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Ideas for a layered data model for an AR tours app based on CIDOC CRM and geodata

Virtual Campus project

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Virtual Campus project

Context:

- University of Cologne
 - Department of Geography
 - Department of Digital Humanities
 - University Library
 - Computing Center
 - Center for Teacher Education
- 2023–2026
- Funding for 'Quality improvement in studies and teaching'
- <https://virtueller-campus.uni-koeln.de/>

Goals:

- Explore how AR and VR can bring improvements for students
- Improve finding one's way on the UoC campus
- Improve (information on) accessibility of buildings and paths
- Create a 3D representation of (some of) the UoC campus

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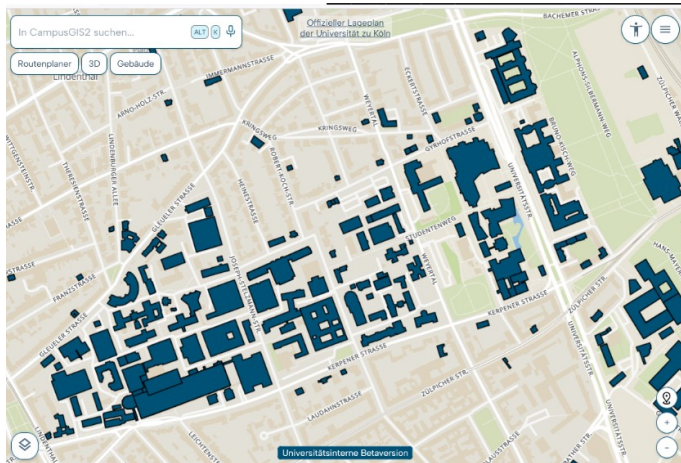
Products:

- 3D models
- Mobile app
- 360° tour of the University Library
- CAVE-Kompakkt integration
- Teaching
 - Hackathon: projects combining geodata and AR/VR applications

Mobile app (Flutter + Unity):

- Help students navigate the UoC campus with its almost 300 buildings, e.g.
 - Find lecture halls and other rooms
 - Find books/media
 - Routing according to accessibility filters
 - Map and AR modes, outdoors and indoors
- Location-based information
 - What is this building, what is in it
 - Opening hours
- AR tours of University Library to get to know the library services

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Screenshot <https://campusgis2.uni-koeln.de/prototyp/>



Mock-up

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Planned addition: AR tours on UoC history

- Tours with topics like
 - History of UoC in a nutshell
 - UoC and colonialism
 - The first woman student at UoC
 - Brutalist architecture at UoC

Why AR?

- The AR navigation feature will exist anyways
- AR tours: interactive, location-based, can be done at any time, multisensory, hopefully compelling

What could these tours look like?

Different ideas, in planning stage:

- AR navigation
- Guided tour: Tour stops in a specific order
- Explorative: Looking around the campus triggers content
- Present relevant multimedia content (audio, video, image, text, 3D model), either/or:
 - Not in AR, but just as popup
 - Show 3D reconstructions of previous building states in AR
 - Show historical photographs in AR, recreating the photographer's view

Data model / knowledge base for AR tours on UoC history

Benefits:

- Potentially very large amount of data, data from different sources → common format
- Sustainability of data beyond the lifespan of this app
- Data could be queried according to tour designer's or user's interests
- Enable students of different disciplines to create their own tours

Data model / knowledge base for AR tours on UoC history

What to model and how to model it? Some of our ideas:

- Base data
 - Buildings, ensembles, squares, etc., their parts and location → E53 Place / E4 Period
 - Events, also related to buildings → E11 Modification and similar
 - Persons, their role at UoC → E21 Person
 - Multimedia objects → E 36 Visual Item etc.
 - 3D models of some buildings (being created in the project); refer to specific parts of the geometry?
→ 3D Tiles standard (and/or annotations / IIIF 3D / Kompakkt)?
- Base data → information presented to user → E73 Information Object
- Suggested tour order → *CRMact actE2 Activity Plan*
 - Links to the base data as presented to the user
 - Parallel with series of annotations in storytelling
- View point of photographer / observed area → issue 579

Data model / knowledge base for AR tours on UoC history

Next steps?

- Feedback from you?
- Start a UoC knowledge base based on a simplified model
 - Add UoC-related items from Wikidata and other sources
 - Extend it based on research literature
- Decide on one type of AR tour to start with (and implement it in the app)
 - Including the use of Activity Plan and/or specific areas recorded by photographs
- Gradually expand both knowledge base and model as necessary

- Involve Digital Humanities students in modelling
- Involve students from other disciplines to research and design content of tours