Overview of Collection Application Testing at Statistics Canada

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Collection Systems and Infrastructure Division, Statistics Canada
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Outline

- Centralized quality assurance and testing for collection instruments
- QC process for CAI and web surveys
- STC partners in testing and quality control
- Issues, challenges, future directions
- Questions / discussion
Centralized QA and testing services

- Quality Assurance Section was created in 2008 in the Collection Systems and Infrastructure Division (CSID) with a mandate to provide centralized QA and testing services for all CAI and web collection instruments and other collection systems and tools developed by CSID
- Goal is to ensure developed applications meet client requirements
- Team currently comprises 12 people
Centralized QA and testing services

- Tests over 200 survey instruments per year for over 25 client divisions
- Provides services for social, business and agriculture surveys using CAI, web and multi-mode collection systems
- Uses manual and automated techniques
QA/testing process for CAI and web surveys

- Five main activities support application development:

Specifications review

- To ensure that specifications accurately capture user requirements and conform to all applicable standards
- All specifications are in two official languages
QA/testing process for CAI and web surveys

Block testing

- To ensure compliance of developed block to specifications
- Uses manual and automated techniques
- Automated testing (TestPartner) compares the developed block to the client specifications looking at text, field limits and many of the CAI application standards
QA/testing process for CAI and web surveys

Integrated testing

- Functional testing to ensure compliance of developed (integrated) application to specifications and standards
- Uses automated and manual techniques
- Automated testing tool simulates interviewer/respondent interaction
QA/testing process for CAI and web surveys

Acceptance testing

- Conducted by clients to ensure application meets requirements

End to end testing

- To ensure production readiness of collection application and infrastructure
- Conducted by various partners
Additional testing for web surveys

Accessibility testing

- Tests for compliance with the Common Look and Feel Standards for the Internet (CLF 2.0, a Canadian government-wide standard)
- Tests against Web Content Accessibility Guidelines (WCAG 1.0)
- WCAG 2.0 and CLF 3.0 coming soon
Additional testing for web surveys

Platform testing
• To ensure correct display and functionality on multiple browsers, screen resolutions and OSs

Usability testing
• To ensure web-based surveys are easy to use and understand

Security testing
• To check for common web application vulnerabilities
Tracking tool

- JIRA is used as issue/defect tracking tool
  - Organized by survey project
  - Tracks issues by survey component; e.g., CATI, electronic questionnaire, pre-contact, etc., and testing phase

- Benefits of JIRA:
  - Corporately supported software tool
  - Flexible, open, customizable
  - Information can be used to inform process improvement
Tracking tool (cont’d) – Example 1
### Tracking tool (cont’d) – Example 2

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<th>Raised In Versions (all)</th>
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Showing 9 of 9 statistics.
Filter: Consulting Services / services conseils
Issues and Challenges

......the usual suspects

- Getting complete specs in both official languages at beginning of development process
- Dealing with changes late in the process
- Many surveys in testing at the same time
- Testing schedules are the first to get squeezed when there are delays in development schedules, but collection dates rarely change!
Issues and Challenges

..... EQ and multi-mode

- Coordinating QA & testing activities for multi-mode (web, CAI, paper)
- Coordinating testing activities with multiple testing partners
- Survey instrument development & testing in parallel with new system development & testing
- Standards for web surveys are a work in progress
Future Directions

Improve change management process

- Current process will be expanded to cover all survey types and modes within a consolidated, formal change management process
- Will ensure that impacts to cost, schedules and deliverables are thoroughly reviewed, and that decisions are well documented and effectively communicated
- Will take into consideration risks and impacts on other collection application or system development projects
Future Directions

Improve change management (cont’d)

- Will engage collection partners in deciding what to change and when
- Will reduce (hopefully!) number of changes late in the process
- Requests for change will be processed and approved according to level of impact
- Process will be administered by a Change Control Secretariat
## Future Directions

### Improve change management (cont’d)

#### Levels of impact:

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<tr>
<th>Level 1 (low)</th>
<th>Approved, rejected or referred by survey collection manager</th>
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<tr>
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<td>No impact on other projects</td>
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<td>Change can be managed within existing schedule and budget</td>
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<th>Level 2 (medium)</th>
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<td>Minor impact within or across projects</td>
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<td>Minor scheduling and/or budget adjustments</td>
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<td>Major impact within or across projects</td>
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<td>Change may impact budget, timelines and allocation of resources across projects</td>
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Future Directions

Increase test automation

- Develop automated tests to measure compliance of business applications against capture and edit specs
- Research and develop automated tests to verify electronic questionnaires against specifications template
- Research and develop automated tests for end-to-end testing of web surveys; i.e., to test the connections between electronic questionnaire and electronic collection service components
Future Directions

Streamline testing services

- Currently testing for security, accessibility, etc., is done for each survey; goal is to test only when there are changes to systems (enhancements), infrastructure or in response to new regulatory requirements

- Longer term goal is to create a centralized corporate testing service
  - Must continue to be responsive to survey instrument development demands; i.e., very quick turn around for multiple surveys and phases of testing
Questions?

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