mission statement as well as keep up with the market trends and latest technologies. TAG tech implements the PRINCE2 & Agile project management methodology to manage its portfolio. The ITSM (Information Technology Service Management) system ensures that it caters to all the needs that are required by "TAG - Tech".

II. RELATED WORKS

[1] In this research paper focuses upon why strategic IT planning is required in an IT organization and how a Management system helps to achieve that. The company or organization must consider building and implementing a clear Information Technology Service Management (ITSM) that can control all IT services better. The paper explains us the various models and the dependent frameworks that are present and will be useful for an ITSM implementation.

[2] This document is intended to examine how knowledge translation capacity and effectiveness (KACE) in ITSM may be affected by several knowledge management processes. A framework was developed to determine what factors impact KACE in the function of the IT Service Desk. The framework focuses on socialization, outsourcing, internalization, and combining as contributors to KACE education.

[3] It is a review that explores the various ITSM adopted by various businesses around the world between 2010 and 2018. She found that not all ITSM practices are adopted consistently, and that some processes tend to be adopted more broadly than others.

[4] A Software-mediated Process Assessment (SMPA) was developed using design science of research methodology, that automated the ITSM processes. Decision Support System (DSS) approach is implemented in order to automate the SMPA.

[5] This paper presented results based on the review of the literature in ITSM between 2000 & 2010.
The following was concluded:

1. Theoretically driven research under shadowed.
2. Continuous improvements in the field.
3. ITSM performance issues, justifications, and IT Infrastructure Library (ITIL) being popular topics of research.
4. lack of consideration during researchat an individual level by ITSM researchers.
5. Conceptual orientation was the favored research method.

[6] The applied research method consists of a literature review, in which research is carried out at eight major global, regional, and national conferences, as well as in 71 international journals. A morphological analysis is used to classify the results. Keyword analysis is conducted to obtain an overview of research topics.

[7] This paper focuses on the implementation of an ITSM in the IT Infrastructure Library (ITIL) Framework.It includes best practices that can be used to implement, for instance, service support processes, such as incident management and problem management.

III. SYSTEM ARCHITECTURE

The Front Door Request (FDR) is the core driving force of the ITSM framework. Each user according to their specific roles and access levels edit, reviews, approves it. The FDR life cycle serves an important part of the entire application workflow. The cycle begins with the initiation of the FDR, passing it to the various users of the systems and moving from one stage to another. Each FDR is mapped to a Proposal Lead, Project Manager, and the respective IT Infrastructure representatives. The following use case diagram show cases the users of the ITSM.

3.1 Technology Stack

This system is created for the users of "TAG Tech" and the Airlines present in the TAG consortium. It is a cloud based Web App which is responsive and can be easily accessible by mobiles or personal computer. The application would be

expected to have a high user traffic and needs to be robust and scalable for handling it. Django which is a framework written in Python along with MongoDB to make it extremely fast and bootstrap as the front end for making the application responsive.
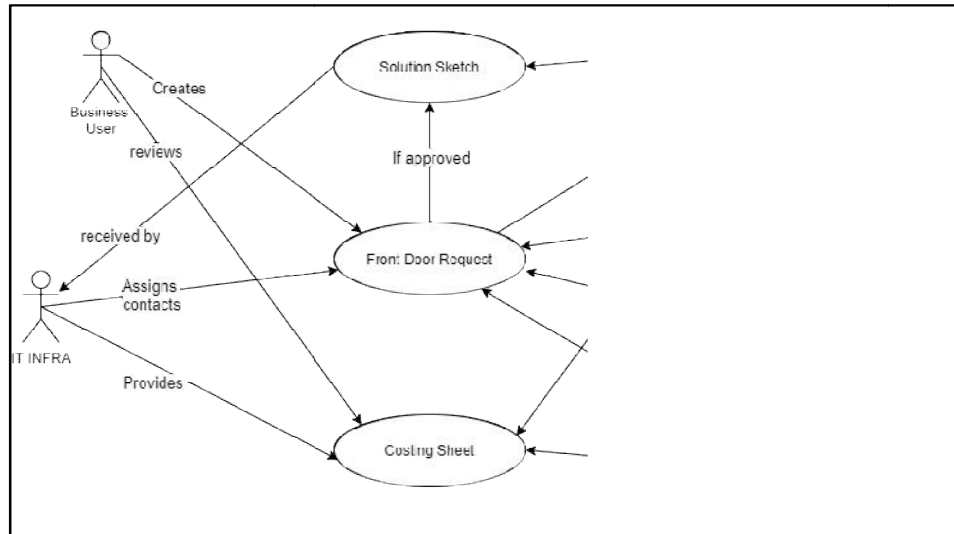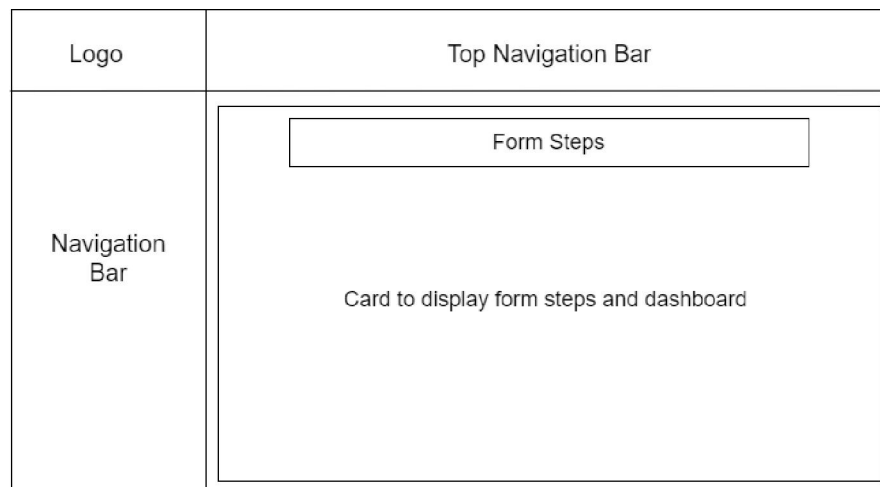

Figure 1: Use Case Diagram

Figure 2: Technology Stack

MongoDB due to its ability to store huge volumes of data and can be used as an excellent distributed database was the ideal choice, as the web application would be connected to companies very own data centres to keep integrity of their company.

Figure 3: Interface Design

3.2 Design

The user interface has been designed in such a way that it is easy to understand it briefly and aesthetically pleasing at the same time. The layout is quite simple with the focus on the form itself (shown in Figure 3). There are two navigation bars, one at the top and the other on the left side. The top navigation bar provides quick links to profile switching and searching, while the navigation bar on left side contains the different trackers for the projects, which are displayed depending on the user designation. The form is displayed on a card that helps in keeping it separate from other UI elements. The dashboard displays the list of all the FDR of the projects that have been undertaken along with their statuses. This makes it easier to view any project's FDR and also one can simply click on it to view the FDR as well as the corresponding solution sketch and statement of work associated with it.

IV. IMPLEMENTATION

The proposed system aims to make use of principles of the traditional approach and provide a more simple, centralized, and automated approach. Thus, reducing various factors such as data redundancy, inefficient communication and human based error. For understanding the system, we can divide it into various modules and understand them.
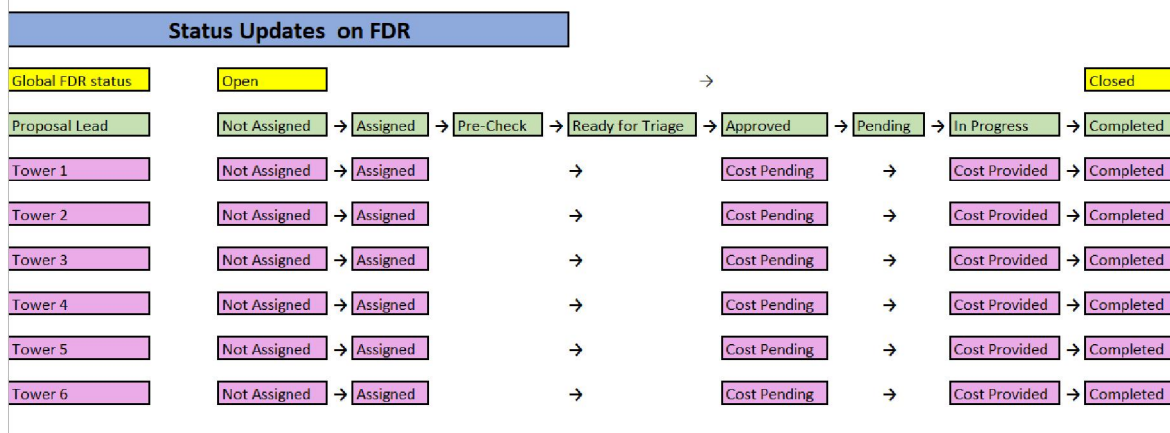
Figure 4: Steps of the FDR
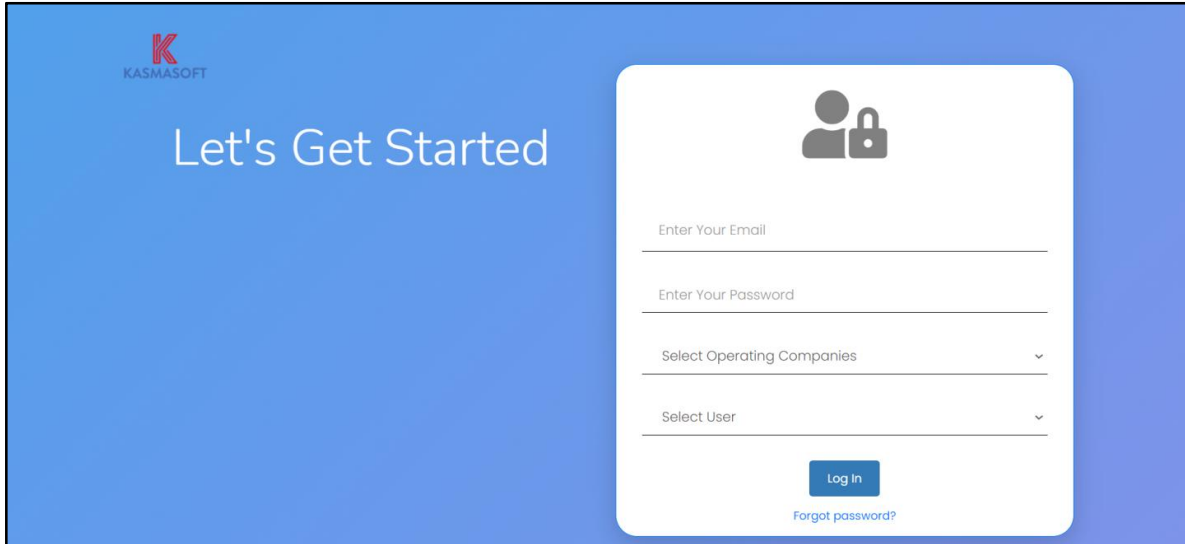
4.1 Data Flow

The entire process starts by the creation of the Front Door Request (FDR). Following are the stages of the system

1. Creation of FDR: The FDR is created by the business user of the system, it can be created with two types, a statement of work and solution sketch. A business user has a product idea and creates the FDR with details like the project title, description, company, categories etc.
2. Assigning a Proposal Lead and Project Manager: Once the FDR is created by the Business User a project manager and proposal lead are assigned to an FDR. These entities are involved throughout the FDR lifecycle. Both project manager as well as the proposal lead perform precheck and pass it on to the IT Infra team.
3. Assignment of IT Infra Representatives: Once the FDR gets the above two entities assigned to it. It moves on for further assessment and is received by the SME's (Subject Matter Experts) of the IT Infra group. These SME's assign individuals from each towers respective FDR's.
4. Providing Costing: The IT Infra group which consists of 6 Towers provide the costing in the respective costing sheets, once the costing is provided by each tower heads, the FDR goes to the PL for review.
5. Reviewing: Once the costing for the FDR is provided it is reviewed by the Proposal Lead and if there is any discrepancies, the PL resends the costing sheet to the IT Infra team for further additions or improvement.
6. Completion and Approval: Once the review is successful the FDR is approved and passed on to the PM Team.
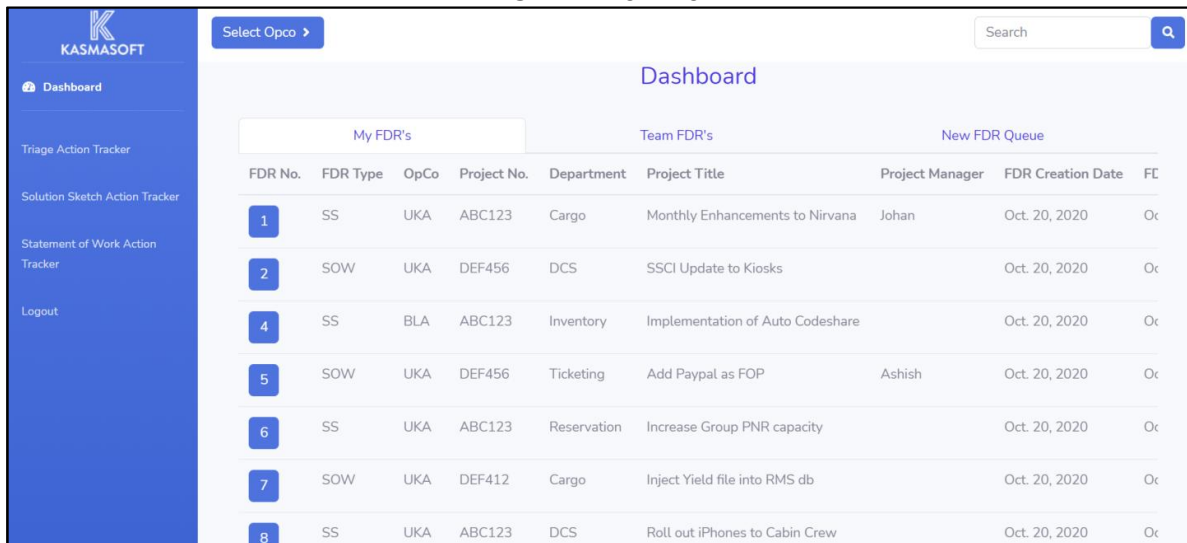
V. APPLICATION DESIGN

The Login Page is the home page or the landing page of the web application.

Figure 5: Login Page

Figure 6: Dashboard

Figure 7: Creation of FDR

Figure 8: Costing Sheet

Figure 9: Internal Costing Sheet -1
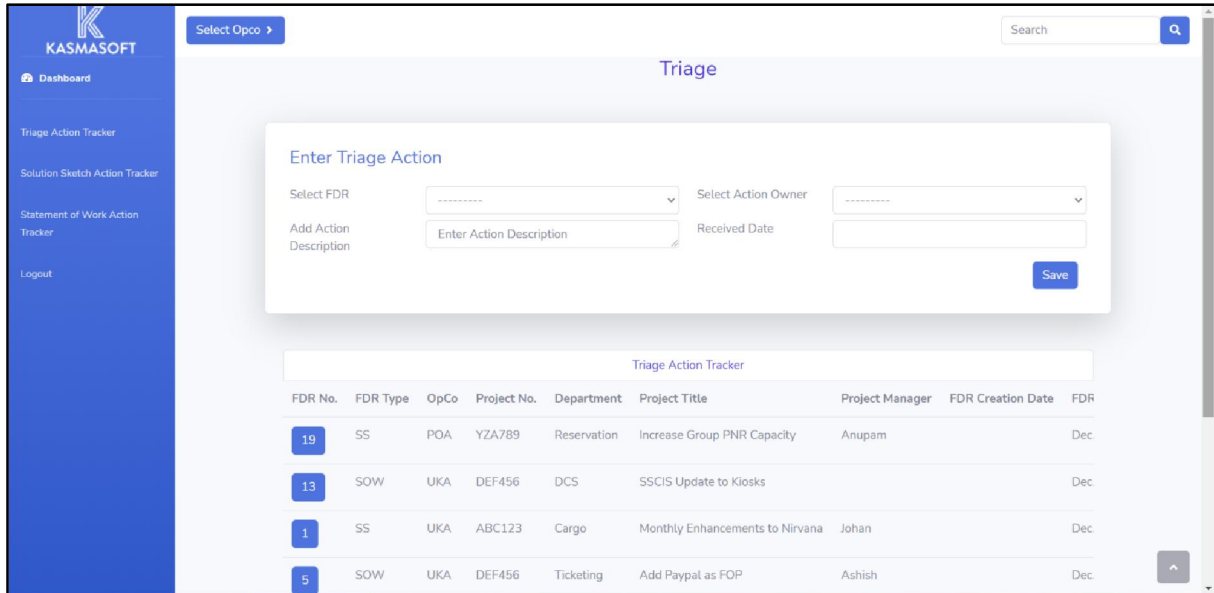
Figure 10: Internal Costing Sheet -2
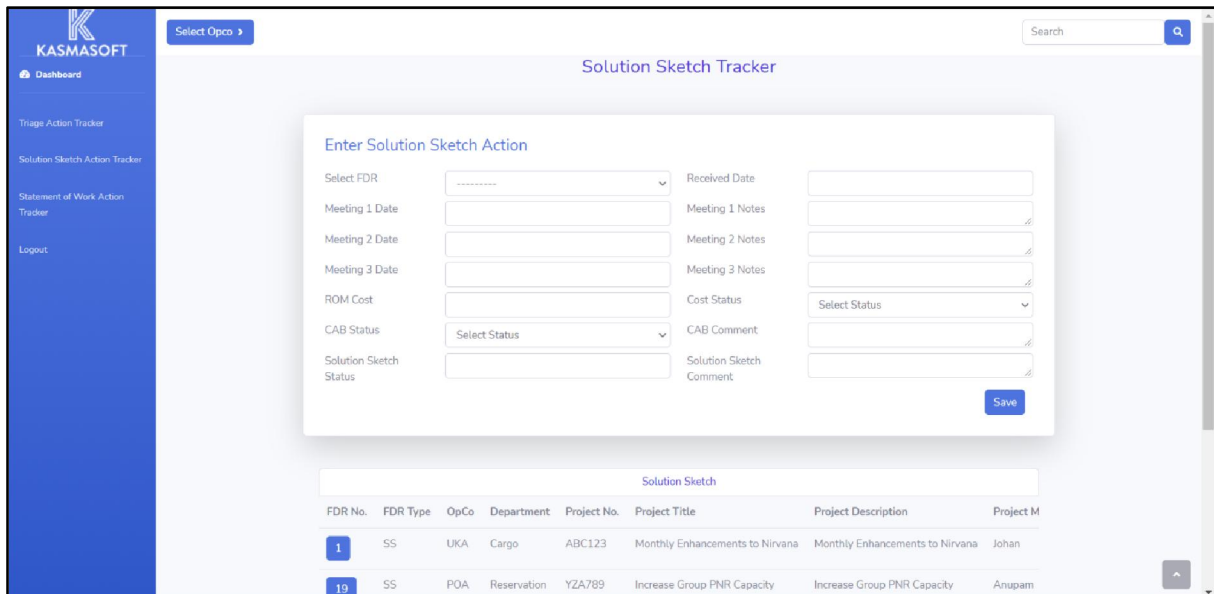
Figure 11: Triage Action Tracker

Figure 12: Solution Sketch Tracker

VI. CONCLUSION

We summarized the entire workflow of the functioning of the application and started implementing modules required throughout the application such as the account for logging into the system, the dashboard for displaying tables that are fetched from the database, and action trackers for tracking of progress during projects registered into the application. We have implemented the tasks of assigning the respective Project Manager and Proposal Lead for the FDR received for a particular project. The Action Tracker, Solution Sketch, and Statement of Work are also built where meeting notes, FDR creation date, and FDR received dates are stored.

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