

Ontology Summit 2012
Ontology for Big Systems
Launch Event:
Summit Overview,
Program Structure, Vision

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Ontology Summit Overview 1

- In an earlier planning session in December, 2011, the community and subsequently, the summit organizing committee members brainstormed on the choice of theme and how best to frame the issues
 - Many suggestions offered: <http://ontolog.cim3.net/cgi-bin/wiki.pl?OntologySummit2012/Suggestions>
- Given the input, we decided to focus on the theme of “Ontology for Big Systems”
- The Ontology Summit begins with a 3-month long virtual engagement by the community on the theme
- We will seek to explore, identify, and articulate how ontological methods can bring value to the various disciplines required to engineer and support a "big system”
- The main goal of the summit is to bring together and foster collaboration between the ontology community, systems community, and stakeholders of some of "big systems”

Ontology Summit Overview 2

- The structure of the Ontology Summit will consist of multiple tracks led by track co-champions, with 1-2 virtual sessions per track, with session chairs and session presentations and panelists exploring the issues and leading the discussions
- Under the guidance of designated Communique lead editors, the track champions will collaboratively compose and co-edit the joint communique, to be affirmed by the entire community
- The Ontology Summit will culminate in a 2-day face-to-face Workshop and Symposium at NIST

Theme (Revisited) of Ontology Summit 2012

- **Ontology for Big Systems**
 - The term "big system" is intended to cover a large scope that includes many of the terms encountered in the media such as:
 - Big data analytics
 - Complex techno-socio-economic systems
 - Large net-centric distributed systems
 - Collective intelligence
 - Large scale infrastructures
- **Key questions:**
 - What can ontology provide to support and understand Big Systems?
 - How does ontology provide that?
 - How does the science and engineering of Big Systems impact ontology?

Ontology Summit Program Structure: Ontology for Big Systems Tracks

- Large-scale systems engineering
 - Systems engineering: an interdisciplinary field that focuses how complex engineering projects should be designed and managed over their life cycles, which includes requirements gathering and analysis, architecture and design, the actual system production process and its integration with the overall business process, including testing and evaluation
- Large-scale engineered systems
 - Focus on the actual structure of complex systems, including the nature, function and behaviour of their various components (physical, technical, social) and their mutual relationships, including integration and interoperability issues. It also involves the study of the global behavior of such systems as resulting from their interactions with the users and the external environment
- Challenge: Ontology and big data
 - Large-scale data and data mining and knowledge discovery, and the ability of ontology to provide support
- Large-scale domain applications
 - Includes Smart Grid, biomedicine, pharmaceutical, astronomical and physical science, collective intelligence, social networking, net-centricity/large scale knowledge management, complex socio-technical systems, cloud infrastructure

Ontology Summit Program Structure: Tracks and Sessions

- The Organizing Committee has undergone an intensive distribution list interaction in the past week on how to frame the discussion
- We are in the process of collaboratively aligning proposed sessions into tracks, and identifying track champions
- Some sessions are cross-track by definition, i.e., addressing issues both in systems engineering and engineered systems, or are focused on large-scale applications that cut across tracks
- Big data is a challenge focus, but all tracks need to address large-scale data management and interpretation
- There is interest in starting to explore ontology quality, evaluation, and metrics in context

Vision for Ontology Summit 2012

- We will aim towards producing a series of recommendations describing how ontologies can create an impact on Big Systems
- We will try to provide illustrations where these techniques have been, or could be, applied in domains such as:
 - Bioinformatics
 - Electronic health records
 - Collective intelligence
 - The smart electrical grid
 - Manufacturing and supply chains
 - Earth and environmental applications
 - E-science
 - Cyber-physical systems
 - E-government
- We will engage the systems community so that the ontology community also learns from them