



Position Paper

General Guidelines for Promoting RFID in Europe

CE RFID
September 2006

CE RFID ("Coordinating European Efforts for Promoting the European RFID Value Chain") is a sustainable network of RFID technology providers, vendors and users, which support the European Commission to increase political awareness and intensify activities for the enhancement of this new technology.

Current members of CE RFID are METRO Group, Germany; AIDA Centre S.L., Spain; Deutsche Post World Net, Germany; EADS, Germany; FEIG Electronic, Germany; Pleon, Germany; RFIT-Solutions, Austria; Siemens, Germany; Tyco Fire & Security ADT, United Kingdom; UPM Raflatac, Finland, VDI/VDE Innovation + Technik, Germany; and XNG, Austria.

CE RFID contributes to the "European Technology Platform on Smart Systems Integration" EPoSS which defines future R&D needs, innovation and policy requirements related to smart systems integration as well as to integrated micro- and nanosystems (www.smart-systems-integration.org).

www.rfid-in-action.eu

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1 Introduction

RFID technology is an outstanding key technology for Europe. Because it is used across various sectors, it serves as a point of departure for many new applications in trade, industry, and services, and as an important, application-oriented object of research in Smart Systems Integration.

European companies and research facilities are currently at the top of the field alongside other international competitors when it comes to tapping the economic potential of RFID technology. Europe would be wise to seize this opportunity and act as a pacemaker in the further development of RFID. The RFID industry is expected to show rapid growth over the next few years, growth which may directly affect the innovative power of the European Single Market. So RFID has the potential to enhance Europe's competitiveness as it strives to achieve the Lisbon goals.

International technology standards and conditions for RFID technology are vital for ensuring smooth processes and minimizing investment risk for users. They are a condition for the long-term establishment of this progressive technology in the marketplace. But many technical and regulatory issues pertaining to RFID cannot be treated satisfactorily at the national level, as RFID systems are frequently used in multinational logistics chains. The U.S. is a dominant factor in RFID developments, in its capacity as a key applications and technology driver, and because of its large domestic market. Despite Europe's strong position in RFID applications and technologies, there is a need for formulating and asserting European approaches in the harmonisation of frequencies, communications and data standards, and transnational R&D programmes. A European RFID initiative is crucial to upholding Europe's international competitiveness and to help shape further developments.

For these reasons, the Logistics/RFID Working Group was set up as part of the European Technology Platform for "Smart Systems Integration." It will start compiling and analyzing the most important issues and problems pertaining to RFID technology across industries, and eventually issue recommended actions for ways in which the legal conditions governing the continued use and development of RFID technology can be improved at the European level. These recommended actions are to serve as the basis for general guidelines to be issued by the European Union for the handling and promotion of RFID technology.

2 Frequencies

Need for action by the EU:

The frequency bands for RFID applications must be extended, and the frequency ranges harmonised. Legacy systems need to make room for innovative technologies. The process of applying for frequency allocation must be simplified and accelerated.

2.1 Extending the frequency bands

RFID applications transmit on various frequency bands. While the 125 kHz and 13.56 MHz bands work satisfactorily, the band assigned to large RFID applications in the UHF range (865-868 MHz) of RFID frequencies does not suffice for ensuring failure-free readouts. Frequency overlaps and collisions are the result. Therefore, the frequency bands in the UHF range (865-868 MHz) need to be extended. Otherwise, we risk losing competitiveness in the further development of the technology, as frequency bands allocated for RFID applications are much broader in the U.S., thereby providing a better starting position for future research and applications. Therefore, stocktaking is required to initially compile the RFID and ambient frequencies of the Member States and to explore extension and harmonisation options.

2.2 Harmonising the frequency ranges

The RFID sector lacks the total harmonisation that has been performed for radio frequencies for mobile phones. Various Member States still operate legacy systems (applications based on older technologies) in frequencies that are seminal to RFID technology. This is exacerbated by poor assertion of the RFID European Norm 302208 standard in individual EU Member States. Therefore, a harmonisation the frequency bands for RFID applications is urgently called for, to ensure EU-wide interoperability of RFID systems and facilitate compatibility with U.S. (902-928 MHz) and Asian frequencies.

A harmonisation the frequency ranges would be essential from a macroeconomic point of view as well, to comply with conditions in the U.S. and remove obstacles to interoperability.

2.3 Migration of legacy systems

The protection of legacy systems increases technical complexity to the detriment of European users. Also, decision making within the ETSI favours the preservation of old, analogue radio applications, which ultimately blocks frequency corridors that are important for RFID applications. Therefore, the introduction of time limits for

legacy systems should be reviewed, along with EU-supported programmes to promote the switch/migration of (old) applications from existing frequency bands to new ones. If the benefits of a switch (as with DVB-T) cannot be successfully communicated, the payment of lump sum settlements for switching off legacy systems should be considered (as with the C-Net). These activities should be summed up in a long-term frequency plan at the European level, classifying key technologies like RFID as “important, primary radio services” and giving them priority.

2.4 Reducing red tape

Due to the scarcity of frequencies, current EU regulations necessitate elaborate, expensive RFID systems. Systems built to American specifications are much easier and cheaper to produce because they do not require elaborate “Listen-before-talk” hardware. Besides, reducing bureaucracy in the frequency allocation process could mean lower testing costs– and greater benefit. Instead of a long drawn-out application procedure, a notification of frequency utilisation could be sent to the authorities, who would then have a short period of time in which they could deny this proposed utilisation if necessary. Recent efforts by the British regulator Ofcom (Office of Communication, www.ofcom.org.uk), to extend the frequency range for RFID applications and abolish the need for licensing RFID applications¹ show how eliminating obstacles can directly fuel the ongoing development of technology.

¹ http://www.ofcom.org.uk/consult/condocs/wireless865_868/

3 Interoperability

Need for action by the EU:

Establishment of a universal certification procedure for the consistent interoperation of different systems and components, and initiation and/or moderation a dialogue across industries is necessary to ensure interoperability.

3.1 Certification

The differing business interests of technology developers have led to a situation where the interaction of transponders, readers and antennas does not work automatically. Therefore, the European Commission should initiate and promote a certification procedure to ensure technical interoperability between RFID systems. A procedure that certifies the interoperability of radio standards used by RFID systems according to ETSI specifications could lead to a breakthrough similar to that seen in WLAN technology, which didn't achieve market-readiness until certification was introduced, either.

3.2 Prevent differing standards

Interoperability problems between the various industries are on the horizon because cross-industry requirements usually play a minor role within a given industry. However, to fully exploit the technology's potential, cross-industry standards have to ensure interoperability. Therefore, cross-industry consultation is necessary to prevent the emergence of different standards from impeding a use of RFID across industries.

4 Standardisation

Need for action by the EU:

Establishing a cross-sector, cross-industry dialogue with the standardisation committees would prevent differing technology and data standards from impeding the ongoing development and interoperability of RFID. A research project could provide for a stock-taking and detailed recommended actions in preparation for this dialogue.

4.1 Technology standards and data standards

While the market has agreed on the Generation-2-Tags as a standard for RFID technology – which will be standardized as ISO 18000 Part 6c in the near future –, other industries favour the norm ISO 18000 Part 6 b. Technology standards have been adopted, but not data standards. The development of differing standards in the different industries can thus present a serious obstacle to the ongoing development and interoperability of RFID technology. Therefore, cooperation between the standardisation committees is urgently required. The European Commission could encourage, set up and promote dialogue between the standardisation committees. It is recommended that a research project be set up to identify areas of overlap and to systematically take stock of the status quo.

4.2 Standardisation process

All further standardisation efforts by the ETSI should reflect the increased need for coordination and harmonisation between technology developers and end users.

5 Research and Development

Need for action by the EU:

EU research policy should systematically promote applied basic research, as well as networking between research efforts in systems integration and the development and application of technology.

5.1 Promotion of application-oriented basic research

A large part of basic research in Smart Systems Integration suffers from a lack of feasibility testing. The EU's policy on subsidies could be used to increasingly gear basic research to problems in the implementation of RFID technology. This could help to eliminate the "parallel" nature (side by side but not intersecting) of research, development and application. Intensified networking between the various research efforts would also be advisable. There should be a joint definition of topics where networking would be especially fruitful (e.g. systems integration, ongoing development of sensor systems for communication between the tags, expansion of tag features, polymer technology for tag production, reading accuracy on various materials, coexistence of several geographically adjacent RFID systems, costs). The option of linking EU research grants for basic research more closely to feasibility criteria should also be considered.

5.2 Increase incentive for end users

The nature of existing research programmes makes them less than attractive for end users of technological innovations. Therefore, research policy should take the end user's perspective into account more. Also, research programmes should be reviewed to ensure they strongly involve end users, and the promotion of field testing for direct applications should be expanded considerably.

6 Patent Cooperation

Need for action by the EU:

Setting up an arbitration board or a patent pool could help to prevent patent litigation from impeding the development of the technology.

The looming possibility of litigation (like Intermecc vs. Symbol in the U.S.) unsettles the protagonists and ultimately impedes the development and introduction of technology. Therefore, the EU should organise a process for establishing a patent pool in a timely manner. It could be modelled on the planned organizational structure of a U.S. consortium on the management of intellectual property in the RFID or EP-Cglobal sector. The establishment of an arbitration board (e.g. at the European Patent Office) could also help to avert legal disputes in time.

7 Data Protection and Privacy Concerns

Need for action by the EU:

The debate about the alleged dangers of RFID for privacy protection should be countered with an illustration of the social benefits that arise from the new opportunities opened up by the technology. Discrepancies should be eliminated and a constructive dialogue entered into with privacy protectionists.

In public debate, there has been much speculation about the possible applications of RFID technology. Frequently, privacy concerns drown out the manifold possibilities of RFID technology. It goes without saying that data security and privacy protection are important components in the development of technologies because no technology can be successfully launched without public acceptance. That is why it is so important that the EU does not allow RFID debate to be limited to areas involving data and personality rights, but instead makes a point of pointing up the benefits of the innovation. A clear commitment to RFID as an important emerging technology is as appropriate as a constructive dialogue about the technology's implications for privacy protection.

8 Active promotion of RFID technology by the EU

Need for action by the EU:

The EU can directly promote RFID technology with specific projects. Traceability and product safety are two topics well suited for pointing up qualitative benefits. Legislation and pilot projects can serve to expand use of the technology and build trust in it.

The privacy protection debate as it relates to RFID has resulted in uncertainty about the benefits of the technology and ultimately in a reluctance to invest in it. Therefore, trust in RFID technology needs to be built. European companies' confidence in investing in RFID could be strengthened e.g. by having public institutions systematically use RFID or by mandating the use of RFID applications e.g. for security reasons. The U.S. FDA recently mandated an "e-pedigree" to improve the product security of pharmaceutical products. The EU could take its cue from this. There are other possible connecting factors as well: The use of RFID technology could tangibly optimize the traceability of products (EU Regulation 178/2002). In principle, it is possible to track products using barcode technology as well. But the amount of data will eventually become so large that it can no longer be depicted on a barcode. Besides, RFID would allow for a paradigm shift: instead of just providing straightforward identification of products, RFID allows for including information on the tag that result in increased "autopilot" capacity of logistics systems, or products that can intelligently document their route of transport and even their composition. This will lead to a quantum quality leap in product information and security and logistics efficiency. An EU Regulation on universal data standards in the tracking of products could therefore be tantamount to an obligation to use RFID. Pilot projects could be carried out to test further fields of application. The possible extension of resources subject to tracking like containers and reusable packages (EU Regulation 1935/2004), the origins and routes of particularly sensitive foodstuffs and pharmaceutical products, offer incentive enough. The European Food Safety Authority in Parma (EFSA, Parma) could play an important role here.

9 RFID Technology and Applicable EU Law

Need for action by the EU:

Timely action to prevent RFID chips from possibly becoming subject to the waste electrical and electronic equipment directive and mandatory CE labelling. In fact, RFID can facilitate the handling and proper disposal of dangerous substances.

9.1 Directive on Waste Electrical and Electronic Equipment WEEE

The wording of the WEEE 2002/96/EC Directive does not explicitly rule out that RFID chips could be seen as waste electrical and electronic equipment. Because it is not the Directive's purpose to classify RFID chips as waste electrical and electronic equipment, it is necessary to interpret the provisions of the WEEE Directive such that RFID tags are not included, and to make this interpretation universally valid.

The Working Group RFID supports the opinion as published on Commission's FAQs-Sheet on the WEEE Directive². It states that per definition RFID tags may fall inside scope of the WEEE Directive. However, many of the circumstances in which RFID tags will actually be employed would result in their falling outside of the scope of the WEEE Directive. This applies particularly for passive transponders without individual power supply. In addition, the appropriate recycling of active transponders already ensures an environmentally conscious use. Therefore, equal standards should be applied to the treatment of active transponders which do not contain any harmful substances and passive transponders.

The U.S. FCC serves as another example, having recently classified passive RFID chips as "unintentional radiators." This implies that passive RFID chips are exempt from the same clearance tests as other technical devices with electromagnetic fields. In the interests of making RFID technology a success, it remains to be specified by the EU that RFID chips do not come under the scope of the waste electrical and electronic equipment directive, which would eliminate the legal risk for further development and investments.

Indeed, RFID technology can be used in Life Cycle Management to label dangerous substances and facilitate their (proper) disposal.

² http://europa.eu.int/comm/environment/waste/pdf/faq_weee.pdf

9.2 CE labelling

CE labelling is an important Instrument of the European Single Market. However, labelling individual tags would be counterproductive as it would impede the use of the technology. Therefore, RFID tags should not be subject to CE labelling. Here, too, the Commission is called on to exempt RFID tags from mandatory CE labelling before a debate about the subject can arise.