Sm**art**track RFID White Paper

Benefits of RFID for Museum and Art Gallery collections

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Introduction

This white paper outlines the benefits of implementing Radio Frequency Identification (RFID) technology for Museum and Gallery collections, in comparison with the traditional number-only manual systems, and barcode systems.

Benefits of Automated (i.e. RFID and/or barcoding) vs number-only manual systems

The primary benefit of any automated numbering system (reading accession numbers and location codes) is that it reduces human error in reading numbers to virtually nil. Additionally, automated systems are normally developed to integrate with the collection management system, thereby significantly reducing data entry time (and additional potential for error).

Drawbacks of barcoding systems

Barcoding systems, like number-only systems, require line-of-sight to read accession numbers. This means that boxes still need to be opened, objects handled, and tags made easily viewable. In addition, there is no practical way that all items being transported through a doorway (e.g. the entry/exit to a storage area) can have their tags read, without physically reading each and every barcode. Also, barcodes are unable to identify multiple items at once – the minimum read time for a single barcode (once it has been made visible) is normally around 1 second, whereas RFID tags can be read at several hundred tags per second.

Essentially barcodes provide only limited improvement in efficiencies over the number-only systems currently in operation. RFID technology provides a quantum improvement, as can be seen in the tables below.

Benefits of RFID technology

RFID technology minimises handling of objects and eliminates difficult accessibility issues to read most accession numbers. For example:

- Furniture – labels can be placed out of sight (for aesthetic reasons labels are placed in difficult-to-see places such as under the centre of a table or under chair seats, etc). Conversely, for barcodes or manual systems larger pieces of furniture may require 2 or more people to lift or move the object just to access the number.
- Works on paper – whether these are stored in solander boxes or stacked on shelves with matt board separators, the tags can be easily read - without having to 'leaf' through and handle each work just to access its number.
- Paintings – tags are normally placed on the reverse and can easily be read from in front of the painting, meaning that paintings on display or in storage racks don't need to be handled and moved off the wall to access the number.

- Rolled textiles – if a tag happens to be rolled up with the textile it can still be read without having to unroll the textile or remove it from its storage container.
- Ceramics and small items – usually these have the number written in a discrete location, or the number is attached using a swing tag. These items are generally housed in small bags within a larger box, or in drawers. Tags can be read without having to handle the items (which are often fragile).
- Plans, drawings, 2-D works, etc – these are often housed in plan cabinets, stacked on top of each other with Mylar or tissue between them. The RFID tags can be read from above without having to lift any items or 'leaf' through them.

Drawbacks of RFID technology

The two main drawbacks in using RFID technology relate to the initial cost outlay for the tags (can be up to $0.70 – $0.80 per tag, compared to ca $0.05 for a barcode), and in some minor modifications that may be required to existing storage to ensure sound 'reads' of the RFID tags. RFID tags need to be kept at least 5mm from metal shelves or drawers as the metal interferes with the radio waves (effectively acting as a shield). In most instances this would simply entail the use of ca 0.5cm thick foam or core-flute being placed on the base of the shelf/drawer so that tags are separated from the metal.