

Incubator Club

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Abstract — This report explains the need for a singular idea platform, overall design architecture, and descriptive detail of our implementation for Incubator Club.

Keywords— Platform, Unified, Incubator, Design Philosophy, Implementation, MEAN Stack

I. INTRODUCTION

Silicon Valley, the capital of tech has always been a powerhouse of innovation and ideas. Many come to Silicon Valley with bright ideas, while investors look to invest in them. Incubator Club matches individuals or groups of entrepreneurs to the right investor.

II. PROBLEM STATEMENT

Many ideas go unimplemented, while others are just empty words with no future plans. Currently, there is no platform that combines an idea with an already built prototype or design for investors to judge.

A. Proposal

With Incubator Club, we only accept ideas that already have a working prototype or are currently in the implementation phase. This will filter out vague ideas and help both users and investors to speed up the process of funding. Combining an idea with a working prototype is a strong indicator that the creator is committed and is able to support their ideas.

III. DESIGN PHILOSOPHY

When we designed Incubator Club, our philosophy was primarily focused on User Experience. We believe that our platform should be easy to use while providing enough functionality to be relevant. To accomplish this, we looked for inspiration and basic UX design architecture in already established websites and read articles for designing a friendly layout. We believe that the first impression is key to retaining and attracting users. Our final design relies on a basic color schema and minimal button user interface for navigation.

B. Design

Our website is divided into three categories: a user, an investor and a project. Each is its own acting entity. Our philosophy is not restricted by entity access, but rather by limiting what each entity can do while providing a transparent view of the whole system (the website). We believe this will attract users and investors alike as there is no “secrecy”. We also believe that the best projects deserve the best recognition. Any user can “like” a project, thereby helping investors choose the best projects. By not restricting who can view projects we believe that it will create more transparency, rivalry, as well as more collaboration.

IV. IMPLEMENTATION

To implement our Incubator Club, we chose the MEAN stack, which stands for MongoDB, Express, Angular and Node.js. The reason why we picked MEAN to power our web application is due to its vast amount of resources, help availability, and external libraries in npm to speed up our development time. Modules like passport.js, which helps enable authentications, bcrypt, which is a hashing library, and express.js, which is a very popular web framework. We also used Bootstrap 4 and CSS in designing the web application. We hosted the website on IBM's Bluemix.net.

A. Security

We built our website with security ingrained. Our philosophy is to never ask for what you don't need and enforce encryption to protect user's personal information. We started with several key securities features as a must: hashing PII (personal identification), hiding html objects, validating user input, and lastly, implementing safe paths across all our routing services.

1. Protect our users.

In our MongoDB, we hashed the user's credentials. This leaves no room for attackers to infiltrate unless they can hack into our database and also dehash our hashing algorithm. We also implemented sessions for user to protect against "man in the middle" attacks.

2. Protect our website.

For our website, we implemented different techniques against the top common attacks. We implemented a load balancer and a limit on each user's active session. This is to prevent DoS attacks against our server. Second, we hid all of our html objects and implemented safe pathing to prevent cross site scripting or OS command injection. Third, we enforced user's input using a strict regex to validate and deny against any potential SQL

injection. Lastly, all of our functions are type safe to prevent buffer overflow.

B. Routing

We picked our application to scale across the y axis for ease of implementation and faster product delivery. Since we route users based on the request they send via https, it is easier to load balance as well as easier to process different types of data the user is requesting.

C. Model

In our database, there are three separate models: users, admin, and projects. We picked MongoDB as it is the best native json database that can be easily integrated with Node.js. In our tables, we identified primary keys needed for each model as well as the different types of query optimizations to enhance the data query time. This was to optimize our search function .

D. Future

In the future, we would like to spend more time optimizing our MongoDB and improve our load balancer as they are the two most important pieces of our application. With millions of potential users, we want each user to have the same low latency experience. We would also like to provide a way to add multiple admin accounts for new investors.

V. CONCLUSIONS

We found that there is currently a need for a platform to connect entrepreneurs and their ideas with potential investors. Incubator Club promotes the distribution of ideas and makes it easy for investors to review many ideas, subsequently selecting the best ideas they wish to seed.

Incubator Club was inspired by Professor Ranjan's idea, "Analytics Incubator".

VI. CONTRIBUTION

Venkat Pushpak Gollamudi - Graduate Student in Software Engineering. Handled the database connectivity between nodeJS and MongoDB. Designed the schema of MongoDB to store user and project details. Developed the entire back end for admin, login, search, submit project, feedback and like functionality in the application. Responsible for ensuring proper data flow between back end and front end.

Anna Chow - Graduate Student in Software Engineering. Handled the initial web design and front end implementation. Centralized our platform with key designs and philosophy. Designed the look and feel of the web application. Designed the logo. Acting Scrum master. Provided additional testing and report editing.

William Baron - Graduate Student in Software Engineering. Collaborated with the front end theme, design and implementation of

the front end. Coordinated the version control and the cloud deployment to be integrated with both IBM git and Github using the IBM CI/CD tools.

Vu Nguyen - Graduate Student in Software Engineering. Handled both front end and back end design, implementation, and security testing. Implemented user's validations, implemented safe pathing, cross check for any potential security vulnerability like sql injection, xss, buffer overflow or man in the middle attack. Wrote the final report summarizing key features.

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