Title
Tools for Dynamic Deployment and Data Management

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Tools for Dynamic Deployment and Data Management

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Deployment Challenges and System Development Motivations

- CENS sensing systems are being deployed in many different real-world settings.
- CENS sensor deployments are highly variable
  - Specialized and often developmental systems and unpredictable field settings leads to faulty data
  - Needs of the scientists may change and new questions may arise after initial data are collected and explored.
- Managing sensor deployments and the resulting data can be challenging

- Need dynamic deployment tools that allow researchers to view and interact with deployment data while data collection is ongoing..
- Interactive systems can reveal problems as they arise, which can then be used to improve existing deployments and help design future deployments.
- Need to keep track of the ways that problems are addressed
- Need to share deployment information and data among distributed teams of researchers

CENS Deployment Center (CENSDC)

(http://censdc.cens.ucla.edu)

- Web-based database for CENS deployment information
  - Researchers make final decisions on what data to collect and how to set up field experiments
  - CENSDC is designed to collect information about what actually takes place in the field
  - Information from past deployments can feed into the design of the next deployment iteration

- Important information relating to human roles in data collection include:
  - Deployment dates and locations
  - People involved
  - Equipment used and deployed
  - Data collection tasks
  - Post-deployment notes
  - Suggestions/recommendations for future deployments

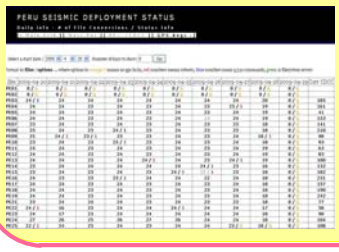
Sensorbase

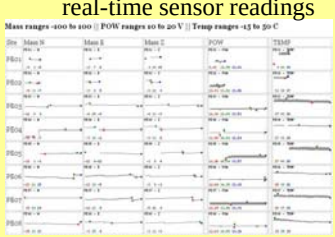
(http://sensorbase.org)

- Web-based database for CENS sensor data
  - User-defined projects can be set up to automatically collect sensor data from remotely deployed sensors
  - Data can be kept private or shared with fellow researchers registered with Sensorbase
  - Researchers can be alerted by email when user-defined conditions exist within incoming sensor data
  - Programmatic access to Sensorbase features allow outside services to access and manipulate existing data
  - Generic enough to be applicable to most data research scenarios while being openly available for individual modifications

CENS Seismic Deployment

- Facilitating high quality data through interfacing with daily data streams
  - Mapping the wireless communication quality between installed seismic stations
  - Tallying daily data capture and conversion rates
  - Displaying sparklines of real-time sensor readings





Future Directions – Interconnections

- These systems enable researchers to:
  - Discover problems with data as they arise
  - Identify and describe the problems
  - Annotate the solutions for future deployments
- ***The resulting data should be of higher quality in the short term, and more easily used and reused in the long term***
- Future plans - better connecting CENSDC and Sensorbase:
  - Allowing Sensorbase to keep track of and display deployment related information from the CENSDC
  - Providing complete programmatic support so that researchers can access data from CENSDC deployment pages using Sensorbase functionalities