

Project Proposal – Lucky Charms

1 Introduction

BaseN Corporation supplies both telecommunications carriers and enterprises with a scalable fault, performance and data management platform as a service called BaseN Platform. The BaseN Platform is able to handle millions of datapoints per second, classify alarms and generate actionable data to the operators and automated systems. The service is being used for both managing service provider networks as well as for industrial automation (and IoT) environments. The company is headquartered in Salmisaari, Helsinki, is founded in 2001 and is profitable. It has also had a very liberal remote work policy for many years.

BaseN Corporation has road mapped a significant facelift to its primary user interface during CY2021. As part of the facelift the current geographical positioning of devices and topology, called LocatableMap, will need to be replaced with a newer system described below in chapter 2, Project goals.

2 Project goals

Displaying geographically positioned content is a core feature of BaseN Platform's fault management functionality. The feature is currently being used 24x7 by service provider network and service operations centers as an authoritative view of the health of their networks.

The main goal of the collaboration project, which will be a greenfield development, are the following abilities:

- Display a graph/network of at least 100k nodes and 1M edges, in a way that is feasible for interactive user experience
- Edges must support bi-directional display (e.g. link utilization both ways)
- Nodes can be positioned using either geographical coordinates (WGS84) on top of Google maps or non-geographical map such as factory floor, data center (static 2D image)
- Manual positioning of a node
- Display multiple independent graphs on layers which can be enabled or disabled on UI
- Draw topology following geographical coordinates, for example
- Update node and edge colors based on externally provided alarm status (near real-time)
- Automatic aggregate map views based on
 - zoom level

- node features, such as site, city, region, country
- edge features, such as weight
- [Internal] instrumentation on user-perceived speed and functionality

3 Technologies

Primary development languages:

- Java/Go (team can choose)
- JavaScript/TypeScript

Pre-selected client-side frameworks:

- Angular
- OpenLayers

BaseN can support the student team with all the above languages and technologies. We will also supply students with Google Maps tokens and provide CI/CD environments, if desired. The source code will be stored in a private GitHub repository for the duration of the project.

4 Requirements for students

We welcome any student teams that are curious about combining multiple disciplines including near-real-time event processing, Geographical Information Systems (GIS) AND are interested in using the latest technologies on both the browser and server side.

We are very confident that you will be challenged in a supportive professional environment while learning quite a lot. This will be to your advantage in your future career as software developer.

All code, documentation and presentations must be written in English. The participants should be familiar with concepts of version control, branches, pull requests, etc.

Knowledge of the following would be useful although not required:

- ECMAScript 6, TypeScript
- Knowledge of web technologies such as REST (and HTTP, HTTP/2)
- Continuous Integration and Testing practices
- Graph theory (discrete mathematics)

5 Legal issues

The client gets all IPRs to the results.

The client will share some confidential information with the students. Signing of the Non-disclosure agreement (NDA) included in Aalto's contract template is required.

6 Client

BaseN will provide a Slack channel (room) for the participants to communicate with company stakeholders for the duration of the project.

BaseN will also provide a JIRA project for the duration of the software development project for all the participants. The JIRA project can be configured for Scrum type with the desired duration of sprints, etc.

We consider the project participants as another development team working towards the same goal, equal to our own developers.

6.1 Client representatives

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7 Additional information

Due to COVID-19 we foresee that this will be an almost 100% remote project.