

## Do RFIDs (radio frequency identifier devices) provide new ethical dilemmas for librarians and information professionals?

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### ABSTRACT

This paper provides an analysis of the current and potential ethical implications of RFID technology for the library and information professions. These issues are analysed as a series of ethical dilemmas, or hard-to-resolve competing ethical obligations, which the librarian has in relationship to information objects, library users and the wider social and political environment or state. A process model of the library is used as a framework for the discussion to illustrate the relationship between the different participants in the library system and it is argued that ethical analysis should involve the identification of future developments as well as current issues. The analysis shows that RFIDs do currently pose some dilemmas for librarians in terms of the conflicts between efficient service, privacy of users and an obligation to protect the safety of society as a whole, and that these are likely to become more problematic as the technology develops. This paper is part 2 of a series of papers on RFIDs and the library and information professions.

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### 1. Introduction

This paper tackles the question of whether RFIDs should be of ethical concern to librarians and information professionals and, in particular, whether they raise any new ethical dilemmas or significantly change the nature of some already existing dilemmas. We frame the question as one of dilemmas since in many cases the scenarios which librarians encounter involve competing and irreconcilable obligations to which there is no clear-cut ethical solution. The role of technology in raising new ethical issues, in particular the invasion of privacy, has been discussed in the academic literature for some time and, increasingly, is impinging on public awareness as can be seen by recent actions by Facebook and Google to improve its privacy protection (Ionescu, 2010; Timson, 2010). Thus far, in terms of information storage, search and retrieval, most public concern seems to be focussed on networked electronic systems rather than on the new possibilities which RFIDs may create for tracking the lending and use of physical information objects. Is this a correct assumption and, if not, what kind of ethical questions are raised for the librarian in terms of safeguarding the privacy of library users? This is an important question to clarify both in terms of accurately educating and informing library users, and also for

librarians in order that the profession can be clear as to how to deal with any potential new ethical challenges which RFID technologies may bring.

First, we provide a description of RFIDs and outline the potential new privacy issues which they may raise. Second, we provide a model of what a library is, in terms of a process perspective (Gibb, Buchanan, & Shah, 2006), as a framework in which to analyse the potential impact of RFIDs. Third, we explore what an ethical dilemma is and discuss some approaches to solving such dilemmas, one of which is establishing the primary role of the moral agent. The impact of RFIDs in terms of creating new value conflicts in the context of medicine has been discussed by Rodota and Capurro (2005), and ethical dilemmas concerning RFIDs in the consumer context have been discussed by Wasieleski and Gal-Or (2008). We argue that this approach can usefully be developed and extended to the library and information context, and that the ethical framework in this case can be modelled as a number of ethical dilemmas. Fourth, we examine the role of the moral agent, in this case the librarian, and explore whether this helps to resolve the dilemmas. We then examine some of the dilemmas in terms of competing obligations which the librarian has to different participants in the library process (including information objects) and, in the case of each dilemma, analyse the extent to which RFIDs may or may not change the nature of the dilemma. Finally we weigh up the evidence from this analysis to determine whether RFIDs do change the ethical context in which librarians deal with competing obligations (both now

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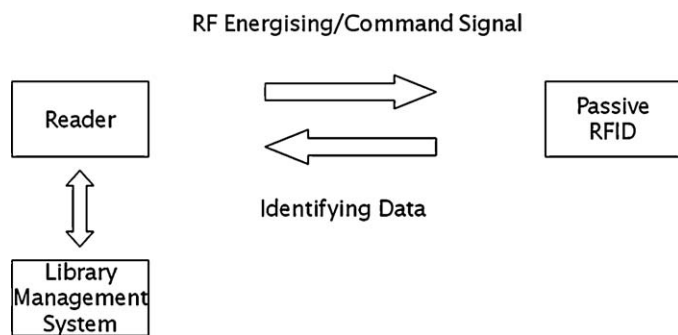


Fig. 1. Transfer of data in a RFID application.

and potentially in the future). In our conclusions we discuss the ethical implications for the profession irrespective of whether the answer is “more of the same” or “new type of threat”. This will then provide a context for our future work on the use and efficacy of ethical and management guidelines (National Information Standards Organization<sup>1</sup>) for the profession in terms of providing advice on the use of new technologies which may pose ethical dilemmas.

## 2. What is a RFID?

A radio frequency identifier (RFID) is a small chip-based device which can store data that can be used to identify objects uniquely. Identification is an important aspect of library and information services as it facilitates procurement, stock management, protection of intellectual property, location and retrieval of information objects and discrimination between editions and formats. Identification has evolved through local accession and call numbers to internationally recognised ISBNs. The technology used to store an identifier has also evolved from a book accession ticket, through barcodes, to security tags and other electronic devices, such as a RFID. An information object that is tagged with a RFID can be detected and tracked as it moves from one location to another, although it should be emphasised that RFIDs only allow the presence of an object to be detected within an area rather than providing a specific location. RFIDs are generally promoted as providing economic and operational benefits to libraries including (Gibb, Thornley, Ferguson, & Weckert, 2010): the reduction or elimination of the physical handling of goods; reduction or elimination of data errors; self-service opportunities; more efficient and effective stock management; and improved security.

A RFID stores data which may describe the information object as well as identify it. The storage capacity varies from a few bits to several kilobytes but library applications normally use tags with 256 bits, with 2048 bit tags also available. The data can be read from fixed or hand held devices without the need to have a line of sight between the information object and the reading device (see Fig. 1). This makes RFIDs considerably more effective and versatile than conventional barcodes, although their cost is currently higher. RFIDs can be divided into two main types: passive and active. Passive RFIDs, the cheaper type, do not have their own power supply but convert energy from transmissions generated by a reading device into a signal which can be delivered across very short (up to 60 cm) or short ranges (up to 5 m). Data can be modified on certain types of tags and this can be restricted to only the security bit being changed when an item is lent. Active RFIDs are generally larger and more expensive but, since they have their own power supply, can transmit data over much longer ranges (typically up to

100 m). In general active RFID are re-writable and hence re-usable devices. RFIDs were initially based on proprietary technologies but international standards, such as ISO 28560-2, have been developed to address aspects such as tag content and structures.

RFIDs can be integrated with library management systems (LMS) in which the identification data is linked to borrower data for the purpose of recording a loan transaction. This data need only be held for the duration of the loan and need not describe the object itself. However, there is at least a temporary link between a borrower and an information object. The RFID tag attached to the information object must also remain live while the borrower is in charge of the information object outside the library environment. It is worth noting, however, that the great majority of libraries use HF (high frequency), 13.36 MHz tags, which have a maximum read distance of around one metre (Organization for Economic Co-operation & Development, 2008). As a consequence, it is argued by some that the risk of tracking is not serious. It would appear to be confined for the present to tracking item use within the library and not once it has left the building. Consequently library borrowers have no reason to fear anonymous vans driving down their streets to check what they are reading (currently their privacy is at far greater risk from the ability to collect computer data via insecure wifi connections) and in a recent webcast, Shai Robkin (Various, 2010) emphasised the relative difficulty of tracking library tags because of the short read distances.

RFIDs raise two main privacy concerns in the library environment both of which relate to the increased risk of surveillance, through the greater capacity to track items and through the potential for hot-listing. Hot-listing refers to the potential practice of compiling a list of hot or dangerous publications (such as books on jihad and bomb-making) and checking who has borrowed or otherwise used these items. The capacity for RFIDs to allow tracking of items has for several years generated privacy concerns, as reflected in papers by Lockton and Rosenberg (2005) and Sletteemeås (2007). In a well-publicised case involving the library sector, there was public concern over the San Francisco Public Library's proposal to tag its book stock, revolving around the potential for inferences to be made about life-style, sexual orientation, politics and so on, based on their reading habits (Garofoli & Podger, 2007).

Palmer (2009) suggests that much of the concern about the potential of RFIDs to enable privacy invasions stems from a tendency to lump a variety of RFID technologies under the single term ‘RFID’, arguing that RFIDs would be better thought of as a range of technologies, sharing similar components and physics to those of the radio frequency transponders that were attached to allied aircraft in WWII for identification. Each of these technologies, he suggests, perform quite differently. Equally, well-publicised privacy breaches in the retail sector should not necessarily cause concern in the library world.

Nonetheless, privacy concerns were sufficient to prompt the American Library Association (ALA) to produce a set of guidelines which, if followed, could cut the potential of privacy breaches considerably. Its guidelines provide a set of best practices, which include continuing “commitment to securing bibliographic and patron databases from unauthorized access and use”, use of “the most secure connection possible for all communications with the Integrated Library Systems (ILS) to prevent unauthorized monitoring and access to personally identifiable information”, protection of “the data on RFID tags by the most secure means available”, limitation of “the bibliographic information stored on a tag to a unique identifier for the item” and prevention of “the public from searching the catalogue by whatever unique identifier is used on RFID tags to avoid linking a specific item to information about its content” (American Library Association, 2006).

Both tracking and hot-listing rely on the capacity to identify items that are being used by library clients but, provided practices

<sup>1</sup> <http://www.niso.org/home/>.

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