

# New Features in Blaise Colectica Questionnaires

*Jeremy Iverson, Dan Smith, Colectica*

Blaise Colectica Questionnaires allows survey researchers to build surveys faster using an intuitive user interface, to leverage the DDI metadata standard, and to generate rich documentation and reports. The software improves transparency into the data capture process.

The third release, launching in October 2018, includes support for grids, rosters, fills and dynamic text, and text formatting. Also featured are collaboration improvements and flowchart export.

The software stores questionnaire specifications using the open DDI and GSIM standards, and can connect to metadata repositories and question banks powered by Colectica software. Data descriptions can be linked with source questions, creating harmonized data and showing data lineages.

Surveys designed with this tool can be fielded using Blaise 5 on the desktop, on the Web, and on mobile devices. The tool converts the DDI metadata into a Blaise project and source code. Changes to surveys made with the tool can be published and executed within the Blaise environment, allowing rapid iteration while developing surveys.

## Benefits

### Faster Survey Development Iterations

Blaise Colectica Questionnaires offers an intuitive survey design surface and questionnaire palette, allowing survey designers to build questionnaires without learning a domain specific language.

### Question Banks Powered by Open Standards

Questions, blocks, and logic can be created within the program or reused from question bank powered by DDI. Reusing standardized questions assists in creating more comparable data.

### Multiple Outputs

Surveys designed with Blaise Colectica Questionnaires are stored as a specification in DDI format. From this single survey specification, multiple outputs can be created automatically:

- Blaise 5 source code
- Paper form
- PDF specification
- Publish to Colectica Repository and Colectica Portal
- DDI metadata

Custom formats can also be built, including custom reports, delimited formats, and additional survey systems.

## **New Features in October 2018**

### **Grids**

A question grid is a series of questions that share the same response options, possibly with header text.

In Blaise, a grid can be specified using a `GROUP .. ENDGROUP` block with `FIELDS` that share the same response type. A `LAYOUT` with a `OptionsButtons` template displays this on the screen as a grid.

In Blaise Colectica Questionnaires, a question grid can be specified by providing the header text, response options, and the text of the questions. This is stored as a standardized question grid in DDI format. When targeting Blaise 5, the appropriate `GROUP` and `LAYOUT` statements are generated. See Figure 1 for example source code.

### **Rosters**

A question roster is a series of questions asked about one or more members of a list, for example members of a household.

In Blaise, a roster can be specified with a `FOR` loop that asks a `BLOCK` multiple times.

In Blaise Colectica Questionnaires, a roster can be specified by providing the following information:

- The maximum number of roster entries allowed
- A value (possibly from a previously asked numeric question) indicating the number of items in the roster
- The sequence of questions to be asked

This information is stored as a DDI Loop construct that iterates over several `QuestionItems`..

Blaise Colectica Questionnaires then generates the appropriate code, including the necessary `BLOCKS`, `FOR` loop, and table `LAYOUT`. See Figure 2 for example source code.

### **Dynamic Text**

The ability to describe fills or dynamic text has been added to Blaise Colectica Questionnaires in this release. This new feature allows a question to use fills and dynamic text, and still be able to be used across different surveys.

When a question is described in DDI, it is globally uniquely identified and made available for use by reference in many different surveys. However, in each survey, a text fill described by a question will likely use a different source variable. To allow reuse of a single question across the contexts of different surveys, a DDI formatted question can describe input parameters. This is much like an input parameter for a block in Blaise. For example, the question can describe a text input parameter named `personName`. When describing the text fill in DDI, this `personName` input parameter is used as the replacement token in the text. All tokens used for fills are input parameter names designated by the individual question description.

To connect an input on a question, the Blaise Colectica Questionnaires tool presents the user with a list of variables present within the survey that are of a compatible data type. This list includes all variables that are in the current scope within the survey, or could be brought into scope. In DDI, a binding ties together a variable and a parameter. A binding is created to tie together the user-selected variable in the scope and the input parameter of the question. This allows a variable such as `name` or `firstName` to be paired with the `personName` input on our example question. Through this coupling, question definitions are portable across surveys while still allowing for usage of survey specific values in fills and dynamic text. The Blaise Colectica Questionnaires user interface hides this complexity from the user, enabling easy reuse across surveys of complex fill and dynamic text question definitions.

## **Text Formatting**

In DDI, Colectica uses the text-based Markdown format, a lightweight markup language, for creating rich text. This Markdown format is also used for describing question text. The Blaise Colectica Questionnaires tool now converts Markdown formatted text into the appropriate Blaise emphasis tags. The Blaise predefined tags of bold, italic, underline, hyperlink, image, headings, horizontal lines, line breaks, spaces, and tables are all supported.

## **Collaboration**

When used together with Colectica Repository and Colectica Portal, Blaise Colectica Questionnaires allows users to collaborate during survey development. Blaise Colectica Questionnaires allows users to comment on any item, including the overall survey, individual blocks, or specific questions. These comments are stored on the repository, so any user looking at a survey while connected to the repository will see what comments other users made.

Users can also see the change history of individual questions, blocks, or the entire survey. This functionality is similar to the Track Changes and Review functionality in programs like Microsoft Word. The goal is to make survey review and iteration faster and more auditable.

## **Reusable Questionnaires**

Blaise Colectica Questionnaires is designed to allow building reusable questionnaires, reusable sections of questionnaires, and reusable questions and response options. The goal is to enable standardization and reuse while keeping the survey author from the underlying complexity by using an intuitive user interface.

The survey author specifies questions, block sections, and logic guided by the visual interface. This guided and structured creation of the questionnaire, as oppose to using a Word document, allows the Blaise Colectica Questionnaires tool to record the structured definition using DDI, an open XML standard for describing questionnaires and survey data. All components of the survey are versioned and identified, allowing for both multi user collaboration and audit trail functionality.

When a survey author wishes to compose a new questionnaire, they can create new questions and components, or they can select questionnaire items from a institutional repository. Blaise Colectica Questionnaires will visually guide the author while creating new items to ensure that the structures are accurately captured using the DDI standard. The tool also allows searching for existing questionnaire items, such as blocks, questions, and response options, to reuse. Browsing a repository for additional items to reuse allows for comparable data collection across waves of a survey or across surveys.

Blaise Colectica Questionnaires enables publishing to a central repository, which can be thought of as an enhanced question bank, storing multiple types of survey components. When a survey author publishes new items to repository, the items are recorded centrally and made available for reuse. Changes to items also are published to the repository and this action creates new revision of changed items, creating an audit trail recording who changed what and when. Publishing to a central repository also enables other users and processes to view changes to a survey instrument as they happen and follow development more closely. The centralized search and audit trail of all questionnaire components can be used by survey authors, project leaders, or automated software agents applying business rules.

Blaise Colectica Questionnaires is able to publish a DDI based questionnaire specification to Blaise. To publish a survey specification to Blaise, the author simply has to click a button in the software and Blaise survey is generated without involving programmers. The software creates all types and fields, adds specified edit checks, blocks, and rules section, all based on the DDI-based specification. The source code generation also insert comments, denotes DDI identifiers and versions of components, and generates Blaise-to-DDI mapping files for use in data documentation processes after survey fielding and data collection.

After a survey is fielded and the data have been published, the reusable questionnaire items are still available in the central repository. A survey author starting on a new survey can reuse questionnaires, sections, and questions from prior surveys. The tool allows authors to import blocks and questions, and specify their required input parameters if any conditional routing or dynamic text relies on values outside the scope of the shared item. The survey author can also import and reuse defined types and standardized questions and sections across surveys.

The reuse of questionnaire components by Blaise Colectica Questionnaires allows tracking comparable data over time. An analyst can track data sets with similar types and question usage, see which data were captured by the same question in different questionnaires, and search and track defined type/codelist/classification usage. This centralization and versioning over time enables researchers to search the repository for likely comparable data.

## Future Developments

Blaise Colectica Questionnaires remains in active development. Ideas include:

- Prefill data
- Export flowchart images
- Question manager
- Generate interviewer manuals, generated based of additional question metadata
- Support for Blaise PARALLELS
- Sample surveys

Most ideas for new features come from users of the software. Ideas can be submitted to the Colectica or Blaise teams.

## Appendix A: Blaise Source Code Examples

Figure 1: Blaise source code used to represent a question grid.

```
GROUP grid1
  FIELDS
    x, y, z : String[5]
  ENDMETHOD

LAYOUT
  AT grid1 TABLE TEMPLATE OptionButtons
```

Figure 2: Blaise source code used to represent a question roster.

```
BLOCK BPerson
  FIELDS
    name : String
    age : 0..120
    sex : (male "Male", female "Female")
  ENDBLOCK

BLOCK BRoster
  FIELDS
    Person : ARRAY[1..10] OF BPerson
  LOCALS
    i : INTEGER
  RULES
    i := 3
```

```
FOR i:= 1 TO 10 DO
  Person[i].ASK
ENDDO
ENDBLOCK
```

```
FIELDS
  PersonRoster : BRoster
```

```
RULES
  PersonRoster.Ask
```

```
LAYOUT
  AT PersonRoster TABLE TEMPLATE Table
```