Collaborating Projects
RUNES – UCB, Caltech, UCSD, ISIS

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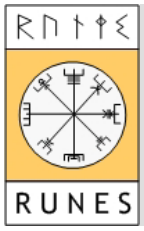
RUNES Coordinator

Ericsson AB, Corporate Research



ERICSSON

Short overview of RUNES

FP6-Call2 Ericsson led Integrated Project

www.ist-runes.org

Introduction

- a 32-month long IP project supported by EC's FP6
  - started in Sept. 2004
- what is in the name?
  - **R**econfigurable: adapt to changing conditions
  - **U**biquitous: high spatial density (inc. remote/hostile locations)
  - **N**etworked: communicating with each other
  - **E**mbedded **S**ystem: tied hardware & software integration
- size: 1040 MM (87 MY)
- budget: 11 M€ (6.5 M€ EU contribution)
- Partners: 23 / 9 industry (4 SMEs), 17 EU
- Project Coordinator: András Tóth, EAB

RUNES

Partners

connectBlue

virtutech

SWEDISH INSTITUTE OF COMPUTER SCIENCE SICS

KTH VETENSKAP OCH KONST

LUNDS TEKNISKA HÖGSKOLA
Lunds universitet

LANCASTER UNIVERSITY

UCL

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RWTH AACHEN
RHEINISCH-WESTFÄLISCHE TECHNISCHE HOCHSCHULE AACHEN

sira

LIPPERT
the embedded PC company

Kodak

IABG

USA

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Australia

VICTORIA UNIVERSITY OF TECHNOLOGY

POLITECNICO DI MILANO

UCSD

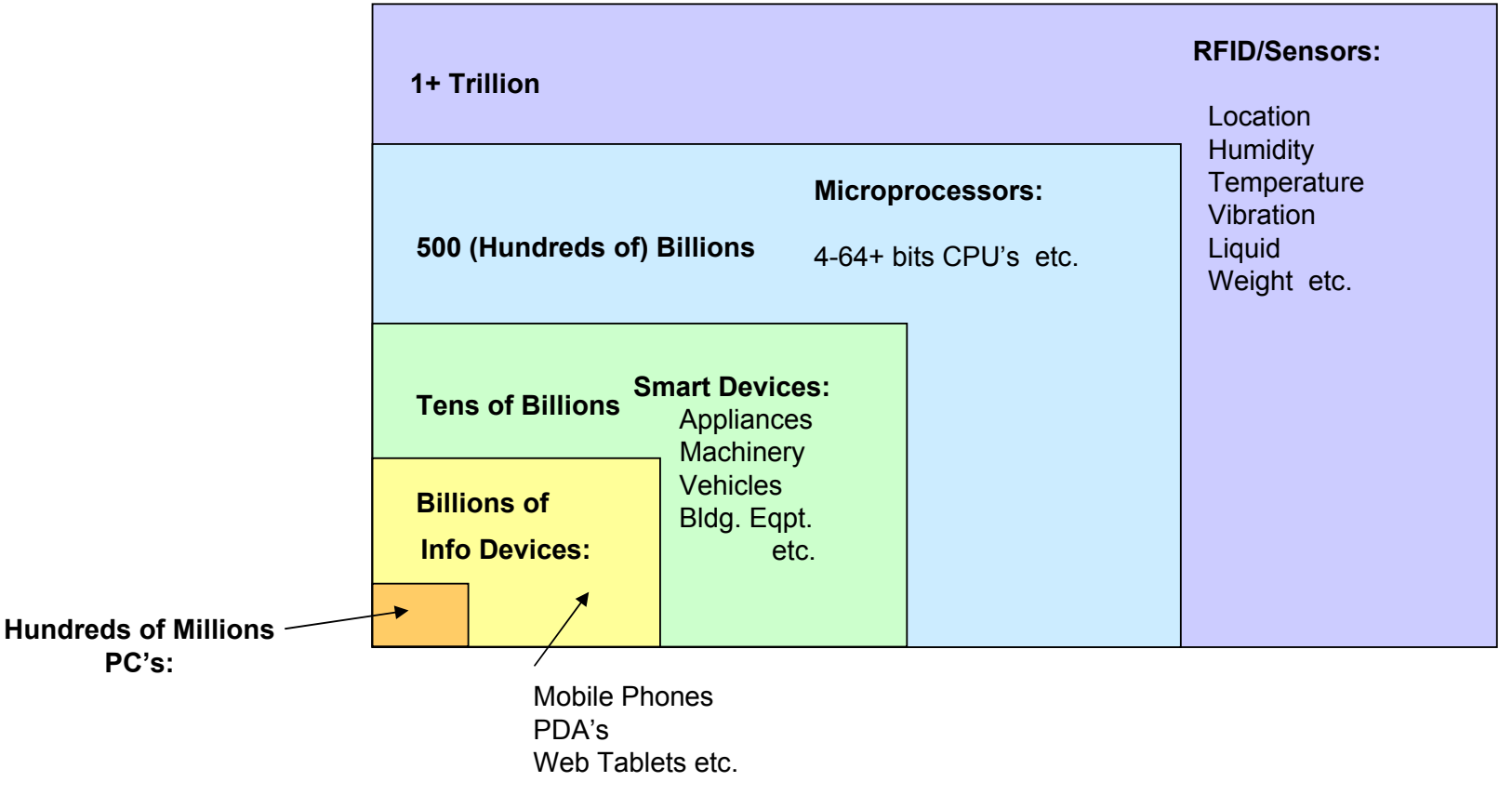
UNIVERSITÀ DI PISA

UNIVERSITY OF PATRAS

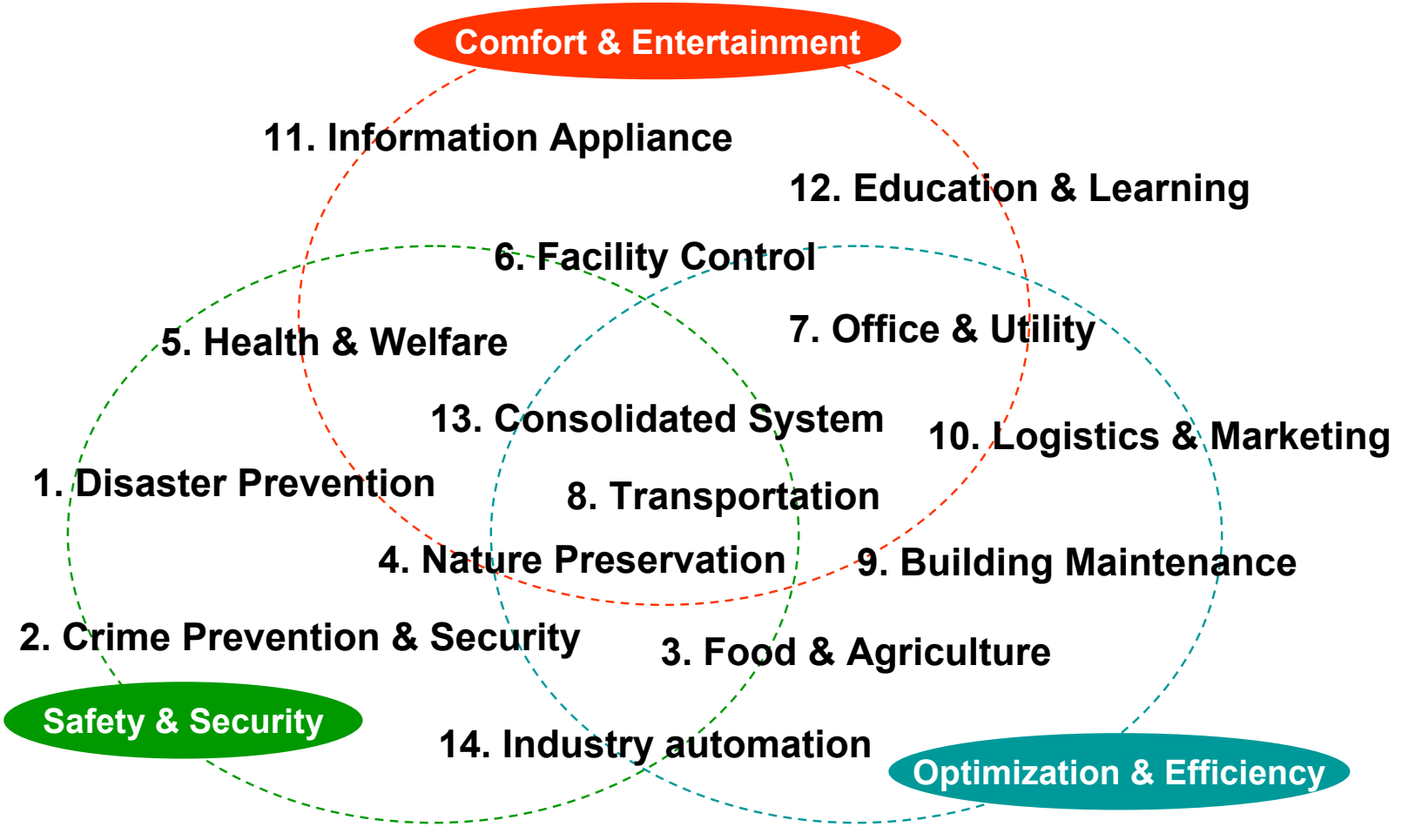
NATIONAL ICT AUSTRALIA LIMITED

Research Agenda on

m2m device population forecast 2010



Application space for EMS



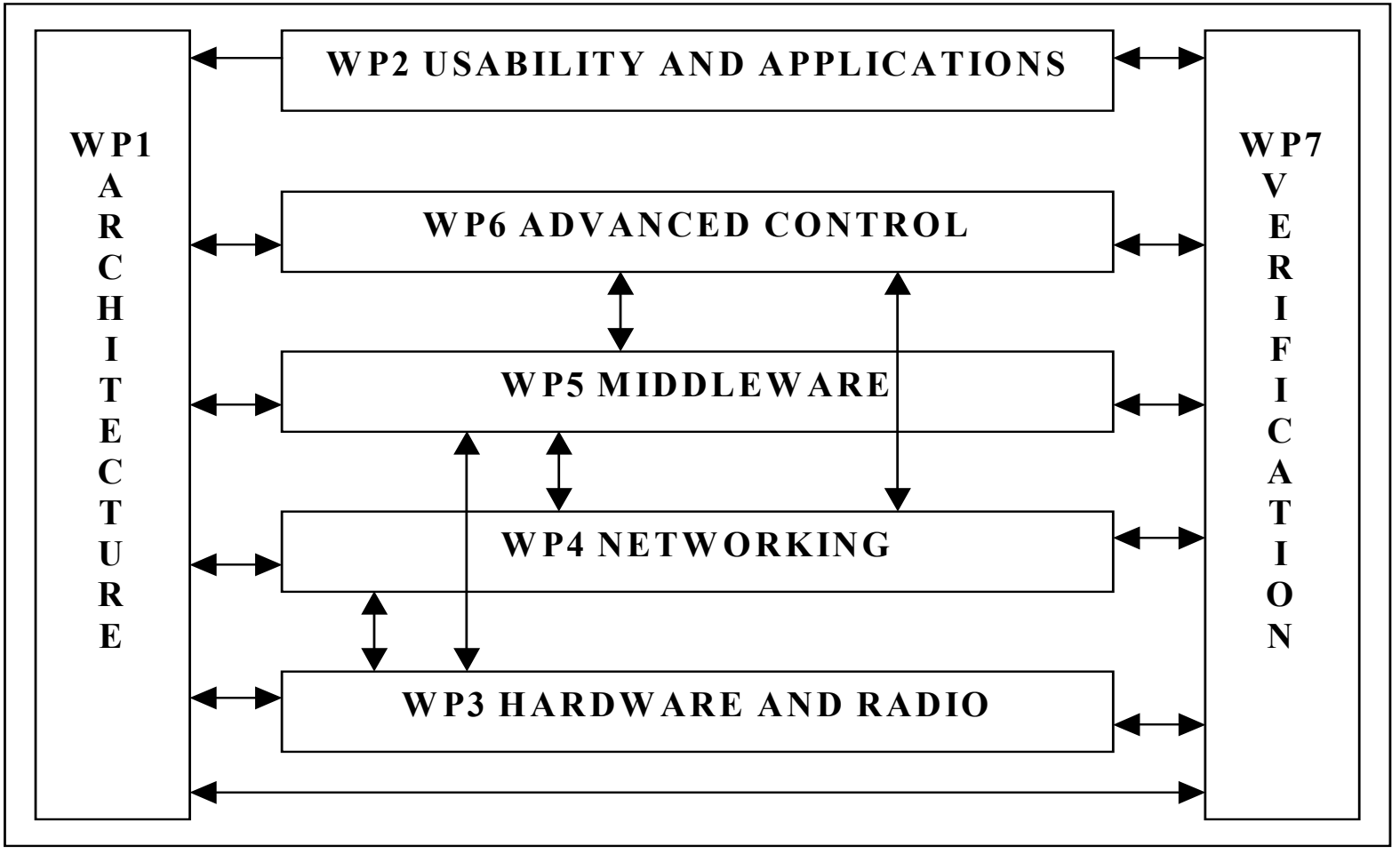
Project's vision

- provide a standardised architecture that enables the creation of large scale, widely distributed, heterogeneous networked embedded systems that inter-operate and adapt to their environments

Project's technical objectives

- develop & standardise an architecture for networked EMS
- build component based middleware for
  - flexibility/adaptability
  - robustness
  - self configuration
- develop light-weight, optimised networking technologies
- apply advanced control to networked embedded systems for real-time systems
- accelerate development by allowing
  - automated assessment of usability
  - easy application debugging
- evaluate system performance
  - study/demo real-world scenarios
  - emulate large scale systems

WP Structure & Interactions



Conclusion

- we are in the middle of a major technological revolution
  - sensing technologies and traditional IT are converging
  - the whole of society will be affected
  - a number of applications with attractive return on investment over the life of the network
- RUNES consortium can accelerate the trend by
  - providing reusable techniques and interoperable development platforms
  - disseminating the knowledge generated through forums and courses, publicly available deliverables
  - stimulating the technology area

UCB in RUNES

- **Objective:** Brings in extensive experience on open experimental software/hardware platforms for networked embedded systems technology
- **Early assessment:**
  - Contributions to definition and development of scenarios (WP2 and WP8)
  - Contributions to requirement report on control-aware embedded networks (Deliverable D6.1 of WP6)
  - Support in setting up small-scale demonstrations on sensors/actuator networks

UCB in RUNES (cont.)

- **Mobility and exchanges:** UCB =>KTH
- Contribution to RUNES session at IEEE CDC/ECC 2005 (submitted)
- **Future plan:**
  - Contributions to adaptive quality of service for flexible wireless automation
  - Mobility and exchanges:
    - KTH, RWTH, UPAT ⇔ UCB
    - UCB => EAB, KTH, SICS

Caltech in RUNES

- **Objective:** brings in leading competences in autonomous mobile systems and information dynamics in complex inter-connected networks
- **Early assessment:**
  - Contribution on estimation over mobile sensor networks (WP6)
  - Contributions on cross-layer feedback for embedded networks (WP6)
- **Mobility and exchanges:**
  - LTH => Caltech,
  - Caltech ⇔ KTH, LTH

Caltech in RUNES (cont.)

- Contribution to RUNES session at IEEE CDC/ECC 2005 (submitted)
- **Future plan:**
  - Contribution to scalable networked embedded systems;
  - Mobility and exchanges:
    - LTH ⇔ Caltech
- Caltech with LTH, Porto Uni., UCB, Princeton, Campinas are members in Control and Dynamic Systems Alliance

UCSD in RUNES

- **Objective:** brings extensive experience in optimised radio technology, intimate knowledge in applications and design methodology
- **Early assessment:**
  - Contribution D3.1 radio technology review (WP3)
  - Contribution to scenario development (WP2) and design methodology work (ETH)
- **Future plan**
  - Participate in evaluation of RUNES platform
  - Trial RUNES technology with application for car industry

ISIS in RUNES

- **Objective:** brings the extensive, cutting edge competence and tools in Model Based Design Methodology
- **Early essessment:**
  - provided access to high quality tools
  - Knowledge transfer, contributing to WP2 and WP7
- **Mobility and exchanges**
  - ISIS => ETH

ISIS in RUNES (cont.)

- **Future plan:**
  - Further deepen the methodology collaboration
  - Supporting development of domain specific toolchain
  - Mobility and exchanges: ISIS ⇔ ETH

Questions, suggestions for improvement

- Coordinated/correlated evaluation of proposals responding to IST respective NSF calls
- Possibility to reserve fund in EU projects to support collaboration with Non-EU partners
- Resolve different views on basic IPR issues
- What is needed to get a collaboration recognised? Should it be formalised or an informal but proven working relationship is good enough?