Customizing Interface for Beach Protocol in EcoPDA

Taylor Savage, Shreyasi Ghosh, Jennifer Chandler, Paul Ashla, Oscar Herrera, Charisse Carter, Taimur Hassan, Christine Lee, Jeffrey Goldman, Nithya Ramanathan, Deborah Estrin
UCLA Center for Embedded Networked Sensing, http://research.cens.ucla.edu

Introduction: An application for organized data collection in the field.

Traditional Methods of Data Collection

- Researchers follow specific “protocols” when observing wildlife and record collected data in paper notebooks.
  - Pen-and-paper collection prone to error.
  - Too time-consuming and tedious.
  - Difficult to aggregate data.
- Outdated method of data collection.

Data Collection with EcoPDA

- Program conforms to same “protocols,” but allows for simple and efficient data recording on a PDA.
  - Eliminates possible errors due to poor legibility.
  - Much faster and more efficient.
  - Easy to view and analyze previously collected data.
- Advanced approach to data management.

Problem Description: Poor beach water quality and outdated procedures for gathering data.

Beach Pollution Demands Better Information Collection

- As many as 7 million Americans each year get sick from swimming in contaminated water.
- Field biologists are looking to study the sources and severity of beach pollution.
  - Record water sample information by hand.
  - Have difficulty comparing and organizing collected data.
  - Limited in the amount and type of information they can record.
- A more advanced approach to data recording would allow for better analysis.

Proposed Solution: Add support to EcoPDA for Beach Protocol.

Database Changes

- Added columns for beach information
  - Submerged in seagrass
  - Non-swimmers in vicinity
  - Pets
  - Birds
  - Trash
  - Other
  - Birds tending nest

- Inserted data columns into existing databases

Sensor Collected Data

- Water Depth
- Sediment Sample
- Image
- GPS Location
- Dissolved Oxygen
- pH
- Temperature
- Salinity

User Customization

- Wrote PHP program allowing user to specify additional observation data.
- Outputs XML file that defines a new protocol.
- Could parse XML to add new protocol information to database, allowing the user to define their own protocol.