Dynamic ACASI in the Field: Managing All the Pieces

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Introduction

While Blaise is an unusually powerful and versatile system, the successful execution of research studies usually requires considerably more than the programming of the Blaise application itself. In particular, a number of technical management processes may be needed in support of data collection and post-collection processing in complex, large-scale surveys. This paper examines the approaches and methods used to manage the complexity of a longitudinal Blaise field data collection involving a mix of CAPI and ACASI interviewing. The sources of complexity in this study included:

- The extensive use of audio-visual enabled computer assisted interviewing (ACASI) with touch screen laptops for three different types of interviews (18 and over, 12-17, and 8-12 years), and the associated need to manage the disparate elements.
- ACASI interviews in two languages (English and Spanish) in the written and sound presentation of questions, question response categories, the selection of advertisements to display or to hear, and help texts.
- The need for confidentiality both in the interview situation and in processing at home office.
- Processing for monthly updates of audiovisual and sound files in both languages that were presented to respondents.
- A daily update of information about the interviews in progress for the helpdesk and for quality control, including the ability to rerun an instrument at the helpdesk to ascertain its current status for assisting interviewers with questions.
- Regular updates of SAS-compatible datasets for statistical analysis and monitoring purposes.
- Longitudinal refielding of cases with appropriate data in subsequent waves of interviewing.

The processes described in this paper were employed for the National Survey of Parents and Youth (NSPY) conducted as part of the Evaluation of the National Youth Anti-Drug Media Campaign by the National Institute on Drug Abuse (NIDA). The sections below discuss the instrumentation components, home office processing, and the management systems developed to support the needs of dynamic ACASI projects.

Blaise, ACASI and Field Management Components

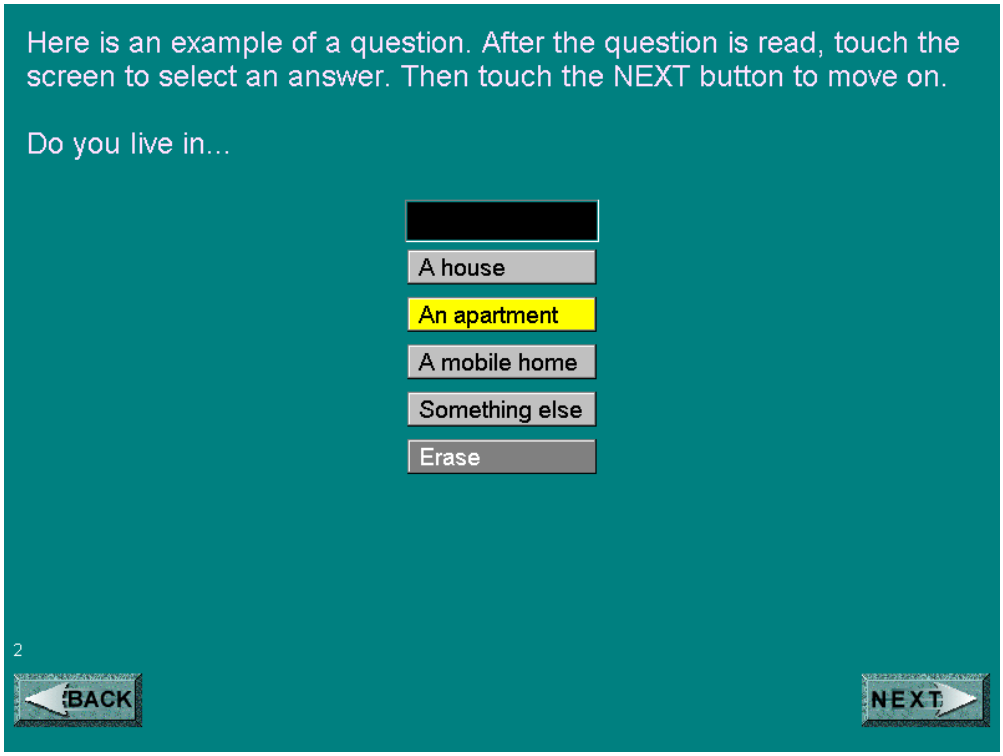
Questionnaires for NSPY were administered in-person in the homes of respondents. Since NSPY was designed to collect sensitive data about drug usage and awareness in the sample population, a certificate of confidentiality was given to each respondent household from the U. S.

Department of Health and Human Services to assure respondents of confidentiality in the reporting of data.

During the course of the interview, the questionnaire screened respondents to determine eligibility and then selected one or two youths from each eligible household and one or two parents, depending upon information provided by respondents, to complete the full interview. The CAPI questionnaires were programmed in Blaise for the CAPI interviewer-administered portions and in Visual Blaise for the audio-visual self-administered ACASI portions.

The survey instruments represented a complex design and data model. The requirement to accommodate both CAPI and ACASI modes for data collection further increased the complexity of the instruments. It was necessary to support Blaise 4.1 and Visual Blaise environments in differing sequences to allow for mixed mode interviewing from CAPI to ACASI. Also, because of the CAPI program's random sampling algorithms to select respondents for the confidential ACASI interviews, there were possible multiple, confidential ACASI interviews with different individuals. It often required multiple visits to the households to complete the ACASI portions with the selected respondent.

Specific sections of the interview that asked sensitive questions and response categories were administered in ACASI mode. For these sections, respondents (parents and youths) used headphones to hear the questions and responses displayed on the screen and used the touch screen to select their response from the answer categories provided. The figure that follows shows an example ACASI screen programmed in Visual Blaise.



This screen is a sample from the tutorial used to instruct respondents on completing the ACASI portions of the interview. The screen displays question text and responses. The respondent would hear a voice reading the question text and responses through the headphones provided. The respondent would select their answer to the question by touching the button for their response choice. An erase button provided the capability for the respondent to erase a response and select a new answer before proceeding to the next screen.

The questionnaires were administered either in English or in Spanish depending on the language requirements of the respondent households. After the text for the questions was developed, the audio files were recorded at a professional recording studio. When question text was changed, the audio files had to be re-recorded in both English and Spanish. Individual .WAV files were recorded for the ACASI instructions to respondents, question text and response categories.

The programming design of these instruments ensured confidentiality of the collected data in both the CAPI and ACASI portions of the survey through a system of "gates." Gates are programmed instructions within the instrument that prevent the back up and review of data to previous questions or sections in the instrument. These programmed gates were located at strategic points within instrument. Once the course of the interview passed a gate, it was not possible to return to an earlier portion of the interview to review questions and collected data, even if the interview had not ended. If the respondent stopped the interview before completing the ACASI portion, the gate securing the data would not be passed, and the data would not be saved.

The interviewers used an Interviewer Management System (IMS) on the laptops to track and view the status of their assignments and enter record of calls information. The Supervisor Management System (SMS) was a web-based application running on a home office server with an Oracle database. When interviewers transmitted to home office, information was exchanged with the SMS regarding case status and assignments.

Home Office Processing

Field procedures and home office processing requirements were defined to ensure the appropriate administration and management of the study in the field and appropriate processing of information after data collection.

The Media Campaign was an ongoing program using mass media venues to run advertisements and other messages to communicate the anti-drug abuse message. These advertisements and messages were run in film, radio, television and print. The Media Campaign used different advertisements and messages based on a schedule for each type of media, and these advertisements changed at different time intervals, depending on the type of media.

Since a goal of NSPY was measuring youth and parent exposure to current Media Campaign messages and tracking the effects of advertising changes, frequent changes were made to the media files. Management tools were needed to support the following operational and analytical tasks:

- The Help Desk had to monitor the progress of interviews on a daily basis for quality control purposes and provide resolutions for identified problems,
- Monthly updates of sound, video, and graphics media files had to be tracked and transmitted to field staff for electronic updating of instruments on field laptops to keep media presentations in the instrument current for data collection, and
- Regular updates of SAS-compatible files were needed for statistical analysis.

Management Tools

Two management tools were developed to meet the needs of the project. A Records Management Tool was developed to automate structural data manipulation at home office; and the Aladin Management Tool was created to provide case level information to the Help Desk, programmers, and data editors.

Records Management Tool

Help Desk and quality control staff required up-to-date information about the status of cases and interviews in order to monitor progress in the field. To meet this requirement, new zip files were transmitted from the field on a daily basis. These files were posted to secure database for processing. The information was then moved to a public database once the identifying information was suppressed.

The Records Management Tool was developed in Maniplus and Manipula to automate the process of managing cases at home office and resolving problems related to Case IDs and records. The Records Management Tool provided access to three Blaise databases to ensure data integrity. The databases included:

- Private Database containing all data received from the field,
- Public Database providing data items needed for most help desk and quality control investigations, and
- Edit Database containing updates and edits posted at home office.

Structural updates to the databases were automated by the Records Management Tool to minimize errors. For example, if the interviewer completed an interview using an incorrect CaseID, it was necessary to move the CAPI and ACASI data to the correct ID and re-initialize the original ID.

Key functionality included:

- Delete Records Function, which allowed for the deletion of a record from any or all of the databases;

- Insert Records Function, which allowed for the insertion of a record from any or all of the databases;
- Extract Address Information Function, which allowed for the extraction of individual or household address information;
- Browse Function, which allowed for browsing of all databases;
- Swap Data Function, which allowed for the swapping of records in any or all databases between IDs; and
- Help Function

Manipula extracts were run weekly on the databases to convert the Blaise files to SAS files for further analysis and QC activities at home office.

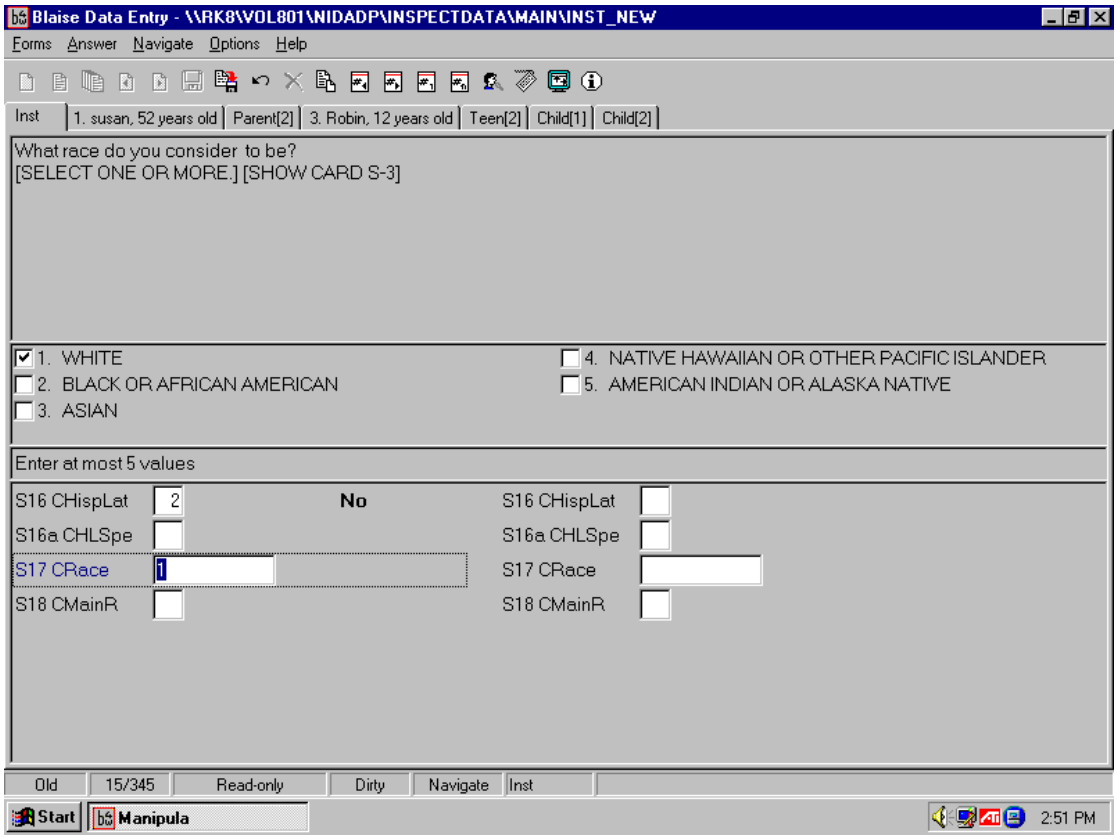
Aladin Management System

The Aladin Management System (an inverted acronym for "NIDA Live Access") provides an up-to-date controlled environment for central access of NIDA databases and programs. The system was developed in Maniplus and calls Winbatch, Access, HTML, Excel, and Word executables and documents. The system is password-protected to ensure that only authorized staff can access NIDA databases and programs. Aladin provides system management functions to set file properties that protect against the accidental execution of programs and deletion of data.

The Aladin Management System supported multiple home office processing functions including:

- View current wave database,
- Test programs,
- Developer environment, and
- Data editing.

View Current Wave Database: Help Desk staff and others monitored the status of cases and interviewer transmissions and assisted field staff who encountered problems using the capability to view the current database using the Help Desk Viewer. This viewer calls the Blaise DEP running under a Maniplus shell as shown below. The Viewer enabled project staff to review the key fields in the current wave of cases. From the Viewer staff could search for a specific case, run the Blaise DEP, view the audit trail, browse the database, or compare case status information in Oracle and Blaise.

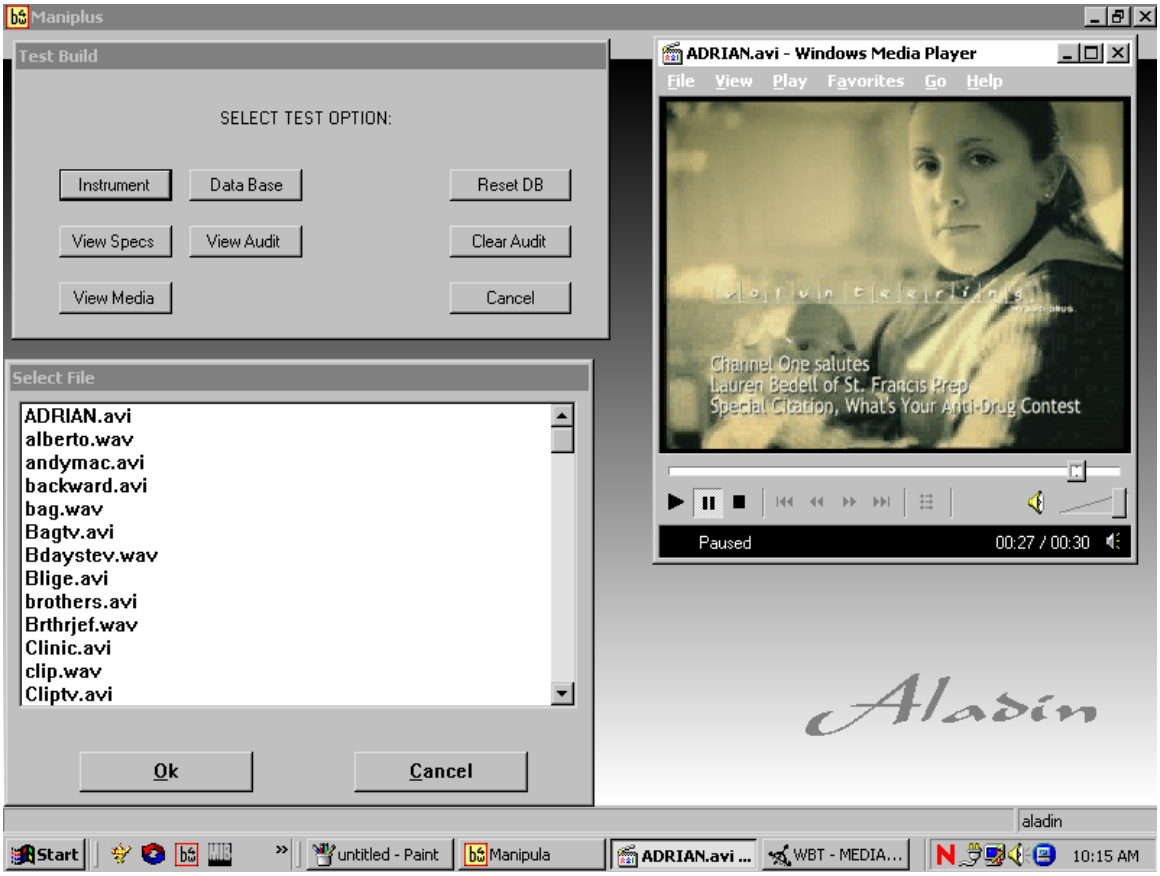


For example, Help Desk staff could search for a specific case by ID and then execute the Blaise DEP for that case. The home office staff could see the specific responses entered by the interviewer even if the case was only partially completed. Since the media presentations were determined by sampling algorithms executed at the time of the interview, this was used to verify the sampling program and determine which ad was played. By using the view audit trail capability, it was possible to see the combined audit trail for the CAPI and ACASI portions of the interview and determine if the interviewer or respondent had particular difficulties.

The browse database capability provided access to the ~.BD files. Home office staff could access the Blaise structure browser to select data fields for viewing. The Oracle/Blaise compare function was used to view case status data from the IMS, SMS, and Blaise interview. Data from the IMS and SMS were stored in Oracle, and the interview data were stored in Blaise. This management function used Microsoft® Access® and required the import of files from the secure Oracle server and text files created by Manipula from the public database.

Test Programs: The Test function enabled developers to perform instrument and database testing, review audit trails created during testing, and review instrument specifications. Aladin's Test function played a key role in ensuring the accurate testing for the monthly updates of the multi-media files (sound, video, and graphics) required to reflect current advertising in the media. The test function enabled developers to view all media files required for an update. The video .AVI and sound .WAV files could be viewed separately through the Windows Media

Player. The instrument had over 3,000 English and Spanish .WAV files to support the CAPI instrument, and over 150 video clips .AVI and .WAV sound clips from radio ads to track and manage.



Developer Environment: This aspect of the system was for systems programmers to refresh the databases and files supporting the system. Batch programs were executed on a daily basis to capture up-to-date information from Oracle containing SMS and IMS information, the Blaise database, and audit trails. Source Integrity was used to manage current versions of the systems code.

Data Editing: During the data collection period, sometimes a help desk report would require that case data already sent from the field to the home office be examined and modified. Once the case was examined through the Blaise DEP or the audit trail viewer and required data changes were identified, the data editing function permitted updates to the database. If appropriate, the updated cases were sent back to the field to complete. In other instances the cases were considered final and ready for analytical processing. Data updates introduced by the data editing function were also captured in the audit trail and indicated as changes made by home office. The system handled re-encryption of the data files as appropriate.

Conclusions

The NIDA study had complex requirements in instrument design, data collection, and home office processing. These project complexities required a systems approach that incorporated diverse elements: Blaise, Manipula, Maniplus, Access, Oracle, and other programs and utilities.

The Blaise program provided the basic platform for the NSPY CAPI instrument, and Visual Blaise enabled the execution of the ACASI portions of these instruments. Additional utilities, like the Record Management Tool and the Aladin Management System provided standard interfaces and controlled environments at the home office for managing development tasks, field monitoring, quality control tasks, data management, and other home office processing tasks. By implementing a controlled environment through these methods and approaches, the project ensured effective data handling, secure data repositories, and standardized methods of development and testing.