MICHIGAN STATE UNIVERSITY

Project Plan

Identity Based Communication and Content Services

The Capstone Experience

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From Students…
…to Professionals

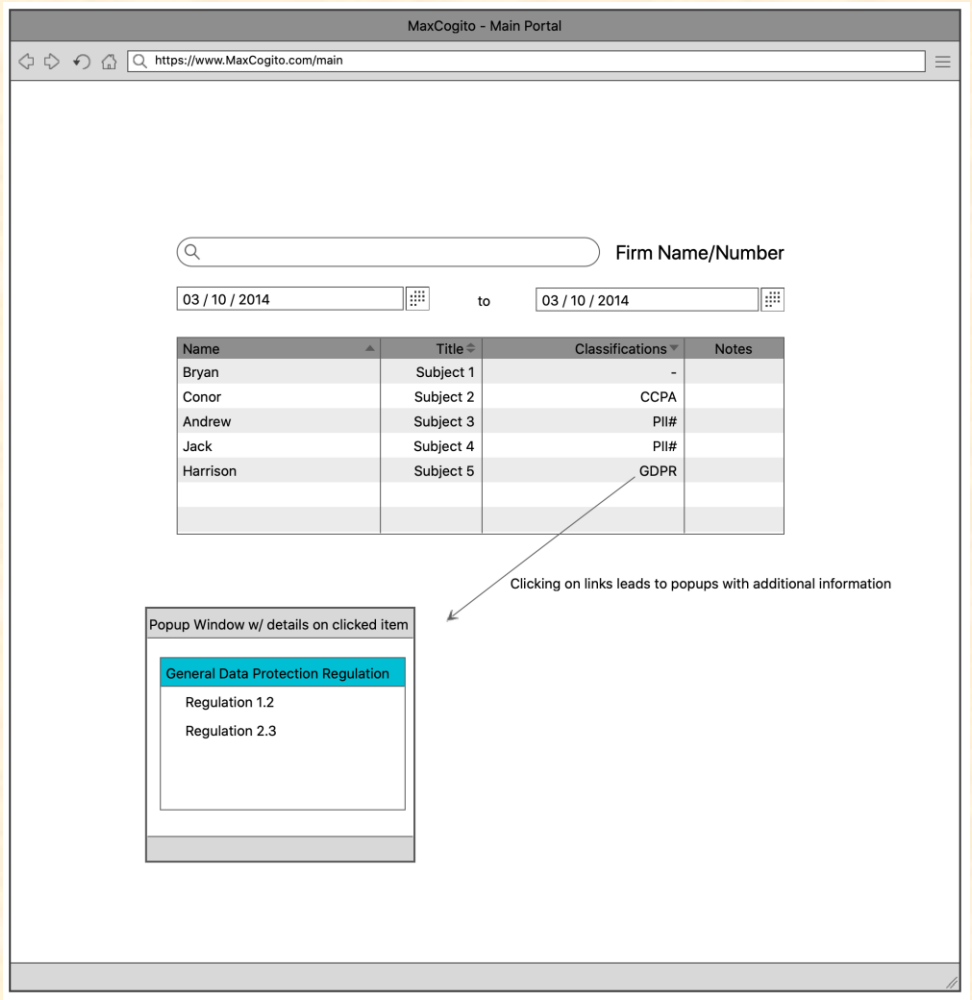
Functional Specifications

- Companies are largely unaware of the data going through their servers.
- Data regulation legislation:
  - CCPA
  - GDPR
- Our project will analyze and process e-mails:
  - Redact personally identifiable information (PII)
  - Tag messages that do not comply with firm policies
  - Allow companies to create their own custom policies

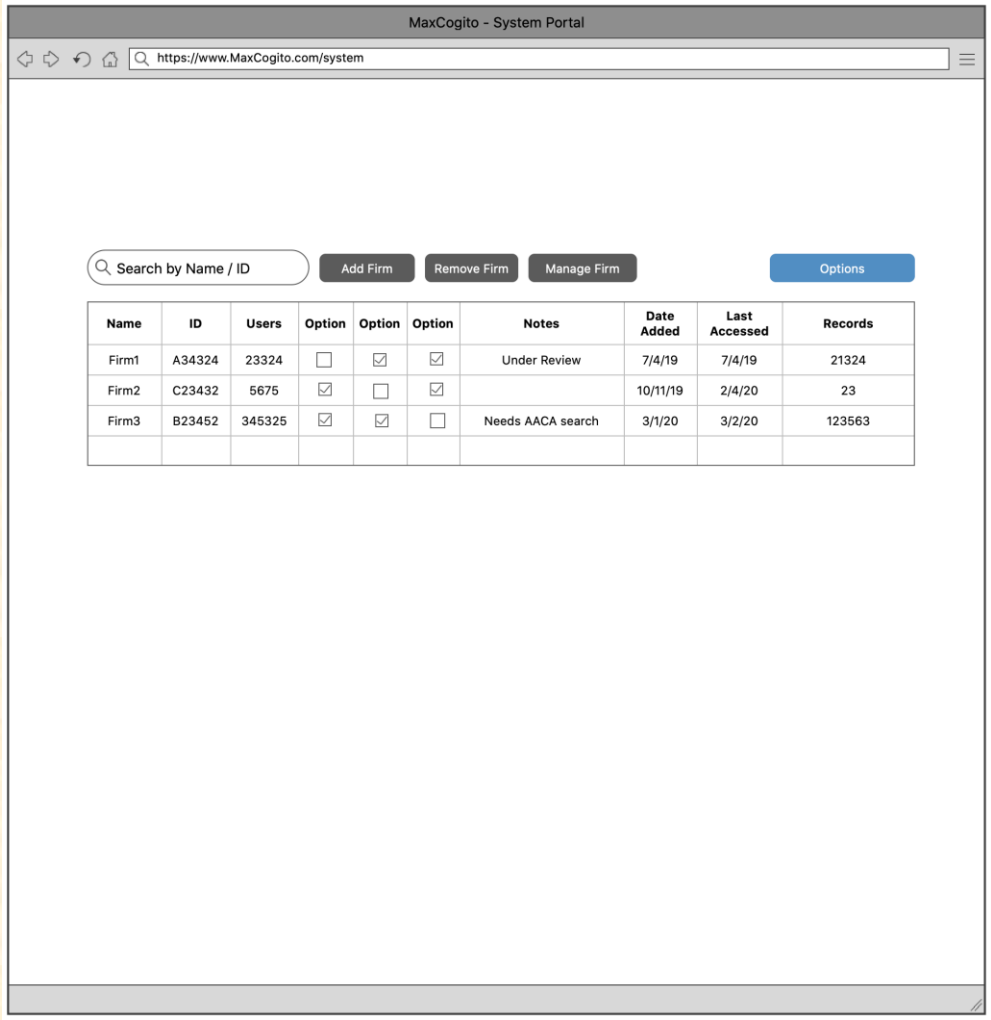
Design Specifications

- Web Portal
  - System-wide admins
    - Handle administrative tasks involving firms (e.g., create, delete, etc.)
  - Firm admins
    - Manage users within their firm
    - Assign compliance offers
  - Compliance officers
    - Manage policy domains, policies, regexes, etc. within a firm
    - Query firm data
      - ❖E.g., Show messages from last week with GDPR violations

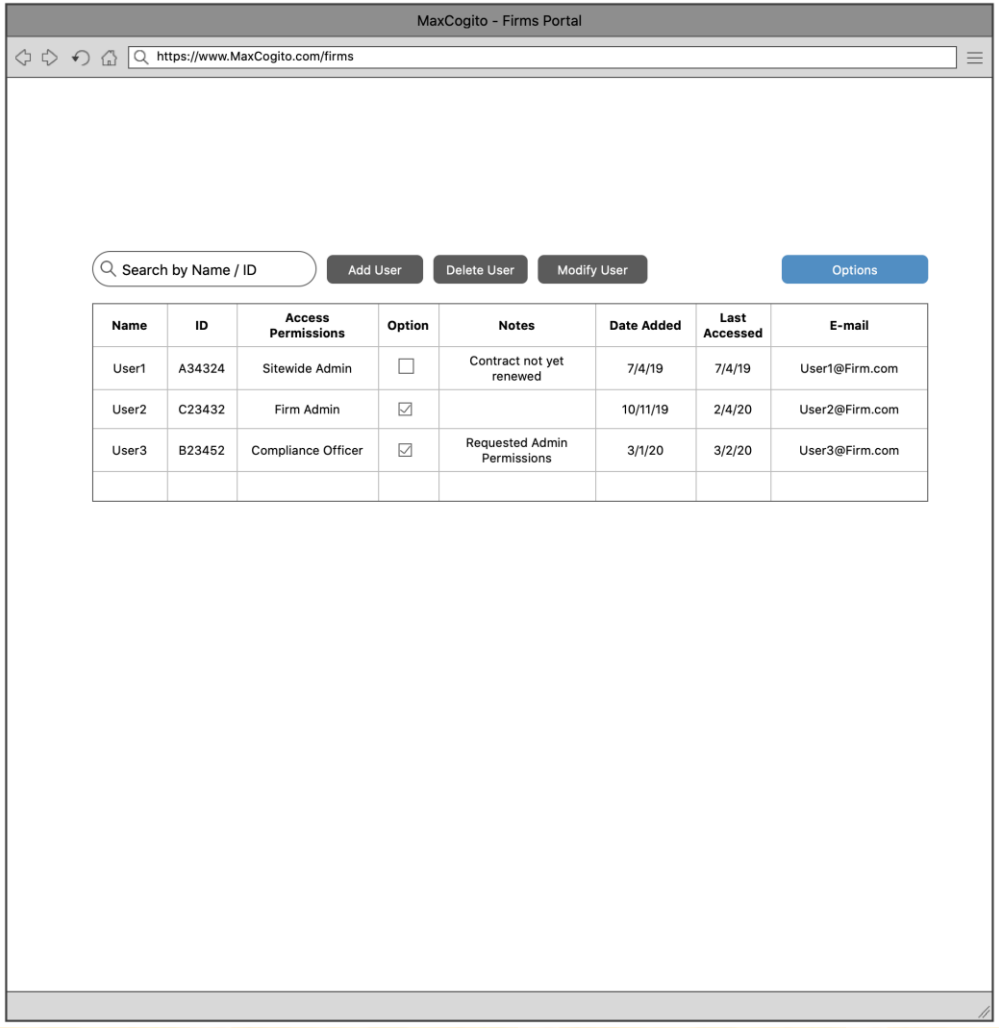
Screen Mockup: Main Portal



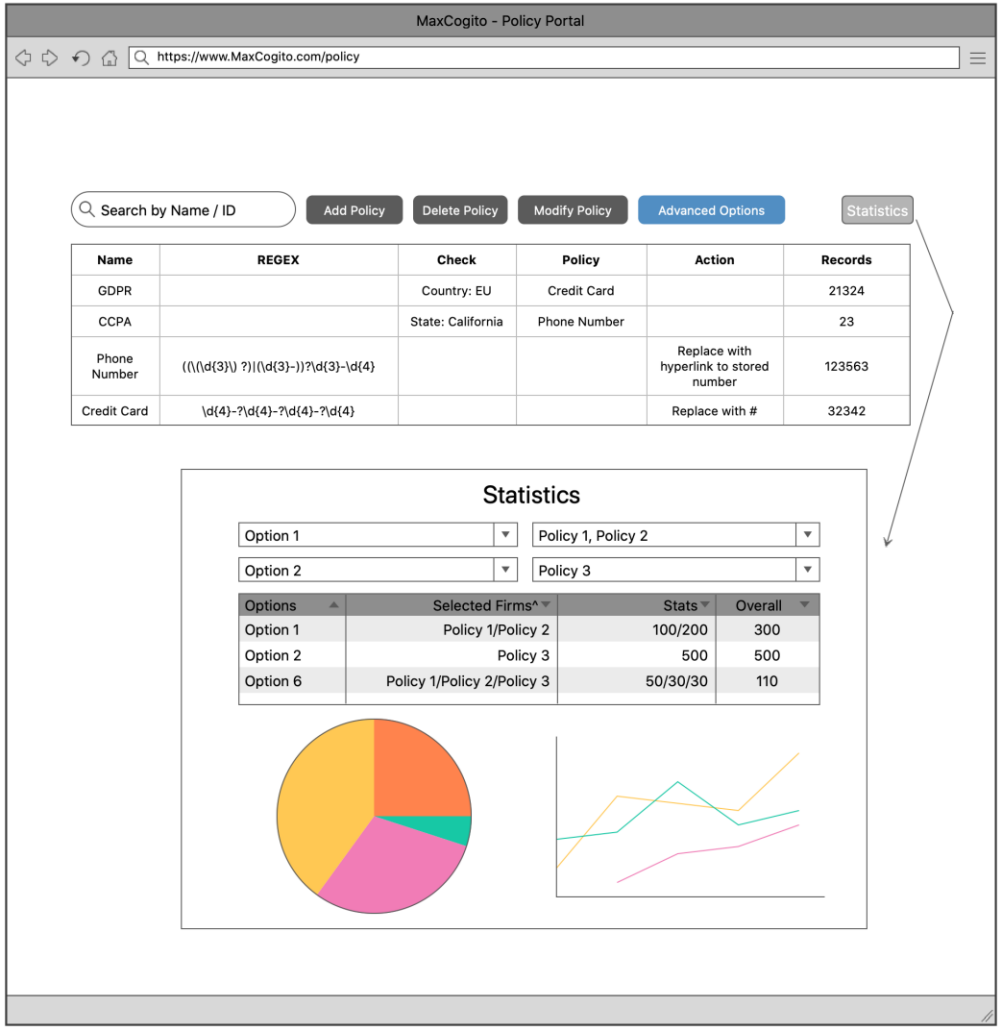
Screen Mockup: System Admin



Screen Mockup: Firm Admin



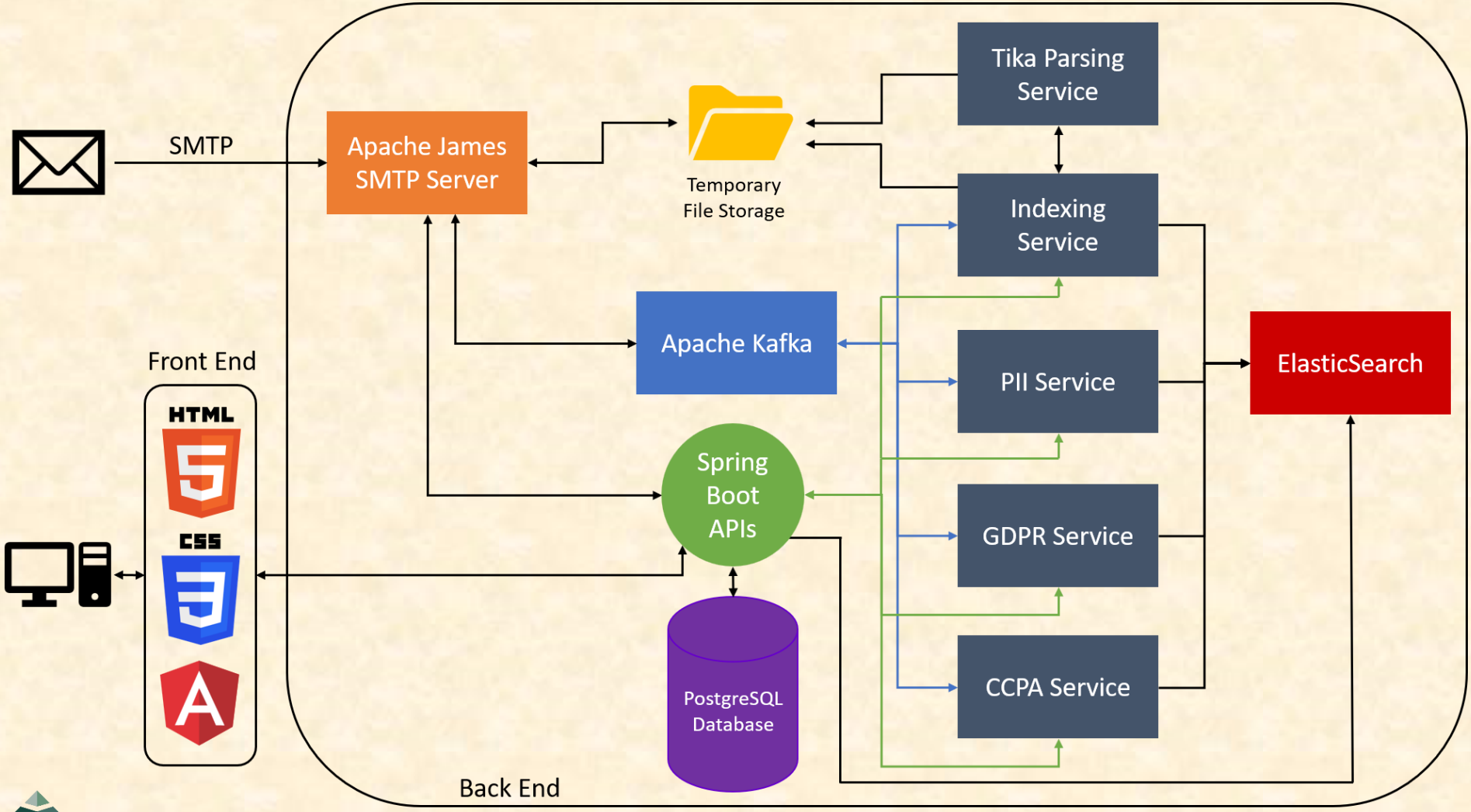
Screen Mockup: Policies



Technical Specifications

- Web Portal
  - Angular SPA
- Cloud Microservices
  - Email handling
    - Apache James
  - RESTful APIs
    - Spring Boot + PostgreSQL integration
    - Spring Cloud Gateway + Load Balancer
  - Policy processing
    - Kafka consumers
  - Indexing
    - Elasticsearch
- Security
  - JWT auth tokens with roles embedded as claims

System Architecture



System Components

- Hardware Platforms
  - Amazon Web Services (AWS) EC2 (CentOS)
- Software Platforms / Technologies
  - Front end
    - HTML5 & CSS
    - Angular
    - TypeScript
  - Back end
    - Java 8
    - Spring Boot
    - PostgreSQL
    - Apache James
    - Apache Kafka
    - Elasticsearch

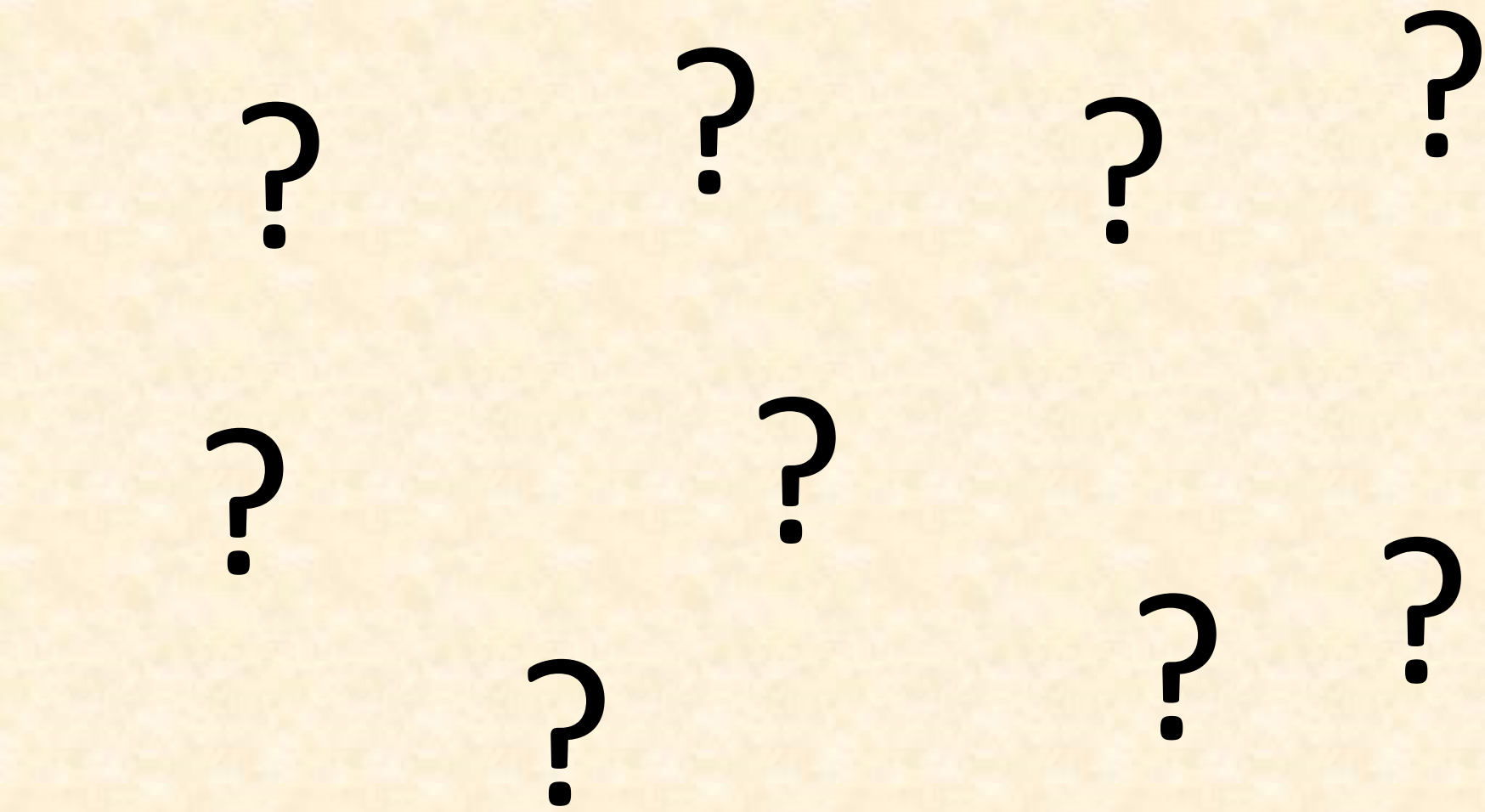
Risks

Integration of Systems
- Compatibility issues when integrating systems (developed in parallel)
- Early attempts to configure communication between our services

Deployment
- AWS deployment of microservices can be complex
- Research and early attempts to incorporate our services with the cloud

Accuracy
- Impossible to know if we will cover all expressions
- Compliance officers will be able to add their own REGEX policies

Testing
- Sufficient testing will require mocking our APIs and a large set of emails
- Use of Mockito & JUnit, production of email generator, and supplementation of personal emails

Security
- Ensure that API end points are secure
- Make sure administration roles are configured properly

Questions?