2nd Transatlantic Symposium on the Societal Benefits of RFID

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Symposium report

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Preface

This document relates to the provision of reporting services for the Second Transatlantic Symposium on the Societal Benefits of RFID, and specifically for rapporteur services. It is drafted by Rebecca Schindler in response to the service contract signed by Mr. Luis Rodriguez-Rosello (Head of Unit, Directorate-General Information Society and Media (DG INFSO), European Commission, Directorate D) dated 17 March 2009.

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Opening and keynote address

As part of the 2007 framework for advancing transatlantic economic integration between the European Union (EU) and the United States (U.S.), the EU-U.S. Summit Leaders identified priority growth projects that will significantly enhance transatlantic economic integration, growth, and job creation. One of these "Lighthouse Projects" is Innovation and Technology, and cooperation on Radio Frequency Identification (RFID) technologies is signed out for specific joint action.

This second symposium on the societal benefits of RFID has built upon the success of the first EU-U.S. symposium in Washington D.C. in September 2008. It aimed to exchange experiences and best practices on RFID-enabled applications or concepts that can bring societal benefits for citizens and organisations from both sides of the Atlantic.[1] Discussions focused on three current application areas for RFID technology: environmental protection and sustainability, e-accessibility, healthcare delivery. In addition, the symposium explored future applications to enhance consumer experience, safety and quality of life as well as discussed the potential for RFID technology to stimulate innovation and global economic growth.

The event featured representatives for transatlantic businesses and U.S. and EU government agencies currently employing RFID technology, user groups, and other organisations involved in the development and application of RFID. Speakers were invited to deliver key statements and to engage in discussions with the panel and the audience. In each session, a case study was presented to illustrate RFID in action.

The second EU-U.S. symposium was preceded by a EU-U.S. networking event, taking place on May 5th at the premises of the European Commission. For more information, visit:
http://ec.europa.eu/information_society/policy/rfid/index_en.htm

[1] The first EU-U.S. symposium took place in Washington DC in September 2008. The report of the first EU-U.S. symposium on RFID can be downloaded from: http://ec.europa.eu/information_society/policy/rfid/documents/EUUSsymposium092008.pdf.

Michael C. Maibach (President and CEO, European-American Business Council)

Michael Maibach welcomed and thanked the many participants who, despite the difficult economic climate invested time and resources to participate in this event. In his opening speech, Michael highlighted the need and importance for the U.S. and Europe to join their efforts to stay ahead of the curve and to promote and invest in innovation to ensure competitiveness of their countries. According to a recent study, conducted by The Information Technology and Innovation Foundation (TIF), a U.S. think tank, the U.S. and Europe are losing in terms of innovation and productivity when compared to Asian countries, in particular Singapore and China. The study is freely available on the European-American Business Council website:
http://www.eabc.org/pdf/eabcanditifreport.pdf

New technologies, such as RFID are an essential building block for competitiveness and innovation and the fear of new technology is not a new phenomenon. To allow for a balanced and informed discussion, the introduction of a new technology requires stakeholders to highlight and prove the societal benefits of a technology. RFID already allows for more secure events, better healthcare, smarter recycling, farm to fork tracking, and supply chain security. Michael sees that the best way to use a new technology is to apply common sense and to use codes of conduct. He calls for a joint leadership that drives competitiveness and innovation in the U.S. and Europe.

Viviane Reding (Commissioner for Information Society and Media, European Commission)

In her video address, Commissioner Viviane Reding highlighted the need for an international forum on Radio Frequency Identification. Countries acting alone will deliver neither the full benefits, nor growth nor the security this technology can bring. Cooperation and interoperable solutions are essential and need to be a priority. Cooperation implies to work together and share best practices on applications that will enhance economic integration to the benefit of citizens and businesses on both sides of the Atlantic.

Commissioner Reding thanked the organisers for their relentless efforts to facilitate transatlantic cooperation and for making this second transatlantic symposium on the societal benefits of RFID a success.

Addendum: Gérald Santucci (Head of Unit, Networked enterprise and RFID unit, Directorate General Information Society and Media (DG INFSO), European Commission) informed that, because of a procedural bug, the Recommendation of the Commission on the privacy and data protection issues is expected to be released on Monday May 11th 2009 (addendum: Recommendation was actually released on May 12th).

Robin Layton (Director, Office of Technology and Electronic Commerce, Manufacturing and Services – International Trade Administration, U.S. Department of Commerce)

Robin Layton agreed with previous speakers and highlighted the need to cooperate, to engage with stakeholders and the importance of sharing. The

networking day preceding this symposium was an important step towards this end.

Robin highlighted the role of innovation and global economic growth. In particular, she sees a role for RFID to drive innovation and to help companies to get out of this downturn better prepared and stronger. Robin and the Department of Commerce are looking forward to strengthen cooperation and to learn about these new innovative applications.

After the opening speakers four plenary expert panels discussed the following issues:

- Panel 1: RFID to Enhance Environmental Protection and Sustainability
- Panel 2: e-Accessibility
- Panel 3: The Application of RFID to Improve Healthcare Delivery
- Panel 4: Safety and Quality of Life: The Consumer Benefits
- Panel 5: Innovation and Global Economic Growth

Panel I: RFID to Enhance Environmental Protection and Sustainability

KEY STATEMENTS

- ***RFID can serve as an important component facilitating traceability of material through the whole chain and, therefore, preserving product quality.***
- ***In the wood industry, RFID can help to considerably reduce waste of material and improve energy efficiency.***
- ***RFID can prove that tropical timber has been legally sourced.***

Panel I explored the use of RFID as an invaluable tool in addressing critical environmental issues. In particular, RFID may provide end-to-end visibility of hazardous materials' transportation and storage life cycle, supply critical data to emergency responders, and increase security of hazardous waste shipments. The panel discussed how innovative uses of RFID technology can generate significant benefits to societies in the area of environmental protection and sustainability. It also explored the ability to improve security in transport.

The panel, moderated by Nigel Dore, Chief Technology Officer at Helveta included Mick Keyes, James Waterworth, and Lorenz Erdmann as members. A case study was presented by Richard Uusijärvi, SP Technical Research Institute of Sweden.

Case study presented by Richard Uusijärvi (SP Technical Research Institute of Sweden)

Mr. Richard Uusijärvi presented a study on wood traceability and optimisation of forest production. The *Indisputable Key* project is co-financed by the European Commission under the Sixth Framework Programme (FP6). The time span of the project is October 2006 – October 2010. It is a collaborative effort of 27 partners, representing more than 150 participants from R&D institutes and universities, system integrators, industrial users and industrial manufacturers.

One of the biggest current problems in wood production is waste of materials and energy: 25 million m³ of wood raw material is wasted. RFID can help to learn more about wood and how the environment affects the final product. Choosing a suitable lot for a specific product already in the forest can significantly reduce the amount of waste. It requires an automatic tracing system to provide this functionality. RFID can help in collecting (real-time) information at every stage of the production process and to provide supply chain visibility.

One of the strengths of the *Indisputable Key* project is that it allows for a closed control system to foster innovation. It will develop necessary methodologies and advanced ICT solutions to improve the use of wood and to optimise forest production. Drivers for improvement are: yield, process, innovation, collaboration, and environment. The project currently uses 2D barcodes. Replacing 2D barcodes with RFID will require cheap, robust, reliable (humid environment), bio-degradable (Environmental Product Declaration) and automatically applicable RFID tags. Various patents on bio-degradable RFID devices have already been filed.

Nigel Dore, Chief Technology Officer, Helveta (Moderator)

Global deforestation and illegal logging are major contributors to greenhouse gas emission. Tropical deforestation accounts for 17-25% of total human-caused greenhouse gas emissions. The World Bank estimates that illegal timber trade costs government 15$ billion per annum in lost assets, revenues and taxes.

In particular, regulation has been a strong driver for change: The U.S. Lacey Act amended in 2008 makes it illegal to import and trade illegally harvested wood; the EU draft framework regulation proposed in 2008 determines the obligations of operators who place timber and timber products on the Community market[2]. In addition, the EU FLEGT initiative[3] aims to establish Voluntary Partnership Agreements with producer nations to ensure that only legally harvested timber is imported. Besides, an increasing number of countries are adopting 'green' public procurement policies requiring timber and timber products to be from legal and sustainable sources.

Nigel Dore presented a case study on how RFID can prove that tropical timber has been legally sourced. RFID can play a role in asset identification and can provide additional information such as commercial height of tree, location, etc, facilitate a visualisation of the forest, and strengthen supply chain security and serve as an important component to prove legality.

Lessons learnt from RFID pilots in tropical forests have highlighted some issues; e.g. availability of RFID tags suitable to operate in the tropical environment; limited read/write memory in cost effective tags; cost and lead times of RFID readers for handheld computers; and read ranges needed careful management.

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2 COM(2008) 0644 final.

3 EU Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT).

Mick Keyes (Senior Architect, BCS CTO Office, HP)

HP develops RFID services and deploys RFID in its inbound and outbound operations. HP implemented RFID across 11 manufacturing and 4 product lines, producing over 3 million products per year, with over 100 stock-keeping units (SKUs). The system allows HP to track all materials and to gain a better understanding about its processes, and facilitates compliance with Social and Environmental Responsibility programmes (RoHS[4], WEEE[5], and beyond). Also, it allowed to considerably improve efficiency, in particular by cutting down labour costs. In order to effectively manage this process, HP engaged in a discussion on social responsibility and re-skilling of labour.

Mick Keyes concluded with the following thoughts on RFID today and for the future:

(1) RFID return on investment (ROI) results differ – no one size fits all: small and medium businesses have different market needs than large enterprises (i.e. costs can be prohibitive, ROI difficult to measure for individual elements in the supply chain) and require different investment models to help greater adoption (i.e. cloud computing models and emerging cloud services ideas may help).

(2) Smart label technology in conjunction with RFID is attractive.

(3) Consumer appetite for information is likely to grow (product ingredients, carbon footprint). RFID is seen as a key element to enable these functionalities.

James Waterworth (Director, EU Representative Office, Nokia)

James Waterworth presented examples on how Nokia is using RFID in their own processes and how they encourage others to use it.

(1) Under the WEEE Directive, mobile phone producers are made responsible to pay for the recycling of their mobile phones. Yet, in practice, the percentage of mobile phones recycled appears to be lower than anticipated. Nokia is interested to use RFID to automatically identify the volume of the recycling Nokia is responsible for, and allow to control and incentivise recycling.

(2) Mobile phone as an RFID reader: Nokia sees a strong potential for mobile phones to serve as RFID readers, the advantage being that mobile phones are always on, providing real time connectivity. Omnipresence of RFID readers/mobile phones will bring the benefits closer to the consumer and provide an environmental and economic rationale for consumers by offering improved and new services (e.g. environmental discovery: carbon miles for food products; combating counterfeit and facilitating compliance with REACH and RoHS Directives).

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4 Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

5 Directive 2002/96/EC on waste electrical and electronic equipment.

Lorenz Erdmann (Institute for Future Studies and Technology Assessment IZT)

Lorenz Erdmann presented the findings of a recent study commissioned by the German Ministry for Environment. The study aims to explore and assess potential risks of RFID tags in Municipal Site Waste in Germany 2007-2022 with a focus on consumer goods and passive tags.

The study expects an exponential growth of RFID tags in particular used for 1-way packaging, distribution and returnable systems from 86 million in 2007 to 23.3 billion in 2022. It investigates the impact of substances used in today's RFID passive tags (ISO/IEC TR 27249-2) on recycled products in 2022 and highlights various risks, e.g. impact of silicon and aluminium used on glass can lead to glass fracture; silicon, copper, aluminium can lead to impurity of paper, cardboards, compounds, plastics. The study distinguishes four scenarios: reference case, techno-economic push, governmental regulation and self-regulation and concludes that governmental regulation will be required to prevent potential conflicts with thresholds for recycled material by e.g. incentivising shift to polymer tags.

Discussions and Q&A:

- Robert Buzink, journalist from NRC. Next, asked for more information about availability, cost, quality and impact of biodegradable chips. Richard Uusijärvi highlighted that preliminary tests have shown that biodegradable chips currently available on the market will not affect processes and quality of paper making.
- Elizabeth Board (GS1 EPCglobal) invited Mick Keyes to further expand on the cloud services idea and how they can help SMEs. In particular, she sees that a 1-step-up 1-step-down rule creates unnecessary restrictions. For example, Nokia sees an opportunity for new innovative solutions if the 1-step-up 1-step-down rule is being relaxed and information is made accessible to everybody in the supply chain, e.g. facilitating consumer recalls or empowering users to retrieve further information about products (e.g. quick scan systems to detect possible substances that could cause allergies).

Panel II: e-Accessibility

KEY STATEMENTS

The integration of RFID within the living space of individuals can help to improve safety and support independent living.

Developers of RFID systems always need to take into consideration the privacy implications of these tools.

e-Accessibility addresses people who potentially experience difficulties with information technologies due to age or disabilities (e.g. visual impairment). In today's society, access to information by all citizens is clearly a right and a condition for prosperity. Europe and the U.S. are already working together on the establishment of a single, common standards framework to enable accessible products and services to be developed and brought faster to the market.

The panel was moderated by David Pesek, Czech Consumers Association Representative. Panel members included Francois Junique, Hans Brons and Immaculada Placencia Porrero. A case study (The Hague Smartline Project) was presented by Hans Brons.

Case study presented by Hans Brons (System Integrator, Connexip)

Hans Brons presented the SMARTLine project. SMARTLine offers navigation support to visually impaired and blind people in the city of The Hague. The project is being funded by the European Commission, the ICT for Inclusion unit at DG INFSO.

The RFID enabled system allows visually impaired people to navigate easier through the city of The Hague and is a first prototype of an electronic navigation system for the blind. It uses active RFID tags (covered in the pavement; installed in and under bricks) to communicate to a terminal (mobile phone). At a point of interest, a text message is being translated into voice to inform the visually impaired person about the location and provides direction. The system relies on a client-server architecture that allows for easy updates.

Roadmap for 2009: (1) to further develop potential future areas/external content services (e.g. passenger information on trains, trams and buses at stops; guidance inside hospitals/government/administration buildings); (2) to develop cooperation with third parties and to move application from a project to a business case.

Francois Junique (ICT for Inclusion unit, Information Society and Media Directorate General, European Commission)

The eInclusion agenda of the European Commission ensures and promotes equal access for all. As specified in the 2006 Ministerial Declaration (http://ec.europa.eu/information_society/activities/einclusion/docs/brochures/riga_dec.pdf) and in line with *i2010*, eInclusion policy addresses issues in the fields of active ageing, geographical digital divide, accessibility, digital literacy and competence, cultural diversity and inclusive eGovernment. It also ensures that new ICT products and services do not create additional exclusion risks.

To facilitate implementation of the Riga Declaration and to evaluate its impact, the European Commission supports research through its Framework Programmes (FP), in particular FP6, FP7 ICT and the Ambient Assisted Living (AAL) joint programme, facilitates deployment pilots through its Competitiveness and Innovation ICT Policy Support Programme (CIP ICT PSP), and engages with industry, academia, users and other stakeholders to prevent new exclusion risks.

Currently two sets of research projects are investigating the use of RFID for better e-Accessibility:

- Assisting mobility of people with vision impairment: SMARTLine (presented), SESAMONET in collaboration with the Joint Research Centre (RFID for virtual tactile tracks, several locations in Italy).
- RFID for monitoring elderly at home: CONFIDENCE (fall detection system), PERSONA (identification of subjects in case of presence of multiple persons).

As a next step, the European Commission aims (i) to support large scale deployment pilots, (ii) to investigate operation and other issues of micro or macro navigation systems – possibly in combination with satellite positioning (Galileo), and (iii) to drive forward standardisation to provide accessibility specifications and assessment supporting toolkits for public procurement.

Immaculada Placencia Porrero (Integration of People with Disabilities unit, Employment, Social Affairs and Equal Opportunities Directorate General, European Commission)

Immaculada Placencia Porrero highlighted the legal and socio-economic importance of integrating people with disabilities, and the market potential for solutions that serve people with disabilities.

The European Union has adopted the approach of the United Nations. All Member States have signed the UN Convention and commit to the realisation of universal human rights for all, hence making the integration of people with disabilities a *right* and not a matter of discretion.

The EU Disability Action Plan 2003-2010 aims to stimulate inclusive participation of people with disabilities and to work towards full enjoyment of fundamental rights. It produces a Communication every 2 years to inform about the progress of its disability plan. For more information: http://ec.europa.eu/social/main.jsp?catId=430&langId=en

Preliminary set of regulatory milestones highlight the importance and legal obligation for industry to offer inclusive products and services:

- COM 2007/738 obliges stakeholders to undertake and promote R&D of universally designed goods, services, equipment and facilities to promote the availability and use, and to promote universal design in the development of standards and guidelines.
- In addition, public procurement directives require *whenever possible* to consider accessibility and are being supported by several Communications and mandates (e.g. COM 2007/724, M 376, M 371).
- The European Structural Fund for cohesion and infrastructure makes it compulsory to *consider accessibility at all stages* (Art. 16).

Discussions and Q&A:

- Chris Sherwood (U.S. Mission to the EU) was interested in the contractual relationships with the blind person, in particular with respect to data protection: is data being kept or destroyed? Hans Brons highlighted that once the project enters the business planning phase, it is intended to shift away from a product organisation to an end-user organisation. It aims to make software available free for download and will require users to agree to certain conditions, hence shifts attention to ensure security of the server.
- David invited panellists to highlight potential upcoming funding opportunities. Francois Junique highlighted the following streams of (potential) funding:
    - Work Programme (WP) 2011-2012: RFID for accessibility (tbd).
    - ALL and ageing population is part of the yearly WP for Member States.
    - CIP 2010: large deployment of navigation assistance to tackle operational and legal issues (tbd).

Panel III: The Application of RFID to Improve Healthcare Delivery

KEY STATEMENTS

- ***Hype cycle for RFID in healthcare is over.***
- ***Only integrated solutions can deliver full benefits.***
- ***Lifestyle management may become an important market for RFID.***
- ***As with all eHealth systems, the design, development and implementation of RFID-enabled systems require the direct involvement of healthcare professionals, patients and relevant committees (data protection, ethics).***

Panel III discussed the role of RFID to improve healthcare delivery. Recent experience in European and U.S. clinical settings shows that RFID is a promising technology for patient safety and quality of care, pharmaceutical application (excluding supply chain and counterfeit drug issues), management of devices, supplies and biological material, and patient and healthcare provider support. In particular, item level tagging and Real Time Locating Systems (RTLS) for staff, patients and assets are expected to significantly improve efficiency, safety and availability and to reduce losses. This session focused on how applications of RFID in the healthcare field can improve patient care, such as infant tracking, medication dose monitoring, medical asset tracking and product recalls.

The panel was moderated by Emilie Barrau, The European Consumers' Organisation (BEUC). Panel members included Gerhard Weller, Ilias Iakovidis and Christophe Duverne. A case study on the deployment of RFID in healthcare was presented by Lorenzo Valeri, RAND Europe.

Case study presented by Lorenzo Valeri (RAND Europe)

Lorenzo Valeri presented evidence from a recent study on the requirements and options for RFID applications in healthcare, conducted by RAND Europe on behalf of the European Commission. A thorough study of case studies conducted in the U.S. and in Europe concludes that the RFID hype cycle is over. Hospitals joined to be innovative, but RFID performance has been mixed:

RFID proved most successful when used in logistics. Logistical applications (e.g. tracking and management of portable assets and equipment, tracking location of patients during clinical journey in the emergency department) have shown sound ROI.

Patient safety applications (e.g. RFID assisted medication commissioning, RFID supported chemotherapy preparation and administration) often fail because of technical limitations (reading rates of 98% are unacceptable, interference issue, reliability of tags and readers), high costs (in particular when used as a mere replacement for barcodes), and may lead to resistance by staff and patients. In these cases, unsuccessful RFID pilots often get replaced by Datamatrix solutions.

Also, the study notes that no integrated solutions have been identified and no off-the-shelf RFID solutions for healthcare were available at the time the study was conducted (2008). Successful applications have shown a strong application design, leadership, paid attention to embed RFID in local delivery processes and the organisational context, and involved relevant committees (data protection, workers councils, ethics committee) from the start. Case studies highlighted that costs strongly differ between applications, ranging from insignificant to prohibitive. However, poor data availability and limited measurement of base-line and of benefits did not allow for a full economic evaluation.

Gerhard Weller (Siemens Healthcare)

Gerhard Weller pointed out that only broad, integrated RFID applications can deliver optimised results. Numerous RFID pilot projects have been conducted, often initiated by hospitals and Medical Devices/RFID/Information Technology manufacturers. Pilots have focused on single and specific applications that often showed limited benefits and ROI, and did not consider societal benefits. To achieve optimised results, Siemens sees a need for broad, cross-workflow/cross ward applications and integration with the Hospital Information Systems.

RFID offers many societal benefits: RFID can help to keep healthcare affordable, in particular in the light of demographic change and an ageing population. It can help practitioners to focus on care and to reduce the time spent on routine jobs; it may prevent malpractice, allow for better quality of care by guided workflows, improve data security and data privacy, and offer assistance for people with special needs.

Siemens highlighted the need for further funding and the importance of research; they encouraged the EU to support broad applications that will show societal benefits of RFID.

Ilias Iakovidis (ICT for Health unit, Information Society and Media Directorate General, European Commission)

Ilias Iakovidis challenged panellists to bring forward truly innovative issues that are not intuitive. He encouraged stakeholders not to focus on back office applications, but solutions that serve the healthcare environment. To convince stakeholders and users, it is important to prove how RFID can reduce costs and improve safety.

What next? To enter the healthcare market, RFID will need to pass a clinical technology assessment and prove its benefits in a scientifically rigorous way. It requires more advanced concepts of economic modelling that look at socio-economic benefits and impacts on a broader scope than just ROI. Foremost, it requires practitioners and doctors to be convinced of its benefits so that they eventually become ambassadors, helping to overcome ethical or privacy objections.

A more promising future for RFID may be found outside the classical concept of healthcare: lifestyle management may become an important market for RFID-enabled solutions.

Christophe Duverne (Senior Vice-President and General Manager BL Identification, NXP Semiconductors)

NXP Semiconductors considers RFID as an important technology to enhance safety and reduce costs in hospitals and for medication. In the hospital environment, NXP sees a potential for RFID to enhance safety by supporting key processes such as patient identification and medical history, patient tracking and monitoring, process compliance and access control. Also, RFID can reduce costs by facilitating asset management, document tracking, regulatory compliance, and supporting clinical testing and lab automation. For medication, NXP sees RFID as a key technology to protect against pharmaceutical counterfeit, support medication and dosing compliance, and to facilitate product recalls and expiry management. In addition, RFID is considered to be an important component for sensor-based supply chain management of temperature-sensitive drugs.

NXP considers RFID as the most promising technology for pharmaceutical counterfeit protection and e-pedigree. NXP calls for a joint effort of all involved stakeholders to promote a positive public perception of RFID in healthcare – a joint effort will require high profile programmes and studies that illustrate the benefits.

Discussions and Q&A:

- In reaction to the presentation given by Siemens, Emilie Barrau stressed the importance to train and motivate staff. Pilots conducted in U.S. hospitals have shown that without proper training, the use of RFID can lead to new errors.
- With reference to the JAMA[6] article, Emilie Barrau highlighted that RFID can lead to interference with other ICT if not properly set up

[6] Journal of the American Medical Association.

(worst case testing) and used. Gerhard Weller noted that the European Commission started a small working group on this issue. The group, of which Siemens is a member, is currently working on developing recommendations.

- Karl Juergen Schmitt (Siemens) agreed with Ilias Iakovidis and called for a new, complementary business model - a new patient-centric model that focuses on keeping people healthy and encourages people to engage in preventive medicine. RFID is likely to play an important role in this market.

Panel IV: Safety and Quality of Life: The Consumer Benefits

KEY STATEMENTS

- ***RFID enabled supply chain management systems enhance product traceability, and facilitate quality and safety monitoring.***
- ***RFID in combination with GPS can prove the quality of food products, offer more transparency, and empower consumers to find out more about a product.***
- ***RFID can provide a technical solution for full traceability of goods and therefore can play an important role to protect against counterfeiting.***
- ***RFID can help increase energy efficiency and reduce greenhouse gas emissions.***
- ***RFID can offer carbon accounting on product level.***

RFID is already improving convenience, safety and security in consumers' daily lives, most prominent examples being automated payment of toll road fees and public transit fares, the authentication of prescription medications, homeland security enhancements, or faster services for library staff and borrowers. Panel IV provided concrete examples of consumer-oriented RFID applications, dispelled myths and stereotypes about potential risks of the technology, and explored further usages of RFID such as anti-counterfeiting, better repairs, traceability and origin control of merchandise (e.g. food, electronics), faster recalls, and product information.

The panel was moderated by Kathryn Ratté, Division of Privacy and Identity Protection, U.S. Federal Trade Commission. Panel members included Geir Vevle, Thorsten Staake, Zoltán Nochta. A case study was presented by Christian C. Clauss, IBM.

Case study presented by Christian C. Clauss (Programme Director, Sensor Network Solutions, IBM)

Christian Clauss presented a case study illustrating how RFID can improve traceability and help to ensure freshness of meat. Global standards for supply chain traceability, created by GS1, were ratified in April 2007. SAP, IBM and 11 other companies have issued software that is compatible with these standards. METRO, a German retailer has been instrumental in the creation and adoption of these standards.

METRO monitors freshness of its meat products by tagging meat packs in an in-store butchery and by monitoring tagged meat packs in an RFID equipped Smart Freezer. The Smart Freezer provides the in-store butcher with daily expiry date reports. RFID has allowed to greatly reduce manual labour and to increase safety, consumer satisfaction and profits.

Geir Vevle (RFID & Industrial IT, Matiq/Nortura)

Nortura is the largest meat, egg and poultry producer in Norway. For Nortura, current RFID drivers are traceability, supply chain management and control, and differentiation (by information). In particular, the combination of different technologies (tracking animals by GPS to provide information about the grazing environment) has allowed Nortura to differentiate from their competitors. RFID in combination with GPS has allowed to prove the quality of its meat and to offer more transparency and background information about a product to their consumers.

The application runs on an EPCglobal Information System (EPCIS) infrastructure. The prototype was presented at an important fair in Norway and was very well received by tech students and industry experts. It also delivered statistical information on potential users.

Thorsten Staake (Associate Director Bits-to-energy Lab, ETH Zurich)

Thorsten Staake introduced the Bits-to-energy lab formed by ETH Zurich and the University of St. Gallen. The Bits-to-energy lab is member of the Auto-ID Lab Network that brings together 113 researchers located in the U.S., Europe, Australia and Asia. The mission of the Bits-to-energy lab is to explore the applicability of ICT to increase energy efficiency and reduce greenhouse gas emissions.

Food supply chains account for 20-30% of total Green House Gas (GHG) emissions in the EU, loss rates due to supply chain failures are estimated to reach 16%. Perishables account for 50% of the retail grocery revenues and are operating on low margins (on average 2-6%). Research areas focus on: (1) supporting and motivating citizens, (2) automatisation and process support, and (3) monitoring energy consumption and GHG emissions. Food supply chains have a high environmental impact.

RFID combined with sensors can provide essential information on age, temperature and shock exposure of products and allow for smarter scheduling of products. Preliminary research highlights that a sensor based approach outperforms the traditional approach by far and allowed a major Swiss grocery

store to reduce total waste of perishable products by 22%, and increase efficiency and profits. In addition, RFID applications provide (a) more transparency and make it easy to conduct carbon accounting on product level/item level, (b) lower emission levels, and (c) more information to empower consumers.

Zoltán Nochta (Deputy Director CEC Karlsruhe, SAP Research, Global Brand Protection)

Zoltán Nochta highlighted the role RFID can play to protect against counterfeiting. Counterfeiting and illicit trading with originals has a significant and growing negative impact on business and consumers. According to recent statistics, illicit trading represents 2-6% of the market and affects large enterprises and small and midsized businesses in multiple industries along the entire value chain. Illicit trading has become an important threat to consumer safety, in particular when it affects pharmaceuticals, automotive products, consumer electronics or the food supply chain.

ICT solutions and related services can help brand owners implement, monitor and adjust a comprehensive anti-counterfeiting strategy. RFID is seen as a promising technology to combating counterfeiting. SAP global Brand Protection Service offers a global service as a unique and trusted entry point for brand owners, distributors, consumers, customs etc. to protect and verify any kind of product. It also allows to detect suspicious cases and to trigger proper action.

Discussions and Q&A:

- In reaction to the presentation given by Nortura, Kathryn Ratté (FTC, moderator) asked whether the model would accommodate product recalls. Geir Vevle highlighted that the system can manage and facilitate product recalls. By the click of a button, the system is able to flag and warn for bad food products and initiate a recall. However, it all depends on the willingness of supply chain members to collaborate and share information in a common EPCIS infrastructure.
- Michael Maibach (EABC) raised the question of legal liability and security. Adoption may be slowed down because RFID will increase transparency and hence provide new grounds for establishing legal liability and security.
- Thorsten Staake (ETH Zurich) highlighted that transparency is needed to improve processes and to better understand purchasing behaviour. Transparency often links to issues of privacy and consumer protection. Yet, in the case of green labelling, transparency has been consumer driven and provides a good example on how ICT can be used to empower consumers.
- Florent Frederix (DG INFSO) asked about the affordability and costs of advanced anti-counterfeit systems. Zoltán Nochta highlighted that costs are dependent on the level of sophistication, however a key to success is the willingness of supply chain partners to provide information and to ensure data quality along the supply chain.

Panel V: Innovation and Global Economic Growth

KEY STATEMENTS

- ***RFID can offer innovative ways of conducting business operations while enhancing customer satisfaction.***
- ***New technologies are critical to simplify transportation chains, increase quality and efficiency of transportation, support the development of intelligent transport systems and facilitate green corridors.***

As recession sets in, businesses tend to focus on their bottom lines. Productivity, energy usage, etc. all must be made more effective. However, like many dreadful eventualities, the global economic crisis carries with it the seeds of opportunity. Businesses need to look for ways to be more flexible and responsive to consumer demands within environments that are becoming increasingly complex and differentiated. RFID shows a strong potential for enhancing flexibility, adaptability and access to adapt in the value chain of the future. Therefore, Panel V explored the beneficial impacts of RFID on economic growth through increased productivity and efficiency.

Panel V was moderated by Joe Alhadeff, Vice President Privacy, Oracle. Panel members included Pawel Stelmaszczyk, Andreas Kruse and Keith Sherry. As case study, Keith Sherry presented the roll out of RFID at Marks & Spencer.

Joe Alhadeff, Vice President Privacy, Oracle (Moderator)

As Chair of the Business and Industry Advisory Committee of the Information, Computer and Communication Committee (BIAC ICCP), Joe Alhadeff highlighted that the OECD is doing substantial work on RFID, innovation and sensor-based innovation. Documentation, including ministerial mandates and policy guidance on RFID is freely available on the OECD website (http://www.oecd.org). Also, the OECD will be hosting in Lisbon on 8-9 June 2009 a conference on "Using Sensor-Based Networks to Address Global Issues: Policy opportunities and Challenges"

(http://www.oecd.org/document/13/0,3343,en_2649_34255_42602061_1_1_1_1,00.html).

Joe Alhadeff sees a potential for RFID to provide new lifestyle applications, and offer innovative solutions for healthcare, environment, safety, security, traceability, transport and logistics.

Case study presented by Keith Sherry (General Manager, Supply Chain Solutions, BT)

BT's internal supply chain operation provides logistics services to more than 30,000 BT engineers across the United Kingdom (UK). Through the use of RFID enabled containers, BT has been able to significantly reduce operating costs and to better manage its own stock and assets.

Marks and Spencer (M&S) a large UK retailer applies RFID labels to garments to identify restocking requirements and replenish in-store stock accurately and quickly. RFID has allowed M&S to better serve customer needs, offering the right garment, in the right store, at the right time, and to facilitate returns.

BT considers RFID as an enabler to: achieve end-to-end visibility and performance; improve efficiency and accuracy; collect real-time business information; increasing supply chain velocity; improve productivity; improve customer service; realise cost savings and enable legislative and Corporate Social Responsibility compliance.

Pawel Stelmaszczyk (Logistics, Co-modality, Inland Waterways, Motorways of the Sea & Marco Polo unit, Transport and Energy Directorate General, European Commission)

Pawel Stelmaszczyk presented the European Logistics Action Plan and eFreight initiative. The road and rail freight sector has been hard hit by the current economic climate (30% decline in early 2009). The Logistics Action Plan formulated by the European Commission provides the framework for the deployment of new technologies, such as RFID, and supports four measures: (1) simplification of transport chains; (2) sustainable quality and efficiency; (3) intelligent transport systems; (4) green corridors.

The eFreight initiative defines four action sets: (1) to establish a roadmap for the development of an integrated ICT application, (2) optimise existing transportation systems, (3) provide a technology toolbox in support of emission targets (Kyoto Protocol), and (4) to promote shared responsibility between transport administration and the business community. In particular, the initiative aims:

- to harmonise documentation by introducing a paperless eDocumentation system across the EU, and
- to streamline eBusiness transactions and promote an open IT system for booking, invoicing, tracking etc. that is compatible with the inter-modal supply chain and offers a one-stop-shop open interface to meet the needs of public and private entities.

Andreas Kruse (Technology and Innovation Management, Standards, DHL)

Andreas Kruse presented two examples that illustrate how RFID can deliver more than just barcode replacement:

- Deutsche Post DHL uses SmartSensor, a passive UHF technology to scan temperature data without opening the package. Shielding materials can be bridged by separating the antenna from the temperature sensor, and hence allow for a quick quality check at the click of a button.
- The SmartTruck solution currently tested in Berlin controls (i) the transfer of risk and (ii) the loading and unloading process. Shipments are tagged with RFID tags and an RFID tunnel automates the hand-over from DHL to the service partner; in addition, RFID in vehicle readers used in combination with a dynamic dispatch application allow for dynamic routing and accommodate ad-hoc pick-up requests managed on the basis of loading status and vehicle position.

Deutsche Post DHL has underlined its commitment and placed an advertisement that highlights RFID as a key feature: "*We make logistics transparent with RFID*".

Discussions and Q&A:

- Mr. Stelmaszczyk clarified the need for a harmonised, open and EU-wide system for eBusiness transactions. Such a system is much needed to facilitate intermodal services, and eventually to break through proprietary systems that do not fulfil modern interoperability requirements and do not allow public and private operators to share the same information.
- In reaction to Keith Sherry's presentation, Elizabeth Board (EPCglobal) noted that the majority of customers are not aware of the technology but they see the increased benefits it can offer (improved availability of mechanise and easier reverse logistics). Keith Sherry agreed and used this opportunity to highlight that despite the difficult financial climate, M&S continues with its RFID rollout and is committed to increase visibility across its entire supply chain.

Summary Session

In the summary session, the five moderators presented shortly each panel, highlighting the main points and conclusions of speakers and discussants. Moderators summarised key policy issues, highlighted areas of ongoing and future collaboration, and identified next steps. The summary session was moderated by Elizabeth Board, EPCglobal. Elizabeth invited moderators to deliver key statements and to distinguish between key policy area and next steps.

Nigel Dore, Chief Technology Officer, Helveta (Moderator of Panel I)

Key policy areas for RFID to enhance environmental protection and sustainability:

- There is a need to provide a solid business case to justify the use of RFID.
- Regulation can be a strong driver to enhance environmental protection and sustainability and drive usage of technologies such as RFID. Fore example, recent amendments to the U.S. Lacey Act make it illegal to import and trade illegally harvested wood which has increased the importance of strong traceability systems in which RFID has a part to play.
- RFID can be used to increase recycling by making it convenient for consumers to recycle – for example by using RFID to automatically identified returned assets and issue coupons.

Ongoing and Future Collaboration:

- Industry standards are very important and need to move higher up the technology stack. Low level RFID standards are fairly mature but as we move up the stack towards areas such as traceability messaging, fragmentation becomes evident.

Next steps:

- Invest in sticky projects with good ROI that allows standards to mature and become accepted by industry.

- RFID standardisation needs to move out of its comfort zone of RFID as replacement for barcodes and mature both higher up the technology stack (e.g. messaging) and in more innovative tag usage such as temperature logging.

David Pesek, Czech Consumer Association Representative (Moderator of Panel II)

Key policy areas for eAccessibility:

- RFID is only an enabler. Public and private sectors should work together to ensure that new products do not create new risks.
- Collaboration should be promoted to harmonise methodology of pilot projects and to consider the entire lifecycle of a product (from design to disposal).

Next steps:

- Identify stakeholders in Member States, the U.S. and worldwide to allow sharing of best practices and to promote take up of innovative RFID solutions that support eAccessibility.

Emilie Barrau, Legal Officer, BEUC – The European Consumers' Organisation (Moderator of Panel III)

Policy areas for RFID in healthcare:

- If the right concerns are addressed and obstacles overcome, RFID in healthcare can improve safety, quality of care, and decrease costs.
- Panellists highlighted that even within one sector, there is no one-size-fits-all solution and RFID needs to be discussed in its context and per application.
- Important issues:
    - Proper RFID implementation requires staff training and a skilled labour force.
    - Healthcare deals with highly sensible data that requires stakeholders to critically think about data integrity and security.
    - RFID may lead to interferences with the physical hospital environment such as equipment and instruments.
    - RFID will need to be critically assessed and to prove its value in technical assessments before it can enter healthcare market.
    - Is there a need for a new business model in healthcare: from classical healthcare with focus on curing and treating towards preventative care?
    - Promote further collaboration and sharing of best practices, and standards.

Next steps:

- Upcoming Commission Recommendation on the implementation of privacy and data protection principles in applications supported by Radio Frequency Identification is expected to help on some issues and provide legal certainty.

Kathryn Ratté, Division of Privacy and Identity Protection, U.S. Federal Trade Commission (Moderator of Panel IV)

Policy areas to promote safety and quality of life:

- Case study illustrated how RFID can be used to improve traceability, ensure quality of products and help combat counterfeiting.
- RFID can offer more transparency and information about a product (e.g. carbon accounting), empowering consumers in their decision making process.
- Consumer safety applications are expected to drive market adoption.

Next steps:

- Promote the exchange of research information.
- Continue dialogue between the U.S. and Europe to promote transparency of the use of the technology itself.
- FTC will continue support on how to best communicate with consumers and citizens.

Joe Alhadeff, Vice President Privacy, Oracle (Moderator of Panel V)

- Panellists see bright future for RFID because of the efficiency gains it offers, particularly important in times of economic decline. Barcode replacement is the first goal but certainly not the last.
- RFID is to be seen as a means to an end and not an end in itself.
- RFID is also an enabling technology to support sustainability and energy efficiency and may help to reach the European Union 2020 goals: reducing overall emissions to 20% below 1990 levels by 2020. And ready to scale up this reduction to as much as 30% under a new global climate change agreement when other developed countries make comparable efforts. It has also set itself the target of increasing the share of renewable energy use to 20% by 2020.
- The road and freight sector has been hit severely by the economic crisis (30% decline for early 2009). The Logistics Action Plan and in particular the eFreight initiative of the European Commission provides a framework for the deployment of new technologies such as RFID.

Elizabeth Board (EPCglobal) thanked the organisers, in particular Robin Layton and Gérald Santucci. She concluded that a wide range of issues have been raised. The key theme seems to be that RFID has become an important technology that enables to solve a diverse range of problems. The symposium has been a success and instrumental in showing that there is a lot of activity on RFID. All participants acknowledged the opening words of Commissioner Reding, it is important to keep the momentum going.

Closing remarks/ Next steps

Robin R. Layton (Director, Office of Technology and Electronic Commerce, Manufacturing and Services – International Trade Administration, U.S. Department of Commerce) and Gérald Santucci (Head of Unit, Networked Enterprise and RFID, Information Society and Media Directorate General, European Commission) presented closing remarks. Jeffries Briginshaw, EU Director, Trans Atlantic Business Dialogue closed this event.

Gérald Santucci (Head of Unit, Networked Enterprise and RFID, Information Society and Media Directorate General, European Commission)

Gérald Santucci thanked speakers and participants for their vivid participation and the organising teams on both sides of the Atlantic for their excellent support and collaborative spirit. The Symposium has been a major milestone and is embedded in a bigger process: the agenda has shown a lot of continuity in discussing healthcare and the consumer experience, but has also allowed to refocus and to introduce new issues such as eAccessibility and to link the topic of discussion to the economic crisis. RFID is one of the technologies that can help us to rethink and get out of the crisis quicker and stronger.

The Symposium was instrumental in highlighting that RFID is only an enabler for many applications, which brings along an obligation to understand and prove its economic and societal benefits to clients, citizens and consumers. The Symposium has shown how RFID, as part of a system, can provide new solutions. It also highlighted the need for a truly interdisciplinary and multi-stakeholder approach to drive RFID take up.

Over the last two years, a strong and effective partnership has grown between EU/U.S. administrations and industry stakeholders - a partnership that will provide the glue to go faster and better through the future. The Symposium has been an important element in this process and the principle ideas of the Symposium must continue. However, the setting will need to be revised to evolve and adapt to new challenges.

The networking event preceding the Symposium was a success and first reactions highlighted the need and benefits of sharing insights on RFID

projects and activities on both sides of the Atlantic. Gérald invited participants to bring forward and to share ideas with Robin and him and informed about the project "RACE network RFID", a new initiative of the European Commission that brings together RFID stakeholders in the EU and internationally. The network will advise the European Commission on the ICT policy support programme over the next years. Gérald also invited participants to contact the network and to also seek further collaboration through it. More information can be found at: http://www.race-networkrfid.eu/.

Next steps for the European Commission:

- Commission Recommendation on the implementation of privacy and data protection principles in applications supported by Radio Frequency Identification will be adopted and published on May 11th 2009 (addendum: Recommendation was adopted on May 12th).
- Implementation of actions defined in the Commission Recommendation and monitoring of its deployment.
- Continuation of work and request for feedback on a Communication on the Internet of Things.
- Continuation of work on standards; including government to government pilot projects.

Robin R. Layton (Director, Office of Technology and Electronic Commerce, Manufacturing and Services – International Trade Administration, U.S. Department of Commerce)

Robin Layton thanked the European Commission for hosting this event and in particular Gérald Santucci for his collegial support. Discussions have been very fruitful and inspiring, and offered a much appreciated opportunity for mutual learning. However, it is also required to think about next steps:

- One option is to organise a stakeholder round table and invite those who express interest to make presentations and participate in 2010. Stakeholder round table will possibly be organised on a bit more modest basis, allowing people to call in.
- Another idea is the set up of a networking platform jointly hosted by the Department of Commerce and the Europa website that allows stakeholders to self-notify projects and to provide contact information that will enable stakeholders to share information, find partners and to collaborate.

Jeffries Briginshaw, EU Director, Trans Atlantic Business Dialogue (moderator)

Jeffries Briginshaw congratulated all participants and moderators and offered some last words for government to pick up: networking is innovation in action. Discussing ideas is a first step towards new products and services. The symposium has shown that government can have a supportive role in this by:

- Supporting and funding such symposia, funding R&D and providing stimulus;
- Light touch intervention using principles as opposed to instructions, encourage open standards and to regard RFID as a complementary not a proprietary technology;
- Reducing regulatory barriers in particular in the area of RFID to ensure that the move forward is aligned and that standards used across the Atlantic can be used globally;
- Increasing transatlantic competitiveness – ambition and focal angle of TABD.

As next steps: next TABD meetings will take place on May 7th 2009 in Washington D.C. and in calendar week 20 (May 11th -15th 2009) in Brussels. Meetings are expected to deliver 5-6 key points that provide for a to-do-list and next steps. Draft list is to be read through consultative mechanisms. Jeffries invited stakeholders to use their advocacy and to spread their ideas through their constituencies.

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"A likely impossibility is always preferable to an unconvincing possibility"(Aristotle)

ANNEXES

Annex 1: Workshop agenda

2nd TransAtlantic Symposium on the Societal Benefits of RFID

6th May 2009, 08:30 – 17:30

Crowne Plaza Hotel, Schuman room, 107 rue de la Loi, 1040 Brussels

The objective of the Symposium is to exchange experiences and best practices on applications or concepts that can bring societal benefits for citizens and organizations from both sides of the Atlantic.

08:00 ***Registration, Coffee and Networking***

08:30 ***Welcome***

Michael C. Maibach, President & CEO European-American Business Council

Opening remarks

Viviane Reding, Commissioner for Information Society and Media, European Commission

Robin Layton, Director, Office of Technology and Electronic Commerce, Manufacturing and Services - International Trade Administration, U.S. Department of Commerce

09:00 **Panel I: *RFID to Enhance Environmental Protection & Sustainability***

RFID can be an invaluable tool in addressing critical environmental issues. In particular, it may provide end-to-end visibility of hazardous materials transportation and storage life cycle, supply critical data to emergency responders,

and increase security of hazardous waste shipments. This panel will explore how innovative uses of RFID technology can generate significant benefits to society in the area of environmental protection and sustainability. It will also explore the ability to improve security in transport.

***Case study** on wood traceability and optimization of forest production**, Indisputable Key** project**, Richard Uusijärvi**, SP Technical Research Institute of Sweden.*

Moderator: **Nigel Dore**, Chief Technology Officer, Helveta

Mick Keyes, Senior Architect, BCS CTO Office, HP

James Waterworth, Director, EU Representative Office, Nokia

Lorenz Erdmann, Institute for Future Studies and Technology Assessment IZT, Berlin (DE)

10:00 Panel II: *e-Accessibility*

e-Accessibility addresses people who are potentially experiencing difficulties with information technologies due to old age or disabilities, particularly cognitive varieties. In today's society, access to information by all citizens is clearly a right as well as a condition for prosperity. EU and U.S. are already working together on the establishment of a single, common standards framework, rather than multiple national and international standards, in order to enable accessible products and services to be developed and brought to market faster. This panel will explore the potential of RFID for providing assistance to visually-impaired people, for tele-assistance, and for ageing populations.

***Case study** presented by **Hans Brons**, The Hague Smartline Project*

Moderator: **David Pesek,** Czech Consumers Association Representative

Francois Junique, ICT for Inclusion unit, European Commission

Hans Brons, System Integrator, Connexip (NL)

Immaculada Placencia Porrero, DG Employment, European Commission

11:00 *Coffee and Tea break*

11:30 Panel III: *The Application of RFID to Improve Healthcare Delivery*

Recent experience in European and U.S. clinical settings shows that RFID is a promising technology for patient safety and quality of care, pharmaceutical application (excluding supply chain and counterfeit drug issues), management of devices, supplies and biological material, and patient and healthcare provider

support. In particular, item level tagging and Real Time Locating Systems (RTLS) for staff, patients and assets are expected to significantly improve efficiency, safety and availability and to reduce losses. This session will focus on how applications of RFID in the healthcare field can improve patient care, such as infant tracking, medication dose monitoring, medical asset tracking and product recalls.

***Case study** on deployment of RFID & Health presented by **Lorenzo Valeri**, RAND Europe*

Moderator: **Emilie Barrau**, BEUC

Gerhard Weller, Siemens Healthcare

Ilias Iakovidis, DG Information Society & Media, European Commission
Christophe Duverne, Senior Vice-President and General Manager BL Identification, NXP Semiconductors

12:30 ***Networking Lunch***

14:00 **Panel IV: *Safety & Quality of Life: The Consumer benefits***

RFID is already improving convenience, safety and security to consumers' daily lives through such innovations as the automated payment of toll road fees and public transit fares, the authentication of prescription medications, homeland security enhancements, or faster service for library staff and borrowers. This panel will provide concrete examples of consumer-oriented RFID applications, dispel myths and stereotypes about potential risks of the technology, and explore further usages of RFID such as anti-counterfeiting, better repairs, traceability and origin control of merchandise (e.g. food, electronics), faster recalls, and product information.

***Case study** on food traceability presented by **Christian C. Clauss**, Program Director, Sensor Network Solutions, IBM*

Moderator: **Kathryn Ratté**, Division of Privacy and Identity Protection, US Federal Trade Commission
Geir Vevle, RFID & Industrial IT, Matiq/Nortura (NO)
Thorsten Staake, Associate Director Bits-to-energy Lab, ETH Zurich

Zoltán Nochta, Deputy Director CEC Karlsruhe, SAP Research, "Global Brand Protection"

15:00 **Panel V: *Innovation & Global Economic Growth***

As recession sets in, businesses tend to focus on their bottom lines. Productivity, energy usage, etc. all must be made more effective. However, like many dreadful eventualities, the global economic crisis carries with it the seeds of opportunity. Businesses need to look for ways to be more flexible and responsive to consumer demands within environments that are becoming increasingly complex and differentiated. RFID shows a strong potential for enhancing flexibility, adaptability and access to data in the value chain of the future. This panel will therefore explore

the beneficial impacts of RFID on economic growth through increased productivity and efficiency.

Case study *roll out of RFID at Marks & Spencer, presented by* ***Keith Sherry****, General Manager, BT Supply Chain Solutions.*

Moderator: **Joe Alhadeff**, Vice President Privacy, Oracle

Pawel Stelmaszczyk, Head of Unit, Directorate General for Transport & Energy **Andreas Kruse**, Technology & Innovation Management, Standards, DHL

Keith Sherry, General Manager, BT Supply Chain Solutions

16:00 ***Afternoon refreshments***

16:30 ***Summary***

This session will summarize key policy issues, highlight areas of ongoing and future collaboration, and identify next steps. Press invited to attend.

Moderator: **Elizabeth Board,** EPCglobal

Summary of each panel session by the four moderators

17:15 ***Closing remarks/ Next steps***

Robin R. Layton, Director, Office of Technology and Electronic Commerce, Manufacturing and Services - International Trade Administration, U.S. Department of Commerce

Gérald Santucci, Head of Unit, Networked Enterprise and RFID, Directorate General Information Society and Media, European Commission

Thank You/Close

Jeffries Briginshaw, EU Director, Trans Atlantic Business Dialogue

17:30 ***End of Symposium***

Annex 2: List of participants

AARNIO	Jaakko	European Commission
ABBAS SHAMSI	Tayyab	TEAM
ALHADEFF	Joe	ORACLE
ANZELMO	Erin	LLM, International Law- Wydanteaire Consulting
ARNALL	Timo	Oslo School of Architechture and Desin
BARNES	Jan	EABC
BARRAU	Emilie	BEUC
BOARD	Elizabeth	GS1 EPCglobal, Inc.
BRIGINSHAW	Jeffries	TABD
BRONS	Hans	Route on Line
BUZINK	Robert	NRC.Next
CAPRIO	Dan	Tech America
CLAUSS	Christian C.	IBM
CORDUANT	Veronique	DHL Logistics GmbH
DANEL	Emilie	GS1
DE KLOE	Robert	Smartline City of the Hague
DE MELIO	Christoph	IBM
DORE	Nigel	Helveta
DUVERNE	Christophe	NXP
ERDMANN	Lorenz	IZT
FRAUTSCHY HEREDIA	David	Telefonica S.A.
FREDERIX	Florent	European Commission
FRIESS	Peter	European Commission
GONZALEZ	Laurent	Fil RFID
GROULT	Vanessa	U.S. Department of Commerce
HERNANDEZ	Paulette	U.S. Department of Commerce

HOHENECKER	Sandra	GS1 Germany (CCG)
HUBER	Andrea	Informationsforum
IAKOVIDIS	Ilias	European Commission
IRNER	Klaus	RFIDSEC
JARONSKI	Waldemar	European Commission
JEPPESEN	Jens-Henrik	Dell
JIMENEZ	Marisa	GS1 EPCglobal, Inc.
JUNIQUE	François	European Commission
JÜRIADO	Rein	European Commission
KEOGH	John	GS1
KEYES	Mick	HP
KITSCHA	Daniel	Metro Ag (MGI Metro Group Information Technology GmbH)
KNAST	Joanna	Motorola
KRUSE	Andreas	Deutsche Post DHL
LAYTON	Robin	U.S. Department of Commerce
LE PALLEC	Sophie	GS1 France
MAIBACH	Michael C.	EABC
MANNEKENS	Henk	British Telecom
MARTOCH	Tomas	GS1 Czech Republic
MATEO	Manuel	European Commission
MEIHUIZEN	Sjoerd	NL Organisation for Scientific Research
MILLER	Cheryl D.	Star Digital Europe
MIRTORP	Johan	Waggener Edstrom
MOLENSCHOT	Toine	Smartline City of the Hague
NITSCHKE	Johannes	eBay EU Liaison Office
NOCHTA	Zoltan	SAP Research
PASIN	Berna	Procter & Gamble Company
PESEK	Anastazia	University of Ostrava
PESEK	David	University of Ostrava
PETKOVA	Martina	Goodyear
PIQUE	Stéphane	GS1 Europa
PLACENCIA PORRERO	Immaculada	European Commission
PODGORNY	Maria João	TABD
PYPE	Patrick	

RATTE	Kathryn	U.S. Federal Trade Commission
SAINTOYANT	PY	SerendIP Network
SANTAELLA	Juan	European Commission - Stagiaire
SANTUCCI	Gérald	European Commission
SCHAD	Jürgen	Siemens AG
SCHEPERS	Herman	Waggener Edstrom
SCHINDLER	Rebecca	RAND Europe
SCHMITT	Karl-Jürgen	Siemens
SHERRY	Keith	BT Supply Chain Solutions
SHERWOOD	Chris	US Mission to EU
SKEHAN	Paul	ERRT
SPIRIDAKI	Kalliopi	SAS
STAAKE	Thorsten	ETH Zurich
STELMASZCZYK	Pawel	European Commission
TEGGE	Andreas	SAP
UCKELMANN	Dieter	BIBA
UUSIJÄRVI	Richard	SP Technical Research Institute of Sweden
VALERI	Lorenzo	Rand Europe
VAN BEVER	Willy	SDV EITA
VAN BOGAERT	Kathy	
VAN LEEUWEN	Frank	Route on Line
VAN WIJK	Wout	European Commission
VEVLE	Geir	MATIQ/NORTURA
WALKER	Randy	Oak Ridge National Laboratory
WATERWORTH	James	Nokia
WELLER	Gerhard	Siemens Healthcare
WENZEL	Christine	SAP
WISEMAN	Hugh	Department of Finance and Personnel
WORM	Charles	Motorola