Exploring Options for Creating Digital Recordings of Telephone Interviews Conducted on Analogue Phone Systems

August Salick and Rob Schultz

UW Survey Center
University of Wisconsin Madison
awsalick@wisc.edu
rkschult@ssc.wisc.edu

Paper presented at the annual meetings of the International Field Directors and Technology Conference
May 20, 2014

© 2014. Materials may not be reproduced without permission of the author.
Why are Recordings Important?

- Quality Control
- Transcription
- Cognitive Batteries
- Recordings are the only deliverable data for some studies
Recording Software - Overview

- Challenges of Recording Software
- Solution: Sound eXchange
- Custom Implementation How-To
Recording Hardware - Overview

- Background of UWSC Recording Hardware
  - Analog vs VoIP

- Analog options considered

- Example recordings and post-call sound quality improvement
Challenges of Recording Software

- XP → Windows 7 transition
- Licensing costs
- Codec control
- Performance
- Automation
- Versatile for CATI and CAPI
Recording Solution: Sound eXchange (SoX)

- Open Source

- Supports Windows, Linux, MacOS X

- Low system resource usage

- Command line execution
  - Versatile across modes, survey platforms
  - Easier to implement changes in the field
Recording Solution: Sound eXchange (SoX)
Custom Implementation

• Scripting to start and stop
  • To start: Execute SoX with batch file parameter
    
    \texttt{sox -c 2 -d -C 64.01 c:\record\filename.mp3}
  
  • To stop: Execute Taskkill
    
    \texttt{taskkill /f /im sox.exe}

• Command line options
  • \texttt{-c} - # of channels
  • \texttt{-d} - use default recording device
  • \texttt{-C} - set compression bitrate
Custom Implementation

- MP3 encoding
  - Can include LAME dll files to enable on-the-fly encoding to mp3
  - Requires compiled Libmp3lame.dll
  - Significantly reduces transfer times from field machines

- Hiding execution
  - Monitoring interviewers for quality control
  - Preventing inadvertent shutdown
  - Freeware “quiet.exe” program
Background

- Increase in client demand for quality recordings
- Upgrade in software (Sox) opened up additional options
- Analog or VoIP
Analog or VoIP?

**Analog**
**Pros**
- Reliability
- Existing infrastructure
- Quality

**Cons**
- Cost
- Quality

**VoIP**
**Pros**
- Low cost
- Computer integration
- Wider array of recording options

**Cons**
- Not supported at UW
- Potential service outages
- Quality
- Latency
Analog phone recording options

- Telephone Recording Control

- THAT-2
  - Telephone Handset Audio Tap

- Broadcast Host
  - Desktop Digital Hybrid
Telephone Recording Control

To **Back** of Telephone

To Digital Recorder

**Play**  **Record**

Telephone Recording Control

From Telephone Jack In Wall
Pros and Cons of Telephone Recording Control

Pros

+ Simple to set up
+ Passive
+ Creates usable recordings for most purposes
+ Extremely low-cost option
+ $35 per unit, plus cost of recording option of choice (tape, digital)

Cons

- Recording files must be named and managed manually
- Equipment lacks durability
- Recordings are single channel
- R volume is often much quieter than INT
- No ability to boost R volume
THAT-2

THAT-2 SETUP

HANDSET

To Phone

Handset Line In

From Phone

TELEPHONE

Handset Type

A B C

(RED) (WHITE)

to PC

THAT-2
Pros and Cons of THAT-2

Advantages
+ Simple to set up and intuitive to use
+ Passive
+ Extreme durability
+ Creates passable recordings for most purposes
+ Relatively low-cost option
+ $225/unit; $365 total cost with supporting equipment

Disadvantages
- Single-channel recordings cannot be easily edited to boost volume of R
- R volume is routinely much quieter than INT
- No ability to boost R volume
Broadcast Host Diagram
Pros and Cons of Broadcast Host

Advantages

+ Separates R/INT sides of conversation into separate channels; ability to boost volume post-interview
+ Better volume control in call
  + Can boost both sides of conversation within limits
+ Better quality microphone

Disadvantages

− More complicated system
− Settings more susceptible to being incorrectly set by interviewers
− Requires special training and good understanding of equipment
− Relatively expensive
  − $495/unit; $825 with supporting equipment
One vs Two Channel Recording

- **Single Channel (Mono)**
  - Reduced quality due to crosstalk
  - Cannot easily edit volume of one side of conversation independent of the other

- **Two Channel (Stereo)**
  - Can boost volume of each channel individually
One channel example

THAT-2 Example
Two channel sound example

Broadcast Host Example
Lessons Learned -- Hardware

• Hardware
  • Depends heavily on existing infrastructure and desired future capabilities.
  • If the highest quality recordings are desired, the ability to make two channel recordings is highly recommended.

• UWSC currently uses a mix of THAT-2 and Broadcast Host equipment
• Transitioning incrementally to Broadcast Host units
Lessons Learned – Software

- Software
  - Selected Sound eXchange based on cost, codec support, performance, and automation
  - Implemented additional functionality – scripted start/stop, mp3 encoding, hidden execution
  - SoX’s basic functionality was simple to implement
  - Versatile enough to standardize software across multiple modes and platforms
Acknowledgements

Steve Coombs
Ken Croes
Dan Lawrence
Vicki Lien
Griselle Sanchez
Garrett Wartenweiler
Eric White
Download Locations

• Sox:
  • http://sourceforge.net/projects/sox/files/sox/

• LAME mp3:
  • http://www.rarewares.org/mp3-lame-libraries.php

• Quiet:
  • http://joeware.net/freetools/tools/quiet/index.htm
Thank You!

For copies of this presentation or more information, contact:

August Salick: awsalick@wisc.edu
Rob Schultz: rkschult@ssc.wisc.edu

Please visit us at:
www.uwsc.wisc.edu