WWW2002 Panel N11

The Semantic Grid

The Grid meets the Semantic Web

Moderator

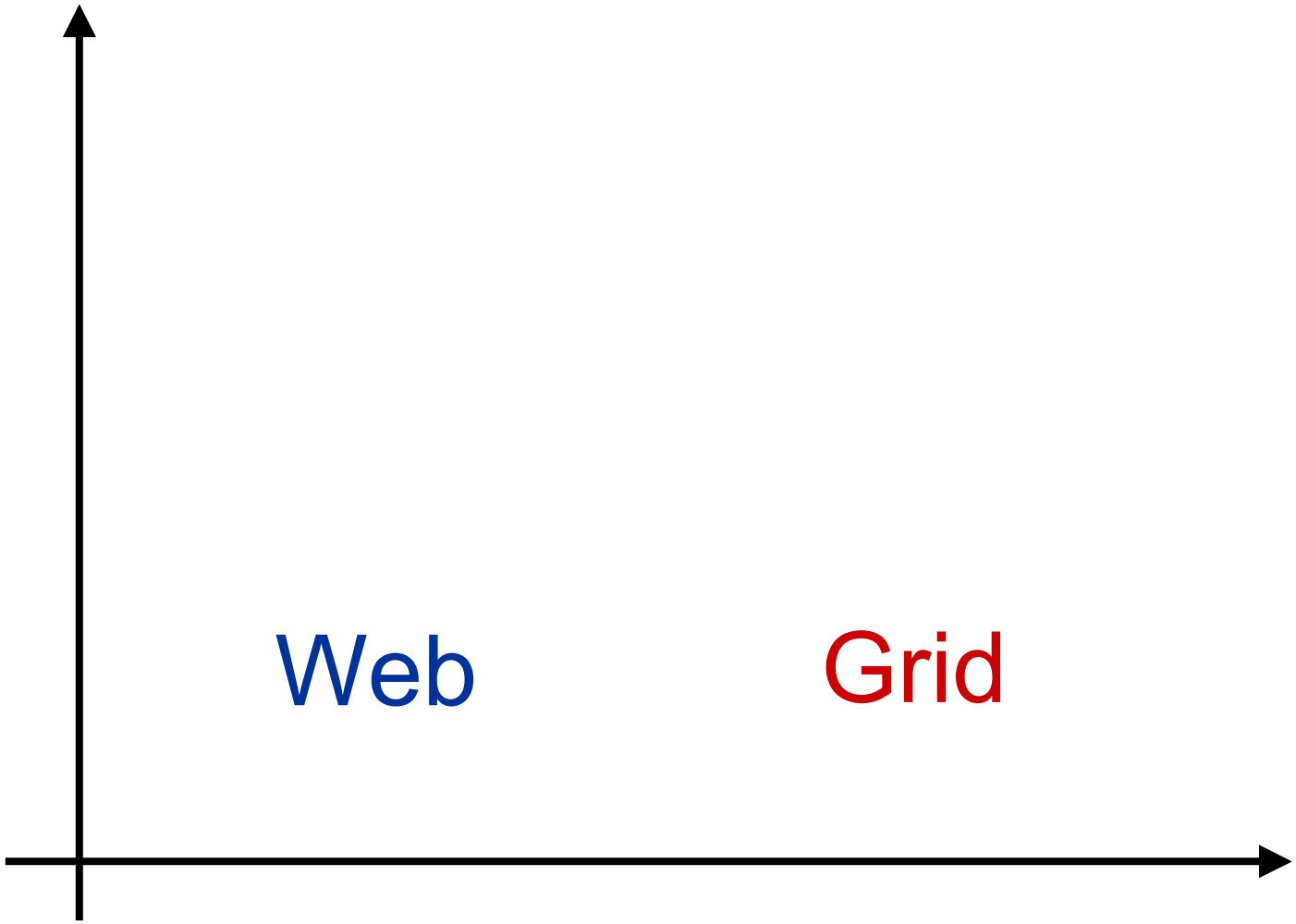
David De Roure

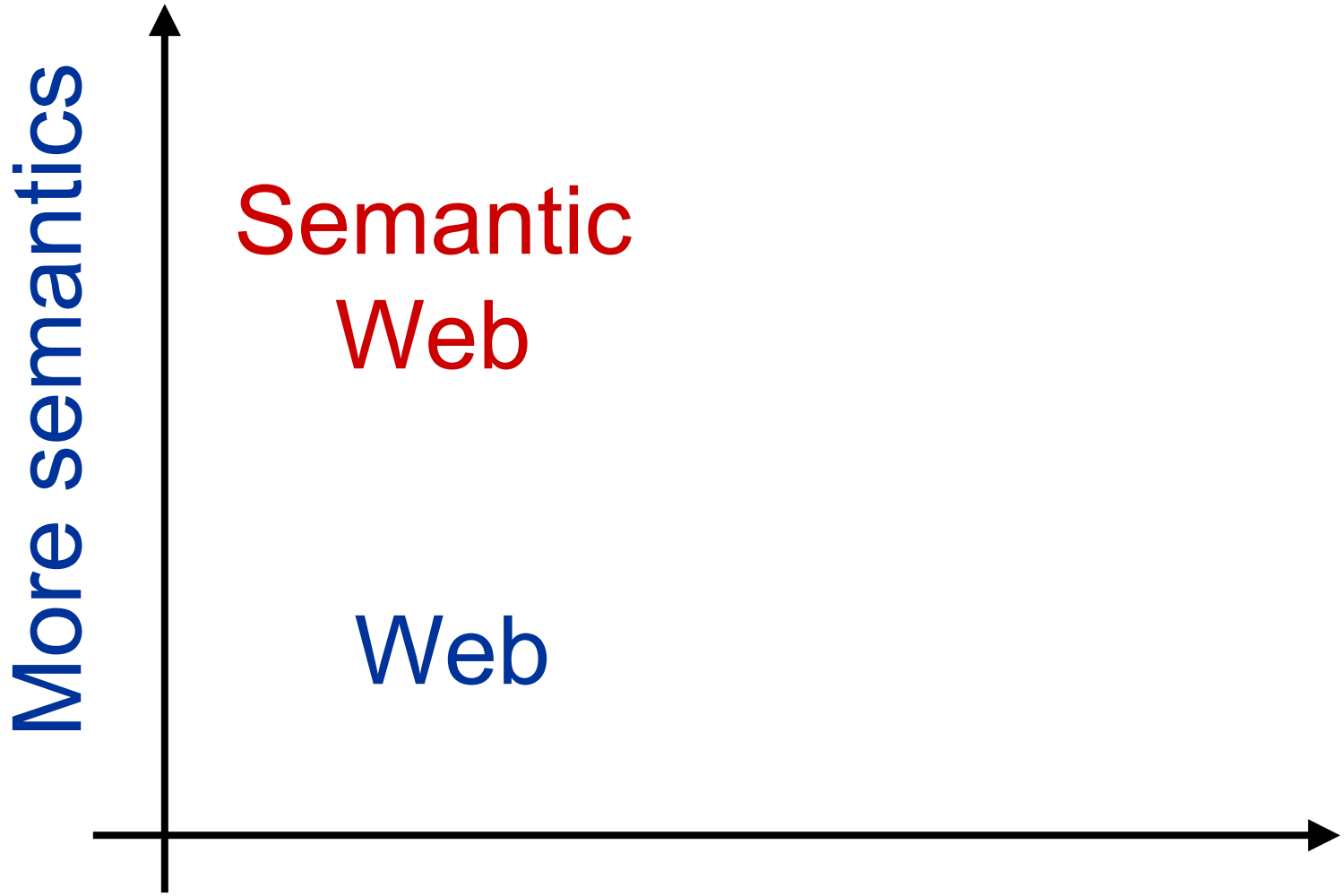
Panelists

Ian Foster **Eric Miller** **Jim Hendler** **Carole Goble**

Visions

- Grid computing is heralded as the future of the Internet.
- Semantic Web is heralded as the future of the Web.
- Are these orthogonal futures?!

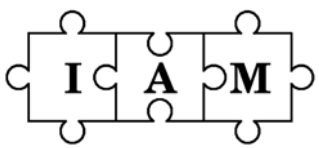

Web
Grid
More computation


More semantics
Semantic Web
Web

Commonality

"Grid computing has emerged as an important new field, distinguished from conventional distributed computing by its focus on large-scale resource sharing, innovative applications, and, in some cases, high-performance orientation...we review the "Grid problem", which we define as flexible, secure, coordinated resource sharing among dynamic collections of individuals, institutions, and resources - what we refer to as virtual organizations."

From "The Anatomy of the Grid: Enabling Scalable Virtual Organizations" by Foster, Kesselman and Tuecke



Commonality

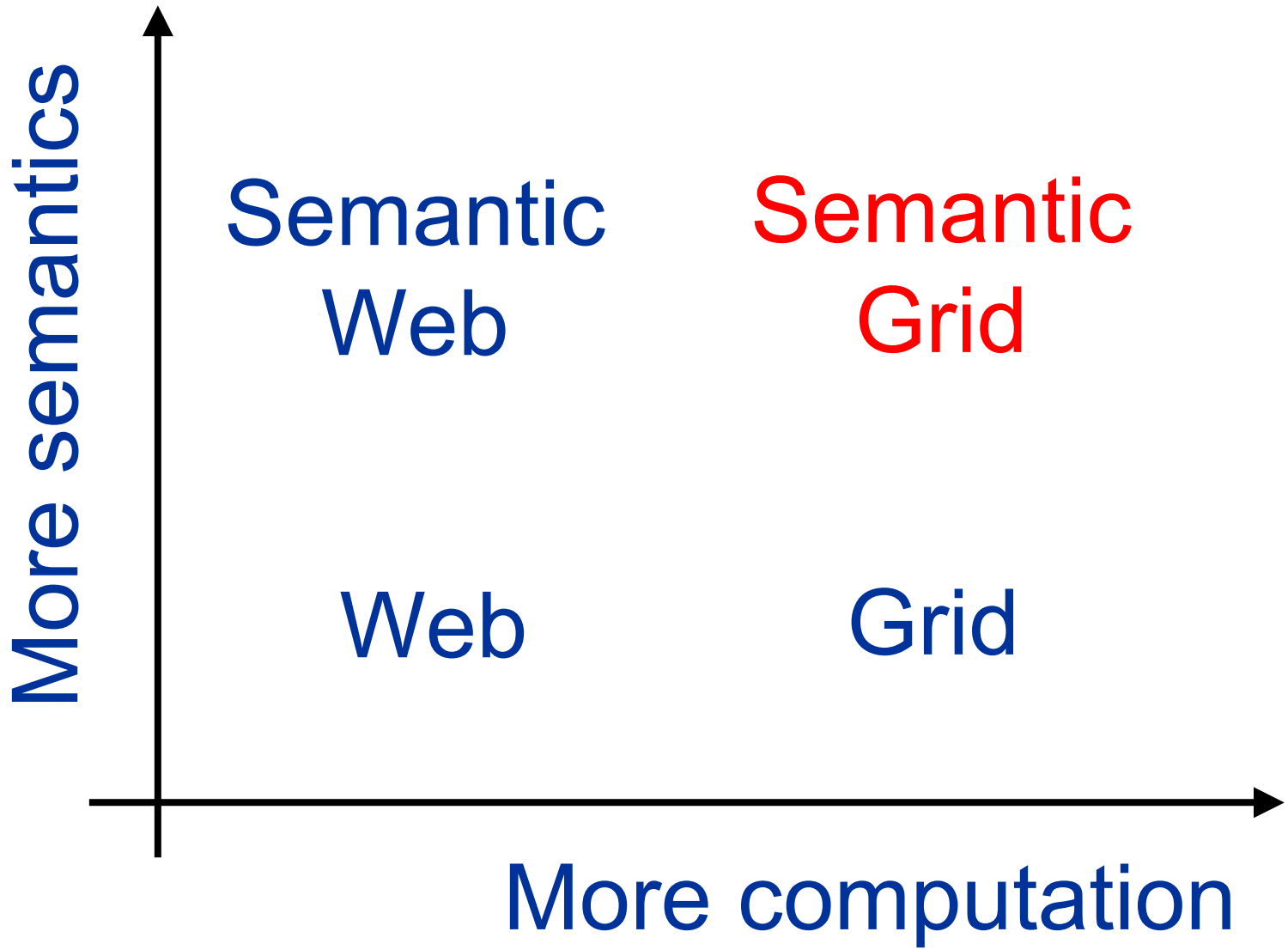
"The Semantic Web is an extension of the current Web in which information is given a well-defined meaning, better enabling computers and people to work in cooperation. It is the idea of having data on the Web defined and linked in a way that it can be used for more effective discovery, automation, integration and reuse across various applications. The Web can reach its full potential if it becomes a place where data can be processed by automated tools as well as people"

From the W3C Semantic Web Activity statement

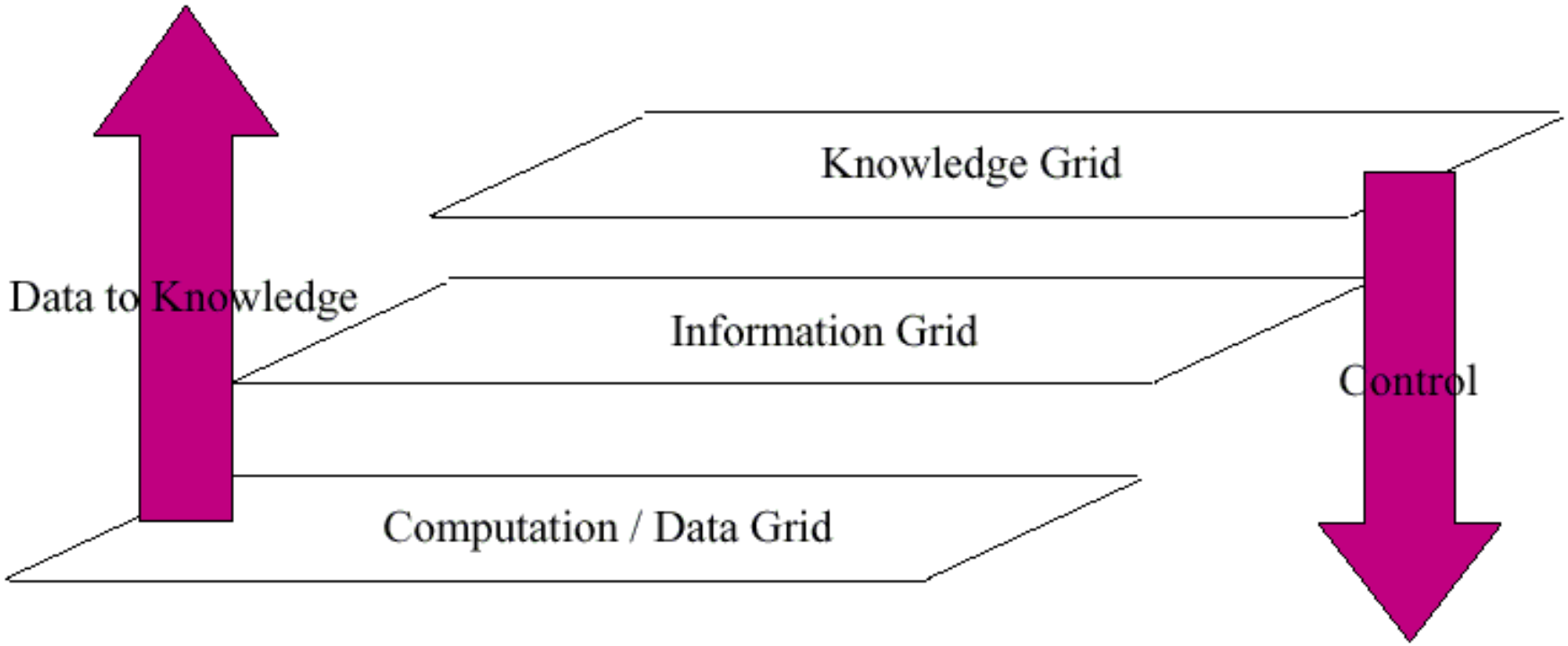
Semantic Grid

- I suggest there is currently a gap between grid computing endeavours and the vision of Grid computing in which there is a high degree of easy-to-use and seamless automation and in which there are flexible collaborations and computations on a global scale.
- I suggest that to support the full richness of the grid computing vision we need *both* grid and semantic web; i.e. the *Semantic Grid*!!!

www.semanticgrid.org


More semantics
Semantic Web
Semantic Grid
Web
Grid
More computation

The GRIDs Architecture



Source: Keith Jeffery

Questions

- What do grid computing and semantic web have in common? Where do they differ?
- Does the Grid need the Semantic Web?
- Does the Semantic Web need the Grid?

Ian Foster is a leader and innovator in Grid computing: the Globus and GriPhyN projects that he co-leads provide technologies that are at the heart of major e-science projects worldwide, and that are increasingly seeing adoption in industry. The book "The Grid: Blueprint for a New Computing Infrastructure" that he co-edited with Carl Kesselman has helped shape this field.

Eric Miller is the Activity Lead for the W3C World Wide Web Consortium's Semantic Web Initiative. Before joining the W3C, Eric was a Senior Research Scientist at OCLC Online Computer Library Center, Inc. and the co-founder and Associate Director of the The Dublin Core Metadata Initiative.

Jim Hendler is a Professor at the University of Maryland and the Director of Semantic Web and Agent Technology at the Maryland Information and Network Dynamics Laboratory. He is also the former Chief Scientist of the Information Systems Office at the US Defense Advanced Research Projects Agency (DARPA). Jim is the chair of the W3C's Web Ontology Working Group.

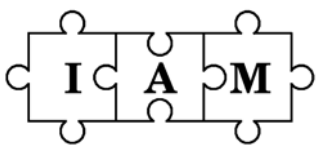
Carole Goble is a Professor in the Department of Computer Science in the University of Manchester, UK, where she coleads the Information Management Group and is Director of her Regional e-Science Center. As Director of a major testbed under the UK e-Science programme, she is building a semantic web for the bioinformatics community - so is really faced with building a semantic grid :-)

More questions

- Should we use RDF(S) or wait for OWL?
- Where will the ontologies come from? SW has focused on certain domains - is the nature different in grid applications?
- SW R&D seems to focus on symbolic techniques. Is there potential for subsymbolic techniques and aren't these part of the grid computing picture?
- Doesn't large scale distributed collaboration involve synchronous working?
- Where do you think it's going in 50 years? :-)
- For each panelist, what is the biggest challenge we must address to realise the semantic grid?

Next steps

- Semantic Grid BOF 7pm this evening
- Euroweb 2002 "The Web and the GRID: from e-science to e-business" www.w3c.rl.ac.uk/Euroweb

- www.semanticgrid.org

Thank You