

Objective ICT-2007.3.4

Computing Systems

ICT Proposers Day
Köln, 1 February 2007



Computing systems: Two target outcomes

1. Novel architectures for multi-core computing systems
2. Reference architectures for generic embedded platforms



1st Outcome: Multi-core Computing Systems

- **On-chip systems** incorporating multiple processing elements in both “general purpose” and “embedded” markets
 - New architectures
 - » symmetric/heterogeneous cores
 - » reconfigurable elements
 - » on-chip interconnect
 - » on-chip memory
 - System level software
 - » operating systems
 - » compilers
 - Programming environments
 - » parallel and concurrent languages
- **Instruments**: STREPs, NoE



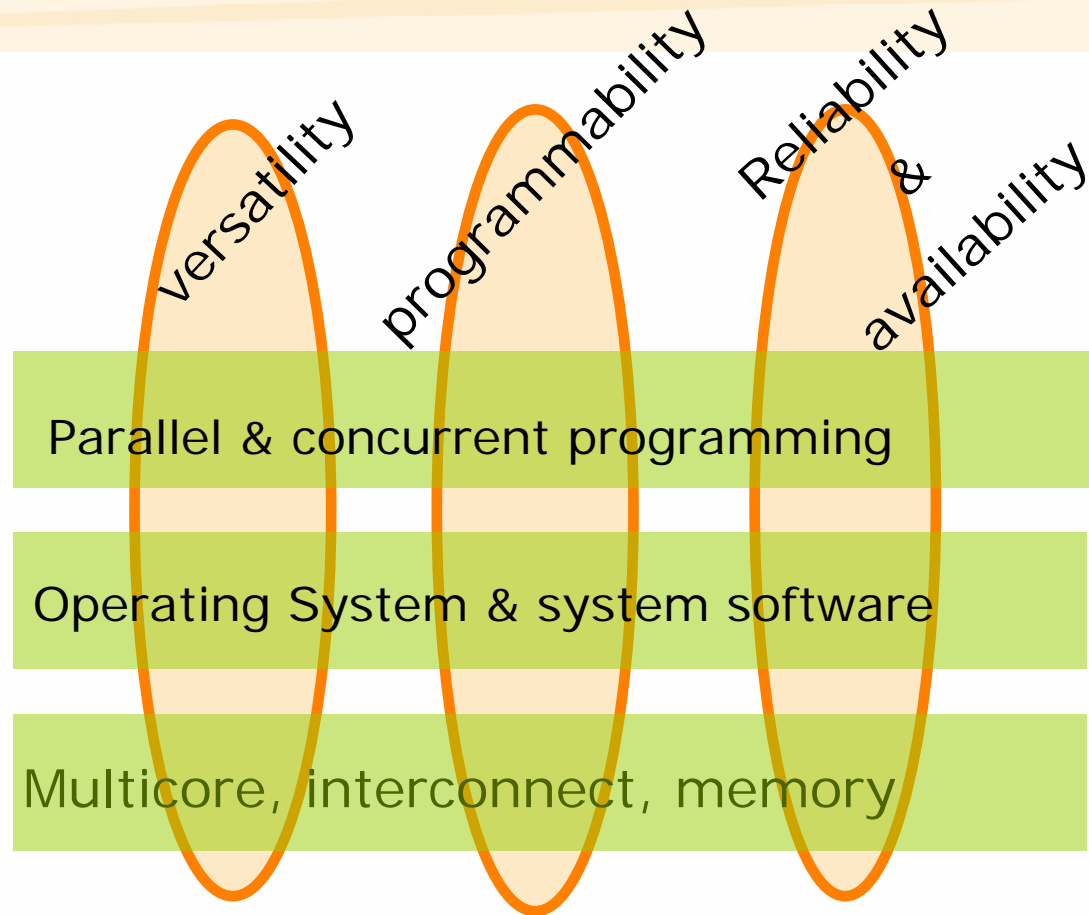
Multi-core Computing: Key research challenges

- **Versatility** to adapt to different and contradictory application requirements
 - from low-end consumer electronics to high-end computing
- “Designed for **programmability**”
 - to fully exploit the hardware potential
- **Reliability** and **availability**
 - techniques and mechanisms for detecting and managing failures



Multi-core Computing: Holistic view

Need for holistic
view of the
research challenges
involving **both**
software and
hardware aspects



2nd Outcome: Reference architectures

- **Development of a limited number of reference designs/architectures for embedded platforms**
 - As generic as possible, cutting accross application domains
 - Accompanied by tools and component libraries
 - Priorities are: conceptualisation, analysis, design, demonstration and evaluation
- **Main characteristics** of the reference architectures
 - Composability
 - Networking
 - Robustness/security
 - Diagnosis/maintainability
 - Resource management
 - Evolvability
 - Self-organisation
- Artemis SRA priority on “Reference Designs and Architectures”
- **Instruments**: small STREPs with limited duration



Computing Systems: Expected Impact

- Mastery of new computing architectures allowing European companies to achieve world-leading positions in computing solutions and products
- Increased market share of European suppliers through the availability of inexpensive generic embedded platforms
- Widespread integration of powerful computing solutions in products
- European excellence in computing architectures, system software and platforms. Strengthened European competence in the use of high-end computing to enable the development of new applications



Instruments & Budget Information

- Collaborative projects (STREPs): 20 MEuros*
- Network of excellence under 1st focus: 5 MEuros*

*amount to be confirmed after the Commission decision on 2008 budget



Relation to other parts of the Programme

– Complementing:

- ICT-2007.3.1: Nanoelectronics, components and electronic integration
- ICT-2007.3.3: Embedded systems design

– Related:

- ICT-2007.1.2: Service and software architectures, infrastructures and engineering
- ICT-2007.1.4: Secure, dependable and trusted infrastructures



Further Information & Contact

- **Computing Systems:**
- <http://cordis.europa.eu/ist/embedded/computing.htm>
- **Info-day: 7 March 2007, Brussels**
- http://cordis.europa.eu/ist/embedded/news_events.htm
- **Email**
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