



Statistics
Canada

Statistique
Canada

Canada



Statistics Canada
www.statcan.gc.ca

Overview of Collection Application Testing at Statistics Canada

Janet Lefebvre, Chief, Quality Assurance Section

Collection Systems and Infrastructure Division, Statistics Canada

FedCASIC, Washington, D.C., March 2011



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

UES Consulting - Project Issue Tracker / Système de suivi des projets - Windows Internet Explorer

http://jira/secure/Dashboard.jspa#

UES Consulting - Project Issue Tracker / Système ...

JIRA Lefebvre, Janet - CSID/DSIC | Quick Search

Dashboards | Projects | Issues | Create Issue

Survey of Staffing 2...
STC Employee Opin...
UES: Head Office
UES Consulting
WES
All EQ UES

Projects
Consulting Services / services conseils (UESCON)

Issue Statistics
Statistics: Consulting Services / services conseils (Status)

Open	6	6%
In Progress	1	1%
Resolved	8	8%
Closed	79	83%
Pending	1	1%

Total Issues: 95

Issue Statistics
Statistics: Consulting Services / services conseils (Resolution)

Unresolved	8	8%
Fixed	72	76%
Won't Fix	2	2%
Duplicate	3	3%
Functions As Designed	7	7%
Cannot Reproduce	1	1%
Invalid	1	1%
Wish List	1	1%

Total Issues: 95

Issue Statistics
Statistics: Consulting Services / services conseils (Components)

No component	4	4%
--------------	---	----

Pie Chart: Consulting Services / services conseils

End-to-End Testing 5.1	19
Integrated Testing 2.1.0	9
No version	8
Acceptance Testing 4.2.6	5
Specifications Review 0.2.2	4
Integrated Testing 2.2.0	2
Acceptance Testing 4.3.7	1
Specifications Review 0.1.4	26
Acceptance Testing 4.1.0	21

Total Issues: 95 Statistic Type: Raised In Versions (all)

Pie Chart: Consulting Services / services conseils

Two Dimensional Filter Statistics: Consulting Services / services conseils

Raised In Versions (all)	Issue Type					T:
	Display	Functional	Other	Text		
No version	6	1	1	0	8	
End-to-End Testing 5.1	3	8	7	1	19	
Acceptance Testing 4.3.7	0	1	0	0	1	
Acceptance Testing 4.2.6	0	4	0	1	5	
Acceptance Testing 4.1.0	8	6	0	7	21	
Integrated Testing 2.2.0	0	2	0	0	2	
Integrated Testing 2.1.0	0	7	1	1	9	
Specifications Review 0.2.2	0	3	0	1	4	
Specifications Review 0.1.4	0	7	0	19	26	
Total Unique Issues:	17	39	9	30	95	

Local intranet | Protected Mode: Off | 100% | 2:19 PM



Tracking tool (cont'd) – Example 2

Two Dimensional Filter Statistics: Consulting Services / services conseils					
Raised In Versions (all)	Issue Type				
	Display	Functional	Other	Text	T:
No version	6	1	1	0	8
End-to-End Testing 5.1	3	8	7	1	19
Acceptance Testing 4.3.7	0	1	0	0	1
Acceptance Testing 4.2.6	0	4	0	1	5
Acceptance Testing 4.1.0	8	6	0	7	21
Integrated Testing 2.2.0	0	2	0	0	2
Integrated Testing 2.1.0	0	7	1	1	9
Specifications Review 0.2.2	0	3	0	1	4
Specifications Review 0.1.4	0	7	0	19	26
Total Unique Issues:	17	39	9	30	95

Showing 9 of 9 statistics. [Show less](#)

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:

Level 1 (low)	Approved, rejected or referred by survey collection manager
	No impact on other projects
	Change can be managed within existing schedule and budget
Level 2 (medium)	Approved, rejected or referred by Change Control Committee
	Minor impact within or across projects
	Minor scheduling and/or budget adjustments
Level 3 (high)	Approved or rejected by Change Control Board
	Major impact within or across projects
	Change may impact budget, timelines and allocation of resources across projects

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?

Janet Lefebvre
Chief, Quality Assurance Section
Collection Systems and Infrastructure Division
Statistics Canada
170 Tunney's Pasture Driveway
Ottawa, ON, K1A 0T6
Canada

Janet.Lefebvre@statcan.gc.ca

Telephone: 1-613-951-4987

Fax: 1- 613-951-4674