

Authoring Blaise questionnaires – a task for the survey specialist or an IT programmer?

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1. Introduction

All organisations approach the development of Blaise questionnaires using their own unique process. We know that their approaches, however, can be broadly divided into two models. In the first, a dedicated team of Blaise programmers develops the questionnaire based on specifications produced by the survey specialist. In the second, survey specialists develop the Blaise questionnaire themselves. We also know that the first approach is the dominant one amongst Blaise-user organisations.

Kinsey and Jewell (1998) confirm this as they state that, ‘Very different strategies and methods are being used successfully in different organisations. Perhaps the most fundamental difference among firms in CAI development is whether the same or different people are responsible for content development and CAI’.

The aim of this paper is not to argue that one of these approaches is the ideal model but to review the existing approaches, based on information obtained from Blaise user organisations. The review will include a summary of the models, a discussion of the advantages and disadvantages of each, explore why approaches differ between organisations, and draw some conclusions about the efficiency of the models.

The discussion in this paper may be useful to an organisation that is about to start using Blaise by helping it make the decision about which broad model it will use. Similarly existing users may find there are aspects of another organisation’s approach that would be useful to adopt in their own organisation.

2. Background

Most Blaise-user organisations have been using the package for between 5 and 20 years, and therefore now would be an appropriate time to review the two broad approaches. One of the aims of this paper is to assess how the approaches organisations adopted have changed over time.

Previous discussions on approaches to authoring CAI questionnaires have covered descriptions of the various models or concentrated on particular stages of the authoring process, for example, testing or specification. They were also written at a time when the move from PAPI was still fairly recent and so included discussions about the transfer from PAPI questionnaires to CAI and the implications of this transition. What has been explored to a lesser degree is why decisions were made to adopt a particular approach.

Clark, Martin and Bates (1998) state that, ‘In an automated environment one confronts a need for instrument authors namely, persons knowledgeable in CAI programming languages’.

There are, however, very few guidelines on how to approach authoring Blaise questionnaires and who the instrument authors should be. Blaise developers provide the

following statement in the Blaise manual, in a section outlining the benefits of the package,

‘Subject matter specialists, statisticians, and programmers can become adept at authoring Blaise instruments. The modular and reusable structure of the language allows many surveys to use the same blocks of code with little or no modification. This results in faster, surer development and better comparability between surveys. The multi-mode nature of Blaise encourages (and can enforce) consistent specifications and conventions between multiple modes of use.’
(Blaise Developers Guide)

To get the best out of Blaise, the Blaise team recommends that for using the basic part of the system, a social scientist, who is working as survey designer and who has at least some experience in IT and statistical methodology is well equipped to create and implement a Blaise survey, and is therefore suitable for this job.

Although the Blaise team do acknowledge that the Blaise system has been growing, enabling to create more powerful and more advanced applications. When organisations want to get more out of the system, one would need programmers that can handle these new and often complex parts of the system, such as the Blaise Component Pack, Datalink and Blaise IS. Also the number of options inside the languages Blaise and Manipula have been growing. For specific projects that need expertise of Blaise at a higher level, using the complex parts of the system, one may ask for programmers with a higher level of education and or experience in IT.

3. Blaise questionnaire authoring across user organisations

3.1 About the organisations

To gather information on current authoring practices, a short questionnaire was sent to 34 Blaise user organisations, the following 11 responded.

- Statistics Canada
- Statistics Slovenia
- Hungarian Central Statistical Office for National Statistics
- Statistics Belgium
- Survey Research Center, Institute for Social Research, The University of Michigan
- Australian Bureau of Statistics (ABS)
- Istituto Nazionale di Statistica (ISTAT) , Italy
- WESTAT
- Statistics Germany
- Statistics Netherlands
- Office for National Statistics, UK

A copy of the questionnaire is provided at appendix A.

These 11 organisations provide a good range in geographic location (i.e. Europe, USA, Canada and Australia), size and experience using Blaise (long established and more recent users, between 6 to 20 years). The responding organisations provide a mix of type of organisation although the majority are National Statistical Institutes.

The use of alternative CAI software prior to using Blaise also varies by organisation. The majority of European organisations had not used any other CAI software prior to Blaise, unlike the American and Canadian organisations who had – such as CASES, Surveycraft and Cheshire (WESTAT’s in house CAI software development system).

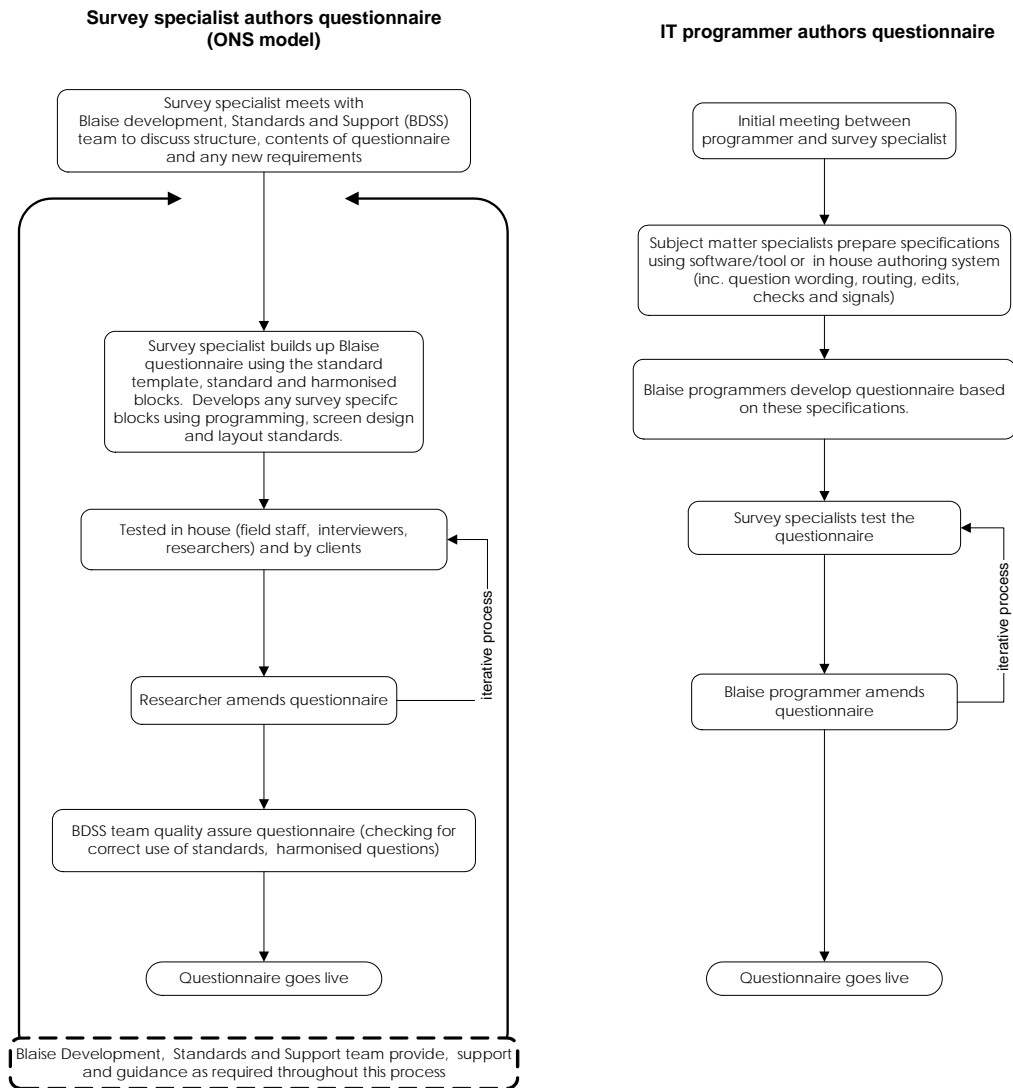
Blaise is used by the organisations to undertake a variety of survey types, including, social, business, institutional and agricultural also using a range of modes of data collection, the most common being CATI and CAPI. The extent to which Blaise is used along the survey process also varies by organisation; all use certain components such as the Data Entry Program (DEP) and Manipula but not all use others, such as Blaise IS or Bascula.

3.2 Summary of approaches

Information provided by the organisations confirms what we would expect, that is, that only two broad approaches exist and that the IT programmer approach is the dominant one.

The following chart describes these two main approaches, highlighting the common stages in each approach and not the points where some organisations deviate from this model. As ONS is the only organisation (from those who responded) which use the survey-specialist model that part of the chart is based on the ONS approach.

Chart 1. Summary of approaches to authoring Blaise questionnaires



3.2.1 Survey specialist authors Blaise questionnaires

ONS is one of the few organisations, and the only one amongst this sample of organisations, where the survey specialist (survey researcher) is responsible for authoring the entire Blaise questionnaire. Colleagues in IM are responsible for case management systems, telecommunications and data output.

Although ONS is the only organisation, of those who responded, Statistics Netherlands have used the approach in the past. When they started using Blaise in 1987, the designer of the questionnaire was the same person as the developer of the questionnaire in Blaise. At this stage the Labour Force Survey was the only survey in Blaise. The number of surveys using Blaise increased and more people working on survey design and implementation resulting in division of staff into specialisms, such as survey designers and Blaise programmers. Now the survey designers write specifications (using VISIO) and then pass them to the Blaise programmer to implement the survey in Blaise.

In order to understand how the process works within ONS, it is important to explain the key elements that are in place to make this approach work.

It is helpful first to describe the role of the researcher within ONS. Researchers are social scientists with some statistical expertise; the entry requirement is a good degree but in reality most have a Masters degree or higher. They are survey generalists i.e. they move from project to project to ensure they receive experience of different type of survey and subject matter. Researchers manage surveys as projects through matrix management of teams and so requires knowledge and control of all aspects of projects (client liaison, sampling, questionnaire design and analysis).

Key to the success of this approach are standards, training and support.

- **Standards**

ONS has recognised the importance of standards since starting to use Blaise for CAI. The benefits of using standards are well documented and are evident along the entire survey process from authoring a questionnaire to data quality.

At ONS, Researchers use the following standards which assist the questionnaire design and authoring process.

- Standards for writing Blaise code, for example, naming conventions and layout of code.
- Screen design and layout standards.
- ONS also maintains standard Blaise code – including blocks of harmonised questions, standard code, for example, Standard Occupation Coding and relationship grid and templates which define the structure of the questionnaire for example, the datamodel rules block and .BLA file.

A further standard or principle is that Blaise code is reused whenever possible and to keep it simple and not overcomplicate code for the sake of it.

- **Support**

Key to the success of ONS's approach is the provision of sufficient support for the researchers who are authoring Blaise questionnaires. More experienced Blaise programmers support those with less developed skills. In the past this was an informal arrangement, and to some extent remains so.

The provision of support was formalised with the creation of the Standards, Quality and Assurance (SQA) team, comprising people from Field, IM and Research branches who had a particular interest in undertaking development projects or those with particular skill to provide support to others. The team members had a limited amount of time to spend on this work and had to fit it in alongside main project work. Fitting the work in became increasingly difficult and development projects progressed very slowly or not at all. To overcome this problem, a smaller team was formed with members having dedicated time. The team, renamed Blaise Development, Standards and Support (BDSS) team, is currently made up of two researchers who spent half their time on development work and the remainder on survey project work and two full time members who concentrated on standards and support work, although in practice they are also involved in development work. A fifth member would be nominated from the

Information Management (IM) section who, it is intended, promotes the use of standards amongst their colleagues in IM, advises on the more technical aspects of Blaise and its implementation and carries out development projects.

The BDSS team,

- holds an initial meeting with author to agree the design of the questionnaire
 - provides support to authors throughout the process
 - reviews and promotes the use of standards
 - maintains standard blocks of questions
 - carries out development work
 - passes on knowledge of new capabilities.
- **Training**

All researchers are expected to learn and be able to program in Blaise; senior managers need to understand enough of the critical design issues to be able to supervise junior staff who are authoring the questionnaires. A half-day introduction to Blaise is sufficient to provide an appreciation of Blaise. Those who will be authoring Blaise questionnaires attend this half-day course and also a three-day course provided by Statistics Netherlands.

ONS is fairly unique in its approach to Blaise questionnaire authoring, so why did it decide to use this approach?

ONS has always regarded CAI software as a tool for researchers rather than a tool for IT specialists. Manners (1998) suggests that as PCs spread in the workplace and PC software became easier to use, researchers became more accustomed to hands-on control in areas of the survey process which they may not have had in former years. It was also felt that Blaise software required no greater computing skills than their researcher already exercised in using statistical analysis packages, like SPSS for manipulating data (using logic as well as just running tables). CAI therefore appeared a natural progression for researchers in their work with computers.

ONS continues to believe that the questionnaire design should be translated directly by the researcher, who therefore constructs the questionnaire using Blaise. In PAPI days, this involved working with scissors and glue; in CAI this process was carried out by cutting and pasting electronically.

A management review confirmed the policy that researchers should write the Blaise questionnaire and recognised the following considerations: (Manners and Green 1996)

- Importance for survey quality of hands-on control and knowledge of the questionnaire by researchers.
- Stressed the importance of co-operation in the survey team between researchers and computing specialists to ensure that the requirements for efficient output design were built into the datamodel by the researchers from the start.

- A model which required researchers to write specifications for programmers to translate into Blaise is duplication of resource and potentially error-prone.
- Researchers will spend a small and intermittent part of their careers writing Blaise questionnaires. This meant that there was a need for need for a cost-effective mechanism to ensure researchers had the necessary up-to-date skills at the point they were required.

This approach has since been critically reviewed several times since ONS started using Blaise in 1990 (for production), and has always been confirmed as the best way to meet ONS's goals in survey design.

Recently the effectiveness of this approach has once again been examined. ONS is currently going through a period of major organisational change which is testing the ONS model. Social and Vital Statistics Division (which contains the Researchers and BDSS) is relocating out of the London office to the ONS office in Newport (now ONS HQ). This has resulted in almost an entire Division of newly recruited staff who have no previous Blaise experience. This has had an impact on the work of the BDSS team, they are having to spend more time providing support, training and in some cases writing sections of Blaise questionnaires and less time working on development projects.

Additional factors that are impacting on the approach are (1) the changing profile of the survey work ONS is currently undertaking which means there is less opportunity to build up expertise in Blaise and (2) the transition of a major ONS survey from cross sectional to a longitudinal survey (detailed in Setchfield 2007).

During this period of change ONS has drifted from the survey specialist taking responsibility for all questionnaire authoring to more of a hybrid approach, as described below. It is hoped that this is a temporary change. It is early days, and ONS is still convinced that this approach to Blaise questionnaire authoring is the most appropriate method.

Hybrid model

A further model that can be included under this broad approach is the Hybrid model. From knowledge, this model is used, to varying degrees, by a small number of organisations. It could be argued that, due to the factors explained previously, ONS has moved closer to this model over the two years.

Before describing this model it is important define the Blaise expert. A Blaise expert is someone who has used built up an expertise and is not necessarily an IT specialist, although they could be.

In this hybrid approach authoring a Blaise questionnaire is not the responsibility of one individual or one functional team in an organisation. Instead the responsibility for Blaise programming is divided between the survey specialist and the Blaise experts. The division of responsibilities may vary between organisations. For example, the survey specialist may be responsible for programming the FIELDS (questions) and the simple routing i.e. the 'research' parts, and the IT programmer completes the more complex parts of the questionnaire such as the concurrent interviewing or rotation of data for dependent interviewing.

3.2.1 IT programmer authors questionnaire

The majority of the organisations who responded used the IM programmer model. In this approach, questionnaires are developed by a team of Blaise programmers. The survey specialist provides a specification by hand or using authoring software which is then passed to the Blaise programmer who develops the questionnaire based on the specification.

The organisations which use this model were asked to define what qualifications they have or their background. Most stated that their IT specialists had Computer science degrees or had a knowledge of a range of software packages.

Organisations who follow the IT programmer model broadly follow the same approach but they deviate from the process in their own unique models. Here are some examples,

- Statistics Canada tests questionnaires at Block level, once these are signed off the front and back end of the questionnaire are then tested; for more complex instruments the blocks are integrated and tested prior to adding the front and back end.
- ISTAT have a team of Blaise experts who develop all questionnaires, alongside the survey specialists, except the Labour Force Survey (LFS). As the LFS is a continuous survey, changes are made by a different team of IT programmers.
- At Westat the specification process is facilitated using an in-house authoring system called Specwriter which is used by both survey specialists and Blaise programmers.
- ABS also have a Survey development tool. This currently produces specifications for a Blaise questionnaire instrument, and they hope to extend the functionality so the software also generates Blaise code.

Approach can also vary by type of survey - for example, at ABS, IT specialists, who are responsible for more than just Blaise programming, develop business surveys, whereas social survey questionnaires are developed by specialist Blaise programmers (although in the near future the two groups will be merged).

There were a variety of responses as to the why their organisation decided to use this model. The most common being that it fitted in with their organisational structure, specifically the traditional division of labour between statisticians and computer specialist. For another organisation, the decision was made due to practical experience and because this method was shown to work. Others chose the model owing to having the advantages of having a central pool of Blaise programmers who use the software continuously and so become more skilled in the software.

ABS said that, while there is no objection to the suggestion that development staff could write their own instruments, there is a feeling at the ABS that people with training and technical skills in question design and testing are better to focus on questionnaire development work, while others with skills in programming are better to focus on the activity of Blaise programming.

Most European-user organisations and ABS had no experience of CAI software before starting to use Blaise. Amongst North American organisations, the majority had used on

of a variety of CAI software packages prior to Blaise, the most prominent being CASES. As the IT specialist is the dominant model amongst all user organisations we can conclude that use of previous software, which may require more IT skills has influenced the approach they use to Blaise authoring. In addition, given the relatively high staff turnover in some organisations survey infrastructure areas it would be difficult for someone to become highly proficient in both areas of work. One organisation using this approach highlight the creative tension between the question designers and Blaise programmers that has been a healthy one for the surveys and pushed the limits of what is possible.

4. Discussion

The following section will outline the perceived advantages and disadvantages of the two broad approaches to Blaise questionnaire authoring.

4.1 Survey specialist authors Blaise questionnaires

Advantages of this approach:

- Blaise skills and expertise are widely spread amongst staff, an organisation does not need to depend on a few key staff with Blaise programming skills. Although the variation in skill levels does mean additional support is required to tackle more complex sections.
- Researchers develop a knowledge of the capabilities of Blaise and can use them to make improvements to current survey or future surveys and also in discussions about questionnaire design with clients.
- Blaise language is similar to SPSS syntax language (the statistical software mostly used by researchers) so they should be able to adapt their SPSS skills relatively easily to use Blaise. However, more recent researchers use windows, reusing existing syntax now, so there may be a longer learning curve for Blaise.
- Blaise software is intuitive and so precludes the need to write an English specification and have that translated by experts into a computer program, this means there is one less stage and eliminates the risk of errors caused by poor specification.
- Researchers design the questionnaire as they program, after some initial planning, they know the subject area, aims of the project and can spot illogical routeing.
- Researcher gets to know the questionnaire very well. They are able then to use this knowledge when briefing interviewers, writing the questionnaire instructions, dealing with questionnaire queries and carrying out the data analysis.
- The researcher maintains control over the whole questionnaire design process i.e. question wording, screen layout, on screen help, routeing, checks, computations and outputs.

Disadvantages of this approach:

- Researchers use Blaise intermittently and so have to relearn each time they start a new project.
- Writing Blaise questionnaires is not perceived by some to be an appropriate task for researchers. Some researchers view the task as mundane.
- Do not have a specification to test the questionnaire against. Although, in practice, a paper questionnaire is often created by the clients or researchers either from scratch or from existing questionnaires at the beginning of the project.
- Training is difficult to plan – there are not always sufficient researchers starting at the same time to fill a course.
- Blaise authoring can get designated only to one team member.

4.1.2 Hybrid model - Blaise questionnaire authoring is divided between the survey specialist and Blaise experts

Advantages:

- Structure of the questionnaire is designed for maximum efficiency of data output, readability or reusability, incorporates standards.
- Allows the researchers to concentrate on question construction, screen layout and testing.
- Experts have experience of working on surveys so they do not ‘lose touch’ with reality.
- Experts responsive to research needs and familiar with Blaise so an ideal position to exploit new possibilities.

Disadvantages:

- Timetabling can be complex, availability of Blaise experts may be problematic as resource must be shared across surveys. Work may also be sporadic, for example, during the preparation for the new survey year on the continuous surveys. Although this may allow time to work on development projects during the ‘quieter’ months.
- Relies on good communication and close working between the teams.
- Susceptible to organisational change – reliance on expertise of a few.

4.2 IT programmer authors questionnaire

Advantages:

- IM staff have the programming and logic skills to program a Blaise questionnaire quickly and efficiently.

- IM staff have the skills to carry out the systematic testing required of the program.
- Training required is minimal.
- Blaise programmers are more skilled in Blaise because they work with it continuously.

Disadvantages:

- Relies on close working of IT and Research members of the team. The IT specialist may not necessarily have the social research knowledge to make informed decisions or understand the context of the work.
- Specification process results in wasted time and introduces errors.
- IM staff may not feel that Blaise programming is sufficiently ‘challenging’.

5. Conclusions

All organisations responded positively when asked how well they felt their approach to Blaise questionnaire worked. It would seem organisations have built up their own unique models that are now embedded within the organisation and work well for them.

There are, of course, perceived advantages and disadvantages of both approaches and some organisations highlighted changes they would like to implement to improve the process. However, since organisations chose to proceed with a particular approach they have spent time making it work within their organisation. From the information supplied by the 11 organisations it is evident that only one organisation had swapped from using survey specialists to IT programmers authoring Blaise questionnaires. After using Blaise software for up to 20 years I would predict that user organisations will now continue using the same model and refining it as necessary.

I would also suggest that it is necessary to regularly evaluate how effective a model works within an organisation. Examples provided in this paper do demonstrate that factors, such as organisational change, can alter the effectiveness of an approach and lead to temporary or permanent changes. This implies that organisations need to be flexible and be willing to adjust their approach when necessary.

From the information provided by the 11 organisations, is not possible to conclude that one approach to Blaise questionnaire authoring is more efficient than another. This reaffirms that no single CAI development method works for every organisation or survey (Kinsey and Jewell 1998). Although it has enabled an updated description of how a selection of Blaise user organisations go about authoring Blaise questionnaires.

This all implies there is no optimum or ideal approach – all that does matter in terms of authoring is that the person authoring the Blaise questionnaire has sufficient Blaise expertise, adequate support and a willingness to learn.

6. References

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7. Appendices

Appendix A

Blaise authoring questionnaire

Name of organisation

Your name and position within organisation

Please provide a brief description of the scope of work undertaken by your organisation.

Date/year when your organisation start using Blaise

Version number of Blaise you used for the first 'live' questionnaire

Did you use a different CAI package prior to Blaise? If yes, then which one

Which version(s) are you currently using for 'live' interviewing?

Current authoring practice. Please describe the process from question development and negotiations with clients up to the Blaise questionnaires 'going live', including details of the specification and testing stages

Why did your organisation decide to use this approach to CAI authoring?

Has the current approach evolved over time? If so, how and why?

If a dedicated team of Blaise programmers author the questionnaires - what are their backgrounds/qualifications?

Which elements of Blaise do you use within your organisation? (i.e. CATI, Bascula etc.)

How do you deal with 'in year' changes to the Blaise questionnaires?

If possible, it would be useful to have an estimate of the length of time it takes your organisation to program a Blaise questionnaire. Or perhaps you could provide an example timetable for a recent survey.

Again, if possible, it would be useful to have an indication of the level of accuracy of your Blaise questionnaires. For example, frequency of re-issuing questionnaires to interviewers.

How do you feel the process works? - are there any changes you would like to make?
