Towards an Enterprise Interoperability Science Base?

ICE Conference, Leiden, 22d of June 2009
Vision of our Research Domain (Future Internet Enterprise Systems)

- Facilitating emergence of future business forms through research for networked organisations
- **Vision of tomorrow’s businesses:** more competitive, innovative, agile, and value creating, but highly techno-dependent!
- Combination of material and immaterial set of tools
- **Service Oriented Enterprise** made of enterprise platforms built around the delivery of new services
- Diversity of continuously evolving ecosystems of enterprises in the future
- **Interoperability** fulfilling this vision, remains a key issue for the WYSIWYG enterprise

Science Base for EI that comprises a new set of concepts, theories and principles derived from established and emerging sciences, with a view to long-term problem solving as opposed to short-term solution provisioning.
History of the initiative

- 31\textsuperscript{st} of July 2006: the first EIRR and its fourth Grand Challenge envisions a science base for Enterprise Interoperability
- On the 11\textsuperscript{th} of March 2008, we start an EISB Task Force composed of 4 cluster representatives to explore the required methodology to achieve a science base
- On the 3\textsuperscript{rd} of June 2009 we launch the kick-off meeting of the EISB Expert Group in the European Commission
Why this initiative?

• Science and engineering relationship questions raised in various discussions
• European Research and Technology Development Projects trend
• As a result of 10 years of software architecture (degree of maturity)
• Strong business case
• Academic, Standardisation and Intelligence communities in other regions are pushing (eBusiness, NIST, NASA, ESA, JAPAN, IFIP, etc.), Software vendors are also supportive (SAP, ORACLE, MSFT, etc.).
• M. Leyton (Rutgers University) is founding the IIIS in the US
Why a Science Foundation?

- To avoid past errors or double funding
- To decouple research from technology and develop fundamental knowledge on complex environments integration
- Because EI is not only a technology issue, it contains semantics, organisational and business aspects also
- To leverage (abstract) rigorous, formalised solutions and apply them to other interoperability contexts
- Because new complex systems require interdisciplinary approaches rather than focused practices

Adapted from Nagib Callaos, “The essence of Engineering and Meta-Engineering: A work in progress"
EISB Current approach

- Primary reflection work should be supported by the cluster (horizontal issue) represented by a Task Force
- What kind of researchers are necessary to help us find an answer to our questions?
- Requires external advice (from prominent scientists knowledgeable of ICT issues) and strong coordination from the domain
  - The focus remains on the enterprise (but will contribute to the overall interoperability issue as well)
  - We look for concrete results > application to FInES
Current Plan

- EI Task Force created in 2008: 4 members reflecting on the approach, reporting to the community.
- EISB Expert Group:
  - Expert Group: 7 representatives from different scientific areas from Academia (e.g. mathematicians, physics, philosophy) and Standardisation/certification bodies
  - reputable scientists from different scientific horizons (physics, mathematics, economics, social science, etc.) to build a balanced scientific framework for Enterprise Interoperability (EI).
  - framework for "free-thinking" within a structured discussion in order to help the community progressing
  - Possibly 2 meetings in 2009.
- Discussions were necessary to
  - validate the problem statement and advise on the approach followed by the TF
  - Results show a strong interest, but uncertainty as to the approach
- Int’l cooperation is essential in this matter, as well as Industry and Standardisation bodies’ support
- Provisions in the WP (Call 5)
- Future EU conference to present results?
This is not an easy task!

- New, exploratory work (so far, not existing elsewhere)

- Requires understanding of the scientific process (epistemology, ontology definition, formalised concepts and approaches, etc.)

- EI Task Force capacity to reflect on the methodology is limited by its essence (comes from the engineer/techno world!)

- Might fail (e.g. problem statement is not appropriately defined, lack of comprehensiveness, incorrect approach to the problem, etc.)
Why a *Science Foundation* for EI?

- “Engineering is the application of science for human benefit”, Prausnitz, 1991
- Science needs engineering to demonstrate evidence, engineering needs science to develop, therefore, “although science and engineering are intertwined, engineering is not a subset of science” Sir Robert Malpas, 2000