RFIDs and European Policies

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"Networked Enterprise and Radio Frequency Identification (RFID)"

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Any opinions expressed in this presentation are the author's own and do not reflect necessarily the position of the European Commission

Challenges

■To realise secure and easy access services from anytime, anywhere, anyone and anything

■RFID applications and new business models are related to many items such as services, network architecture, security, privacy, and even for human lifestyle & culture

■Main challenge: How RFID solutions can meet User Requirements and Public Expectations?

■To add value to the current market situation both in the upstream processing industry and for downstream consumers

> ▶ e.g., traceability in Food Chain

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Key Trends

❏ TECHNOLOGY

- Low-cost tag and reader
- Proliferation of devices (e.g. mobile phones with RFID readers)
- Sensor network (location system, temperature tracking, etc.)

- Embedded technology
- Networked RFIDs

❏ APPLICATIONS

- Railway pass
- E-ticket
- E-pedigree
- Recycling
- Passports

- ID cards
- Contact-less payments
- Food packaging
- Banknote
- Smart toys

❏ EVOLUTION

In-house (production FA, QA)

SCM (palette & case)

Authentication (item level)

Product Lifecycle Management

New Mobile Device Business Models

RFID + Sensor = "Super RFID"

RFID	Sensor
A contactless Auto Identification	A tiny unit to monitor the environment
Capture data automatically by RF signals to identify objects	Capture, process and transmit data automatically by the embedded hardware
Comprise small data-carrying tags and fixed or mobile readers	Comprise the trans-receiver, microprocessor, power supply and some storage units

Sensors can be embedded in RFID realising ID detection and monitoring function, e.g. moisture or temperature sensors (in food RFID), light sensors (in chemical medicine RFID), vibration sensors (in display RFID), pressure sensors (in tyre RFID)

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Cornerstones of an European RFID Policy

- Preparation of the "Internet of Things"

- Providing objective information on RFID to citizens

- Balancing the different RFID "speeds" in the European Member States

- Fostering technology take-up, innovation

- Safeguarding security and data protection

- RFID in the context of health and environment

- Sustaining an international dialogue on all aspects of RFID development and deployment
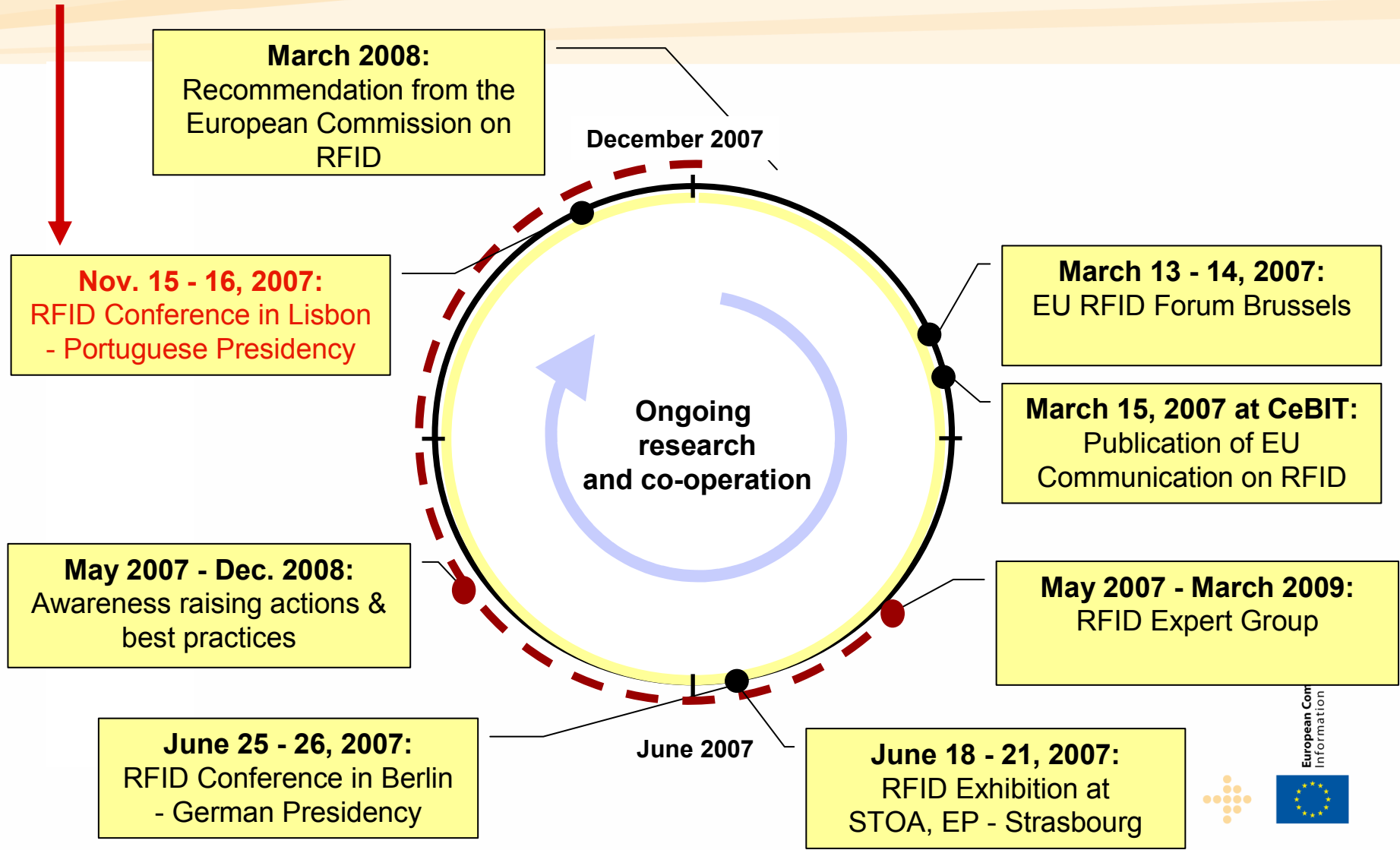
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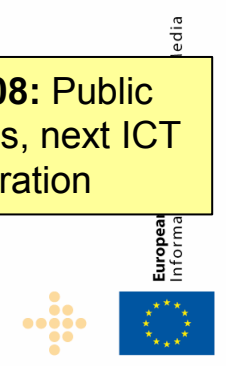
Communication on RFID (COM(2007)96

- ❑ RFID Security and Privacy
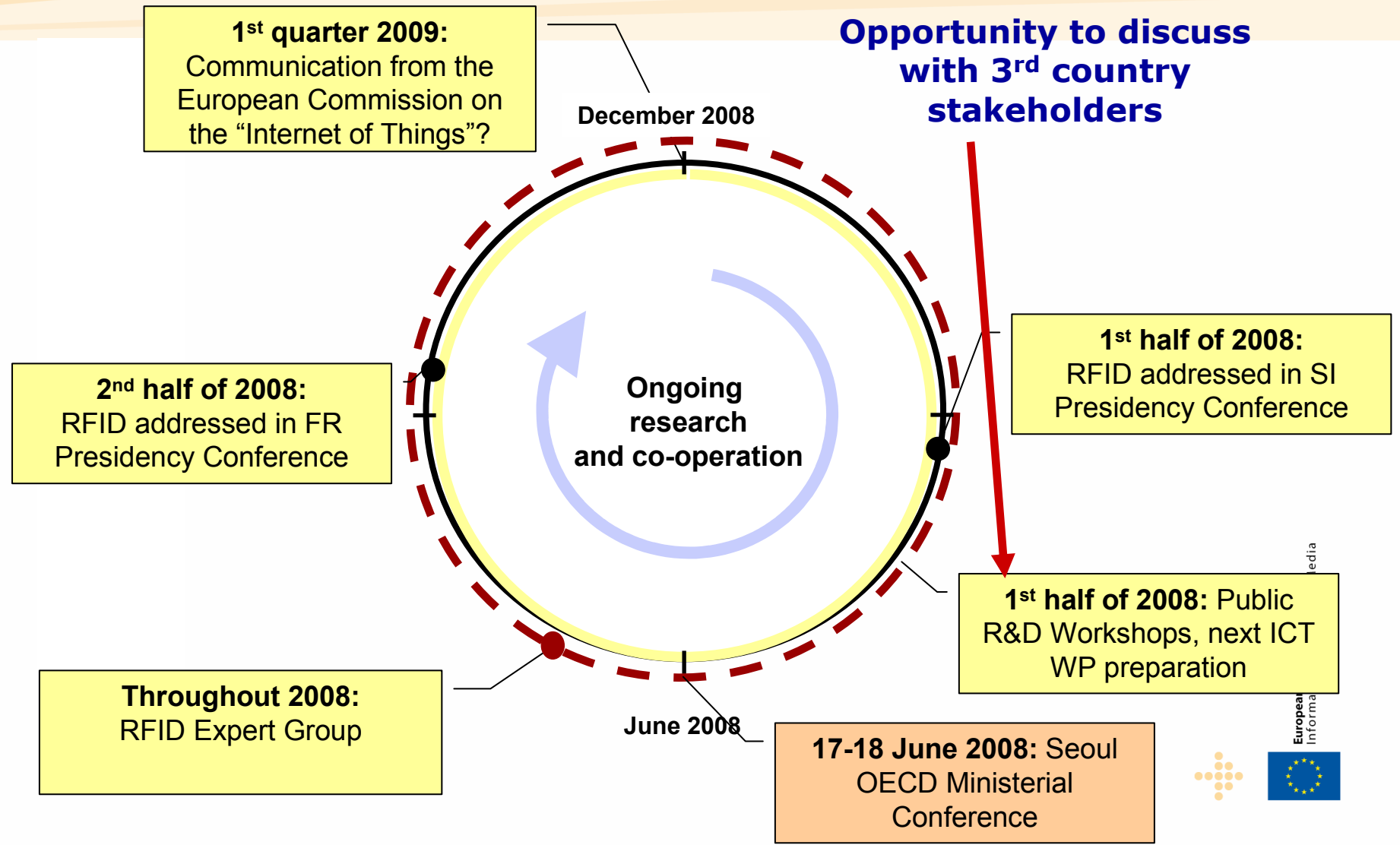
- ❑ Radio spectrum

- ❑ Research and innovation policy

- ❑ **Standardisation**
  - ❑**European requirements (privacy, security, IPR, licensing...)**
  - ❑**Identify standardisation gaps**
  - ❑**Framework for the development of future RFID standards**
  - ❑**International cooperation for certain application sectors**

- ❑ Further actions on RFID technological and governance issues

EU RFID Roadmap 2007

Opportunity to discuss with 3rd country stakeholders

March 2008:
Recommendation from the European Commission on RFID

December 2007

Nov. 15 - 16, 2007:
RFID Conference in Lisbon - Portuguese Presidency

March 13 - 14, 2007:
EU RFID Forum Brussels

March 15, 2007 at CeBIT:
Publication of EU Communication on RFID

Ongoing research and co-operation

May 2007 - Dec. 2008:
Awareness raising actions & best practices

May 2007 - March 2009:
RFID Expert Group

June 25 - 26, 2007:
RFID Conference in Berlin - German Presidency

June 2007

June 18 - 21, 2007:
RFID Exhibition at STOA, EP - Strasbourg

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EU RFID Roadmap 2008

1st quarter 2009: Communication from the European Commission on the "Internet of Things"?

December 2008

Opportunity to discuss with 3rd country stakeholders

2nd half of 2008: RFID addressed in FR Presidency Conference

Ongoing research and co-operation

1st half of 2008: RFID addressed in SI Presidency Conference

Throughout 2008: RFID Expert Group

1st half of 2008: Public R&D Workshops, next ICT WP preparation

June 2008

17-18 June 2008: Seoul OECD Ministerial Conference

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Discussion Items of the RFID Expert Group (1)

❑RFID Expert Group established on June 28, 2007

❑Objective:

➢By end 2007: Inputs (contributions, guidelines) for Recommendation to the EU Member States on the implementation of privacy and information security principles in RFID-enabled applications

➢By end of 2008: Inputs (visions and position papers) for EU policy on the "Internet of Things"

❑Participants: Consumer associations, Manufacturers, Users, Standardisation bodies, European Data Protection Supervisor, National Ministries of Industry and Economy, …

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Discussion Items of the RFID Expert Group (2)

❑Core of the Recommendation

  ❑Need to safeguard privacy and anonymity

❑When product data becomes "personal data", then Data Protection Directive (European Law) applies

❑RFID in retail

  ❑Opt-in model? Opt-out model? Which implications technically/financially?

  ❑Information of the customer when RFID tags cannot be deactivated, disabled or removed without affecting the product's functionality

  ❑Easy verification by the customer that the tag is 'off'

  ❑No discrimination of the customer

❑Information campaigns to raise public awareness

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Establishment of an European Cluster of RFID Research Projects (CERP)

"Establishing synergies between RFID research projects is a prerequisite for a competitive industry and for a secure, safe and privacy-preserving deployment in Europe"

- To provide guidance on RFID privacy, security and other stakeholders' concerns

- To voice stakeholders' concerns associated with the further development and deployment of RFID systems

- To act as an information multiplier throughout the Member States and Industry

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Application Fields Based on RFID Reference Model

Application Fields	AMI-4-SME	BRIDGE	CE-RFID	CoBIs	Dynamite	INDISPUTABLE KEY	PRIME	PROMISE	SMART	SMMART	StoLPaN	SToP	TraSer
A. Logistical Tracking & Tracing		X	X	X	X	X			X	X		X	X
B. Production, Monitoring and Maintenance	X	X	X	X	X			X	X	X			X
C. Product Safety, Quality and Information		X	X			X	X						X
D. Access Control and Tracking & Tracing of Individuals			X	X		X	X				X		
E. Loyalty, Membership and Payment											X		
F. eHealth Care													
G. Sport, Leisure and Household											X		
H. Public Services													

Courtesy of the CE RFID Coordination Action
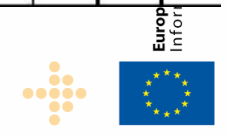
R&D, Innovation & Policy Needs

Technological Research

Hardware: Tags, Readers, Embedded Systems

Miniature tags with increased reading ranges; smart systems; small-sized antennas for readers…

Software/system aspects

Data security and integrity; data quality; integration of RFID systems into applications…

Networks

Look-up services for efficient data retrieval; access rights issues; networked RFID-based systems; interoperability & standards; network security…

Deployment Facilitation

Large-scale pilots

Evaluation of economic and societal benefits

Information for stakeholders

Regulation

Privacy; Radio spectrum; EMF effects; Environment…

Standards

❑ Closed vs. open systems

➢ Up to now, RFID usage has been confined to closed-system usage

➢ Expected potential can only be realised in an open system approach

❑ Role of the Commission

➢ Stimulate/support global harmonisation of RFID standards

➢ Contribute to set RFID standards

❑ Role of Industry

➢ Actively participate in global standardisation activities

Main RFID Standards Bodies

❑ EPCglobal: global standards on how to attach information to products → increased efficiencies throughout the supply chain

❑ ISO: set of standards for the interface between reader and tag (series ISO/IEC 18000-n)

❑ ISO/IEC 14443: defines a proximity card used for identification

❑ ETSI: EN 300 330 (RFID systems operating at LF & HF); EN 300 220 (UHF 433 MHz & 860-960 MHz); EN 302 208 (UHF 860-960 MHz); EN 300 440; EN 300 328 (microwave RFID); EN 300 674.

Interoperability Issues

❑ Integrated logistics

➢International standards are clearly needed

❑ Asset management

➢Standards useful but not essential

❑ People and animal identification

➢In the long term standard approaches will be mandatory

❑ E-payment

➢Strength of the banking sector

❑ Toll payment

➢Highway toll payment should be standardised to support "roaming"

❑ Access management

➢RFID standards for people are needed

❑ Car keys

➢Manufacturers' de facto standards

Privacy: A Safe Deployment Scenario?

Standards?
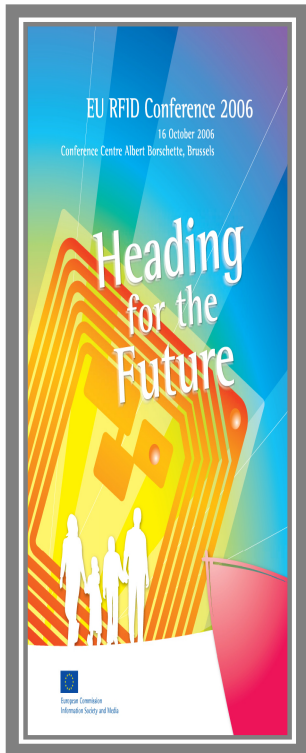
1. Build in privacy compliance
   - ➤ Define minimal level of needed PET
   - ➤ Invest in new secure technologies
   - ➤ Define certification and/or 'security seal'
2. EU's legal framework
   - ➤ Data Protection and ePrivacy Directives
   - ➤ Reports of "Working Party 29"
3. Enforce legal framework

Frequency Allocation and Regulation

❑ Spectrum allocation

❑ Reallocating spectrum is a long process

❑ Consensus exists in Europe to promote a globally harmonised spectrum

❑ EC decision on UHF spectrum harmonisation meets today's requirements

➡ Sufficient for initial RFID deployment

➡ Future adoption

❑ Longer term spectrum requirements have to be explored now

➡ Industry offered already their help for the analysis

More Information

http://cordis.europa.eu/fp7/ict/

**http://ec.europa.eu/information_s
ociety/policy/rfid/index_en.htm**

http://www.rfid-outlook.pt/

http://www.rfidconsultation.eu/

http://www.rfid-in-action.eu/cerp

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THANK YOU!

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