



# History on the GO

*“Open a window into the  
past of the city using your  
own mobile!”*

HistoCaching Team  
Open Data Camp 2021

# HistoCaching Team



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# Challenge 5: History on the GO

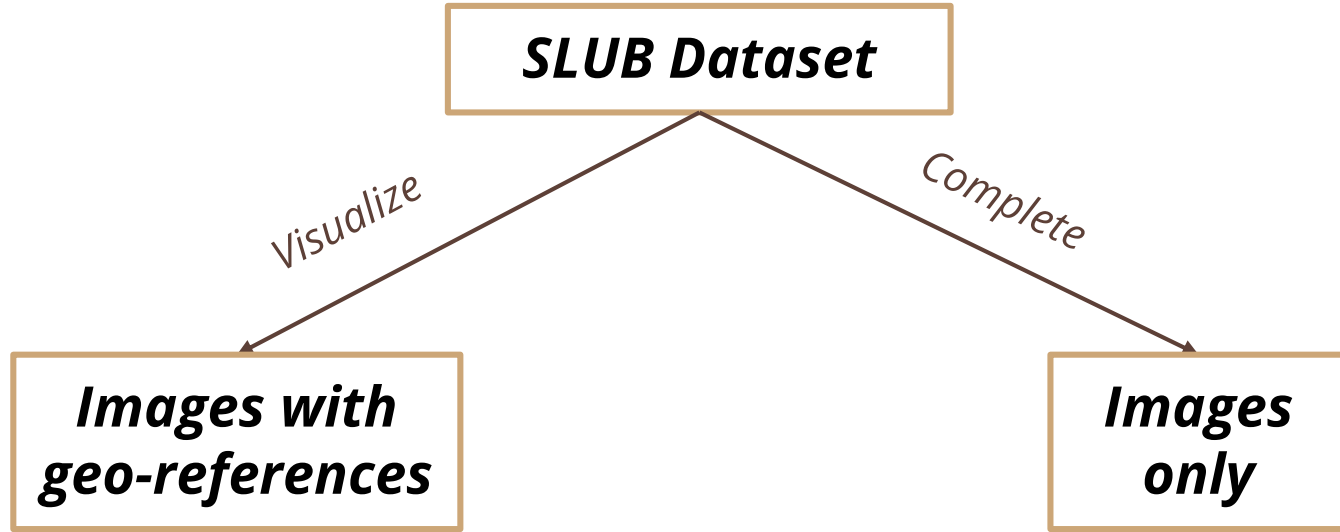
## ***What do we have? Historical images!***

- 35 images with geo-references (view points coordinates)
- ... and a lot images without

## ***What we gonna do? The mobile App!***

- Show the data with geo-references in Augmented Reality
- Provide a simple way to complete other historical images with geo-data

# Concept: data-driven development



**For:**

Any history seekers! Gives everyone a perfect opportunity to get closer to city's history and dive into the atmosphere of the old times

**For:**

Historians and dataset handlers to simplify data completion and provide more images for visualization

# The Visualization Concept

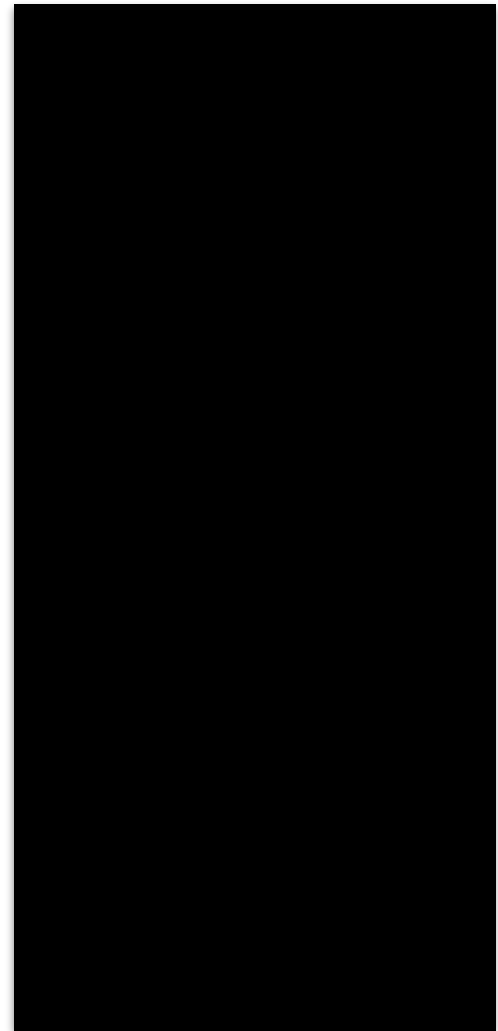
## ***Visualization:***

- Place geo-targets to map for global navigation
- Place the viewpoint to the Virtual World (convert geo-reference to pose)
- Place the image as a billboard relatively to viewpoint in a Virtual World (define relative position)
- Allow manual correction for the billboard position

## ***Possible extensions:***

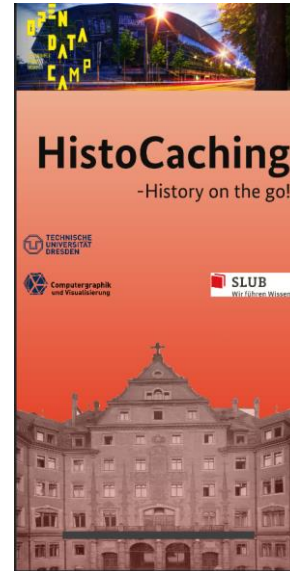
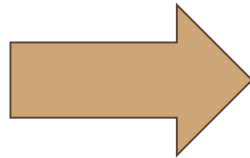
*Any images modifications* - improve image quality with Deep Learning, colorize an old image , use videos instead of images, try to go up with 3D reconstruction, etc.

*Localization quality improvement* - improve compass and gps data processing



# Development State: View Mode

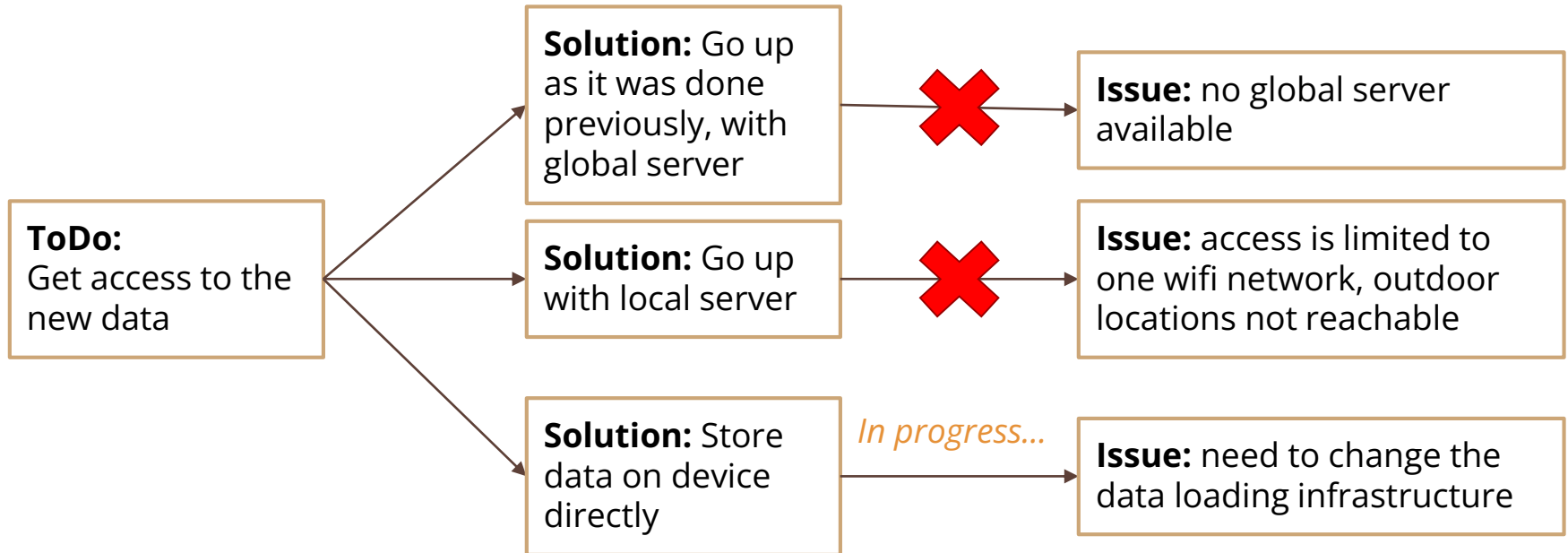
1. Update the functionality & design
  - a. Provide new App design
  - b. Remove redundant functionality w.r.t. new data



# Development State: View Mode

## 2. Set up SLUB database

- Convert to file format acceptable by App
- Set up the access to new database



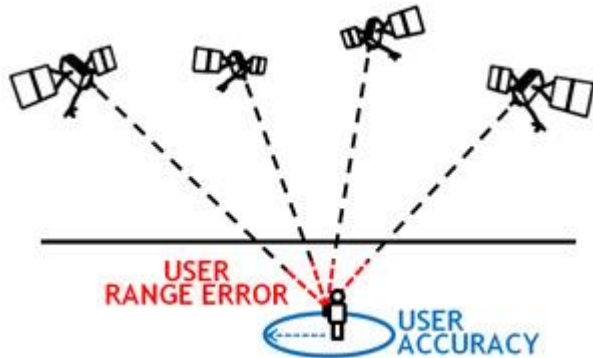
# Development State: Indoor GPS issue

Signal-based positioning or ***why don't we just put a fake point here, at the stadium?***

Modern approaches:

Indoor -> WiFi points & building map

Outdoor -> GPS + Compass & world map

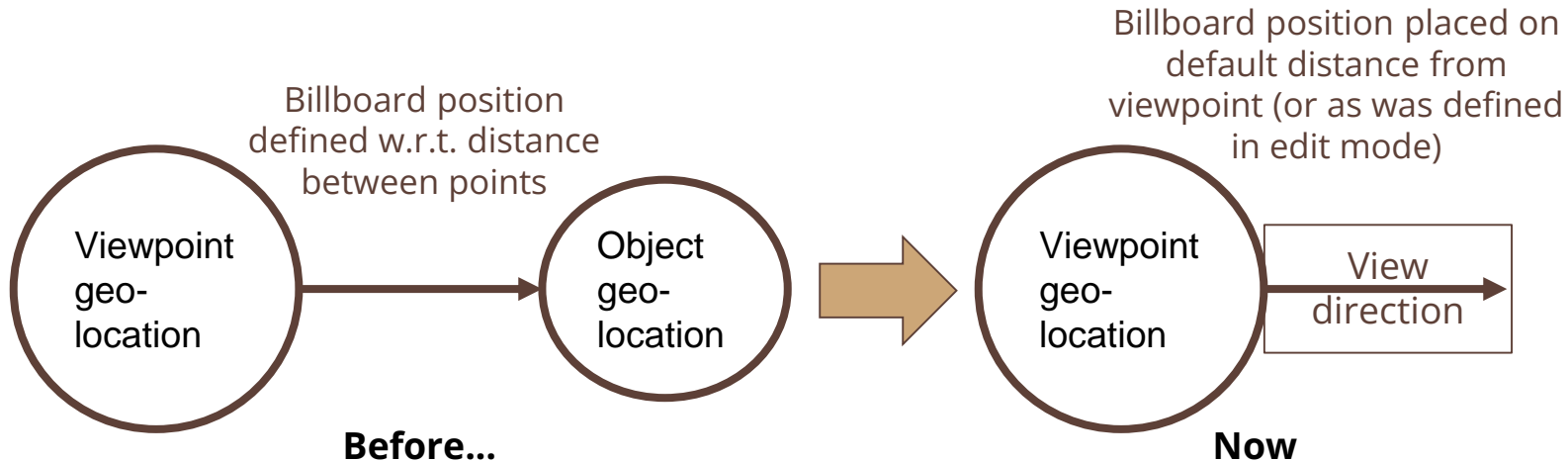


Instability of GPS and compass at the stadium. The device is just lying on the black table on the balcony all video time



# Development State: View Mode

3. Change Pol position format: from 2 points(view + target) -> viewpoint + view direction(angle):
  - a. infrastructure support
  - b. localization support (need test -> need database access)



# The Edit Concept

1. Select the image that requires geodata edit and run Augmented Reality edit mode for it
2. Place image into the default location in Augmented Reality(AR) session with respect to current user position
3. Move image to the position with the best view in AR
4. Update the database with obtained georeference data required to reproduce the item
  - a. User position as geolocation and view angle (from sensors)
  - b. Relative billboard pose with respect to viewpoint (from Unity)

## **Possible extensions:**

*Add locations list filtering* - by favourite list, by rough item location info(stay near location area), show only those without georeferences

*Improve visualization* - e.g. add transparency scrolling to see how the historical image match real object

Questions Time!