CASI questionnaires with Blaise 4.7

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1. Introduction

With the introduction of Blaise 4.7 new powerful features came available. The possibility to define your own menu options and buttons and to invoke through these options new processes like Maniplus set-up's including data interchange allowed us at Statistics Netherlands to create multi-layer questionnaires. This paper describes the structure of these multi-layer questionnaires for the Production Price Index survey and for the Inland Shipping survey created for our CASI-tool EDR and will focus on the new features of Blaise 4.7 applied herein. Also included is a description of the electronic questionnaire for the EU-survey on Continuing Vocational Training applying some of the new functionalities introduced with Blaise 4.7.

Besides the possibility of creating multi-layer questionnaires a lot of other improvements were made in Blaise 4.7. Many of them were gratefully used in the newly created CASI questionnaires for EDR.

2. The requirements

2.1. Form-based actions

Already for some time the subject matter departments using electronic questionnaires for CASI were asking for the possibility to start-up actions directly from an opened form. Actions e.g. like printing the form. In our CASI-tool EDR we generate a RTF-file and invoke the current text editor (mostly MS-Word) to show and print that generated file. The RTF-file is generated with a Maniplus set-up and populated with the data from the form. Until the birth of Blaise 4.7 this set-up was invoked by a menu option in the main (Maniplus) set-up using the stored data from the form. For a respondent it was not always clear that he should first close (and store) the form before he could print it. Although before version 4.7 it was also possible to activate a process from a menu option in the form (but not using a button!) there was no possibility to pass on the data from the current form. Not as a record and also not as parameters.

Similar to printing it was also requested to create for the respondent the possibility to send the current form (using CBS encryption and communication software included in the CASI-tool EDR) after filling in the last answer. For the reasons explained before the respondent had to close the form first and send it using the main menu. In this case it was even necessary to for fill some conditions (like filling in the mandatory questions) before this function should be enabled.

2.2. Multi-layer questionnaires

More than a year ago the department responsible for the Producers Price Index survey (PPI) came with a request to create an electronic form. Under the pressure for being more cost-effective they saw this (and rightly) as the only possible way. Several unsuccessful attempts were made to create a form using Blaise 4.6 to meet this need. It appeared to be impossible to solve the main problem regarding the PPI: the need for a master-detail solution. The PPI survey is asking the enterprises to fill in their prices for a set of products produced or imported by them. For that purpose an enterprise receives 1-3 slightly different forms (sales interior, sales

abroad and import) depending on its activities. The main part of the form is a list of the products (max. 60) for which they have to fill in their prices. In the paper questionnaire that is the ONLY form. Every product is defined by 9 attributes (slightly different between the 3 forms) like product name, quality and quantity and so on. The respondent must be able to change each of the 9 attributes to introduce a new similar product if the old one is not produced anymore. Also he must be able to add new products and to de-activate (temporarily or for ever) a product. On the paper questionnaire it was done by the most powerful tool a human being ever created: the pen! Just by scratching on the paper and writing what ever he wants next to it he could for fill his task. In the electronic form the 9 attributes appeared to be too extended to place them as question fields on the main form e.g. in a table. The respondent would loose the overview. Several attempts were undertaken to apply the Rules section to switch between a main form with only a summary of the attributes and a parallel with more detailed fields. All attempts remained unsuccessful. There was no way we could create something like an auxiliary form.

At the same time the department responsible for the surveys on Traffic and Transport came with a similar problem. They received all kind of paper forms from lockkeepers and bridgemen reporting about inland shipping movements. These movements were grouped by a so-called event: the lockage (of the lock) or the opening of the bridge. Information should be provided as well on the level of an event as on a ship (or group of ships). They were also looking for 2 electronic forms to support this two level (or multi-layer) questionnaire. As always, the paper forms used were very "flexible". Mainly one level (very large) matrixes in which the event information was written only on one line while the data about the ships were spread over several lines. Of course, additional (but crucial) information was written everywhere. Only a (costly) human being could understand the information written on these paper forms.

2.3. The adjustable index

Finally a third "customer" reported itself: the department responsible for the EU-survey on Continuing Vocational Training (CVTS). As it was known that this questionnaire with rather complicated questions could not be filled-in in one session by the respondent, it was decided to apply our CASI-tool EDR. The main issue in this questionnaire was the need of dynamic routing. The questionnaire consists of 7 different parts. Depending on the answers given in the second part rules determine which other parts should be answered by the respondent. As it was meant to be a CASI questionnaire it was very important that the respondent knew at all time at which point he was in the questionnaire. The length of the questionnaire made it not suitable for a sequential solution in which the active parts followed each other as the respondent was filling in the questionnaire. As methodologists in Statistics Netherlands disapproved the use of tags (with parallels) in case there were a number of it (as in this case), an alternative with a main adjustable index screen was created. The navigation through this questionnaire was made easy thanks to the new functionality of Blaise 4.7.

3. The solutions

3.1. The form/action architecture

The main improvement in Blaise 4.7 was the possibilty that from within an opened form an action can be invoked. Not only can the action be invoked but also the data in the current form can be transferred to that invoked Maniplus set-up. This set-up on its turn can start up another (sub-) form pre-populating it with data from the parent form. And finally it works two-ways: the data from the sub-form, after editing, can be transferred back to the parent form. And even more: from within a

Maniplus set-up another set-up could be invoked transferring (to and from) the current record of a temporary file.

This functionality makes it possible to create an architecture like this:

Form

command   data

Action
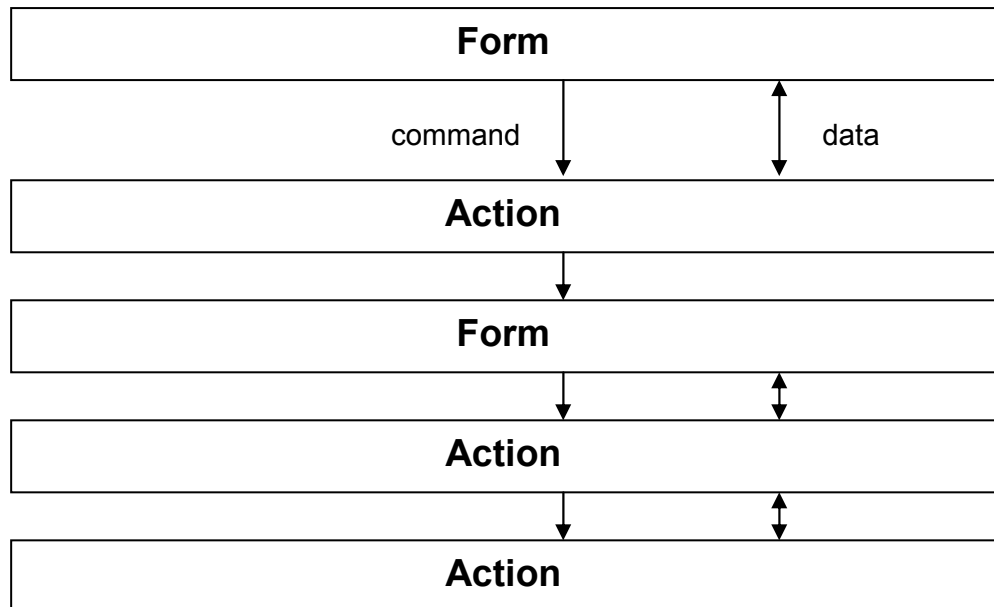
Form

Action

Action

Any set of "layers" is possible. Between two forms there is always an "action" (set-up) to transform data to the other model.

This architecture was applied in the three questionnaires I mentioned before. In the next paragraphs I will go in more detail for each questionnaire to show how the multi-layer model was solving the typical problem.

3.2. The Producers Price Index (PPI) questionnaires

The 3 questionnaires of the PPI survey are completely the same with the exception that only a few attributes of the products are different. The following description is therefore valid for all three the questionnaires.

The main form of the questionnaires is the list of the products (or price items) for which the prices should be given. This main form consists of a data model containing a TABLE of (maximum) 60 rows. Every row refers to a BLOCK with contains the fields for the product attributes and the related price. Furthermore it contains two auxiliary string fields. These auxiliary fields are filled with a selection of the values of the fields with the product attributes. Only these auxiliary fields and the price field are shown together with a field for the status of the price item and the currency used for the price. Except for the price field all the other fields can not be edited in this form.

The initial set of price items is sent with the form to the respondent. If a respondent wants to change the attributes of a price item he focuses on that row and activates through a menu option or a button a Maniplus set-up. Which row is focused is determined by the invoked set-up using the ACTIVEFIELD statement. This statement produces the name of the focused field including the index of its occurrence in the table. This index is derived from its name.

In the invoked set-up a Blaise file is opened in a temporary folder using a separate data model with fields for all the attributes of a price item. A record is written filled with the data from the fields from the focused row of the table of the current record

of the parent form. The current record is available through a temporary file with the INTERCHANGE=TRANSIT settings. Applying the EDIT statement the resulting form is shown on the screen and the data can be edited. (Because in 4.7 a temporary file can not be used in an EDIT statement a real Blaise file had to be created on the spot. After finishing the action it is deleted again. In Blaise 4.8 this is not necessary anymore as a temporary file can also be used in an EDIT statement.)

After closing the form the Maniplus set-up is checking the HISTORY field to see if the form was changed. If that is the case the data is copied back in the temporary file to pass it on to the parent set-up. The SETUSERCHANGE statement is used to inform the parent form that it has been changed.

In a similar way a new price item can be added creating an empty record in stead of a pre-populated record. This is done by invoking the same Maniplus set-up with another value for a parameter altering its process. The new price item is added at the next empty row in the table in the parent form. If there are 60 price items (the maximum) stored the "add" option is disabled.

The value of the status field of the table row is changed using a Maniplus dialog in stead of a form. Again it is done by invoking the same Maniplus set-up with another parameter value. Changing the status the respondent can communicate that the price item is temporarily or definitive inactive. He is not allowed to remove a price item initially provided by Statistics Netherlands. This is done by the survey department based upon the status information provided by the respondent, when a new set of price items for the next period (can be a month, a quarter or even 6 months) is sent to the respondent. The respondent can however remove a price item that was added by him before.

Furthermore the attributes of a price item can be set back to its original values (as was initially provided by Statistics Netherlands) invoking another action. If it is done while the respondent has the sub-form with the detailed attribute fields opened another Maniplus set-up is invoked to perform this action. In fact we can speak of 5 layers: (EDR-menu ->) Set-up1 -> Form1 -> Set-up2 -> Form2 -> Set-up3.
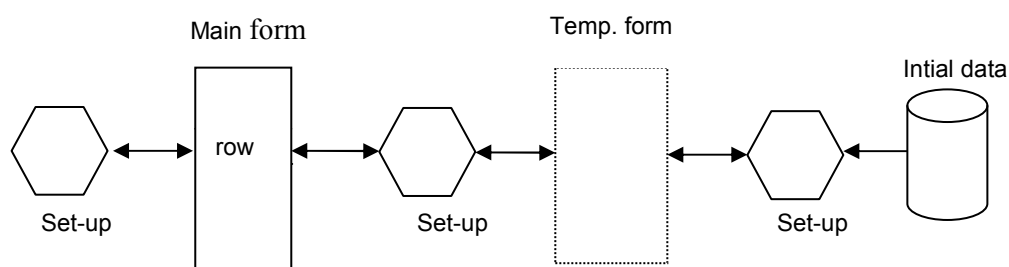

The 3 different PPI CASI-questionnaires were put in action in February of this year and according to the PPI department quite successfully.

3.3. The questionnaire for locks and bridges

Different from the PPI questionnaires the main form in the (monthly) questionnaire for the ship movements at locks as well as in the one for the bridges does not contain a field that can be filled. Thanks to new functionality in Blaise 4.7 a user is still able to select (focus) a line in the table. Both questionnaires have the same architecture, only some fields in the forms are different.

The main form is a TABLE of (maximum) 1000 rows to show the events and their ship movements. It only contains a view on the events and ship movements; the real data is stored in a separate Blaise files. One for the events and another for the ship movements. In the main form the data of an event as well as of a ship movement in stored in a string field. The ship movement data is slightly indented giving a hierarchical view. For every action like editing, adding or removing an event or ship movement a Maniplus set-up is activated. In the same way as in the PPI questionnaire this set-up detects with row is focused. However, in this questionnaire the real data is stored in separate Blaise files and, depending on the requested action, these files are edited. Closing an action the table in the main form is rebuild by this set-up deriving the necessary data from the separate Blaise files. In the event file a toggle field is present which value indicates if the related ship movements should be added to the main form or not. The value of this field is also changed using a button (or menu action) in the main form. The effect is that the respondent can show or hide the ship movements for one or more events.

Event form

Main form (only for viewing)

Ship form

Set-up
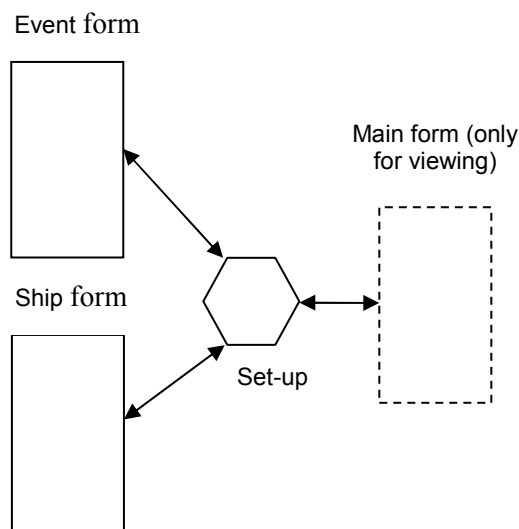
During the development it became clear that the majority of the questions in these questionnaires were not used by Statistics Netherlands but by the Ministry of Traffic and Transport. Due to that and some other discussions about maintenance the survey department decided not to go on with these questionnaires.

3.3. The CVTS questionnaire

In the CVTS questionnaire the 7 different parts are created as 7 BLOCK's in the main form. Additionally a BLOCK containing the Index as a enumerated question is added. In fact there are 4 different Indexes. Depending on the values in the fields of part 2 one of these indexes is put on the route. The first two parts are always included. By selecting a value in the Index the related part is put on the route just after the Index. All the other parts are then off-route (although their data is not lost as they are still on the route through KEEP statements). As a consequence the respondent is jumping directly to the first screen of the selected part.

At the end of the active part the respondent also reaches the end of the questionnaire. In Blaise 4.6 he had to browse back to the Index screen by screen (as a part normally contains more screens). Thanks to Blaise 4.7 we can now apply a button or menu option which activates a Maniplus set-up transferring the data. With the SETACTIVEFIELD statement we change the active field to the active Index field and return to the form. As a result the respondent jumps directly to the Index, were ever he was positioned in the form.
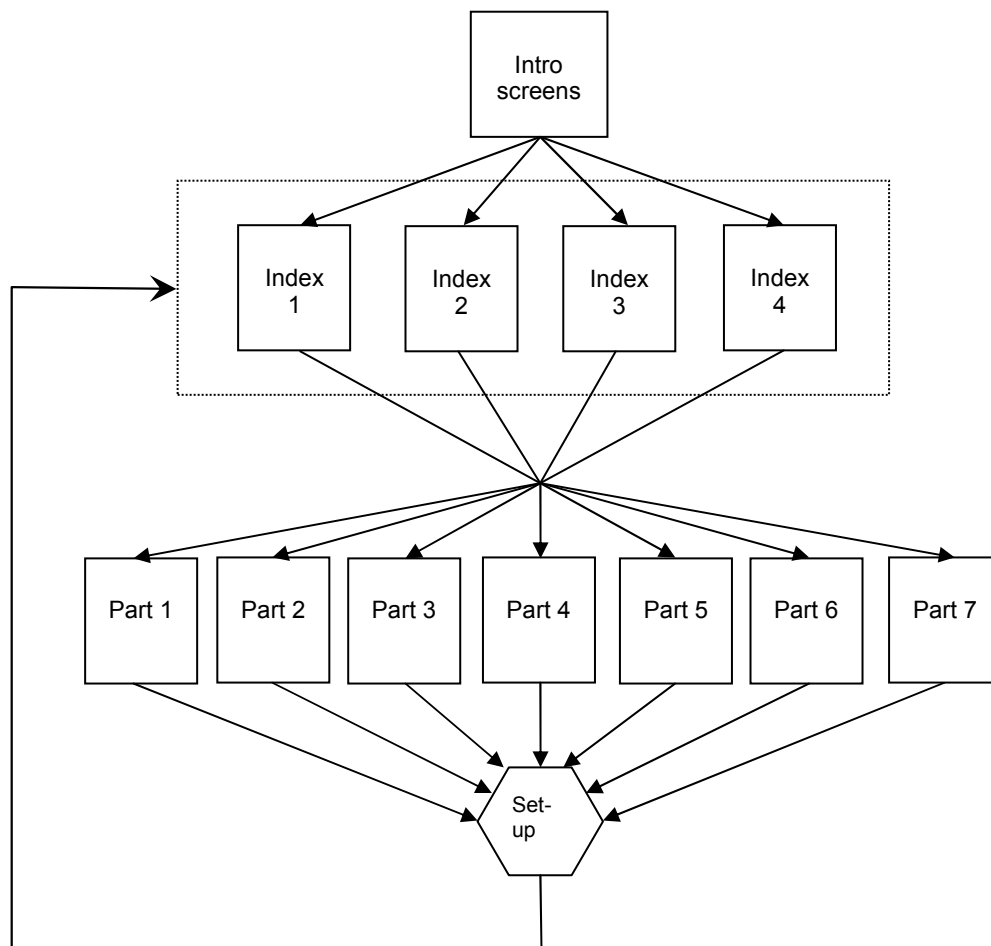
It is planned that this questionnaire will be operational in the second half of April.

5. Concluding remarks

With the release of Blaise 4.7 we were given the opportunity to create CASI questionnaires that were not possible before. As we have proven already with the PPI questionnaires they for fill the needs of our statistical departments as well as of our respondents. The on-going integration of DEP and Maniplus will allow us to create with Blaise in the near future without extensive resources any kind of powerful questionnaire that most certainly cannot be created with any other language or tool.