

Asset Management System: Application and Software Requirements

Ashveer Singh (B.Tech)

Member of Technical Staff 3, Nineleaps Technology Solutions Pvt. Ltd., Bangalore.

Abstract

An Asset Management System is a conveyed application that has been created to keep up the subtleties of the advantages and related data with respect to it in any association. It would keep up the data about the advantages and related inquiries with the goal that the IT board of the association can undoubtedly know the subtleties of the considerable number of benefits. It is easy to comprehend and can be utilized by anybody inside the association who isn't even acquainted with the framework. It would be very easy to use for giving administrators the dominant part of the rights. This product application would be created utilizing the ground-breaking coding apparatuses of React at the front end with MongoDB database and Node.js Framework at the backend.

The Asset Management System would make it simple for the administrator to follow all the advantages, tickets raised in regards to that benefit and activities the organization is taking a shot at and resources utilized in it. The mix of these modules into one application ensures the perfect stage for re-assembling and modifying IT Management frames nearby the affiliation destinations. The system accomplishes a straight forward technique for maintaining up the nuances of the points of interest used inside any affiliation. This paper gives an overview theoretical look upon the Asset Management system and goes through the essence of the problem that should be resolved.

Keywords: Agile, Asset Management, IT, Operating System, Software, Windows.

Introduction

For huge organizations with gigantic work power, there is the need to have a worker resource, the executive framework, which handles all the data of the advantages and issues associated with them. Such frameworks, in addition to other things, ought to have the option to assist the executives with deciding the advantages status present in the organization, conjecture resource needs and issues happening with the benefits, and to assist specialists with managing their benefits proficiently. "Managing physical assets is not a novelty for a wide range of asset-intensive industries (aviation, civil engineering, public infrastructure, etc.) as it is stemming from the 1960s and originally was an approach to maximize the value of asset portfolios throughout their life-cycle," [1] also known as "terotechnology"[2].

IT asset management is an all-encompassing computer system which tracks the assets of the organization. International Association of IT Asset Managers (IAITAM) defines "IT asset management as a set of business practices that incorporates IT assets across the business units within the organization"[3].

It helps to support strategic decision-making in an IT ecosystem.
The objective and goal of an IT asset management solution is to:

- Effectively help with the management of the assets.
- Improving the visibility of assets to a large extent.
- Ensuring the optimum utilization and maintenance of assets.
- Reduce the software and IT costs.
- Ensure compliance with the requirements of rules and regulations.

IT asset management connects the assets with the IT infrastructure of the organization. With an efficient asset management system, the management and the IT professionals can review and monitor all sorts of assets within the organization. The information can be used to make accurate decisions about the availability, purchase and other aspects of the asset's lifecycle. IT asset management can be viewed as a combination of IT and accounting services. The information generated in the systems can be effectively used to prepare an accurate balance sheet. This can facilitate the management in making informed business decisions. "Asset managers need to have a practical working knowledge of the major assets at a management level so as to be able to make sound business decisions. They need to be aware of the assets which constitutes elements in any given capability, that is, the array of subsidiary items that are necessary to support particular prime equipment"[4].

Problem Statement

The manual systems in organizations require a lot of file work to be done. It is a time consuming system. When all assets and its respective employee information are maintained manually, any searching requires excessive effort manually. There is no way of gathering the information so fast and in the cheapest manner. In the previous system, all the information was in one place thus making the process of analyzing the problem with any of the assets a difficult task. The organizations that manage their IT asset inventory using paper-intensive processes can greatly drain resources. These are also prone to errors and inaccuracies. Spreadsheets are often used where they enter the details of the assets, and then modify them as they update. With the introduction of IT inventory systems, this worry has evaporated and the process has been made simpler and quicker.

Problem Discussion

This system ought to involve a web application, on one hand, and a database (chronicle of data) on the other. The program should play out the fundamental assignments upon the database as recuperating, embeddings, invigorating and eradicating the data. Any additional value is a goal of a further module progression. It is a kind of procedure to start the improvement from arranging and building up the database, as this structure will choose the further structure of the application program.

The reasonable database model (tables, their substance and the associations between them) should respond to the given endeavor and spread the fundamental requirements. The interface of the program should be anything but difficult to utilize, and should be as easy to use for both specialist and executive and management.

Another issue is to outline the hierarchy of leadership of the delegates to their specific assets that will be shown up in the manager's entry way of the web application. The given assets are mapped with their specific customer in the affiliation and the fixed preferences for an individual zone.

The IT inventory system allows to keep track of information, such as the date when the company purchased the hardware, how long you have been using them, if there's a lease expiring on the components, etc. System administrators should know the software version, and how long the end-users have been running it on their system. Also whether their OS is current or not. All this information will help them decide whether they should replace the old hardware, update the firmware on the system, fix or uninstall a vulnerable application, and more such things.

Tracking the IT inventory and updating it using inventory management systems will help to monitor the computer hardware and software. And as a company, compliance with corporate security policies must be ensured, and this can be achieved this using an IT inventory system.

If system administrators are allowed to isolate vulnerabilities quickly, such as unauthorized or illegal software, outdated software, malicious and unauthorized downloads, it'll be easier to see where the potential risks exist. These risks can be prevented before major problems could arise.

Use of Agile Methodology

Agile is a process that involves the management of a project by breaking it into several stages that involve constant collaboration with stakeholders at several levels and continuous innovation and iteration. It is an iterative approach to software delivery that builds software from the start of the project, instead of trying to deliver it all at once near the end.

Agile now-a-days refers to the above mentioned values as well as the frameworks to implement them that also include: Scrum, Kanban, Extreme Programming (XP), and Adaptive Project Framework (APF). Therefore, in project management, it is a process to manage a project characterized by constant iteration and collaboration in order to more fully answer a customer's needs.

Scrum

Scrum is the subset and an important feature of Agile. It is a light weight process framework for the agile development and is also the most widely-used one around the world.

- A process framework is a set of practices that must be followed in an order for a process to be consistent with the framework. A Scrum process can be clearly differentiated from the other agile processes by particular practices and concepts that are divided into three different categories: Roles, Artifacts & Time Boxes.

Burn-down Chart

The burn-down is a chart that shows how quickly the team is burning through the customer's user stories. It shows the total effort against the amount of work delivered in iteration.

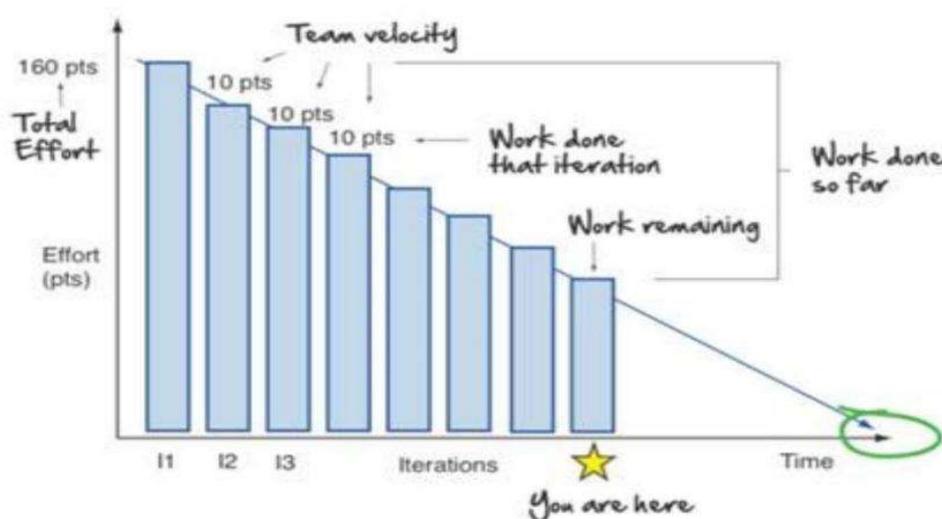


Figure 1: Burn down Graph

The total effort is visible on the left and team velocity on the right. This simple graph also shows

- Work done each iteration
- Work remaining
- Work done so far

The above is somewhat ideal. A more realistic burn-down looks like this.

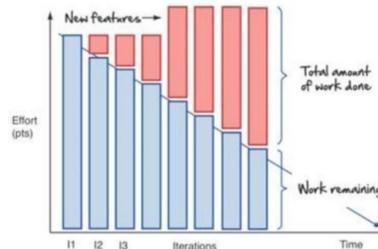


Figure 2: Realistic Burn down Graph

It's never one straight line. The team does not move at exactly one fixed velocity. Things are discovered all along the way.

Software Requirements

Operating Systems :Windows

Microsoft Windows is a get-together of all graphical system families, developed, displayed & marketed by the Microsoft Company. Every family obliges a particular line for handling industry and Windows families combines Windows NT and windows embedded; these can cover sub families, eg. Windows embedded compact or Windows Server. Old Windows families fuse Windows 9x, Windows Mobile and Windows Phone.

Languages :JavaScript

JavaScript is a dynamic language, desolately made and has top out of the line limits. It is a language that is multi-perspective, supporting article masterminded, essential, and helpful in programming. JavaScript was developed in the ECMA Script language standard and is essentially used as client favoring JavaScript, executed as a part of a Web program to give updated UIs & dynamic locales. It uses programmed access to computational things inside a host space.

FrontEnd: React.js

React is a JavaScript library for building UIs. It is kept up by the Facebook and a network of individual engineers and organizations. Respond can efficiently be used as a base in improvement of the single pages or even portable apps.

React makes it effortless to make intuitive UI s, plan straightforward directions for each state in the application, and adequately refreshes and shows perfect segments whenever information changes. Assemble epitomized parts that deal with their own state, at that point create them to make complex UIs.

Redux

Redux is a kind of “anticipated state holder for JavaScript apps. It encourages the user to compose applications that carry on reliably, run in various conditions (customers, server and local) and are not difficult to test. In addition, it gives a great designer experience, for example, live code altering joined with a time traveling debugger.”

Redux can be utilized alongwith React, or with other view library. It is quite small (2kB, including conditions), but has a big environment of add on accessible.

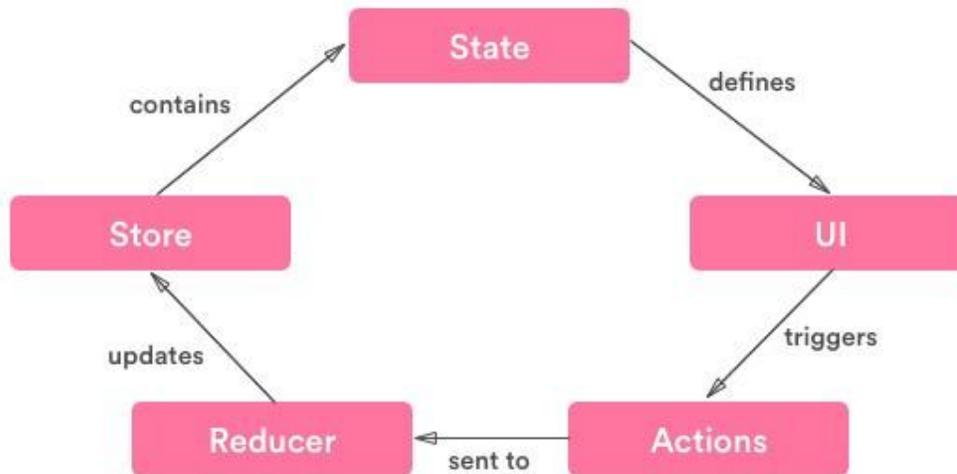


Figure 3: React.js working

EJS

EJS is a template engine for JavaScript. It seems pretty laissez-faire in that it doesn't tell you how to organize things. EJS is a tool to generate HTML markup with plain JavaScript.

HTML:

Hypertext Markup Language (HTML) is the standard increment for making site pages and web applications. Cascading Style Sheets and Javascript, it outlines a gathering of three establishment progressions for www.

Most web programs get HTML based reports from the web server or from neighborhood storing and rendering the data into the respective site pages. HTML shows structure of the page semantically & at first includes finished paperwork for nearness of the report. HTML tags are the structures of HTML pages. While HTML creates, pictures and several other things, for example, savvy structures can be introduced into the render page. HTML provides with an approach to make composed documents by displaying assistant semantics for the content, like, headings, sections, data, associations, refer to several things. HTML parts are determined by marks, made using edge areas.

CSS:

Falling Style Sheets (CSS) is a template language used for portraying the introduction of a record written in an increase like HTML. CSS is generally used to empower the division of introduction and substance that includes design, hues, and textual styles. This kind of a partition can improve the content openness; give greater control as well as adaptability in the particular of intro features.

CSS Syntax:

A CSS rule has two main parts:

a selector and one or more declarations:

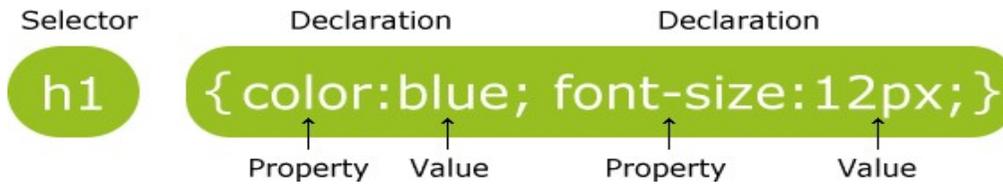


Fig 4: CSS Syntax

- o The selector is usually the HTML element the user wants to style.
- o Each declaration consists of a property and a value.
- o The property is the style, attribute one wants to change, each property has a value.

Backend: Node Js

Node.js is an open-source cross stage JavaScript run-time condition, which executes JavaScript code outside a program. Node.js lets engineers use Javascript to make order line devices and from server side scripting running contents server side to create site pages content before the pages are sent to the client's browser.

Thus, Node.js aligns with the JavaScript everywhere, binding the web application improvement around a single programming language, instead of several dialects for server & customer side contents. However .js is actually the standard filename augmentation for JavaScript code. The name "Node.js" does not allude to a particular record in this unique situation and is only the item name.

MongoDB

MongoDB is the cross stage report database program. Enlisted as a NoSql database program, Mongo DB uses JSON-like archives alongwith the blueprint. Mongo Db has been created by MongoDB Inc. and authorized under the Server Side Public License. Mongo DB bolsters field, run inquiry, and ordinary articulation look. Questions can change explicit fields of records and even more incorporate client states as JavaScript capacities. Enquiries can accordingly be arranged to restore an arbitrary example of the consequences of a specific given size. MongoDB gives greater accessibility imitation sets. A copy set consists of a minimum of two duplicates of the information. Every imitation part can act in the job of the essential or auxiliary reproduction. All researches and composes are done with the essential reproduction naturally.

Postman

Postman is a collaboration platform for API development. Postman's features simplify every step of building an API and streamline collaboration so that one can create better APIs faster. It makes it easy to get the response of the APIs and to use them with their inputs in query, header, path or body. Using Postman makes the following tasks useful:

1. Accessibility - To use Postman, one would just need to log-in to their own accounts making it easy to access files anytime, anywhere as long as a Postman application is installed on the computer.
2. Use of Collections - Postman lets users create collections for their API calls. Each collection can create subfolders and multiple requests. This helps in organizing your test suites.
3. Collaboration - Collections & environments can easily be imported or exported making it extremely easy to share the files. A direct link can also be used to share the collections.

4. Creating Environments - Having multiple environments aids in less repetition of tests as one can use the same collection but for a different environment.
5. Creation of Tests - Test checkpoints such as verifying for successful HTTP response status can be added to each API call which help to ensure the test coverage.
6. Automation Testing - Through the use of the Collection Runner or Newman, tests can be carried out in multiple iterations to save time for repetitive tests.
7. Debugging - Postman console also helps to check the data that has been retrieved, further making it easy to debug tests.
8. Continuous Integration - With its ability to support continuous integration, development practices are maintained.

Robo 3T

Robo 3T is a free and lightweight graphical UI for MongoDB. It is a MongoDB management tool, that has shell-centric cross-platform, is supported by JSON i.e. JavaScript Object Notation. This tool is not typical of MongoDB's other administrative tools of user Interface i.e. its shell could get embedded in Mongo Shell with a whole lot of access in both Mongo CLI and Mongo graphical UI. It is a visual tool that helps manage Database MongoDB. It is a part of free open source software, and supports all three operating systems: Windows, Linux, MacOS. With its help, a user can view, edit and delete mongo documents.

Swagger Documentation

Swagger allows you to describe the structure of your APIs or act as a manual for using your APIs. Swagger allows the UI developers or anyone using the API to know that how the data is to given for the API and what will be the output of the API. Along with that it gives you the general description of the function of the API. By reading the API's structure, automatically beautiful and interactive API documentations can be built. Client libraries can be automatically generated for the API in different languages and study other possibilities like automated testing. Swagger carries out this task by asking your API to return a YAML or JSON that contains a detailed description of your entire API. This file is essentially a resource listing of your API which adheres to OpenAPI Specification. The specification asks you to include information like:

- What are all the operations that your API supports?
- What are your API's parameters and what does it return?
- Does your API need some authorization?
- And even fun things like terms, contact information and license to use the API.

Swagger spec can be written for API manually, or have it generated automatically from annotations in your source code.

JS Documentation

The JS documentation provides detailed information about a function or object in Node.js. It shows which arguments a method accepts, the return value of that particular method, and whichever errors could be related to that method. It also shows which all methods are available for the different versions of Node.js. It is a markup language that is used to annotate the JavaScript source code files. The programmers could add documentation

detailing the application programming interface of the code they're creating by using comments containing JS Documentation.

GitHub

Git is a distributed version control system. The complete codebase and history is available on developers' computer that allows for easy branching and merging. It is a website and cloud-based service that helps developers to store and manage their code, and also track and control changes to their code. The developer can then safely make changes to that part of the code without affecting the rest of the project. After that, when the developer gets his part of the code functioning properly, he can merge the code back into the main source code to turn it official. All these changes are easily tracked and can be repeated if needed.

Mail Trap

Mailtrap is a server solution to test mail with a feature that allows testing email notifications without sending them actually to the real users of the application. It works as a powerful email test tool and also helps view dummy emails online, forwards them to your regular mailbox, share with the team and more. Mailtrap is a mail server test tool prepared by Railware Products, Inc., a premium software development consulting company. Mailtrap uses the SMTP server for receiving mails in its portal. An SMTP server is a computer or an app, responsible for sending emails and functions following the Simple Mail Transfer Protocol (SMTP). SMTP server receives emails from the client, passes them on to another SMTP server & relays them to incoming mail server.

Methodology

1. Database Analyzing, Design and Implementation

A social database like mongoDB composes information in the form of tables (or relations). Tables consist of lines and sections. The line is like a record. A segment is called a field (or trait). A db table is like spreadsheet. The connections that can be developed among the tables empower a social database to proficiently store tremendous amount of information and adequate recovery of the selected information.

The database for this web application should store resource information, that is, the data of the assets of the association and the employees to whom that specified resource has been doled out to. I have built a database with different tables speaking to the various assortments required for our database. For this, the fundamental essential and remote keys ought to be characterized into the reacting tables. The characterized structure is made in similarity with the end clients' needs and requests. Every asset would have different insights about the benefits and the employees and projects.

2. Program Structure Analyzing and UI Construction

Subsequent to getting the db arranged, application program ought to be developed and executed in some programming condition to empower the clients to speak with the database. UI is expected to be developed as an important structure of the program. The basic general exhortation while building UIs is to "know your end clients" as there are countless guidelines

and necessities, concerning the entire procedure of UI advancement. Each UI comprises a certain number of controls (tables, channels, buttons etc.). The rundown of the considerable number of properties and strategies for all controls is known as Application Programming Interface (API).

A lot of x controls are utilized so as to arrive at the ideal reason, what concerns the usefulness of the app, include Labels, Text boxes, Combo Boxes, Data Matrix, Panels, Tab controls and it goes on. These controls accessible in the program are kept fit to the related structures that are utilized in the application.

Future Scope

The IT Asset Management is growing fast in its utility and advancement techniques as more and more companies are stepping ahead towards implementing programs and more and more providers are stepping in to offer services. The future of IT Asset Management is, on the whole, being able to quantify and manage risk effectively. It is coming up as a service model in which results are realized faster and there is rapid on boarding of products to better control mechanisms.

Since assets are essential to our lives, well managed assets can realize huge values, but using the outdated approach can lead to irreparable losses. Hence the role of asset management is transforming. The IT world is almost in the middle of an asset management revolution which is expanding its scope each day. This very transformation is further pushed by the requirement to meet technical and industrial demands in future with limited resources. Therefore, Asset Management System needs to be optimized and updated by all growing and expanding organizations.

Conclusion

Asset Management System has transformed the working of organizations. This transformation goes beyond the development of the asset inventory, condition assessment or risk analysis. It completely alters the way the organization operates. It saves time and money, increases efficiency and integrity, reduces the risks related to human errors, develops real time assets analysis, ticketing system with real time ticket status monitoring and provides a consolidated platform for managing all the assets. Therefore, it is no less than a revolution in the work management of the organization. The asset management system takes a complete and holistic view of the lifecycle of an asset. Therefore, the lifecycle of a product or machinery includes its life from procurement to disposal. It leads to a perfect monitoring, systemized approach and management, in turn placing the business or an enterprise to increase their profits and returns. Therefore, it has immense scope in the industrial communities of the world.

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