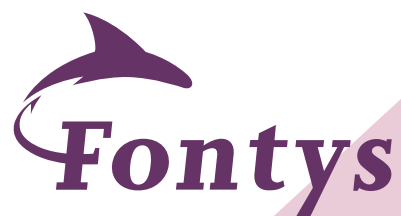

Challenge Description

Guide for this Collection

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14-12-2023

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Challenge Description

Guide for this Collection

The Challenge

The challenge is to create a smart office system for ASML's new buildings that enhances the control and accessibility of lighting, blinds, and climate systems. The goal is to develop an application that is intuitive, convenient, and quickly accessible for ASML employees without the need for a mobile app or excessive login screens. Key points to consider include:

1. **Ease-of-access:** The system should provide quick and easy access to current settings and controls for ASML employees. This should be achieved without the need for a mobile app and unnecessary login screens.
2. **Security:** Access to the system should be restricted to ASML employees present in the building, and controls should be limited to their respective work areas.
3. **Environmental factors:** The system should be capable of considering environmental factors, such as adjusting lighting based on movement and lowering blinds in response to sunlight.

The project encourages creativity, allowing for various solutions to enhance the smart office experience while emphasizing the importance of meeting the basic functionalities of the challenge.

Introduction

Our team has chosen to develop a smart office solution for ASML, focusing on three main components: a web application, a mobile app, and a voice control module. These elements will be connected through a central API, deployed on a Kubernetes cluster and organized as microservices. My role will primarily involve working on the Kubernetes setup, microservices architecture, and the API.

Why We Chose This Approach

The decision to adopt a web app, mobile app, and voice control, all linked through an API, reflects a practical approach to accommodate different user preferences and scenarios. Here's the straightforward reasoning:

1. **Pragmatic Accessibility:** Users have different preferences and scenarios. A web app caters to those on desktops, the mobile app is for those on the move, and the voice control offers a hands-free alternative. This setup ensures users can interact conveniently based on their context.

2. **Efficient Integration:** By centralizing functionalities through a common API, we ensure consistency across platforms. This simplifies development, maintenance, and real-time synchronization of user settings.
3. **Scalability and Maintenance Ease:** Microservices in a Kubernetes cluster provide scalability and easy maintenance. Each microservice operates independently, allowing for agile development, deployment, and updates as needed.
4. **Professional Development Focus:** Choosing microservices and Kubernetes aligns with a goal to enhance our skills. This project serves as an opportunity to dive deep into these technologies, gaining practical experience and knowledge for future endeavours.

In essence, our approach is practical—tailored to user needs, efficient in implementation, and aligned with ongoing professional development goals. We aim to deliver a functional, user-friendly smart office solution while sharpening our skills in modern technology practices.

Sprint 1

What I have done this sprint

- Researched viable technologies

How I approached it

The stakeholder interview allowed me to gather valuable insights, and I conducted thorough research on potential technologies to ensure viability.

This is the result of this sprint:

I have gained insights from stakeholders, and determined which technologies are viable for the project.

How I validated the result

The results were validated through documentation of detailed analysis of viable technologies.

Consulted experts? What was their feedback?

No.

What I have learned and what I would do better next time

I have learned the importance of a systematic approach to project initiation. In the future, I would enhance my interviewing skills to extract even more valuable insights from stakeholders.

What I will do in the next sprint

In the next sprint, I will proceed with the following tasks:

- Develop a project plan based on the gathered requirements
- Begin prototyping and testing of selected technologies
- Schedule additional stakeholder meetings for ongoing feedback and validation

Sprint 2**What I have done this sprint**

- Developed a comprehensive project plan
- Initiated work on the architecture diagram
- Created a mock mobile application using .NET MAUI

How I approached it

I approached this sprint with a focus on translating the identified project requirements into a concrete plan. I began drafting the architecture diagram to visualize the system structure and concurrently started working on a mock mobile application using .NET MAUI.

This is the result of this sprint:

The project now has a detailed plan outlining key milestones, an architecture diagram in progress, and a prototype of the mobile application built on .NET MAUI.

How I validated the result

Validation was conducted through regular reviews of the project plan, feedback from team members, and testing of the initial mobile application prototype.

Consulted experts? What was their feedback?

During this sprint, I collaborated with my peers at work to validate the feasibility of the architecture and received valuable feedback on the initial mobile application prototype.

What I have learned and what I would do better next time

I have gained insights into the importance of collaboration with team members and experts during the planning and prototyping phases. In the future, I would enhance my skills in creating more detailed architecture diagrams.

What I will do in the next sprint

In the upcoming sprint, I will focus on the following tasks:

- Complete the architecture diagram
- Refine the project plan based on feedback
- Iterate on the mobile application prototype with additional features and improvements

Sprint 3**What I have done this sprint**

- Designed the architecture for the features being implemented
- Set up the deployment environment, including Kubernetes
- Configured the domain and integrated Cloudflare tunnel for secure access
- Implemented Continuous Deployment (CD) using ArgoCD
- Initiated work on Continuous Integration (CI) with Jenkins
- Ongoing API implementation
- Established and configured an MQTT broker

How I approached it

I approached this sprint by focusing on the infrastructure and deployment aspects. I carefully designed the architecture to align with the project's goals and initiated the implementation of key features. Additionally, I set up a robust deployment environment with Kubernetes, configured the domain for accessibility, and integrated CD and CI tools for efficient development and deployment workflows.

This is the result of this sprint:

The project now has a well-defined architecture, a set up deployment environment with Kubernetes and CD using ArgoCD. CI is in progress with Jenkins, and key infrastructure components like the MQTT broker are established.

How I validated the result

Validation was conducted through thorough testing of the deployment environment, ensuring proper integration with Kubernetes, ArgoCD, and other tools. Initial feedback from the ongoing API implementation and MQTT broker setup also contributed to validation.

Consulted peers at work? What was their feedback?

During this sprint, I collaborated closely with peers at work to ensure the robustness of the architecture and deployment environment. Their feedback was instrumental in refining configurations and ensuring best practices.

What I have learned and what I would do better next time

I have learned the importance of careful planning and collaboration during infrastructure setup. In the future, I would streamline the CI setup process for more efficiency.

What I will do in the next sprint

In the upcoming sprint, I will focus on the following tasks:

- Complete the Continuous Integration setup with Jenkins
- Continue API implementation
- Conduct additional testing and refinement of the deployment environment and architecture