



Information Society and Media

# Grid Strategy towards the Lisbon Objectives



- ➡ Coordination of National Programmes
- ⇒ Opening-up of National Programmes
- ⇒ International cooperation
- ➡ Build critical mass
- ⇒ Derive standardisation strategy





⇒ Integration – structuring – standardisation















### Networked European Software and Services Initiative



A European Technology Platform for SW, Grids & e-Services:













### **Next Generation Grids Report 2006**

Future for European Grids: GRIDs and Service Oriented Knowledge Utilities – Vision and Research Directions 2010 and Beyond, January 2006

### Service-Oriented Knowledge Utility (SOKU)

A flexible, powerful and cost-efficient way of building, operating and evolving IT intensive solutions for business, science and society.

- > building on existing industry practices, and emerging technologies
- > support ecosystems that promote collaboration and self-organization
- > towards increased agility, lower TCO, broader availability of services for all
- > empowering service providers, integrators and end-consumers of ICT
- > (r)evolution of concepts from Web, Grid & Knowledge technologies
- > as safe, ease und ubiquitous as existing utilities such as electricity or water



NGG3



#### **Towards Framework Programme 7** Vision from Grids to Service Oriented Knowledge Utilities



The architecture comprises services which may be instantiated and assembled dynamically, hence the structure, behaviour and location of software is changing at run-time





A utility is a directly and immediately useable service with established functionality, performance and dependability, illustrating the emphasis on user needs and issues such as trust

assisted ('semantic') to facilitate automation and advanced functionality, the knowledge aspect reinforced by the emphasis on delivering high level services to the user

Services are knowledge-









#### Grid Market : the segments of the value chain













#### Indication of Worldwide Grid Spending by type of Grid, **Products, 2005 - 2010 (\$billion)** \$25 \$20 \$15 \$10 \$5 \$02006 2008 2010 2005 2007 2009Enterprise Grids □ Partner Grids Service Grids Source: http://www.insight-corp.com/%5CExecSummaries%5CGrid05ExecSum.pdf

Grid Computing: A Vertical Market Perspective 2005-2010, The Insight Research Corporation, February 2005,











ICT WP 2007-08 Challenges							
					PROVISI	ONAL	
		End-to-end systems for Socio-economic goals				]	
E	Flagships     TPs	Digital content and knowledge	ICT for health	Intelligent car and sustainable growth	ICT for independent living and inclusion		
Technology roadblocks	Network and service infrastructures	<ul> <li>The Network of the Future</li> <li>Service and Software Architectures, Infrastructures and Engineering</li> </ul>				erging	
	Cognitive systems, robotics and interaction	<ul> <li>Secure, of infrastru</li> <li>Network</li> </ul>	e and Eme echnologie				
	Components, subsystems and embedded systems	<ul> <li>New paradigms and Experimental Facilities</li> <li>Critical Infrastructure Protection</li> </ul>				Future	
Information Society and Media Directorate-General – European Commission							





# **Challenge 1: The targets**

Today	5 – 10 years
Billions of devices connected	•Trillions of devices connected
•"Convergence" emerging but: User handles separate networks, a multiplicity of devices, disparate services	<ul> <li>Anywhere, anytime, any device</li> <li>Unlimited capacity</li> <li>Reconfigurability, adaptability, Interoperability, Service composition</li> </ul>
<ul> <li>Security and trust are "add on" characteristics</li> </ul>	•Built-in security and trust
<ul> <li>Robustness/dependability a key hurdle</li> </ul>	•Highly dependable software and systems
•Difficulty to cope with the fragmentation of the value chain	<ul> <li>Full support to distributed value chains</li> <li>Service oriented architectures</li> <li>Computing/data handling a utility</li> </ul>





# Challenge 1 'Pervasive & Trusted Network & Service Infrastructures'

<ul> <li>The network of the future (200M€)</li> <li>• Ubiquitous network infrastructures and architectures</li> </ul>	Services & SW Architectures, Infrastructures and Engineering (150M€)		
<ul> <li>Optimised control, management and flexibility of the future network infrastructure</li> <li>Technologies and systems architectures for the Future Internet</li> </ul>	<ul> <li>Service architectures</li> <li>Service/SW engineering approaches</li> <li>Strategies and technologies enabling mastery of complexity, dependability &amp; behavioural stability</li> </ul>		
<ul> <li>Secure, dependable and trusted infrastructures (85M€)</li> <li>Security &amp; resilience in network infrastructure</li> </ul>	<ul> <li>Virtualisation tools, system software and network – centric operating systems</li> <li>Integrated solutions supporting the networked enterprise</li> </ul>		
<ul> <li>Security &amp; trust in dynamic and reconfigurable service architectures</li> <li>Trusted computing infrastructures</li> <li>Identity management and privacy enhancing tools</li> </ul>	<ul> <li>Networked Media (85M€)</li> <li>Interoperable MM network &amp; service infrastructure</li> <li>End-to-end systems</li> </ul>		



Infe IST WP2007-2008, soon to be published Indicative budgets



# **Conclusions (I)**

#### **Evolution of the Grid vision towards Service Oriented Knowledge Utilities (SOKU)**

- > 2003: virtualisation, simplicity
- > 2004: mobile Grids & NC-OS
- ➤ 2005/06: Convergence of Grid-web services ⇒ SoA/SOKU

# > 130 M€EU funding for 36 projects ⇒ longer-term research + industry orientation

**Building strong European industrial commitment** 



NESSI







**Conclusions (II)** 

### **Next Generation Grids and Next Generation Networks**

- Will telcos and IT industries converge towards compatible solutions?
- Can the Grid paradigm be built on any network?
- FP7 IST Challenge 1 will provide opportunities for exploring the convergence of network and service infrastructures





# **Further Information**

• Brochure: Building Grids for Europe

⇒ FP6 Grid Project Fact Sheets, FP5 Grid Project Achievements

# Workshop and Expert Group Reports

"Next Generation Grids 3 – Grids and service oriented knowledge utilities: vision 2010 and beyond", publication expected February 2006

and more: <u>cordis.europa.eu/ist/grids</u>

- NESSI: <u>www.nessi-europe.com</u>
- FP7: <u>cordis.europa.eu/fp7/</u>



