



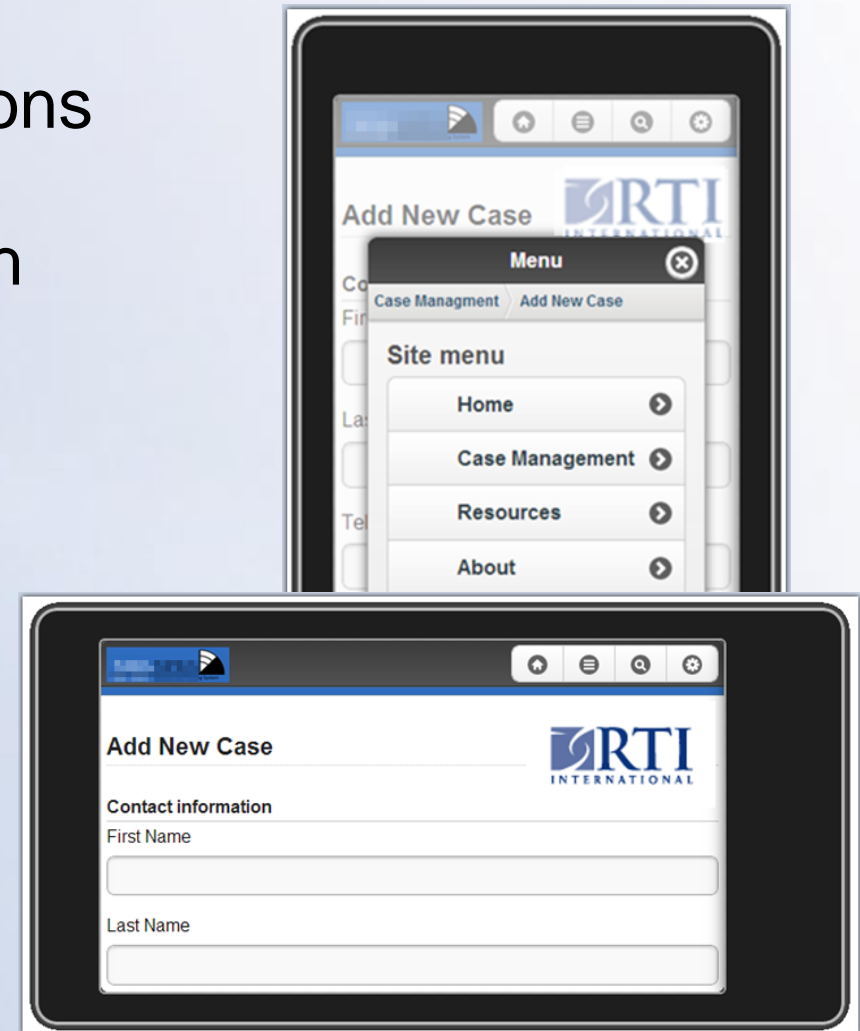
Developing Responsive Mobile Web Systems Using an Open Source Framework

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FedCASIC
Washington, DC
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Outline

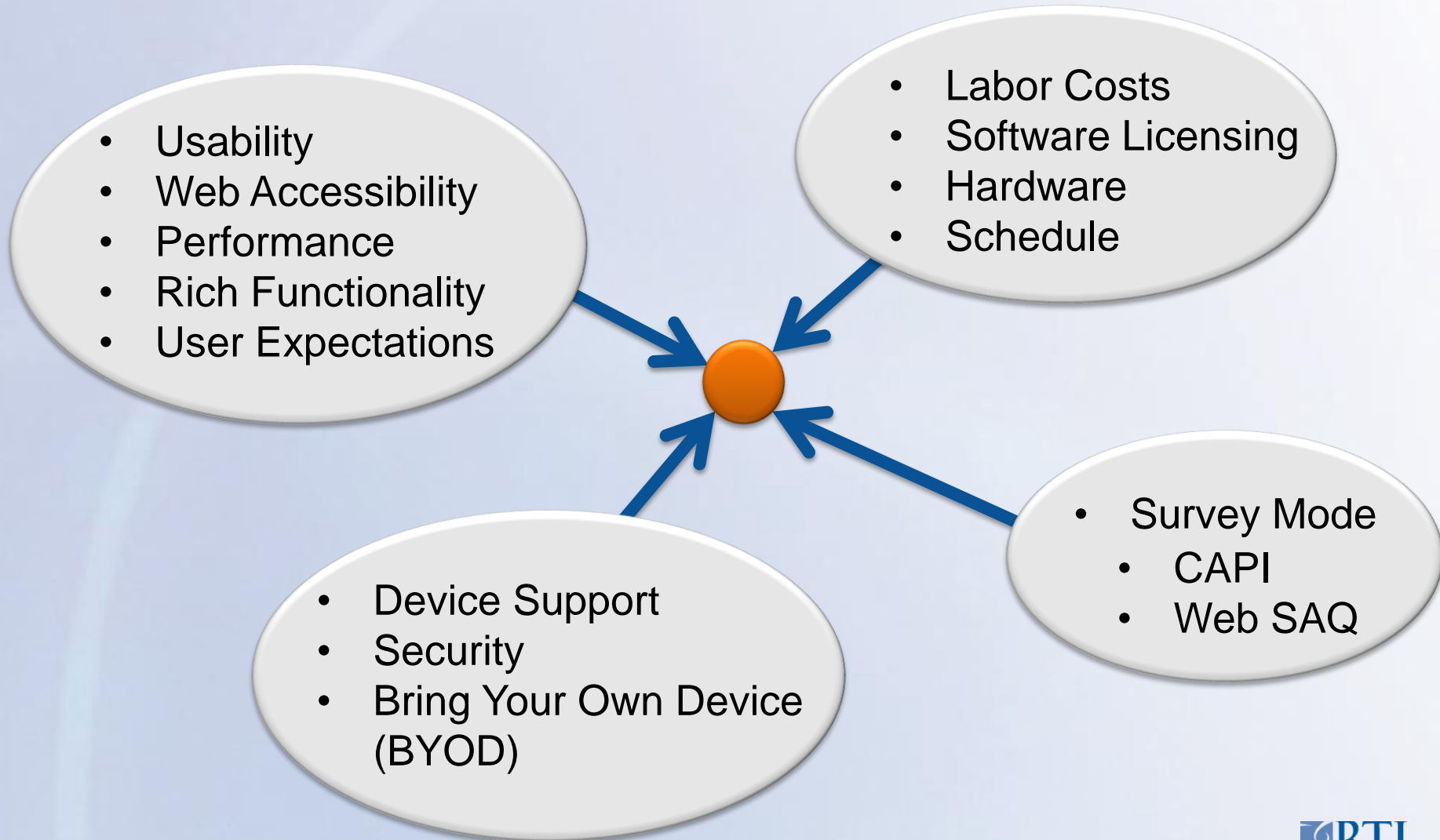
- Mobile Data Collection Options
- Driving Factors for Approach
- Project Requirements
- Open Source Framework
- Case Study
- Challenges



Mobile Data Collection Options

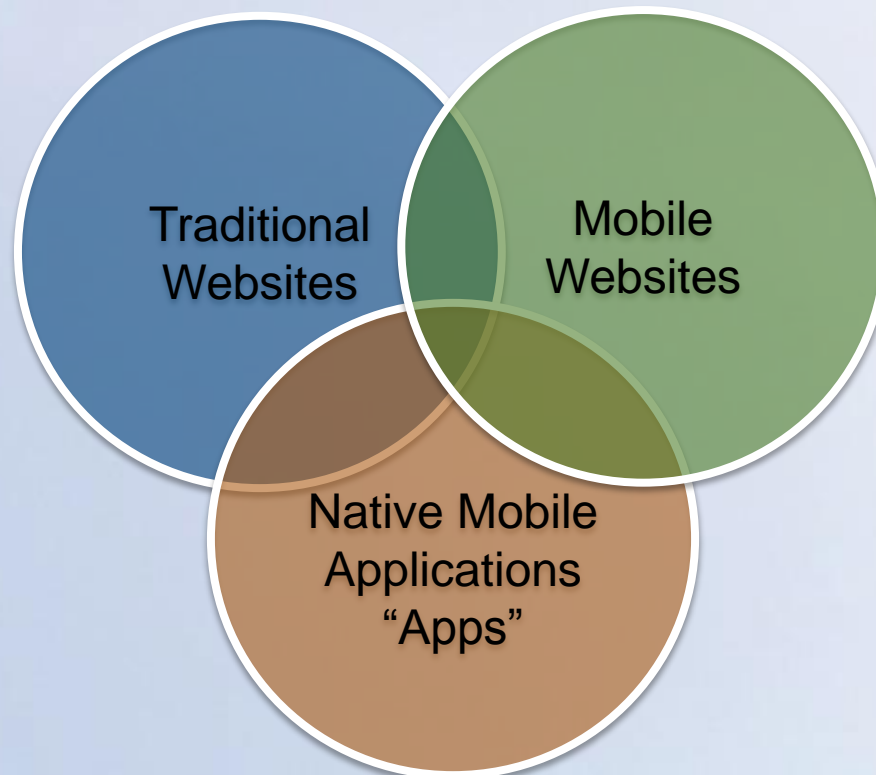
- Traditional Websites
 - Viewable on mobile devices but often times difficult to navigate menus, perform tasks and view content
- Native Mobile Applications – “Apps”
 - Written specifically for device platform (Android, iOS, Windows Phone) and is installed on the local device
- Mobile Websites
 - Optimized for mobile devices by incorporating responsive web designs that visually adapts to the device size

Driving Factors for Approach



Driving Factors for Approach

- Each option addresses some factors with some overlap
- No single best option for all scenarios
- Solution must match project and user needs



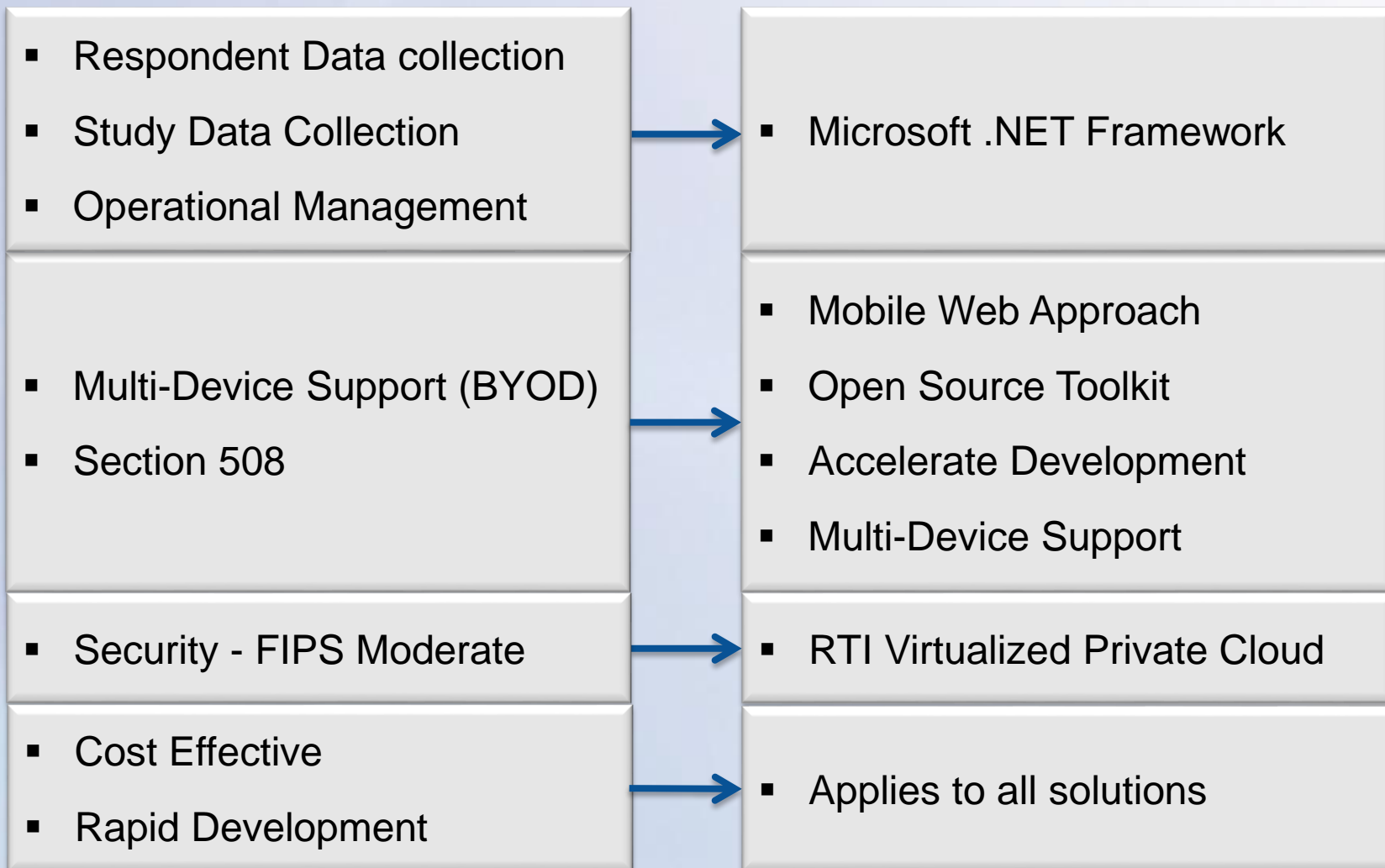
Case Study Project Requirements

- Cost Effective
- Rapid Development
- Respondent Data Collection
- Study Data Collection
- Operational Management
- Multi-Device Support (BYOD)
- Section 508
- FIPS Moderate Security

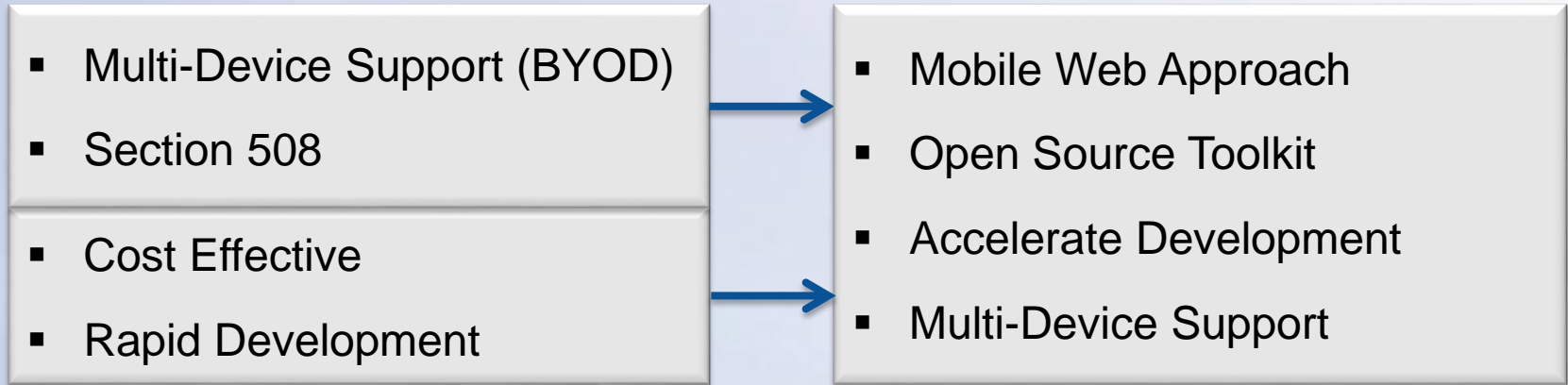


Project Requirements

Chosen Solution



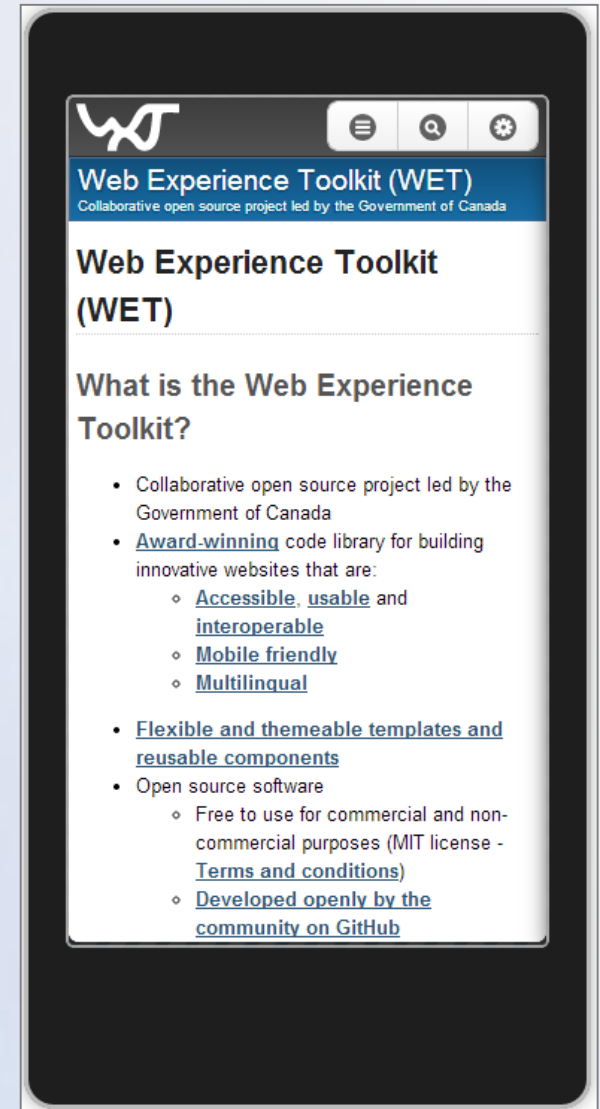
Mobile Web Solution Selection



- Open source and commercial options assessed
- Responsive Web Design options increasing
- Selection of Web Experience Toolkit solution

Web Experience Toolkit

- Led by Government of Canada
- Open source
- First-Class Mobile Device Support
- Community Development / Support
- Featured:
 - <http://government.github.com/>
 - <http://howto.gov>



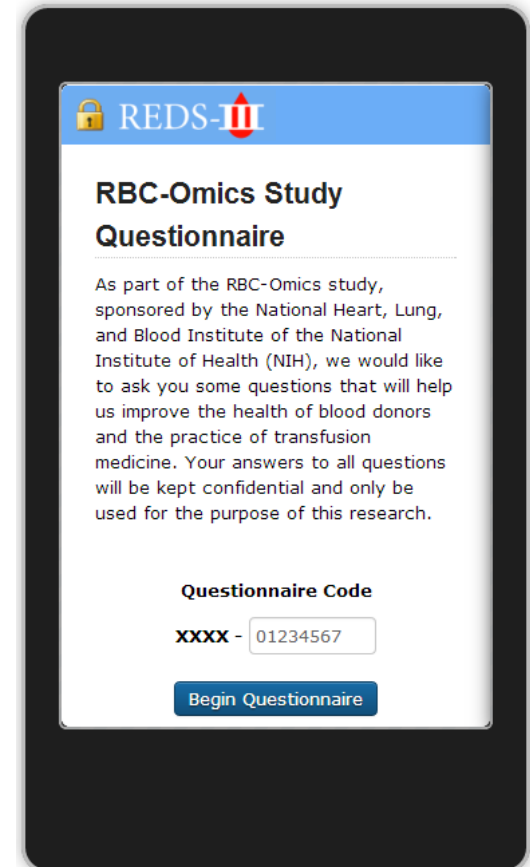
Web Experience Toolkit

- Built using latest web technologies
 - HTML5
 - CSS3
 - JavaScript
- Reusable
 - Themes
 - Plug-ins
- Web Accessibility
 - Conforms to WCAG 2.0 level AA
 - Leverages WAI-ARIA to further enhance web accessibility
 - Addresses many Section 508 provisions



Case Study: REDS-III

- Recipient Epidemiology and Donor Evaluation Study-III
 - National Heart, Lung, and Blood Institute (NHLBI)
 - National Institutes of Health (NIH)
- Data Coordinating Center
 - RTI International
- Numerous Data Collection Efforts
 - Electronic Medical Record Extraction
 - Clinical Study Management
 - Enrolled Subject Data Collection
 - Computer Assisted Personal Interviewing
 - Web-based Self Administered Questionnaires



The image shows a tablet displaying the REDS-III RBC-Omics Study Questionnaire. The interface has a blue header with the REDS-III logo and a lock icon. Below the header, the title "RBC-Omics Study Questionnaire" is displayed. The main text explains that the study is sponsored by the National Heart, Lung, and Blood Institute of the National Institutes of Health (NIH) and asks for questions to help improve blood donor health. A "Questionnaire Code" field shows "xxxx - 01234567". A blue button labeled "Begin Questionnaire" is at the bottom.

Case Study: REDS-III

REDS-III RBC-Omics Qx x

← → ↻ <https://redstest.org/...> ☆

SECTION D - Your Current Medications

20. Do you regularly or occasionally use any of the following antacids? Check all that apply.

- Axid (Nizatidine)
- Tagamet (Cimetidine)
- Nexium (Esomeprazole)
- Prevacid (Lansoprazole)
- Aciphex (Rabeprazole)
- Zantac (Ranitidine)
- Pepcid/Mylanta (Famotidine)
- Protonix (Pantoprazole)
- Prilosec (Omeprazole)
- Zegerid (Omeprazole)
- Do not use any

SECTION D - Your Current Medications

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Case Study: REDS-III

REDS-III Domestic Study

REDS-III

RBC-Omics

Enroll Donors | Manage Donors | Reports | Raw Data | Process Recalls

ENROLL DONOR - NEW STUDY PARTICIPANT INFORMATION

Subject ID: Required

Donor ID:

Study Site: -- Select One -- Required

Informed consent signed and on file: -- Select One -- Required

Consented to long term storage: -- Select One -- Required

Enrollment Date: Required

Enrollment DIN: Required

Sample Collection Date:

Known Hemocromatosis:

Gender: -- Select One -- Required

Ethnicity: -- Select One -- Required

Race:

- Native Hawaiian or Other Pacific Islander
- American Indian/Alaska Native
- Asian
- Black or African American
- White
- Unknown
- Not Collected
- Other

Study Group: --Automatically Determined--

REDS-III

RBC-Omics

ENROLL DONOR - NEW STUDY PARTICIPANT INFORMATION

Subject ID: Required

Donor ID:

Study Site: -- Select One -- Required

Informed consent signed and on file: -- Select One -- Required

Consented to long term storage: -- Select One -- Required

Enrollment Date: Required

Enrollment DIN: Required

Sample Collection Date:

Known Hemocromatosis:

Gender: -- Select One -- Required

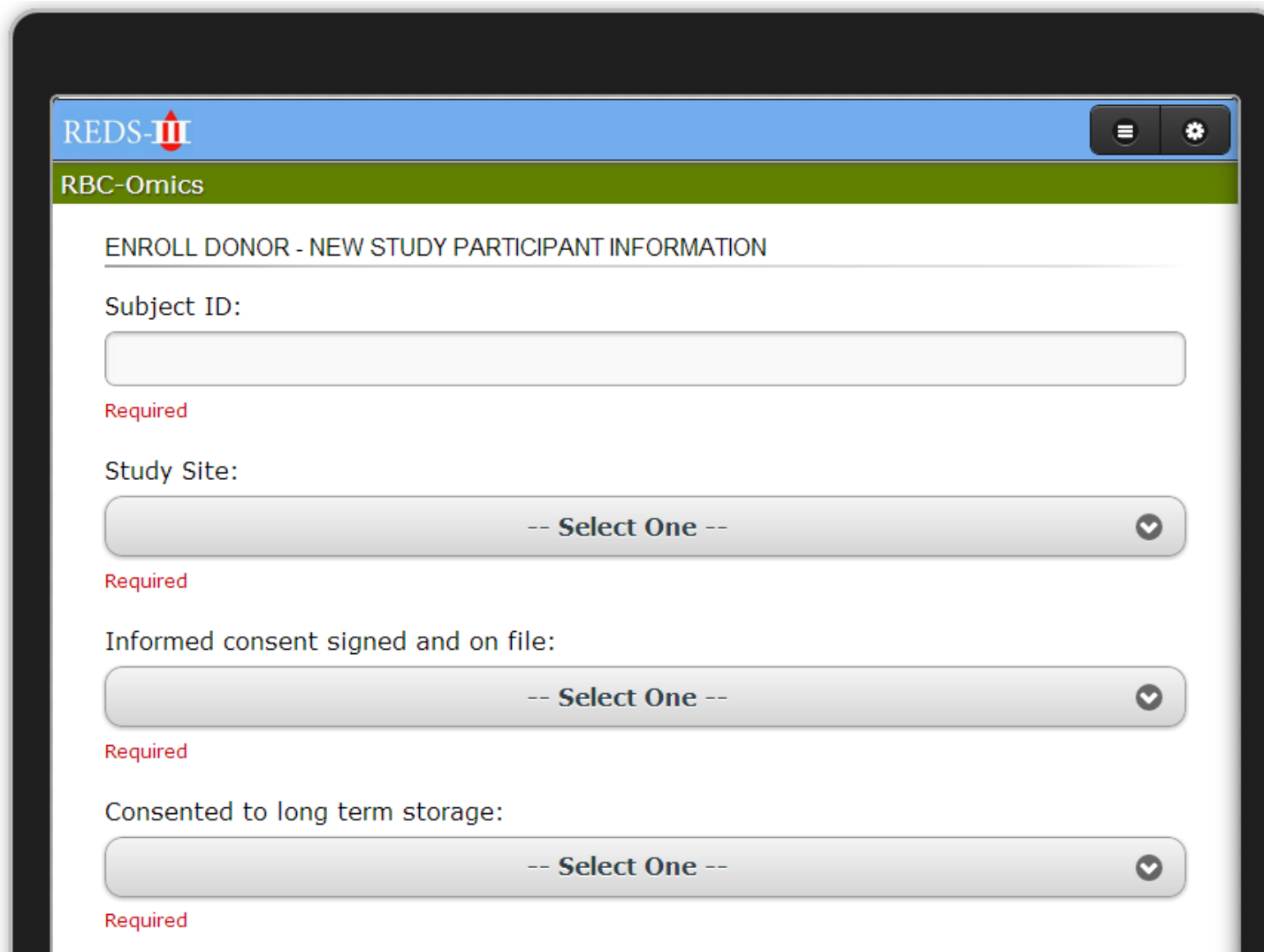
Ethnicity: -- Select One -- Required

Case Study: REDS-III

The screenshot shows a web browser window with the following elements:

- Browser tab: REDS-III Domestic Study
- Address bar: [Redacted URL]
- Header: REDS-III logo and navigation links (admin | Main Menu | Logout)
- Section: RBC-Omics
- Navigation: Enroll Donors | Manage Donors | Reports | Raw Data | Process Recalls
- Form Title: ENROLL DONOR - NEW STUDY PARTICIPANT INFORMATION
- Form Fields:
 - Subject ID: Required
 - Donor ID:
 - Study Site: -- Select One -- Required
 - Informed consent signed and on file: -- Select One -- Required
 - Consented to long term storage: -- Select One -- Required
 - Enrollment Date: Required
 - Enrollment DIN: Required
 - Sample Collection Date:

Case Study: REDS-III

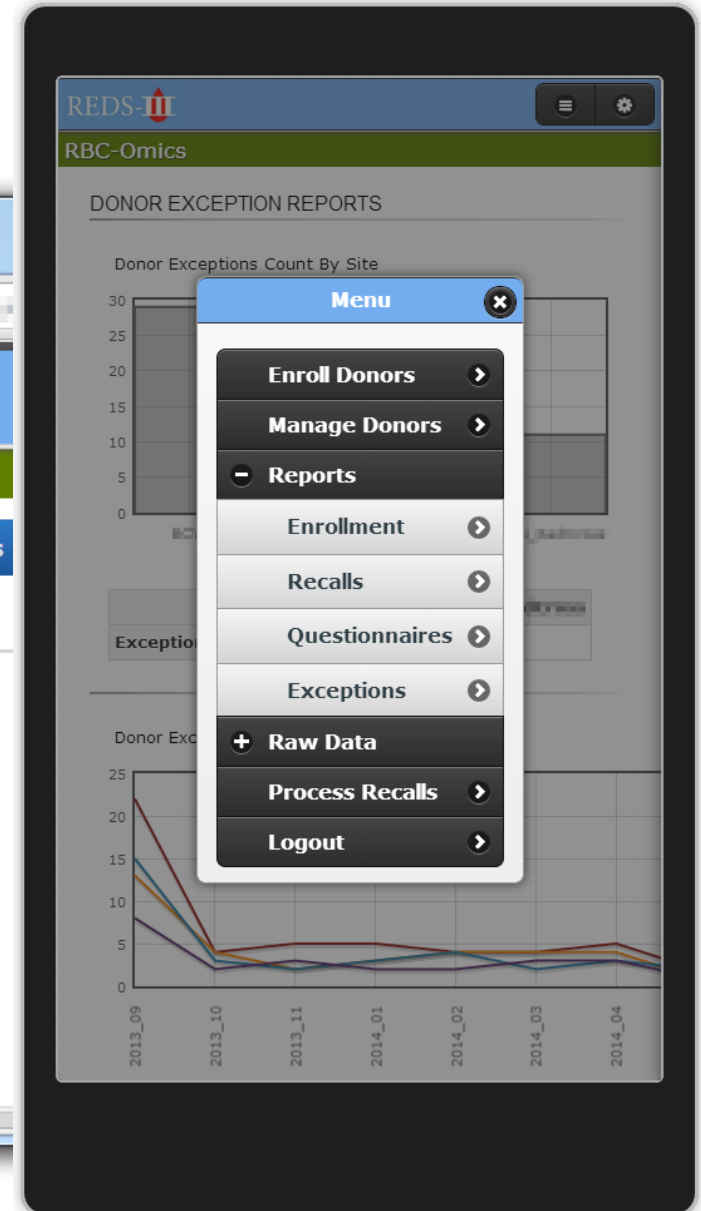
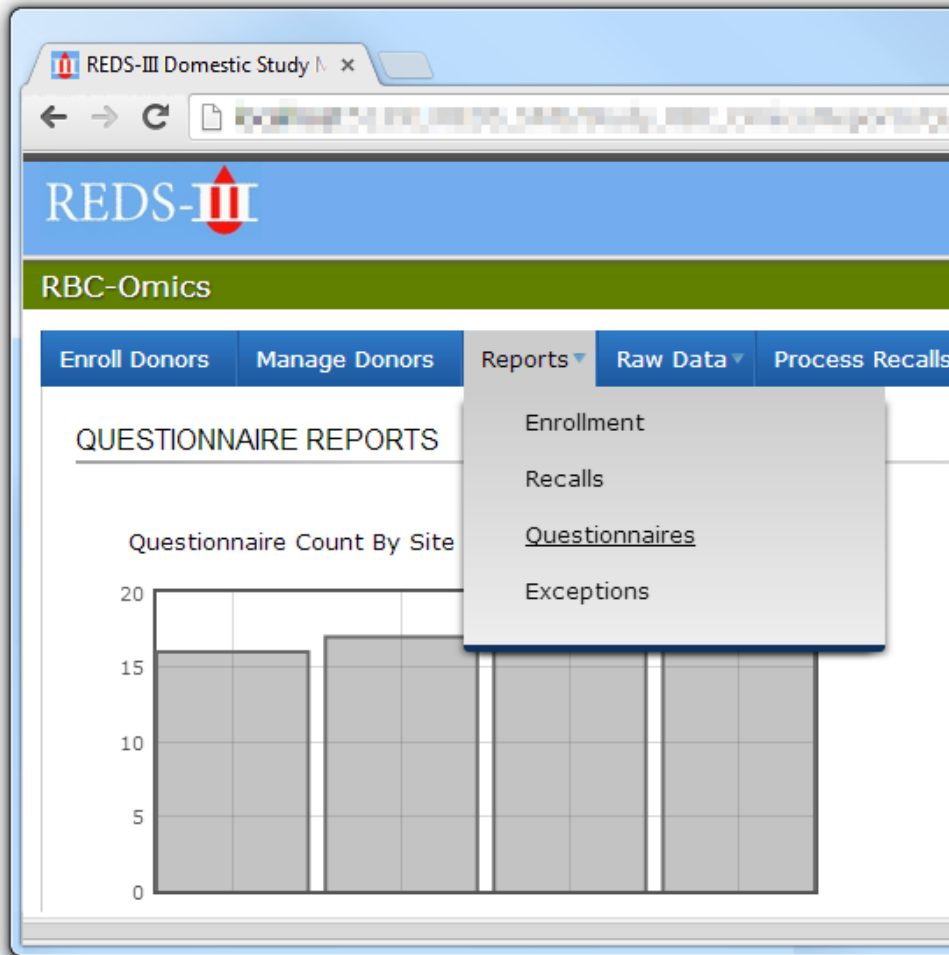


The screenshot shows a web application interface for REDS-III. At the top, there is a blue header with the REDS-III logo and a hamburger menu icon. Below this is a green bar with the text "RBC-Omics". The main content area is titled "ENROLL DONOR - NEW STUDY PARTICIPANT INFORMATION". It contains four required fields:

- Subject ID:** A text input field.
- Study Site:** A dropdown menu with the text "-- Select One --".
- Informed consent signed and on file:** A dropdown menu with the text "-- Select One --".
- Consented to long term storage:** A dropdown menu with the text "-- Select One --".

Each field is followed by the word "Required" in red text.

Case Study: REDS-III



Case Study: REDS-III

REDS-III Domestic Study

Recall Count By Group

▼ Recall Count By Group Table

Title	High Intensity	Hispanic	non-Hispanic Asian	non-Hispanic African American	non-Hispanic Caucasian / Other
Study Group	20	16	12	19	51

Recall Count By Group

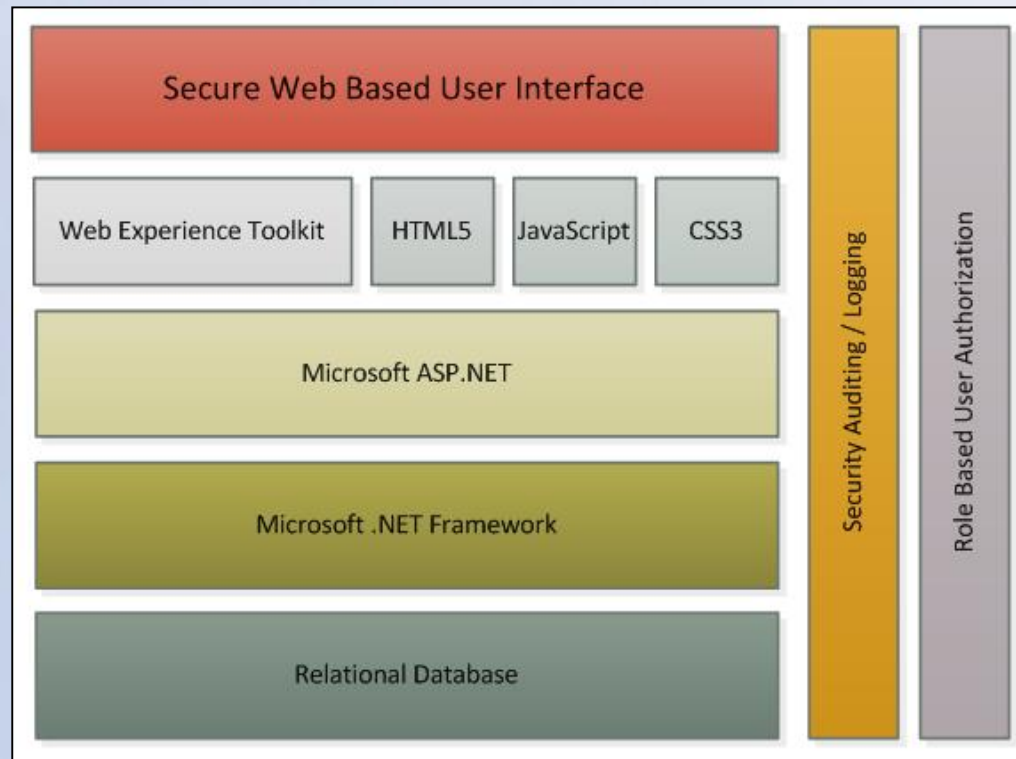
► Recall Count By Group Table

Recalled Subjects Pending

-- Select Site --

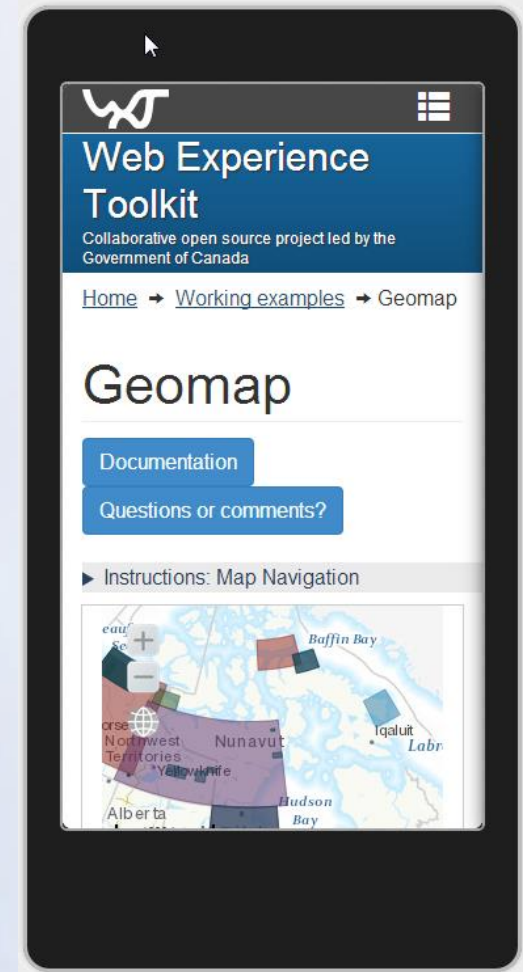
Challenges

- Legacy Browser Support
- Modern Browser Differences
- User Expectations
- Development Integration
- Toolkit Customizations
- Predictability of Change



Conclusion

- Success
 - Multi-study / multi-mode data collection
 - Positive end user experience
 - Flexible device support
- Web Experience Toolkit
 - <http://wet-boew.github.io/wet-boew>



More Information



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