

Global Computing

- A **global computer** is a programmable computational infrastructure distributed at worldwide scale and available globally
 - It provides uniform service guarantees for communication, cooperation and mobility, modalities and disciplines for resource usage, security policies ...
 - examples : the Internet, the (world-wide) VPNs, the Web, the telephone network, the GRID, etc.
- An **overlay computer** is an abstraction that can be implemented on top of a global computer
 - examples: resource discovery services, search engines, P2P mechanisms



Global Computing II: goal

- multiple, diverse global computers will each realise a different global platform
 - utopia: a global computer optimised for every need
 - dystopia: a disarray of incompatible architectures
- The overall goal of this call is to achieve real, integrated global computing in a wide range of application scenarios
 - by providing foundational advances on suitably large classes of global computers
 - together with the integration of methods and concepts necessary to advance the field of GC as a whole



Global Computing II: Objectives

- To achieve **innovative theories, computational paradigms, linguistic mechanisms and implementation techniques** for the design, realisation and deployment of future **global computational environments**
- key issues to be considered:
 - **security**
 - **scalability**
 - **distribution**
 - **resource management**



Global Computing II (obj. cont.)

other specific, non exclusive areas of interest include:

- o Methods and infrastructures for trust
- o Models of interaction and cooperation;
- o Abstraction mechanisms;
- o Components and modularity;
- o Programming languages concepts;
- o Validation and verification
- o Algorithmics and software principles



GC II: Challenges

- Design and realise new global/overlay computers
 - and the corresponding computational paradigms, linguistic mechanisms and implementation techniques
- Devise theories and techniques concerned with the areas of interest listed before
 - applicable in general, to form the conceptual backbone for the whole GC2
 - applicable to specific classes of global and overlay computers, where this is justified by the nature or unapproachability of the issue at hand
- Broaden the application domain of global computers
- ...



Global Computing II: Approach

Global Computing fosters a research approach aiming at **substantial integration** between:

- theory
- systems building
- experimentation

following a foundational approach typical of **Computer Science research**



GCII: checklist for proposals

- provide both **foundational advances** on suitably large classes of global computers, and the **integration of methods and concepts** needed to lead to general results;
- **identify clearly the class** of global or overlay computers they focus on (not unnecessarily restrictive)
- have **clear and realistic objectives** related to the list of core issues and challenges of GC2
- have a set of **clear success criteria**
- present a substantial **integration of theory and practice**, following a foundational approach
- pursue **innovation** and present a clear challenge and adventure in research
- have the **potential to radically change** the way we do computing and, in the end, to improve our quality of life

