

Enriching the GIScience Research Agenda: Fusing Augmented Reality (AR) and Location Based Social Networks (LBSN)

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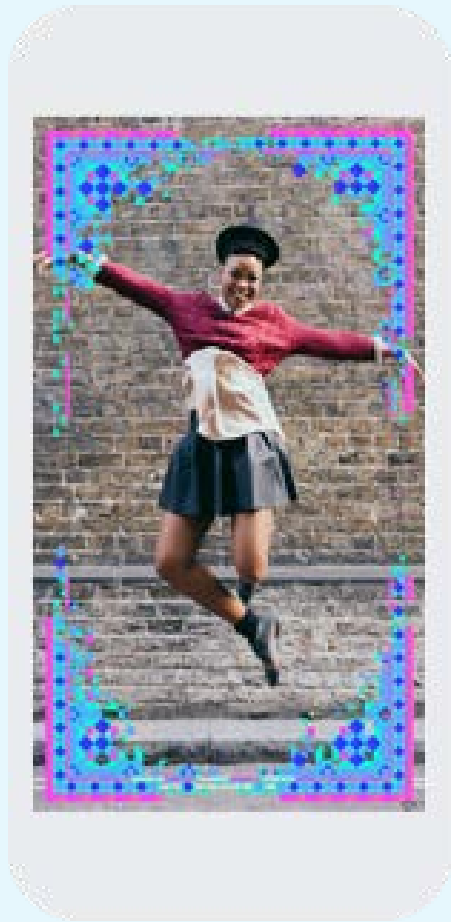
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What Can AR Do?

- Overlaying real world views or scenes with virtual, computer-generated, objects that appear to visually coexist in the same space.
- Wide integration in everyday applications:
 - games
 - marketing strategies
 - navigation aids
 - home design software
 - personal assistance
 - general education applications
- What about in social media?

Something More Than This?



Source: Facebook AR

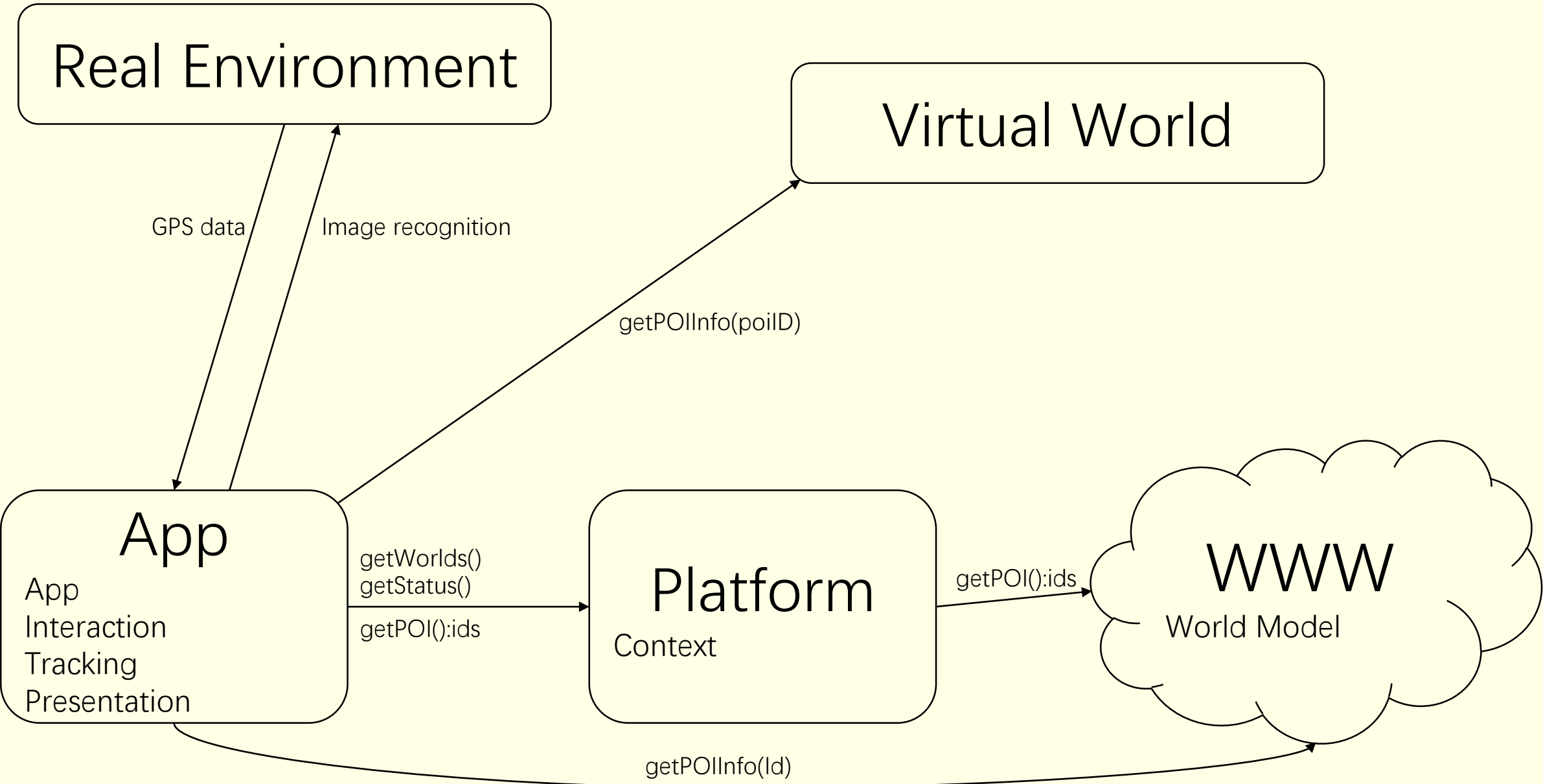
LBSN from the GIScience Perspective

- How are user locations connected with user social networks?
- LBSN is an important source of spatiotemporal data
 - Wide population coverage
 - Convenient data acquisition
- LBSN brings up new conceptual models and frameworks
 - Embodied space (Farman 2013)
 - Spatial self (Schwartz & Haleboua 2015)

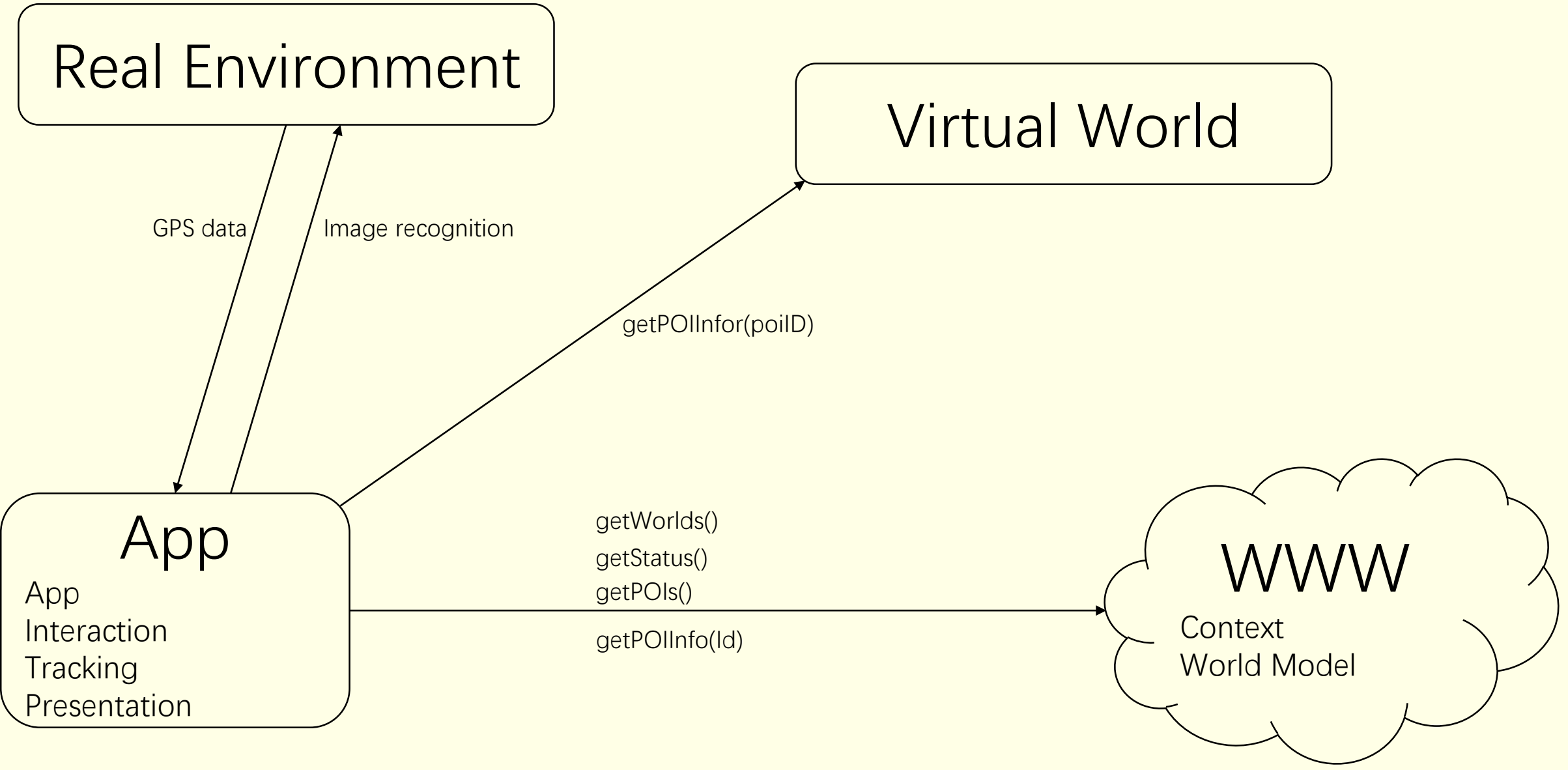
The Fusion of AR and LBSN

- AR 2.0 framework (Schmalstieg et al., 2011)
 - smartphones as a low-cost platform that combine AR display, tracking and processing,
 - mobility to realize AR in a world model,
 - backend infrastructure for the distribution of AR content and applications,
 - easy to use authoring tools for creating AR content, and
 - large-scale AR tracing solutions which work in real time
- Example AR 2.0 architectures (Butchart, 2011)
 - “Gateway” architecture
 - “Web” architecture

"Gateway" architecture for mobile AR browsers



“Web” architecture for mobile AR browsers



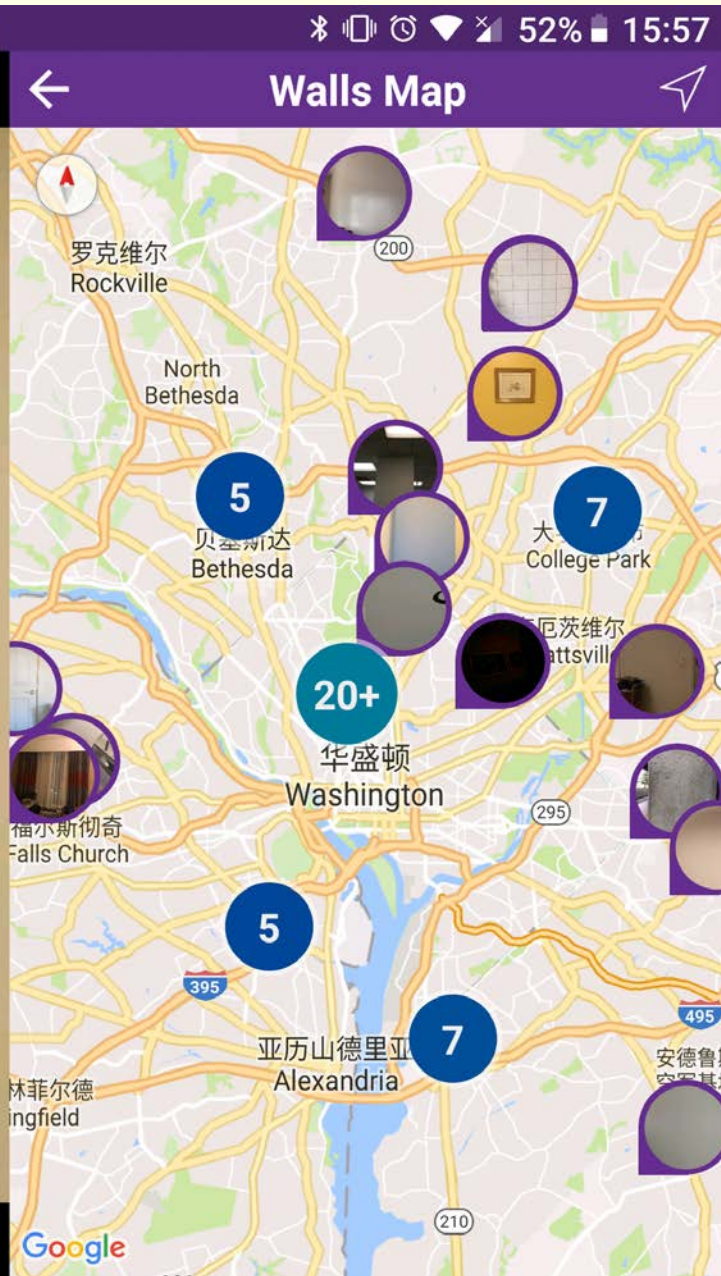
Examples of AR 2.0 Application

- Sekai Camera
- Wallame



User interface of Sekai Camera (Tochidot, 2010)

<https://www.youtube.com/watch?v=oxnKOQkWwF8&t=48s>



Screenshots of Wallame

Enriching the GIScience Agenda

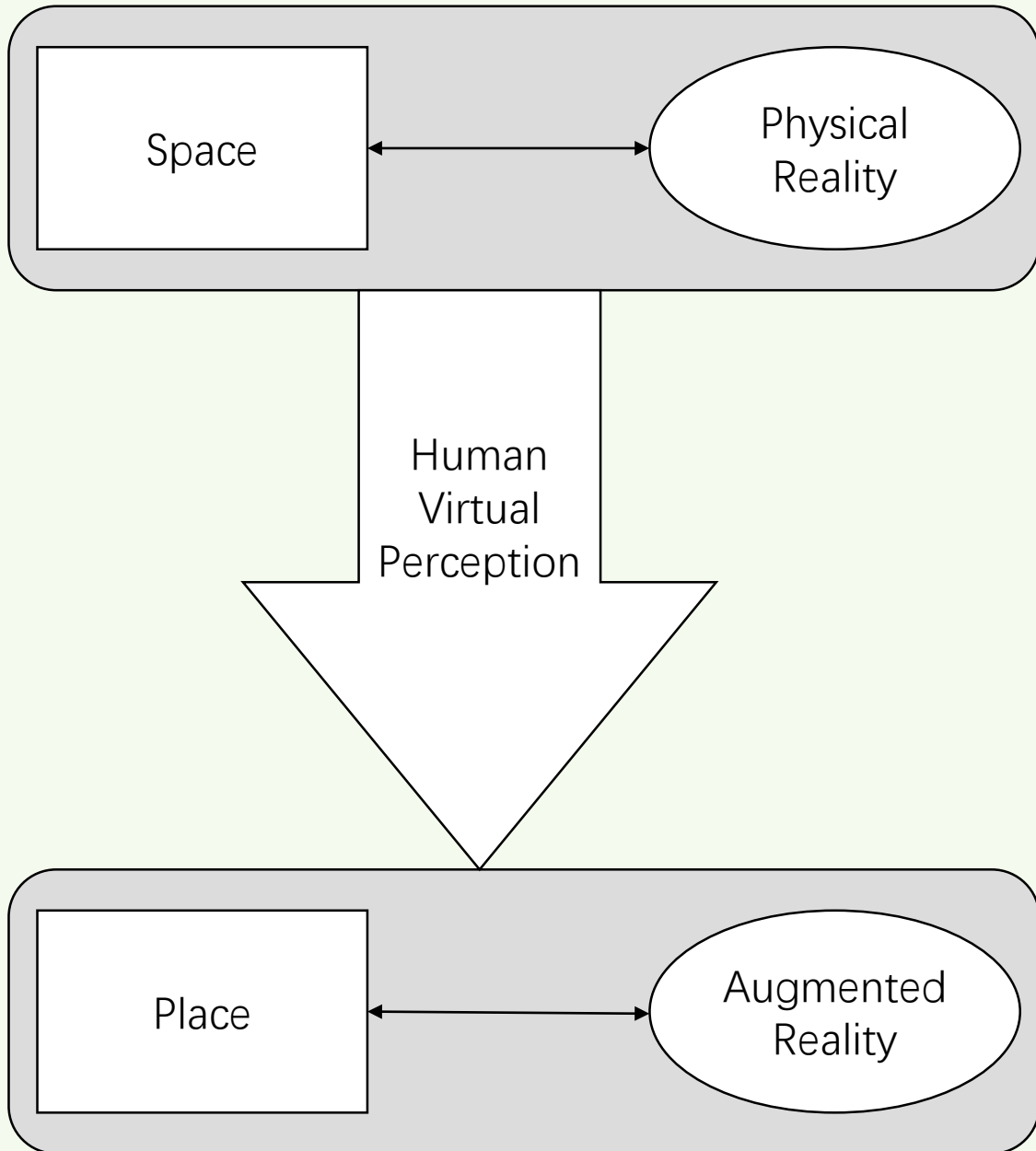
- Data conflation
- Platial GIS
- Multimedia storytelling

Data Conflation

- Incorporating ambient information from AR
- Moving from 2D to 3D (e.g., Google ARcore anchoring)

Platial GIS

- Visualizing place in space
- Holding localness assumption



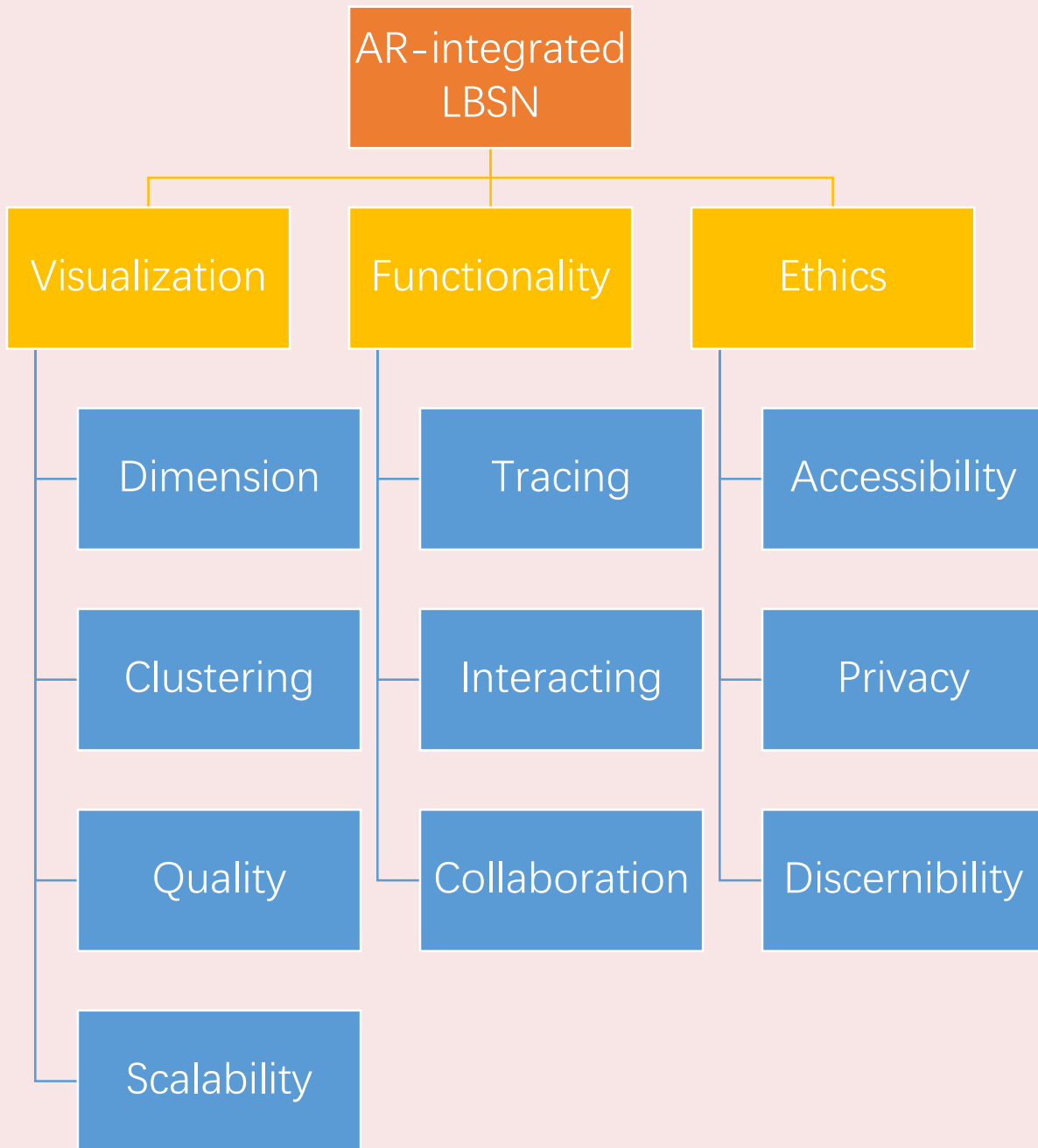
Correspondence between
reality/virtuality and space/place

Multimedia Storytelling

- Enhancing immersivity and interactivity
- Developing more coherent narratives



Screenshots of an "AR Portal" prototype (Nedd, 2017)



Guidelines to develop and evaluate AR-integrated LBSN

Conclusion

- Examples of new research question:
 - Can ambient information in AR-integrated LBSNs assist spatial data matching/clustering?
 - Can AR-integrated LBSNs reveal characteristics of places?
 - How can various forms of AR-integrated LBSN enhance our storytelling experience?
- Next steps:
 - Probe if there is any statistical correlation between characteristics of user-generated content and the surrounding environment.
 - Develop an analytical approach that would provide more insights to understanding spatial GIS and the impacts of localness on user's behavior in social media.