



Praxisprojekt Anwendungssysteme – Daimler New Van

Domenic Bosin, Alexander Dittmann, Sebastian Lienau, Marius Möck, Philipp Ratz, Antonio Schürer, Christoph Witzko

Motivation

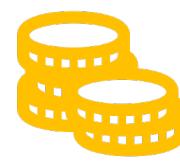
Autonomous van will revolutionize transportation



Convenient



Flexible



Cost efficient



Ecologic



Goal



Fun Facts



1767

Lines of Code written



46

Tasks completed



850

Hours clocked



178

Coffees needed



Agenda

1. Team Organization
2. Requirement Engineering
3. Technology Decisions
4. Quality Management & Testing
5. Project Status
6. Summary



Agenda

1. Team Organization
2. Requirement Engineering
3. Technology Decisions
4. Quality Management & Testing
5. Project Status
6. Summary

Team Organization - SCRUM

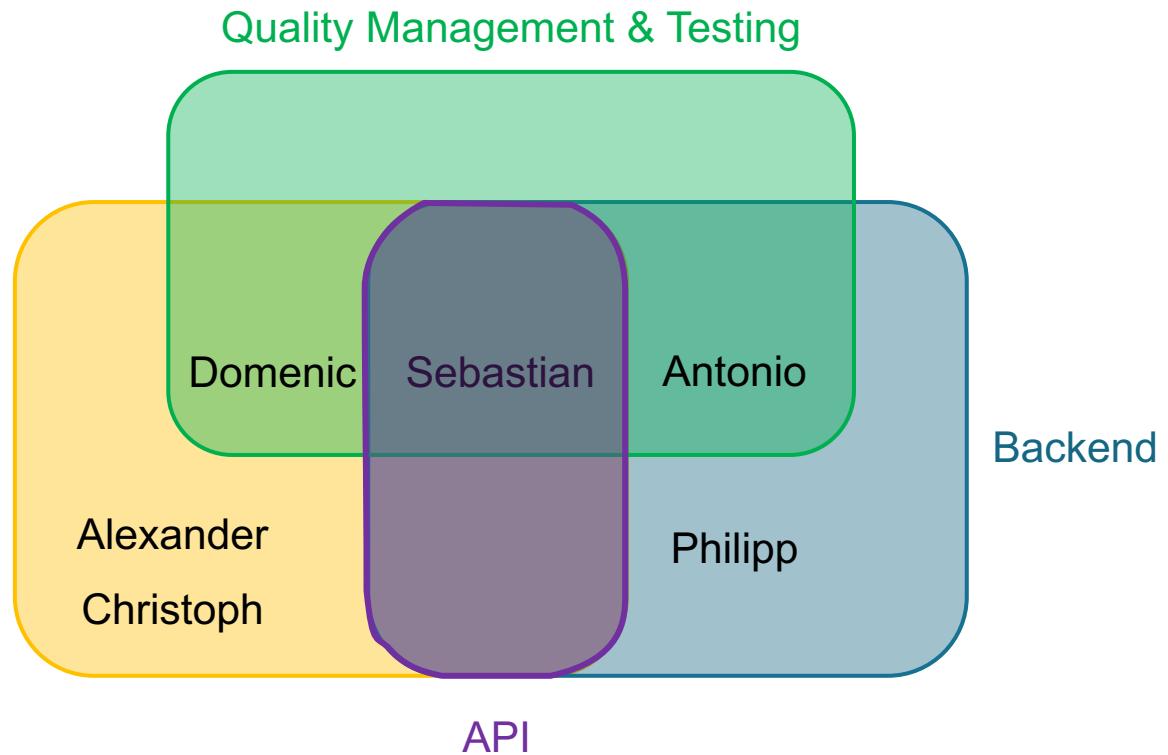


Daimler



Marius

Frontend

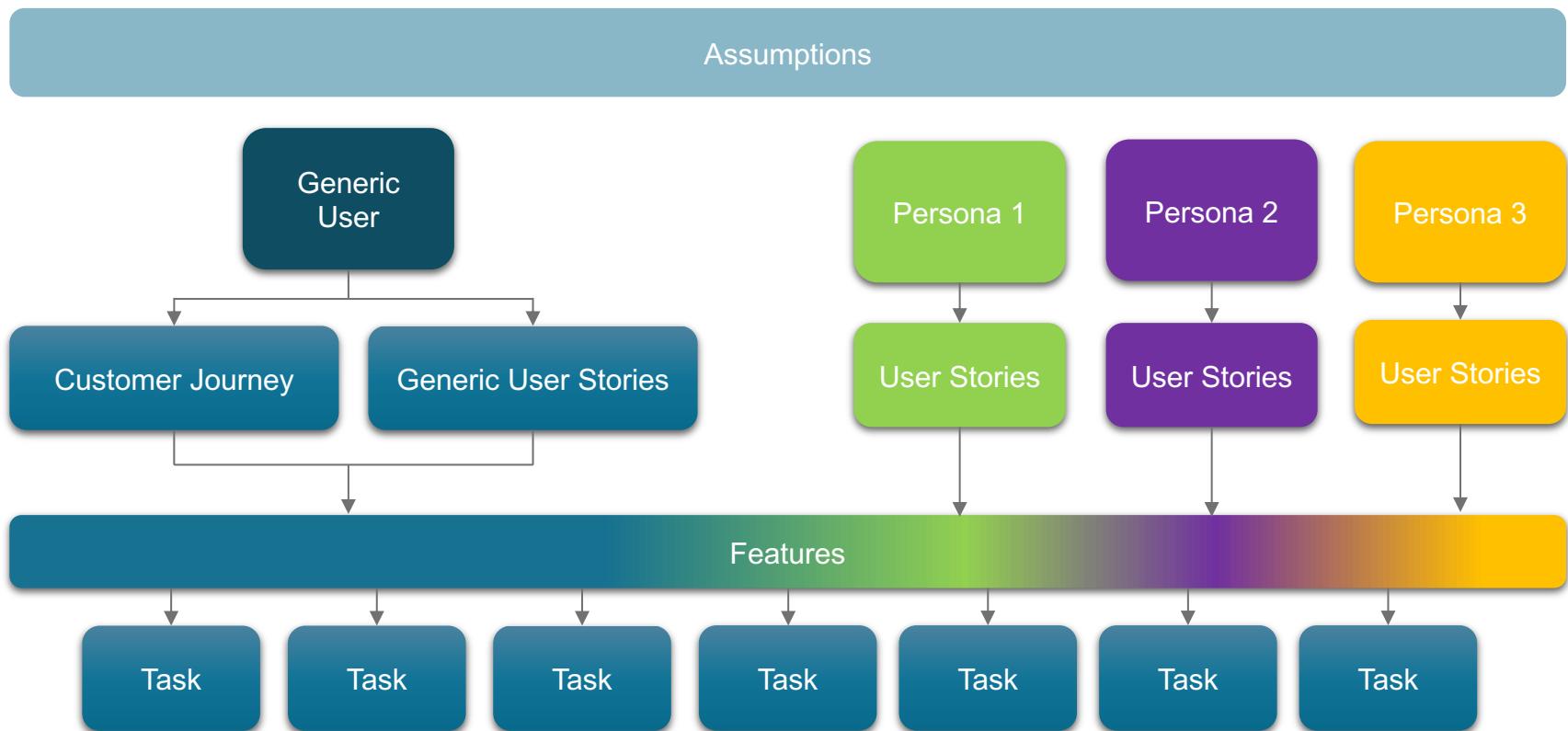




Agenda

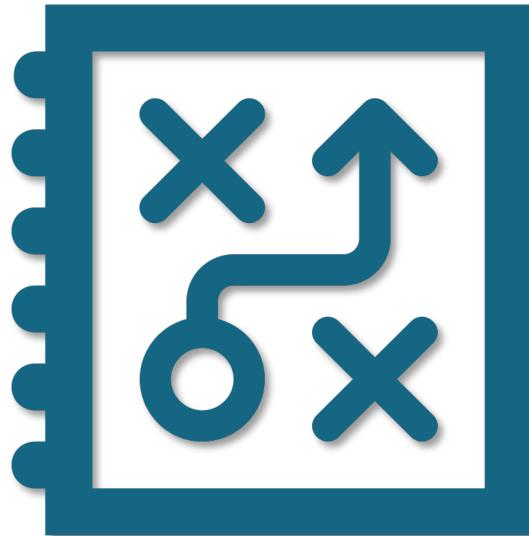
1. Team Organization
2. Requirement Engineering
3. Technology Decisions
4. Quality Management & Testing
5. Project Status
6. Summary

Requirement Engineering Process



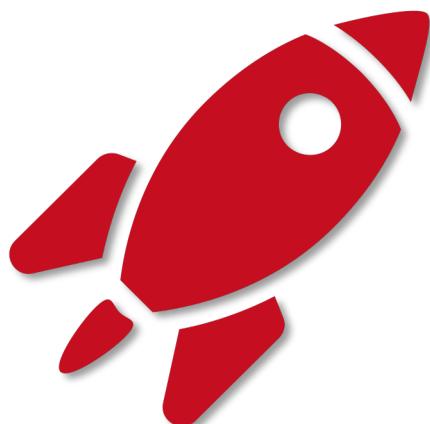


User Stories - Mobility

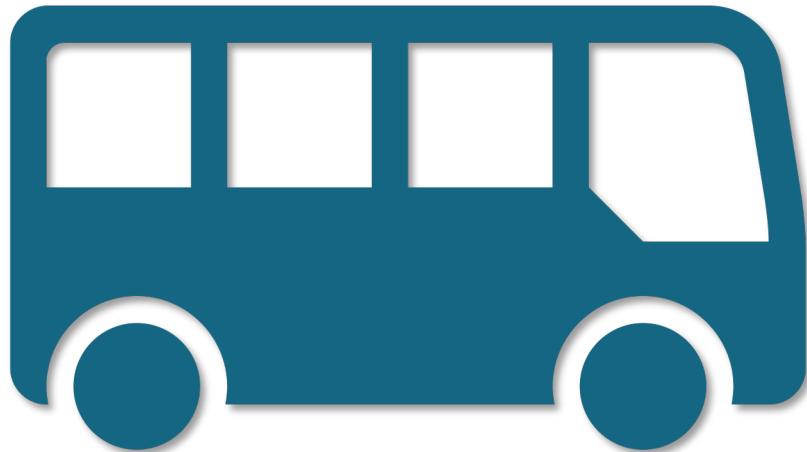




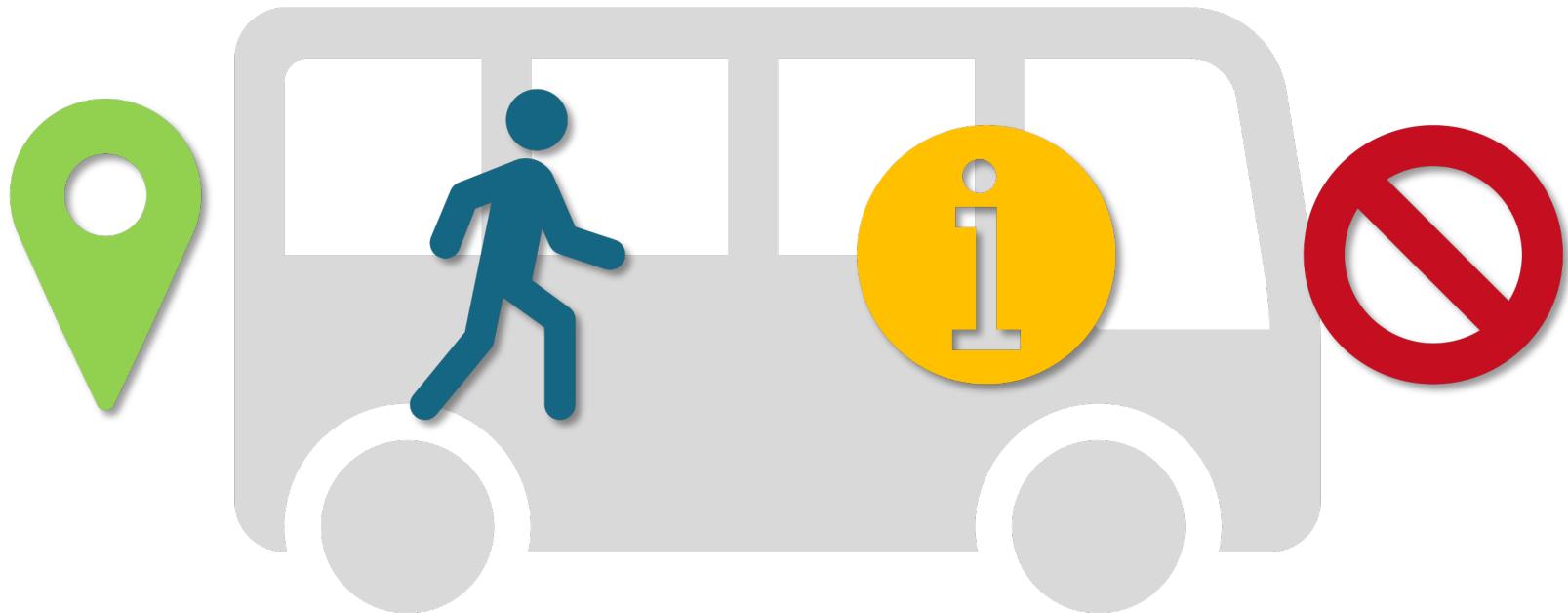
User Stories - Transportation



User Stories - Service



User Stories - Service

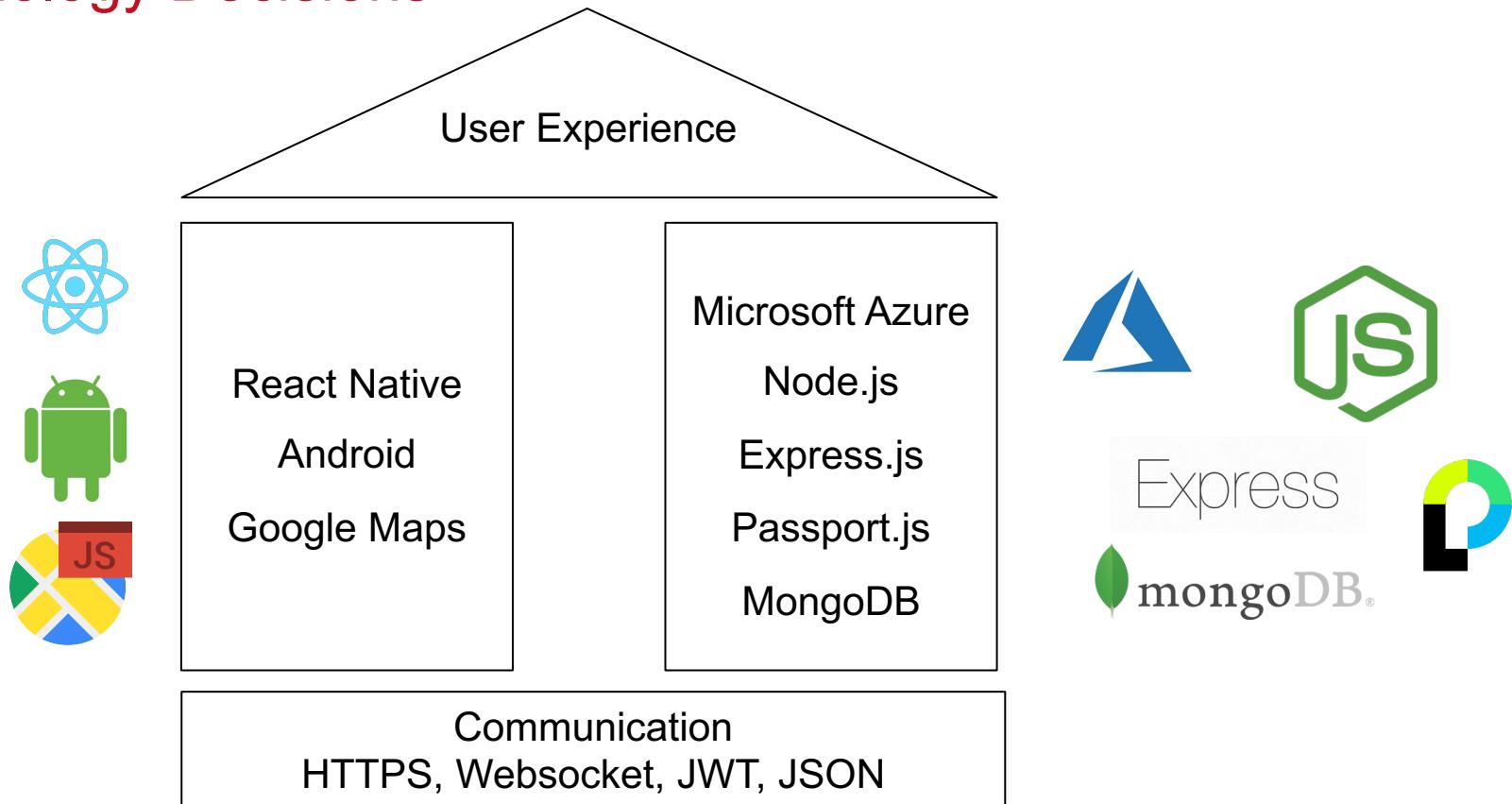




Agenda

1. Team Organization
2. Requirement Engineering
3. Technology Decisions
4. Quality Management & Testing
5. Project Status
6. Summary

Technology Decisions

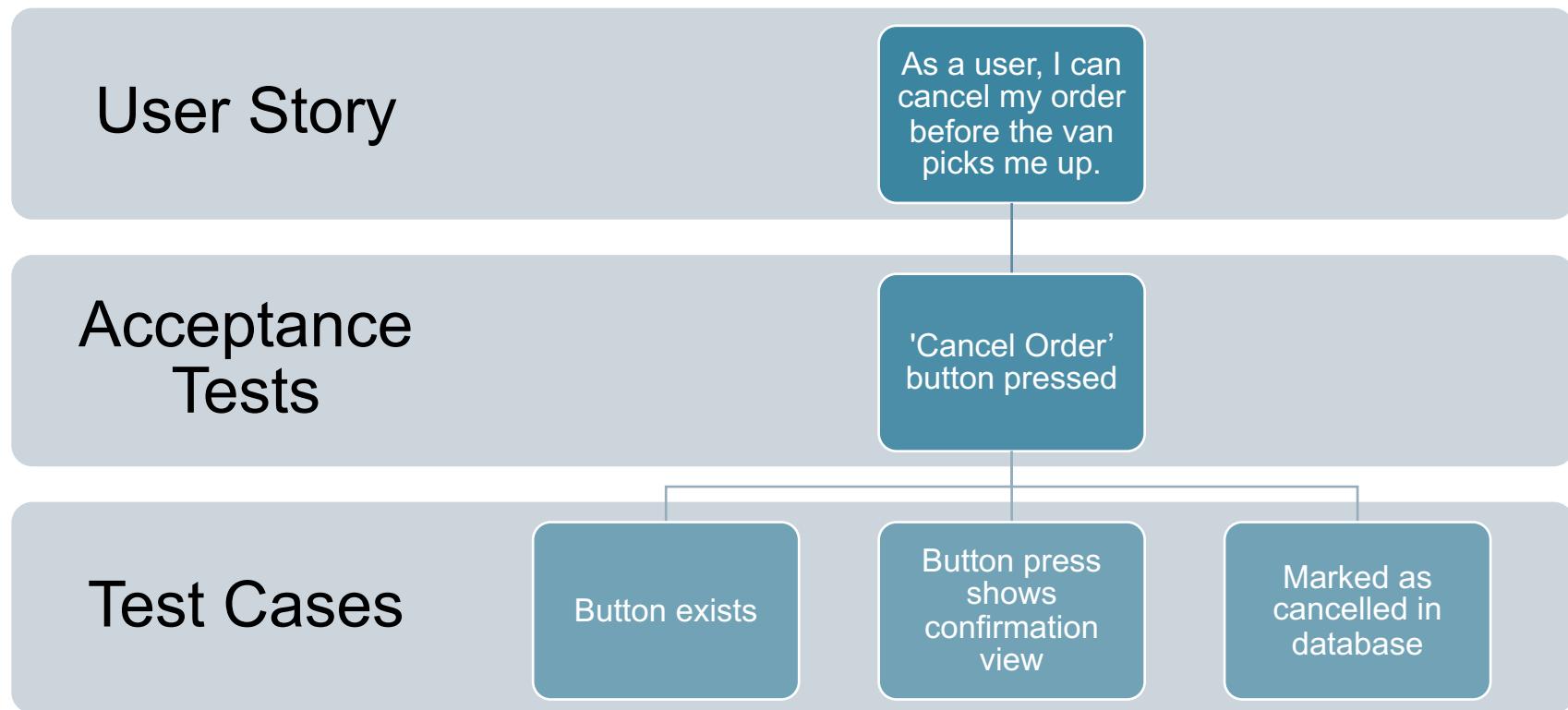




Agenda

1. Team Organization
2. Requirement Engineering
3. Technology Decisions
4. Quality Management & Testing
5. Project Status
6. Summary

Quality Management & Testing

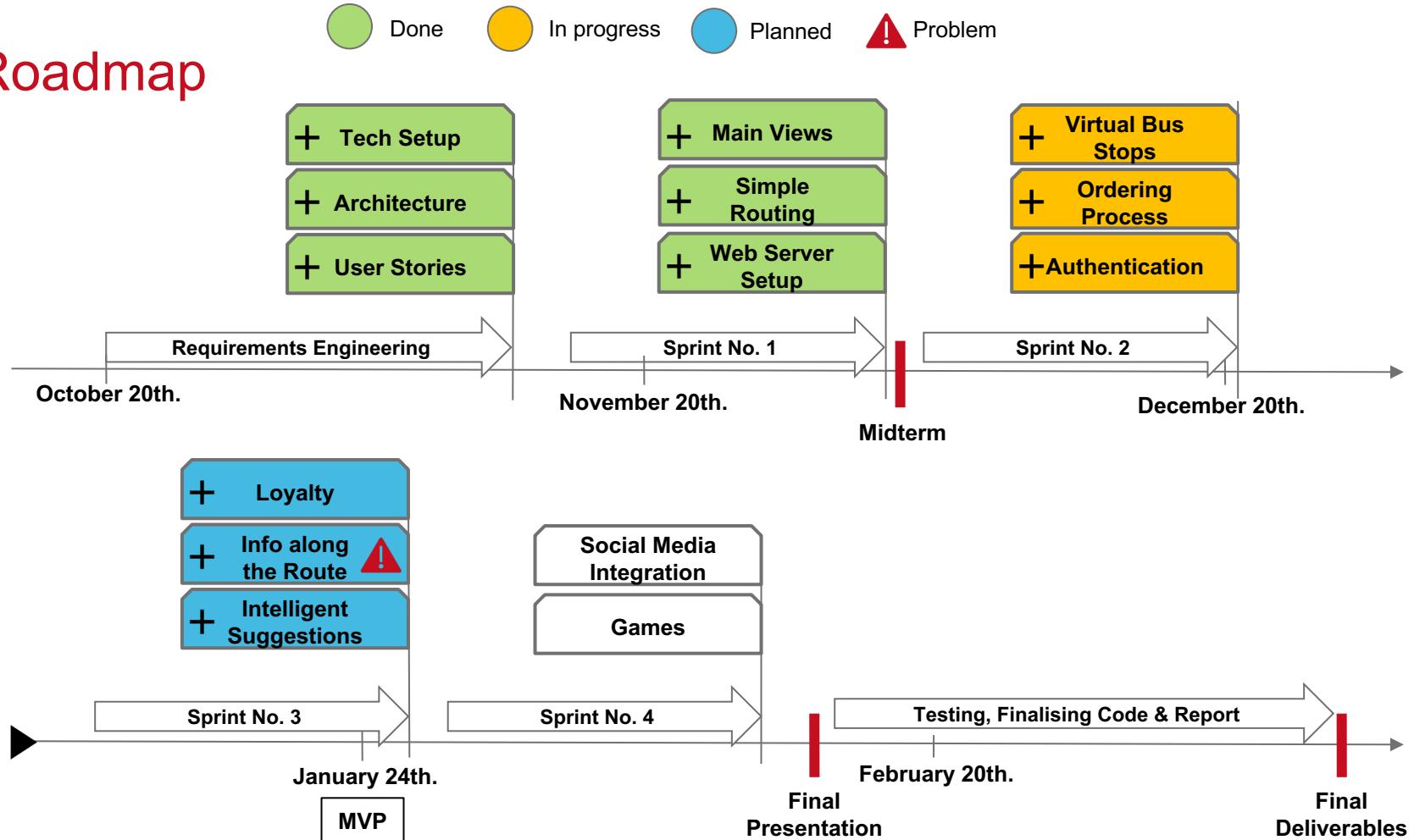




Agenda

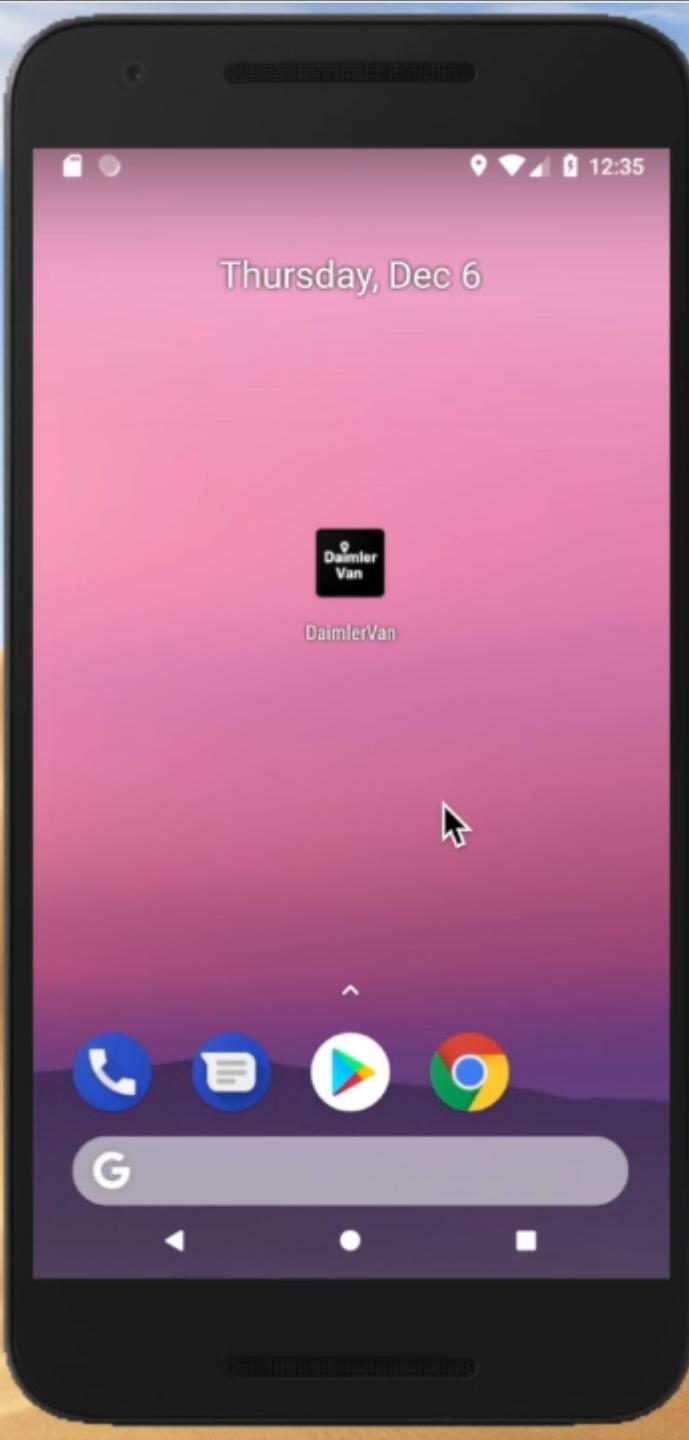
1. Team Organization
2. Requirement Engineering
3. Technology Decisions
4. Quality Management & Testing
5. Project Status
6. Summary

Roadmap



Demo Frontend





Problems

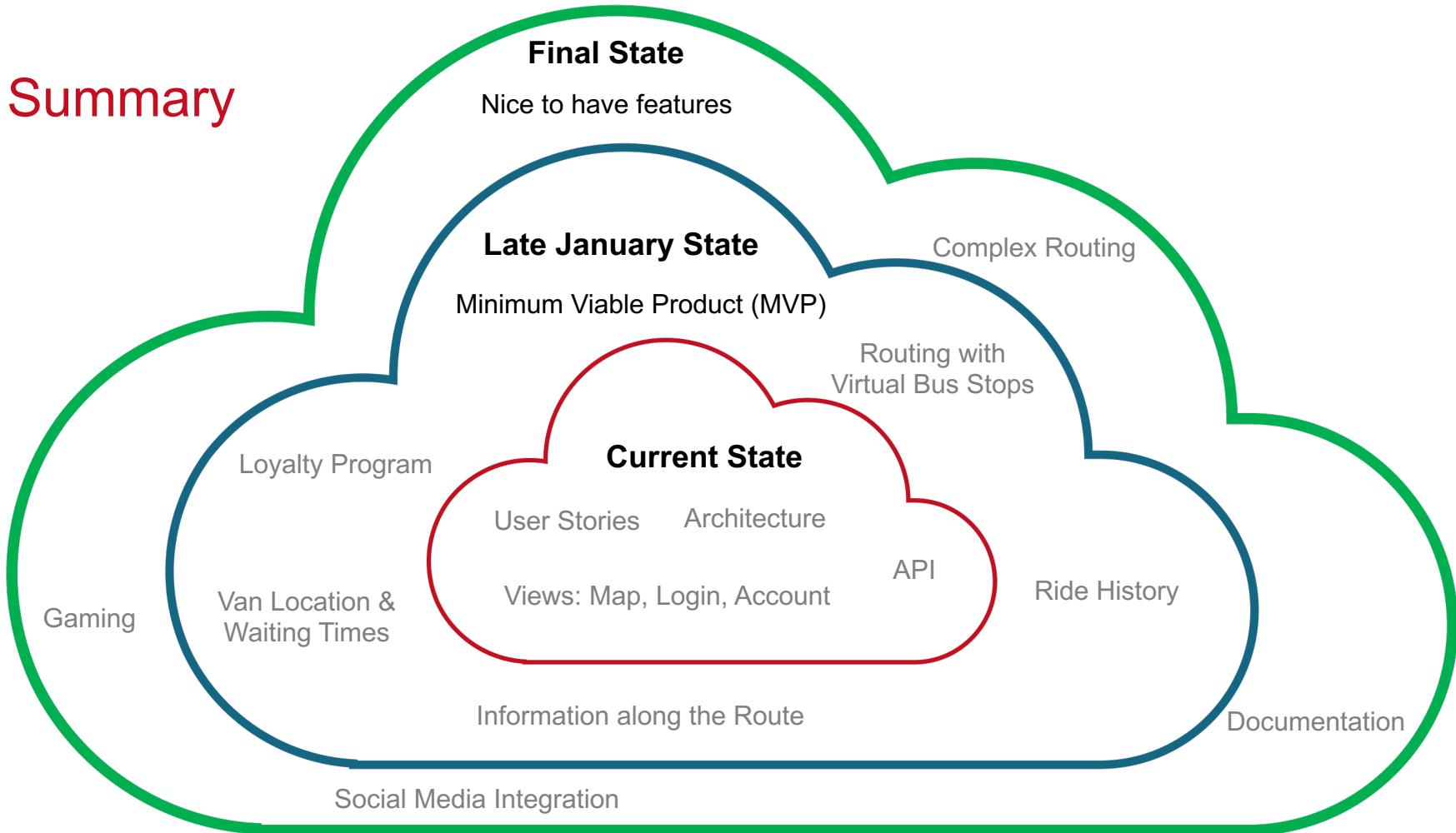
Problems	Approach
Measure Progress	Quality Management & Testing
App Testing	
GPS Simulation	Android App (Lockito, Teleport)
User Stories	



Agenda

1. Team Organization
2. Requirement Engineering
3. Technology Decisions
4. Quality Management & Testing
5. Project Status
6. Summary

Summary





Backup

Backup: Technology Stack - Frontend



Native Base



React Native Maps



Redux



React Native

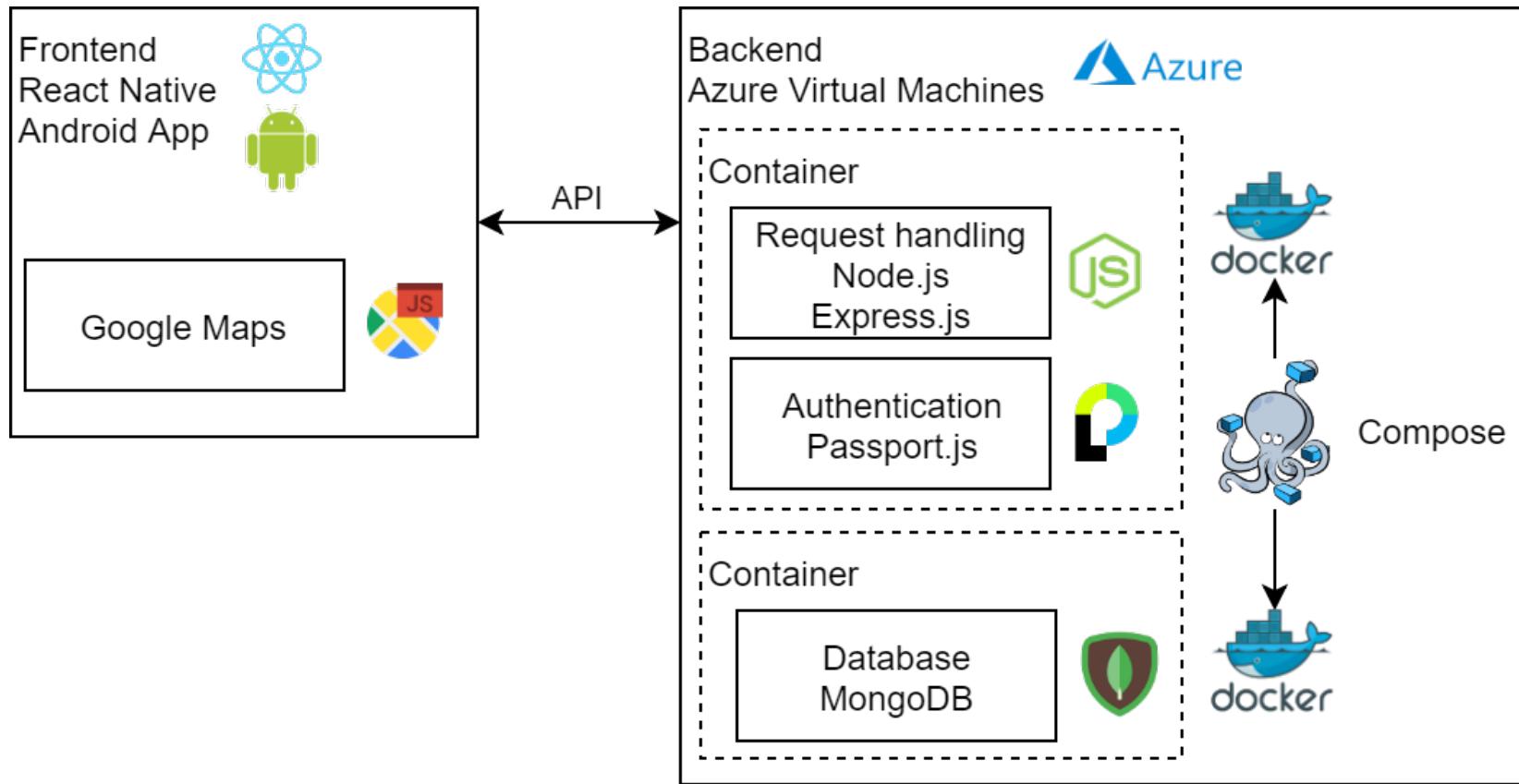


Android SDK

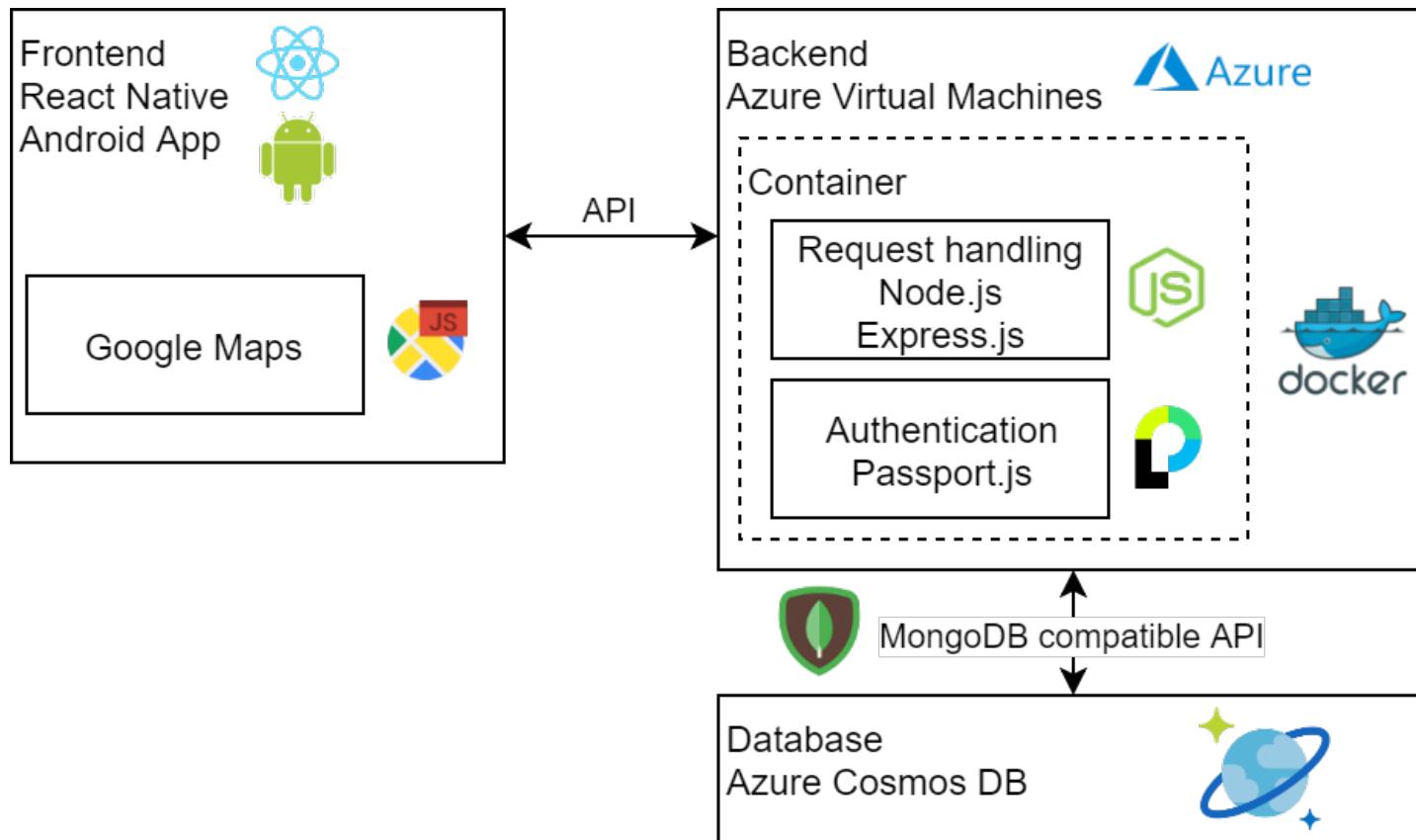


Java

Backup: Architecture

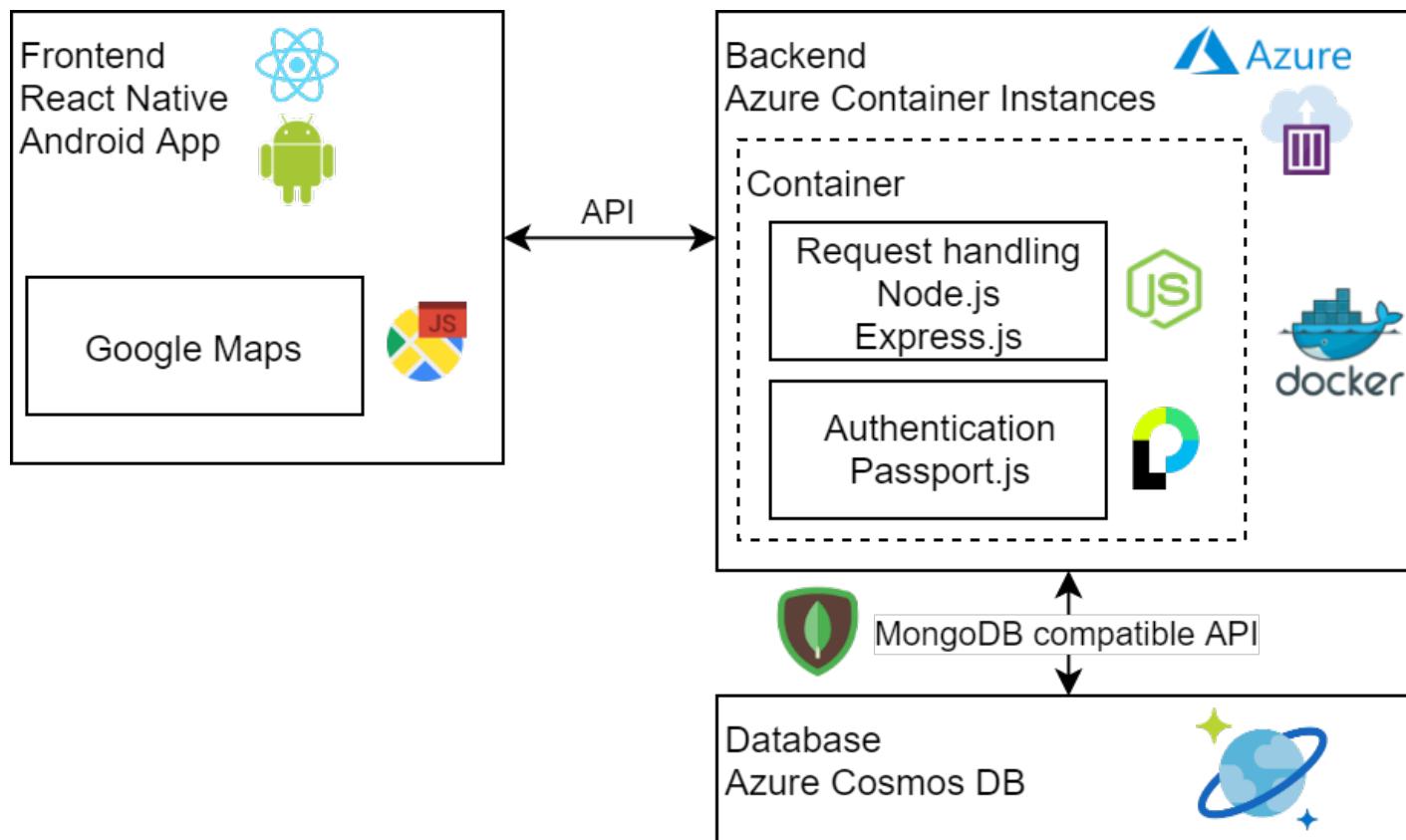


Backup: Cosmos DB Architecture



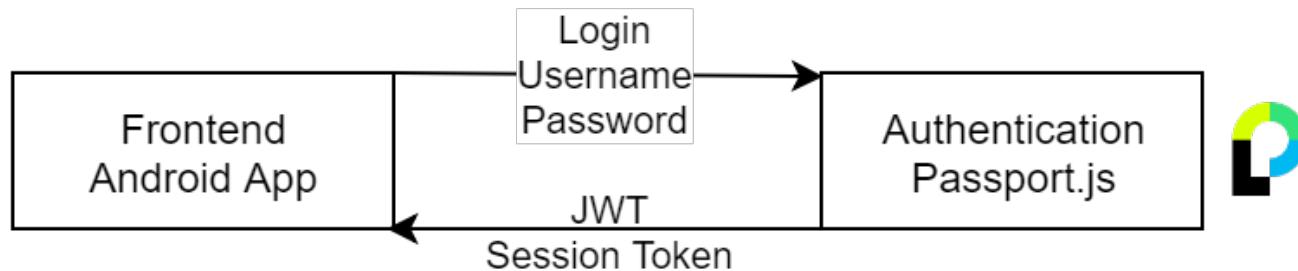


Backup: Container Instances Architecture

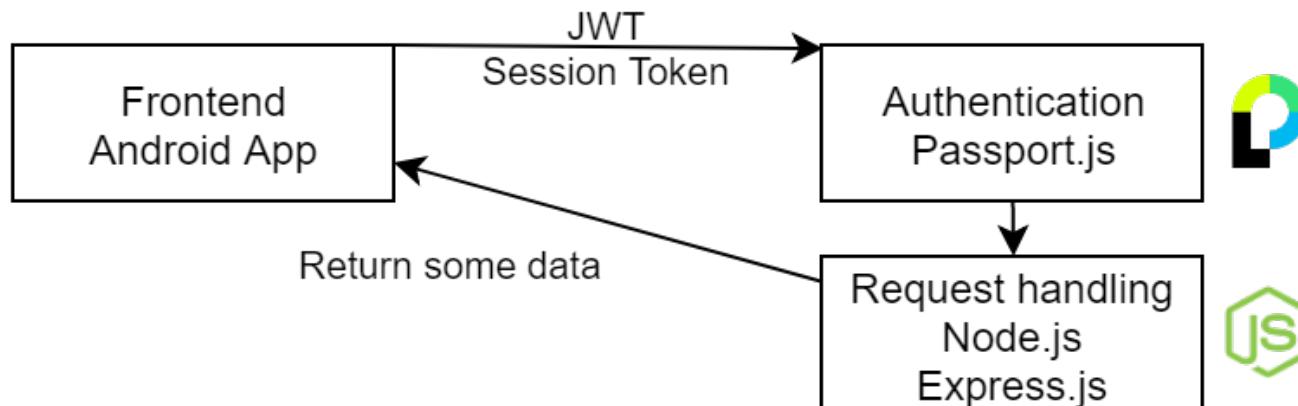


Backup: Authentication

1. Login - request a JWT Session Token



2. Requests authenticated with JWT Session Token



Backup: Main User Story Status



Done (first
sprint)



In progress
(second sprint)



Planned

Routing

Routing from A to B

Routing from and to Virtual
Busstops

Continuous Passenger & Van
Location

Passenger Journey
Composition

Basic User Services

Ride Ordering Process

Authentication

Account Info incl. Past Rides

Intelligent Ride Suggestions

Additional Services

Loyalty Program

Social Media Integration

Information on Environment

Games

Backup: First Sprint

Account View

- Basic information about the user's account

Log-In View

- Possibility to log in using an existing account (currently just a mock)

Map View

- Displaying a predefined route on a Google Maps view

Frontend

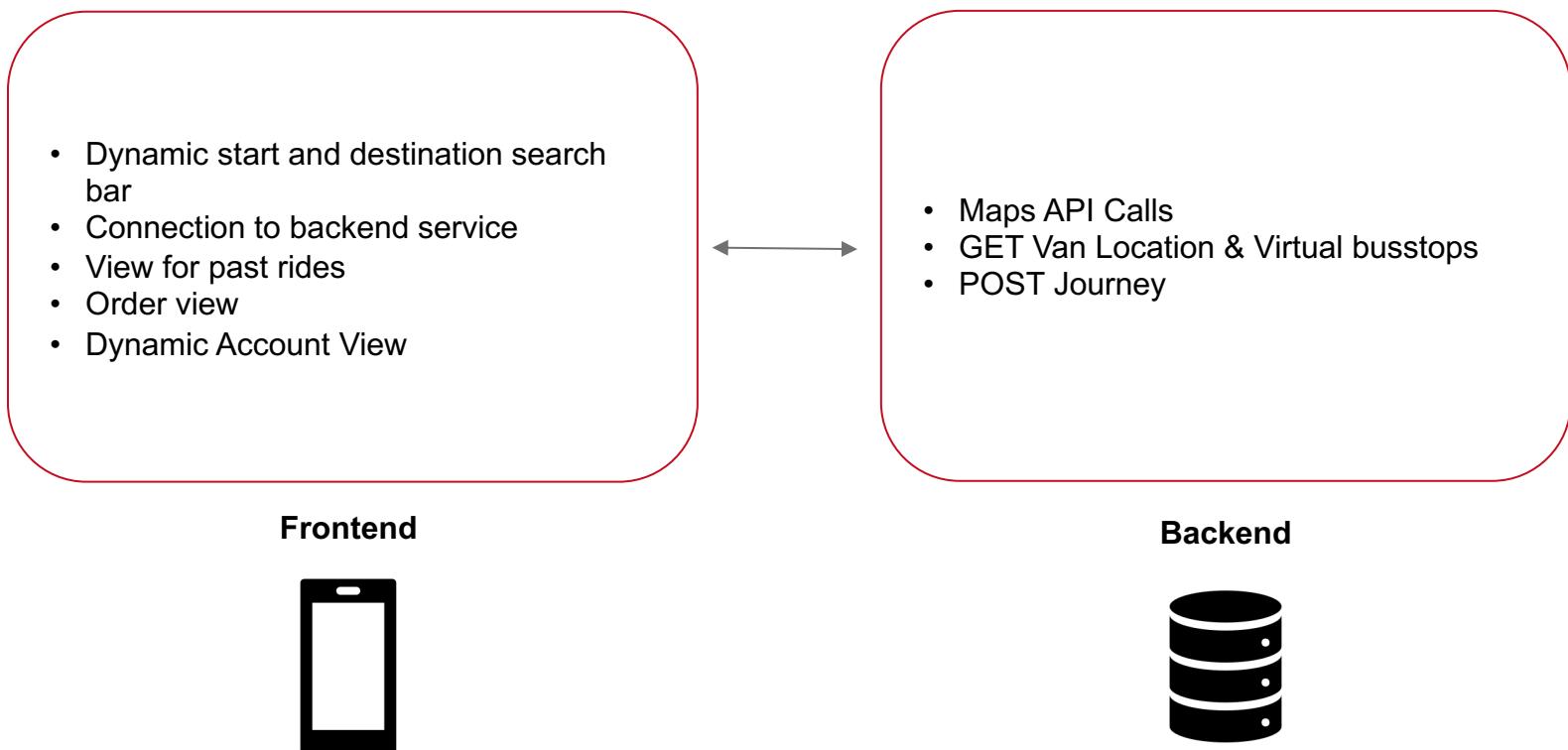


- Express Server
- DB Connection
- GET Request - User & Past Rides
- POST Request – Past Rides

Backend



Backup: Second Sprint



Backup: API – Current State

Functionality	Resource
<ul style="list-style-type: none">• Get current user account information• Change user account information	/accounts/{accountId}
<ul style="list-style-type: none">• Place a new order• Get past and current orders	/accounts/{accountId}/orders
• Change an active order	/accounts/{accountId}/orders/{orderId}
• Get possible routes	/routes
• Get nearby virtual bus stops	/virtualbusstops

Detailed API specification can be found at <https://github.com/pasws18/documentation/blob/master/api.md>

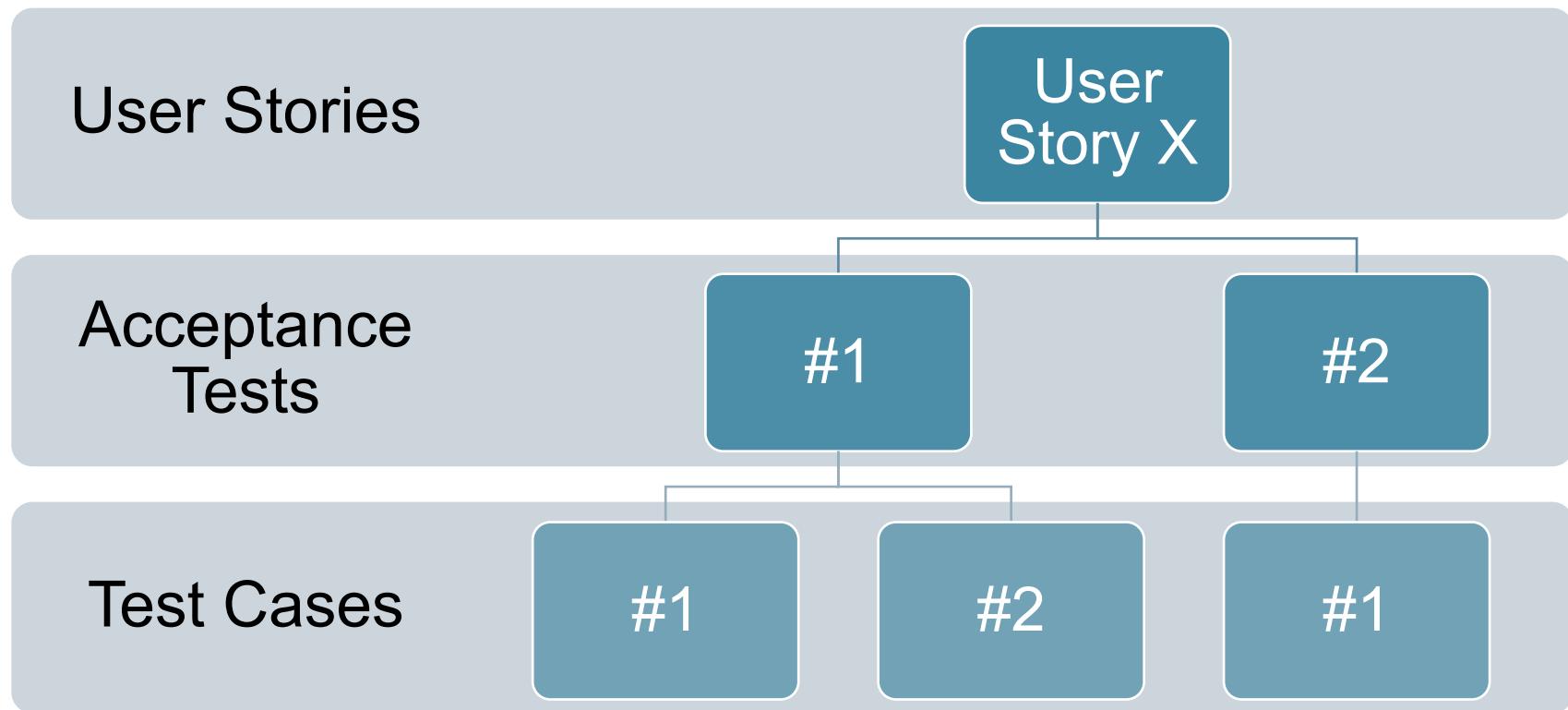
Communication

Use-Case	Protocol
Manage loyalty points	HTTPS / REST
Save and call game scores	HTTPS / REST
User's and Van's live position	Websockets
Live Game	Websockets

Backup: Quality Management & Testing

- Testing user stories
 - Breaking each user story in one or more acceptance tests
 - acceptance tests cover a high level test scenario and follow the happy path
 - Each acceptance test will be broken down in multiple test cases
- Example
 - User story
 - As a user, I can cancel my order before the van picks me up.
 - Acceptance Test
 - Given that I am logged in as a customer and have ordered a van, then clicking the button 'Cancel Order' takes me to a view showing that my order was successfully canceled.
 - Test cases
 - After logging in and booking a van the 'Cancel Order' Button exists
 - Pressing the 'Cancel Order' Button goes to the order cancel confirmation view
 - The order should be marked as canceled in the database

Backup: Quality Management & Testing



Backup: Quality Management & Testing

- Code quality
 - Every team member is encouraged to write legible code
 - We enforce a unified coding standard with a linter
 - Every change on the code base is peer reviewed
- Integration tests
 - We plan to implement automated integration tests to ensure compatibility between app and backend
- Automated Testing
 - Every committed change is automatically tested on a continuous integration (CI) platform
- Release
 - Semantic versioning to prevent incompatibility between frontend/app and backend

Backup: Quality Management & Testing

- Frameworks
 - Frontend/App (react-native)
 - jest
 - detox
 - Backend
 - mocha
 - node-tap

Backup: Comparison - Native App Development

	React Native	Android	iOS
Programming Language	JavaScript	Java	Objective C
Supports crossplatform development	✓	✗	✗
Operating System (Development)	Mac / Windows / Linux	Mac / Windows / Linux	Mac
Market Share	-	~ 70%	~ 20%

Statcounter: Mobile OS Market Share: <http://gs.statcounter.com/os-market-share/mobile/worldwide> (accessed on 04.12.2018)

Backup: Comparison – Map Services

Feature / Maps	Google	OpenStreet	MapBox	HERE
very detailed API documentation	✓	✓	✓	
Location Tracking	✓	(-)	✗	
Tour by turn navigation	✓	✗	✓	
Public transport	✓			(-)
Gated areas	✗			
Free	(-)			✓
Customization Options	✓	✓	✓	✓

(-) Limited



Organisation Tools



Slack main communication tool



Trello project management



GitHub code management



OneDrive meeting documents and presentations



Overleaf LaTeX project report & documentation



Clockify time tracking

Backup: Weekly Schedule

Mon	Tue	Wed	Thu	Fri
Teammeeting Frontend/ Backend		Teammeeting		
Conference Call Daimler		Feedback ISE Chair		

Backup: Git Workflow

