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Beyond-the-Horizon and Interlink (how ERCIM has affected EC Strategy)

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Paris, May 28, 2009

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BTH at a glance

- **Full title:** Anticipating Future and Emerging Information Society Technologies (Coordination Action)
- **Costs / EC contribution:** ~600K € / 480K €
- **Duration:** 1/1/2005 – 30/6/06
- Coordinated by ERCIM
- Scientific coordination: FORTH

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Purpose

- To define the *major challenges* and *promising research directions* in ICT-related *strategic areas* that require support, *through a well-organised, extensive and systematic consultation of the relevant research community in Europe*.

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Intended Impact

- Policy developments
  - *Contribution to enhancing EU's reactivity to emerging scientific and technological challenges*
- Research community
  - *Consensus building and mobilization*
  - *Formation of research networks*
  - *Interdisciplinary research*
- Industry
  - *Increasing industry awareness of new trends, challenges and visions in IST-related research*

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Thematic Groups

- TG1: Pervasive Computing & Communications
- TG2: Nanoelectronics & Nanotechnology
- TG3: Security, Dependability & Trust
- TG4: Bio-ICT Synergies
- TG5: Intelligent and Cognitive Systems
- TG6: Software Intensive Systems

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Methodology

- Open method of consultation and coordination
- Continuous working group methodology, combined with major brainstorming workshops, in the form of a foresight exercise
- Collaborative workspace to support online communities
- Consultation with the wider European research community on outcomes

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Outcomes

- Findings from the Thematic Groups
  - Visions and grand challenges
  - Proposals for new research programmes
  - Cross-thematic issues
- Wide dissemination of results (European Research Community, European Parliament)
- Big majority of proposals adopted as proactive initiatives in the FP7 FET Work Programme

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Proposals (sample)

- *Networked Societies of Artefacts*
- *Human-Computer Confluence*
- *Interfacing Cell-biology with nano-electronics*
- *Ambient security, dependability and privacy*
- *Quantum cryptology*
- *Bio-inspired Strategies of Growth, Development and Evolution*
- *Design for Emergence*
- *Developmental Robotics*

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Interlink at a glance

- **Full title:** International Cooperation Activities in Future and Emerging ICTs (Coordination Action)
- **Costs / EC contribution:** ~1M € / 900K €
- **Duration:** 1/10/2006 – 31/5/09
- Coordinated by ERCIM
- Scientific coordination: FORTH
- Participants: LMU, FhG, UniKarl

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Interlink's mission

- To identify and address **world-scale, basic research problems**, where significant added value is expected to be gained from world-wide cooperation
- To establish **communication and cooperation mechanisms within and beyond Europe** to support the formation and functioning of a related scientific community
- To identify **complementarities in selected thematic areas** among EU and non EU countries that can give rise to knowledge and technology exchange
- To define **joint basic research agendas**, road-mapping activities and joint RTD initiatives

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Thematic Areas & Methodology

- **WG1:** Software intensive systems and new computing paradigms
- **WG2:** Ambient computing and communication environments
- **WG3:** Intelligent and cognitive systems
- Independent meetings within and outside Europe
  - strong transcontinental participation (> 50%)
  - participation of researchers from industrial labs
- Consolidation of WG findings
- Cross-thematic issues
- Dissemination via books, chapters in books, white papers, invited talks etc.

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Outcomes

- Comprehensive State-of-the-Art Reports and Research roadmaps in the 3 thematic areas
- New research themes
  - *Ensemble engineering*
  - *Socially-aware ambient intelligence*
  - *Designing Future Urban Interaction and Communication Environments*
  - *Processes and representations for emergence*
  - *Emergent cooperation*

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Outcomes

- Unifying theme / umbrella scenario: "Humane Smart Cities"
  - Cross-thematic research area offering the potential for multidisciplinary collaboration and integration of perspectives and technologies form all three InterLink Thematic Areas
  - *Intention-driven semantics*
  - *Communication & interaction*
  - *Behaviour (autonomic behaviour / synergetic intelligence)*
  - *Horizontal issues (openness, scalability, assurance, harnessing complexity, heterogeneity, privacy, trust)*

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Impact

- InterLink- FET Meeting
  - 01 February 2008, Brussels
- Input for FP7 calls
  - Human-Computer Confluence (Call 5) – contributions from WGs 2,3
  - Calls 6 and beyond (WP 2011-13)
  - FET flagships
- Input to road-mapping activities in USA
  - H. Christensen, US Robotics roadmap (WG3)
- Input to road-mapping activities in Japan
  - Y. Kuniyoshi, Cognitive Systems roadmap (WG3)

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Conclusions

- BTH has been the source of several of the FET Proactive Initiatives in FP7
- We aspire to achieve a similar impact with the recommendations from Interlink
- Guidance from and collaboration with the EC is a prerequisite
- Impact on the research programs of non-European countries: US Congress on Robotics, Japanese Science Foundation on Cognitive Systems
- Follow-up actions in preparation

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Acknowledgements

- Inception: Stelios Orphanoudakis, Thierry van der Pyl
- Implementation: Constantine Stephanidis, Antonis Argyros, Bruno le Dantec, Jerome Chailloux
- Guidance: Thomas Skordas, Walter van de Velde
- Advisory board: Keith Jeffery, Stefan Jähnichen, Arne Sølvberg, Jean-Eric Pin
- Support: Jessica Michel, Florence Pesce, Patricia Ho-Hune, Emma Liere, Peter Kunz
- Publicity: Catherine Marchand