

International seminar of the CentraLab project  
Hotel Dalia, 5th March 2012, Košice, Slovakia

# ELLIOT Project

## Launching Initiative of Slovakian eLiving Lab Smart Office Environment

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InterSoft, a.s., [www.intersoft.sk](http://www.intersoft.sk)

## Slide 1

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# ELLIOT Project: Basic Facts



ELLIOT: *Experiential Living Lab for the Internet Of Things*

Framework Programme 7, ICT Call 5 : FP7-ICT-2009-5

Objective ICT-2009.1.3: *Internet of Things and Enterprise environments*

Project type: STREP / Collaborative research, Project No: 287560

Duration: 30 months (September 2010 - February 2013)

Web: [www.elliot-project.eu](http://www.elliot-project.eu)

Coordinator: TXT Polymedia S.p.A., Italy



Partners: 9 + 3 (Italy, Germany, France, UK, Bulgaria, Hungary, Slovakia)

## Aims of the project:

- the development of an Internet of Things experiential platform,
- to directly involve users (customers, citizens) in co-creating, exploring and experimenting new ideas, concepts and technological artefacts,
- to study a potential impact of IoT and the Future Internet in the context of the Open User-Centred Innovation paradigm and of the Living Lab approach.

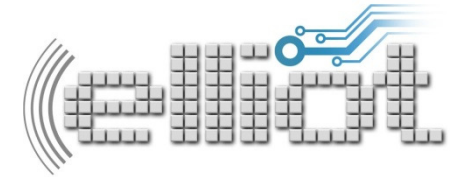
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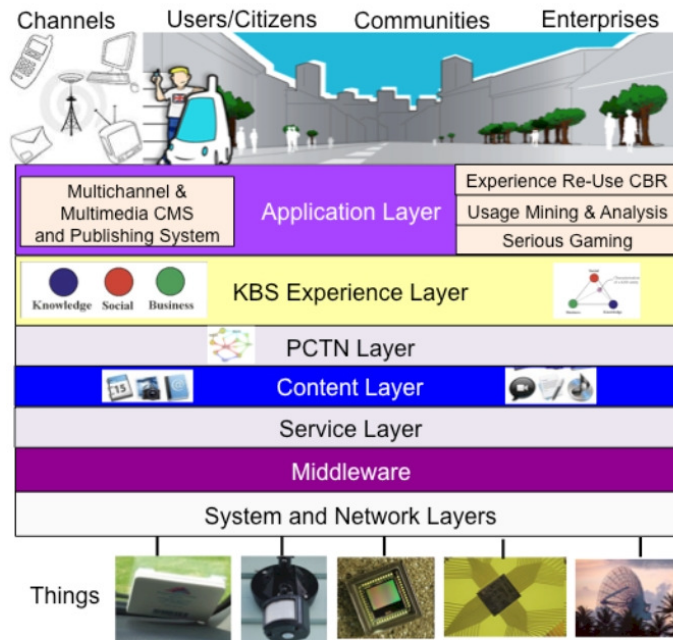
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# ELLIOT LL-IoT Approach



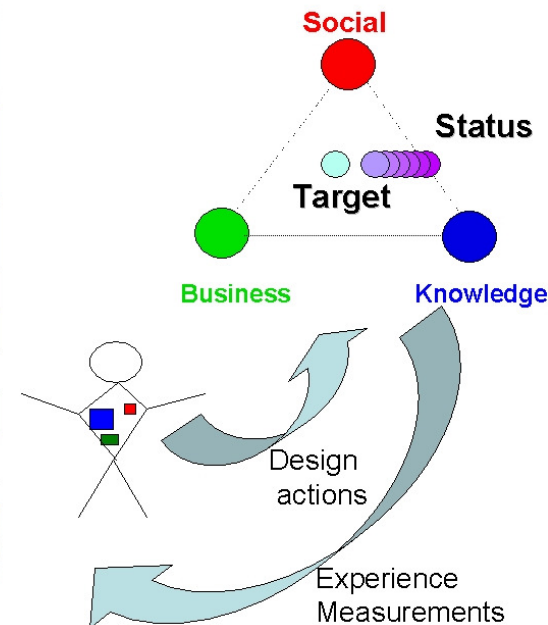
## Objectives, principles of the approach in ELLIOT:

- Explore the potential of **user co-creation techniques and tools**, such as serious gaming, participative requirements engineering and verification/validation, in the context of IOT.
- Study and develop a set of **KSB (Knowledge-Social-Business) Experience Models** integrating social, intellectual-cognitive, economical, legal and ethical aspects related to the use of IoT technologies and services into a single, “holistic”, meta model.



The KBS chromo-framework

© R.Santoro A. Bifulco PRO-VE 2005



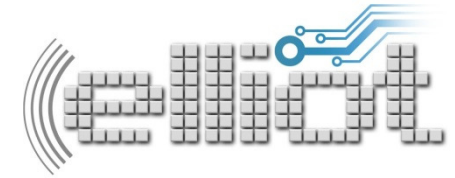
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# ELLIOT-EEU Extension



## Extension to the Enlarged European Union (EEU):

- Duration: 18 months (September 2011 - February 2013)
- 3 new use cases - pilot applications: Bulgaria, Hungary, Slovakia, as complements to former ELLIOT pilots

## Focus of pilots:

- **Logistics PLM:** Logistics Product Life-cycle Management (PLM) supported by IoT and RFID technologies
  - BIBA LogDynamics Lab, Bremen, Germany
  - SafePay Systems Ltd., Hungary
- **Extended concept of “Well Being” in a hospital environment**
  - San Raffaele Hospital, Milan, Italy
  - Virtech Ltd., Bulgaria
- **Green Services @ ICT Usage Lab**
  - INRIA (Sophia Antipolis), France
  - InterSoft, a.s., Košice, Slovakia



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# ELLIOT eLiving Lab in Slovakia



Pilot name: **ECOffices - Ambient Intelligence in energy saving**

- **Smart Office** use case
- Integrates **Aml-IoT & semantic technologies**, with respect to the KSB (knowledge-social-business) aspects of user interactions
- Targets the optimisation of energy consumption in offices
- **Location:** Košice, Južná trieda 6
- **Partners:**
  - Responsible project partner: InterSoft, a.s.
  - Application partner, Pilot hosting: RWE IT
  - Consultations: Technical University of Košice
  - Expected cooperation: Košice IT Valley



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# Application Partner : RWE IT



RWE IT Slovakia,

<http://www.rweit-slovakia.com>

- belongs to RWE group, leading energy (gas, electricity) distributor in Eastern Slovakia
- daughter company of RWE IT GmbH, IT services provider for RWE

**EOffices pilot** will be implemented in the premises of RWE IT:

- two buildings in Kosice, 270 people
- types of offices: open space rooms, small rooms (for 3 people), videoconferencing rooms
- central heating, air conditioning in every office
- equipment: computers, monitors, mobile phones, printers, copiers
- electricity consumption: 125 000 kWh / year (2010)
- heating: 187 527 kWh / year (2010)



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# Objectives of ECOffices pilot



**Goal:** to enhance the ELLIOT platform by integrating the Semantic Ambient Intelligence (Aml) with the Internet of Things, People and Services applications in the Smart Office use case

## Focus:

- experiment the ELLIOT outcomes and the new semantically enhanced Aml technology in the Energy test case in Slovakia
- demonstrate the platform capabilities towards a positive impact on environment (energy consumption, CO2 footprint)

## Expectations:

- intensify R&D activities in the area of Aml-IoT in Slovakia
- emphasize the validation of R&D results in practical test cases, dissemination and exploitation of the results => Living Lab
- enhance competitiveness and product/service portfolios of SMEs in Slovakia by a solution aimed at energy efficiency in the business environment
- contribute to the environment protection by decreasing energy consumption by the business sector (currently about 40% of all energy consumption in SK).

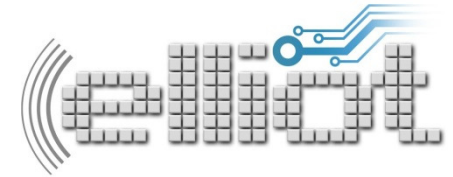
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# Technology: Aml & Semantics



## Ambient Intelligence:

- embedded (services into devices, networked devices into the environment)
- context aware: devices can recognize user and his/her situational context
- personalized: user profiles, needs and settings are taken into an account
- adaptive: devices may change in response to user- anticipatory

## Semantics:

- The Semantic Model Driven Architecture (Semantic MDA), shared ontologies, interoperability for services and devices

## Aml-IoT platform: LinkSmart system

- Outcome of the FP6 project Hydra, <http://www.hydramiddleware.eu>.
- Enhancements ongoing in the FP7 project ebbits, <http://www.ebbits-project.eu>.



- new types of devices and services,
- semantic sensor fusion, more advanced events processing,
- business rules and business process models,
- pilot applications in automotive industry (focus: reduction of energy consumption) and agriculture (food traceability scenario).

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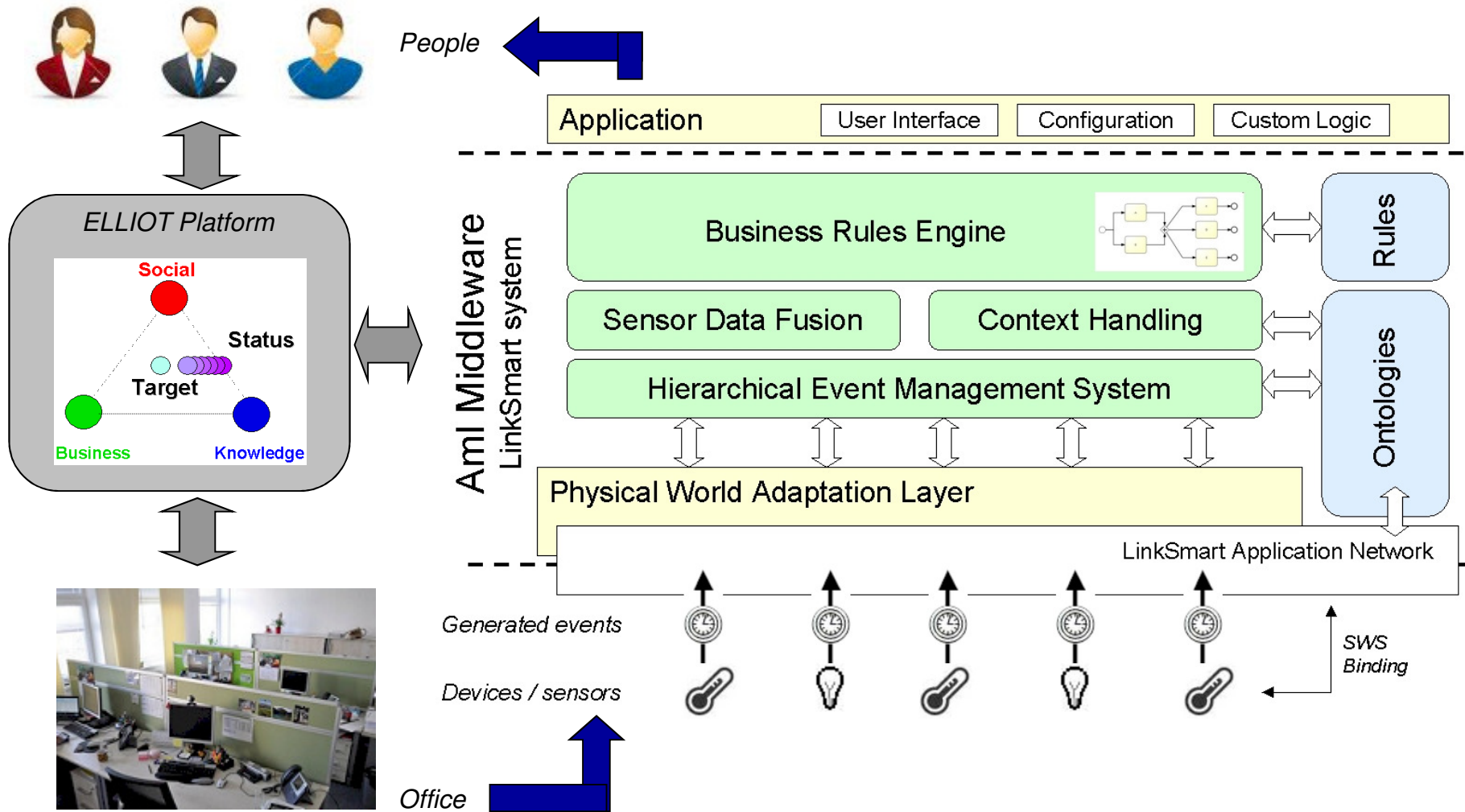
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# ebbitts : LinkSmart system



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# The “Smart Office” concept



## From “Smart Houses” to “Smart Offices”

### Smart House:

- a house that has advanced automatic systems for lighting, heating, air-conditioning, window and door operations, security etc.
- lot of solutions, both commercial and research

### Smart Office:

- to employ the paradigm of the smart house in a business environment,
- inclusion of / integration with business processes,
- optimization of existing processes in an organization (or office),
- ability to implement new and more efficient business processes,
- expected benefits on the user level regarding to more organized and coordinated social interactions.

### Challenges:

- correspondence of Aml-IoT with business processes,
- acceptance and support from the side of employees (and management),
- possible solution: Aml-enhanced services and processes should follow the recommendations of IT Infrastructure Library (<http://www.itil-officialsite.com>) and the related standard ISO/IEC 20000:1-5.

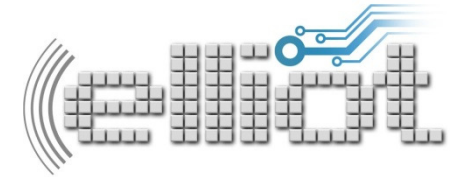
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# Living Lab - actors and phases



## ACTORS:

Designers:	Consumers:
Researchers in the field of IoT and Aml technology	Decision makers, business analysts, and managers of institutions involved in the Living Lab
Smart office application designers	Employees, smart office workers
Business process designers	Producers and providers of Aml-IoT solutions
	Research community in human resources management, sociology, energy efficiency, etc.

## PHASES:

### 1. Co-creation (Development)

- Technical set up and installation of sensors, devices, and applications in the smart office
- Semantic structures (ontologies) for interoperable representation of devices

### 2. Exploration (Deployment, Release)

- Business process(es) for maintaining the smart office use case
- Sensors and devices are semantically described and included into the process model
- KPIs and global settings are specified; services are deployed in ELLIOT platform

### 3. Experimentation (Run)

- A set of interactive experiments is performed
- Partial scenarios: Meeting Room, Working Units, Collaboration

### 4. Evaluation (Testing)

- KPIs are evaluated for each experiment / scenario => modifications of BPs, scenarios

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# Goals and objectives of ECOffices



The ECOffices Living Lab in Košice is aiming at:

## Introducing new IoT technologies:

- Semantically enhanced Aml, provided in the Living Lab environment, should enable new user experiences by the location-based interaction of humans with things in the real world

## Enhancing the ELLIOT platform with features of EEC countries:

- The energy efficiency aspect (nowadays, a “hot topic” in Slovakia) will be demonstrated by means of IoT (+ semantic Aml) approach, specifically targeting SMEs in Slovakia and other EEC countries.

## Maximising the D/E impact of IoT research results:

- Disseminate the ELLIOT concept and results in both business and research/academic community
- Involve other local players (i.e. Technical University of Kosice, software houses as Ness, T-Systems, Košice IT Valley initiative, etc.) into the ECOffices Living Lab.

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# Summary, future steps



## Current situation:

- LinkSmart middleware was adapted for the IoT/Aml solution of ECOffices LL.
- Premises of the Smart Office environment were identified and prepared in cooperation with RWE IT.
- Infrastructure of devices and sensors was specified.
- Architecture design of the LinkSmart + ELLIOT solution is ongoing.

## Future work:

- Architecture and functional specification should be finished in April 2012.
- Implementation of the LinkSmart + ELLIOT solution into the ECOffices Living Lab is planned for May 2012.
- Testing and co-creative development should be performed in several iterations from June till September 2012.
- ECOffices Living Lab has an ambition to join the European Network of Living Labs (ENoLL, <http://www.openlivinglabs.eu>) in its next wave.

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# Thank you for your attention!

Questions, suggestions, ...?



More info at: [www.elliott-project.eu](http://www.elliott-project.eu) or [www.intersoft.sk](http://www.intersoft.sk)

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