

Preliminary Usability Assessment of the Map Interface of the Election Incident Reporting System (EIRS)

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ABSTRACT

I describe a preliminary usability assessment of the Election Incident Reporting System's (EIRS) map-based incident reporting tool conducted as a final project in a graduate course on *Needs Assessment and Usability* at the University of California at Berkeley¹. I used qualitative interviews, task-based heuristic evaluation and cognitive walkthrough user testing to evaluate the usability of the interface. I find that while EIRS behaved remarkably well during the last election, there could be improvements in consistency, efficiency, the arrangement of visual elements and volunteer training which would deliver a smoother user experience and more functional user interface.

1. INTRODUCTION

Elections are a core function of a representative democratic government. Over the past decade, elections in the United States have become increasingly mediated by computerized voting systems [1]. The introduction of computerized systems into voting brings with it the problems of these systems in other contexts: "bugs" routinely arise with computerized systems and there are greater opportunities for undetected malicious behavior. Both these types of complexities can ultimately affect the ability of a voting system to capture the votes of citizens.

Tracking problems that voters have with computerized voting systems is an important part of their increased adoption. By keeping track of these problems, we can know what problems voters are having with new ways of casting their votes and possibly catch symptoms of malicious behavior that a maldoer might be executing to affect the vote count.

In this paper, I describe a preliminary usability assessment of an election incident tracking system developed by the Verified Voting Foundation² (VVF) and Computer Professionals for Social Responsibility³ (CPSR) to track election problems with the general election of 2004. In Section 2, I describe the Election Incident Reporting System⁴ (EIRS) developed and deployed by VVF and CPSR. Section 3 describes the assessment methods I employed and section 4 outlines the results of each assessment method. Finally, I

¹INFOSYS 214 was taught in Spring 2005 by Professor Nancy Van House at UC Berkeley's School of Information Management and Systems (SIMS).

²<http://verifiedvoting.org/>

³<http://www.cpsr.org/>

⁴<http://maps.voteprotect.org/>

offer both high- and low-level recommendations in section 5 and conclude in section 6.

2. EIRS DESCRIPTION

EIRS is one of the first election problem tracking tools and certainly the most sophisticated tool with a public dataset and interface. EIRS is a web-based tool used for recording and tracking election incidents as well as managing volunteers used in this process. In this section, I describe the need for a tool like EIRS, what component parts EIRS consists of and the context in which EIRS was used during the election cycle in 2004.

2.1 The need for EIRS

As mentioned briefly in the introduction, as elections and the tools we use to cast votes become more complicated, public interest organizations need more sophisticated tools to aggregate the information associated with problems people have in the voting process.

There is a case to be made that many different actors within the elections space should be interested in keeping track of election incidents. For example, vendors should have some desire for tracking problems with their voting systems in order to improve their design. As well, election officials and administrators, the customers of voting system vendors, should have an interest in keeping track of problems that voters have with new technologies that they have purchased. In practice, neither of these groups track election incidents in a publicly-identifiable manner. I can only speculate that vendors do not want problems advertised to minimize tarnishing the reputation of or exposing vulnerabilities with their products. As well, election administrators have tight budgets that leave little room to contemplate problem tracking and they might also feel that this information could compromise voter confidence in their electoral system.

Where the need for an election problem tracking tool did find purchase was amongst the various public interest organizations that participate in election protection activities. Broadly, election protection is non-partisan proactive action that aims to increase the enfranchisement of eligible voters. Specifically, the Election Protection Coalition⁵ (EPC), a coalition of sixty 501(c)(3) organizations headed by the Lawyer's Committee for Civil Rights Under Law⁶ and the

⁵<http://www.electionprotection2004.org/>

⁶<http://www.lawyerscomm.org/>

People For the American Foundation⁷ recognized the need for an election incident tracking tool to coordinate their legal and volunteer deployment during November 2, 2004. The VVF and CPSR were awarded a grant in the summer of 2004 to build the Election Incident Reporting System. EIRS was developed during the months leading up to the 2004 election.

2.2 Components of EIRS

EIRS is essentially a LAMP⁸ web service entirely based on open-source software. Volunteers take calls from a phone hotline (1-866-OUR-VOTE) and record data in a database using the EIRS software which is then available on the web.

EIRS as deployed on Election Day 2004 consisted of three main subsystems. First, there was a form tool that allowed volunteers to enter information into the backend database. This form is based on PHPSurveyor⁹ which allows customization of survey and form instruments and then storage and management of responses in a database.

Second, there is a reporting tool which displays incident information. This part of the tool is a map-based interface which displays the number of incidents in each state via a color-coded gradient. The MapServer¹⁰ software allows clickable maps to be associated with database information. The EIRS map tool is the focus of this usability assessment and Figure 1 gives an overview of the different elements of user interface.

Third, EIRS had a set of volunteer management tools based on the Advokit¹¹ software which allows volunteers to sign up and volunteer managers to match tasks to the skills of specific volunteers.

2.3 EIRS within EPC

EIRS was used as a central part of the coordination of the EPC during the 2004 election. VVF and CPSR developed EIRS essentially as contractors to the decision-making organizations that lead the EPC. This was the first time that the EPC had used information technology as a major part of their election protection operations; in previous years EPC had used paper-based forms to record incident information via their voter hotline. Through this relationship, VVF/CPSR were able to realize their goal of tracking voting technology incidents and EPC organizations with volunteers on the ground were able to use the tool to coordinate their efforts as well as have the benefits of a historical record of all election incidents that could be used for subsequent research [2, 3, 6].

The EIRS team conducted a pilot of the tool and incident reporting processes during the 2004 Florida Primary. This was the first and only system test and was very helpful for

⁷<http://www.pfaw.org/>

⁸“LAMP” is an acronym that refers to web services running on the GNU/Linux operating system, running the Apache web server, the MySQL database and the PHP server-side scripting architecture.

⁹<http://phpsurveyor.sourceforge.net/>

¹⁰<http://mapserver.gis.umn.edu/>

¹¹<http://www.advokit.net/>

iterative design of EIRS. However, it is very hard to replicate the extent of election day activity¹².

2.4 Prior usability work on EIRS

Two members of the EIRS user interface team, Catherine Marshall and Jeff Johnson, were intimately involved in usability and user interface issues during its development and deployment. In a talk at ACM’s SIGCHI 2005, Johnson and Marshall described a method of “convergent usability evaluation” that they used to improve the usability of the EIRS tool in a highly resource-restricted evaluation environment [5].

¹²There was an effort to direct a good deal of attention to EIRS via posting a Slashdot (<http://www.slashdot.org/>) story that discussed the tool. This was an attempt to direct a “Slashdot effect” on to EIRS and the system held up to this attention without incident. (For more, see: http://en.wikipedia.org/wiki/Slashdot_effect)

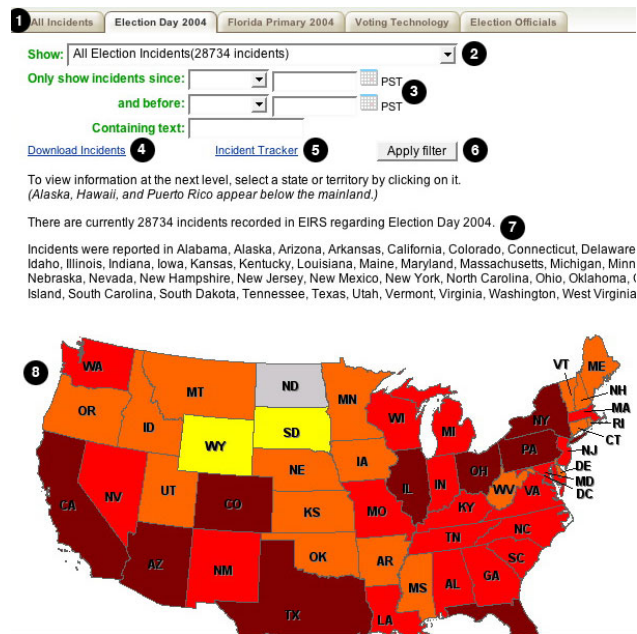


Figure 1: A general screenshot of the EIRS map interface. Notable features (Note: numbers in this caption correspond to black circles in the figure above.): 1) a set of navigation tabs at the top of the interface; 2) a pull-down menu titled “Show” that can be used to narrow the types of incidents displayed; 3) A set of two pull-down menus and three data entry fields for entering times and dates respectively with the last field allowing a text search on the contents of incident reports; 4) A link that allows the user to download the incident data in spreadsheet form; 5) An “incident tracker” which only displays the map graphic given the current search context; 6) An “apply filter” button that users can click on to execute their search; 7) Text that gives some basic instructions and basic data given the current search context and; 8) The map interface itself which displays a color-coded and clickable map of the United States.

The previous work focused on the data-entry or form tool of EIRS, not the map-based incident reporting interface which is the subject of this assessment. However, to the extent that both interfaces are part of the same tool and same incident reporting infrastructure, I utilize parts of their work where it directly implicates issues of usability.

3. ASSESSMENT METHODS

As part of my assessment, I employed three substantive assessment methods. I chose to begin by talking to people who participated in the development and/or organization of EIRS and to then shift my focus to the tool itself and the users of the tool.

3.1 Methods: Qualitative interviews

I began by interviewing six people at high organizational levels of EPC and EIRS about the development and implementation of the tool during the Fall of 2004. A specific section of the interviews was aimed at usability problems that the participants had experienced or heard about during election activities. Each interview lasted about thirty minutes to one hour. I recorded the interviews with a digital audio recorder and then partially transcribed each interview. I then extracted a set of known usability concerns and asked follow-up questions via email where necessary. In addition, I also had access to the interview data of Johnson and Marshall [5].

This is a very limited sample of six individuals at high positions of organizations involved in EPC activities and eight interviews with EPC volunteers and staff members. In the future, for this and other work related to EIRS, I would like to expand this sample into other EPC organizations.

3.2 Methods: Heuristic evaluation

As part of an assignment in INFOSYS 214, a colleague, Kelly Snow, and I conducted a task-based heuristic evaluation of the EIRS map interface.

We chose a grouping of four tasks around which to structure our heuristic evaluation. These tasks were chosen to replicate tasks that we felt would be common activities that EIRS users and EPC volunteers would engage in on Election Day and after. Specifically, we chose the following tasks:

1. Find out how many incidents were reported in the 2004 election.
2. Find election incident 31153.
3. Navigate to all registration-related problems reported during the Florida 2004 primary (31 August 2004) in Palm Beach, Florida. Then, navigate to all machine problems in the same county during the general election of 2004.
4. What kind of voting technology (make and model) did Santa Clara Co., CA use *[sic]* in on Election Day in November 2004? Were there reported problems with this technology during the Election in November 2004?

We used two sets of heuristics: Keith Instone's "Site Usability Heuristics for the Web" [4] (adapted from Jakob

Nielsen [7]) and the more general Bruce Tognazzini's "First Principles of Interaction Design" [10].

We evaluated the EIRS map interface using the specific tasks listed above against our set of heuristics. We assigned a severity level to each violation across a range from one (1) to five (5) with one being not a bad violation and five being catastrophic¹³.

Each evaluator did separate initial heuristic analyses and then met to reconcile the results. This is typical in the process of heuristic evaluation as it eliminates groupthink and biases and increases the amount of errors found [8, 9]¹⁴. I should note that it would be desirable to have more evaluators with more heuristic evaluation experience.

3.3 Methods: User evaluations

The third evaluation method involved task based user studies. I recruited eight participants to do task-based think-aloud cognitive walkthroughs.

As a large percentage of EPC volunteers are attorneys or law students, I choose to recruit six law students and two SIMS students with usability and user interface experience.

There are benefits and drawbacks of this sample. Notably that law students are close to the actual users of EIRS and that this is a small sample of students, not a representative sample of EIRS map tool users. Two law students actually used EIRS on election day as volunteers, two were not very comfortable with computers in general and one SIMS student had volunteered in the development of EIRS.

Each participant was instructed to choose a type of web browser¹⁵ and then to perform the tasks listed in section 3.2. I also asked each participant to "think-aloud" as they tried to complete each task so that I could record their thoughts onto a digital audio recording device. As well, I attempted to prompt participants when I noticed that they had forgotten to talk about a particular event.

4. RESULTS

The progression from interviews, to heuristic analysis to user evaluation provided a rich amount of data at different levels of detail and from different perspectives.

4.1 Results: Qualitative interviews

From the qualitative interviews, I found out a series of "known problems" with EIRS. The map Interface is slow even without the substantial loading that takes place around Election Day. In some cases, the data-entry form was slow enough that various EPC sites used paper forms to record information and there were problems translating incidents recorded

¹³We narrowly defined catastrophic to be heuristic violations that resulted in the user not being able to complete a given task.

¹⁴As an aside, we also found it to be very helpful to have both an evaluator that was fairly familiar with the interface and one that was not.

¹⁵Participants had to choose between MS Internet Explorer, FireFox or Safari on a Macintosh computer running the Apple operating system.

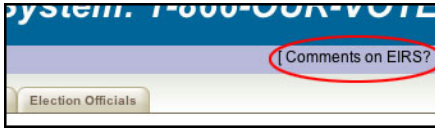


Figure 2: A screenshot of the EIRS comment form link.

on paper forms into the EIRS web forms. Also, some inappropriate personal information was mistakenly included in form fields that were public instead of fields kept confidential. There were also indications that some older less computer-savvy call center operators chose to use paper forms over the interface out of preference.

The map interface¹⁶ didn't meet the needs of the various analysts and attorneys tasked with filing litigation from EPC organizations. IT staff at PFAFW even went so far as creating their own tool on the night before Election Day, although this tool was not real-time data but updated approximately every 30 minutes and did not have case numbers associated with each incident. This, combined with the slowness of the map interface, resulted in many analysts using the PFAFW tool, if they had access to it, or the Excel spreadsheet¹⁷.

Another known problem was that the volunteer management feature was a problematic. The central decision-making organizations in the EPC, LCCRUL and PFAFW, had conflicting requirements for the volunteer management facilities; LCCRUL desired volunteer management and PFAFW already had these capabilities through other software. A complicating factor in this was that most EPC organizations wanted a lightweight process for getting volunteers up and running with EIRS but that the volunteer management software required users to answer a long form of questions.

The access model to the data-entry interface and underlying incident data was too complicated and not clear. EIRS was designed to protect against malicious entry so that incidents entered by an account that had not been vetted by a higher EIRS user would not show up in the database. As an ad hoc work-around for this issue many sites used workstation-specific logins instead of log-ins associated with an individual volunteer¹⁸.

Other, less significant known issues included:

- There were reports that it was difficult to navigate to the incident reporting form.
- There was some desire for integrating other types of information such as voting machine information and instructions and having the interface complete some

¹⁶Note that the PHP Surveyor software had a more complicated analysis tool feature. However, it was found by one user as being “not user friendly” and it did not support the full range of Boolean operations.

¹⁷See element 4 of Fig. 1.

¹⁸There were also indications that volunteer organizations are very protective of their volunteer information. However, being able to associate incidents based on the user who entered the information is very valuable for later analyses.

information automatically or remember frequently entered information.

- The EIRS feedback box (See Fig. 2) was forwarding feedback emails to a non-existent email address during the election due to an unfortunate change of the feedback email address without updating where the EIRS software sent this feedback.
- The EIRS training sessions were a powerpoint slide show often held over teleconference or videoconference. Some expressed a desire for hands-on training with the tool.

4.2 Results: Heuristic evaluation

During the process of heuristic evaluation, we found a number of violations. Tables 1 and 2 summarize the number of violations sorted by severity level and by heuristic type.

Of the tasks we chose (See § 3.2) one task, task number two, was actually impossible to complete. When we initially realized that this task was not complete-able, we thought about not including it in the evaluation but then decided to keep it to examine error handling and how users would respond to the strange behavior.

Both tasks 3 and 4 were developed in order to show how more complicated tasks are supported by EIRS. Both of these last tasks had two parts intended to test the tools ability to support tasks across different axes of the interface. Below, I briefly list some interesting results from our heuristic analysis by task¹⁹.

4.2.1 Task 1

Task 1 involved finding out how many election incidents were recorded in November 2004 and was the easiest to complete. We noticed that the number of election incidents is displayed in sentence form in the interface as well as in the navigation menu that narrows the type of incidents being displayed in the interface (see Fig. 3). However, the size of the text in the text area of the interface is no different than the other text in the interface and we suspected that this lack of differentiation might cause problems for users looking for aggregate data (heuristic 1 – Visibility of System Status).

Users have to scroll down past the map interface in order to see the “Jump To” links which provide an alternative method of drilling down to the state and county levels (heuristic 13 – Readability and Scannability).

¹⁹We have a more comprehensive report of our heuristic analysis available from the author on request.

Severity Level	Violations
Severity 1 (not bad)	1
Severity 2	7
Severity 3	7
Severity 4	10
Severity 5 (catastrophic)	1

Table 1: Summary of number of violations sorted by severity.

Heuristic	Violations
1. Visibility of system status	3
2. Match between the system and the real world	1
3. User control and freedom	4
4. Consistency and standards	2
5. Error prevention	3
6. Recognition rather than recall	1
7. Flexibility and efficiency of use	1
8. Aesthetic and minimalist design	1
9. Help users recognize, diagnose, and recover from errors	0
10. Help and documentation	1
11. Color Blindness	2
12. Latency	1
13. Readability, Scannability	5
14 Track State	1
Total	26

Table 2: Our list of heuristics with the number of violations present for each one. Note that the first ten heuristics are from Instone and the last four are from Tognazzini.

As noted above, the interface is slow. Each map takes several seconds to load and this latency increases for those maps that contain many data points (heuristic 12 – Latency).

4.2.2 Task 2

Task 2 involved navigating to the text of election incident 31153. This kind of task is particularly relevant for EPC legal and technical volunteer coordination on Election Day that might turn on a specific incident report or set of similar reports. EIRS doesn't have an "incident number" or "case number" field so we found two ways to get this information: users could either search for the text "31153" using the "Containing Text" field²⁰ or they could download the incidents in spreadsheet form²¹ and search using spreadsheet software.

In the analysis of this task, we found a major problem: The

²⁰See element 3 of Fig. 1

²¹See element 4 of Fig. 1

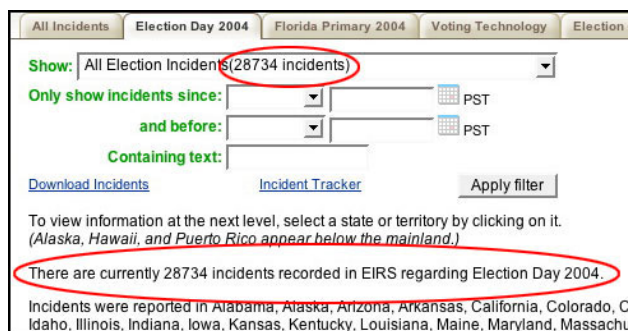


Figure 3: A screenshot of the goal of task 1. Note that the information is included in the "Show" menu as well as in sentence form in the interface narrative.

context of a search is lost after clicking on the map interface. If the user chooses to search in the "Containing Text" field, the map is redrawn and shows one state having an incident that matches. Unfortunately, if the user then clicks on the state shown by the map interface, their search context is lost and they are then presented with a map at the state level with all incidents from that state. The only way to get to the incident in question would be to search for this text at each level (nation, state and county).

As well, we noted that the drop-down "Show" menu wasn't alphabetized or in order of increasing or decreasing incident number. As such, it would be difficult for users to find information in the menu (heuristic 13 – Readability and Scannability). The tab "Florida Primary 2004" shows a full map of the United States and might confuse users who think that this is a geographical narrowing of incident data²² (heuristic 1 – Visibility of System Status). Making a new selection from the drop-down menu, without clicking the "apply filter" button automatically submits the selection while users have to click "Apply Filter" for date or text searching (heuristic 3 – User Control and Freedom).

4.2.3 Task 3

Task 3 involved finding county-specific incident information in Florida during the primary election (August 31, 2004) and then a different type of incident information in the general election of November.

The only remarkable heuristic violations we noted during this task were that the aggregate information about inci-

²²Incidents such as those reported by with absentee voters, for example, may find the voter calling in the incident from a state other than Florida

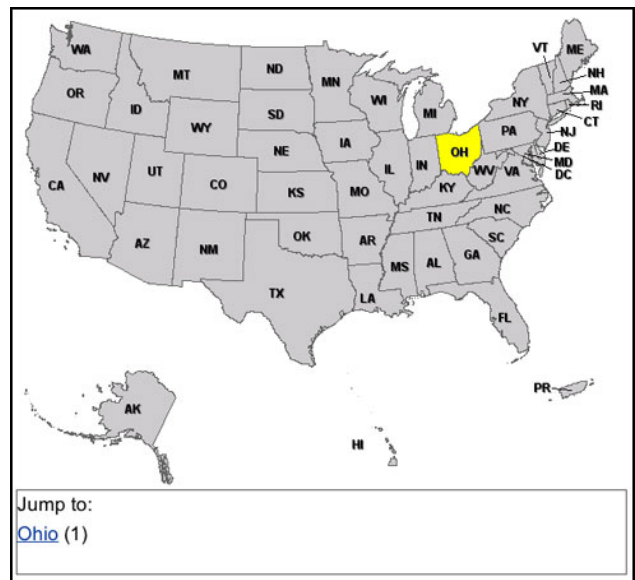


Figure 4: A screenshot of the map display after searching for the text "31153" in the "Containing Text" (in task 2). Note that the image of Ohio and the text below the map display are different (as discussed in § 4.3).

dent data at the county level is only available visually or via exploring the numbers in the drop-down menu (heuristic 13 – Readability and scannability) and that this information is initially hidden from view (heuristic 3 – User Control and Freedom).

4.2.4 Task 4

Task 4 was the most relevant to my own research [6] and analysis and involved ascertaining the type of voting technology used by Santa Clara County during November 2004 and then if there were indeed any incidents reported with this technology.

An immediate inconsistency we noted in this task is that the last two tabs of the EIRS interface take the user to completely different database and interface with its own look and feel and without the navigation features of the EIRS incident interface. This new part of the interface is the Verifier²³ tool which provides data on voting technology and information about election officials and local election procedures. This implicated our heuristics on consistency (heuristic 4) and user control and freedom (heuristic 3).

Further heuristics that we felt were compromised centered around the lack of explanation for the terminology of the Verifier interface (heuristic 10 – Help and Documentation), the lack of “tool tips” to aid navigation like in the EIRS incident interface (heuristic 6 – Recognition rather than recall) and that the Verifier tool makes use of green and red without secondary cues which could be problematic for the color blind (heuristic 11 – Color blindness).

4.3 Results: User evaluations

“You never know what your users are going to do.” –Irina Lib (SIMS student in INFOSYS 214, Spring 2005)

The user evaluations were by far the most illuminating of all three assessment methods that I employed. After learning so much from the heuristic evaluation of EIRS, I wondered if user studies using the same tasks would add much to the evaluation. I raised this as a question in INFOSYS 214 and Irina Lib provided an insightful answer that began with the quote above. In fact, I learned quite a bit more about the mechanics of how users would actually manage to complete the chosen tasks. At the same time, user actions and strategies did confirm a substantial amount of what we found through heuristic evaluation.

Not a single voter had much trouble completing the first task. However, some did take a while as they couldn’t easily find the number of reported incidents and one user started to add up the numbers in the “Show” menu to see if the total matched the number by the menu option for “All incidents”.

A very interesting result from the user evaluations involved with task 2 was that a few users noticed during the experiment that the links on the map are different from the text links below the map. That is, their search context would be maintained if they used the links below the map instead

²³<http://verifiedvoting.org/verifier/>

of clicking on the map²⁴. Three users noticed this behavior on their own and tried their best to compensate for this behavior by only using the text links.

In task 3, Some users were leery of the possible loss of search context that they experienced in task 2 and didn’t have a great deal of confidence that their search criteria would be maintained down to the county level and then again after changing elections (tabs) from the primary to the general election. This would essentially manifest as a loss of confidence in the interface and the users trying to anticipate failure by taking circuitous routes to complete their tasks.

In task 4, users had quite a bit of difficulty navigating back from the Verifier database to the election incident interface. Only one user found the link in the Verifier that took them back to the main EIRS interface. Further, most users expected “tool tips” but Verifier doesn’t provide them; users would either look at the link text for each county or they would use the text links under the map (if they scrolled down far enough to see these links).

5. RECOMMENDATIONS

Out of this multi-method usability assessment some natural recommendations for improving EIRS arise. Most of these recommendations are minor and can be incorporated into the tool easily. A few will take more intense deliberation, design and implementation amongst the EIRS team²⁵.

5.1 Improve inconsistencies

There are various inconsistencies in the behavior of the interface that could be improved.

- Search context is lost when users click through map, however this context is not lost when they click through the text links below the map. This is simply a matter of changing the tool to eliminate constructing different links for these two elements.
- Individual incidents cannot be called up by case number. There should be an easy way of inputting and incident and/or case number and getting access to the text of the incident.
- The “apply filter” button should not activate automatically when an incident type is selected from the “Show” menu. Users who wanted to narrow incidents by type *and* time/date were caught off-guard by the interface executing the “apply filter” function when an incident class was chosen²⁶.

²⁴Note that the image of Ohio (See Fig. 4) in task 2 is linked to the URL `<https://voteprotect.org/index.php?display=EIRMapState&state=Ohio&cat=ALL&tab=ALL>` while the text below the map is linked (essentially) to the URL `<https://voteprotect.org/index.php?display=EIRMapState&tab=ALL&cat=ALL&search=31153&go=Apply+filter&state=Ohio>`.

²⁵I am assisting the VVF and EIRS with a larger post-election analysis, the preliminary version of which is my masters paper for the MIMS degree at SIMS.

²⁶This also has implications for screen readers that non-sighted users may use when interacting with the interface. A good heuristic for this is if the menu function executes when the mouse button is released, the menu is not accessible.

- A large area where consistency could be improved is that between the EIRS database and the VVF Verifier database²⁷. If possible, search context should be maintained when moving between the Verifier and EIRS. A simple change that would do a lot for orienting users would be to have similar navigation features between the two, or to visually separate them in each interface. Either way, it should be easy for users to get back to the incident map from the Verifier and vice versa. The wonderful tool tips for counties and states in EIRS should also be employed in the Verifier. Finally, opening an “other maps” selection in Verifier opens a new window, which might be to indicate that they are separate databases; however, this action is not what happens with EIRS so may confuse users.

5.2 Improve efficiency and terminology

A few changes or additions to the EIRS interface and the terminology it uses could greatly improve its efficiency.

- There is a need aggregate data and canned reports at the national, state and local levels. Having this data at the user’s finger tips or pointers to such data would allow better communication of aggregate election incident information²⁸.
- EIRS could provide reasonably visible information on the state of the user interface and search context. One way to remedy this would be to fill in input fields once the tabs do a filter for the user or if the user clicks “Apply filter”. Also, the “Containing text” search content should be matched in the incident text using bold text or color highlights.
- The prominence for “reset”-like actions such as the “back to national map” button or a link that takes users back to the main interface could be improved.
- The list of counties below the map image could be better located. Positioning the list to the right of the map would obviate the need for users to scroll down past the map to see the links.
- As the map image appears to be the rate-limiting factor with the latency of page loads, it would be more efficient to turn the map interface off by default and allow users to turn on and off the drawing of maps with a button. It may also make sense to provide a completely separate server and interface for advanced users or to drastically improve the ability for the interface to draw maps with added servers or caching of data.
- Some input fields are unnamed and others have ambiguous names such as “Show”, “Show incidents since” or “Jump to:”. These names could be improved to give

²⁷The first three and last two tabs of the map interface respectively.

²⁸It might be wise to also give some sort of indicator of the confidence held in the aggregate statistics. As incidents are pruned, developed, combined, etc. this indicator could be updated so that users could properly qualify their statements about aggregate data.

hints at their content such as “Incident category”, “Beginning date” or “Counties:” (respectively)²⁹.

5.3 Rearrange visual elements

- Incidents should be displayed at the bottom of the page after a search is executed so that users do not have to drill down through maps to see the text of relevant incidents.
- For each input field in which the user can type, it is a good idea to include an example of what the interface expects the input to be like. If there are different ways of entering the input, the interface can provide a basic example and then provide a help link to more information.

5.4 Volunteer Training

Volunteers could use better training to improve classification of data, recording of incident details and so they can more efficiently deal with incident reporters. Training should not be just powerpoint slides but an easy-to-execute mini-curriculum of sorts with hands-on demonstrations of how to handle typical calls and how to enter in and retrieve data from the system. Tutorial material could be provided for people to walk through on their own time.

5.5 Other recommendations

Some other recommendations I have include:

- The EIRS comment form should be an integral part of the iterative design of the tool. Making sure that the comment submission tool works and can handle Election Day loading is an important part of capturing data about the usefulness of the tool.
- With the luxury of the length of time before future elections, regular user evaluation and incorporating principles of user-centered design should be a high priority. A survey of EPC volunteers and EIRS data users on and after Election day is a great place to start.

I have neglected to discuss at length two other important drivers of the need for EIRS saw some spotty support that could be improved – the desire to have aggregate data on-hand during Election Day and shortly thereafter for consumption by the media and the desire for having detailed descriptions of each incidents in the EIRS database. As of now, the first depends on having canned statistical reports designed to yield information commonly requested by the media and the second depends on EPC volunteers being adequately trained to properly classify incidents.

6. CONCLUSION

While the last section laid out some clear steps for improving EIRS and pointed out a few places where more concerted work is needed, I should point out that the organization, development and implementation of EIRS by VVF and CPSR

²⁹It is also wise to add <label> attributes to the pull-down menu so that non-sighted users using screen readers have access to information about each choice and making each choice.

within EPC was an overwhelming success with such constrained resources in terms of staff, money and time. Thousands of volunteers were able to use EIRS on Election Day to record, classify and analyze voting problems as they were reported in real time and the database has already been used in a number of preliminary analyses [2, 3, 6].

While many who work in the elections field, myself included, feel that election incident tracking and reporting is a function that the federal government should undertake, the relevant administrative bodies (EAC, FEC, DoJ) seem to have little interest in taking on this kind of responsibility³⁰. Faced with this reality, everyone involved with an interest in election incident reporting should work towards making EIRS the one-stop, highly-usable database for such information.

7. REFERENCES

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³⁰The one exception is § 3(c) of the current election reform bill sponsored by Representative Conyers (H.R. 533). For more, see: <http://thomas.loc.gov/cgi-bin/bdquery/z?d109:h.r.00533>.