

Developing the On-line Milk Production Survey using Blaise IS

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1. Introduction

The Central Statistics Office of Ireland decided as part of its strategic plan to initiate a project to exploit the potential of data capture over the Internet using Blaise IS.

As this was a first for both the business area and the Blaise development team in terms of using Blaise IS, it was decided that we would proceed with a relatively short form and a sub-sample of the usual respondents. We decided to limit the number of respondents due to the constraints associated with the version of Blaise IS we were using. Even with the issues associated with the version of Blaise IS we felt the experience gained in terms of the development process and feedback from respondents in completing the form would be of great benefit to us in future similar projects and would be worth the initial effort.

The survey selected was the Milk Production survey which was scheduled for live release using Blaise IS in November 2003. Previously this had been a paper-based survey which meant that we would have to develop a new Blaise instrument.

2. Approach to overall management of survey

We decided to develop a Welcome page, which we would certify as a secure site and create hypertext links within this page to the on-line Blaise instrument. This allowed us to add new hypertext links for other surveys.

This Welcome page contains some background information as well as advice and technical assistance on completing the Blaise instrument(s).

We opted for the interview-based approach over the form-based approach in this case primarily because of the level of routing involved.

We also decided to use the same Blaise instrument for a number of reference periods of the survey thus avoiding development overheads associated with each new reference period. All potential respondents were informed by post of the new data collection method, the URL to log on to and their own unique PIN.

3. Development process

We needed to investigate Blaise IS in terms of translating a standard Blaise instrument into an application that somebody who is not familiar with the concept of routing, error handling, etc would be comfortable with. Up to now all Blaise interviews had been carried out by trained CSO interviewers. This new initiative would involve people who would not be familiar with the concept of automatic routing i.e. questions appearing and disappearing depending on the responses given or standard Blaise errors.

Using the sample Fears instruments and the various Blaise IS options we created several different instruments. We also began combining changes in the modelib and Dep menu Manager with the samples provided.

Initially we created nine separate prototypes in total, which we then presented to the business area. We started with the defaults, changing colour, text screen layout adding the CSO logo and contact information.

Once we had agreed on a general approach we began to develop a draft version of the live instrument.

As the live instrument involved a good deal of routing, we needed to ensure that the instrument was as user friendly as possible.

Certain key areas were identified which we felt would determine if the users would find the instrument easy to use.

These areas were –

3.1. Layout

- Very early on we abandoned the traditional Blaise screen (2 parts) and opted for a paper-based look. We felt that the idea of having two parts to the screen would not suit people who would not have seen this style before.
- As each question response involves the server validating the answer, the instrument could prove time consuming to complete, even for a short return. We therefore needed to create a instrument that was capable of being completed quickly in the event of a “nil” return or where the amount of information being returned involved only one section of the instrument.
- We were conscious that the types of hardware and software used by respondents would vary significantly. Because of this we needed to ensure that question text, font size, colour and insertion of page breaks were designed so that the instrument would be readable across all types of set-ups.

3.2. Navigation

- Navigating backwards proved to be problematic due to automatic page breaks which required a different approach in order to bypass.
- We also needed to decide whether to use scroll bars (effective within a page) or not.
- We felt the inclusion of a progress bar on the top of the instrument would be helpful for the respondent however we needed to ensure that it was constantly visible and that it did not scroll up.
- The instrument was eventually designed as one long page with the option of using either the mouse and scroll bar or the next and previous buttons to navigate forwards or backwards.
- We decided not to include any menu options.

3.3. Validation

- We needed to ensure that any validation and associated messages were intuitive.
- We decided against using hard errors as we felt that the option presented could lead to confusion (goto, suppress).
- The general consensus was to keep the instrument as simple as possible with the minimum number of options available but still ensuring an adequate level of validation and routing.
- The approach we took to ensuring that the respondents’ details were correct in terms of their ID and reference period was to use a pre filled database that we included in the package. We created a partially completed database that contained the PIN and reference periods for each respondent for a period covering 3 years. This information represented the key for each record and comprised of the respondent’s unique ID and the reference period they were responding to. If the record does not exist on the database the respondent is not allowed to carry on. We selected the option not to allow the creation of new records on the database.
- If the respondent attempts to complete a previously completed return, they are flagged that a return has already been made for the period concerned and asks them to confirm that they wish to continue. In the event a respondent selects a reference period in the future, a message is displayed informing the respondent of the error. This check utilises the current system date.

Every time a record is submitted for a reference period, a counter is incremented to record the number of times a return is completed by a respondent for that reference period. This identifies the return as an amendment to an already completed return in the business area.

We can interrogate the database to find out how many returns have been made for a particular reference period and if required, identify the amendments that have been submitted for previously submitted returns.

A summary question was included at the end of the instrument that reminds the user of the responses they are about to submit and provides a final opportunity to make any amendment if necessary.

4. Using Blaise IS

The Workshop, Package Builder, Server Manager are quite easy to use and are intuitive. We found that by experimenting with various layouts, it was easy to become familiar with the options available.

4.1. Unforeseen issues

Initially, we used the same virtual directory structure for different instruments. This in itself did not cause a problem. We think a problem occurred when we attempted to stop and remove one of the instruments from the survey manager. As it shared the same virtual directory as other instruments it caused the Server Manager to fall over. At one stage we needed to uninstall Blaise IS and IIS and re-install them both before the problem was rectified.

As the version of Blaise IS being used did not facilitate concurrent access, we needed to ensure that no more than one respondent was connected at any one time. We did this by developing a VBScript program which first checked to see if a .-lk file existed before allowing a user to connect to the interactive form. If the file existed the respondent was advised to try logging on later. Although a regressive step in terms of completing forms on line, we felt that it would not be a major issue as the number of respondents was small and the number of instances where somebody would be locked out would not be that frequent.

We did not initially envisage having to amend the receipt and error pages. Although the changes were small, they still required some understanding of HTML.

4.2. Amendments to default settings

A number of changes were required in the modelib to create the page layout we were looking for, a continuous page with a constant header and footer. These included the following amendments to the default grid of the layout interviewing section.

Default Grid

View height :	26		
Cell width :	76	Cell height :	12
Page width :	1	Page height :	38

Default Field Pane

Field text set to visible

Answer list set to visible

Input line set to visible

A continuous page was considered the only viable option as page breaks made navigation, particularly backwards very difficult.

A major disadvantage of the Blaise development environment was that the changes to the modelib settings had different effects on the normal instrument and how it looked in the BlaiseIS preview. This proved time consuming as the instrument had to be compiled after changes made to the modelib and then the instrument had to be brought into the BlaiseIS Workshop before the layout amendments could be checked using the preview option.

We used a variety of fonts, colours and sizes for maximum impact. The default font was changed to Arial, size 9. We used a bold font for the question proper and the default font for range explanation. We used a brown italic font for user instructions for example, how to move to the next question and a blue underline font for section headings.

We inserted the CSO logo and contact information logo on the top of the HTML interactive page/form and we included a progress bar. A permanent footer was also included with two navigation buttons that allowed the user move to the "Previous" or "Next" question. This involved some HTML knowledge.

We also made some changes to the receipt page to ensure the close button is always visible by moving it to the top of the page. Some text changes were made to the Blaise IS error page to make it more "diplomatic".

In order to minimise the amount of time a respondent could be locked out we amended the timeout option to 7 minutes with a warning after 5 minutes.

5. Security

Security was addressed by creating a certified secure site on a server outside the CSO firewall. Although the site is secure we still selected the SSL option when generating the Blaise IS instrument.

Two further measures were adopted. The first was to remove any identifying questions. The second was to remove the data from the database and transfer it inside the firewall as quickly as possible once the interview was complete.

This was done by using the on load event of the receipt page which only happens when a return has been submitted. A VB exe was written for this purpose. This guaranteed that the Blaise database never contained data for longer than a few seconds post completion of a return.

6. Testing

Testing of hardware and software was a significant issue. We needed to test as varied set-ups as possible to ensure the instrument layout was compatible with most types of hardware and software. As the CSO has a standard approach to software and hardware the normal testing associated with application development would not suffice in terms of assuring the suitability of the application across different platforms.

This issue was resolved by giving colleagues their own PINs, getting them to submit returns from their home PCs and record when and what they submitted.

Feedback was received on response times, user interface and ease of use.

7. Sequence of events for submitting a return

- Log on to secure site Eforms.cso.ie using name and password. The Welcome page provides some technical information
- Click on the hypertext link to the survey.
- The respondent proceeds to complete the form.
- When the form is submitted successfully i.e. without any hard errors and the record is written to the Blaise Database, a receipt page is generated by the Blaise IS system that is displayed to the respondent. The on load event of this receipt page initiates a VB application which carries out the following tasks :
 - Runs a manipula that extracts the record from the Blaise database into a fixed length text file and subsequently deletes the contents of the record except for some selected variables.
 - Generates an SMTP message which emails the text file as an attachment to an account inside the firewall.
 - Deletes the text file.

8. Conclusion

In hindsight the work involved in developing a suitable instrument layout and the work required in addressing security issues, involved far greater effort than originally envisaged.

Although, having completed the first survey, any subsequent surveys should prove much easier to implement.

The multi-user access issue needs to be resolved before Blaise IS can be used widely as a data capture tool.

The response time is a potential problem as it is dependent to a large extent on telephony hardware available to the respondent. A major concern in the testing was the amount of time involved in accessing the server to validate the answer and prompt the next question. As all the testers at one point were testing from home without the benefit of ISDN or broadband the response times were very slow. As this was a survey aimed at businesses that all have ISDN lines the problem is not as relevant to them. It did however highlight the fact that there are definite limitations as to what this mode of interviewing can be used for.