Future Internet Service Offer

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A proposal on…
How should Internet Scale Systems of Systems research challenges be addressed?

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Background

- 70s (A. P. Sage, M.W. Maier,…)
- Defense and aerospace sectors as main targets.
- NASSE workshop in ServiceWave ’09
  - ISSoS initiative

  www.esi.es/issos

Hypothesis I

- ISSoS is a good perspective to approach research and engineering on the FI.

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ISSoS research structure

- New technologies and theories to enable the functional requirements of the FI
  - Agents, AOP, orchestration, virtualization, authorization, ontologies, IPv6,….
- New methodologies, models and tools for creating the ISSoS engineering which will apply the new technologies and theories to the systems in the market.
  - MDE, MM, Openness characterization, Process Description, Reference Models, Process enactment, BPMN, BPEL, …

Hypothesis II

- SoS engineering techniques need tailoring for the Future Internet
  - Yes
    - New models and methods to be created
  - No
    - Just focus on the new technologies needed

Hands-on

- Simplify Hypothesis I
- Enumerate some challenges

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Simplify hypothesis I: What is ISSoS?

Internet scaled Systems of Systems

- is a paradigm that describes
- those scenarios composed by
- autonomous information systems
- which collaborate
- to attain a goal
- under changing conditions to which they adapt

ISSoS Key characteristics

- Open interfaces
- Self Governance
- Emerging behaviours

Non conventional requirements prioritisation:

PEOT

Which are the research challenges?

- Engineering:
  - Internet technologies not used in critical environments
  - Migration drama must be minimized
  - Problems should be addressed at the adequate layer
  - Definition of the expected behaviour
  - Select the degree of authority: directed, virtual, collaborative systems.
  - Lack of mapping between Internet elements and real-life jurisdictions
  - Define triage policies
  - Guaranteeing SoS economies
- Research:
  - Self-awareness of complex systems
  - Self-configuration
  - Entropy optimization
  - System behaviour virtualization