Augmented Reality (AR) Navigation System for Commercial Spaces

Software Projects - Group 14

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March 2019

Motivation

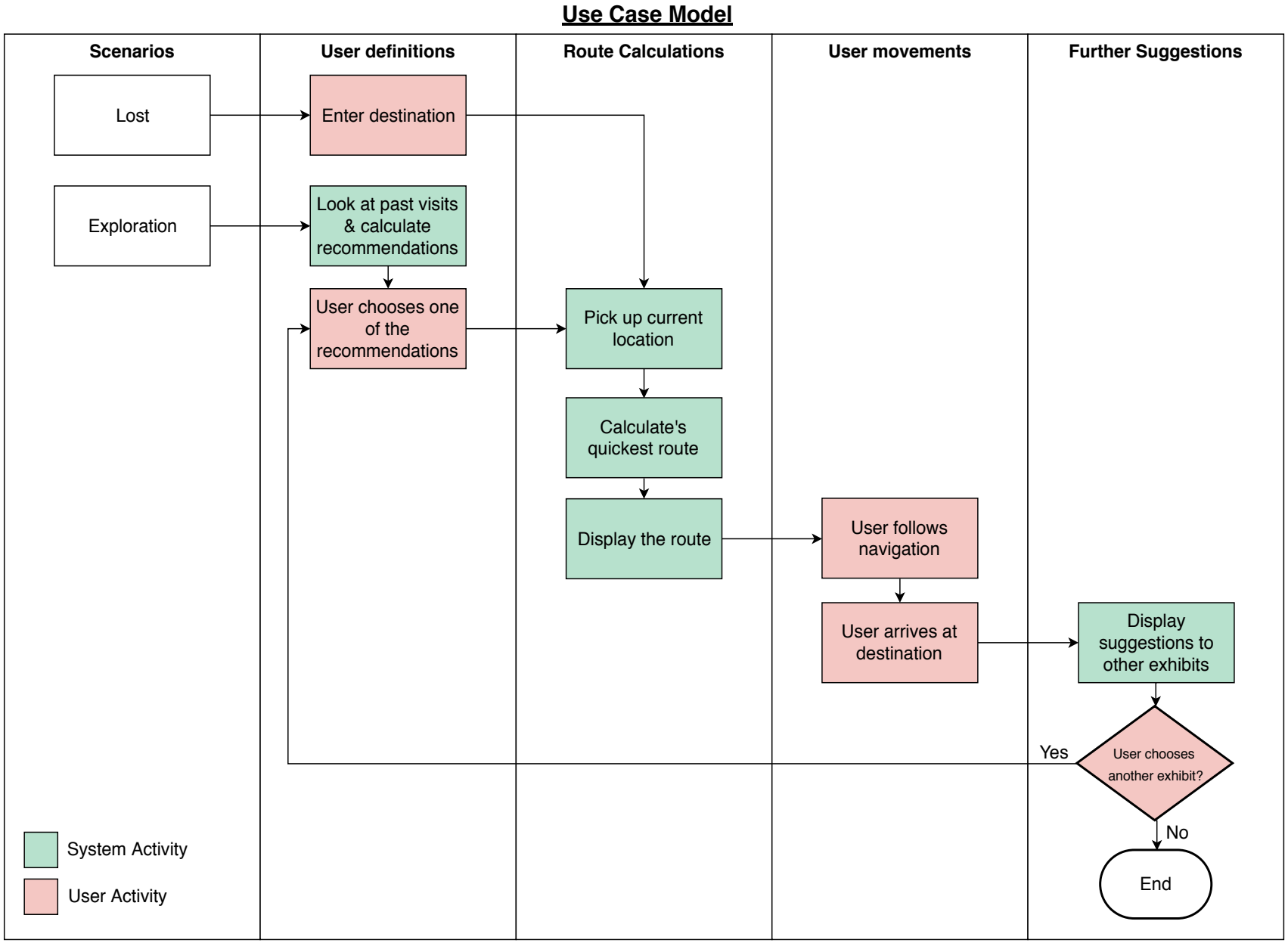
- Lack of maps and signage in museums.
- Old technology currently in use, e.g. portable audio guides
- Various applications to other scenarios, e.g. supermarkets or libraries.

Scope

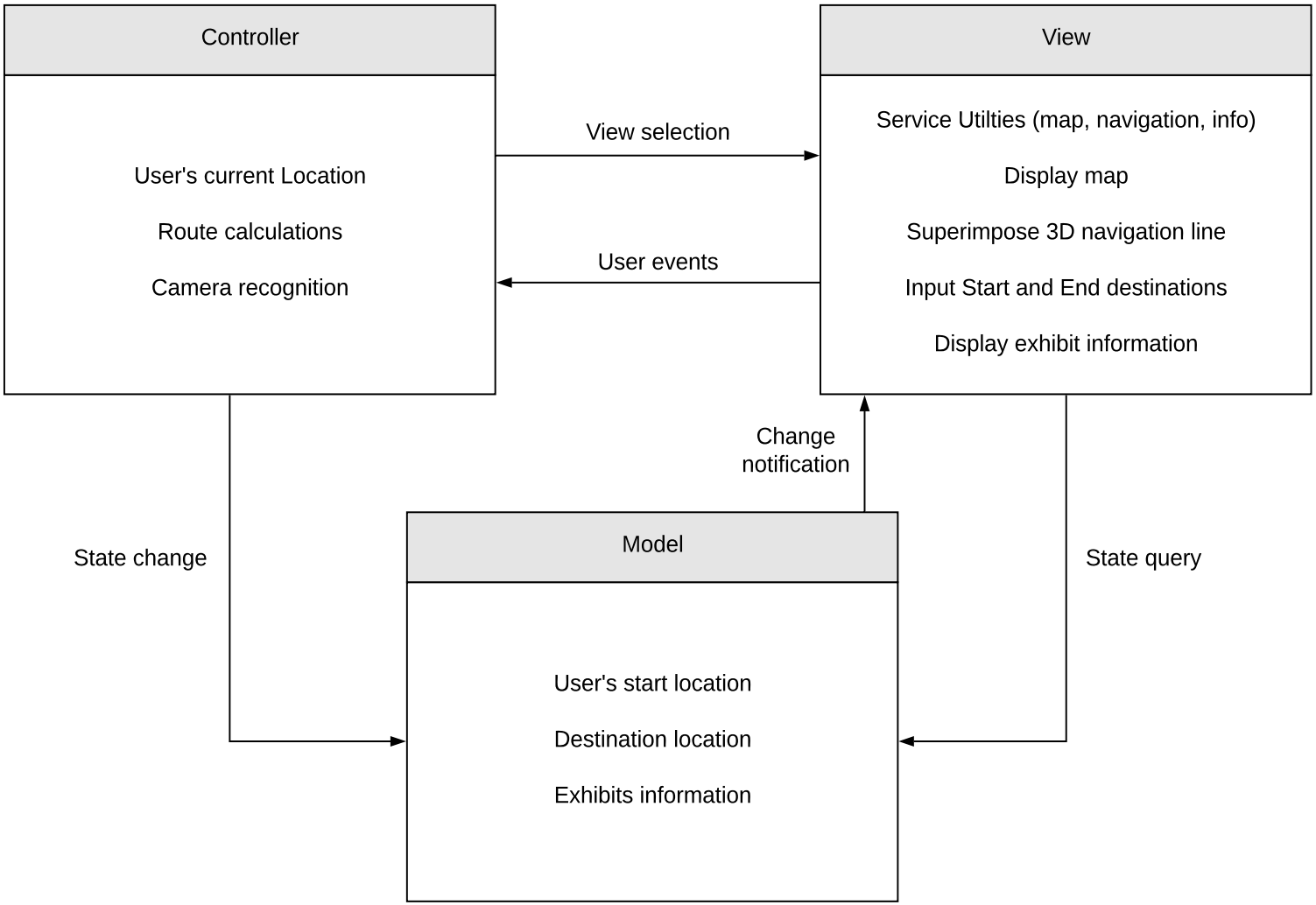
- Display navigational routes in real-time.
- Calculate the shortest route to the user specified location.
- Use AR to enhance user navigation routing.

Design

- Android Prototyping
- User flow diagrams
- Model-View Controller


Use Case Model
Scenarios
User definitions
Route Calculations
User movements
Further Suggestions
Lost
Exploration
Enter destination
Look at past visits & calculate recommendations
User chooses one of the recommendations
Pick up current location
Calculate's quickest route
Display the route
User follows navigation
User arrives at destination
Display suggestions to other exhibits
User chooses another exhibit?
Yes
No
End
System Activity
User Activity

Model-View Controller



Development Process & Testing

- Used Agile/Scrum instead of Waterfall
- 4 Sprints Conducted
- TDD approach
  - Unit
  - Integration
  - Regression
  - Performance & Stress
  - User Acceptance (UAT)

Outcomes

Sprints Conducted

- Arduino hardware construction and Bluetooth
- Navigation using A* path-finding algorithm
- AR: Rendering objects on screen

Evaluation

- High technical standard in the back-end
- Very "agile" in moving things between sprints to accommodate changes
- Good feedback from industry professionals and users
- Executed plans as of our proposal according to stakeholders and user requirements

Questions?