UNIVERSIDAD COMPLUTENSE MADRID

GRASIA

https://grasia.fdi.ucm.es

Smart Cities at UCM GRASIA

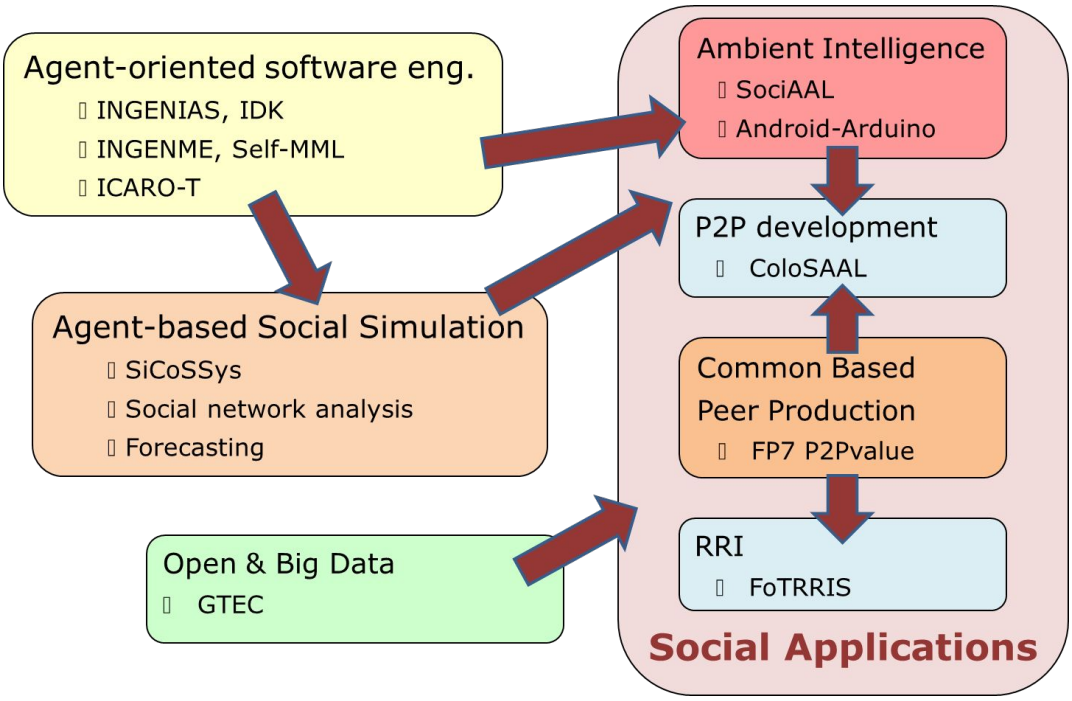
Inter-disciplinary Research on Agent-Based Social Applications

Jorge Gómez Sanz
Juan Pavón Mestras

The UCM GRASIA Research Team

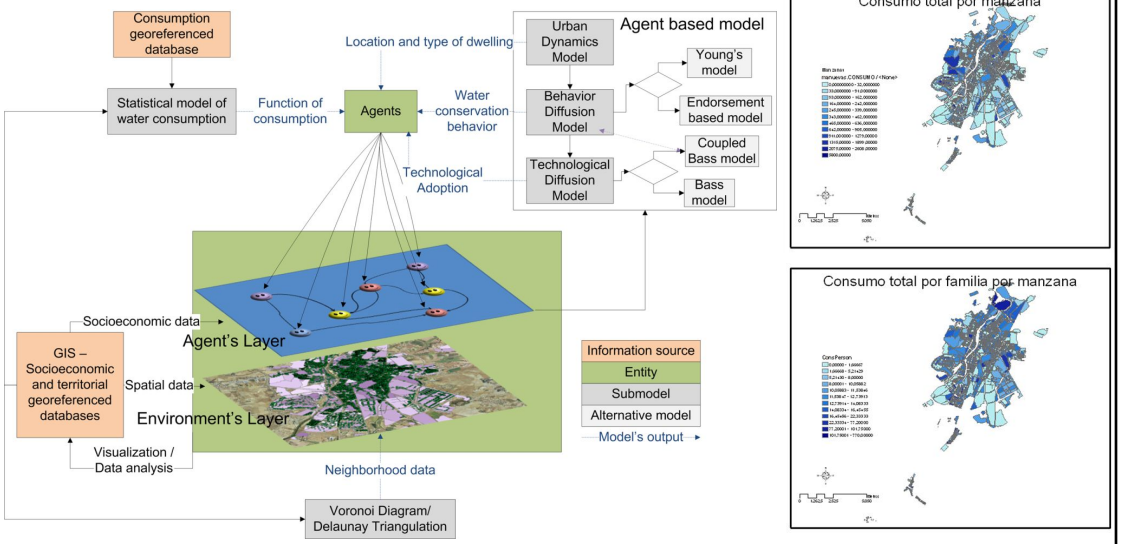
- Coordinators: Jorge Gómez Sanz & Juan Pavón
- 20 Researchers (15 PhD) + postgraduate students
- Multidisciplinarity:
  - ➢ Computer science (AI and Sw Eng)
  - ➢ Social research
  - ➢ Communication and media sciences
  - ➢ Statistics
  - ➢ Health care

Our traditional lines of research



Agent-based modelling

Domestic water management in Valladolid



AAL development issues

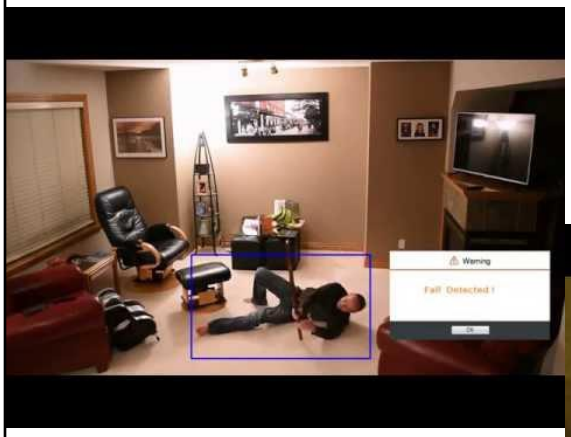
- Development of AAL solutions
  - Integration of advances in hardware and software
  - Understanding of **real users' needs** and requirements
    - End-users: disabled people, personal care assistants (PCA), family
    - Healthcare specialists, social assistants, etc.

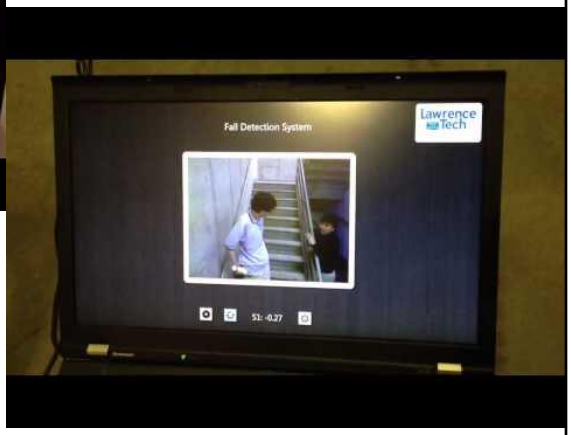
⇒ Limited participation in the development process

⇒ The final product does not correspond to their needs

  - Specifics of each person's disability
  - Day-life routine
  - Usability issues

SociAAL: Testing AAL





Living labs

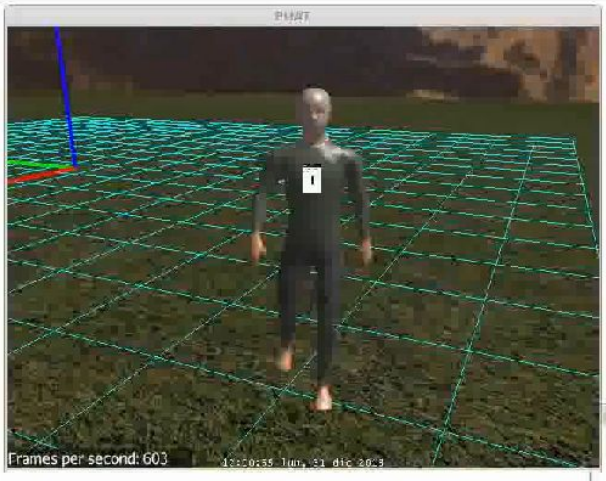
- *A residential home research facility where the behaviour of people living in this house is observed and usage patterns are collected by researchers that are investigating methods for merging new technologies with user-centered design* [https://en.wikipedia.org/wiki/Living_lab]

- Issues:
  - Expensive: equipment, personnel
  - Time to execute scenarios
  - Some scenarios cannot be experimented: fire, falls, etc.
  - Difficult to control and configure experiments
  - Repeatability issue
  - Not well integrated in the development process

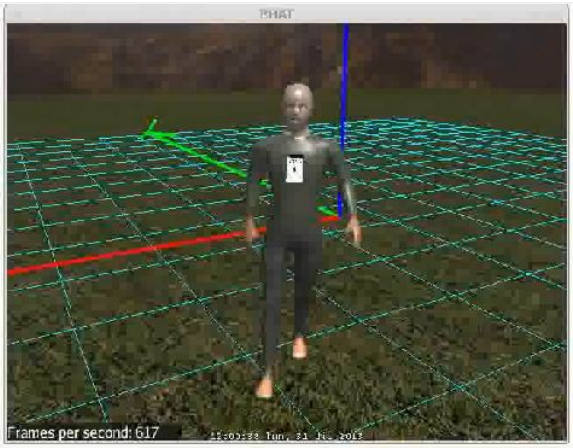
Virtual living lab

- New concept
  - Pablo Campillo-Sanchez, Jorge J. Gómez-Sanz: *Agent Based Simulation for Creating Ambient Assisted Living Solutions*. PAAMS 2014: 319-322
- Simulation of a living lab issues
  - Keep **user's privacy**
  - Need to have **repeatable**, **cheaper**, but **credible** experiments
  - Run **simulations for weeks in real time**
  - Study and capture the **requirements** associated to actors
    - E.g. situations faced by Parkinson patients
  - How to capture **Activities of Daily Living**
  - How to model **interaction between actors and the devices**
  - Actors
    - Can produce events: voice, movements, manipulation of objects (e.g. an android smart phone)
    - Can perceive the environment: images (screen), sound, vibrations, other events (e.g. door opening)

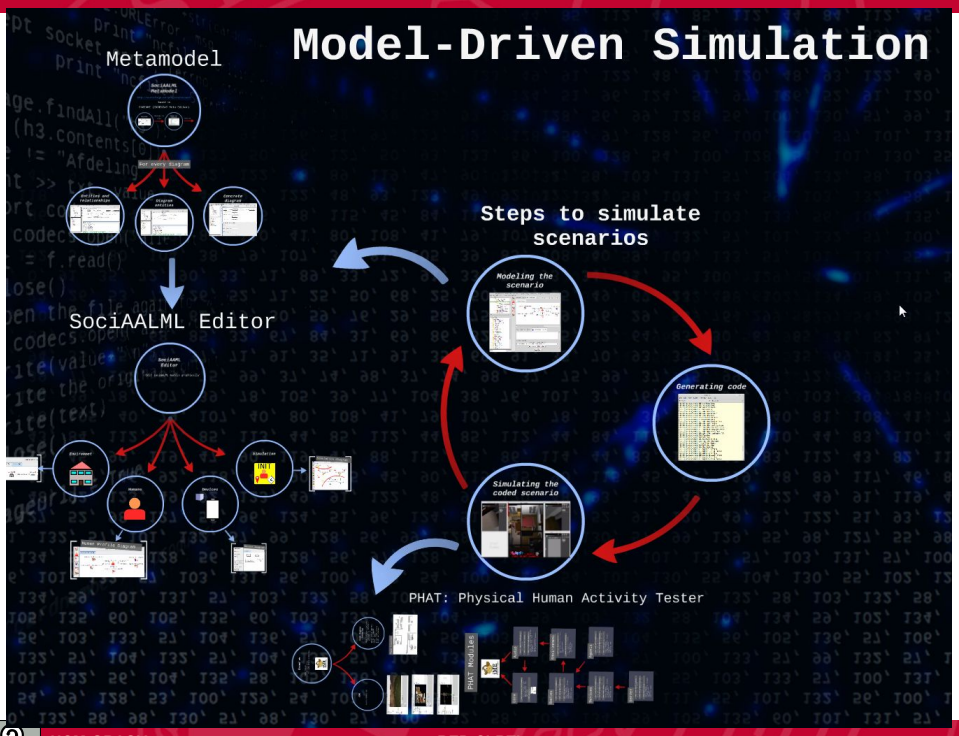
SociAAL: Virtual Living Lab



SociAAL: Virtual Living Lab

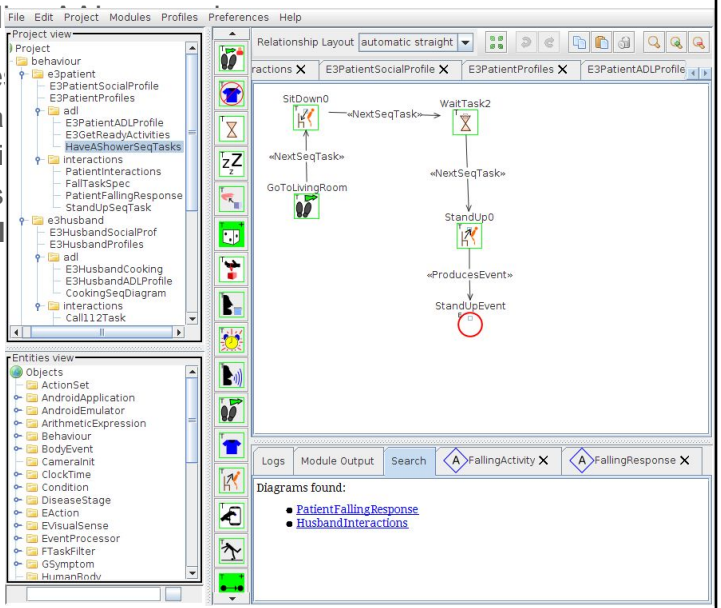


SociAAL: Model driven development of AAL

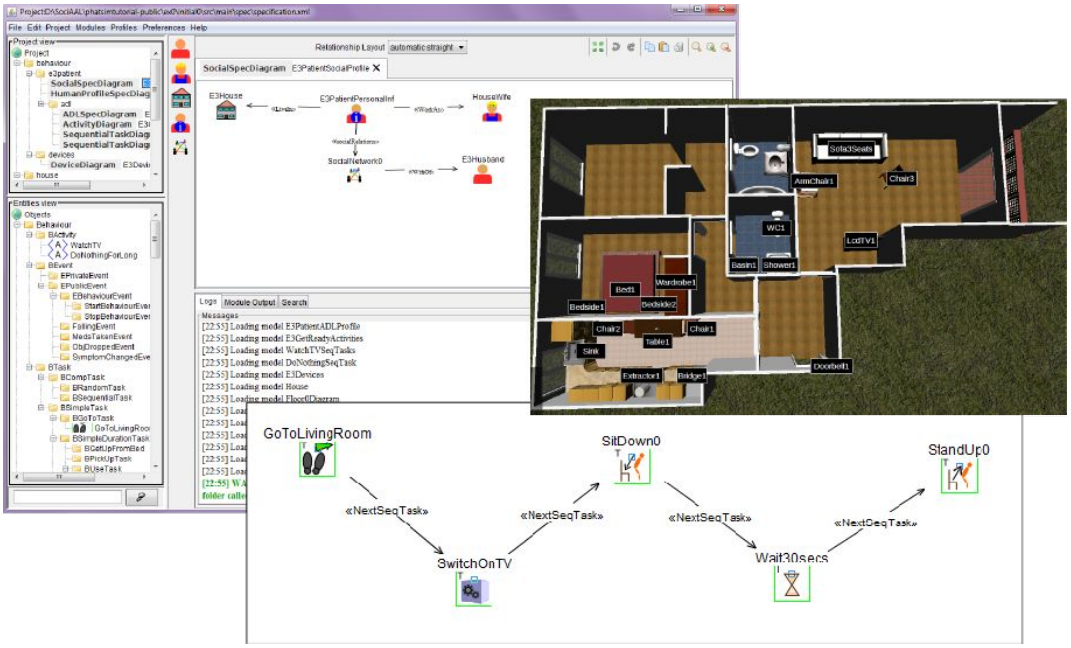


SociAAL-ML

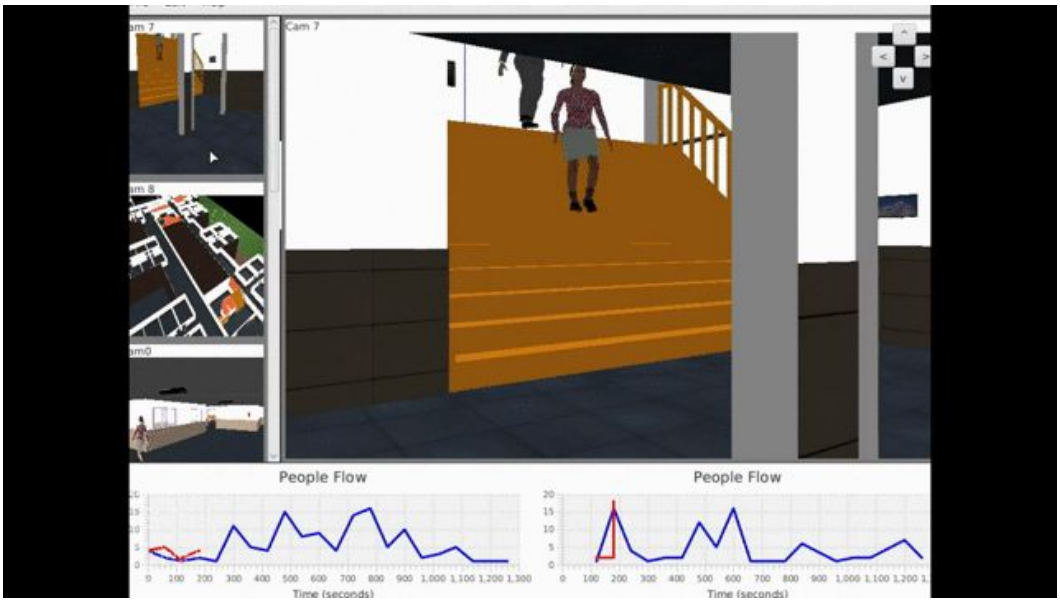
- A language for modell
- Each scenario require
  - **Actors** in the scena
  - **Activities** of the dai
  - How these activities
  - Description of the **el**



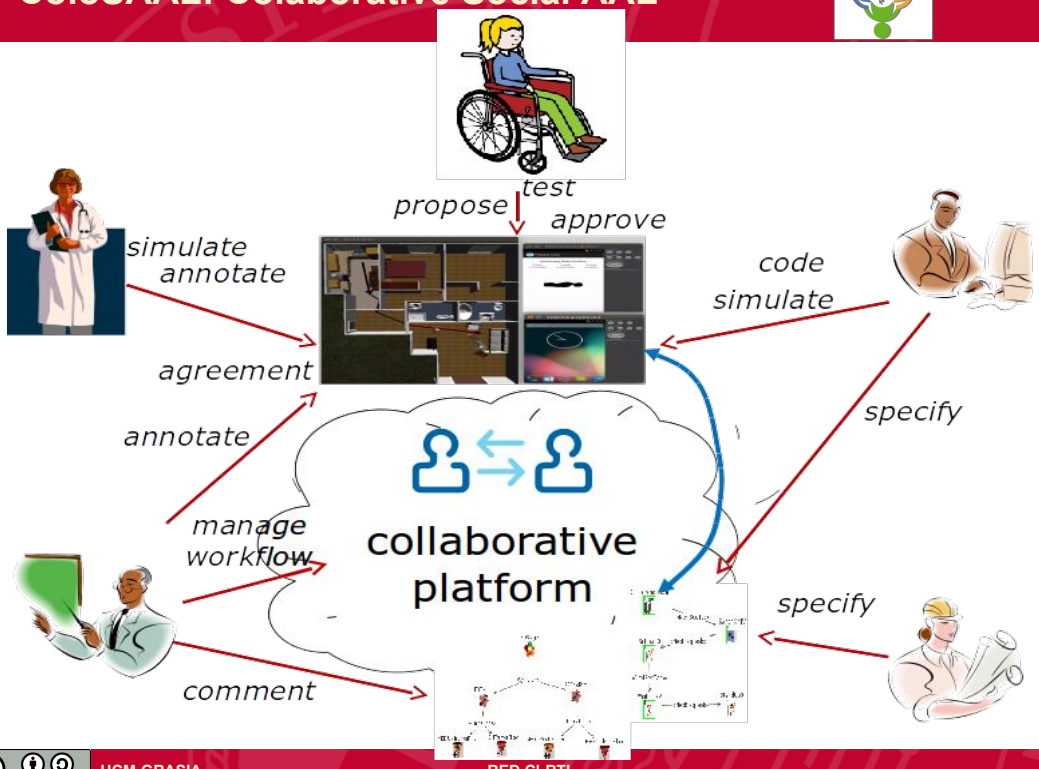
SociAAL: Virtual Living Lab



MOSI-AGIL: Modelling crowds of pedestrians



ColoSAAL: Colaborative Social AAL



Hack with people

http://grasia.fdi.ucm.es/hackwithpeople

Paso 4 Paso 3

Paso 5

Construir la Solución

5 Prototipado físico

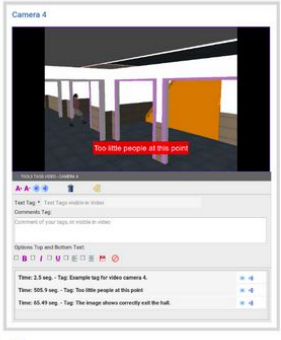
Una vez que sabemos lo que se quiere construir, usamos elementos electrónicos asequibles para montar prototipos que puedan probar voluntarios. A diferencia de otros enfoques, cuando llegamos a aquí: no hemos invertido recursos físicos más allá

Paso 1

Definir los casos prácticos

1 Modelando los problemas y las Soluciones

Paso 2



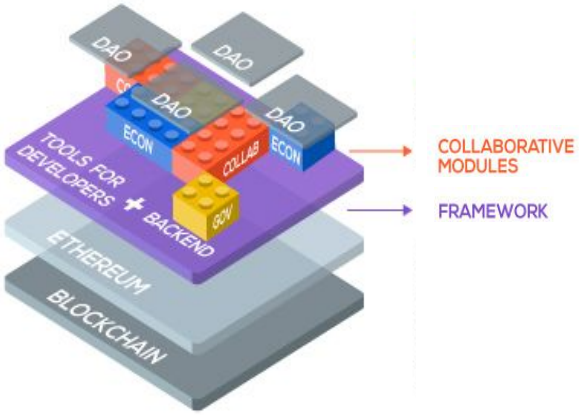
2 Comenta los resultados

Los comunicación se canaliza mediante una herramienta de comentarios similar a las herramientas que se usan para poner subtítulos a las películas. Aquí se modelan qué comportamient se espera de los actores en un escenario ideal y

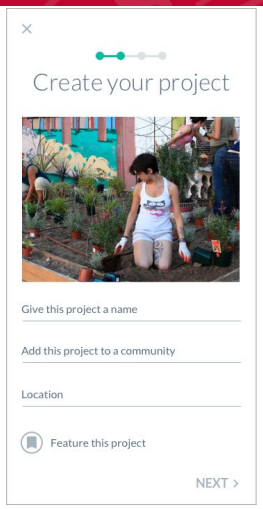
Otras líneas de trabajo

- Middleware para aplicaciones P2P

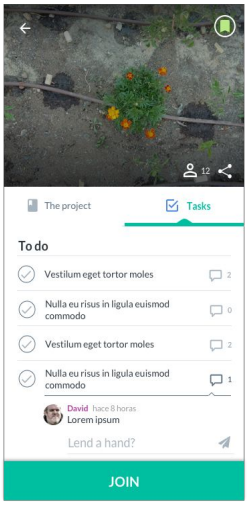
- ERC Starting Grant: P2P MODELS (Decentralized Blockchain-based Organizations for Bootstrapping the Collaborative Economy)



P2Pvalue: Tools for CBPP

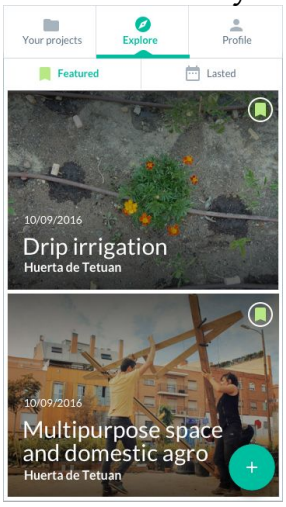


share responsibilities
explain how to do things



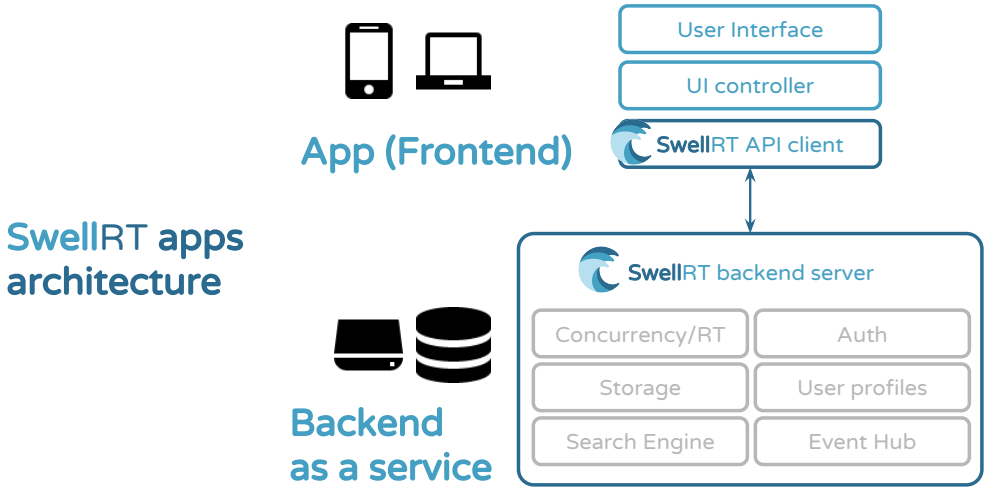
collaborate

be aware
feeling part
of the community



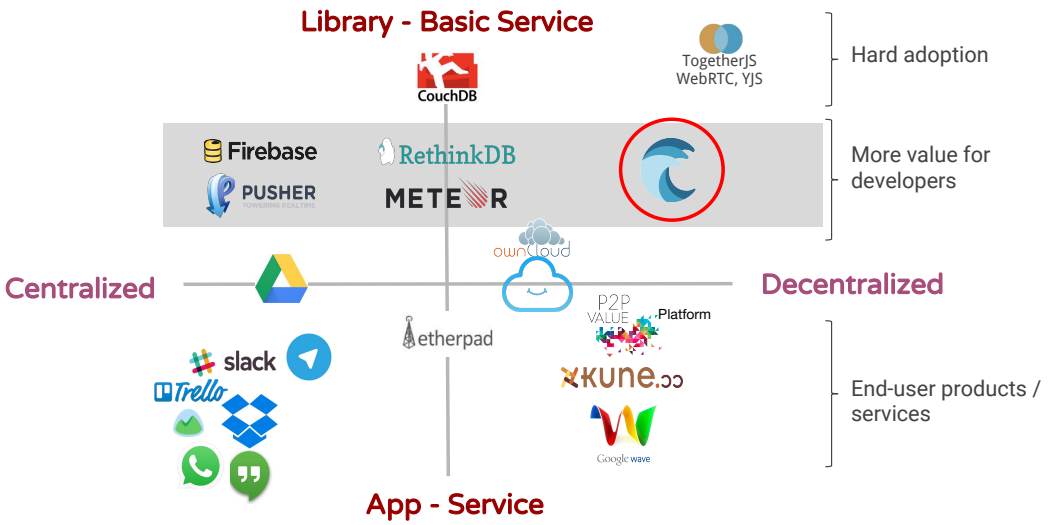
P2Pvalue: Tools for CBPP

- Fast App development with SwellRT



P2Pvalue: Tools for CBPP

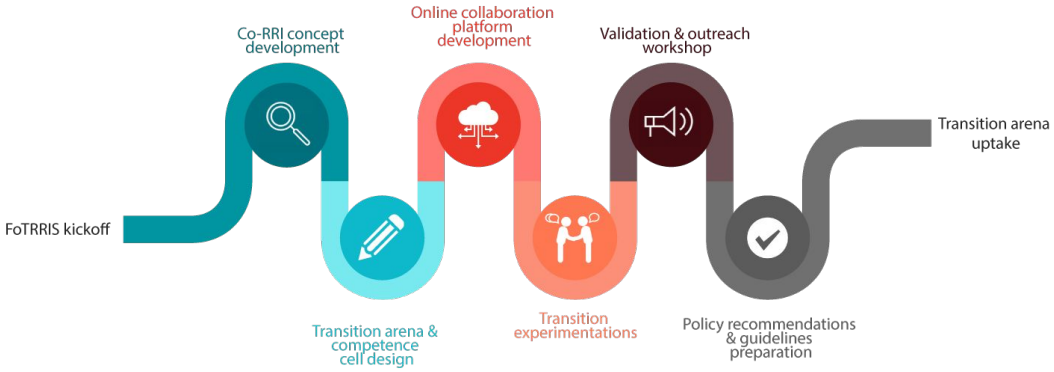
- RT Technologies Quadrant



Otras líneas de trabajo

FoTRRIS

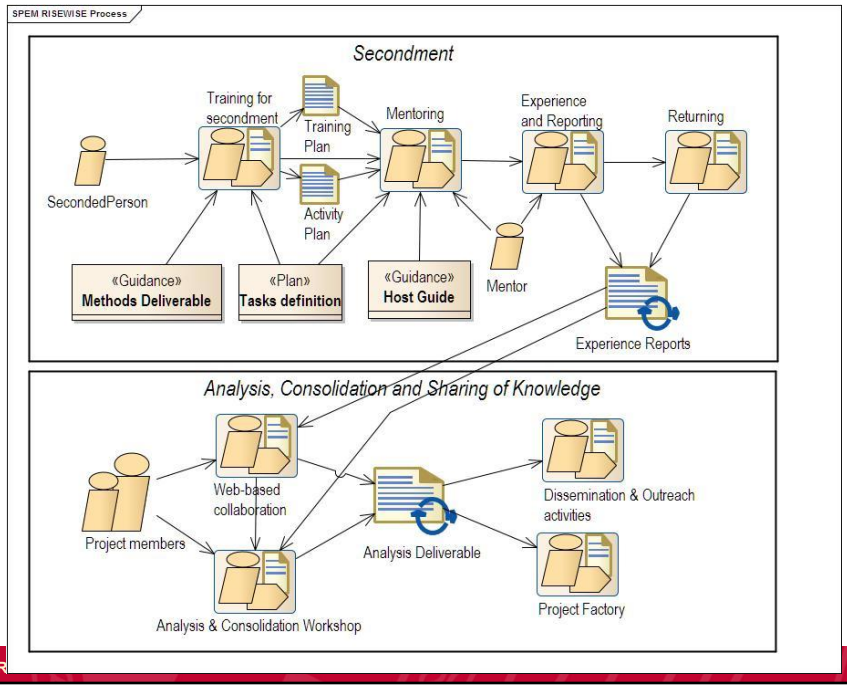
Fostering a Transition towards RRI systems



Otras líneas de trabajo

Risewise

Rise Women with disabilities In Social Engagement



Máster en Internet de las Cosas

http://grasia.fdi.ucm.es/miot/

UNIVERSIDAD COMPLUTENSE MADRID

INICIO DESCRIPCIÓN PLAN DE ESTUDIOS MATRÍCULA Y PRECIOS HORARIOS Y SEDE ACTIVIDADES CONTACTO

BIENVENIDO AL MÁSTER UNIVERSITARIO EN INTERNET DE LAS COSAS Y SISTEMAS INTELIGENTES

Un título oficial reconocido en el Espacio Europeo de Educación Superior (en proceso de acreditación).

Se trata de un título de máster universitario que capacitará para hacer un doctorado o bien sólo adquirir competencias profesionales. El título estará avalado por las autoridades educativas españolas y será reconocido por otras universidades igual que otros másteres oficiales.

Conclusiones

- Main page of UCM GRASIA
  - http://grasia.fdi.ucm.es
- Herramientas para comunidades P2P: Teem
  - Web app: https://teem.works/
  - GET IT ON Google Play http://tiny.cc/teemapp
- Middleware para aplicaciones decentralizadas:
  - http://swellrt.org/
- Hack with People
  - http://grasia.fdi.ucm.es/hackwithpeople/
- MASSIS
  - http://www.massisframework.com/