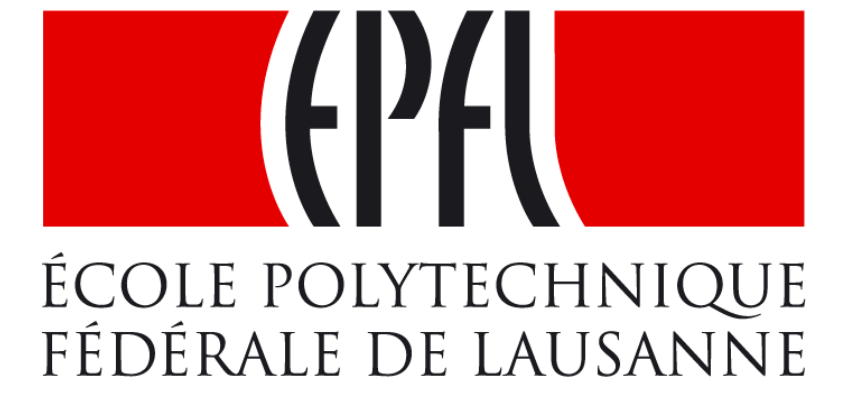


Semantic-aware Location Privacy: An Android Library

Berker Ağır, Jean-Paul Calbimonte, Karl Aberer

Distributed Information Systems Laboratory (LSIR), EPFL

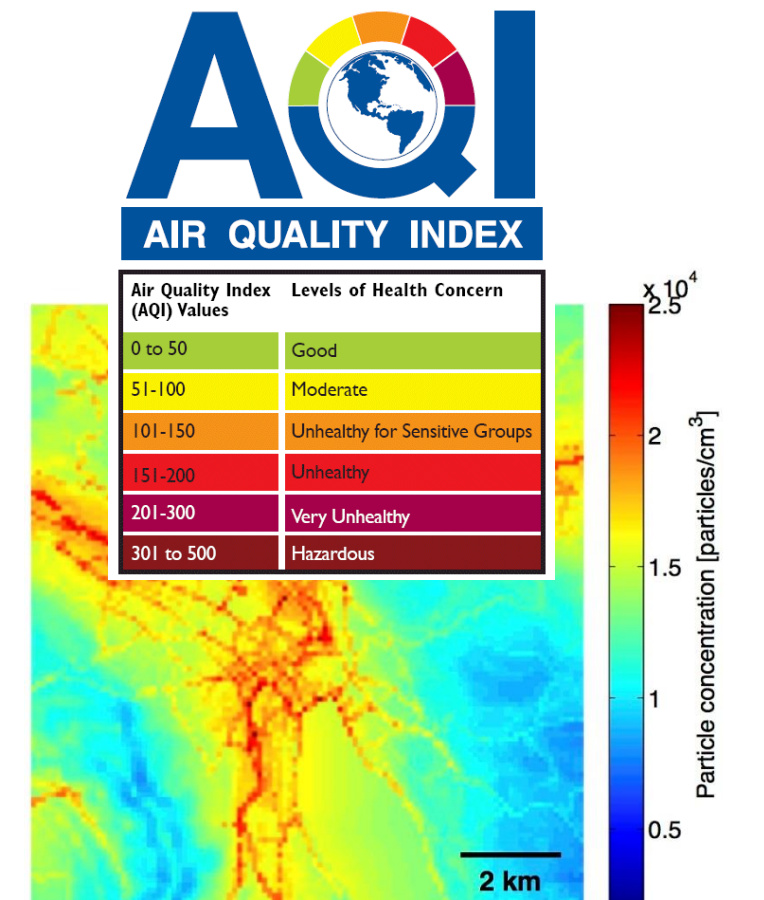


Human-centric Applications



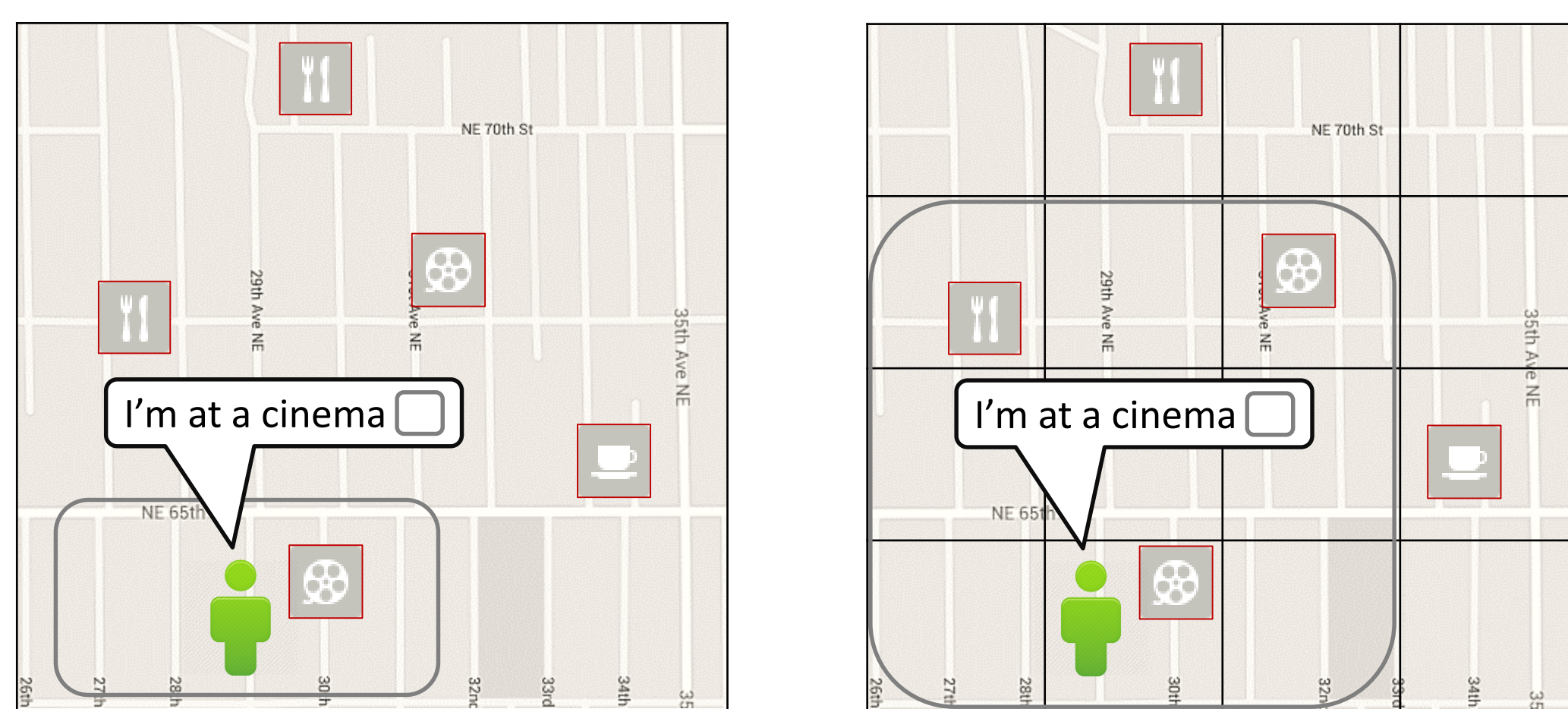
Active Internet Presence → abundant data disclosure on Internet platforms (e.g. OSNs)

Human as sensor → infer context of users from mobile data and social networks



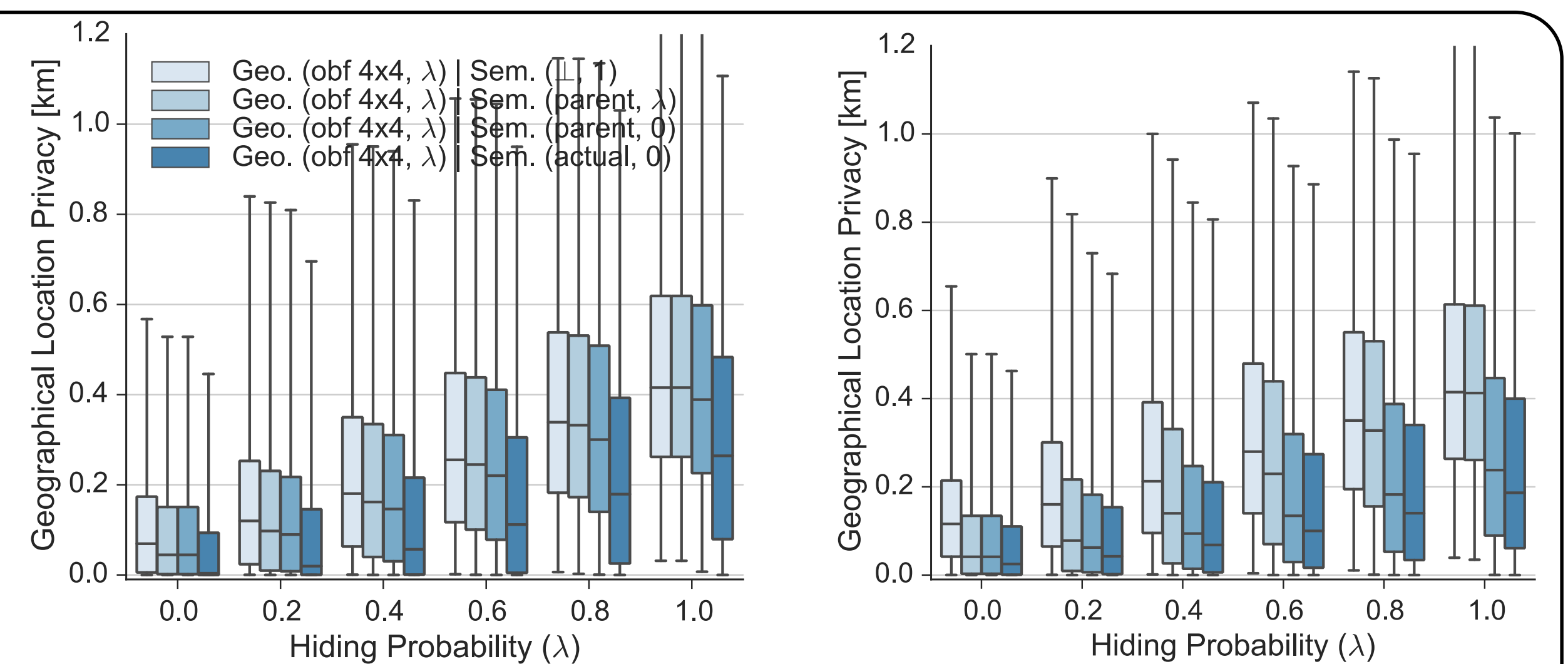
Location-Privacy in Continuous Data Disclosure

Semantic Information in Location Privacy



Need of privacy protection mechanisms (e.g., obfuscation, hiding)

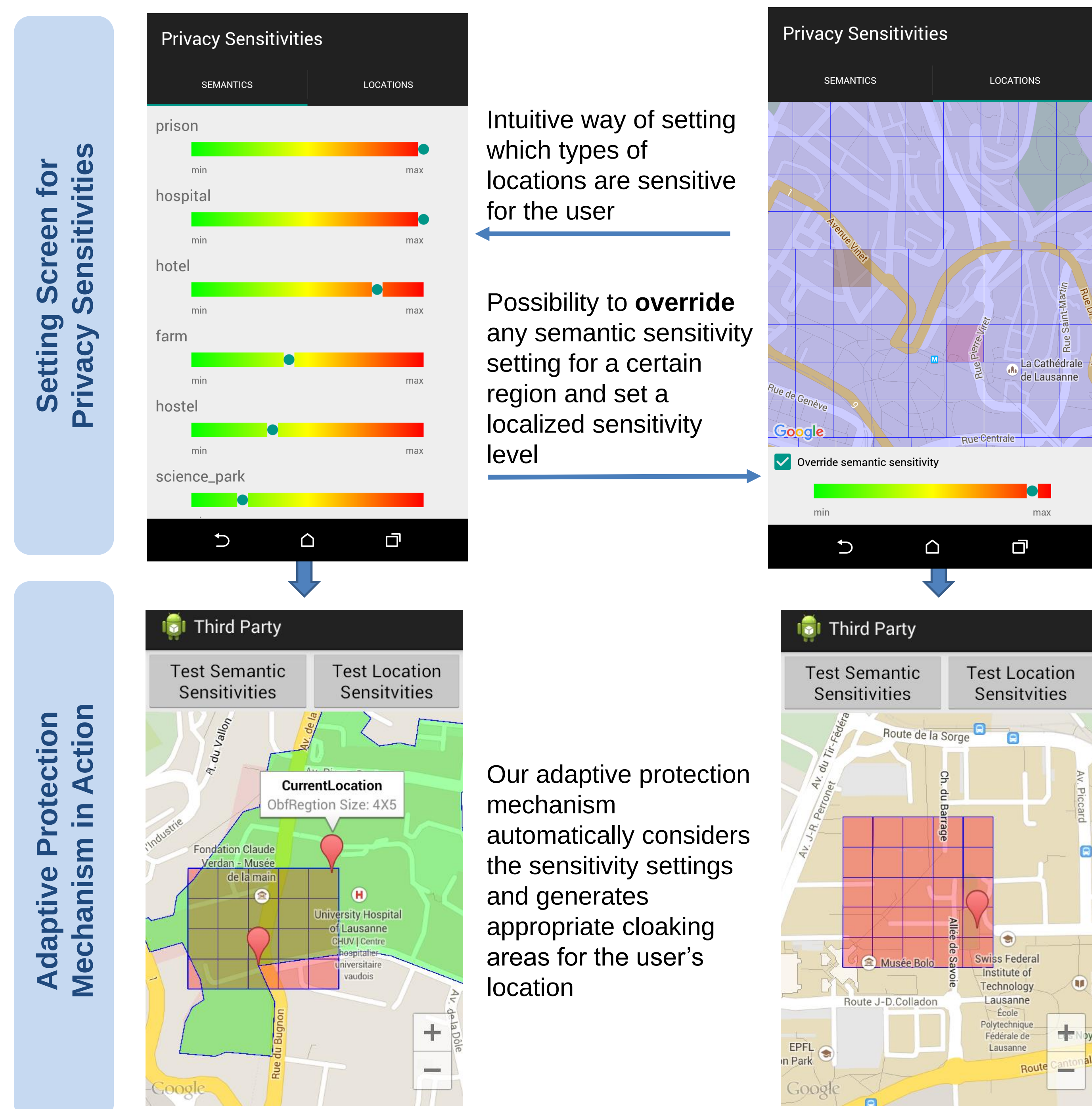
Disclosure of Geographical / Semantic Location in a Mobile environment



Semantic Information influences substantially on the location inference [3]

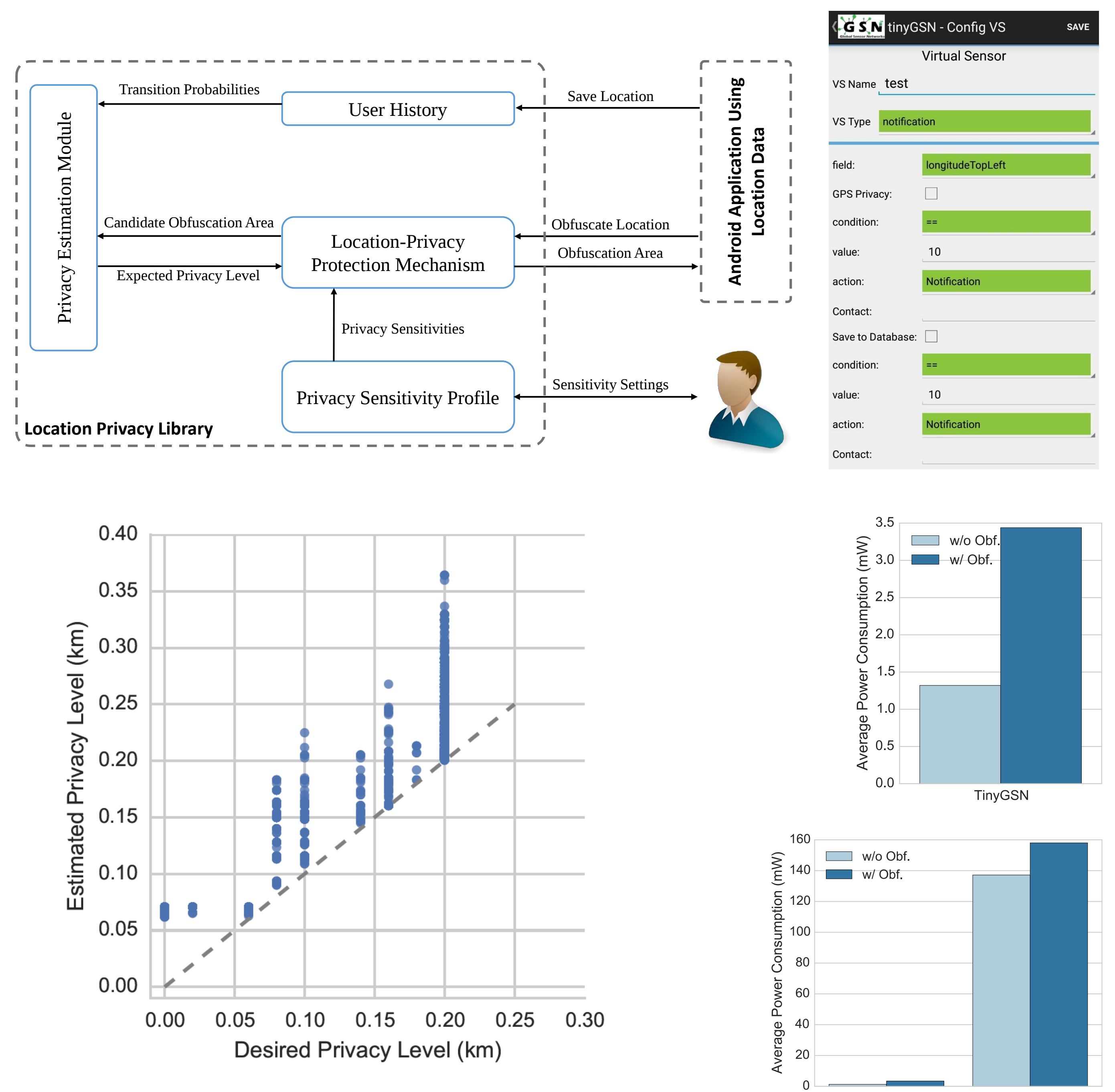
An Android Library for Widespread Protection

- Android library and an application that integrates a mechanism to protect user's location privacy considering:
 - Location semantics** fetched from OpenStreetMap
 - Sensitivities** based on location semantics and geographical locations



Android Privacy Library

Integrated with the tinyGSN android application for general purpose mobile sensing. The adaptive location privacy protection approach considers users' privacy preferences w.r.t. certain locations and location types, and adaptively tunes protection techniques such as obfuscation and hiding.



References

- [1] B. Agir, T. G. Papaioannou, R. Narendula, K. Aberer and J.-P. Hubaux. *User-side adaptive protection of location privacy in participatory sensing*, in Geoinformatica, vol. 18, num. 1, p. 165-191, 2014.
- [2] B. Agir, J.-P. Calbimonte and K. Aberer. *Semantic and Sensitivity Aware Location-Privacy Protection for the Internet of Things*, Workshop on Society, Privacy and the Semantic Web - Policy and Technology (PrivOn), 2014.
- [3] B. Agir, K. Huguenin, U. Hengartner, and J.-P. Hubaux, "On the Privacy Implications of Location Semantics," EPFL, Tech. Rep. EPFL-REPORT-213006, 2015..