

Radio Frequency Identification Applications in Libraries

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RFID Research

- **Conducted survey during fall 2004**
- **Tested the RFID system and workflows during spring 2005**
- **Used RFID Libramation product for testing**

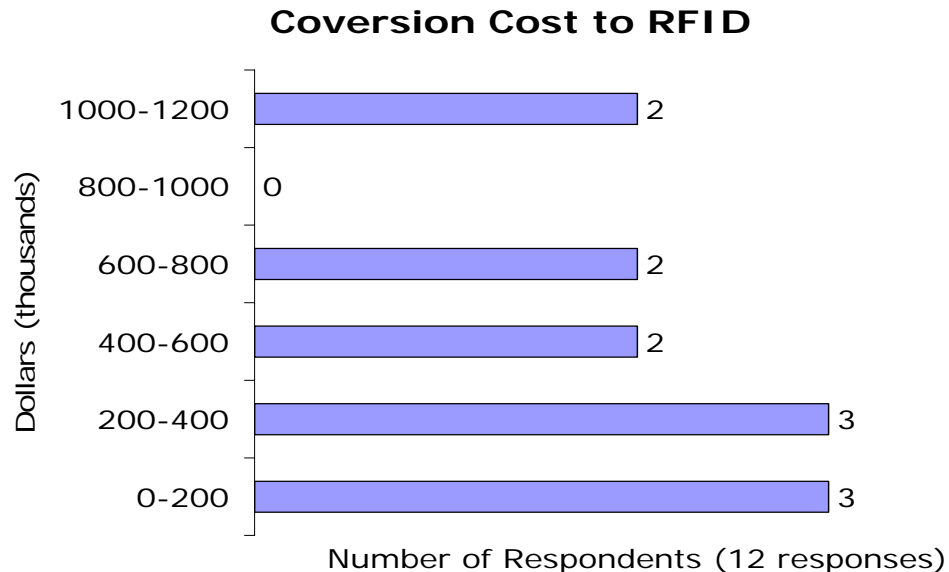
RFID Survey Results

1. Have you migrated to RFID?

Of the 29 survey respondents 10 libraries (34%) had migrated to a RFID based system and 19 libraries (66%) had not.

2. If already migrated or planning to migrate, what was/is the estimated conversion cost?

12 quantitative responses were received. The conversion cost (actual or estimated) ranged from \$113,000 to \$1.2 million with the average conversion cost being \$502,917.

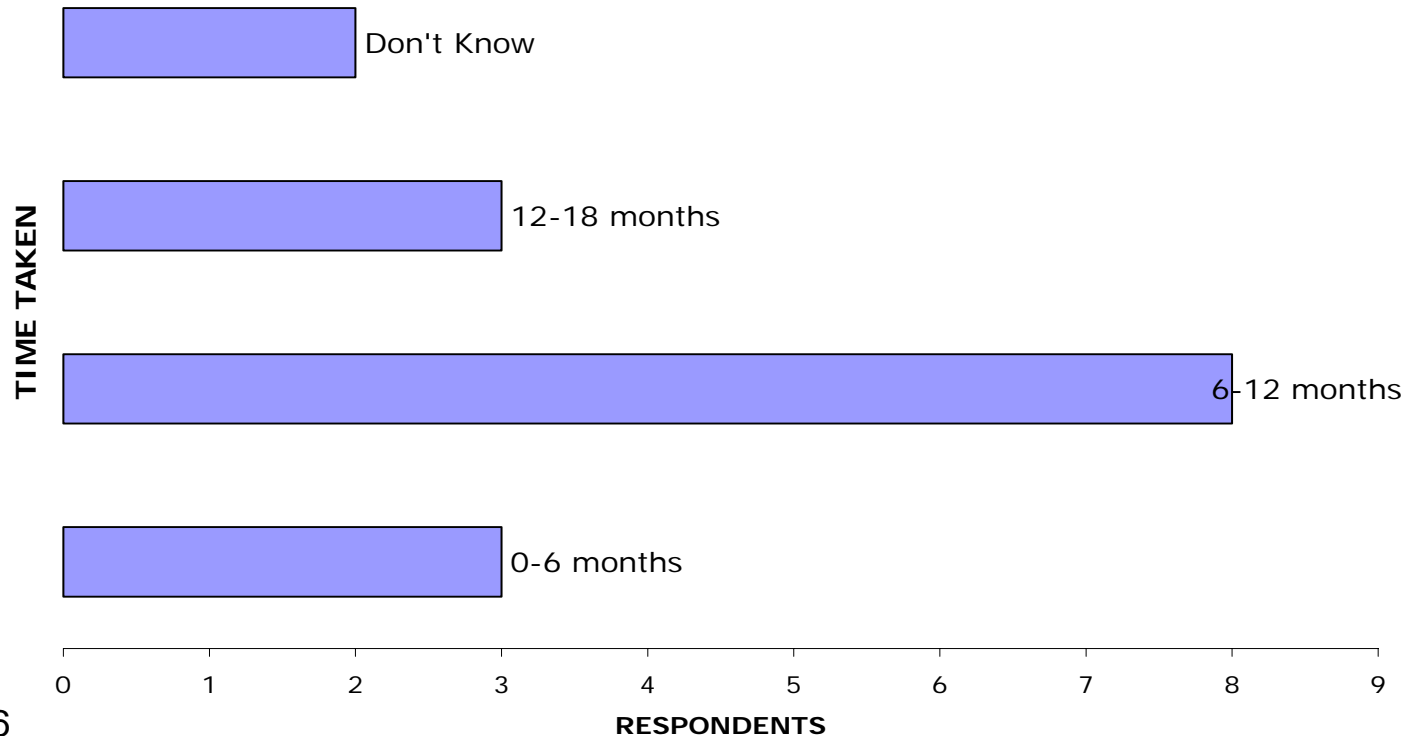


Survey results cont.

3. What was or is estimated to be the conversion time?

3 (21%), less than 6 months; 8(58%), took 12 months, and 3(21%) took 18 months to switch to RFID. The average conversion time was 11.18 months.

CONVERSION TIME TO RFID LIBRARY SYSTEM

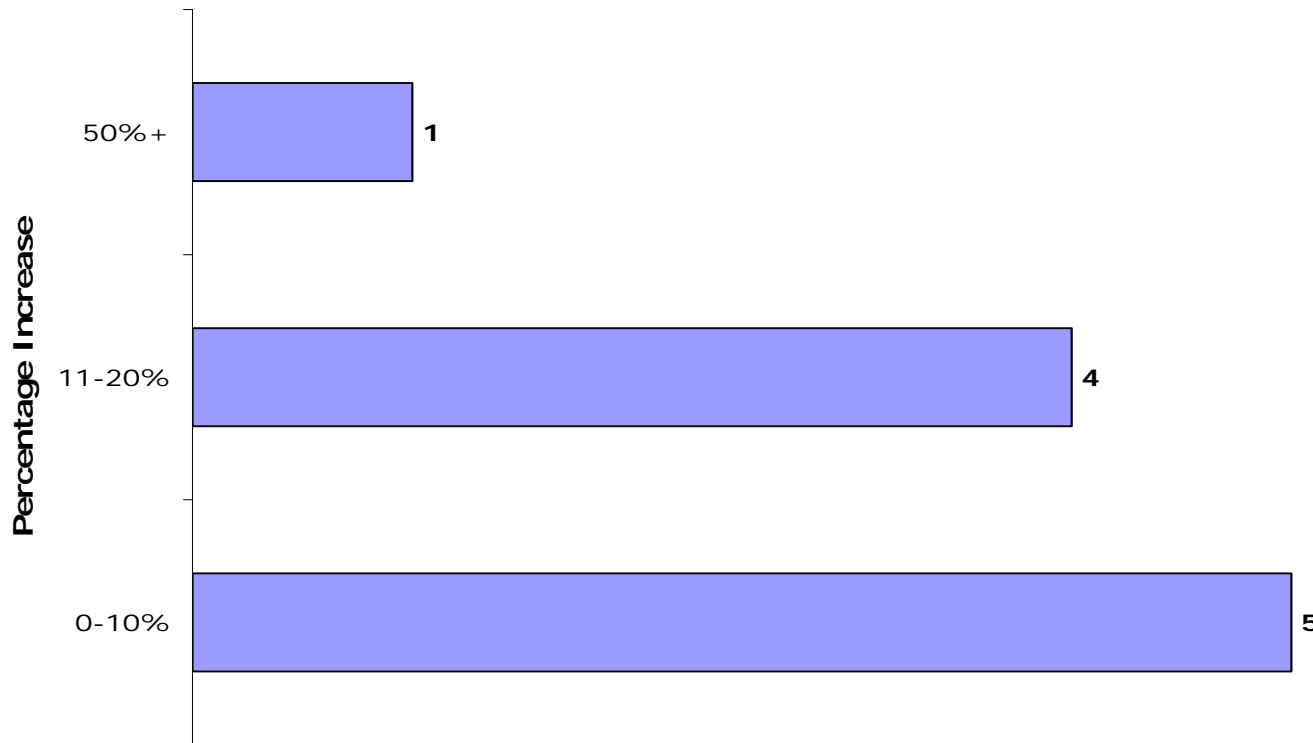


Survey results cont.

4. Has the library usage increased since RFID implementation?

50% of the participating libraries showed more than 10% increase in usage since RFID implementation.

Increase in Library Usage Since Conversion

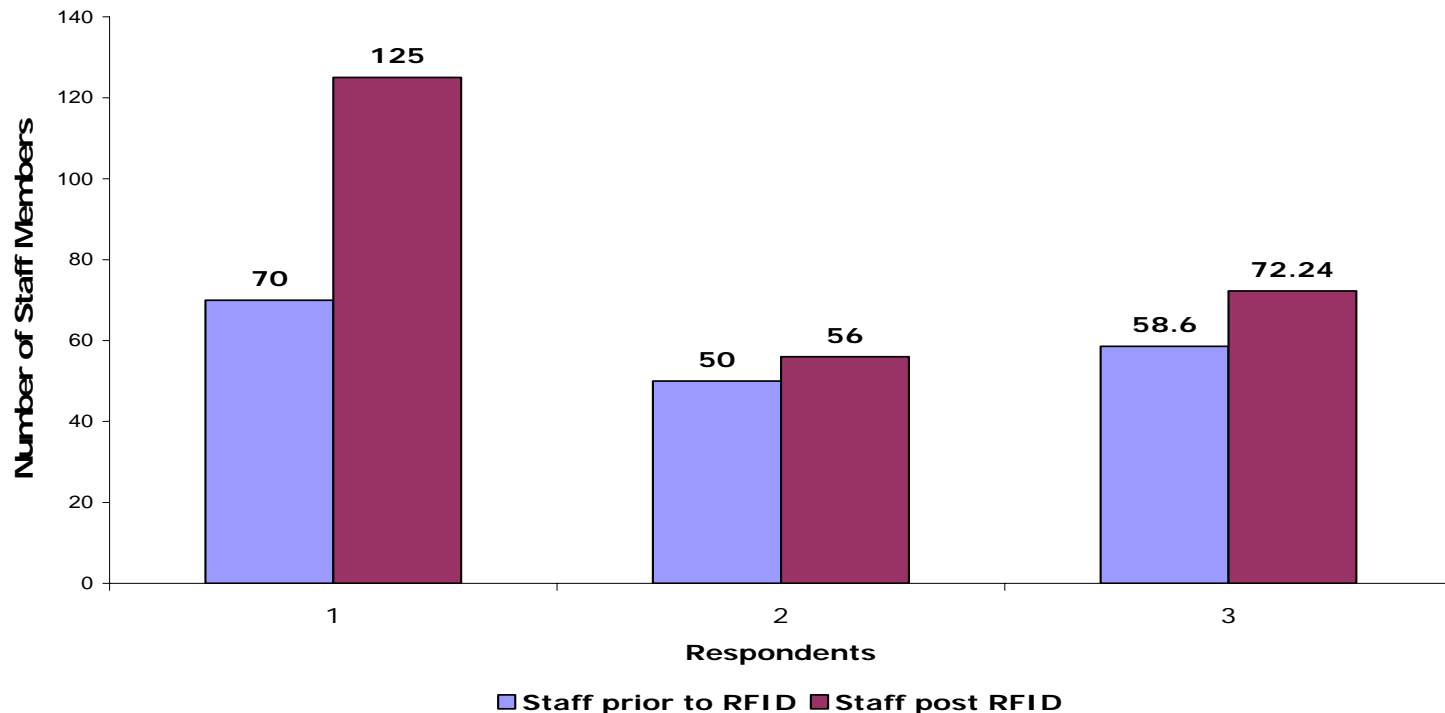


Survey results cont.

5. How has the number of staff changed since RFID migration?

Most of the responding libraries showed little to no changes in the head count of employees. 3 libraries, however showed significant difference in the number of employees prior to and post RFID adoption. All three attributed this to a facility expansion or a move to a new facility.

Change in Staff Numbers Post RFID Migration

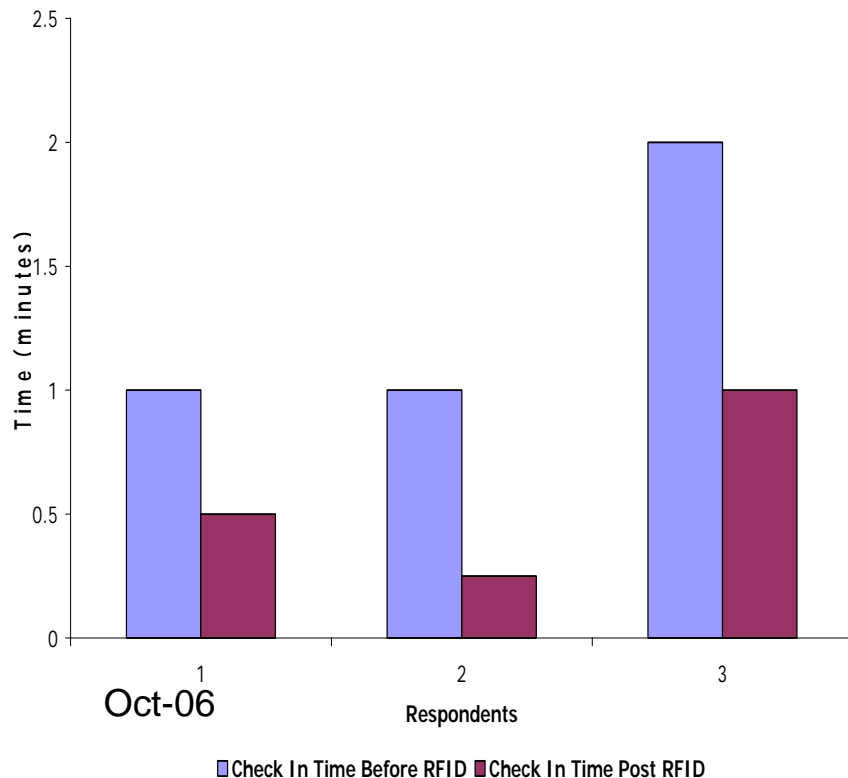


Survey results cont.

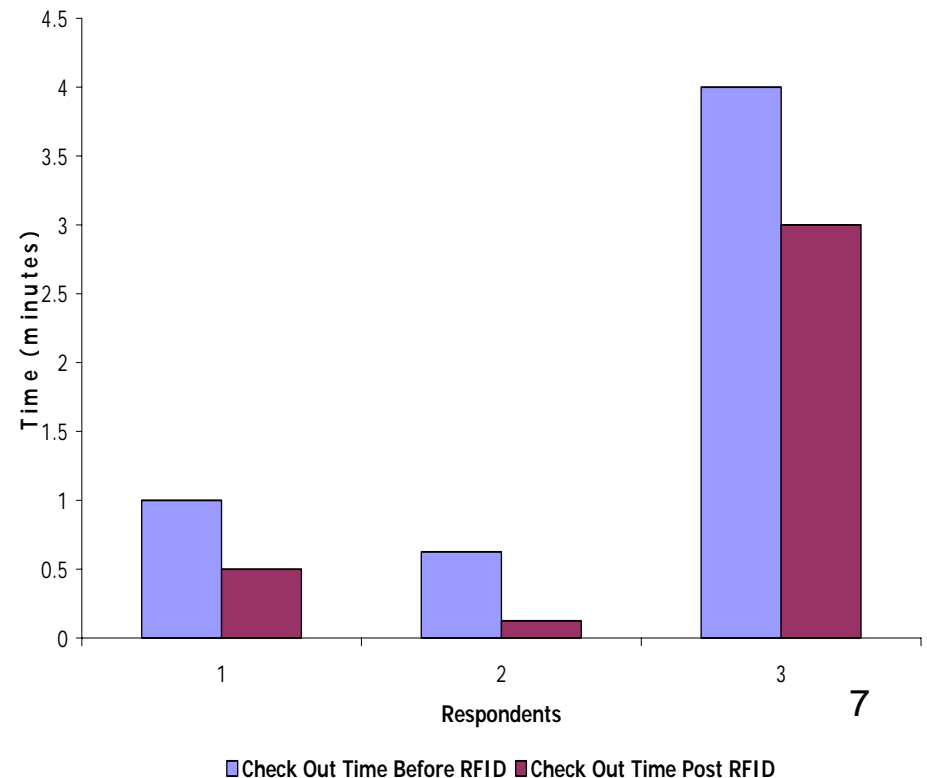
6. What was the average check-in and check-out time prior to and post RFID implementation?

10 responding libraries commented on a significant reduction in both check-in and check-out times and processes. 3 of them provided quantitative responses.

Average Check In Time Prior To And Post RFID



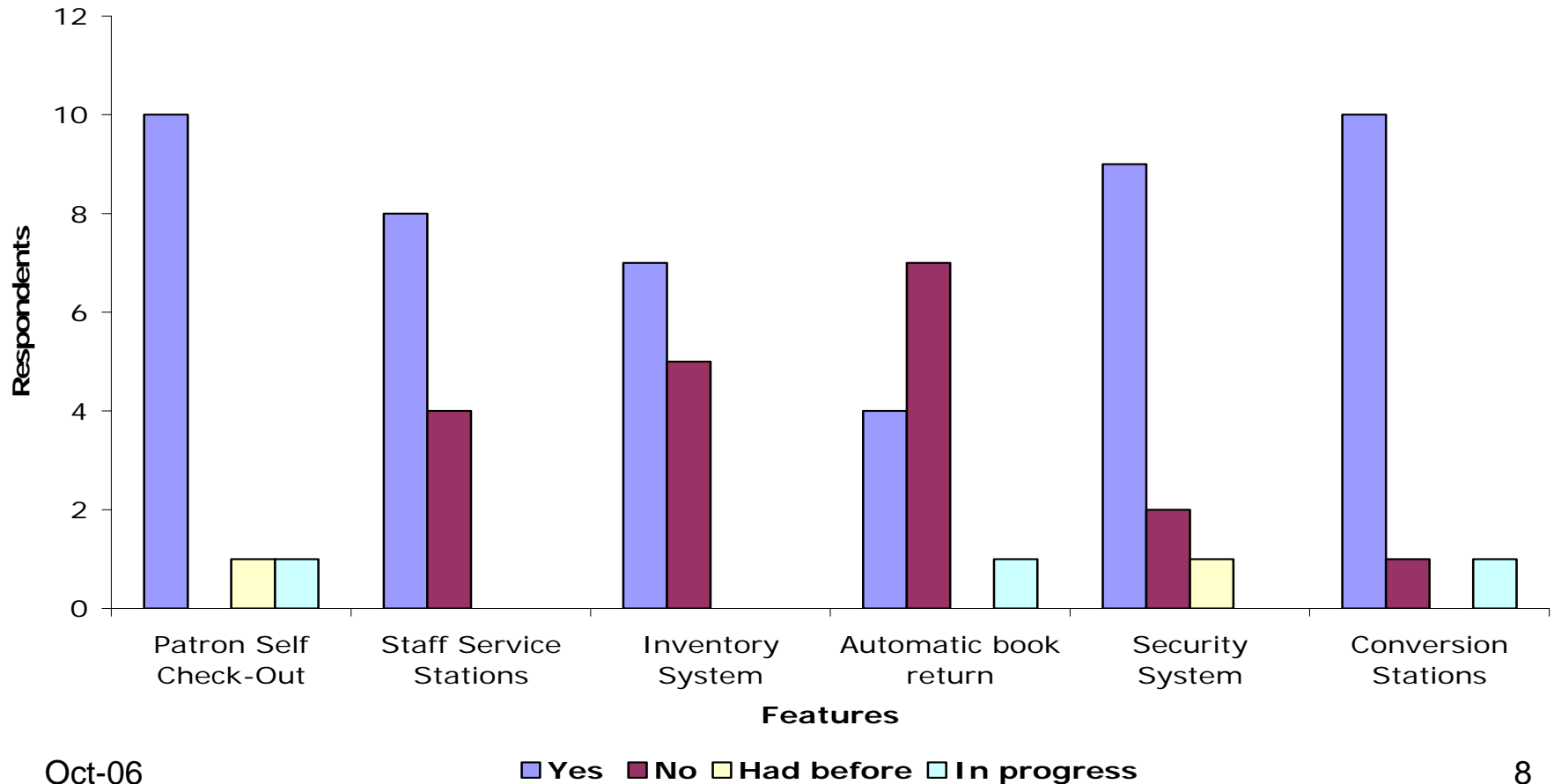
Average Check Out Time Prior To And Post RFID



Survey results cont.

7. What RFID system features have you installed /are planning to install?

RFID System Features Adopted/Planning to Adopt



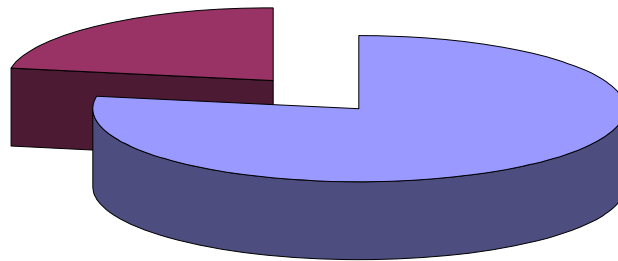
Survey results cont.

8. What security feature did you use prior to RFID adoption? Have you replaced them? Number of replacements?

2 of the 9 libraries that responded were using Checkpoint's RF system and 7 were using 3M's tattle tape. The number of replacements varied from 25,000 to 400,000.

SECURITY FEATURE PROVIDER

Checkpoint, RF, 22%



3M (Tattle Tapes), 78%

Survey results cont.

9. What kind of training you received and recommend?

Libraries reported that most of the training was handled by vendor.

10. Would you recommend RFID to other libraries?

- 16 libraries responded positively:
- RFID is the wave of future
- RFID open opportunities to streamline other circulation functions
- RFID has raised efficiency on operations, cuts theft, & decreased motion injuries
- Installing automated check-in and sorting as well as self check-out will save staff time and repetitive stress handling
- It dramatically improve workflows and is worth the conversion where it is easier to get technology dollars than staffing dollars
- It reduces lines at desk that reduces staff stress and simple check out procedures empowers patrons.

Concerns included financial impact and privacy issues.

RFID Library Simulation Project

Variables tested,

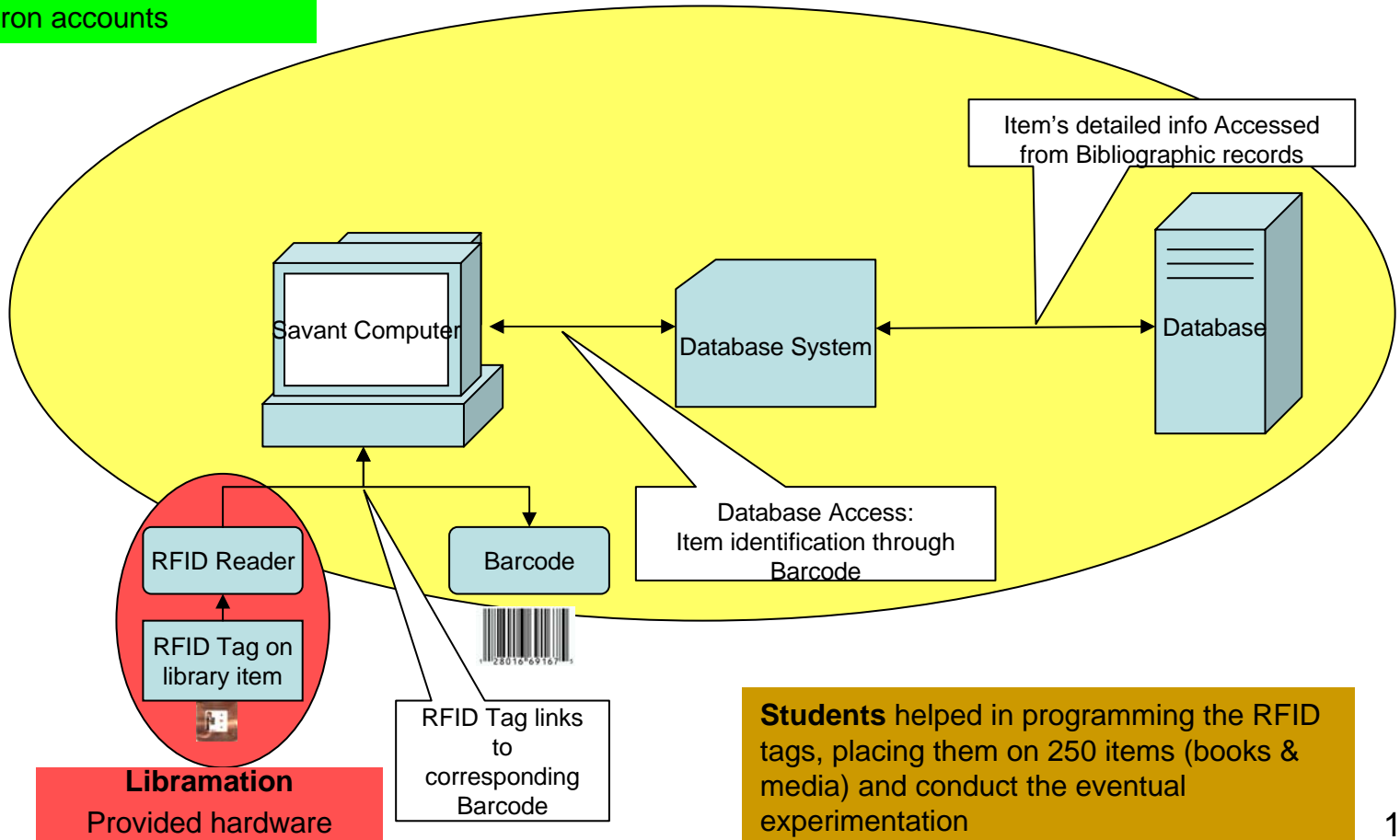
1. Unmediated check out service
2. Savings in staff time
3. Streamlined inventory and weeding processes
4. Privacy issues

RFID System Design

Kennedy Library provided space, help with linking the RFID tag to the Bibliographic records by creating 250 barcodes for items to be used in the simulation, creating 10-20 mock patron accounts

Innovative Interfaces

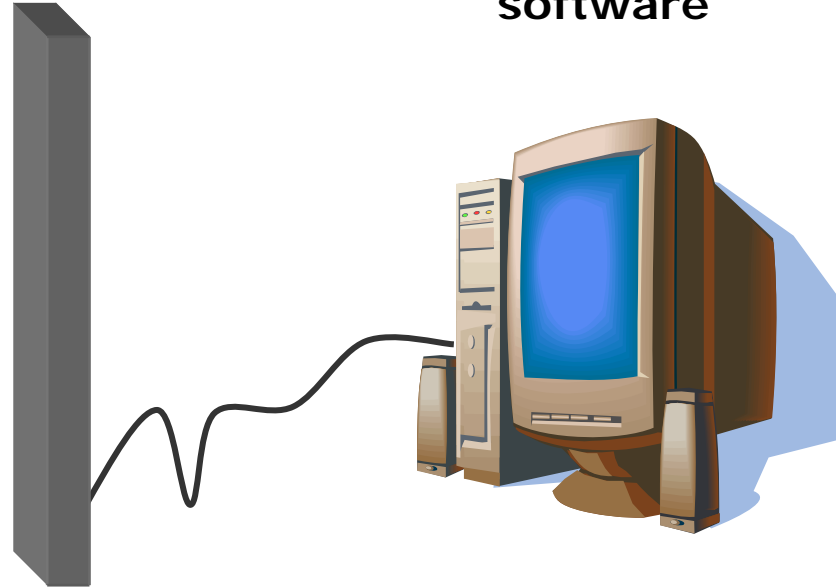
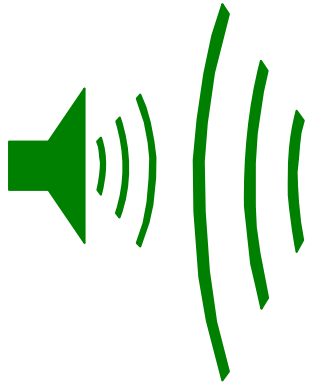
- Extracted data from Innovative Interfaces into the Libramation bibliographic data system for RFID simulation
- Checked it out to 10-20 individual accounts within the system



Components of a RFID System

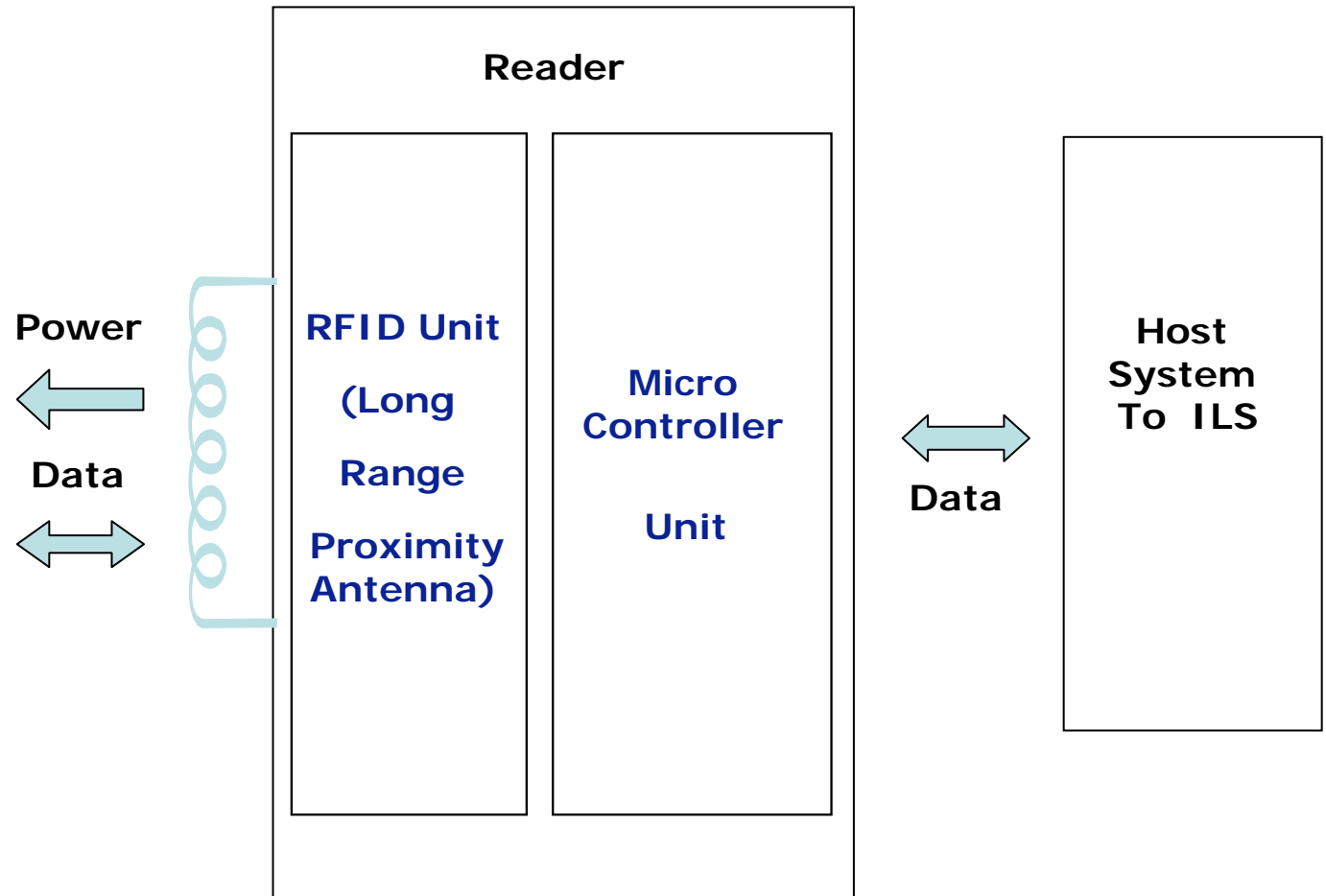
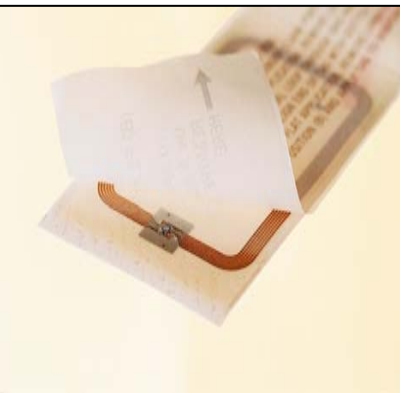
Scanner

Computer with software



RFID Tag

Information Exchange for a Typical RFID based Library



Information Exchange for a Typical RFID based Library cont..



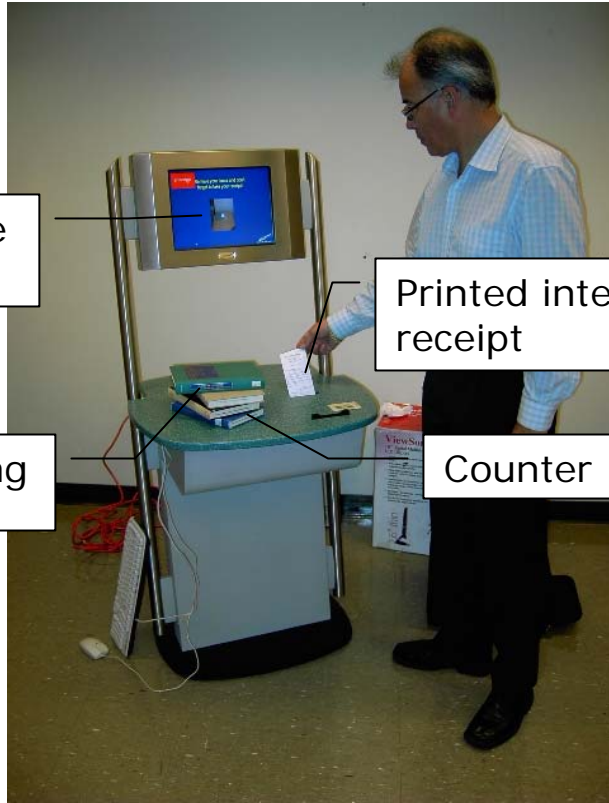
Item being programmed

PC with programming software

Antenna

Staff Self Service Station

RFID Library System



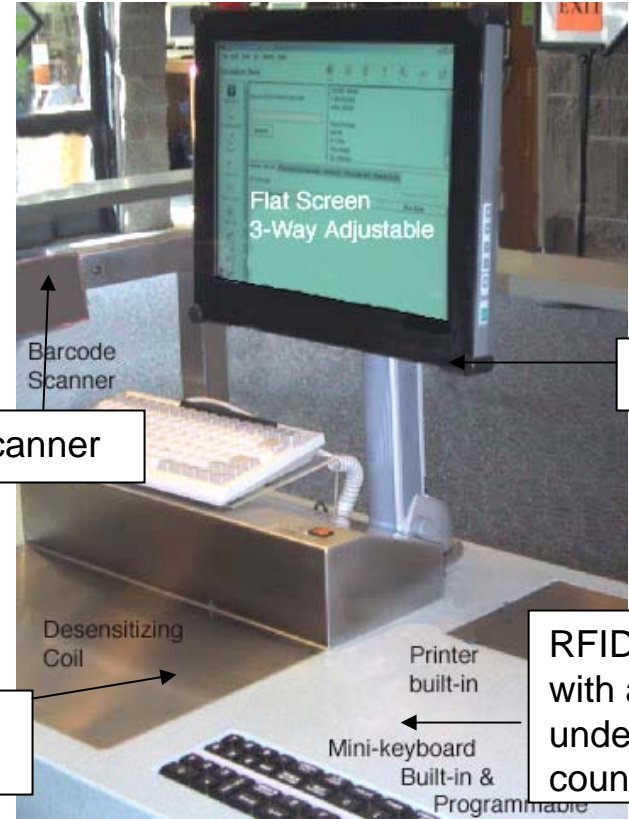
Interactive screen

Printed interaction receipt

Items being processed

Counter

Self Check-out Station



Barcode Scanner

Screen

Barcode Scanner

Desensitizing Coil

Desensitizing Coil

Printer built-in

Mini-keyboard Built-in & Programmable

RFID Section with antenna under the counter

Hybrid Circulation Desk

RFID Project Findings

- save time and operate efficiently and effectively as they include bib info and security combined
- faster self check out
- portable scanner make inventory quick and easy
- cost (one time commitment); 1.34 million = \$502,917
- conversion time 11.18 months
- privacy is not an issue unless RFID tags are used on user cards

Citation: Singh, Jay, Brar Navjit, And Carmen Fong. "The State of RFID Applications in Libraries." *Information Technology and Libraries* 25 (March 17 2006):24-32