Scuola di Dottorato in ICT – PhD School in ICT

Research project for a PhD curriculum in ICT – Computer Engineering and Science

**Tutor**: Prof. Letizia Leonardi

**(\*) Italian Co-tutor:** Prof. Giacomo Cabri (FIM), Prof. Franco Zambonelli (DISMI)

**(\*\*) Foreign Co-tutor:**

**Proposed Title of the research:** Adaptive Middleware for the Internet of Things

**Keywords(5):** Internet of Things (IoT), smart objects**,** context-awareness, self-organizing and adaptive systems.

**Research objectives(max 10 rows):**

The Internet of Things is rapidly gaining ground in the modern world. The basic idea is to have the ubiquitous presence of a huge number and variety of *things* or *objects* that are able to interact and cooperate with each other in order to achieve common goals.

The aim of this research is to study and implement models and solutions for the development and/or integrations of middleware in the context of the Internet of Things. These middleware have to exhibit context-awareness, self-organizing and adaptation.

**Proposed research activity(max 10 rows):**

State of the art in Internet of Things

Study of context-aware, self-organizing and adaptive systems

Definition of general models for the representation of contexts

Identification of possible approaches and algorithms

Design of a general middleware architecture

Implementation of a prototype

Participation to the appropriate Summer Schools

**Supporting research projects(and Department):**

FoCAS, coordination action FP7, FIM

AMBIT, project funded by FCRMO, Softech-ICT

**Possible connections with research groups, companies, universities..**

Prof. Emma Hart, Edunburgh Napier University, UK

Dr. Jeremy Pitt, Imperial College, UK

Prof. Giancarlo Fortino, Università della Calabria, I

Dr. Niranjan Suri, IHMC, USA

Prof. Marco Aiello, Groningen Univerasity, NL

(\*) optional

(\*\*) optional/to be completed on the second year