


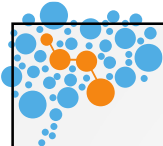


## AAL Testbed

Arantxa Renteria (TECNALIA) – Mauro Dragone (Univ. College Dublin)

European Robotics Forum, Rovereto. March 12-14<sup>th</sup>, 2014

RUBICON is a three-year project, funded by the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement No.269914




## RUBICON Goals

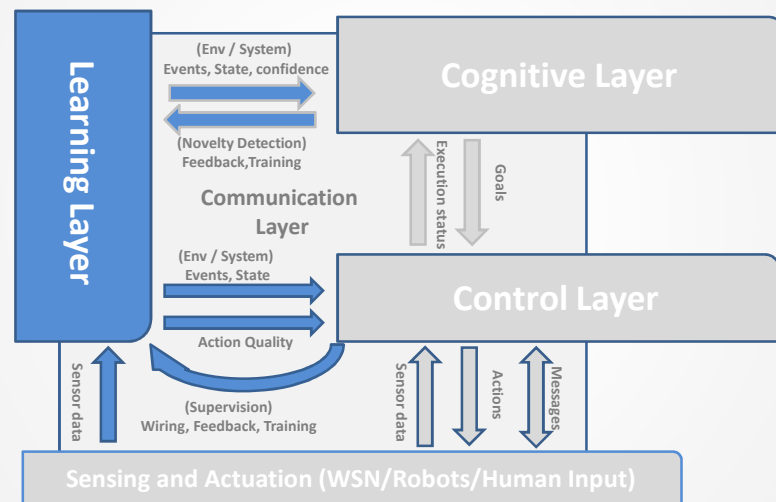
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Rubicon **minimizes the need for programming and human supervision of robotic ecologies**

The Rubicon ecology is **able to adapt to changes of its application requirements and to its environment**



## High-Level RUBICON Architecture



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## AAL Scenario (Homelab at Tecnalia)



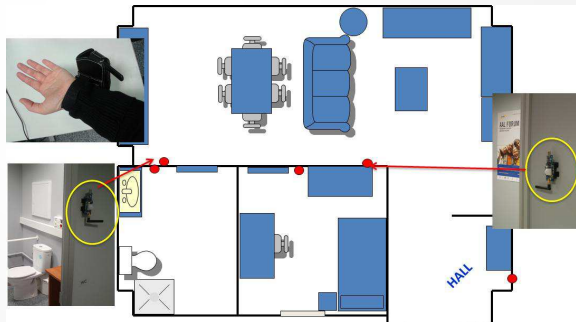
## AAL Scenario (Homelab at Tecnalia)



Turtlebot moving around, interacting with user, capturing data

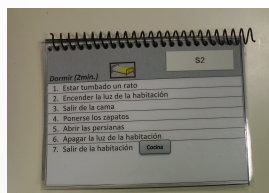
Sound recognition: door bell, faucet, microwave oven, music, TV...)

Sensors on users (accelerometer, localization)



## Data acquisition

- PDA app to label activities
- Video recording of experiments
- Scripts of daily activities: preparing lunch, setting up table, eating, resting, sleeping, listen to music...

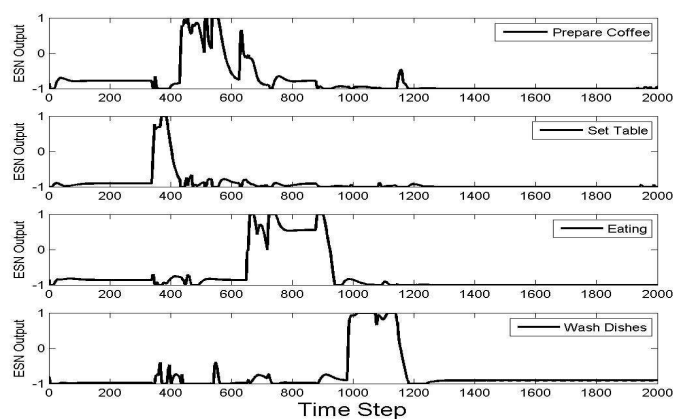


## Results Achieved


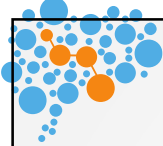
- Implementation a **distributed general-purpose learning system** for robotic ecologies
  - Adaptive and reconfigurable
  - Incremental learning
  - Designed for computationally constrained devices
- Experimental **assessment** on real-world Rubicon scenarios
  - Ambient assisted living (**AAL**)
  - Localization by Received Signal Strength (**RSS**)
- Learning to adapt to environmental/user changes
  - Distributed intelligence for **adaptive configuration planning**
  - Innovative application through **Control-Learning Layer integration**

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## Results of AAL Testbed




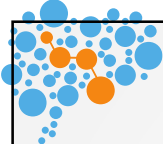

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## Novelty of work

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- RUBICON robot ecology applied to a domotic environment
- Example of AAL services: supporting activities (rehabilitation...), switching on/off of devices, house configuration (open/close blinds...)
- Significant data coming from sensors (6 GB), labeled using a PDA based app. Made publicly available for research purposes



## RUBICON AAL Testbed

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Thank you!!

