MICHIGAN STATE
UNIVERSITY

Project Plan

Profiling Manufacturing Plant Computer Network Traffic

The Capstone Experience

Team GM

Ignacio Brarda
Logan Cummings
Ben Frisanco
Joseph Guzman
Bella Oh

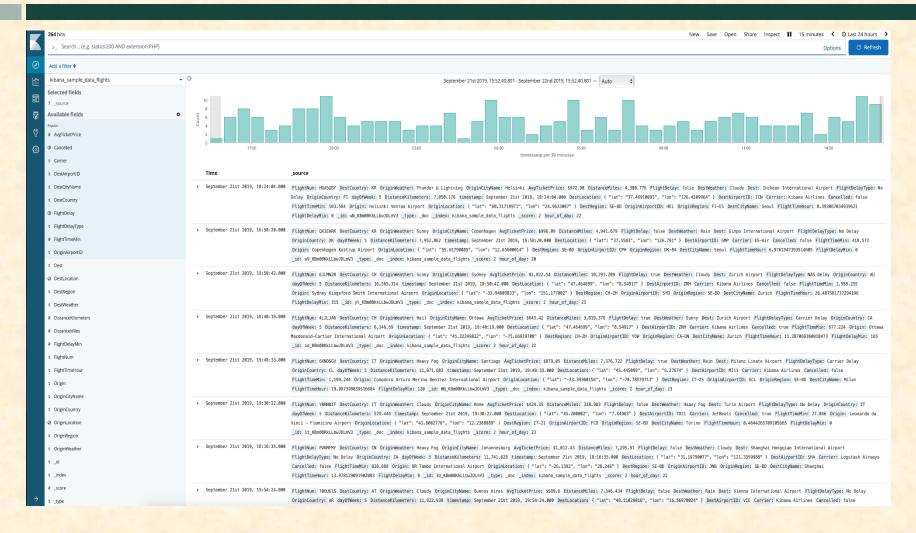Department of Computer Science and Engineering
Michigan State University

Fall 2019

Functional Specifications

- Manufacturing plant networks are targets

- Large amounts of traffic
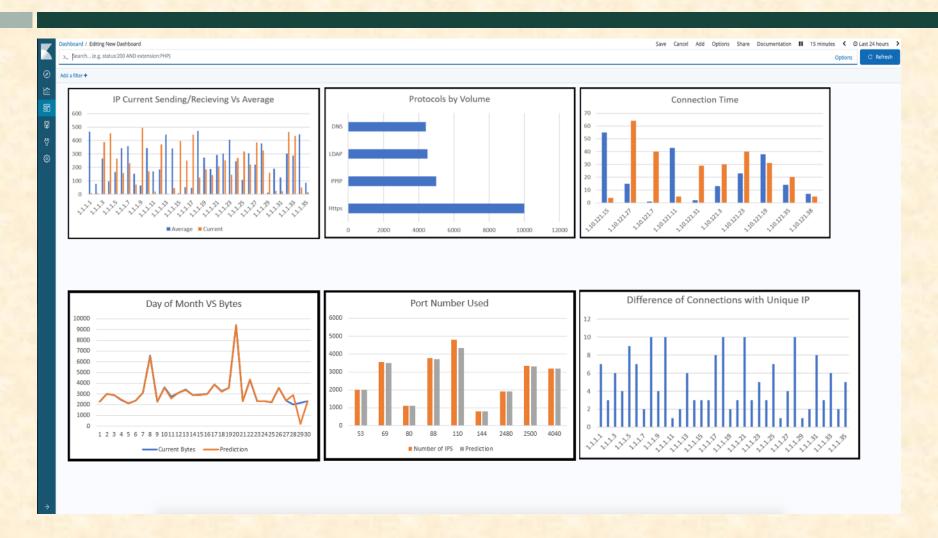
- Machine learning

- Dashboard

Design Specifications

- Machine learning
  - Search for anomalies
  - Continuous learning
- Dashboard
  - Web accessible
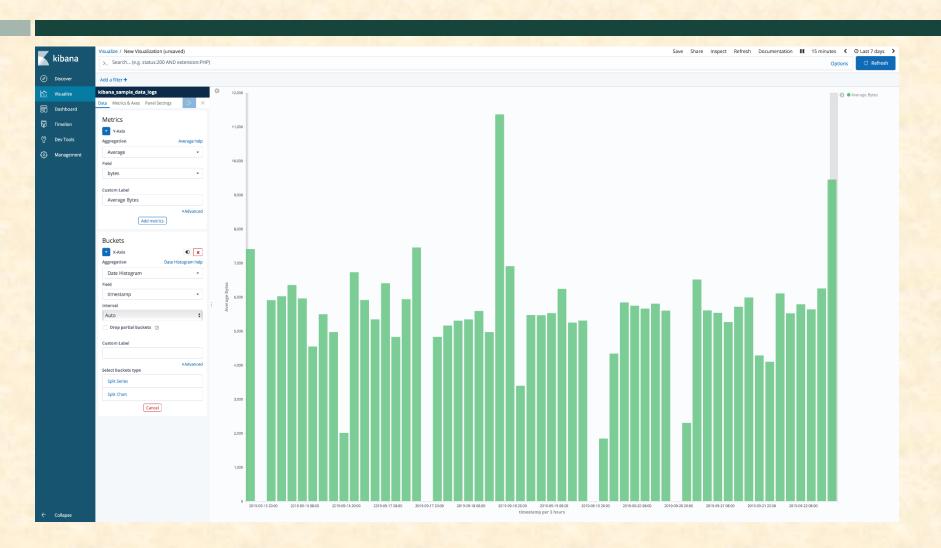 - Highlight network anomalies

Screen Mockup: Logs
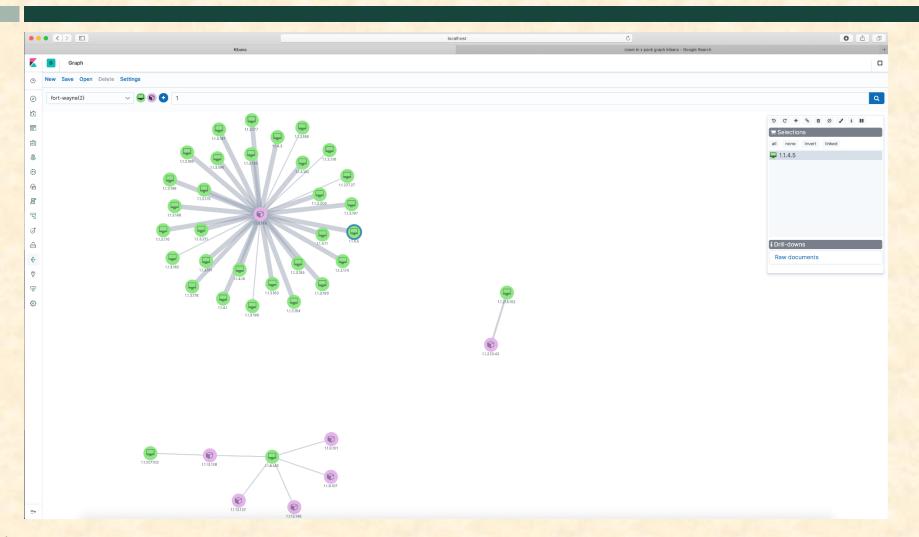
Screen Mockup: Dashboard
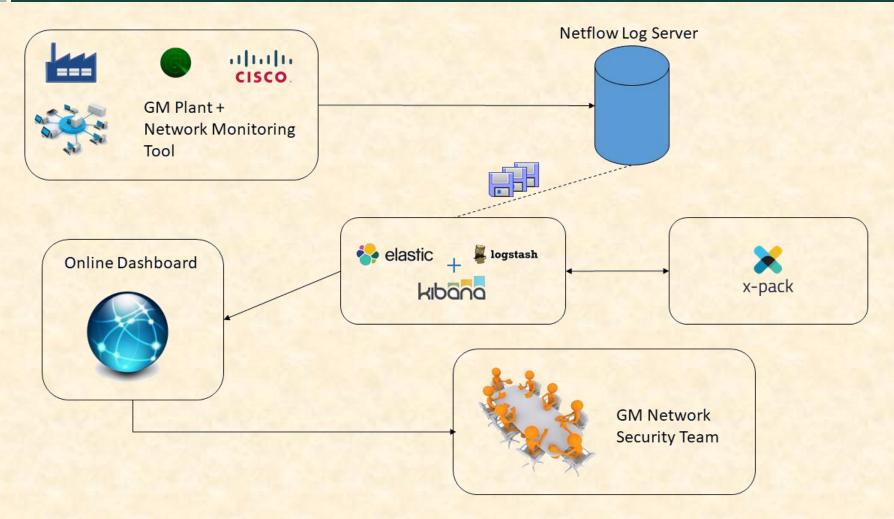
Screen Mockup: Visualize

Screen Mockup: Machine Learning

Technical Specifications

- Front end of application built using ELK stack application suite.
  - Elasticsearch (search), Logstash (data storage), and Kibana (graphs & visuals)
- Hosted locally, would be implemented in GM production server environment.
- Machine learning model built using X-pack
  - Elastic Stack extension
  - Analyzes preprocessed datasets provided by GM

System Architecture

System Components

- Hardware Platforms
  - iMac Desktop Computers
- Software Platforms / Technologies
  - ELK Stack
  - X-pack Extension
  - CSV files

Risks

- Scalability of Product
  - Intake and process data in close to real time
  - Enable processing of real time data, time-efficient analysis
- Representative Data for Machine Learning Model
  - Organized and suggestive data input to model
  - Filter data feed before model processes it
- Machine Learning Model Access
  - Project is longer than what academic free trial can provide
  - Create open free trial, transfer progress when possible
- Data Visualization
  - Determine how to portray results effectively in dashboard
  - Provide frequent communication, mock-ups to receive feedback

Questions?

Team GM Project Plan Presentation