

**MICHIGAN STATE**  
**UNIVERSITY**

# Project Plan

Identity Based Communication and Content  
Services

The Capstone Experience

Team MaxCogito

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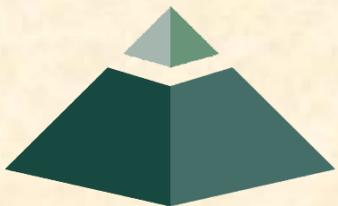
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*From Students...  
...to Professionals*

# 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

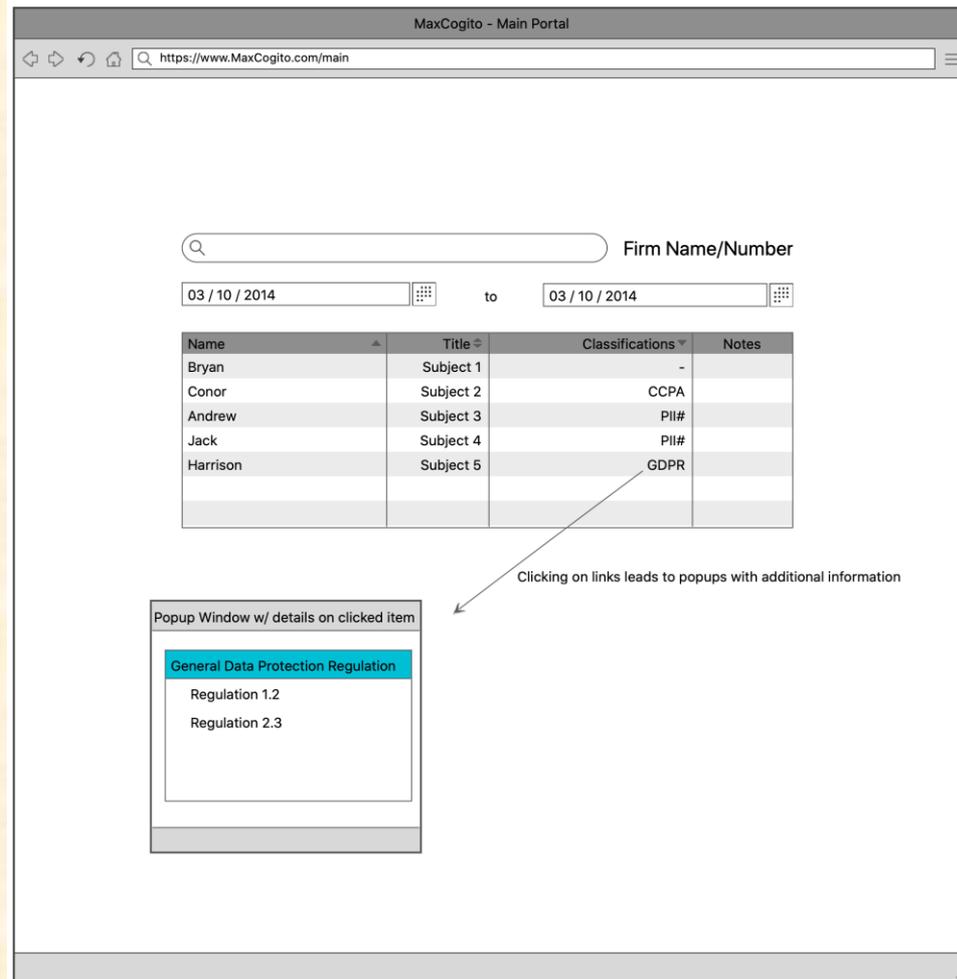


# Design Specifications

- **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

MaxCogito - System Portal

Search by Name / ID Add Firm Remove Firm Manage Firm Options

Name	ID	Users	Option	Option	Option	Notes	Date Added	Last Accessed	Records
Firm1	A34324	23324	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Under Review	7/4/19	7/4/19	21324
Firm2	C23432	5675	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		10/11/19	2/4/20	23
Firm3	B23452	345325	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Needs AACA search	3/1/20	3/2/20	123563

# Screen Mockup: Firm Admin

The screenshot displays the 'MaxCogito - Firms Portal' interface. At the top, the browser address bar shows 'https://www.MaxCogito.com/firms'. Below the browser, there is a search bar labeled 'Search by Name / ID' and three buttons: 'Add User', 'Delete User', and 'Modify User'. To the right of these buttons is a blue 'Options' button. Below the buttons is a table with the following data:

Name	ID	Access Permissions	Option	Notes	Date Added	Last Accessed	E-mail
User1	A34324	Sitewide Admin	<input type="checkbox"/>	Contract not yet renewed	7/4/19	7/4/19	User1@Firm.com
User2	C23432	Firm Admin	<input checked="" type="checkbox"/>		10/11/19	2/4/20	User2@Firm.com
User3	B23452	Compliance Officer	<input checked="" type="checkbox"/>	Requested Admin Permissions	3/1/20	3/2/20	User3@Firm.com

# Screen Mockup: Policies

MaxCogito - Policy Portal

https://www.MaxCogito.com/policy

Search by Name / ID Add Policy Delete Policy Modify Policy Advanced Options Statistics

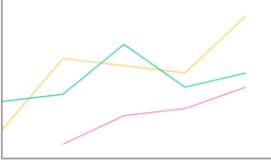
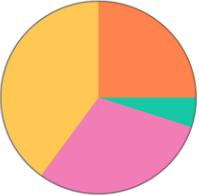
Name	REGEX	Check	Policy	Action	Records
GDPR		Country: EU	Credit Card		21324
CCPA		State: California	Phone Number		23
Phone Number	((\d{3}) ?)(\d{3}-)?\d{3}-\d{4}			Replace with hyperlink to stored number	123563
Credit Card	\d{4}-?\d{4}-?\d{4}-?\d{4}			Replace with #	32342

**Statistics**

Option 1 Policy 1, Policy 2

Option 2 Policy 3

Options	Selected Firms^	Stats	Overall
Option 1	Policy 1/Policy 2	100/200	300
Option 2	Policy 3	500	500
Option 6	Policy 1/Policy 2/Policy 3	50/30/30	110

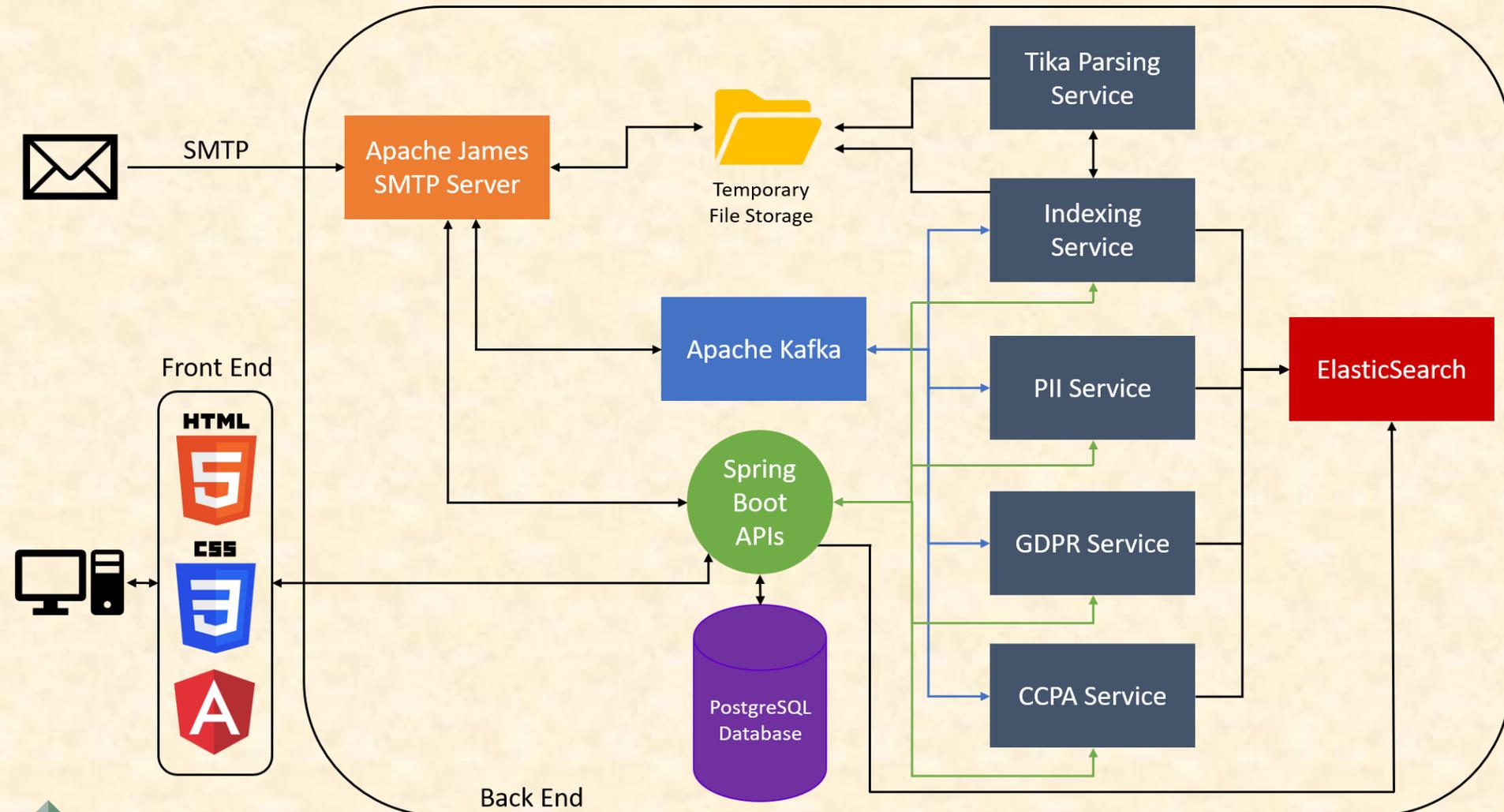


# Technical Specifications

- 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?

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