Design and Implementation of Application Suite for Motorola Wireless Handheld Barcode Scanner

George Brown College
Computer Systems Technology
Field Placement
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About the Project
George Brown College Field Placement

- Students participate in a field placement as part of their final year in Computer Systems Technology
- Eight students were selected by the college to complete a project for Motorola
- Timeframe of one semester: January to April, 2008
Motorola Handheld Wireless Barcode Scanner

- Portable, battery-powered handheld device
- Uses Windows Mobile or Windows CE operating system
- Touch screen and keyboard for user input
- Communicates using Wi-Fi or cellular technology
Motorola needed an application suite to demonstrate the handheld’s capabilities to potential customers.

The suite would demonstrate the capabilities in several different fields: health care, field service, warehousing, etc.
Application Requirements

- Lightweight, easy to use handheld interface
- Wireless connection to a central database server
- Simple administration of the server
- Customizable content to match the potential client (ie. logos, product listings)
About Wireless Networking
IEEE 802.11b

- The world standard for local-area wireless networking
- Also known as “Wi-Fi” or “Wireless-B”
- Maximum speed of 11 megabytes per second: faster than household broadband Internet access
- Slower than 802.11g, but less expensive
Wireless Access Points

- An access point (AP) allows wireless devices to access a conventional wired network.
- Wireless range is limited, so multiple APs can provide increased coverage.
WS2000 Wireless Switch

- Provided by Motorola for the project
- Can easily interconnect wired networks with wireless networks
- A wireless antenna is connected to the switch to turn it into an 802.11b access point
Synchronization

- The handheld does not need a constant, uninterrupted wireless connection. It holds a complete copy of the server’s database.
- When data on the handheld has changed, it can connect to the server and exchange the new data. This is called “synchronization.”
- During this, the handheld also obtains new data which has changed on the server.
- Synchronization should occur often to prevent data from growing old and obsolete.
Application Demonstration
The program is used by pressing on the touch screen with a finger or stylus.

You can synchronize the handheld with the server, and then select a field to simulate on the handheld.
Application Demonstration (cont’d)

- The Health Care application simulates the administration of drugs to a patient
- You start by scanning the barcode on a patient’s wristband (using the scan button on the handheld)
Application Demonstration

- If the barcode matches a patient’s entry in the database, her information is displayed for verification.
- The required drug is also listed.
- You must scan the drug to ensure you are administering the right one.
Application Demonstration

- After scanning the correct drug, you can administer it to the patient.
- When you press Next, the application saves the date and time to add to the patient’s drug administration record.
Application Demonstration

- Once completed, you can Start Over to scan the next patient.
- You are reminded to synchronize the handheld to keep the central server up-to-date.
Conclusion

- The project was completed successfully, providing Motorola with a basic suite of applications to demonstrate the handheld’s capabilities.
- Those capabilities include wireless networking, demonstrated by the use of a central database server.
Conclusion (cont’d)

- The WS2000 wireless switch made it easy to communicate between the Motorola handheld and the database server.
- This project demonstrates how a basic collection of technologies can be used to create a large-scale application for use in many different fields.