MICHIGAN STATE UNIVERSITY

Project Plan

Force Platform Ingestion Tool

The Capstone Experience

Team Rook

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From Students…
…to Professionals

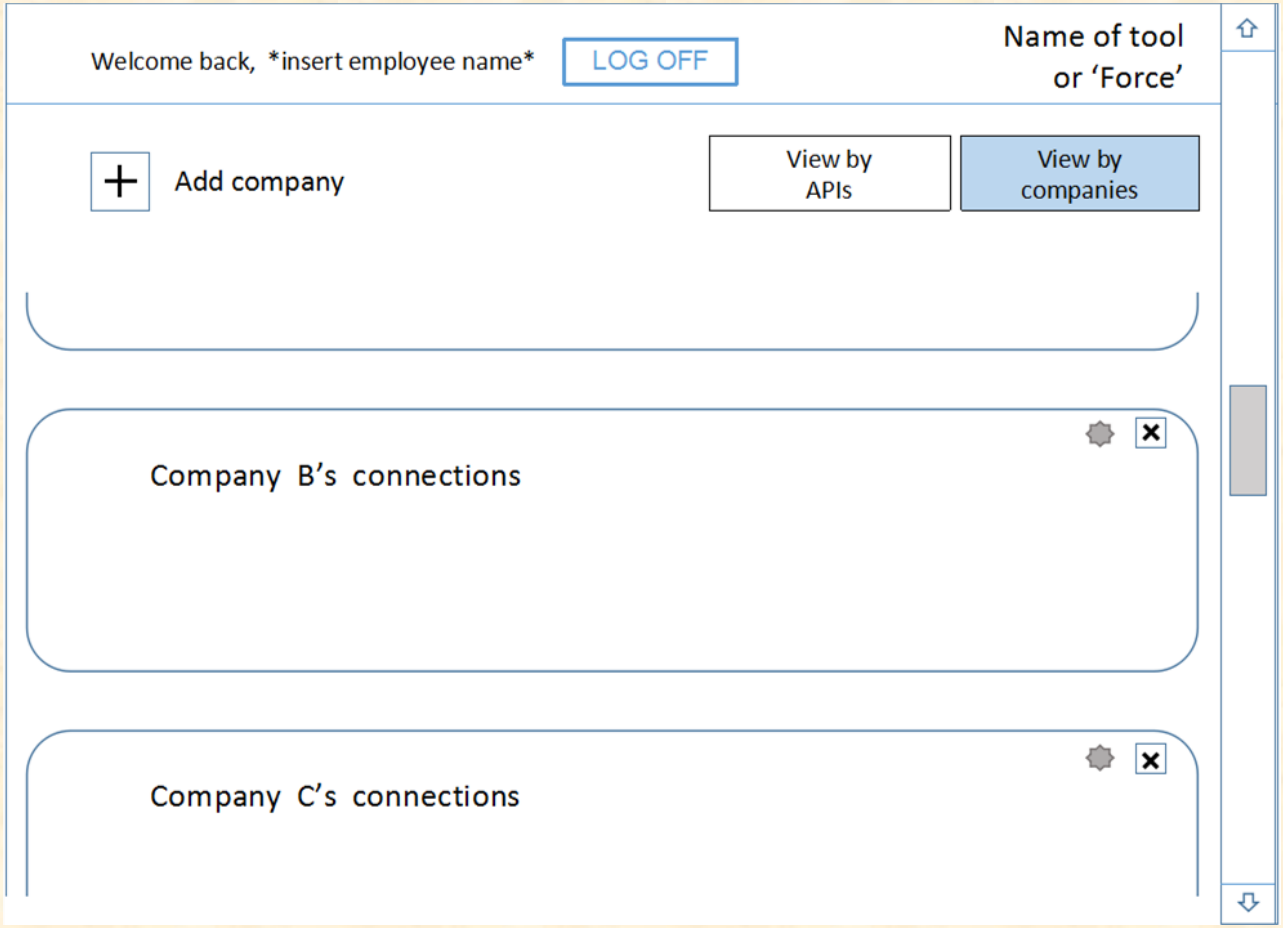
Functional Specifications

- Force platform for security alert management/analysis
- Force accepts data in one format, but clients send data in different formats
- Force PIT provides an easy way for clients to integrate existing monitoring tools with Force
- Promotes outcome-focused mission by allowing analysts to see related alerts

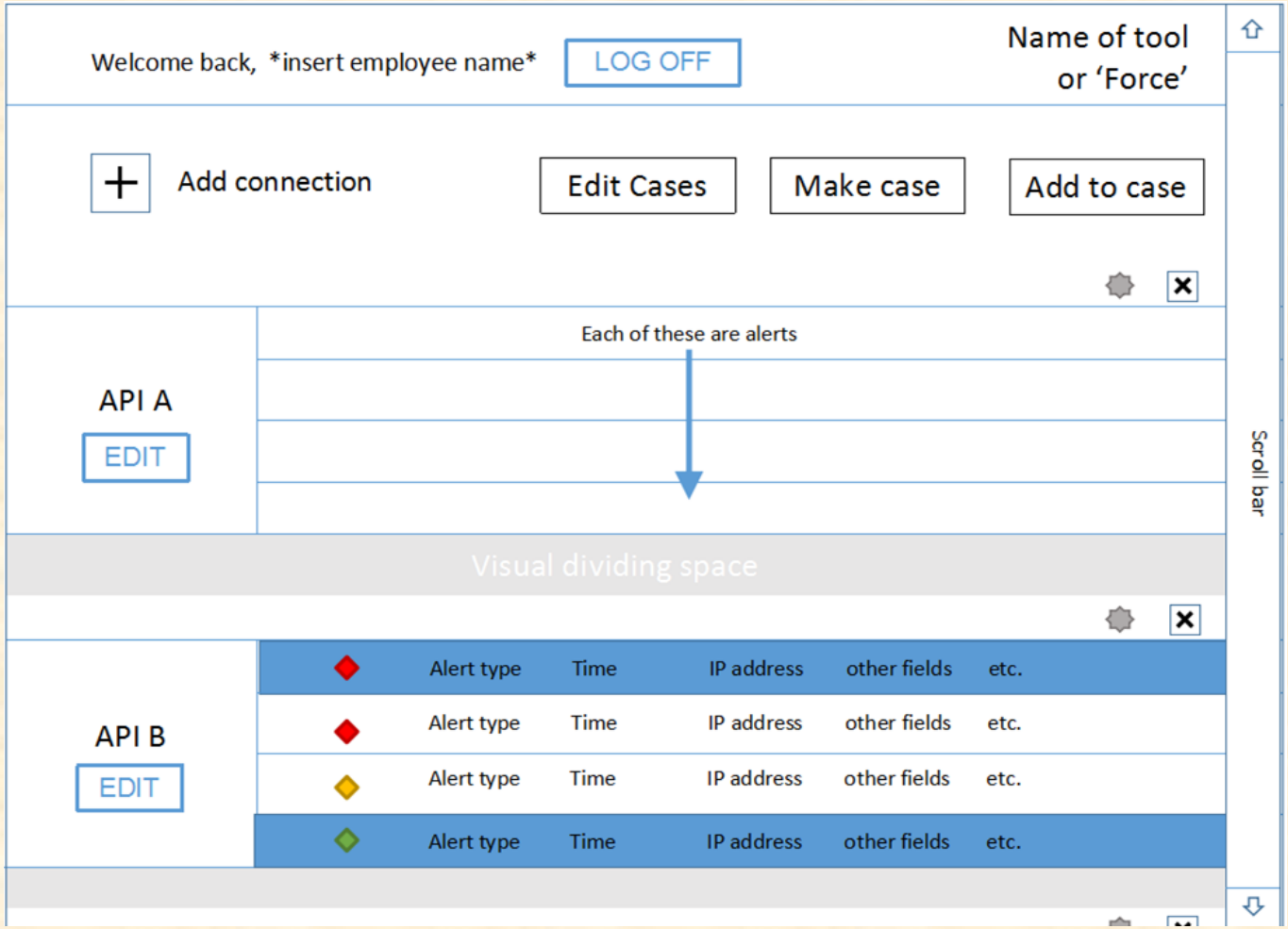
Design Specifications

- Mirrors Force's outcome-focused design
- Filters context options for viewing alerts
- Lists alerts by alert severity
- Allows grouping of alerts into suggested cases

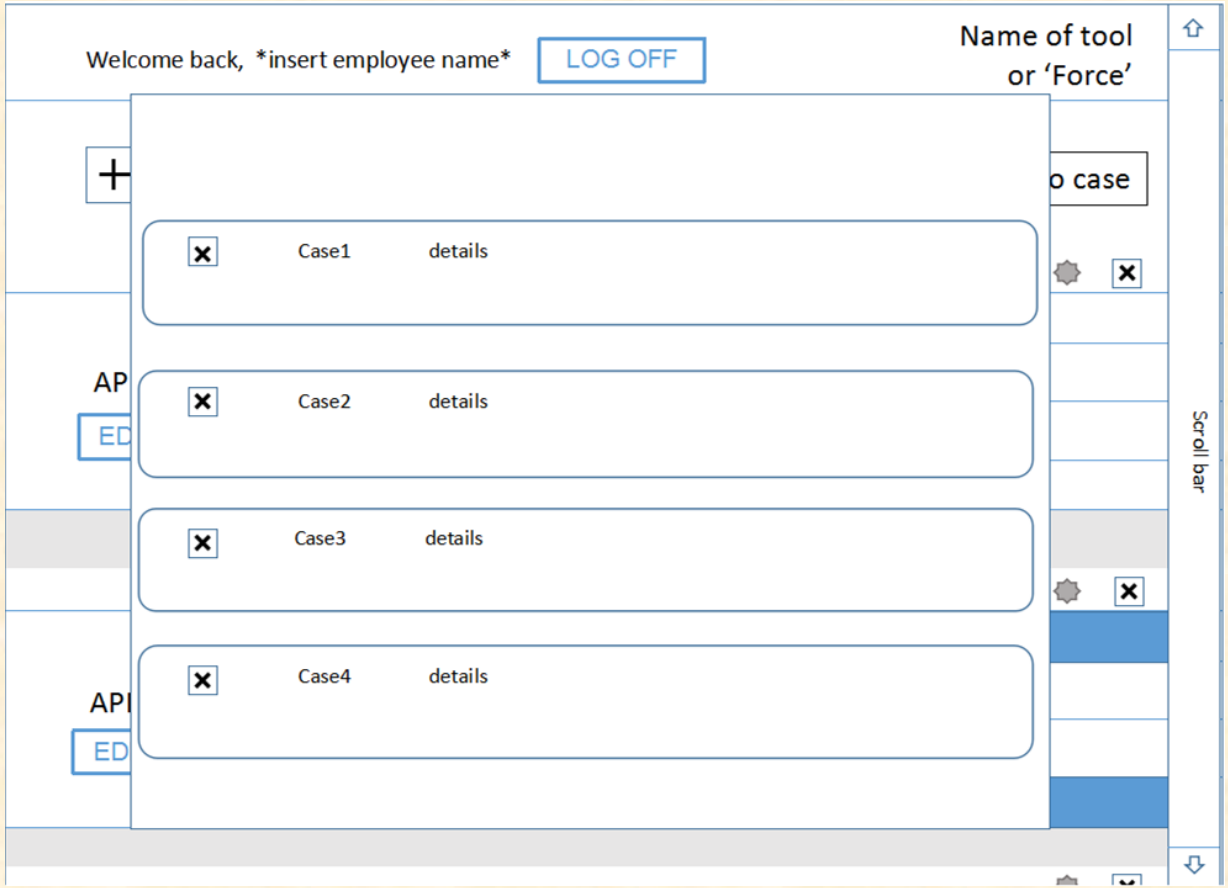
Screen Mockup: Connection Page



Screen Mockup: Alert Page



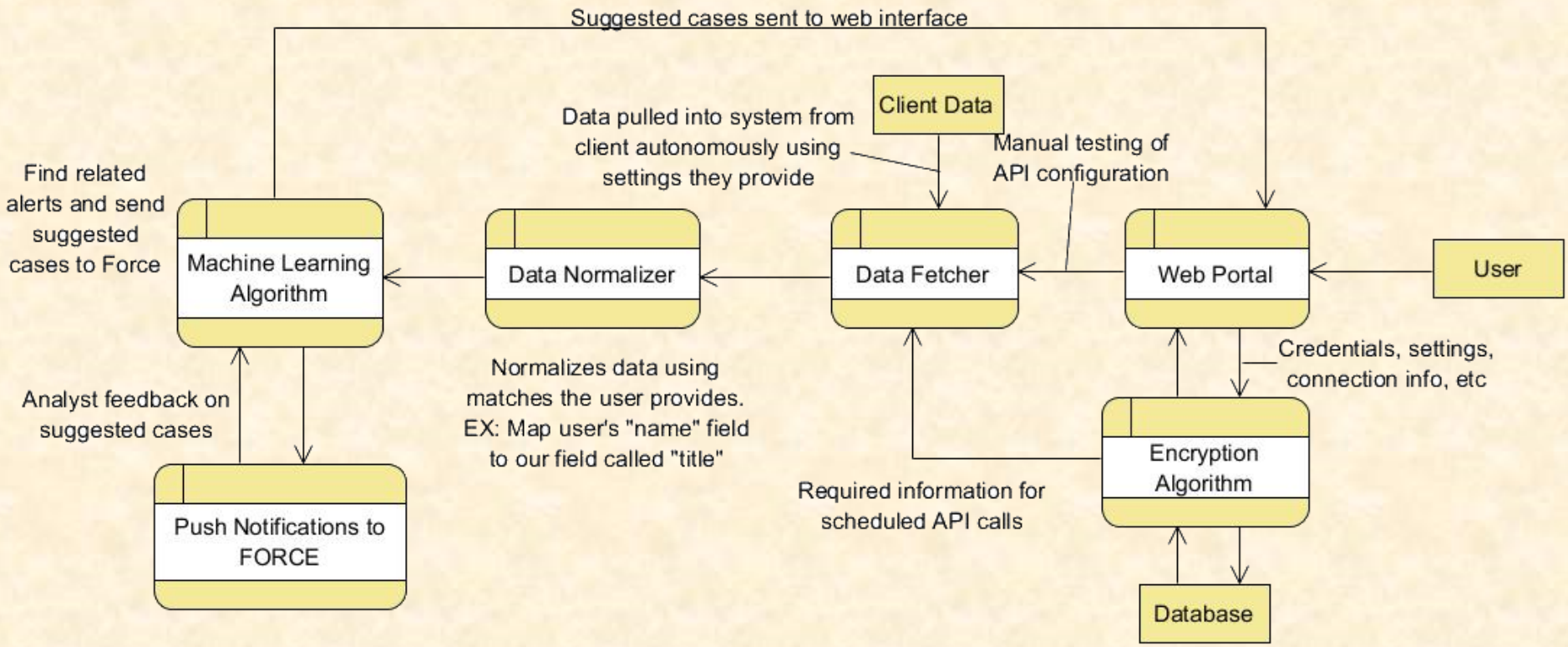
Screen Mockup: Case Page



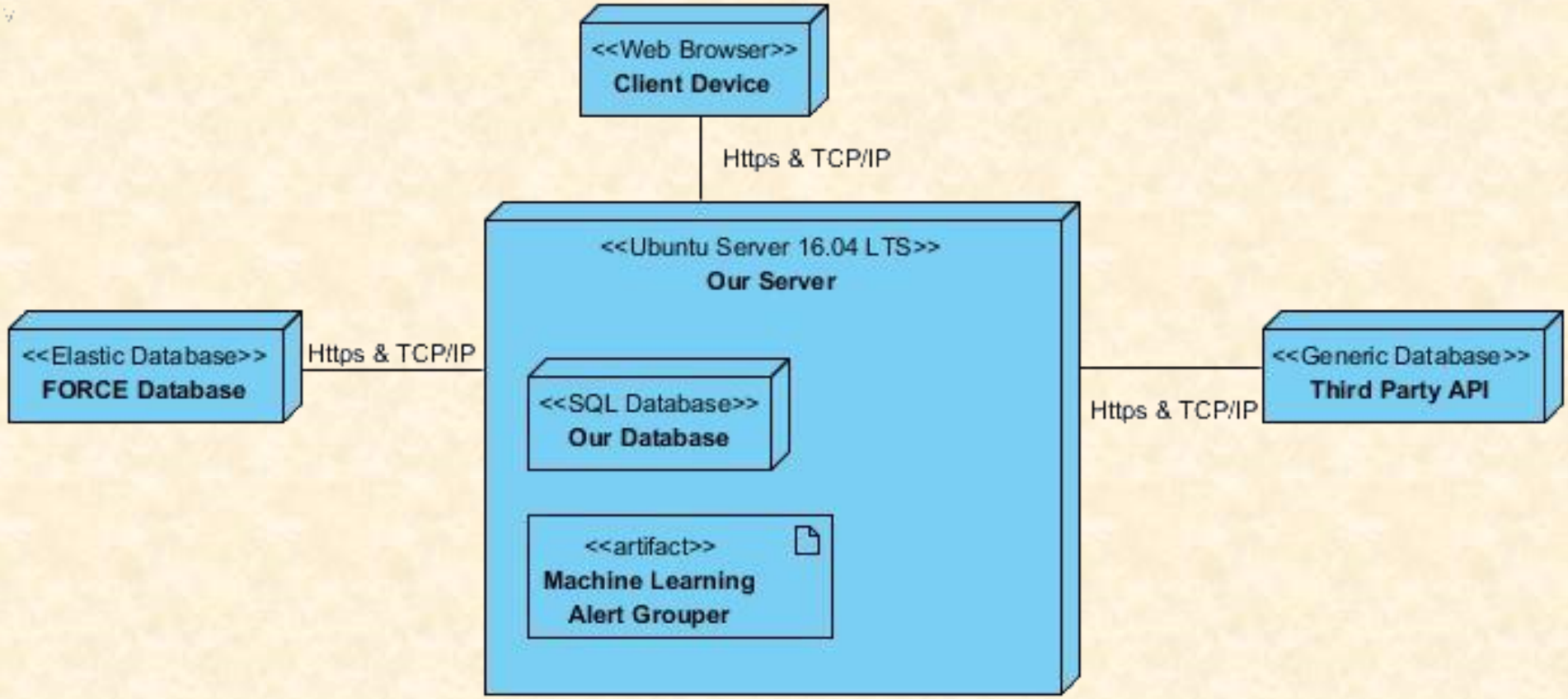
Technical Specifications

- Web Interface
  - Users configure new API connections
  - Analysts view machine learning suggested cases
- Data fetcher
  - Periodically polls each configured API connection
  - Normalizes API output and sends Force database
- Machine Learning component
  - Suggests groups of possibly related alerts
  - Analysts confirm relation to further train the model

System Architecture



System Architecture



System Components

- Hardware Platforms
  - Capstone Lab Server
  - Existing Rook Infrastructure
- Software Platforms / Technologies
  - Web application server
    - Ubuntu 16.04 LTS, nginx, uwsgi, Python (Django)
  - Data storage/retrieval
    - MySQL, Elasticsearch, DynamoDB
  - Development tools
    - Git, MyCLI, Visual Studio, PyCharm, Vim

Testing

- Compare machine learning algorithm against current statistical analysis
  - Track number of suggested cases validated by analysts
- Utilize Development/Master Branches
  - Pull requests must pass unit tests and review
- Code review with area partner prior to merge
  - Each area has two experts

Risks

- R1: Data Normalization
  - Various input data types -> Unified JSON format
  - Only certain APIs and template formats will be supported
- R2: Unsupervised Machine Learning Algorithm
  - Algorithm must improve based off of analyst feedback
  - Research unsupervised learning and utilize Rook contact
- R3: Web Portal UI
  - Front-end skills are required for a satisfactory result
  - Best practice research and client feedback

Questions?