



HAL
open science

Adding a Social Dimension to the Web of Things

Andrei Ciortea, Olivier Boissier, Antoine Zimmermann, Adina Magda Florea

► **To cite this version:**

Andrei Ciortea, Olivier Boissier, Antoine Zimmermann, Adina Magda Florea. Adding a Social Dimension to the Web of Things. Journées scientifiques SEmba 2013, Apr 2013, Saint Germain au Mont d'Or, France. emse-01082444

HAL Id: emse-01082444

<https://hal-emse.ccsd.cnrs.fr/emse-01082444v1>

Submitted on 13 Nov 2014

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Adding a Social Dimension to the Web of Things

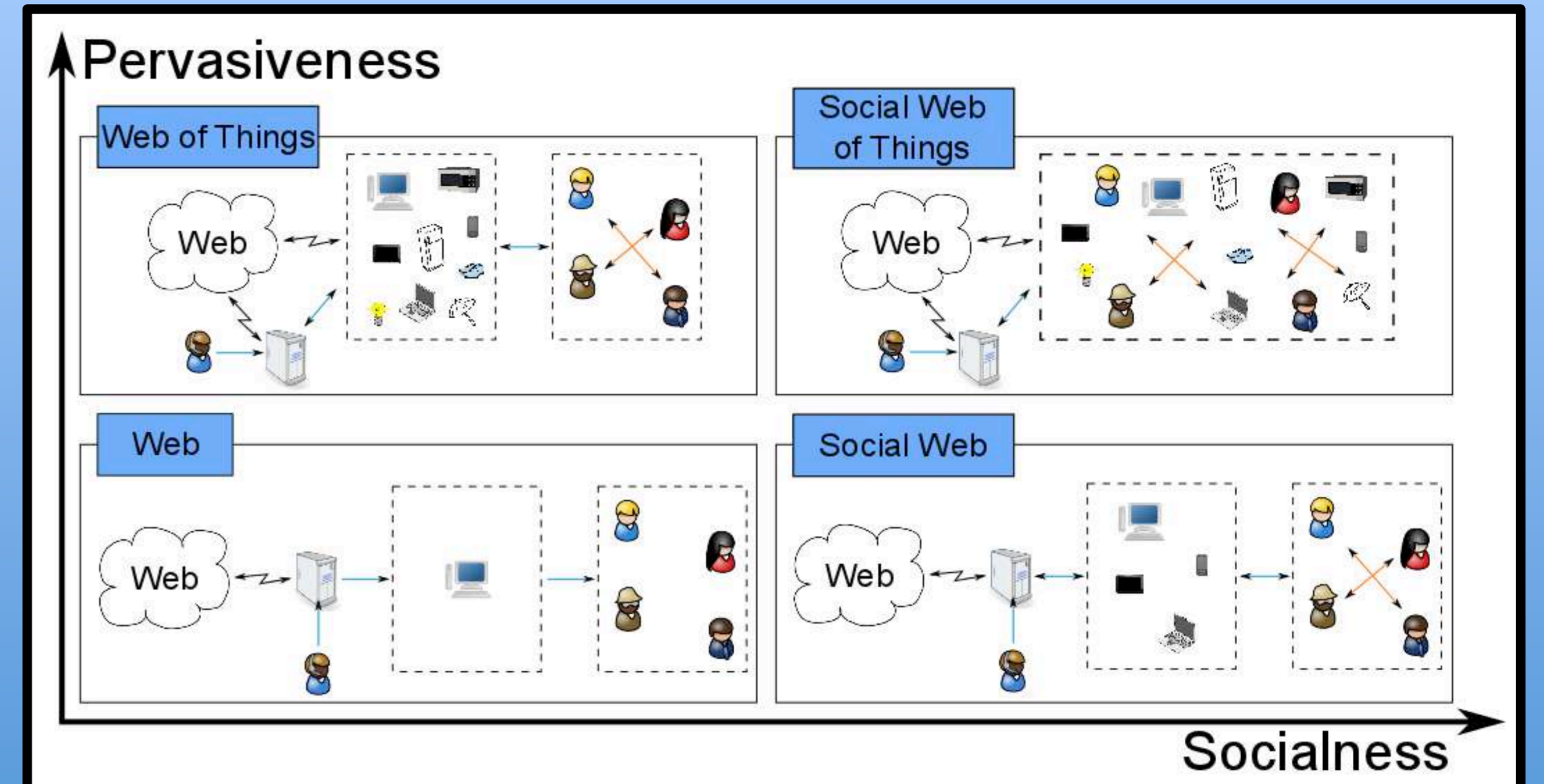
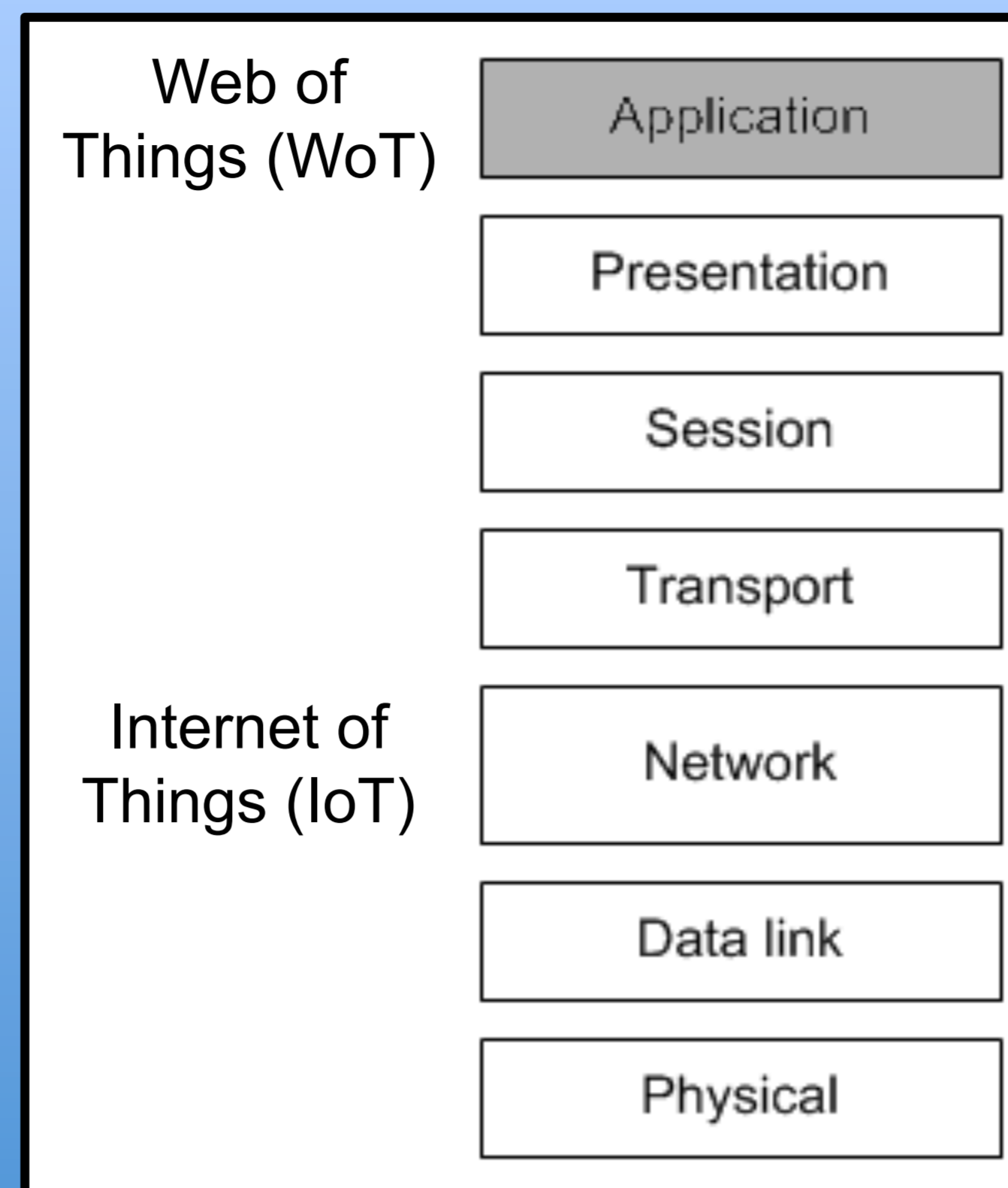
Andrei CIORTEA^{1,2}, Olivier BOISSIER¹, Antoine ZIMMERMANN¹, Adina Magda FLOREA²

¹École Nationale Supérieure des Mines de Saint-Étienne - Institut Henri Fayol

²University "Politehnica" of Bucharest

Context

- Growth in connected devices
- Things become Web-enabled
- The Web is now social



Motivation

- Enable scalability and understandability from a user experience perspective
- Interconnect billions of things and users in an effective and scalable way
- Endorse things with capabilities of discovering one another and collaborating in WoT apps

Approach

- Design a *Socio-technical Network* of people and autonomous things.
- Use multi-agent normative organizations for (i) bringing autonomy to things, while in the same time (ii) controlling the autonomy of things and (iii) supporting coordinated behavior in WoT apps.

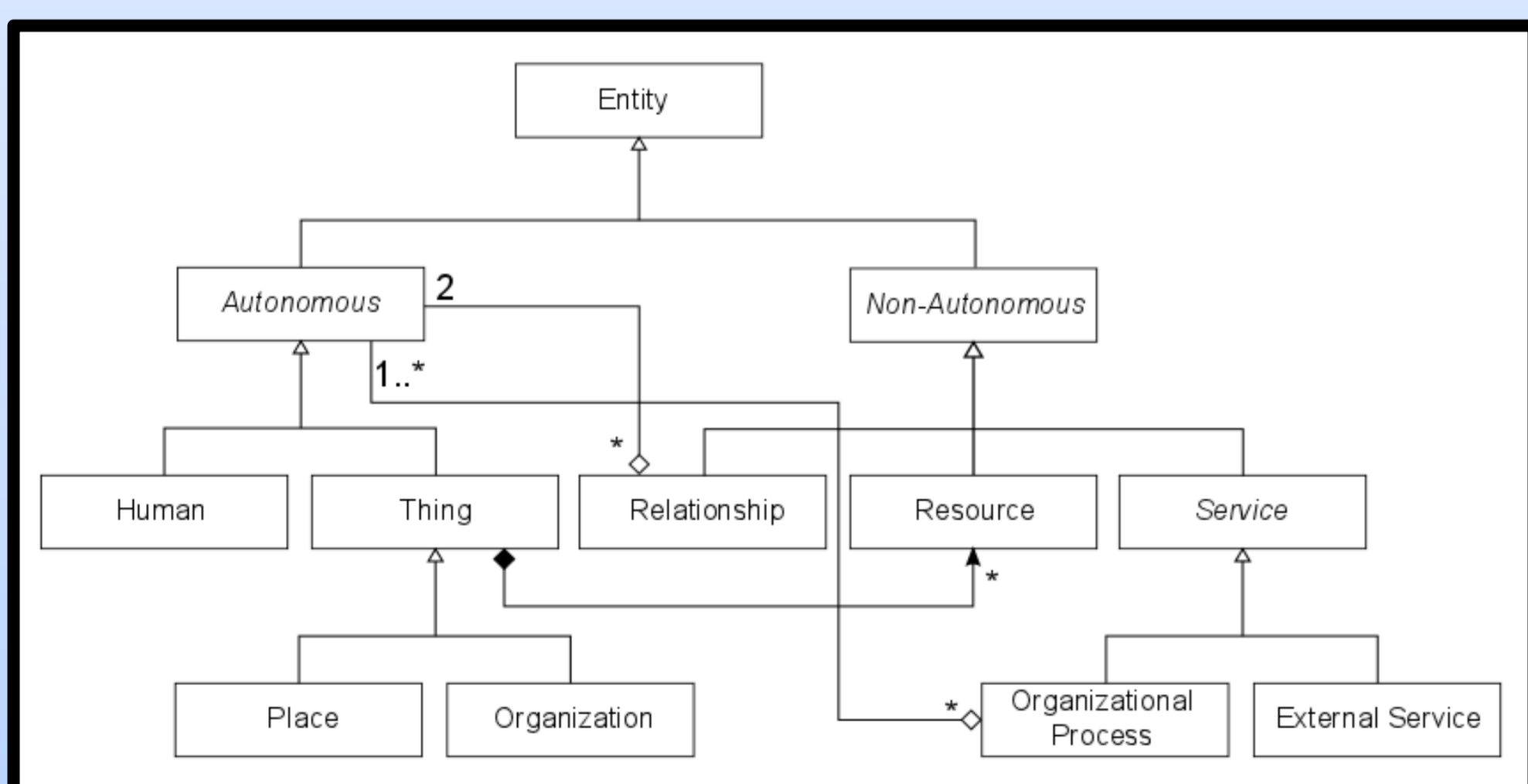
Web of Things: Integrate Web-enabled devices into the Web.

Social Web of Things (SWoT): Integrate *autonomous* Web-enabled devices into *existing* social networking platforms.

The Socio-Technical Network (STN)

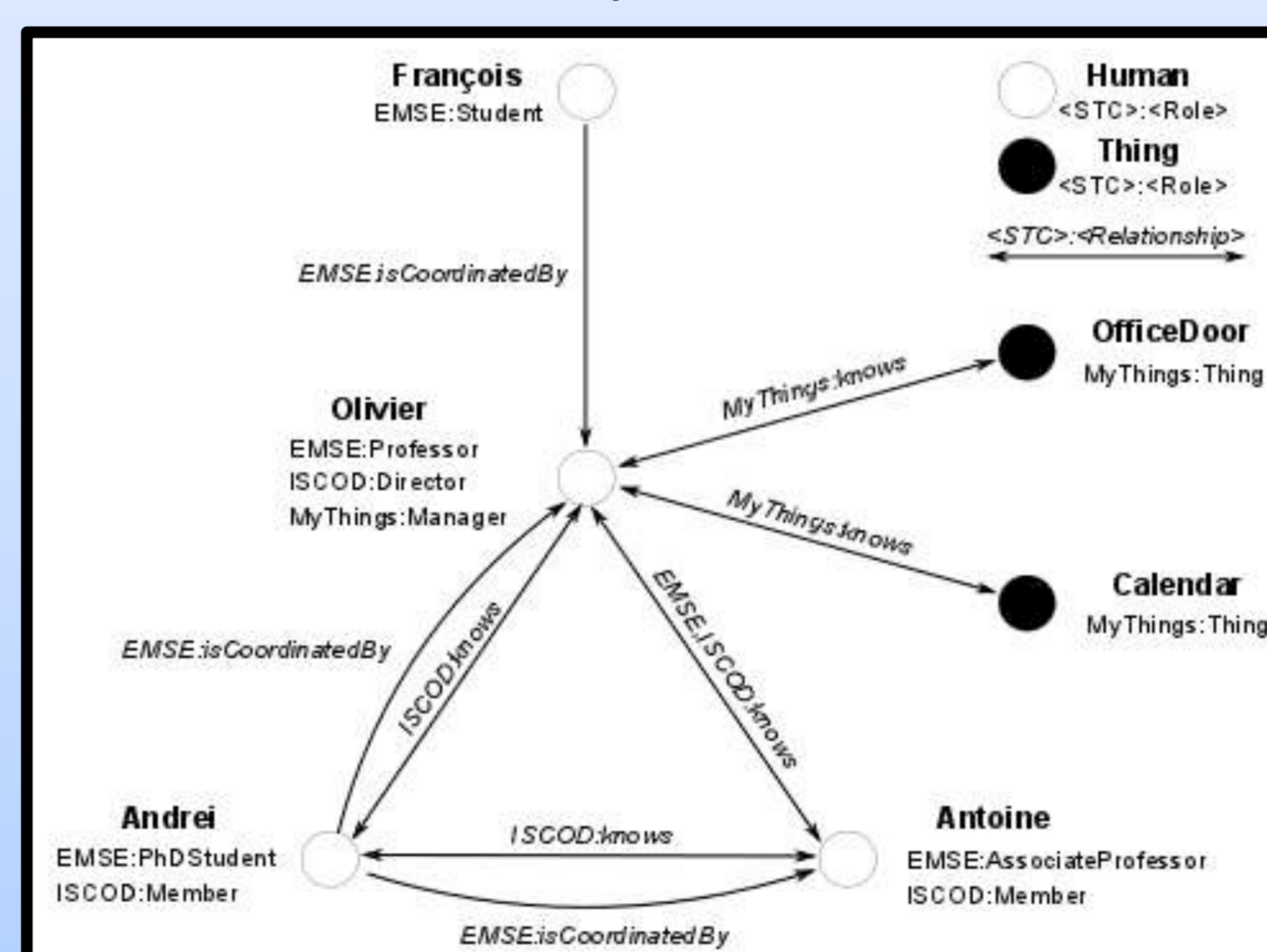
Entities

- An entity is anything in the SWoT that is addressable through an URI.
- All entities have a virtual representation.



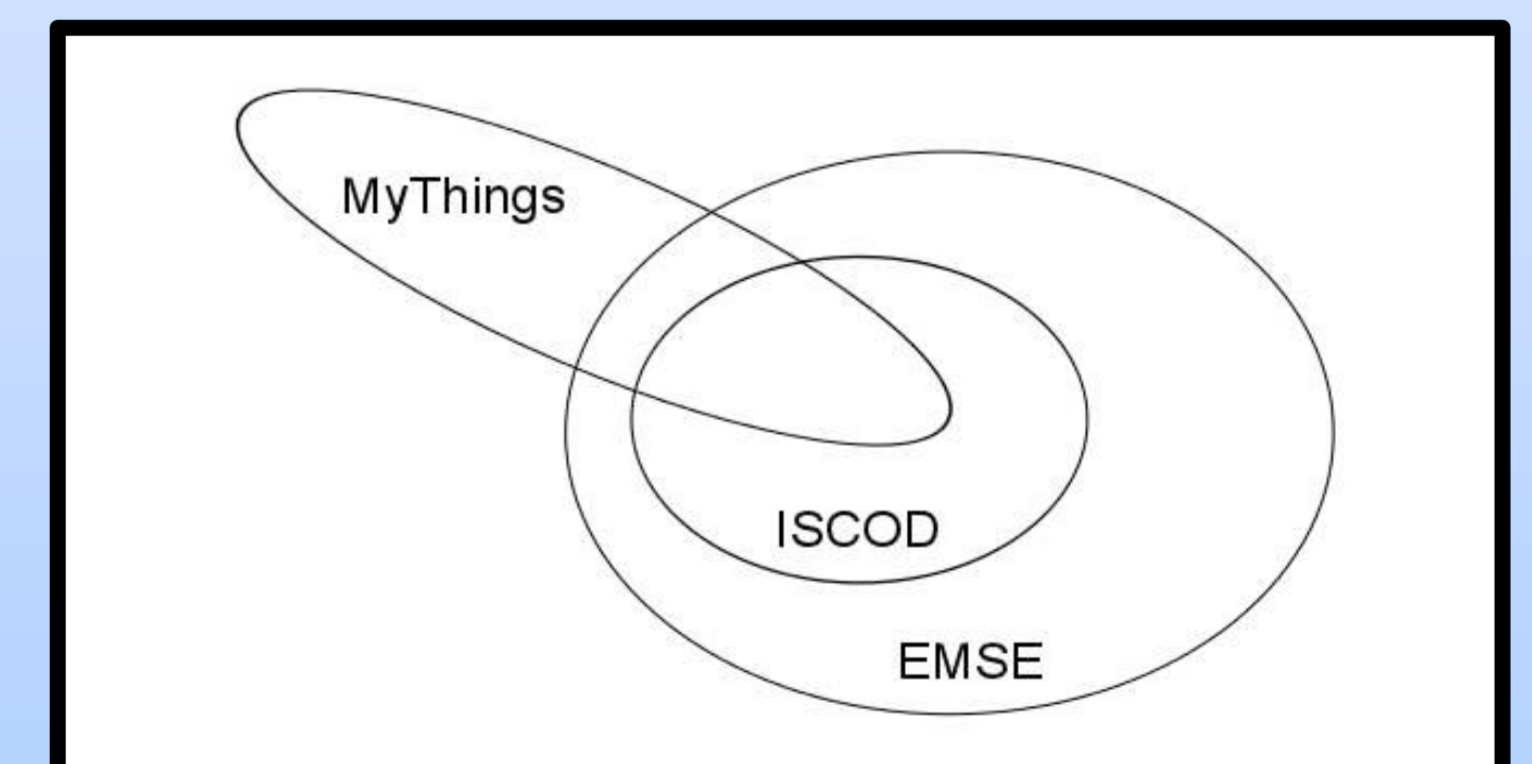
Socio-technical Graph (STG)

- Integrates with existing social graphs (e.g. Facebook, Google+, FOAF, etc).
- Default relationships: *knows*, *checkedIn*.



Linked Socio-technical Contexts (STCs)

- Govern the autonomous growth of the network, service discovery and composition, and smart disclosure of information.
- A STC can be described on several dimensions: *structural*, *functional*, *normative* and *communicational*.
- Represented as multi-agent normative organizations.



Conclusions and Perspectives

We aim at enriching the WoT with a STN of people and autonomous things, thus creating our vision for a *Social Web of Things*.

The STN is composed of:

- Entities, both *autonomous* and *non-autonomous*;
- A STG for structuring the entities that participate in the STN;
- Linked STCs for supporting more autonomy and coordinated behavior in SWoT apps, and setting ground rules for autonomous entities in the STN.

Building the STN will allow us to further investigate efficient mechanisms for service discovery and composition, informed dissemination and smart disclosure of information.