

Questionnaire Design in Blaise for a Multimode Survey

Hilde Degerdal & Jan Haslund (Statistics Norway)

1. The project

For the 3rd Continuous Vocational Training Survey 2006 in Norway (CVTS3) the data collection is conducted in a multimode design. The survey objective is to implement the CVTS3 according to the specifications agreed between Eurostat and EU Member States, in the CVTS Commission Implementing Regulation. Those specifications are extensive, e.g. There are extremely great demands on consistency of the data. The codebook is strict, and a lot of the fields don't allow missing. These specifications require a good tool for the collection process.

In addition to CVTS3 objective itself, Statistics Norway will provide a pilot addressing enterprises with 1-9 employees and one addressing new NACE categories. Further, Statistics Norway will implement new methodologies for CVTS3 i.e. web questionnaires. The latter will be one of the key elements in our design.

So, in addition to our survey objectives, we have two experimental objectives:

1. To study possible instrument effects of the combination of methods originally proposed in the project
2. To study how interviewers most efficiently can be used in business surveys

In the CVTS3 survey we will have two designs, one for large and one for medium size enterprises. It is planned that enterprises with more than 250 employees should be contacted by telephone and then interviewed by personal interviews, while smaller companies will be contacted by post and offered to respond on web or a paper questionnaire. In the first design there is no separate reminding strategy. In the second design, however, those who have not responded before the deadline will receive a postal reminder. Schematically these two designs can be described like this:

Design1:

Telephone contact ▶ Computer Assisted Personal Interviewing (CAPI)

Design2:

Postal contact ▶ Paper and Pencil or Computer Assisted Web Interviewing (PAPI/CAWI) ▶ Postal reminder

In addition we would like to compare these two designs with a third one that we believe might be a more cost efficient way of using interviewers in business surveys. This design can be described like this:

Design3:

Telephone contact ▶ Paper and Pencil or Computer Assisted Web Interviewing (PAPI/CAWI) ▶ Telephone reminder

The telephone reminder may cause an interview, and then we need a CATI-instrument.

All data is going to be analysed in one joined data file. We want the data manipulation to be as straight forward as possible. For CVTS, with its strict requirement of the data quality, it is convenient that all data are collected with the

same set of rules. That is one reason why we decided to make one questionnaire for all methods. The tool we have for making different instruments out of one questionnaire is Blaise.

2. Requirements

2.1. The requirements from CVTS Commission Implementing Regulation

Their list of controls for validations and consistency codes, requirements for no-missing and so on is a document of 13 pages. These claims from the committee are a challenge, especially since we know from earlier experience that a lot of the information is not easy for the respondent to find.

We really need to take those requirements in consideration during the work of making good data collection tools, in order to avoid too much struggle afterwards.

2.2. The layout requirements

In Statistics Norway we have clear guidelines for what a web questionnaire should look like. Gustav Haraldsen has made a manual on how to make good web questionnaires, and we want to follow those guidelines. It means very high focus on user-friendliness.

Figure 2.2.1. Layout

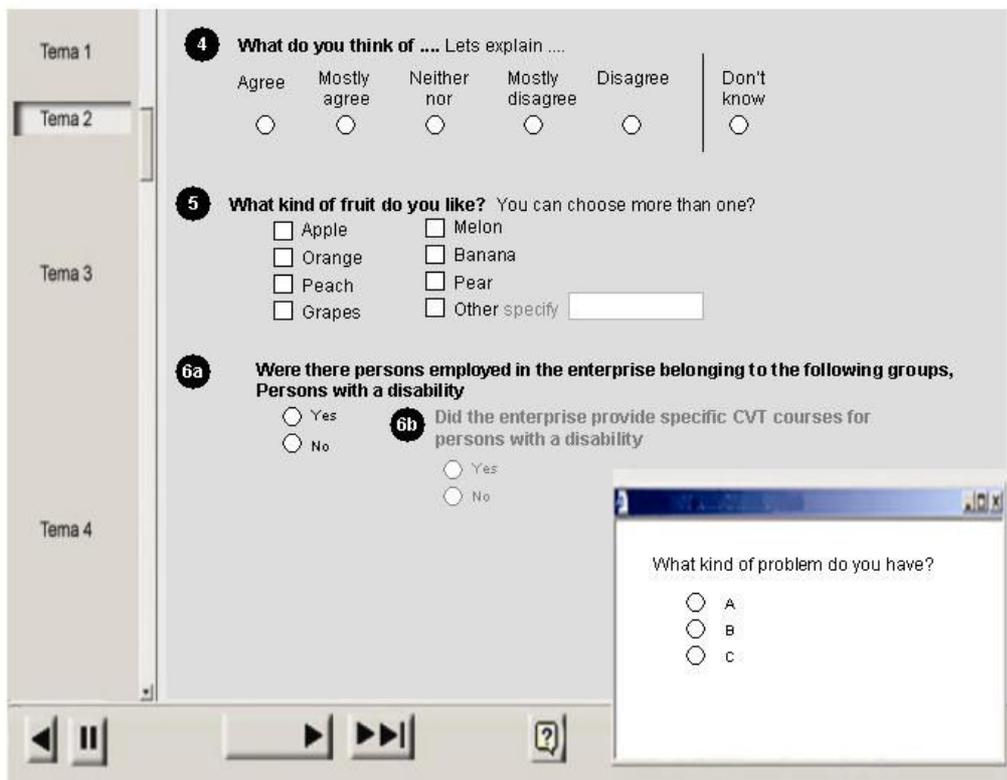


Figure 2.2.1 is a screenshot giving some examples of what kind of requirements - based on the guidelines) we have.

3. Organization and schedule

The work with the instruments was separated into two different subgroups in the project. A group of four persons, "the questionnaire group" had responsibility for the quality of the questionnaire, and what it should be like in the different modes. They should make a good basis for the programming of the questionnaire and the different tools. This group included some Survey methodologists from the division for Data collection methods.

A group of two more people, Jan Haslund and Hilde Degerdal, had more technical tasks. We should also realise the different instruments according to instructions given by the first group

A brief timeschedule:

Receiving the last instructions from Eurostat	December 2005
Making the basis questionnaire as a basis for Blaise programming	January 2006
Blaise programming, Blaise IS and CAPI	February
Data collection	15. March ->

Questionnaire group's tasks were

1. Translate the questionnaire into Norwegian.
2. Learn about the situation out in the enterprises. Such as who in the organization holds which kind of information that we would ask for, (if anyone at all). They call a number of enterprises to learn about it.
3. Adapt experience from earlier CVTS to avoid similar problems
4. Sort out what kind of information we need to ask for, and what we could retrieve from registers
5. Decide on which phrases to use to be understood similarly in the different sorts of enterprises
6. Decide on structure of questionnaire, taking into consideration what they learned about who could answer which questions
7. Decide on level of controls, and don't know-handling. This was difficult because there was a big difference between what kind of quality we want, and what they have learned about what kind of information the enterprises had.

When they had finished the steps 1-6 above, they had a scheme of questionnaire ready, with a draft text for the questions. Then we had a basis for starting the Blaise programming.

4. The Blaise work

4.1. Visit to the Blaise team

In 2005 we spent a few hours to look at the Blaise IS. The impression we got was that almost any kind of layout is possible to make in Blaise IS. If you make the right changes in the modelib and/or in the style sheets.

But it does not seem straightforward to find out how to build the different layouts. Hence we invited ourselves to Heerlen in January. We sent some examples of wanted layout in advance. (Figure 2.2.1). When we came to the Tim Carati's office the 23th of January, he had made solutions for us, that met most all of our requirements.

4.1.1. What we discussed – and learned

- The figure 2.2.1 shows that we want name of the Block as buttons in the left margin. This is not possible in Blaise 4.7, but will be in Blaise 4.8 if the blocks are parallel blocks.
- We want the field tag to have a certain layout. Specifying a gif-file as background in the style sheet biHTMLWebPage.xsl solved this wish. This solution was implemented in the style sheet during our visit
- We had some concerns about scale questionnaires like quest 4 in the figure. The distance between the different answer categories should be equal, and not depended of the amount of text. It was also an issue that the Don't Know answer should not influence the visible impression of the scale. We knew that we should use the ScaleType for this type of question. And we learned that the distance between the categories is calculated out of 100% divided on number of categories. We also learned that using "no-wrap" on the text could destroy the equal alignment of the answer categories. The wanted separator before "Don't know" was implemented in the style sheet during our visit.
- We learned how to use the OtherSpecifyType, which met our wishes on question 5.
- An answer consisting of a number combined with Don't Know gives radio buttons in front of the inputfield for the number as well in front of the Don't Know answer. We did not want that. We got a solution where the radio button before the inputfield is hidden.
- The size of textboxes does not have to correspond with the length of the STRING-fields; it can be adjusted in the modelib by using a special field pane.
- A question with an answer that leads to just one follow-up question, the layout should be like in quest 6. The solution here was to use the MultiColumnType. Even though we are not able to have the first questions text above both columns, this is an adequate solution. The wish of having the follow-up question disabled until it is on the rule, is met by using a variable as a font code in the Field and answer text. It is first set to gray, and when the question is on the rule, it is recomputed into black.
- We also got the possibility to choose text or pictures on the footer buttons. We wanted an additional button - for End. And that was implemented as well. It was done by a change in the style sheet. It will be standard in 4.8.
- Due to pop-up blockers, a separate window for help-instructions and error messages, as shown in the figure, is not a recommended solution. The instruction text or error messages shows up as a separate line under the Field text at the actual question.
 - If a question has a help-text an ikon shows up beside the Field text. By clicking the icon the help-text shows. It is also possible to have the help as a separate html-document and link to an anchor in this.
 - For error messages involving more than one question, it is possible to put links in the error message, making it possible to jump to the other questions involved. We got this functionality that will be included in 4.8
 - The survey methodologists want the help text, or error message, to be a kind of guide helping you through the problems, using questions and answers. This is not possible.

- We also learned about storing of data, and to use a working data base. Saving is done by each new page, and by each "critical field". By unexcepted disruption of the session, the data from it is stored as uncompleted in the "working database". When the questionnaire is completed, the data is transferred to the main database.
- In Norwegian we have two languages, and we discussed different methods of choosing language. What we wanted was to have a choice together with the login, and that is possible.
- Ordinary Audit trail is not possible in Blaise IS. But we can get access to a lot of process data, using an additional Blaise data base, the journal.bdb. On every contact with the server, information will be written in the journal.

We also discussed other issues during our stay in Heerlen. We will just point out some of the issues here.

- Javascript disabled
- Screen resolutions
- Browser compatibility
- Consequences of Pop-up blockers for the whole questionnaire
- The Progress bar
- Other ways of answering questions, for example; calendars, gliders, scales to point in.
- How to fill in a questionnaire without a mouse. It is possible just to use the keyboard
- Tailor-made text in questionnaires and answers is of course no problem, but causes use of critical questions that can slow the performance.
- Lookup and coding
- Multimedia, like use of pictures can be implemented via html tags in the field-text

Our two days in Heerlen were extremely useful and gave us a lot of valuable advice. And for the rest of the process we appreciated the possibility of sending emails and getting quick answers from Tim Carati!

4.2. Making the questionnaire in Blaise

We had some plans on how to work to get the highest benefit of using one software for the different instruments. The questionnaire should be kept in one document as long as possible. Our intention was to start to author an ordinary questionnaire, as we know it from CAPI. We were aware that the different modes would require different error messages and level of how strict the checks should be executed. And of course we knew we would have to adjust the help-instructions according to mode of data collection; taking into consideration that some of the instruments are meant for professional data collectors (interviewers) and others are for amateurs. And we had an idea that the field text as well had to be adjusted after method of collection.

We planed to start the work like we normally do for our CAPI-surveys, and then to do some slight changes.

Well, it does not go that way. In end of January we had the basis for our work. It looked like a paper questionnaire, with headings and instructions for self-interviewing. It meant that the basis was more like the web-questionnaire than a CAPI-instrument. Anyway it was what we had, and we were in a strict time schedule, so we started the work.

We will now tell about the work and the solutions within the different sections in the Blaise Datamodel.

4.2.1. Types

We defined the types as usual. There was no need for many different types in this questionnaire. It was mostly YesNo, and amount of Nok, hours and persons. To customize it for web, we had to do some changes. We want the layout for some questions to be like quest 6 in fig 2.2.1. So we had to make a special type for those questions, MultiColumn. Later, during the evaluation, we skipped this layout and used ordinary types for those questions. Some questions we needed the OtherSpecifyType, so we implemented this one. These questions were SET OF. We learned that we had to put the "SET OF" in the Type-section and not in the Field-section to get the wanted effect.

A lot of the types consist of numbers of many digits. To make the typing easier for the respondent, and thereby improve the quality of the data, we wanted those numbers to use the digit group option. Unfortunately this option did not work in the Blaise IS.

There was a lot of questions in the questionnaire that could have the answer 0. As an example the total number of participants of courses should be grouped by kind of arranger. If the enterprise did not use a certain kind of arranger, it is not obvious that the respondent has to type 0 in that cell. In the CAI-version it is easy to put an instruction to the interviewer "if none type 0". But what we wanted in the Web questionnaire was a separate box to tick "none". Using the REFUSAL answer solved that. We translated the word refusal into the Norwegian word for none. And then it shows up like this figure.

Figure 4.2.1.1

The screenshot shows two identical form sections. The first section is titled "Salg og markedsføring" and the second is "Ledelse og organisasjonsutvikling, administrasjon". Each section contains a text input field, a radio button labeled "Don't know", and another radio button labeled "Rather not answer".

Figure 4.2.1.1 is a screenshot showing use of don't know and refusal

First the inputfield, the Don't know, and Refusal/none shows up vertically. As default we want the answer categories vertically, but in this case we had preferred it to be horizontally. We asked Tim Carati if that was possible, and it was.

Figure 4.2.1.2

The screenshot shows a questionnaire question with three sections. The question text is: "Nedenfor ønsker vi at du skal fordele de 100 arbeidstimene brukt på interne opplæringskurs i 2005 på ulike opplæringsområder. Dersom et kurs ikke passer med svarkategoriene nedenfor, bruk den svarkategorien som ligger nærmest. Bruk skjønn dersom bedriften ikke har detaljerte opplysninger." The three sections are: "Salg og markedsføring", "Ledelse og organisasjonsutvikling, administrasjon", and "Økonomi og regnskap". Each section has a text input field followed by two radio button options: "Ingen" and "Vet ikke".

Figure 4.2.1.2 is a screenshot showing use of refusal as "none" ("ingen")

4.2.2. Fields

We wrote one field text like in the specification we got from the "questionnaire group". We used auxfields for headings and subheadings. To remove the input-field from those auxfields we defined a special fieldpane in the modelib. Those headings were fine for the web, but in the CAPI questionnaire they did not show unless you went back to them. So to make texts for transition between the different sections in the CAI-instrument we needed to do what we usually do, to put an additional text in start of the first question in the sections. There was also a need for making other adjustments in the text to customize it for the interviewers. That means both in the text to be read and in the instructions. Our solution of this challenge was to make two languages for the questionnaire, one "web"-language and one "cai"-language.

4.2.3. Rules

The part of the rules handling which fields to be on the route (the go-to-instructions) was straightforward. This part was also similar in all instruments. The challenge in the rules was the checks. Since we knew that some of the information was difficult to provide, we could not use hard errors. We had to use signals for all sort of controls. The "questionnaire group" discussed and tried to figure out which of the numberless controls from CVTS to implement in the different instruments. Meanwhile we wrote all of them in Blaise. We knew that we had to run them all one day, if not earlier so as a part of the revision after the data collection. All controls were written in a separate section in the document. At first we put them all as comments, and when we decided to include a control in the questionnaire we just removed the brackets around the check, and implemented a suitable error message. The error messages were different for the web and for the cai questionnaire so again we gain from the solution with the WEB- and CAI-languages. Some checks should only be conducted in the CAI-questionnaire. Those were grouped together, so we easily could put them in a pair of comment-brackets for the web-version.

The handling of DontKnow was a big issue. For the purpose of the experiment it was wanted that it should look similar in the different instruments. It could be that don't know should be shown as an ordinary answer category both on web and on CAI. It could also mean that don't know should not be a visible answer for none. That would mean that we set an empty-attribute on every question and let the meaning of empty be like don't know. Then it was wanted to have a warning when the respondent let a question be unanswered. The consequence of this would be a huge amount of checks!

The conclusion was for a while to disable the DONTKNOW and put the Don't know as an ordinary answer category for each question. But again we need the Don't know for the questions that should be answered by a number. The final conclusion was near the standard solution. Use the Don't know answer to be a button or a Function key in the CAI-instrument as the interviewers are familiar with. In the Web-questionnaire it is a separate answer category.

Some of the fields were not allowed to be answered by Don't know according to the rules from CVTS. For those questions we set a signal and tried to persuade the respondents to give an answer.

4.2.4. Critical/Newpage

When the web questionnaire was almost finished and we had decided on the layout; the fonts and the space between the questions, and the length of the lines of text, we could start the work on separating the questionnaire in different pages. Here we had to take into consideration both the visual impression, and the most practical way of running the rules. In addition to the newpage, we marked some fields as critical. In our work here we had some clear guidelines. We do not want

any scrollbars. And we do not want new questions to show up on a page when the respondent clicks the next-button. Checks should be conducted straight away so they don't meet the situation of getting a "red" page of error messages when leaving a page they hoped they had finished. On the other hand, we could not put critical on each field. But we found an acceptable compromise here.

4.2.5. Help text /instructions

In our questionnaire we have no use for neither a help language nor a separate help file. The needed instructions were implemented in the question text.

4.3. Layout

We had several discussions with the Survey methodologists on matters of screen layout. We need to agree on the look and content of the different parts of the screen, the header, menu and footer. We skipped the progress bar. The background colour was first grey, so pastel green, and so grey again. Another topic was the action buttons; should they have symbols or text? In which order should they be aligned, where should they be placed? We had to type some changes in the style sheet `biHTMLWebPage.xsl` to meet the wishes of "the questionnaire group". The left pane was also a topic for some discussions. We did not need any menu, but we want to use it for giving the respondent an overview of the questionnaire. We should also offer a visible link to support. We tried to make a html-document, but the solution was to make an image and an image map for the e-post address.

4.3.1. Fonts

To clarify the visual understanding of the web questionnaire, we needed different presentations of text, one for each category:

- Questionnaire title (Arial 20 Bold (in the header))
- Section headings (Arial 12 bold)
- Transition text (Arial 9)
- Questions (Arial 8 bold)
- Instructions (Arial 8)
- Answer labels (Arial 8)

We agreed on font specifications as described in parentheses.

They were implemented in the `modelib`. To avoid misunderstanding for the interviewers we needed to change the `modelib` we use for them as well. We want them to have a layout similar to other surveys they do.

4.4. Other Blaise IS issues

In addition to the work on the questionnaire itself and the layout we had some other tasks.

We had to translate the texts in the Blaise IS environment into Norwegian. It is not easy to find similar phrases in another language. An issue here is also to be sure in which context the phrase shows up. Another of course, is that the respondent should understand the phrase. One example here was a Norwegian phrase for "Suppress" for the Signals.

We also got a problem with the Norwegian letters. In the questionnaire itself it was handled correctly. But in the heading, and if we use menu-buttons, the Norwegian letters were not represented correctly. To solve this problem we had to change the `encoding="ISO-8859-1"` into `encoding="ISO-8859-1"` in the `biHTMLWebPage.xsl`

The list below is on topics we have to handle, and have made some preparations for, but not yet completed.

- To learn as much from the project as possible, we want to collect Process data when the respondent fills in the web-questionnaire. We set up a Journal file that gives us information about id number of the respondent, the session number and time when the respondent enters a critical question, or went to new page in the questionnaire. We also received the error messages the respondent activated, so we can figure out which questions are difficult for the respondents to answer.
- We gave the descriptions for the WEB server to the IT-department in Statistics Norway. They configured a WEB server with Internet Information Services. The server is located outside the internal net. So we have to use Terminal services to get access to the server and we have to send the blaise-databases via email to the internal net.
- Due to performance issues we use working database for saving uncompleted forms.
- The respondent shall open a certain record in the database for filling in the questionnaire. Therefore we need a login with user id and password. We send the user id and password to the respondent in a letter. This letter also contains information about the survey and of course it gives the URL to the survey.
- The last thing we had to implement before data collection started, was to build a system for supervision of the data incoming. It should give a good overview of data coming from the different modes of collection. The system should also offer good solutions on retrieving data for revision.

5. Conclusion

First of all, when writing this paper early in March it is too early to conclude. Due to a delay in the survey project, we have not finished our work yet.

But to conclude about the work so far. We are satisfied with the result. We have been able to produce instruments that meet nearly all requirements from our guidelines and expert group.

We have learned a lot in Blaise-, survey- and web- subjects. Hopefully we have gained from using just one software for the different instruments. We kept the questionnaire in one document nearly to the end. And that meant that we ensured we had the same structure and rule in the different instruments.

Our hope of just making a questionnaire, and then doing some slight changes to adjust it to web, was not fulfilled. It was hours of intensive work between those two instruments.

But of course a lot of what we have done to produce the Web-questionnaire is making standards that would be used in later Blaise IS projects. Another part of it is of course learning, testing and testing again.

At the end we will emphasize the importance of Tim Caratis advice and help. We would not have received a finale product like the one we have, without him

Figure 5.1. How it ended up

opplæringskurs for ansatte - Microsoft Internet Explorer

Statistisk sentralbyrå
Statistics Norway

Opplæringskurs for ansatte

21 Så ønsker vi at du skal fordele de 100 arbeidstimerne brukt på eksterne opplæringskurs i 2005 på ulike kursarrangører.
Bruk skjønn dersom bedriften ikke har detaljerte opplysninger om dette.

Skoler, høyskoler og universiteter
 Ingen Vet ikke

Voksenopplæringscentre og andre offentlige undervisningsinstitusjoner som er finansiert eller administrert av offentlige myndigheter
 Ingen Vet ikke

Private kursarrangører
 Ingen Vet ikke

Leverandører av varer eller tjenester, dvs bedrifter som ikke har opplæring som hovedaktivitet, men som tilbyr kurs i tilknytning til bruk av sine produkter
 Ingen Vet ikke

Arbeidsgiverforeninger, bransjeorganisasjoner, handelsorganisasjoner
 Ingen Vet ikke

Fagforeninger
 Ingen Vet ikke

Andre kursarrangører
 Ingen Vet ikke

TEMAER I SKJEMAET
 Bakgrunn (1-9)
 Opplæringskurs (10-35)
 Kostnader (36-43)
 Andre opplæringstiltak (46-59)
 Organisering og planlegging (60-69)
 Fond for opplæring (70-73)
 Evaluering (74-77)
 Ansattes innflytelse (78-85)
 Rammebetingelser (86-89)
 Årsaker til ikke opplæringsaktiviteter (90)
 Læringer/aspiranter (95-104)

Du kan kontakte oss med e-post datafangst@ssb.no eller på telefon: 62 88 51 90 alle hverdager mellom 08:00 - 15:00

◀ Forrige Neste ▶ Gå til siste utfylte side

Figure 5.2. How it ended up

opplæringskurs for ansatte - Microsoft Internet Explorer

Statistisk sentralbyrå
Statistics Norway

Opplæringskurs for ansatte

Rammebetingelser for opplæringen

86 Var bedriften underlagt tariffavtaler eller andre kollektive avtaler som regulerte bedriftens opplæringspolitikk i 2005?
 Ja
 Nei
 Vet ikke

87 Benyttet bedriften i 2005 offentlig finansierte rådgivningstjenester for å identifisere opplæringsbehov eller for å få hjelp til å utvikle opplæringsplaner?
 Ja
 Nei
 Vet ikke

88 Mottok bedriften i 2005 offentlig støtte for å dekke kostnader i forbindelse med opplæring av ansatte?
 Ja
 Nei
 Vet ikke

89 Begrenset noen av faktorene nedenfor bedriftens opplæringstilbud i 2005? Merk av for de viktigste faktorene, maksimalt tre alternativer.

Opplæringskursene var generelt for kostbare
 Bedriften fant ikke egnede opplæringskurs i markedet
 Bedriften hadde problemer med å vurdere de ansattes opplæringsbehov
 Det ble gjennomført omfattende opplæringstiltak for 2005
 De ansatte hadde ikke tid på grunn av høy arbeidsbelastning
 De ansattes kunnskaps- og ferdighetsnivå tilfredstilte bedriftens behov
 Bedriften fokuserte mer på opplæring av læringer/aspiranter enn på opplæring av vanlige ansatte
 Andre faktorer
 Vet ikke
 Ingen

TEMAER I SKJEMAET
 Bakgrunn (1-9)
 Opplæringskurs (10-35)
 Kostnader (36-43)
 Andre opplæringstiltak (46-59)
 Organisering og planlegging (60-69)
 Fond for opplæring (70-73)
 Evaluering (74-77)
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