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RFID TECHNOLOGY AND HEALTHCARE:
EXECUTIVE SUMMARY

REPORT ELABORATED BY THE CENTRO DE DIFUSIÓN DE TECNOLOGÍAS
(CEDITEC)

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Executive summary

There is no doubt that RFID is a technology which has experienced a steadily and rapidly growth during last few years. Some of these technology key features – its flexibility and ease of reading RFID tags wirelessly, the possibility of reading a lot of them simultaneously, or its tag writing capability, for instance, are yielding a broad range of applications: from tracking, stock control or real-time location systems, to security issues.

A lot of well-known companies are heavily committed to RFID implementation and its sensible use, so this technology is predicted to get a successful development in the near future. The key benefits of this technology have been certainly proved right in many practical situations. However, a complete and successful RFID development depends on several barriers to implementation, such as security and privacy issues.

This technology watch report is mainly focused on RFID applications in healthcare, taking into consideration technology aspects and related activities. In addition to a brief introduction to RFID history, the scope of this study and a general health environment overview, this report includes a detailed technical description of RFID technology and examines its main components:

- Tags
- RFID readers
- Software
- Middleware
- Information systems

The different kinds of systems depending on the operating frequency range are also taken into consideration:

- Low-frequency systems.
- High-frequency systems.
- Ultra high-frequency systems.
- Microwave systems.

All of them are analyzed in terms of memory capacities, data transmission speed, range, costs and applications. As a result, an easy comparison and assessment of their advantages and disadvantages has been made.

There are several competing technologies, some of which are really mature. In fact, up to now, these technologies, such as barcodes or contact buttons, have a solid market presence. These ones, as well as those technologies which are emerging nowadays and seem to be an alternative to RFID in a near future, are analyzed in this report.

One of the barriers to RFID systems implantation is the one concerning privacy and security. Therefore, there is a chapter which deals with the main security threats of an

RFID system and that ends with a brief overview of the solutions for it. Other privacy aspects are considered here, too.

Apart from these general chapters, a trends analysis and a description of the evolution of RFID systems implementation, based on a methodological revision of scientific publications and patents, which are proved to be key indicators of any technology evolution, are included as well.

The second part of the report is focused on RFID applications in healthcare, gathering specific issues of different environments: the hospital, the pharmaceutical industry and the one concerning telemonitoring patients outside the hospital area.

Finally, the report attempts an analysis of the RFID market perspectives in healthcare, including the value chain and the main actors and stakeholders. The study concludes with a SWOT analysis, identifying strengths and weaknesses of this technology.