

Master Lab Course Web Applications: **Exercise 4 – Final Presentation**

Team 4

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Idea – ARWars

- Massive multiplayer **browser game** taking place in the **real world**
- Based on Google Maps and Google Places API
- Optimized for **Desktop-PCs** and **Smartphones/Tablets**

Features

- Creation of an **augmented reality** overlay
- Players have to **meet** at real life places to progress in the game

Rules

- **Two factions** struggle for supremacy
- Players assemble into **teams**
- Players **capture places** available from Google Places
- Captured places yield **resources**
- Resources can be used to **build units** or are necessary to capture special places
- Units aid in capturing or **defending** places



Business Model

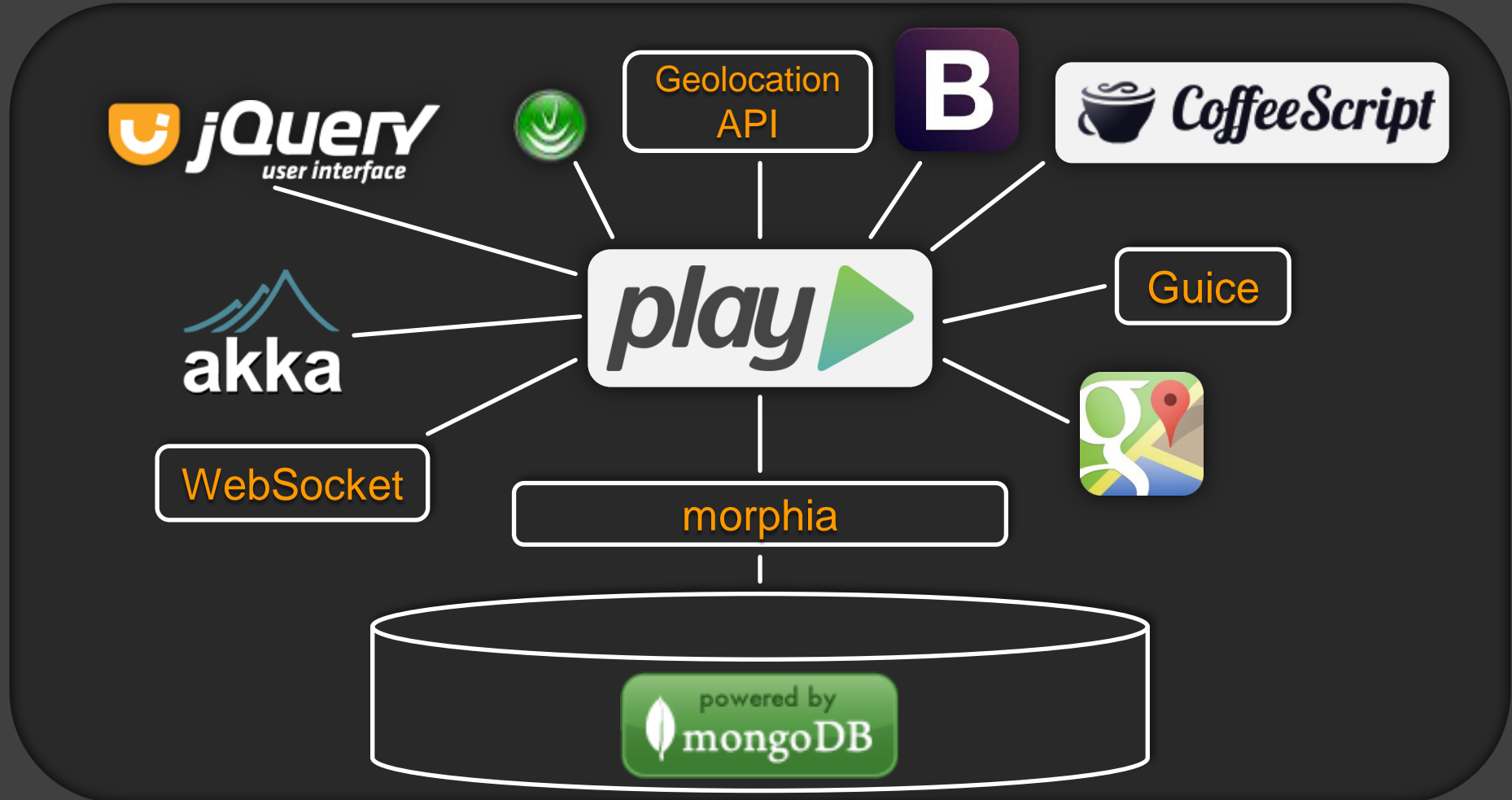
- Advertisements
- Selling decorative objects
- Selling organisational services



Competitors

- Traditional browser games → Ogame, Droidwars
- Persistent mobile multiplayer games → Mobile Mafia
- Location-based networks → Foursquare, Google Latitude
- Ingress by Niantic Labs (closed beta)

Technology Stack 1/3



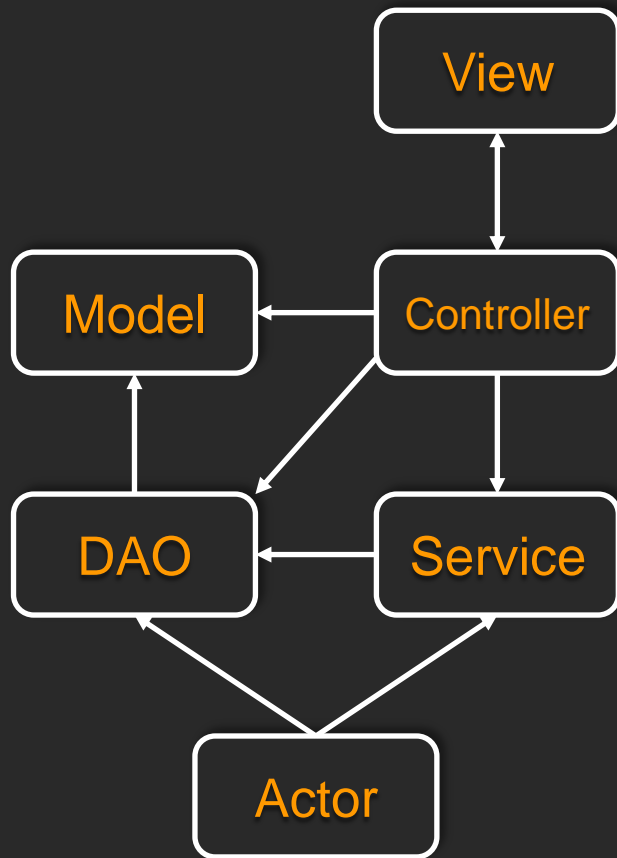
Technology Stack 2/3

- mongoDB: **High performance** noSQL-database
- morphia: **Mapping** Java objects to/from MongoDB
- WebSocket: **Bi-directional** communication for the web
- akka: Event-driven **concurrency** framework
- Guice: Dependency **injection** framework
- Google Maps/Places API: **Map** and location data

Technology Stack 3/3

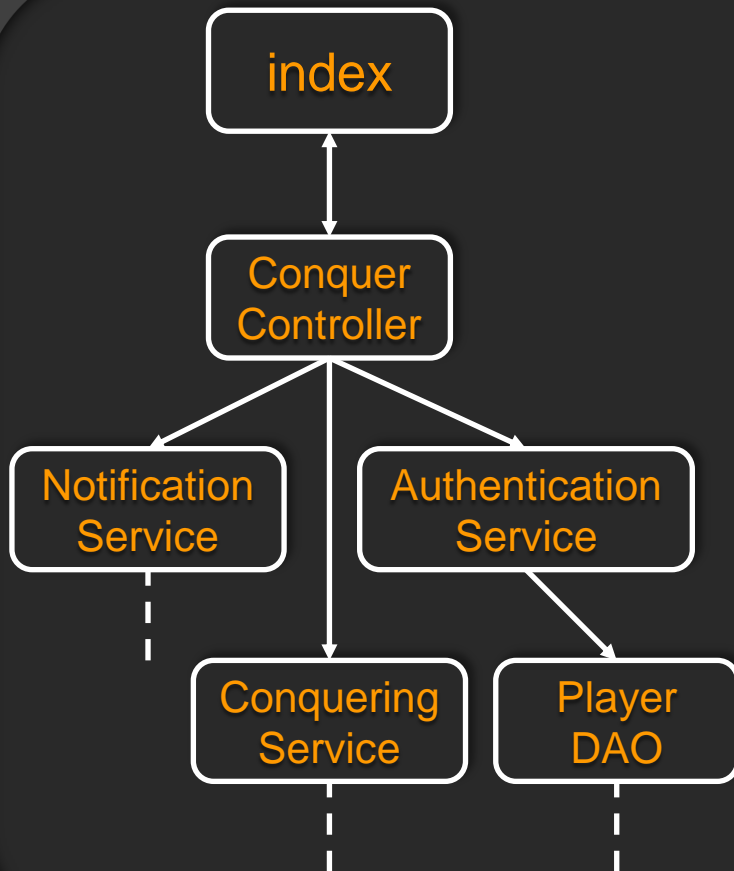
- jQueryUI: JavaScript **user interface** library
- Pines Notify: JavaScript **notifications** for Bootstrap
- Geolocation API: Retrieve **position** from the browser
- Bootstrap: Powerful **front-end** framework
- CoffeeScript: **Language** that compiles into JavaScript

Architecture



- Services: Encapsulate **business logic**
- DAOs: **Abstract** from the database
- Views: User interface **templates**
- Models: Represent **entities**
- Controller: **Connect** business logic, data storage and representation
- Actors: Carry out **concurrent** and **asynchronous** actions

Architecture example: Conquering



- index: **View** for the main interface
- ConquerController: **Delegates** calls from the UI to the services
- NotificationService: Sends **notifications** to players
- AuthenticationService: **Retrieves** the player currently logged in
- ConqueringService: Manages **conquering** attempts, calculates result
- PlayerDAO: Responsible for retrieving **player-objects** from the DB

Screenshot Desktop



ARWars v1.0

Profile Help Logout

Places

Search:

Place	Resources	Units
Dianella La Guardia	50 	1
Kai Kai Möhrke	50 	0
KESCO GmbH, Gesellschaft für Consulting, Coaching und Catering	50 	1

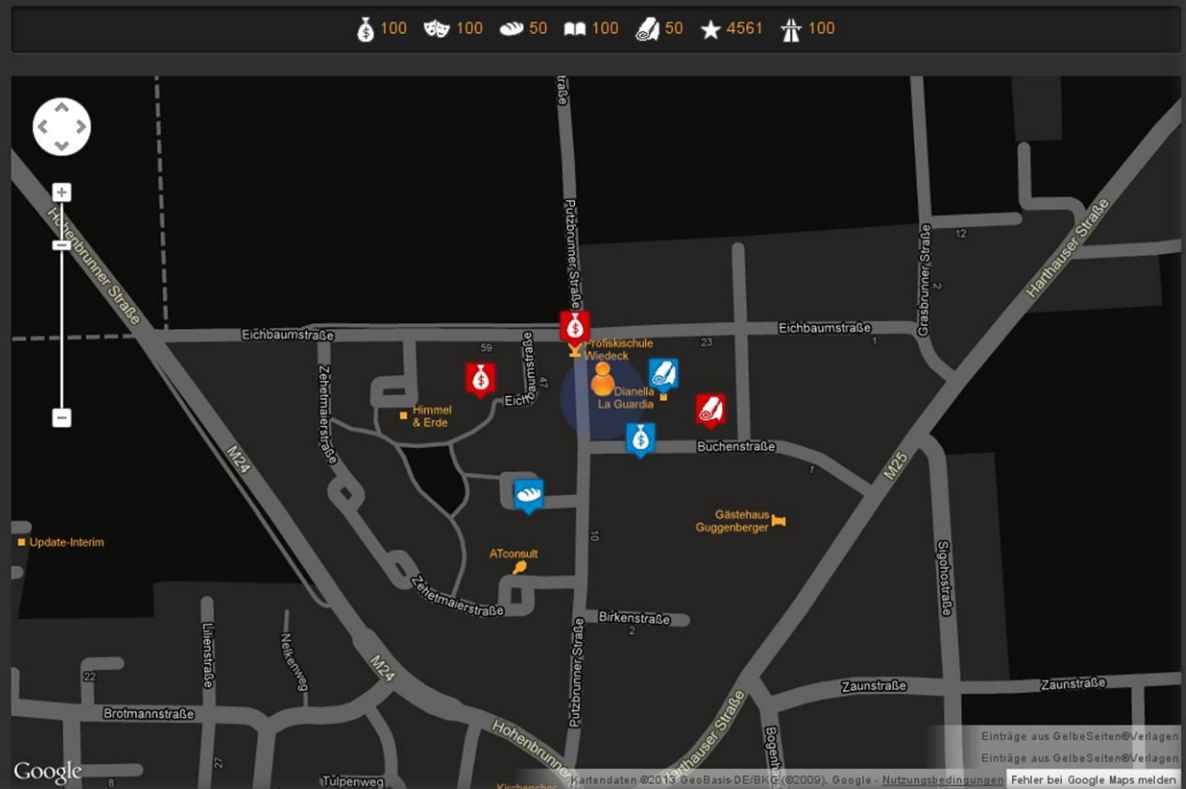
Deploy units

Units

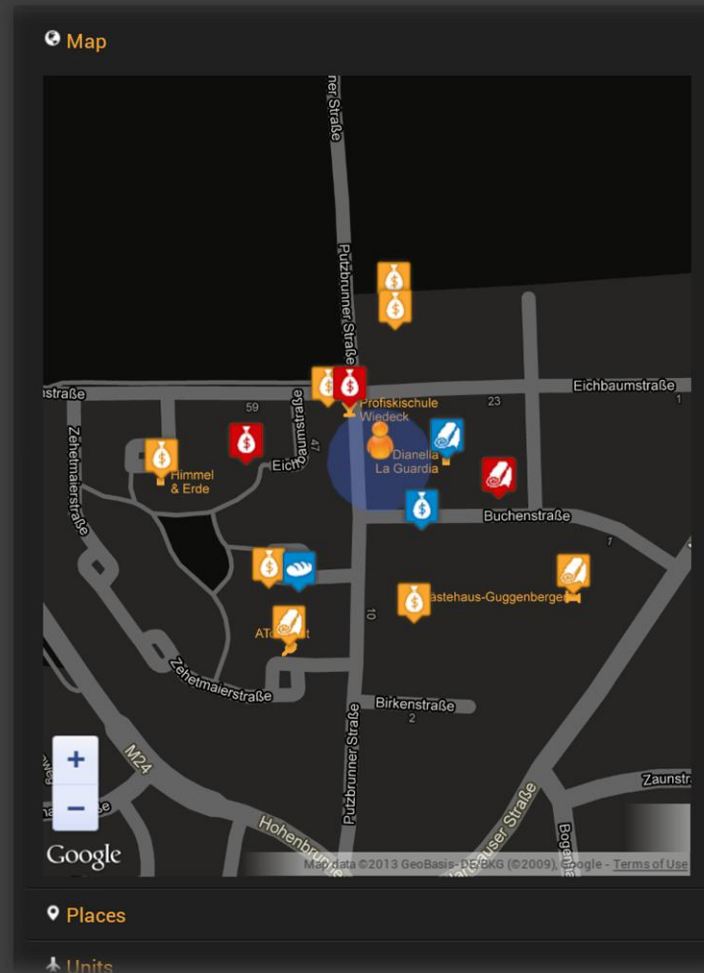
Team

Notifications

Statistics



Screenshot Mobile



Demo

Conquering Places

1. Initiate conquering attempt
2. Let team members join
3. Check requirements
 - number of participants currently nearby the place (150m)
 - sufficient resources: evenly split across the participants
4. Inform the initiator
5. Conduct the battle: result is not known upfront
 - failure chance of a unit: btw. 5 and 10 percent
 - strength is uniformly distributed btw. minStrength and maxStrength
6. Inform participants of result



Deploying Units

- Player can deploy units to his conquered places to **defend** them
- Deploy **menu** can be invoked
 - from **sidebar** (where the conquered places of the player are listed) or
 - directly from the place **popup window** on the map

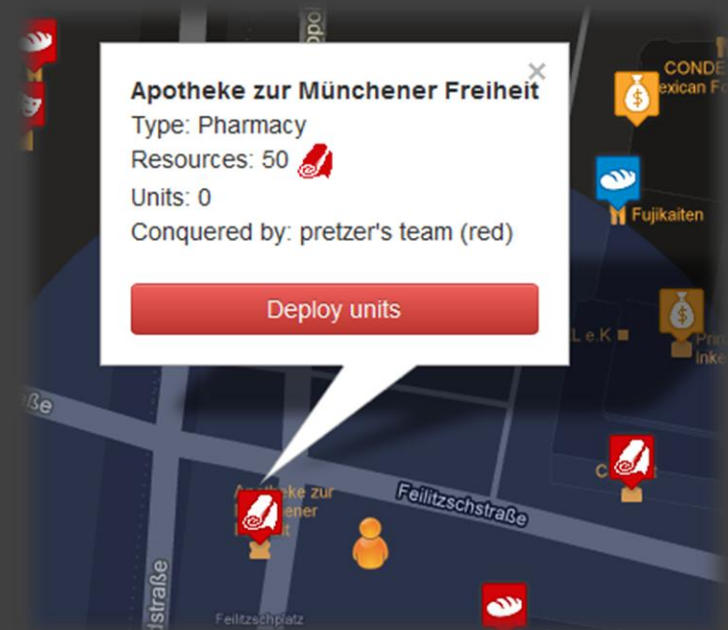
Deploy units to your conquered places

Infantry **290**

Grunt **110**

Deploy at: Alte Pinakothek

Deploy Close



Building Units



- Players can use their resources to **build** units
- Total amount of units is **limited** by the **food** resource
- Units live until they **fail** at a conquering attempt



🚧 Units

Type ▲	Free ◆	Overall ◆
Grunt	2	4
Infantry	5	10
Sum	7	14

Build new units

Build new units

Grunt **2** Costs per unit: 150  100 

Infantry **4** Costs per unit: 170  200 

Build Close

Team management

Team master

- Permissions
- Who becomes a team master

Actions

- Inviting players to the team
- Inviting straglers
- Deleting players
- Changing team name and avatar

Team

Team information:

Faction: red
City: Munich
Team name: Best team
Team master: Mark

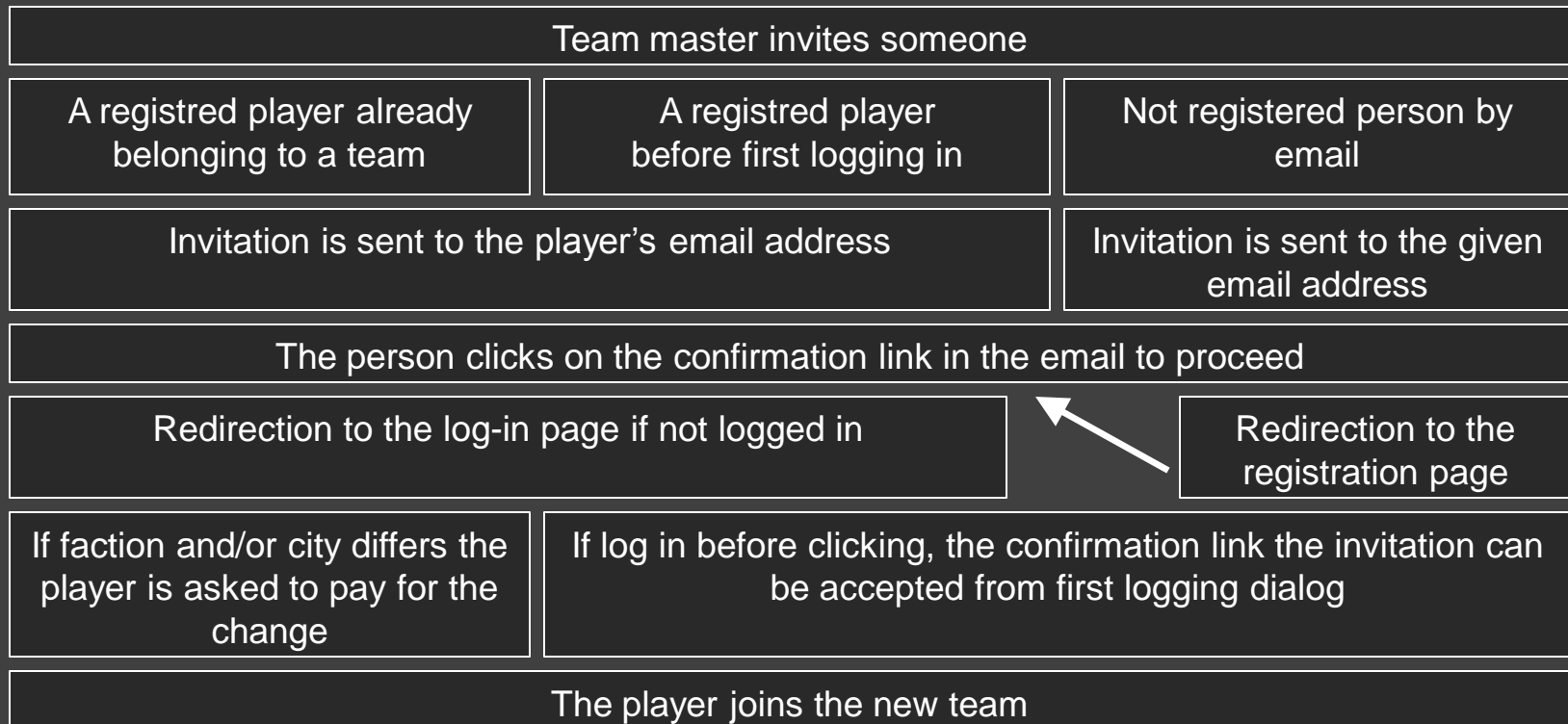
Team members:

Mark
John ✕
Aston ✕

Team resources:

 0  300  0  300  0  0  300

Acceptance of an invitation – schema



The end