Web and multi mode surveys using free / open source tools

AAPOR Webinar
Thursday 17 February, 2022 – 1pm EST
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Quick introduction

- **Adam Zammit**
  - Computer programming background, worked with social science researchers for over 15 years
  - Developed open source CATI, paper form processing and text response classification software
  - Current Director of Operations for...
- **ACSPRI**
  - Australian not-for-profit organisation
  - Runs the equivalent of the ICPSR summer program
  - Small survey research centre running a survey similar to the GSS in a PAPI mode (along with others)

About this webinar

- What is free/open source software (FOSS), and why does it matter?
- Obtaining and using FOSS multi mode survey software
- Setting up our “base” questionnaire using LimeSurvey
- Producing and delivering the questionnaire in multiple modes
- Limitations of the tools
- I’ll show demos via videos to avoid any hiccups but can show some things “live” at question time if requested

What is free/open source software, and why does it matter?

FOSS

- **“Free” as in “Freedom”, but usually free of cost as well (sometimes not)**
- **The 4 freedoms**
  - Use
  - Share
  - Study
  - Improve

FOSS Advantages

- **Collaboration across institutions**
- **Software re-use**
- **No vendor lock in**
- **No artificial licensing barriers to adoption**

FOSS (potential) Disadvantages

- **Potential lack of vendor support (depending on product)**
- **May require more technical expertise to setup (this is less and less an issue these days)**

Why does FOSS matter in survey research?

- Potential cost savings
- Collaboration/teaching benefits
- No vendor lock in
- Replication
- Sovereignty

What software will we use and how do we obtain it?

Software to be demonstrated

- **LimeSurvey**
  - Web based questionnaire authoring and web survey tool
  - Includes queXML for producing paper scannable questionnaires
- **queXS**
  - Web based CATI
- **queXF**
  - Web based system for processing scanned paper forms
- **OfflineSurveys App (not FOSS, but Freeware with premium option)**
  - For offline CAPI, Android App

Web based software

- **Web based software**
  - Need to install software on a web accessible computer
  - Data is stored on that computer/server
  - The user interface to the software is using your web browser (not installing an “app”)
- **OfflineSurveys app is the exception**
  - An android app
  - Stores data on local device until uploaded

Obtaining the software

- **Manual installations**
  - Downloading published releases
  - Using Git/Github to obtain the latest release and make it easier to develop / contribute / modify the software
- **Docker based installation**
  - Works on a server/cloud or local computer for testing
- **Demonstration servers**
  - Running on server not under your control
  - OK for a quick test but you don’t have control over data
- **Hosting provider**
  - Most providers than can host “Wordpress” can also host this software
  - Some specialist providers may have better support

Git and Docker

- **Install Git for your computer**
  - Git (also FOSS) allows you to download and collaborate on software development
  - https://git-scm.com/downloads
- **Install Docker or Docker Desktop**
  - Docker (also FOSS) allows you to run software in “containers” separate to your operating system
  - Won’t interfere with other software but will allow you to rapidly test and develop
  - https://www.docker.com/get-started

Installing LimeSurvey using Git and Docker

- **Video:** **Demonstration video**
- **Open a command window**
- **Run:**
  - git clone https://github.com/adamzammit/limesurvey-docker
  - cd limesurvey-docker
  - git checkout lts
    - This is for the long term support edition
  - docker-compose pull limesurvey
  - docker-compose up -d
- **Open a browser and browse to:**
  - http://localhost:8082/admin

Installing queXS using Git and Docker

- **Video:** **Demonstration video**
- **Open a command window**
- **Run:**
  - git clone https://github.com/adamzammit/quexs-docker
  - cd quexs-docker
  - git checkout remotelime
    - This is for queXS version 2
  - docker-compose pull quexs
  - docker-compose up -d
- **Open a browser and browse to:**
  - http://localhost:8080/admin

Installing queXF using Git and Docker

- **Video:** Demonstration video
- **Open a command window**
- **Run:**
  - git clone https://github.com/adamzammit/quexf-docker
  - cd quexf-docker
  - docker-compose pull quexf
  - docker-compose up -d
- **Open a browser and browse to:**
  - http://localhost:8081/

Connecting queXS ↔ LimeSurvey

- **Video:** Demonstration video
- **LimeSurvey Global Settings:**
  - Security – set Iframe embedding to “Allow”
    - Allows for LimeSurvey to sit inside queXS for the telephone interviewer web interface
  - Interfaces – enable JSON-RPC
    - Allows for queXS to communicate with queXS
- **queXS**
  - Add questionnaire service
    - Set RPC URL to be the LimeSurvey Remote Control URL
    - Add username and password
    - Set Questionnaire entry URL to be LimeSurvey index URL (For interviewers to access)

Where do we start?

Creating a “base” questionnaire

- **Video:** Demonstration video
- **Setting up a questionnaire in LimeSurvey allows for running in web and CATI modes**
- **Export for paper and CAPI modes**
- **Text from previous questions can be inserted by using {QUESTIONCODE} notation**
- **A survey must be “Activated” to allow for data collection**
- **“Closed access mode” is required for CATI integration. Respondents will each have a unique entry code (token)**

How do we deliver the questionnaire in multiple modes?

queXS (CATI)

- **Video:** Demonstration video
- **A questionnaire needs to be created in queXS linking to the web LimeSurvey questionnaire**
  - Will add call/case management on top of the data collection component in LimeSurvey
- **Load in a sample file via CSV**
  - Requires at least a phone number column
  - Can infer timezones from phone number, state or post code
  - Choose limits for how many times sampled numbers should be called
- **Assign which interviewers you want to work on the project**
- **Ensure the scheduler is reloaded**
- **Telephone interviewer view**
  - Call the next available case
  - Make appointments
  - Set call outcomes
- **Reporting view for supervisors**
  - Future appointments
  - Outcome codes (AAPOR standard outcome based, of course)

Offline Surveys (CAPI) setup

- **Video:** **Demonstration video**
- **Need to clone a questionnaire in LimeSurvey to make available in CAPI mode**
- **Requirements for importing in to Offline Surveys Android App:**
  - Activated survey
  - Open access mode
  - No welcome screen
  - All questions on one page

Offline Surveys (CAPI) load and run

- **Video:** Demonstration video
- **Install Offline Surveys app via Google Play store**
- **Add a new survey to the app**
  - Use the URL of the survey as a participant
  - Needs LimeSurvey username and password for data sync
- **Can conduct the questionnaire offline**
- **Set up syncing to be automatic when online, or manual syncing**

Export to a paper form

- **Video:** **Demonstration video**
- **Use the LimeSurvey export to queXMLPDF function to export to PDF**
  - Can change font size / paper size / orientation at export stage
- **Save the ZIP file and extract it**
  - PDF file itself to print and distribute
  - Banding XML file that describes all elements on the form for digital processing later

Set up system for processing returned paper forms (queXF)

- **Video:** Demonstration video
- **Load in original PDF file and banding XML to queXF so it knows how to recognise the scanned forms**
- **Choose which operators you want to verify the forms**

Scan, upload and process returned forms

- **Video:** Demonstration video
- **Scan in returned forms as individual PDF files (greyscale or colour at 300 DPI)**
- **Upload the PDF files to queXF**
- **Set queXF to process the imported files**
- **As a verification operator, assign each next form for processing and confirm data entry / response selection is correct**
  - This can be done by multiple operators at a time
  - Response boxes are automatically selected but handwritten text manually entered
- **Export the data as a CSV file**

What can’t we do (yet)?

Some current limitations…

- **If questionnaire differs by mode, data needs to be manually merged**
- **Offline CAPI only works on Android devices (online can use any device)**
- **Multi-mode case tracking limited to web and CATI modes (separate system used for paper and CAPI modes currently)**

Where to from here?

What next...

- **Give it a try!**
- **Any bugs or improvements can be lodged as GitHub issues or pull requests**

References

- **FOSS: https://fsfe.org/freesoftware/freesoftware.en.html**
- **Git: https://git-scm.com/downloads**
- **Docker: https://www.docker.com/get-started**
- **LimeSurvey: https://www.limesurvey.org**
- **queXS: https://quexs.acspri.org.au**
- **queXF: https://quexf.acspri.org.au**
- **queXML: https://quexml.acspri.org.au**
- **Offline Surveys: https://www.offlinesurveys.com/**

Thank you – questions?

- **Please contact me if you need more information: adam@acspri.org.au**
- **Thank you!**