deti universidade de aveiro
departamento de eletrónica,
telecomunicações e informática

TQS: Product specification report

André Miguel Antunes Cardoso [108269], Tiago Alexandre Abreu Figueiredo 107263], Alexandre Pedro Ribeiro [108122]
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1   Introduction

1.1   Overview of the project

QuickServe is an innovative management platform designed to revolutionize the fast-food industry by providing a comprehensive solution for streamlining operations, enhancing customer experience, and empowering kitchen staff with real-time insights. The platform is tailored to meet the unique needs of system managers, customers, and kitchen employees, ensuring a seamless and efficient dining experience.

1.2   Limitations

Ideally the system would provide both the visualization and the algorithms necessary to optimize the workflows of the employees. While in a first instance this won't be available, we plan to encompass this area in a following iteration

2   Product concept and requirements

2.1   Vision statement

QuickServe envisions a future where the fast-food industry is transformed by a management platform that not only streamlines operations but also elevates the customer experience and empowers kitchen staff with real-time insights. Our vision is to create a seamless and efficient dining experience that is tailored to the unique needs of system managers, customers, and kitchen employees. By providing a

comprehensive solution that meets these needs, QuickServe aims to revolutionize the way fast-food chains operate, ensuring that every aspect of the dining experience is optimized for success.

2.2   Personas and scenarios

Alex Smith, the System Manager, brings a wealth of experience in IT and operations management to the role. His background equips him with the skills to tackle the challenges of inefficient order management, difficulty in tracking Key Performance Indicators (KPIs), and the complexities of optimizing work chains. Alex's goals are centered around streamlining operations, reducing costs, and enhancing customer satisfaction through the implementation of efficient management tools. His objectives are to leverage advanced management systems to improve workflows and ensure the smooth running of the fast-food chain.

Alex Smith, the System Manager, is tasked with optimizing the daily operations of the fast-food chain. On a typical day, Alex starts by reviewing the previous day's performance metrics to identify any bottlenecks or inefficiencies. He notices that the order management system is struggling to handle the volume of orders, leading to delays and customer dissatisfaction. Alex decides to implement a new order management tool that promises to streamline the process. He spends the morning setting up the new system, configuring it to handle the chain's specific needs. By the end of the day, the new system is fully operational, and Alex observes a significant reduction in order processing times. This improvement not only enhances customer satisfaction but also allows for better tracking of KPIs, aligning with his goal of streamlining operations and reducing costs.

Emily Doe, the Customer, represents the busy professional seeking a quick and convenient dining experience. Emily's needs are driven by her desire for quick service, variety in menu options, and a seamless ordering process. Her goals and objectives are focused on enjoying a fast, efficient, and enjoyable dining experience, with an emphasis on avoiding waiting in lines.

Emily Doe, a busy professional, is looking for a quick and convenient dining experience. She visits the fast-food chain's website to place an order for her favorite meal. The website's user interface is intuitive, allowing her to easily select her meal and add it to her cart. Emily chooses a delivery option to save time and receives a confirmation email with her order details and an estimated delivery time. As she waits for her order, she appreciates the variety of menu options available, ensuring she can enjoy different meals on different days. Upon receiving her order, Emily finds it to be exactly as she ordered, with the meal arriving on time. This seamless experience meets her needs for quick service and variety, reinforcing her positive perception of the fast-food chain.

John Baker, the Kitchen Employee, is a dedicated worker with a proven track record in fast-food kitchens. John's role involves preparing food orders efficiently and maintaining cleanliness. His

challenges include managing multiple orders simultaneously and keeping the workspace organized amidst the fast pace. John's goals and objectives are aimed at improving work efficiency, reducing errors, and enhancing the overall dining experience by ensuring cleanliness and organization in the kitchen.

John Baker, a kitchen employee, is preparing for a busy lunch rush. He uses the new order management system to efficiently manage multiple orders simultaneously. The system's clear display of orders and their status helps John keep track of what needs to be prepared and when. Despite the fast pace, John ensures that each order is prepared accurately and on time. He also takes a moment to organize the workspace, making it easier for him and his colleagues to work efficiently. By the end of the rush, John feels satisfied with his performance, having contributed to a smooth dining experience for the customers. This scenario aligns with his goals of improving work efficiency and reducing errors, enhancing the overall dining experience.

2.3 Project epics and priorities

For our implementation plan, we present the following epics and timelines:

Order Management System:
- **Objective**: Enhance the system for seamless order placement and real-time tracking.
- **Iteration 1**: Develop a basic order management system that allows customers to place orders and receive basic status updates.
- **Iteration 2**: Implement real-time tracking for orders, enabling customers to know when their food is ready.
- **Iteration 3**: Add a dashboard for system managers to view all orders and manage staff more effectively.

Work Chain Optimization:
- **Objective:** Enable dynamic adjustment of work chains based on real-time data.
- **Iteration 1**: Introduce basic work chain management features, allowing system managers to manually adjust work chains.
- **Iteration 2:** Implement a system that provides real-time data on customer demand and operational efficiency.
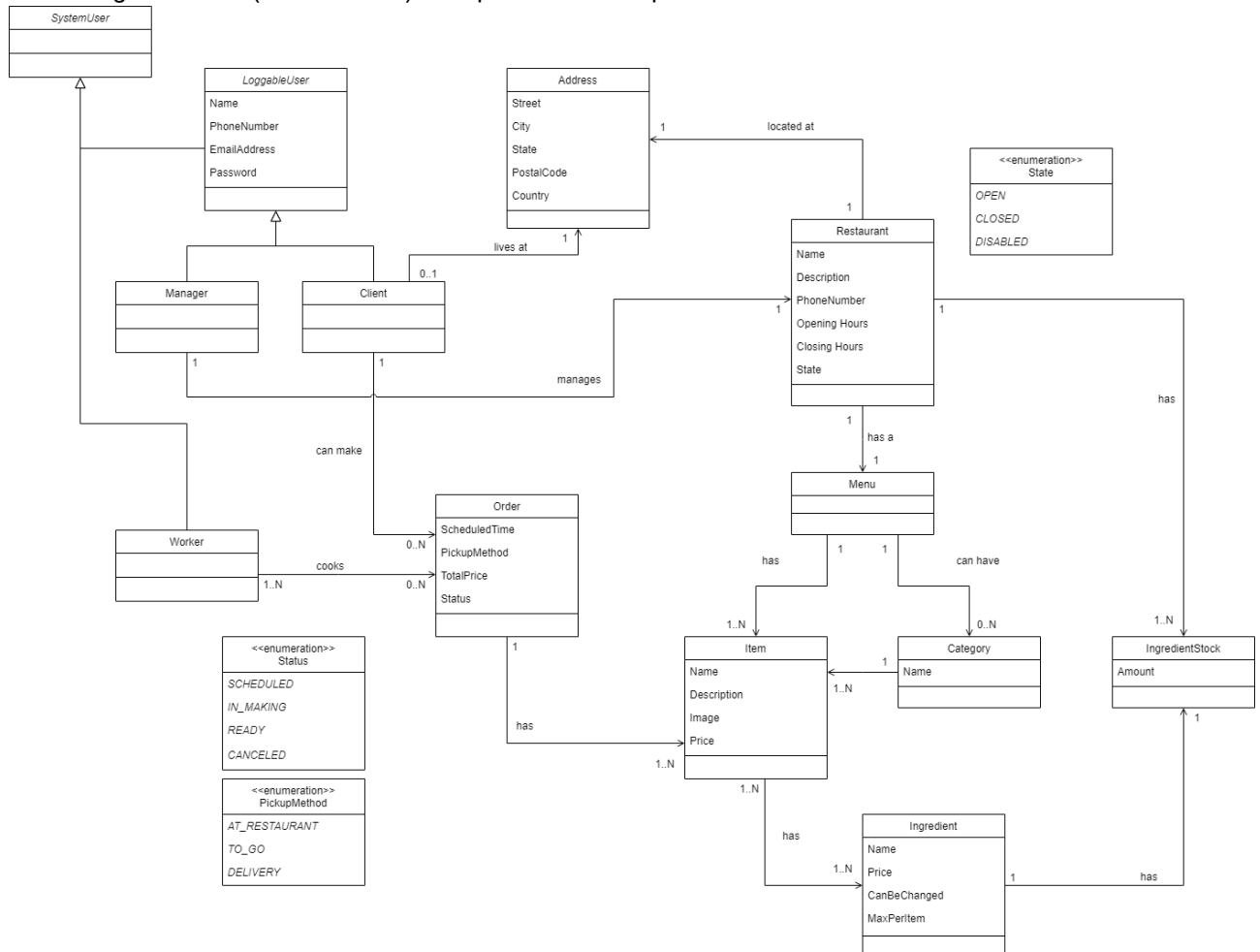
KPI Tracking and Reporting:
- **Objective**: Provide detailed analytics and reporting tools for system managers.
- **Iteration 1**: Set up basic KPI tracking for sales and customer satisfaction.
- **Iteration 2:** Develop detailed reporting tools that allow system managers to analyze operational efficiency.
- **Iteration 3:** Integrate the reporting tools with the order management system to provide a comprehensive view of the business's performance.

3   Domain model

<which information concepts will be managed in this domain? How are they related?>
<use a logical model (UML classes) to explain the concepts of the domain and their attributes>

4   Architecture notebook

4.1   Key requirements and constrains

There are a few key requirements that have a significant bearing on the architecture. They are:

- Efficient handling of usage spikes throughout the day, during lunch and supper.
- The service will be available on various platforms, primarily web, mobile and on big screens.
- The service should handle requests made from kiosks and registers.
- The process of cancelling orders from clients should quickly appear on the chef's screen.
- Menu items might become temporarily unavailable, due to missing ingredients.
- The System Manager must be able to import menus.

4.2 Architecture view

→ Discuss architecture planned for the software solution.

→ include a diagram (a package or block diagram)

→ explain how the identified modules will interact. Use sequence diagrams to clarify the interactions along time, when needed

→ discuss more advanced app design issues: integration with Internet-based external services, data synchronization strategy, distributed workflows, push notifications mechanism, distribution of updates to distributed devices, etc.**>**

Notas:

- Desenvolver este modelo, de forma a demonstrar as diferentes componentes dentro do backend, ou seja, controllers.
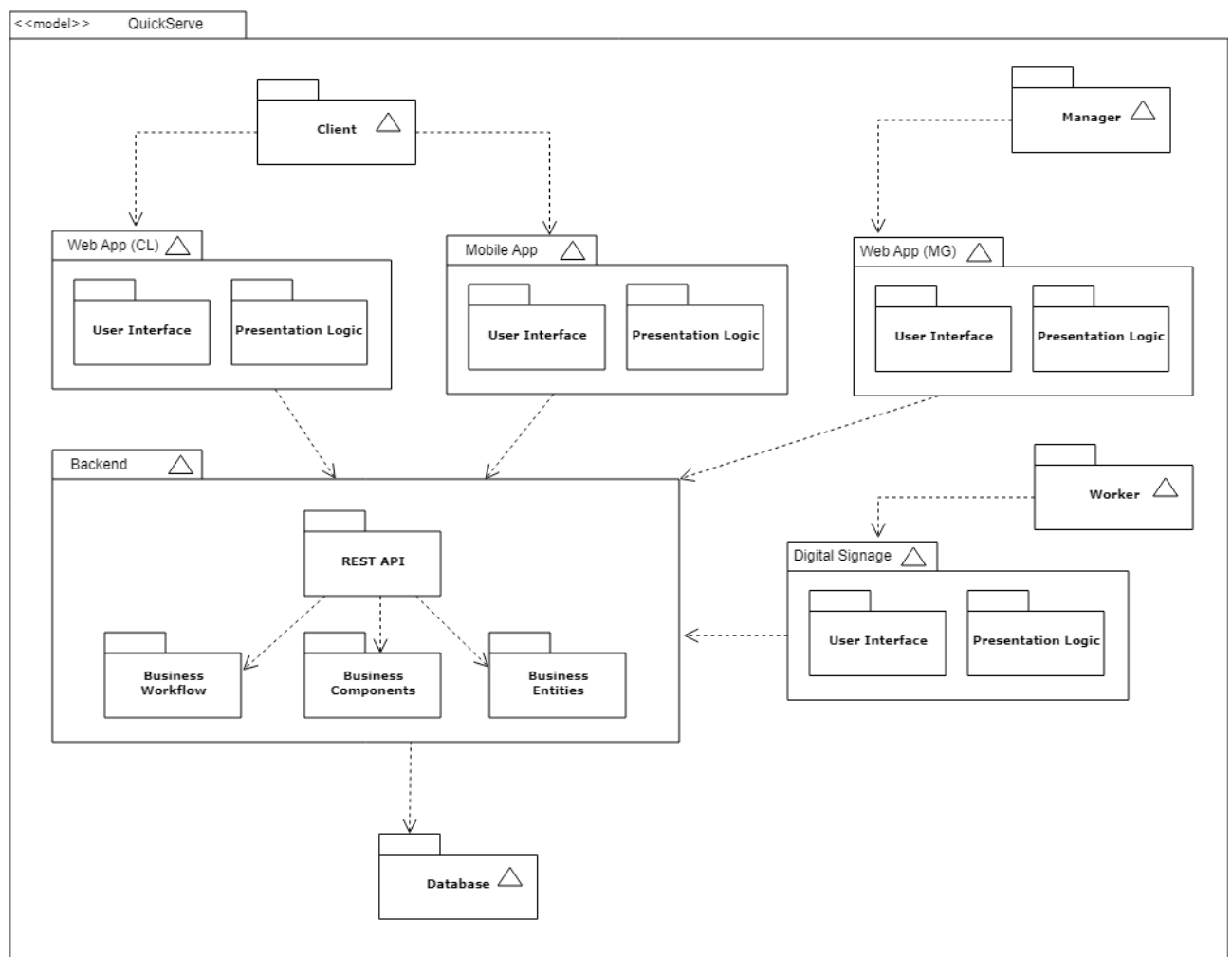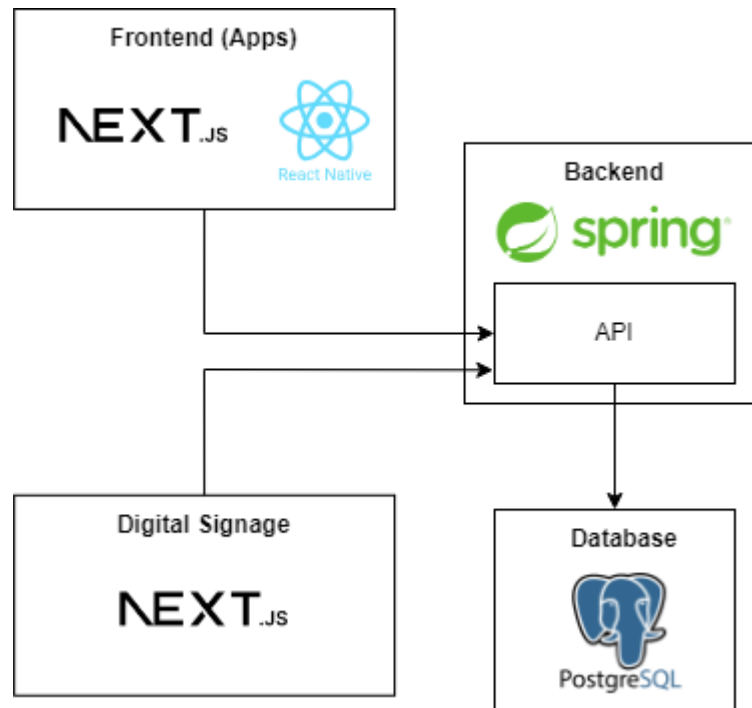
For the front-end, we used React to develop both the client and the management web applications, and for the mobile app available for clients we used React Native.

Regarding the backend, we used Spring to develop an API capable of providing our service not only to our web apps but also to mobile. Spring's capability for dependency injection makes building APIs a much easier process.

To save our data, we need a database that allows for fast access and is also consistent and available, so we chose PostgreSQL.

Regarding the mobile app, we also need to implement push notifications, to keep the client updated on their order status.

4.3   Deployment architecture

[Explicar a organização prevista da solução em termos configuração de produção (*deployment*). Anotar, no diagrama, as tecnologias de implementação, e.g.: colo aro simbolo do PostgreSQL na Base de dados,…]

5   API for developers

[Explicar a organização da API. Os detalhes detalhes/documentação dos métodos devem ficar numa solução *hosted* de documentação de APIs, como o Swagger, Postman documentation, ou incluída no próprio desenvolvimento (e.g.: maven site)

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<document the support endpoints>

[Base URL: localhost:8080/weather]

client Regular user of the weather forecast API   ⌄

GET /now/{latitude},{longitude} get weather forecast of the current day for the given coordinates

GET /recent/{latitude},{longitude}/{days} get weather forecast of the next days starting from today until the given number of days for the given coordinates

GET /period/{latitude},{longitude}/{start},{end} get weather forecast of the given time period for the given coordinates

GET /cached get weather forecasts previously requested and still present in cache

6 References and resources