Requirements Management for Net-Centric Enterprises: An Overview

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SYSTEMS ENGINEERING Research Center

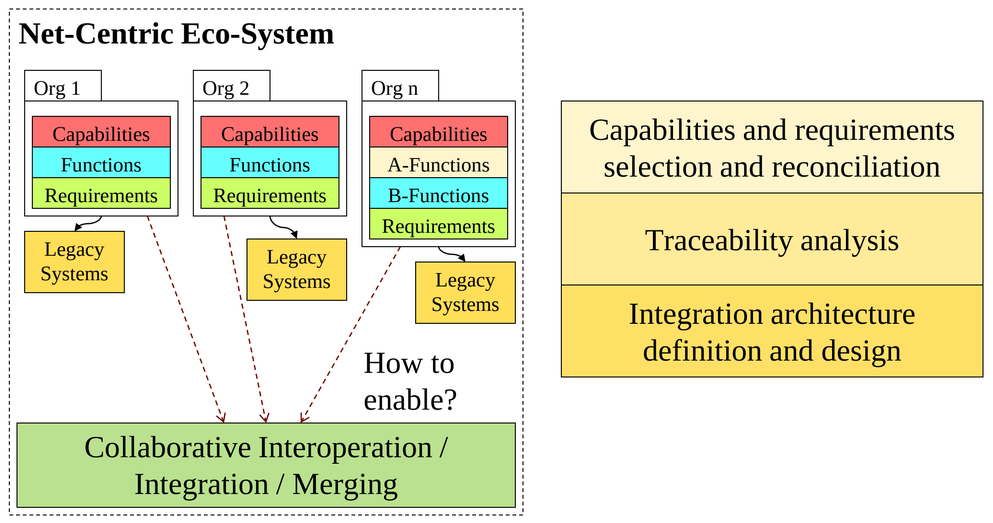
RT-25
Net-Centric Requirements Management

Georgia Tech

University of Southern California

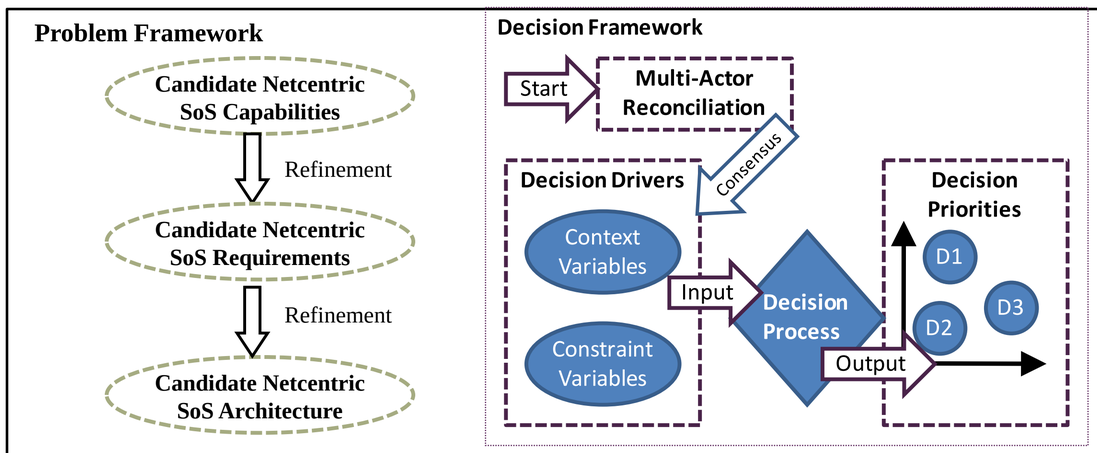
Background: Problem Statement

- Net-centric enterprises engage semi-autonomous business units, each with its own goals and methods for characterizing "requirements"
- These units often need to collaborate using common IT systems, involving integration or merging
- Missions and unit needs evolve over time
- Legacy systems exist and must be addressed
- How should capabilities and requirements be managed?



Our goal: Specify a methodological framework for requirements management, identify candidate Methods, Processes and Tools (MPTs), and use case studies to aid in solution development and value articulation

Solution Approach: Methodological Framework



- Decompose high-level capabilities into software requirements, then into architectures
- Provide support for multiple stakeholders involved in net-centric integration (conflicting needs, compartmentalized information)
- Provide support for traceability
- Use a spiral decision process to incrementally involve lower levels of detail and incorporate evolution of needs

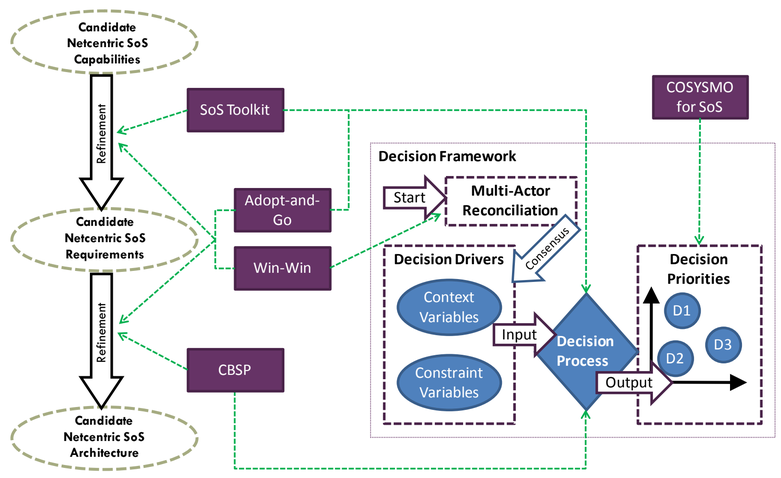
Solution Details: MPTs, Case Studies and Validation

Methods, Processes and Tools (generic systems/software)

- **Win-Win** – MPT for negotiating and resolving multi-stakeholder conflicts regarding IT requirements
- **System-of-systems toolkit** – MPTs for going from capabilities to requirements
- **Adopt-and-Go** – MPT for selecting one system from among multiple
- **CBSP** – MPT for deriving architecture design decisions from IT requirements
- **COSYSMO for SoS** – MPT for estimating cost of software-intensive system-of-systems given size factors and cost parameters

MPT Mapping To Problems

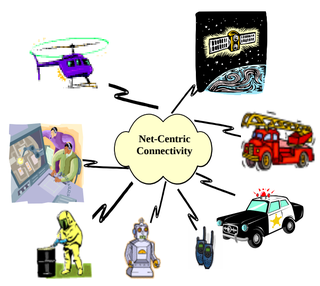
Next step: Use case studies to adapt MPTs and integrated solution to net-centric domain



Case Study Analogy Approach

· Apply the methodology/MPTs:
  Identify issues/challenges
  Determine MPT adaptations
  Evaluate methodology
· Expected outputs:
  Manual/tutorial
  Other research problems

- Regional area crisis response
- Mergers (HP-Compaq)
- Back-office IT integration (ISP)
- Health IT



Validation Goals and Approach

- Determine capabilities and gaps with respect to managing requirements IT integration efforts in net-centric-like environments
- Determine extent to which our methods and tools address gaps
- Determine specific reactions and insights
  Enterprise systems integration
  Health IT integration
- Surveys and interviews
  Developed generic instrument
- Walk-throughs and usage

Conclusions

- Methodology/MPTs
  - Specified generic solution framework
  - Indentified candidate MPTs
- Case studies and validation
  - Case studies to adapt MPTs to net-centric domain and demonstrate solution value
  - Validation with third-party systems integrators to identify gaps and independently demonstrate solution value

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References

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