

“Image tagging (ARTigo): A game or system that allows users to identify and geolocate landmarks depicted in artworks”

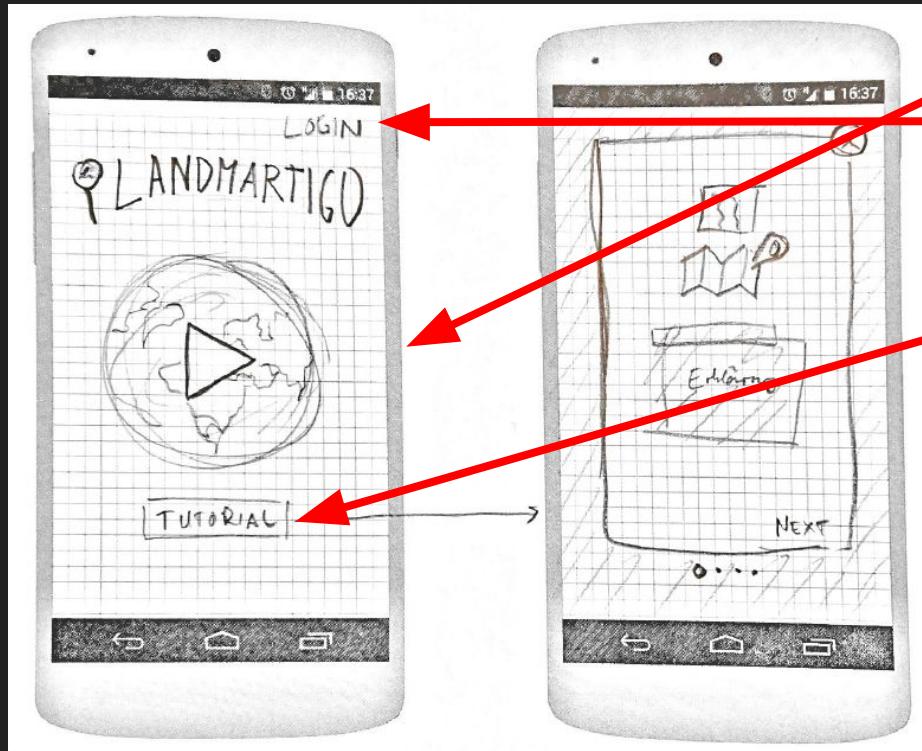
landmARTigo

Gutsy Gibbons

Functionality as seen by the user

- play a round of our game
 - get preselected images (like painting, building, statue, ...)
 - mark as
 - i. contains landmark → locate it on a map
 - ii. doesn't contain landmark
 - iii. contains landmark, but I don't know → skip
 - get points for same selection as “round partner” player
 - get points afterwards if there is no data yet (requires login)
 - get a summary of what artworks were selected (intrinsic motivation)
- explore artwork around your location
 - explore artworks on a map
 - get notified if you are close to some tagged artwork (requires app)

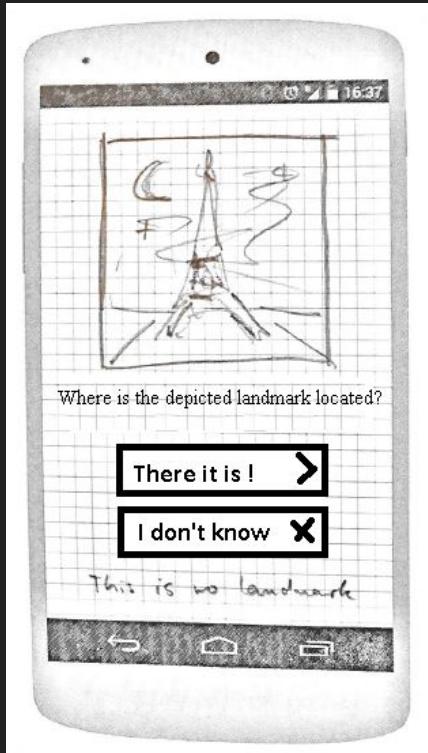
Workflow → Tasks + Functionality



Home Screen and Tutorial

- Homescreen with optional Login
- “Login” changes to “View Summary” when user chooses to make a profile
- Button leads to short image based tutorial

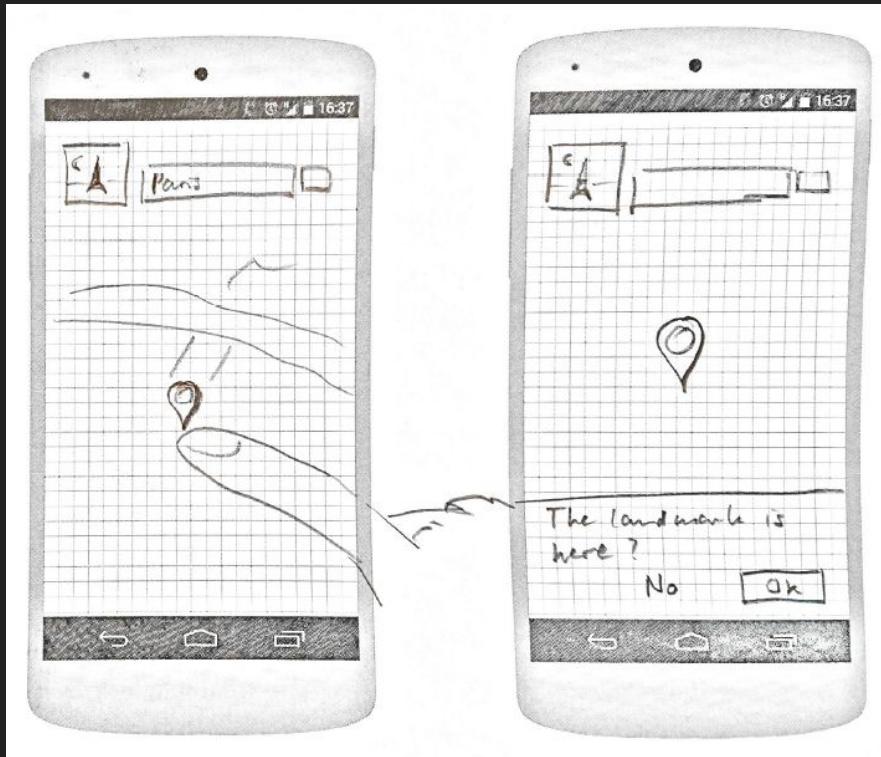
Workflow → Tasks + Functionality



Game Screen

- Primary Game Screen with 3 Options to choose
 - “There it is!” if the user identifies a landmark and knows the location
 - “I don’t know” if there might be a landmark present but the user is unsure
 - “This is no landmark” if preselection failed and there is no landmark present
- If the user chooses “There it is!” he is navigated to the Selection Screen, otherwise to the next image

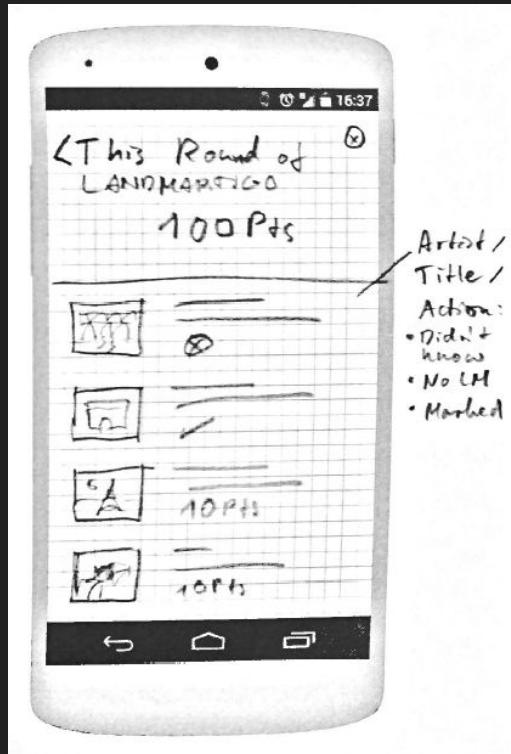
Workflow → Tasks + Functionality



Selection Screen

- Selection Screen connected to the Maps API
- User can search for and zoom in to pick a location by tapping it
- Confirmation request to avoid accidental positioning
- Picking a location either leads to the next image or the Summary Screen

Workflow → Tasks + Functionality



- Summary of the game round
 - How many points were earned
 - Detailed information about each tagged image
 - Artist
 - Title
 - Picked landmark/ Didn't know/ No Landmark

Summary Screen

Task

decomposed manageable task

- preselected images that probably contain landmarks
- select them individually
- select a location or don't select for each

Incentivization Model

Extrinsic Motivation

- Social motivation
 - *Indirect feedback from the job:* “Bragging” with points and selfies
 - *Action significance by external values:*
 - Immediate validation: Instant point rewards
 - Delayed validation: Notifications about results show that user actions are not pointless

Incentivization Model

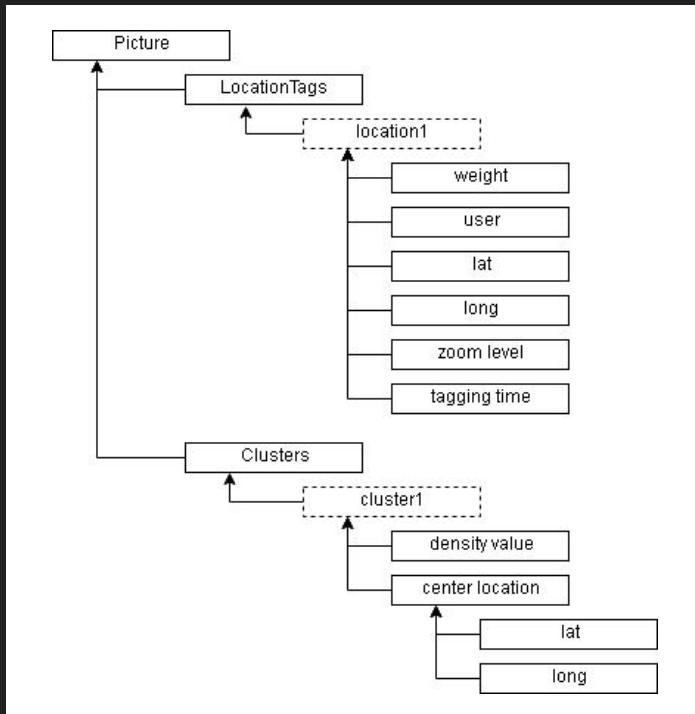
Intrinsic Motivation

- Enjoyment based motivation
 - *Task identity*: Users of Artigo are likely to identify themselves as “art nerds”
 - *Direct feedback from the job*: Immediate sense of contribution (either by direct result or by knowing that data will be useful in future validation)
 - *Pass time*
- Community based motivation
 - Not much yet
 - We want to look into community building design to improve motivation here, maybe transitioning some *social motivation* aspects into deeper *community based motivation*

Incentivization Model

- Long term motivation through
 - Community (yet to come)
 - Notifications about successful delayed validation (also help to keep the game in users' memories)
 - Adding value to the point reward system by ranking the users (maybe with special badges like "art explorer")
 - filter when you have been at a landmark depicting the artwork and your selfie
 - inherently interested people
 - altruism, helping a worthy cause

Data processing



$weight = 1$ if instant validation is successful
(both players agree)

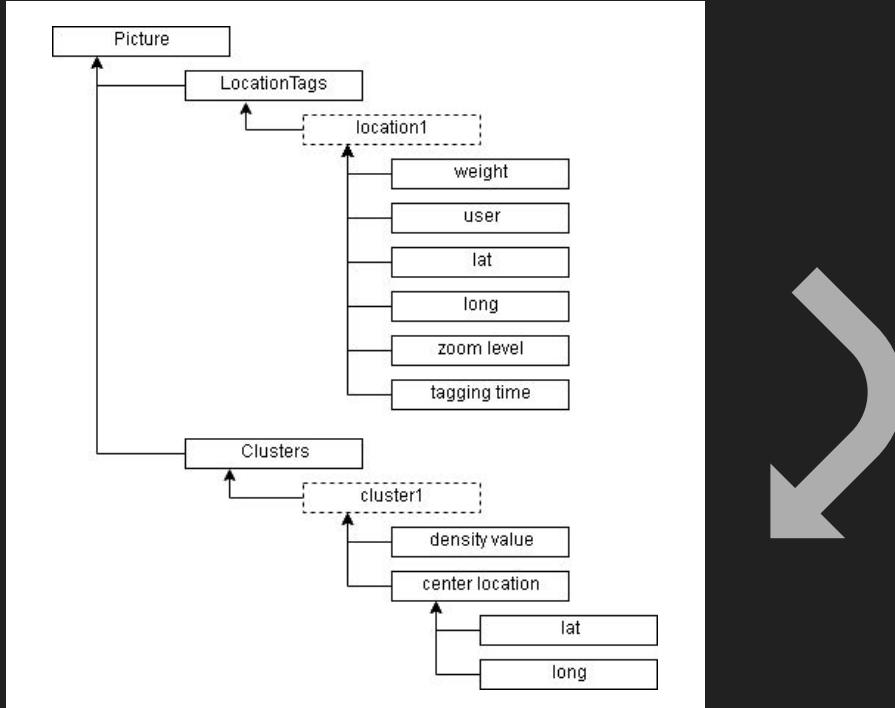
$weight < 1$ otherwise

save *user names* to notify them later

the higher the *zoom level*, the higher the quality
of this location tag

very low *tagging time* suggests a bot (QA)

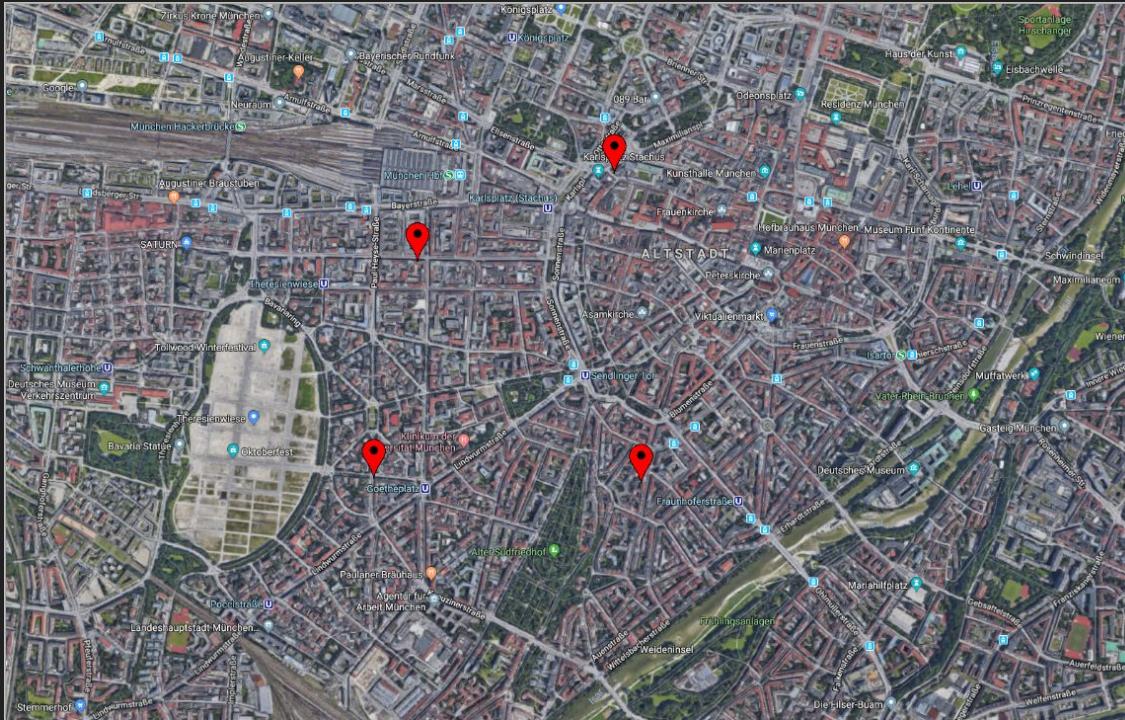
Data processing



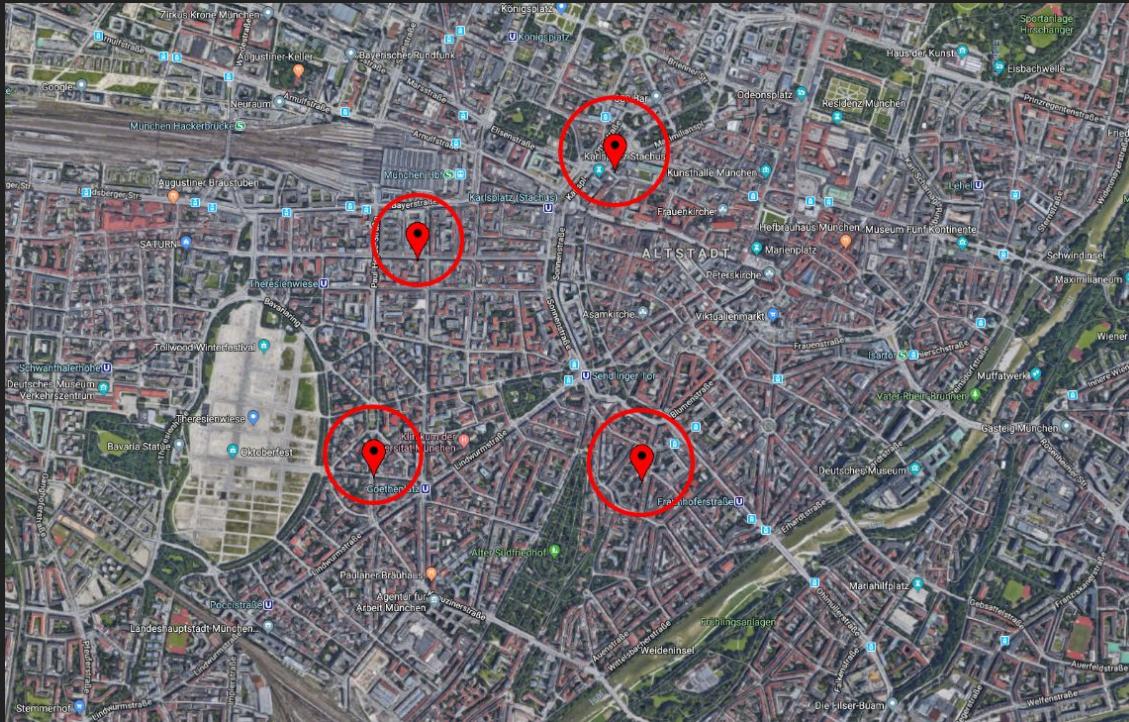
Whenever a new location tag is added to a picture, the **DBSCAN clustering** algorithm is executed.

The resulting clusters have a *density value* which is used as a threshold to determine its validity (QA).

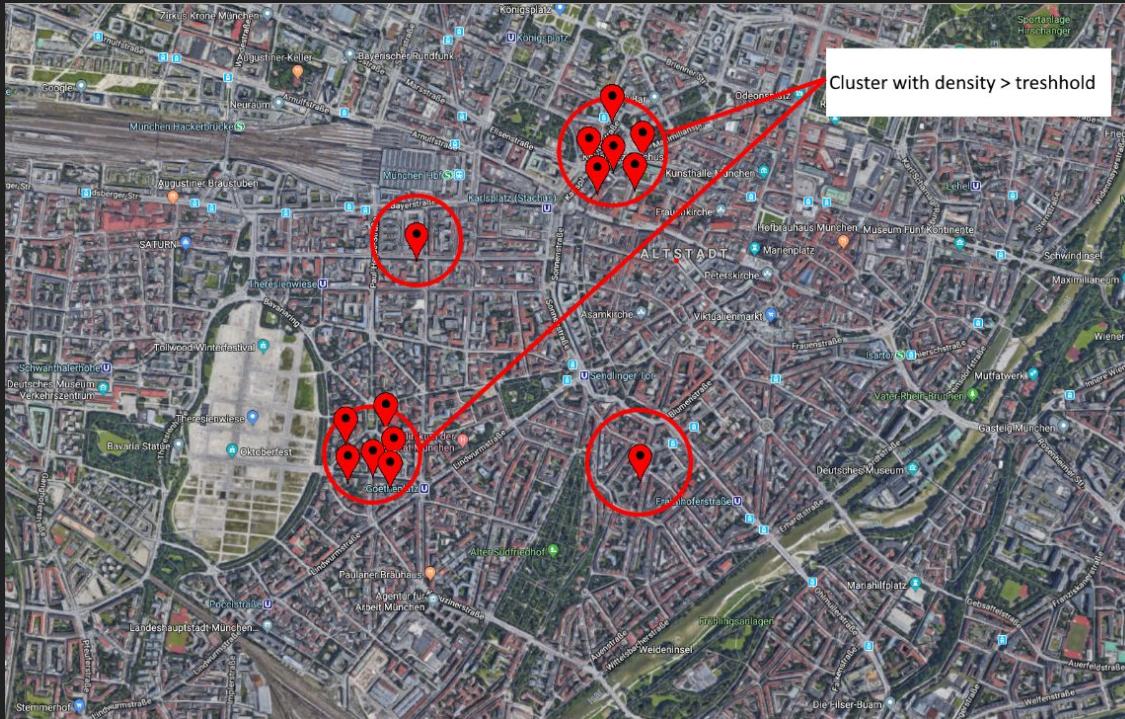
Clustering to process collected locations



Clustering to process collected locations



Clustering to process collected locations



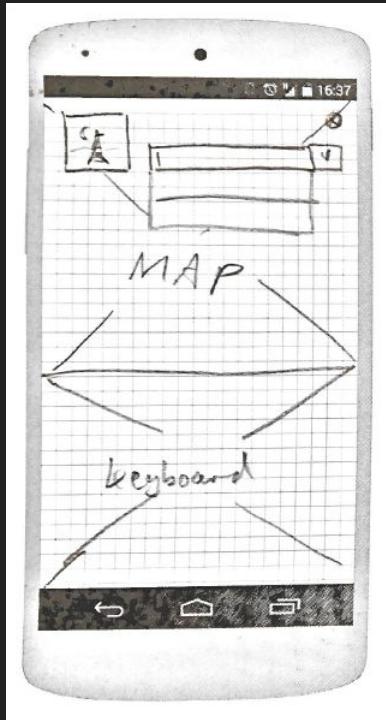
Quality Assurance

- two step validation (instant and delayed)
 - outliers are detected by clustering algorithm (DBSCAN)
 - bot and malicious user detection
 - occasionally add already tagged pictures as a task to check on users
→ gold standard based quality assurance
 - time to complete tasks is measured - irregularities are filtered
- don't use their results; if more often: block IP / user name
- attract inherently interested users

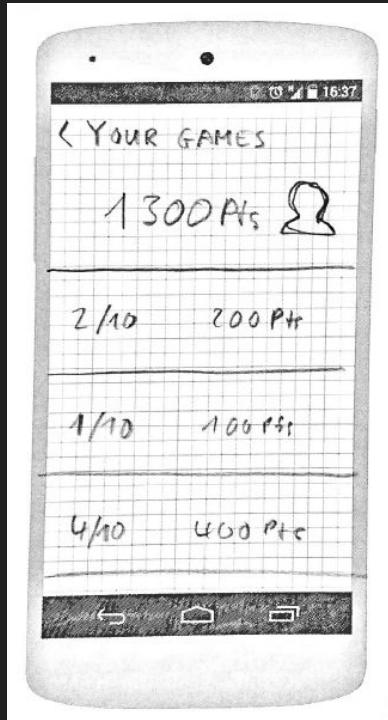
Sources

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- Chamberlain, J., Kruschwitz, U., & Poesio, M. (2013). Methods for engaging and evaluating users of human computation systems. In *Handbook of Human Computation* (pp. 679-694). Springer, New York, NY.
- Nicholson, S. (2015). A recipe for meaningful gamification. In *Gamification in education and business* (pp. 1-20). Springer, Cham.
- Kröger, P. (WS 17/18). Density-based Methods: DBSCAN [Vorlesungsfolien].
Abgerufen von http://www.dbs.ifi.lmu.de/Lehre/KDD/WS1718/04_Clustering-3.pdf

Outtakes



Map Screen;
reachable from Game
Screen



Game summary;
reachable from Home
Screen when logged in