Universitat Oberta de Catalunya

Security and Privacy Technologies for Smart Cities

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SmartGlacis Project (2015-2019)

KISON Group
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Smartness is likely to result in ubiquitous control and profiling of citizens

SmartGlacis: Security and Privacy Technologies for smart cities

The general objective of SmartGlacis is designing solutions to help making the life of citizens in a smart city efficient, secure and privacy-preserving in three broad areas:

A. **smart green mobility**
B. **e-commerce**
C. **citizen participation**

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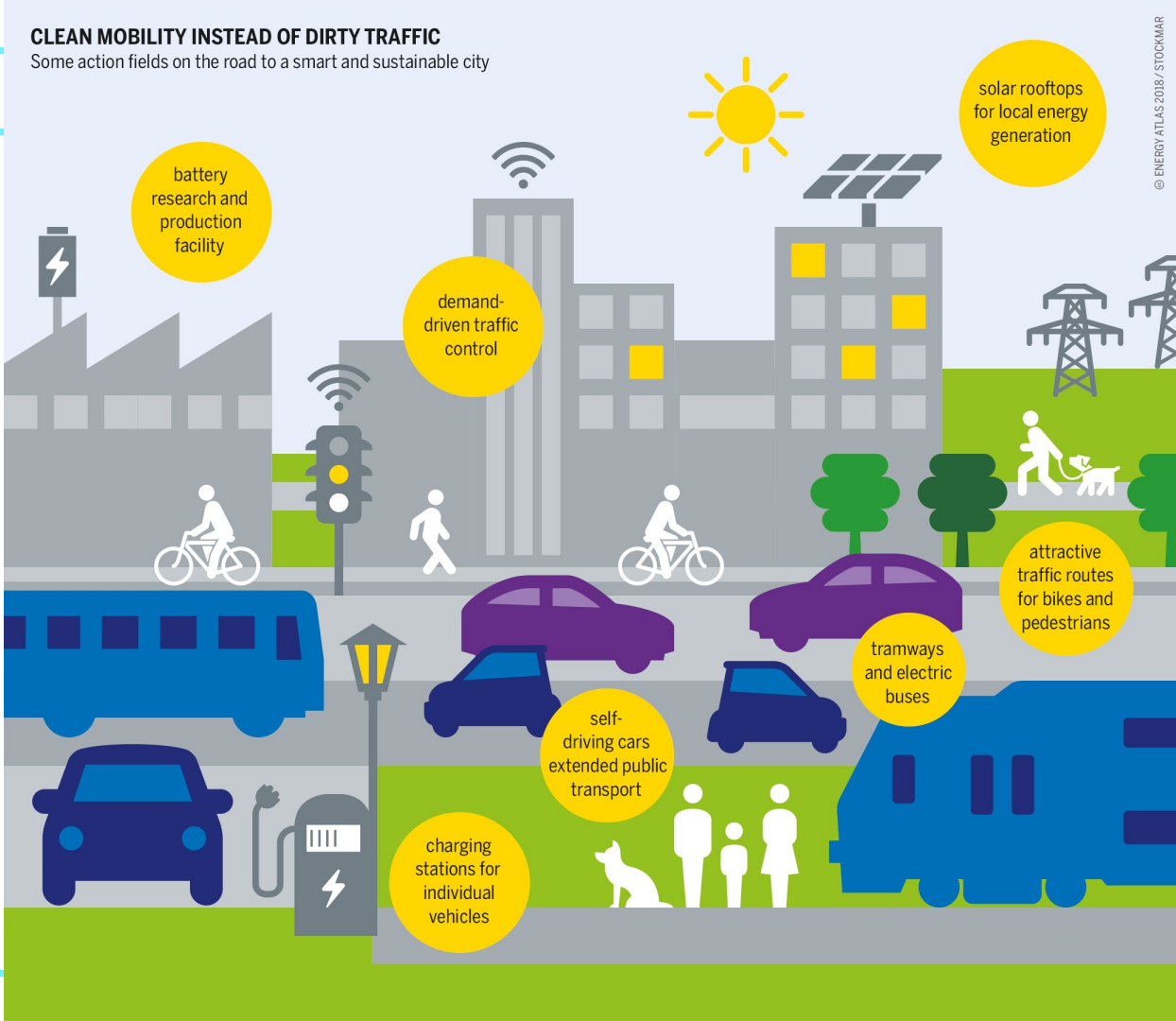
A. Green mobility:

- Fee collection for low-emission zones
- tolls for restricted areas
- parking discounts for high-occupancy vehicles

Research in mobility incentives compatible with security (that is, fraud avoidance) and privacy (that is, driver anonymity)



B. e-Commerce:

- Credit card payments that can be tracked
- Loyalty programs

Research in electronic tickets that are secure (cannot be counterfeited) and privacy-aware. Reconcile group discounts and loyalty programs with buyer anonymity

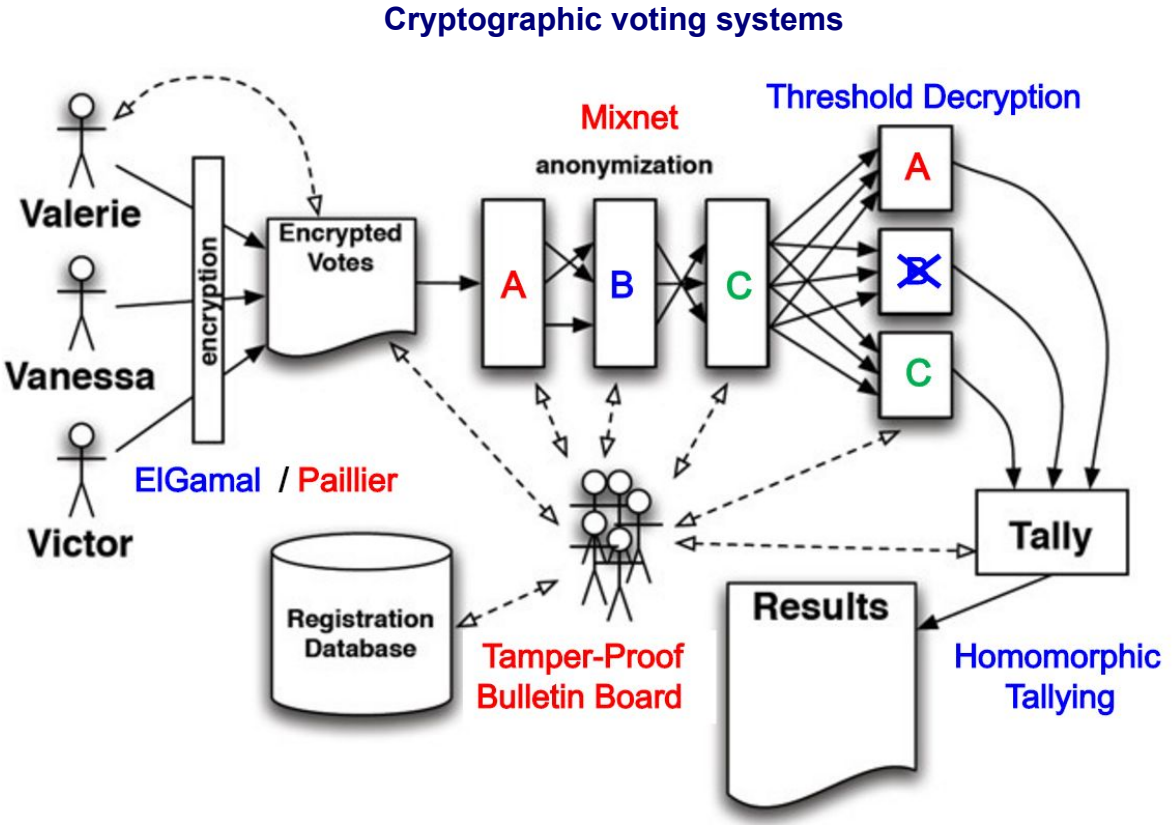
C. Citizen participation

- E-democracy
- User generated content
- City alerts, emergencies

Solutions to encourage citizen participation in the governance and function of the city in an anonymous way, but at the same time identifying and penalizing malicious users

E-democracy

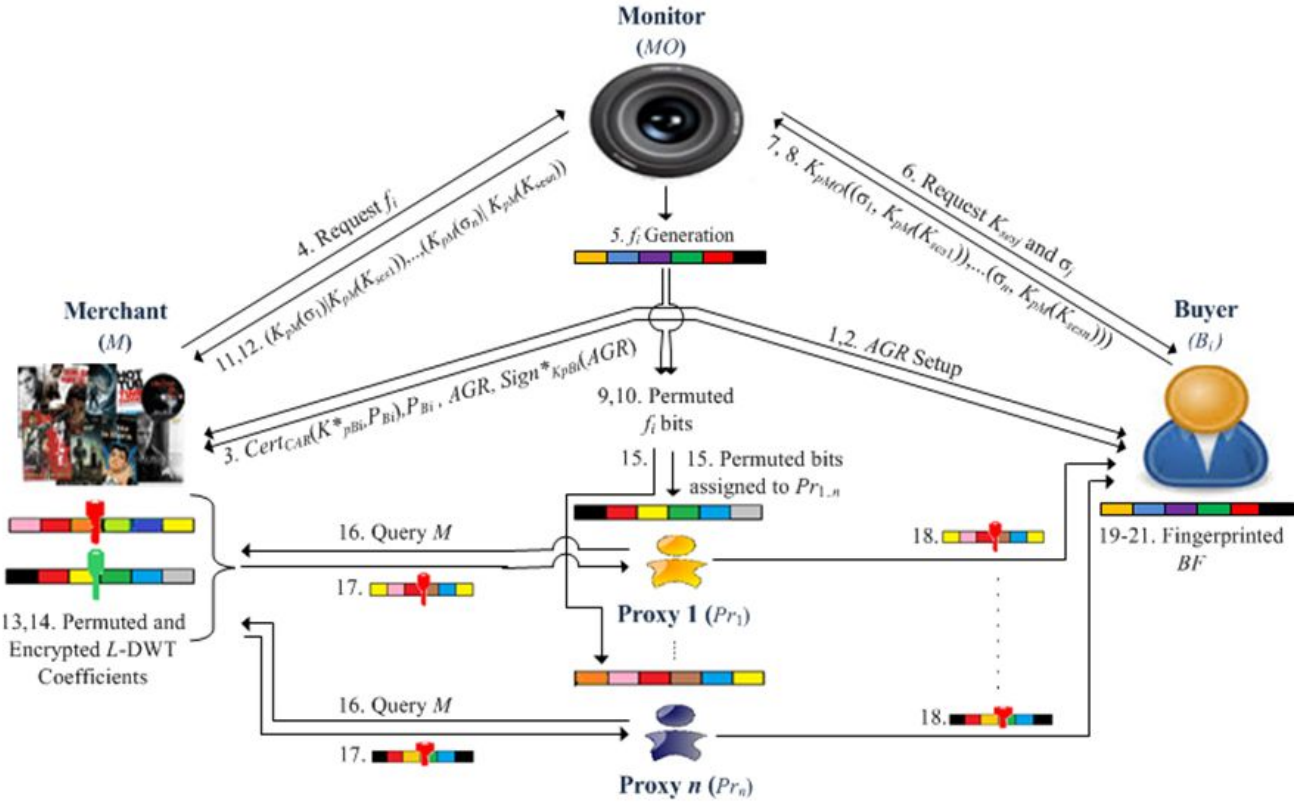
1. Electronic voting and polling systems
   Systems to allow groups of people to allow/reject measures or express opinions according to the majority.
   Design and implementation of an e-voting system for unsupervised environments and adapted for use in lightweight devices.



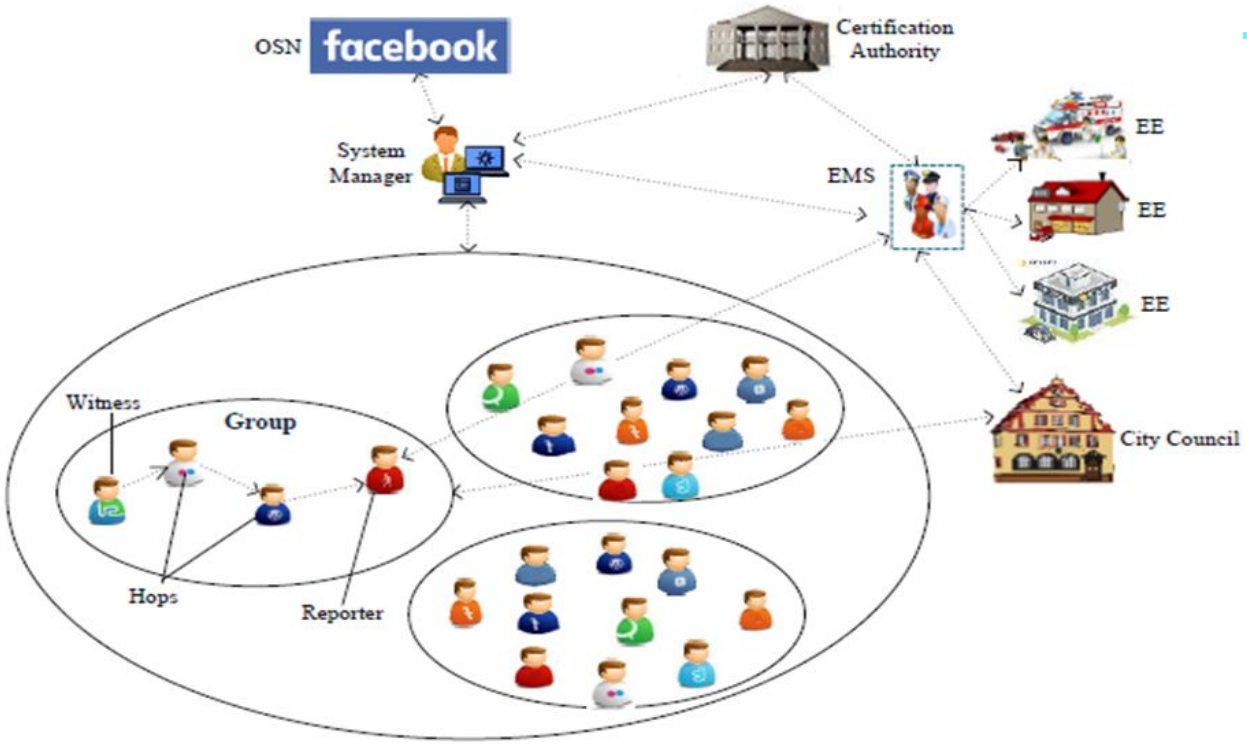
User-generated content distribution

Framework for Privacy-aware Content Distribution in P2P Networks with copyright protection

We propose protocols to share user-generated content through online social networks that avoids **copyright infringements and privacy breaches**.



SmartGlacis/Citizen: Participation areas

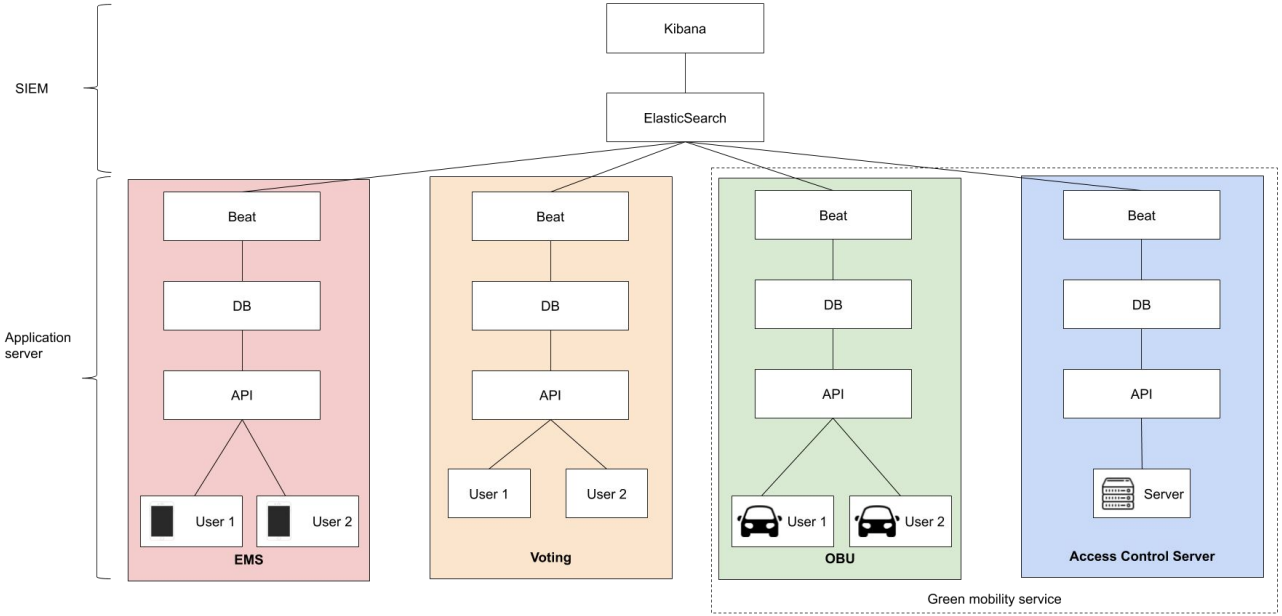


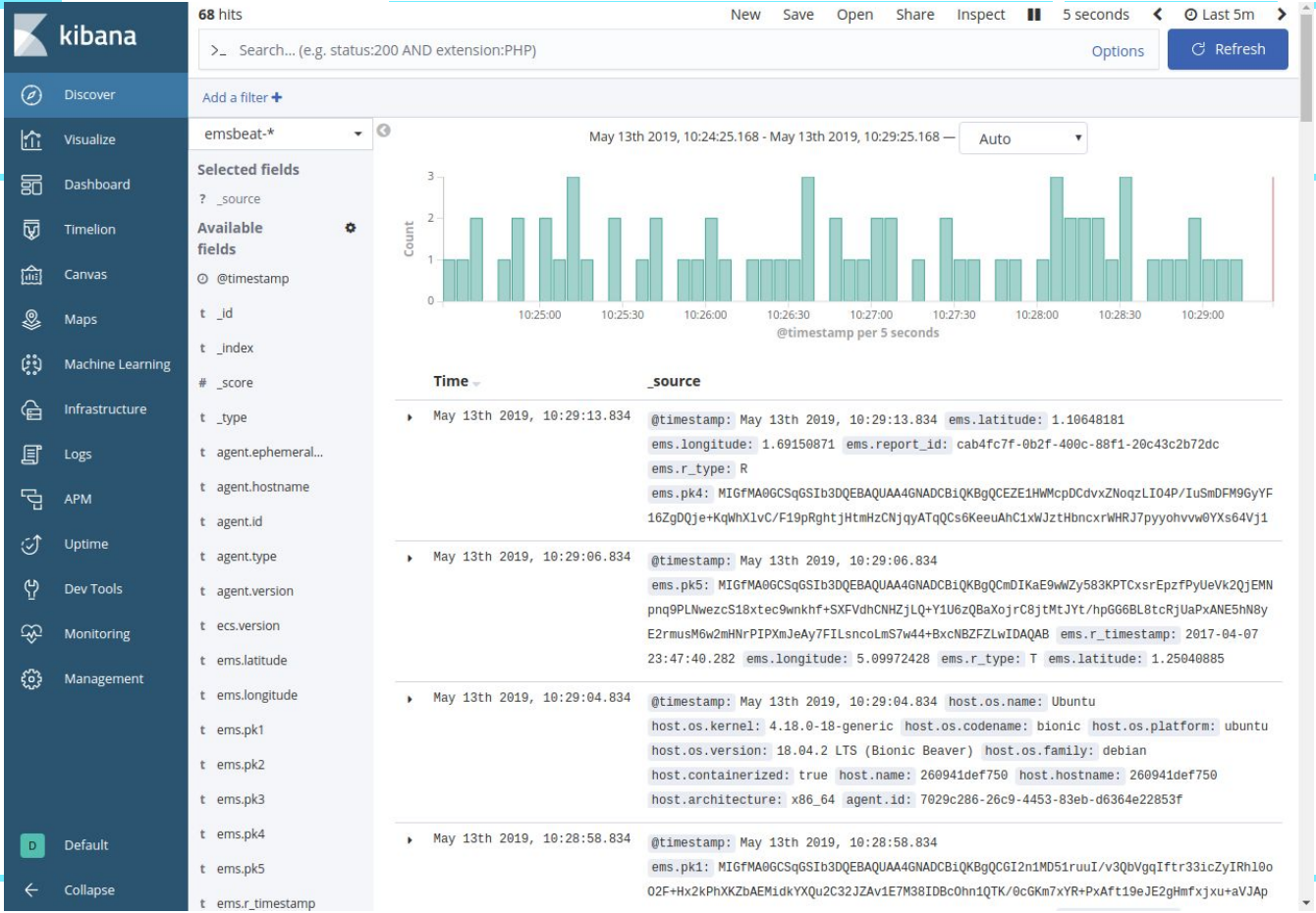
Emergency reporting

We proposed an emergency reporting system that provides **privacy to honest witnesses**, but can disclose the identity and punish the malicious ones.
The system is designed over an **online social network** that facilitates the indistinguishability of the witness among a group of users.

Analysis of alerts and anomalies in the smart city

A SIEM (Security Information and Event Management) based-solution gathers and analyses the records and data generated in the smart city.





Data received from the EMS application

Summary

The presented system collects data from all services in a smart city and allows global analysis of anomalies or attacks, which would not be possible without the integration of data in a centralized platform.

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