DREs: Learning from the fields of Human-Computer Interaction & Information Visualization

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Voting and Visualization

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- ◆ The problems of DRE are not unique
    - ▪ Typical of public access information systems
    - ▪ Need to look to the professionals:
        - ● Human-Computer Interaction (HCI)
        - ● Information Visualization (InfoVis)
    - ▪ These fields create innovative design/interaction solutions and evaluate this work with qualitative and quantitative user studies.
- ◆ Our goal should be **"better than paper"**

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What is paper?

Paper Ballot – page 2

Paper Ballot – page 3

What are computer interfaces?

- Many companies don't advertise the interface
- When they do, they don't describe usability studies
- There is no overview
- Navigation is often a challenge

MicroVote Infinity Voting Panel – *next*, *prev* in red

Hart InterCivic eSlate.

VoteHere Platinum.

Information Visualization

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- Visualization **helps users see patterns and detect outliers in large data sets**
- A ballot *is a large dataset*
  - Most DREs show less than 4 races per screen
  - How do voters understand how they voted?
  - How do voters build trust in these systems?

- Show more than fits on the screen by:
  - Good, dense information design
  - Overview+detail
  - Abstracted representations
  - Simple navigation mechanisms

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Navigating Large Spaces

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- Imagine driving from NY to CA with only street maps.
- You need abstracted overview maps – that show states and highways.

- We have the same problem with voting systems:
  - How do you get an overview of the state of your ballot?

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A Motivating Example

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- ◆ Zoomable User Interface (ZUI)
  - Single screen interface
  - Overview + Detail
  - Natural navigation and progress indication

Follow-up

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- ◆ Where do we go from here?
  Learn from the HCI/InfoVis communities:
  - Build designs to support range of tasks:
    - "understanding" tasks
    - Intangibles, including voter comfort and trust
  - Evaluate with representative users
  - Usability studies to find interface errors and understand user satisfaction
  - Quantitative empirical studies to measure performance data: speed & accuracy