

CARI



IBUC 2010 – Pre Conference workshop



INTRODUCTION

- Blaise CARI requested by the B-CLUB
- Implementation based on specifications from various B-CLUB members

- CARI has been implemented in DEP.exe
- Parameterisation via settings file
 - Specification program BICariSpec.exe

- Resulted in a generic solution that can be used without any changes to an existing datamodel!

WHAT IS NEEDED FOR A CARI SURVEY?

- Hardware
 - A computer with a working sound card and a microphone
 - Verify that it works, for instance using the Windows Recorder
- A Blaise datamodel
 - Any model will do. There are no special CARI requirements
 - Probably you want to adapt it to ask consent for recording
- A CARI settings file
 - Created by the Blaise CARI specification program (extension .bci)
- Software
 - Blaise DEP.exe
 - To record mp3 'lame_enc.dll' is required for encoding

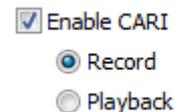
RECORDING AND PLAYBACK

CARI in Blaise offers

- Recording. It creates
 - Sound files (format: WAV, WMA, MP3)
 - Screenshots for recorded questions (format: JPG, BMP, PNG, GIF) [optional]
 - Information files for recorded questions (XML) [optional]
- Playback
 - All Sound files available for a certain field
 - Minimal functionality

HOW TO START?

- Use the Control Centre run parameters dialog
 - Go to DEP, Options tab
 - Set 'Enable CARI' and then select Record or Playback
 - Go to DEP, Files tab and specify the settings file:



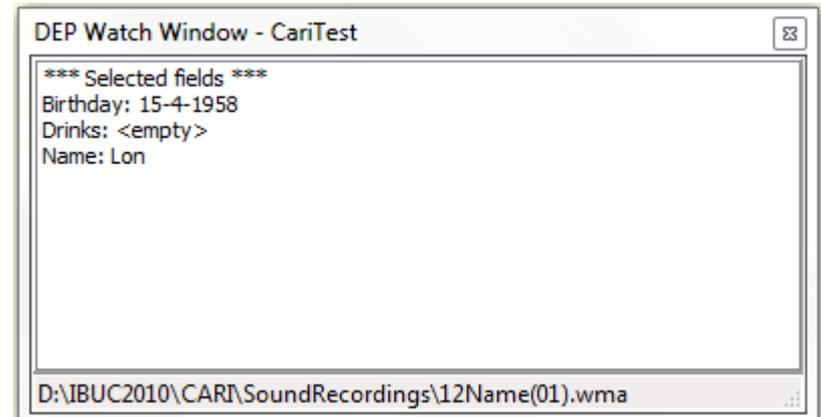
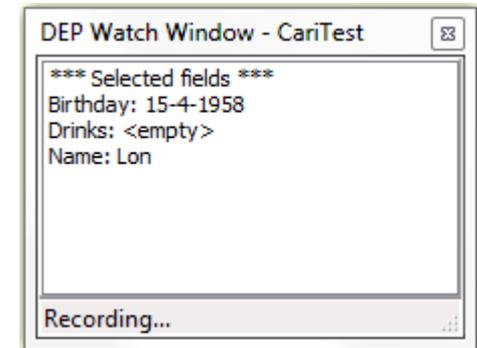
CARI settings file:

- Command line parameters:
 - Record or play
/CARI=RECORD or /CARI=PLAY
 - CARI settings file
/BCI=<file name>

DURING DEVELOPMENT AND TESTING

Use the watch window!

- During record: it displays 'Recording...' when a question is being recorded
- During playback: it displays the name of the file that is playing



CARI SETTINGS FILE

- Contains many, many settings for
 - Audio recording and playback
 - Screenshots
 - Information files
 - Logging
 - Consent
 - Fields to be recorded
- A default settings file is shipped with Blaise in the BIN folder
 - CARI.bci
 - All fields are recorded!
- Not all settings are equally important

EXPRESSIONS

- Many CARI settings are in the form of an expression
- Expressions in CARI are similar to the expressions used in Blaise Menu files
- In the specification program they can be recognised by the button to check the syntax
- In an expression many special functions are available. They all start with \$

EXPRESSIONS (2)

Some special functions (there are many more):

- \$DATAROOT Path of the current data file.
- \$STARTDATE Date the session of the current form started.
- \$STARTTIME Time the session of the current form started.
- \$FILEDATE Date the CARI file was created.
- \$FILETIME Time the CARI file was created.
- \$FIELDNAME Name of currently focused field.
- \$FIELDVALUE Value of currently focused field.
- \$KEYVALUE Key value of current case.
- \$COMPUTERNAME Full computer name.
- \$BLAISEUSER Environment variable 'BlaiseUser'.
- \$WINDOWSUSER Account name of the current user.

Expression examples:

- True or False
- 'REC'+\$KEYVALUE+\$FIELDNAME
- (Person[1].Consent=1) and (Flag<>1)

EXPRESSIONS (3)

- An enumeration field in an expression can be accessed various ways. Given the definition:

Consent "Do you give permission for this interview to be audio taped" : (Yes "Sure", No "No way")

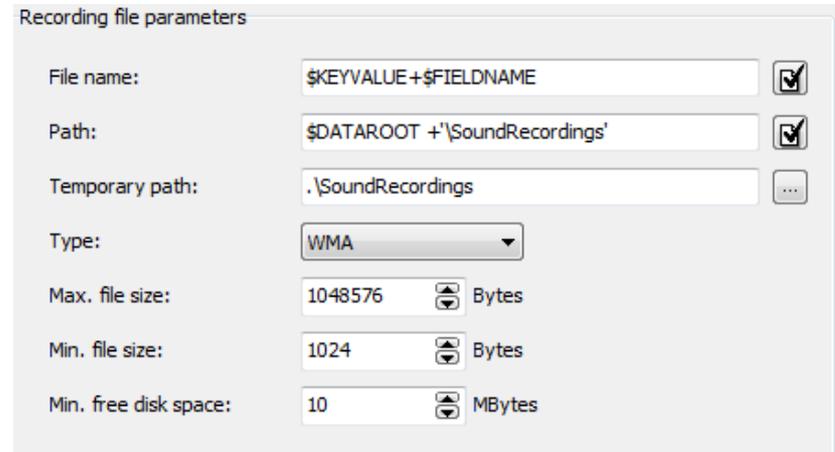
- The following expressions are valid:
 - Consent = 1 { use the field code value }
 - Consent = Yes { use the field label, case insensitive }
 - \$FIELDVALUE = 'Yes' { use the field value as text, case insensitive }
 - \$CATNAME = 'Yes' { use the field label as text }
 - \$CATTEXT = 'Sure' { use the field label alias text }
 - \$CATCODE = 1 { use the field code value }

RECORDING

- You can
 - Enable / Disable the recorder
 - Influence what fields are recorded
- Note that
 - Enabling the recorder does not mean that fields are actually recorded
 - A field can only be recorded when the recorder is enabled
- So basically you have to 'worry' about when to enable the recorder and when to actually record

RECORDING SETTINGS: FILE PARAMETERS

- **File name:** A string expression to uniquely identify the file
- **Path:** A string expression
- **Temporary path:** Folder where recordings will be stored temporary
- **Type:** WAV, WMA and MP3
- **Max. file size:** Maximum file size in bytes
- **Min. file size:** Minimum file size in bytes. Undersized files will be purged
- **Min. free disk space:** Recording stops when less free space is available on the current drive

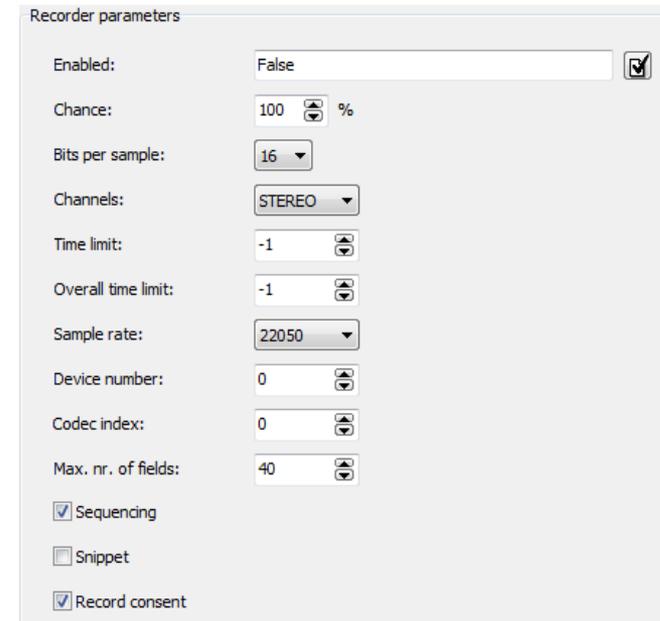


The screenshot shows a dialog box titled "Recording file parameters" with the following settings:

File name:	<input type="text" value="\$KEYVALUE+\$FIELDNAME"/>	<input checked="" type="checkbox"/>
Path:	<input type="text" value="\$DATAROOT +'\SoundRecordings'"/>	<input checked="" type="checkbox"/>
Temporary path:	<input type="text" value=".\SoundRecordings"/>	<input type="button" value="..."/>
Type:	<input type="text" value="WMA"/>	
Max. file size:	<input type="text" value="1048576"/> Bytes	
Min. file size:	<input type="text" value="1024"/> Bytes	
Min. free disk space:	<input type="text" value="10"/> MBytes	

RECORDING SETTINGS: RECORDER PARAMETERS

- **Enabled:** A Boolean expression. If true the recorder is enabled
- **Chance:** Specifies the chance that recording is activated for a question
- **Time limit:** Recording duration
- **Overall time limit:** Recording stops when the overall recording time for a case is reached
- **Max. nr. of fields:** Recording stops after this number of recordings per case
- **Sequencing:** Recordings for same field get a sequence number
 - (nn) is added to file name, where nn is a number starting with 01
- **Snippet:** Randomly set the recording duration (between 0 and Time limit)
- **Record consent:** When set the recording will be saved also when consent is not lent [default when adding consent questions]

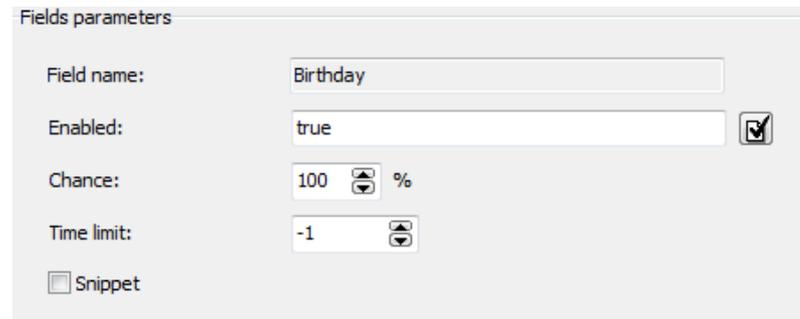


The screenshot shows a dialog box titled "Recorder parameters" with the following settings:

Enabled:	False	<input checked="" type="checkbox"/>
Chance:	100 %	
Bits per sample:	16	
Channels:	STEREO	
Time limit:	-1	
Overall time limit:	-1	
Sample rate:	22050	
Device number:	0	
Codec index:	0	
Max. nr. of fields:	40	
<input checked="" type="checkbox"/> Sequencing		
<input type="checkbox"/> Snippet		
<input checked="" type="checkbox"/> Record consent		

FIELDS

- In CARI you can define a list of fields
- For each field you can set:
 - **Enabled:** A Boolean expression that turns the recorder on or off
 - **Chance:** Specifies the chance that the recording is activated
 - **Time limit:** Property to set the recording duration. -1 = no limit
 - **Snippet:** Randomly set the recording duration (between 0 and Time limit)
- Important. A field specification works as a toggle. Once the recorder is enabled by a field it will stay enabled until it is disabled



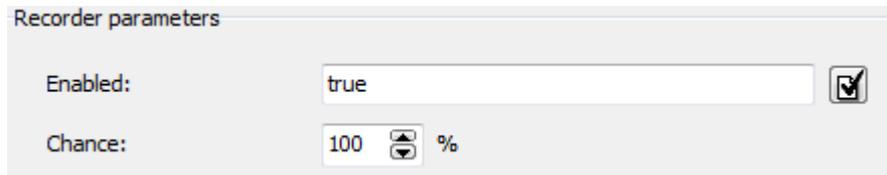
Fields parameters

Field name:	Birthday
Enabled:	true <input checked="" type="checkbox"/>
Chance:	100 %
Time limit:	-1
<input type="checkbox"/> Snippet	

EXAMPLES OF USE (1)

Now it is time to put everything together and start recording...
It is all about finding the right mix of Enabled and Chance...

- Most simple situation: record all questions

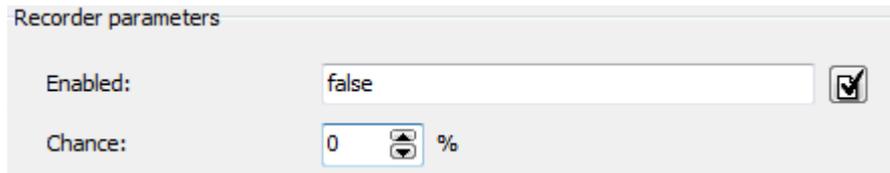


The image shows a dialog box titled "Recorder parameters". It contains two settings: "Enabled:" with a text input field containing "true" and a checked checkbox icon; and "Chance:" with a text input field containing "100", a spinner icon, and a "%" symbol.

Recorder enabled and record with chance 100%

EXAMPLES OF USE (2)

- Record only one field:

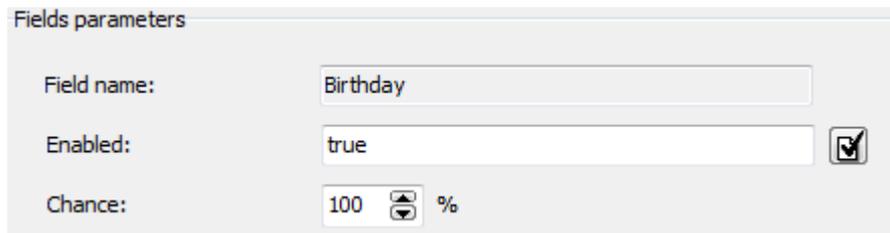


Recorder parameters

Enabled:

Chance: %

Recorder disabled and record with chance 0%



Fields parameters

Field name:

Enabled:

Chance: %

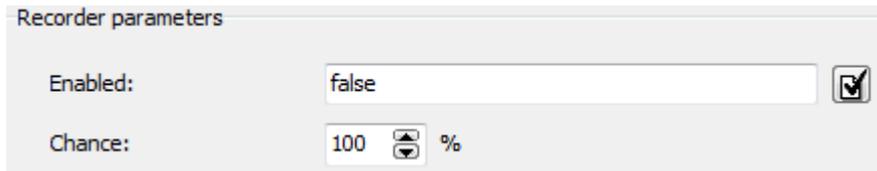
Recorder enabled for field *Birthday* and record with chance 100%

Question: Why are the questions after *Birthday* not recorded?

Answer: Although the recorder is still enabled the chance for recording is 0%...

EXAMPLES OF USE (3)

- Record a range of fields

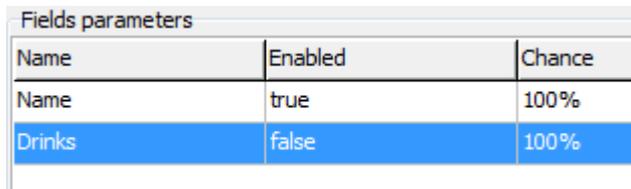


Recorder parameters

Enabled:

Chance: %

Recorder disabled and record with chance 100%



Name	Enabled	Chance
Name	true	100%
Drinks	false	100%

Enable the recorder at *Name* and disable the recorder at *Drinks*

Question: Why are all fields on the route after *Name* and before *Drinks* recorded?

Answer: Because the recorder is still enabled and chance for recording is 100%...

EXAMPLES OF USE (4)

- Record all except a few

Recorder parameters

Enabled:

Chance: %

Recorder enabled and record with chance 100%

Fields parameters

Name	Enabled	Chance
Name	true	0%
Birthday	true	0%
Drinks	true	0%

Set Chance to 0% for all fields that need not be recorded

CONSENT

- Consent is a mechanism that allows CARI to handle the permission to make recordings
- One or more fields in the datamodel can be defined as Consent field
- Whenever consent fields have been defined the recorder is initially disabled
- Suppose you have the following list of questions in order of the route:

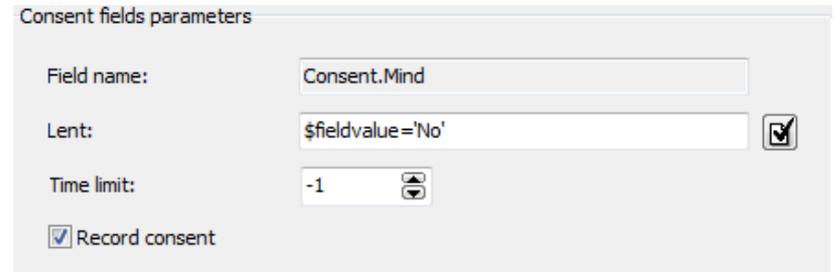
q1 - q2 - c1 - q3 - q4 - q5 - c2 - q6 - q7 - q8

where c1 and c2 are consent questions, then

- q1 and q2 will never be recorded
- Consent of c1 influences recording of c1 and q3 .. q5
- Consent of c2 influences recording of c2 and q6 .. q8

CONSENT PARAMETERS

- **Lent:** A boolean expression
When evaluated to true recordings can be made
- **Time limit:** Property to set the recording duration. -1 = no limit
- **Record consent:**
 - During the question a recording is made
 - When set the recording will be saved also when consent is not lent
 - When not set the recording made will be deleted when consent is not lent

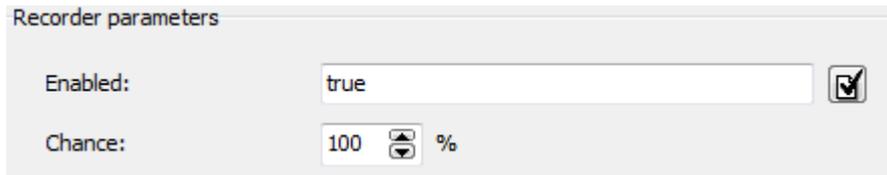


The screenshot shows a configuration window titled "Consent fields parameters". It contains the following fields and options:

- Field name:** A text input field containing "Consent.Mind".
- Lent:** A text input field containing "\$fieldvalue='No'", with a checkmark icon to its right.
- Time limit:** A dropdown menu showing "-1" and a refresh icon.
- Record consent:** A checked checkbox.

EXAMPLES OF USE (5)

- Record all questions using consent

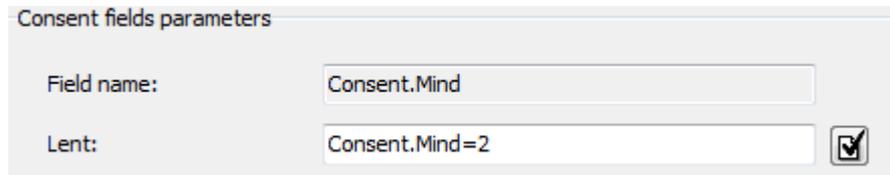


Recorder parameters

Enabled:

Chance: %

Recorder enabled and record with chance 100%



Consent fields parameters

Field name:

Lent:

Only when the answer to *Consent.Mind* equals 2 all following questions will be recorded

- Note that this example is basically the same as example (1) with the use of consent added

EXAMPLE OF USE (6)

- For each person in a household that has given consent, record all questions except a few
 - This is example (4) but now for each person the fields are named that need not be recorded plus
 - For each person the consent is defined:

Consent fields parameters	
Name	Consent
Persons[1].MindRec	\$FIELDVALUE='No'
Persons[2].MindRec	\$FIELDVALUE='No'

SCREENSHOTS

- It is possible to instruct CARI to take a screenshot at the moment the DEP moves on to the next field and the recorder stops
- Various types are supported: BMP, JPG, GIF, PNG
- You can set the capture context:
 - Form = the DEP form
 - Window = the DEP
 - Screen = all you can see
- You have to experiment what works best for you. To consider:
 - Size of the file produced
 - Quality of the screenshot
 - Time it takes to make the screenshot

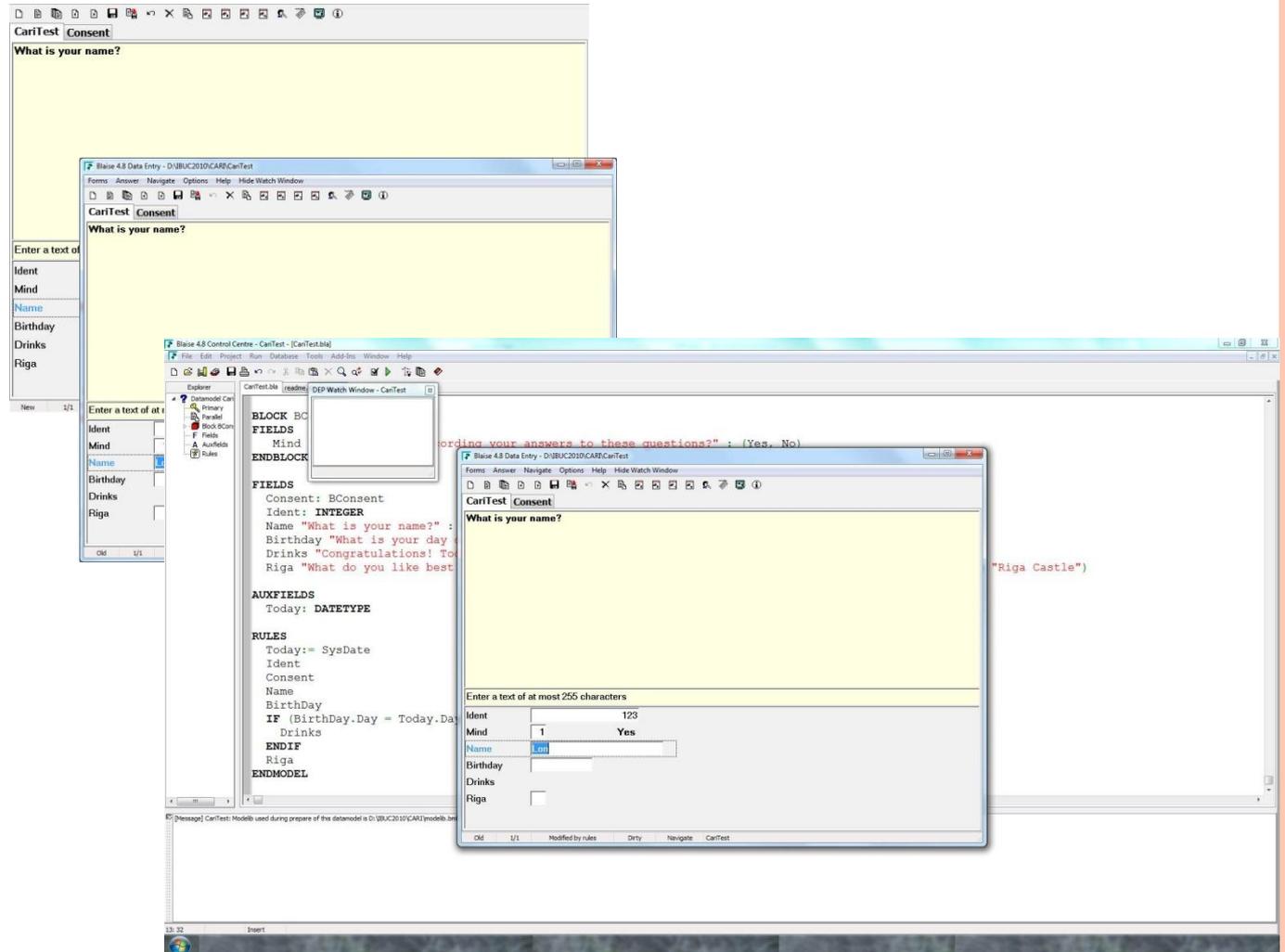
The image shows two screenshots of the CARI configuration interface for screenshots. The top screenshot is titled "Screenshots file parameters" and contains the following fields: "File name:" with the value "\$KEYVALUE+\$FIELDNAME" and a checked checkbox; "Path:" with the value "\$DATAROOT+'\\ScreenShots'" and a checked checkbox; "Temporary path:" with the value ".\\ScreenShots" and a "..." button; "Type:" with a dropdown menu set to "JPG"; and "Min. free disk space:" with a value of "10" and a "MBytes" label. The bottom screenshot is titled "Screenshots parameters" and contains the following fields: "Enabled:" with the value "true" and a checked checkbox; "Capture context:" with a dropdown menu set to "SCREEN"; "Sequencing" with a checked checkbox; "Monochrome" with an unchecked checkbox; and "Compression quality:" with a value of "70" and a "MBytes" label.

CAPTURE CONTEXT

FORM →

WINDOW →

SCREEN →



INFORMATION FILES

- It is possible to instruct CARI to write an XML file with information at the moment the DEP moves on to the next field and the recorder stops
- XML contains meta information of the field and contains the data of the field

The image shows two screenshots of a software configuration interface. The top window is titled "Information file parameters" and contains the following fields: "File name:" with the value "\$KEYVALUE+\$FIELDNAME" and a checked checkbox; "Path:" with the value ".\Information" and a checked checkbox; "Temporary path:" with the value ".\Information" and a button with three dots; and "Type:" with a dropdown menu set to "XML". The bottom window is titled "Information parameters" and contains the following fields: "Enabled:" with the value "true" and a checked checkbox; and a checked checkbox labeled "Sequencing".

EXAMPLE OF XML INFORMATION FILE

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Application="C:\Program Files\StatNeth\Blaise 4.8 Enterprise\Bin\Dep.exe, Version: 4.8, Build: 4.8.2.1570"-->
<SessionInformation>
  <Data Name="D:\BUC2010\CARI\CariTest.bdb"/>
  <DataModel Name="D:\BUC2010\CARI\CariTest.bmi" DateTime="2010-10-06T18:25:00" Text="CariTest"/>
  <Form KeyValue="12" DateTime="2010-10-06T18:30:15" Status="DIRTY" WindowsUser="Lon" ComputerName="LON-LAPTOP"/>
  <Fields>
    <Field Name="Name" QuestionText="What is your name?" Language="Default" FieldKind="DATAFIELD">
      <Type Name="STRING" Required="true" DontKnowAllowed="false" RefusalAllowed="false">
        <BaseType Name="STRING" Size="255"/>
      </Type>
      <Answer Value="Lon" FieldStatus="RESPONSE" Remark="This is a remark" DateTime="2010-10-06T18:30:42"/>
    </Field>
  </Fields>
</SessionInformation>
```

- The schema of the XML is shipped with Blaise. See CARI.xsd in BIN folder
- A source of paradata

LOGGING

- CARI logs what it did in a text file
- You can specify the log level. Possible choices:
 - No logging
 - Only fatal errors
 - All errors
 - All errors and warnings
 - Extended
- During development and testing: just set it to 'Extended'
- During production: set it to 'All errors'

Logging file parameters

File name:	<input type="text" value="\$METANAME"/>	<input checked="" type="checkbox"/>
Path:	<input type="text" value="\$DATAROOT"/>	<input checked="" type="checkbox"/>
Extension:	<input type="text" value=".carilog"/>	

Logging parameters

Log level:	<input type="text" value="Extended"/>
<input checked="" type="checkbox"/> Time stamp	

LOGGING

Example of Extended logging

Gives a lot of insight what goes on behind the scenes

```
"2010-10-04T11:07:50.882","Info","Used settings: D:\IBUC2010\CARI\CariTest.bci."  
"2010-10-04T11:07:50.884","Info","C:\Program Files\StatNeth\Blaise 4.8 Enterprise\Bin\Dep.exe, Version: 4.8, Build: 4.8.2.1565"  
"2010-10-04T11:07:50.899","Info","Directory .\ScreenShots created."  
"2010-10-04T11:07:50.901","Info","Directory .\Information created."  
"2010-10-04T11:07:50.929","Info","Directory .\SoundRecordings created."  
"2010-10-04T11:07:51.364","Warning","Recorder disabled."  
"2010-10-04T11:07:51.366","Info","Form entered. Key: to be determined."  
"2010-10-04T11:07:53.407","Info","Recording to D:\IBUC2010\CARI\SoundRecordings\${TMPKEY01Consent.Mind(01)}.wma started by DEP."  
"2010-10-04T11:08:15.196","Info","Recording to D:\IBUC2010\CARI\SoundRecordings\${TMPKEY01Consent.Mind(01)}.wma stopped by DEP."  
"2010-10-04T11:08:15.198","Warning","Recording stopped at field Consent.Mind. No consent lent."  
"2010-10-04T11:08:15.318","Info","Image saved: D:\IBUC2010\CARI\ScreenShots\${TMPKEY01Consent.Mind(01)}.jpg."  
"2010-10-04T11:08:15.319","Info","Temporary recording .\ScreenShots\${TMPKEY01Consent.Mind(01)}.jpg erased."  
"2010-10-04T11:08:15.321","Info","Temporary recording .\SoundRecordings\${TMPKEY01Consent.Mind(01)}.wma erased."  
"2010-10-04T11:08:15.387","Info","Temporary directory .\SoundRecordings\ removed."  
"2010-10-04T11:08:15.405","Info","Temporary directory .\ScreenShots\ removed."  
"2010-10-04T11:08:15.424","Info","Temporary directory .\Information\ removed."
```

PLAYBACK

- The play mode is not a complete playback of the whole interview. As you step through an existing form, DEP acts as a player of the soundtracks available at each field on route
- Recordings will be located based on the playback file name expression
 - The expression may contain wildcards
- Multiple recordings are concatenated
 - Based on the creation time of the recording
- During playback mode the answers in the form can be changed. However this can be avoided by using '/CARI=PLAY' together with the '/R' (read-only) parameter

WRAPPING UP

- CARI is not difficult but also not easy
 - Study the examples and experiment with them
 - Use the watch window
 - Use 'Extended' logging and study it
- Because of the expressions, very complex CARI applications can be implemented
- There is always need for more functionality. Let us know your needs!