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SUMMIT**
APRIL 3RD - 4TH 2007

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European Commission
Directorate General Information Society and Media
Networked Enterprise and Radio Frequency Identification (RFID)

European RFID Policy in a Global Context

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Active Policy on RFID

- Main policy objective is to contribute to:
 - economic growth,
 - creation of more and better jobs,
 - more competitive conditions for companies and industry,
 - improved quality of life of European citizens and customers.

“Faster development and take-up of RFID technology in different application areas to contribute to higher productivity and a sustainable economic development in EU, while effectively dealing with the (potential) downsides attached to RFID implementation”



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Current Situation: Applications

- RFID applications already spread in Manufacturing, Logistics and Supply Chain Management
- High potential for society and individuals
 - Healthcare; disabled persons; elderly...
- Several barriers and challenges for take-up
 - High investments/costs; cost-benefit models; performance issues; lack of accepted standards; security & privacy; changes in supply chain organisation; lack of legal certainty; lack of involvement of SMEs...



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Current Situation: Industry

Fragmentation of the supply side

- Suppliers of diverse origin
 - Winders (Sokymat, MBBS...); wireless card specialists (ASK, Tagsys...); chip manufacturers (TI, Philips, STM...); ICT generalists (Siemens, Thales, Omron, Tracetel...)
- Many areas of skills
 - Founders/chip designers; designers & manufacturers of packaged tags; designers and manufacturers of readers; integrators of H/W solutions; designers of communication interface software (middleware); designers of application software; system integrators
- Few integrators have an overall competence on RFID systems
 - Industry consolidation likely



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Current Situation: Research

- R&D topics for RFID tags
 - Alternative tag designs: chipless, IC-based
 - February 2007: **Hitachi** unveils smallest RFID chip (0.002 inches by 0.002 inches; 60 times smaller than the μ -chip)
 - March 2007: European project **PolyApply** presents a 13.56 MHz RFID transponder fully made of flexible organic devices (<http://www.polyapply.org/home.html>)
 - Tag packaging: nanotechnology, printed electronics
 - Sensory tags: smart dust...
- R&D topics for RFID readers
 - Multi frequency; multi standard; adaptive readers; mini or micro readers; new anti-collision protocols...
- Network architectures
 - Microprocessor design; P2P computing
- R&D on privacy-enhancing technologies; privacy-by-design



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Current Situation: Regulations in Europe

- Electro-Magnetic Compatibility (EMC)
 - CEPT in Europe
 - Issues *recommendations*
 - RFID belong to Short Range Devices
 - Directive 1999/5/EC
 - ETSI: working with CEPT on technical and normative aspects
- Communication frequencies
 - Radio Spectrum Decision 676/2002/EC
- Health and safety of people
 - ICNIRP (1998), IEEE (C95.1-1999), EC (1999/519/EC)
 - Protection of workers: Directive 2004/40/EC
- Electromagnetic pollution
 - Frequency Hopping vs. 'Listen Before Talk'



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Current Situation: Standardisation

- Generic standards
 - ISO standards
 - ISO/IEC/JTC1/SC31 interoperability
 - Air interface: ISO/IEC 18000-x; item management
 - Chip unique identifier: ISO/IEC 15963
 - Syntax and identifier of application families
 - Certification and performance tests
 - ISO/IEC/JTC1/SC17 wireless IC-based cards
 - Network infrastructures
 - ISO/IEC/JTC1/SC6 – links with ITU, IEEE
 - IETF – network dimension of the Internet
 - EPCglobal current projects
 - Network infrastructures
- Application standards
 - Animal sector; postal services; wireless chip card; fight against counterfeiting; distribution supply chain (EPCglobal)



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Current Situation: Standardisation (cont.d)

- Privacy Enhancing Technology standards?
- World-wide standards?
 - Unique identifiers; RFID service architectures
- Application domain standards?
 - In the US: standards for the pharmaceutical supply chain, military supply chain, safety uses in cars...
 - In Europe, due to the different Member States, the need for application standards is even larger!



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Current Situation: Privacy

- A key concern for consumers / citizens
- Concept of privacy was wrought in Europe & the US
- Definition of “privacy” has evolved
- Different approaches coexist
 - In Europe
 - general protection (1995 & 2002 Directives)
 - ‘Article 29 Data Protection Working Party’
 - Privacy commissions in all EU Member States
 - In the US
 - Strong federal laws for Government
 - Self regulation, case-by-case for industry
- Three overarching principles in Europe
 - Focus on information systems, not technologies; privacy and security by design; maximal individual participation & consent



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Why Talk About RFID?

1. RFID technology offers opportunities for improving competitiveness and innovation
 - Link to the Lisbon Agenda and the i2010 initiative
2. Use of RFID technology is expected to grow strongly over the coming years
 - Will pervade every sector of the economy and corner of society
 - Is the doorstep to the Ubiquitous Information Society
3. Key issues:
 - Getting technology right (affordable, standards, features, spectrum)
 - Addressing privacy, security concerns
 - Getting clarity on legal issues (infringement of IPR, privacy legislation, health & safety)



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Why Action at European Level?

- Guided by proportionality, subsidiarity, additionality
- Appropriate in the case of RFID:
 - All EU Member States face the same types of issues,
 - European privacy policy is to a large extent harmonised,
 - trans-national traffic and trade will be affected by RFID requirements,
 - Different states will have different priorities, so that coordination in RFID deployment and policies would lead to efficiency and effectiveness at all political levels.



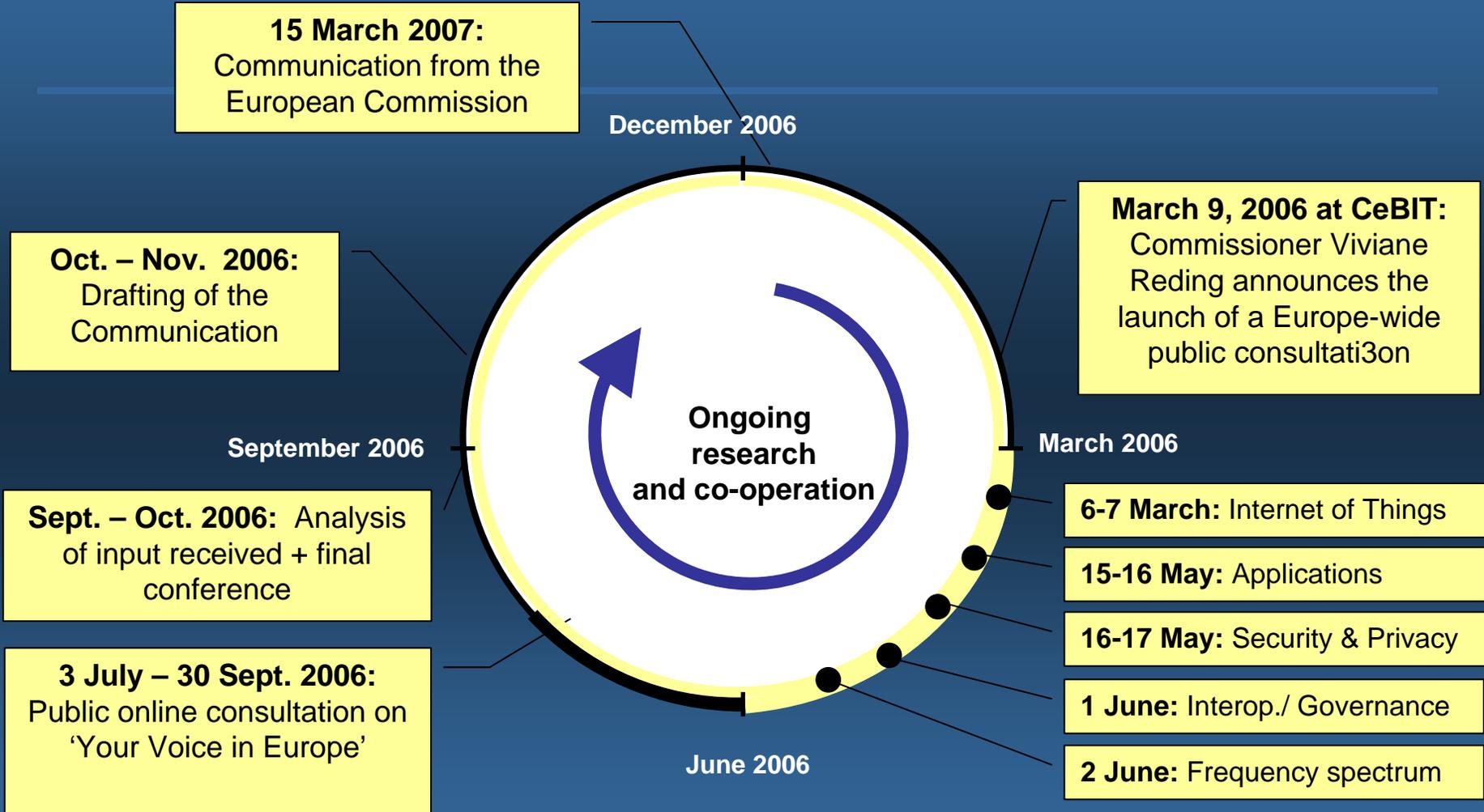
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The Public Consultation Process

- 5 workshops:
 - Technology focus: “From RFID to the Internet of Things”, 6 & 7 March 2006
 - RFID Applications, 15 & 16 May 2006
 - Security and Privacy, 16 & 17 May 2006
 - Interoperability & Governance, 1 June 2006
 - Frequency Spectrum, 2 June 2006
- On-line consultation, 3 July – 30 September
- Final conference, 16 October 2006



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Main Call from Workshops

To help build a cross-society consensus on technical and legal/social/societal/ethical issues associated with the deployment of RFID

These issues include in particular:

- Active stimulate take-up of RFID throughout society
- Creation of legal clarity
- Clarity about requirements wrt data privacy
- Ensuring proper radio spectrum allocation
- Actively pursuing interoperability of systems on a global level



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Consultation Outcome

Results of the on-line consultation
on “Your Voice” and references to
workshop discussions



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Respondents

- 92% male, 8% female
- 65% interested citizens
- ~90% EU-15, 6% non-EU
 - US ranks 7th with 68 responses!
- More than 62% age 25-44



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General Questions

- There is not sufficient information available for interested citizens to come to an informed judgment of RFID pros and cons (61%)
- The application of RFID does not offer great potential for improving the life of European citizens
 - according to 44% of respondents



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RFID Use

- EC to stimulate the uptake of RFID?
 - 24% call for stimulation of uptake in healthcare
 - 19% call for stimulation of uptake in pharmaceuticals
 - 35% say “no stimulation”
- Promote the use of RFID in order to increase patient safety and potentially reduce costs?
 - Yes: 45%
 - No: 40%
- Encourage use of RFID for reducing risk of counterfeiting in pharmaceuticals?
 - Yes: 38%
- European level harmonisation?
 - Intermodal transport systems, container and shipment tracking systems
 - Identification and tracking of pharmaceutical products in EU



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Security, Privacy and Data Protection

- Rely on technical solutions (70%) and education/awareness raising (67%), underpinned by legislation (55%) rather than on self-regulation (15%)
- Less than 10% think there is no issue, and just over 10% think it is up to the end-user to take action
- 66% want RFID tags attached to products in supermarkets to be automatically de-activated, to be removable (51%) or only readable on short distance (44%)



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Security, Privacy and Data Protection (Cont.d)

- 74% of respondents are fairly strongly or very strongly concerned with RFID-enabled monitoring of employees
- ~50% think use of PETs in RFID applications should be mandatory, be promoted at European level (31%)
 - ~10% want to leave it to the market
- Notification of RFID use can be done either by 3rd party certification (says 56%), or by self-certification (says 44%), as long as RFID use is clearly indicated



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Standardisation and Interoperability

- 68% think the EC should stimulate and support initiatives that lead to global harmonisation of RFID standards (17% are opposed)
- 78% ask for a more active role by the EC in setting RFID standards
 - Main task: to assess whether standards are in compliance with European cultures and values (61%)
 - Mandate standards: only 38%



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Frequency Spectrum

- The EC Decision on UHF spectrum harmonisation for RFID (2006/804/EC, 23/11/2006) is sufficient to provide a favourable environment for UHF RFID deployment, say 64% of respondents
 - 42%: OK for the next 3 to 5 years, at least
 - 30% sufficient for the next 5-10 years
- Action is required towards identification of long term spectrum needs, in order to be able to address the issues before they arise



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Research

- First priority (75%) on research concerns privacy enhancing technologies (PETs)
 - Encryption and authentication for RFIDs
- Next priority is R&D on innovative applications
 - for the benefit of the citizen (40%)



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Summary of On-line Consultation

Call for action at European level in particular on:

- Awareness raising on the RFID pros and cons
- Ensure proper address of privacy, security and data protection issues by development of technological solutions, underpinned by legislation
- Establishment of standards, and initiating negotiations about global harmonisation of standards



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Cornerstones of An European RFID Policy

- More information on RFID
- Balancing the different RFID “speeds” in the European Member States
- Strengthening the European economy on RFID in the international context (take-up, innovation)
- Preservation of security and data protection
- Preparation of the “Internet of Things“
- RFID in the context of health and environment



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Measures on European Level

- **Security and privacy**
 - Early integration of security mechanisms in RFID systems
 - End users must be considered during the design of a system
 - By the end of 2007, the Commission will issue a Recommendation to set out the principles in respect of RFID usage
 - Assessment of the need for further legislative steps to safeguard data protection and privacy
- **Research and innovation**
 - 2007-2008 Workprogramme of the ICT theme of the 7th Framework Programme
 - 4 challenges which respect to RFID: healthcare, intelligent mobility systems, nanosystems, organics, future networks
 - Promotion of research in the area of security of RFID systems (e.g. light-weight security protocols and advanced key distribution mechanisms)



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Measures on European Level (cont.d)

- **Radio spectrum**
 - Long term requirements for additional spectrum currently being studied by industry
 - The EC may use its competences under the Radio Spectrum Decision to identify additional harmonised spectrum for RFIDs throughout the Community
- **Standardisation**
 - European standardisation bodies should ensure that international and European standards meet European requirements
 - The EC will continue the dialogue with the US, China, Korea and Japan
- **Governance**
 - Towards a global model of an information retrieval network for communicating objects like RFID tags in the future “Internet of Things”
 - Security and privacy issues in a longer-term perspective



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RFID Stakeholder Group

- Established for 2 years (2007 – 2008)
- Representing all categories of ‘stakeholders’
- To advise the EC on RFID privacy, security and other stakeholders' concerns
- To develop a vision
 - Regarding how RFID systems should operate
 - Security, scalability, sustainability, interoperability...
- To act as an information multiplier
 - Throughout the Member States and industry



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CERP - Cluster of European RFID Projects

- Establishing synergies between RFID research projects
 - To enhance industrial competitiveness
 - To ensure a secure, safe and privacy-preserving deployment
 - To drive the development of an information – and knowledge-based economy and society
- 13 projects in the areas of logistics & transport, product lifecycle, business management and anti-counterfeiting



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Policy Outlook Document

- **Challenges for market-driven innovations**
 - Aspects of RFID apps relevant for trade and industry, which are already available or close to market
- **Technology and application roadmaps**
 - Compilation of the present state of the art in RFID and its representation within the European Research Area, future technologies and applications of the 2nd generation, and the possibilities of their development
- **Social Issues**
 - A differentiated overview on societal needs, new options, requirements, impacts and challenges. Several issues: personal benefit for citizens and consumers resulting from RFID; trust and mistrust of the public; process for a fruitful transparent dialogue with the public



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Policy Outlook Document (cont.d)

- **Intersection analysis**
 - The main strands represented previously will be analysed and put in a common context
- **Political options and recommendations**
 - The essential hallmarks and approaches for a common European policy will be postulated. It will be described, which options are seen for a broad European roll-out of RFID, how such a model fits in global structures and which players are of central importance
- **Political follow-up**
 - Council: roadmap for the ongoing process
 - Portuguese, Slovenian and French Presidencies of the EU
 - European Parliament



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Conclusions



The European Commission supports and promotes a stronger use of RFID

EC Communication sets the basis for concerted actions towards safe, secure and privacy-preserving deployment of RFID in an international context

→ **25-26 June 2007 – EU RFID Conference in Berlin**