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EICTA position paper on Radio Frequency Identification (RFID)

EICTA highly welcomes that European Commission's DG Information Society and Commissioner Viviane Reading have opened a consultation across all member states about a future policy on RFID. RFID technology and its applications are a powerful mean to improve operational procedures and processes in business, administration and public service for the European citizen. In addition to technical aspects, the future of RFID is strongly impacted by political and societal issues, whereas technical and non-technical aspects are often interdependent.

RFID technology has been known and used for a substantial time for a limited number of applications. However, many of its new presumed applications have evolved rather recently, and offer new opportunities and challenges that have to be addressed in the near future. Among those are questions of public acceptance, data privacy and security, interoperability and standards, technical regulation, such as frequency allocation as well as questions of focus in R&D policy.

Still, the RFID market in Europe, as well as world-wide is rather small, predictions indicating a significant growth potential in the coming years. A European RFID policy should be developed in accordance with all European stakeholders to provide a stable basis for the development and use of RFID technology and applications, which acknowledges and respects the interest of stakeholders and can lead to a broad adoption of RFID in the future. EICTA members recognize the importance of a European RFID policy, which should fit into the international context, and will continue to assist concerned organizations, institutions and authorities in addressing upcoming issues.

Applications & benefits

In the current discussion on RFID, although it is triggered by applications in the retail sector, the whole range of applications should be considered, since all applications will be affected by a future RFID policy in Europe. The fact that RFID technology does not require a line of sight enables a seamless automation of data capture and processing and thus a direct linkage of mobile objects to an IT infrastructure.

The key market drivers for the use of RFID are optimizing the supply chain, improving manufacturing processes, speeding up payment services, combating counterfeit and fraud, improving security and ensuring quality. Sectors that already use RFID technology in its

supply chain business operation are retail, automotive, chemical and pharmaceutical industry, clothing, etc. An additional benefit from optimized supply chain operation is that an equal turnover of transported items can be achieved with decreased traffic on the road network. Counterfeiting and fraud protection using RFID technology are an important issue for pharmaceuticals or luxury goods. Even after passing the sales desk, RFID holds great opportunities, e.g. in the application for smart household appliances or in optimization for recycling procedures. The use of RFID in networked applications within hospitals or between hospitals and practitioners holds a high potential to streamline work flow in medical environments and thus reduce cost in healthcare systems.

RFID has particular relevance for small and medium-sized enterprises (SMEs). While SMEs often refrain from early adoption of new technologies they stand to gain from the increase in competitiveness RFID can provide. Many examples show that small organizations can greatly benefit from introducing RFID provided they clearly analyze their needs and accordingly implement RFID technology in their processes.

Standards

EICTA believes that the use of regulation to support RFID development and diffusion will be most effective when it is globally "harmonized" and embodies a consistent set of expectations and objectives.

RFID development and diffusion will be most effective when it is supported by voluntary, consensus-based technical standards. It is important to recognize that there are, and will continue to be, different standards for different RFID technologies. Different standards have been developed for the transportation sector, identification cards, and supply chain management. Standards approved by international standards organizations, such as the ISO, are particularly significant in that international standards tend to attract the largest vendor community worldwide to support them.

Standards are at the foundation of the global technological economy. They can create value and aggregate markets. They can facilitate technology diffusion, promote production efficiency, product compatibility, interoperability, and enhanced competition. They can help to drive down costs for consumers and they can provide communication of important commercial information between buyers and sellers. A large, competitive vendor community building to a common standard creates large dividends for users of the technology, particularly in innovation.

The digital technology sector depends on standards today more than ever before. The rapid pace of change in the sector requires companies and their suppliers to modify, improve, and re-develop their technologies, products, and services in order to satisfy worldwide consumer demands. Standards and their development process must therefore stay relevant and keep pace with this fast changing, global marketplace.

The products manufactured by EICTA members are developed and marketed globally, making a harmonised set of standards a requirement. If differing guidelines or standards are adopted, or when new policies deviate from previously adopted standard/guidelines, industry players can be immobilised by the some times impossible choice between them. Conflicting and non-harmonised standards can force the developer to choose one standard over another or cause significant extra work and time to attempt to meet both standards. The end result is not necessarily to the benefit of the user and invariably involves significant delays.

EICTA supports the development of a coherent global market for RFID products and services. We believe that one of the requirements for a coherent market is the development and adoption of international (rather than national or regional) standards; where this is not feasible we support the global harmonisation of regional standards.

EICTA members participate in the development of those global standards that accommodate new technologies, benefit all users, build upon the generally recognized body of accessibility requirements, can be objectively measured, and are harmonized to meet the needs of all geographies. Regulations and policies that adopt such standards enhance the market for accessible products and services rather than creating barriers or disincentives.

Spectrum allocation & Frequency regulation

It is clear that RFID means global free circulation and use of equipment throughout the world, a fact which should be recognized in frequency regulation.

In Europe this necessity has been served by the Radio-communications and Telecommunications Terminal Equipment (R&TTE) Directive supported by the Short Range Devices regulations.

It is worth to note that RFID is not “per se” a radio communication service, as defined by the ITU Radio Regulation.

SRDs regulatory framework supported RFID because it offers an almost harmonised spectrum throughout Europe at free of licence use conditions.

RFID and SRDs in the UHF band: scenario and issues

Currently significant problems arise to the use of RFID systems due to restricted frequency space access, resulting from spectrum scarcity in the UHF band. First and immediate necessity is the harmonization of regulatory requirements across all member states of the EU to ensure a general possibility of UHF RFID operation across national borders.

In the recently reorganised European Short Range Devices 863-870 MHz band, market predictions for RFID indicate that its use will extend to consumer applications. That prediction suggests that the present designation of 3 MHz between 865-868 MHz will be insufficient to cater for the vast numbers of RFIDs deployed.

Indeed it appears that there is spectrum scarcity in the SRDs UHF 863-870MHz band; that European 7 MHz bandwidth at 25mW erp power is the prime core band available for generic SRDs (vast majority of the market applications) but this spectrum is shared between many specific SRD applications, including RFID and radio services (e.g. those services used by the military). This constrains power levels here to a much lower level than is permitted in the US. This has resulted in the need for a sub-band segmentation in Europe to ensure sharing compatibility between different applications.

This contrasts with the situation in the US that made available 26 MHz of bandwidth between 902 – 928 MHz for generic spread spectrum SRDs as well as many HF and UHF frequency bands (with associated power limits) and other ISM frequency bands. This US rule enabled a “generic use and power limit” approach that is possible largely because of the large bandwidth (26 MHz) thanks to spectral density energy dispersion.

Just recently Industry, in close cooperation with ETSI and CEPT, introduced an advanced spectrum access technique to reduce that “band segmentation” issue; this is the Listen Before Talk/Adaptive Frequency Agility (LBT/AFA).

This spectrally efficient technique has been adopted both for generic SRDs and RFID, thus strongly limiting a possible risk of mutual harmful interference and offering the necessary operational reliability sought by users.

Additionally this solution gives the benefit of spreading generic SRDs throughout the whole band, thus reducing the traffic loading on a specific sub-band, including the RFID one.

A major problem for the adoption of UHF technology in Europe is furthermore the obligation for UHF RFID systems to operate on a “non-interference, and non-protected basis”, the first meaning a “listen-before talk” (LBT) restriction.

This unfortunately strongly limits UHF RFID systems when many of them are operating in parallel and in close proximity, for example in-line multiple warehouse gates that is one of the dominant RFID applications.

Additionally the anticipated rapid increase in the number of tagged items will also drive demand for increased channel bandwidth to maintain system response time by means of increased data rates.

It therefore appears that RFID may become a major exploiter of the UHF band and may as well create problems for SRDs and other band users.

The RFID and SRDs adopted (LBT/AFA) technique will mitigate the congestion problems but the projected rapid growth of RFID and SRDs will require additional spectrum. A

solution to the arising spectrum issues can only be found in cooperation with the SRD industry and an open dialogue should be started.

✦ Proposals for possible solutions

EICTA fully believes that a solution would be arranged by a two step approach as follows.

- (a) A short-term solution by the establishment of an official European Standard for the synchronization of RFID UHF readers to avoid mutual signal suppression (due to the LBT requirement), an activity which is currently underway in ETSI .
- (b) A mid-long term solution by allowing spectrum access to an expanded range compared to the current UHF SRDs and RFID spectrum both. This should be as close as possible in frequency to the existing designation to meet market needs. Reason is because RFID tags can be manufactured to cover a 100 MHz max. operating range; it is therefore possible for the same tags to be read at different frequencies in the world. For example today in Europe interrogators operate within the band 865 – 868 MHz while in the USA they operate at 902-928 MHz.

That additional access to spectrum could be considered dependent upon on the robustness of the existing primary occupants. For example, access to the broadcast bands; particularly “Band V”, has already been identified in various European fora. Clearly, such an introduction should, in no way, prejudice the Broadcast services. Please see in this regard preliminary technical thoughts as given in Annex 5 of CEPT ECC Report in response to the Second EC Mandate to CEPT to develop a strategy to improve the effectiveness and flexibility of spectrum availability for Short Range Devices (SRDs).

Finally, it should be noticed, that in several non-EU countries, UHF RFID in the bandwidth 860-960MHz overlaps with telecommunication equipment (i.e. GSM900/UMTS900) operating at 880-960MHz. Therefore, to successfully globally implement UHF RFID technique, interference on the global arena has to be considered.

Research & Development

Even though having a high potential to increase efficiency in processes and procedures, the barriers for the adoption of RFID technology in upcoming applications, are significant, since often process flows have to be redesigned. This inherently can mean changes in IT infrastructure and work flow, for which risks and benefits are often not trivial to calculate. Highest potential for an increase in efficiency have highly networked RFID applications. Therefore, besides the funding of RFID technology development (e.g. privacy enhancing technology, sensor based, and new networks application), the funding of a variety of pilot

projects (e.g. in the clinical environment or in E-Care projects, designed to improve the daily living conditions for the elderly, in anti-counterfeiting and fraud protection, such as for the pharmaceutical sector, or in e-government projects as well as in advanced sensors to enhance mobility and safety) plays an important role for the adoption of RFID technology in Europe.

In this view, budget for RFID projects should be explicitly allocated in FP7 and address low-cost solution in different areas of technology including improved autonomy. Pilot projects funded by the European Research Framework Programmes should be aimed to develop integral RFID solutions for special requirements within the EU. Publicly funded pilot programmes are the best way to demonstrate the benefit of RFID use not only to corporate users, but as well to the broader public to create an environment in Europe, which welcomes the adoption of a new and promising technology.

Data Privacy & Security

RFID as an enabling technology is the basis for a large number of applications. Most of these applications do not store or use personal data. Rather, the chips contain number codes used to identify goods or inform about production processes.

RFID tags often hold not more information than needed for an appropriate identification. Extended information is located in other environments (i.e. enterprise systems) and when needed shared between actors using for example EDI. The RFID tag identity often is only the “key” to the extended information. Cornerstone for data privacy issues arising with the increased use of RFID is with the existing privacy legal framework set out in the general Data Protection Directive (95/46/EC). This ensures the responsible use of personal data. Strict compliance with this framework should limit possible concern over infringement of individuals’ privacy to the possibilities that RFID potentially allows the abuse of the data connected with the tag. There should be transparency about the use of RFIDs in order to build consumer confidence including appropriate notification of RFID use. The precise measures that are needed to achieve this transparency will depend on the nature of the information that can be collected or inferred from the specific RFID devices and the context of their use.

Users must have an opportunity whether to give consent to the use of information acquired through RFID devices that require notice. For instance, consumers should, where possible, have the opportunity to choose whether the use of RFID technology is desired after the point of sale and whether the information can be used for customer loyalty programmes. The latter is already to date regulated clearly by the general Data Protection Directive (95/46/EC), giving the consumer a clear option whether to allow the use of his personal data or not. Further development of security technology for RFID applications can play another important role to address privacy concerns. New privacy enhancing technologies techniques for RFID improve the privacy and security level for upcoming applications, such as anti-counterfeiting measures e.g. for the pharmaceutical sector. If company confidential



data (like the movement of goods) is captured, the data or data pointers and links should be stored in a way that guarantees that no unauthorised access is possible. Data security schemes and procedures must be transparent and acceptable for all international users.

RFID technology and its applications can enhance the quality and efficiency of business and public service operations and benefit to consumers for their daily life.

EICTA will actively participate in the debate with all stakeholders and offers an open dialogue with all concerned groups.



EICTA MEMBERSHIP

About EICTA:

EICTA, founded in 1999 is the voice of the European digital technology industry, which includes large and small companies in the Information and Communications Technology and Consumer Electronics Industry sectors. It is composed of 56 major multinational companies and 36 national associations from 27 European countries. In all, EICTA represents more than 10,000 companies all over Europe with more than 2 million employees and over EUR 1,000 billion in revenues.

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