Blaise

Blaise Team Presents

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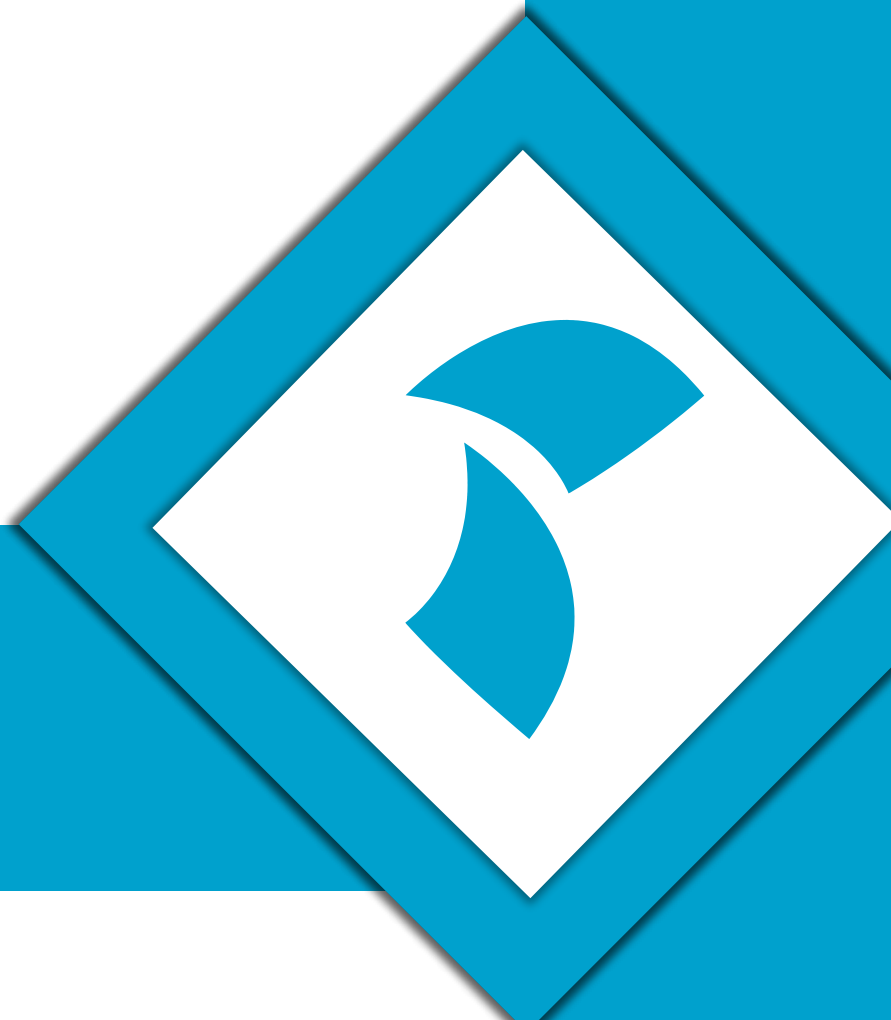
October 25, 2023

Agenda

- Artificial Intelligence
- Privacy & Security
- Performance
- Video Interviewing
- Multimode Case Management
- Dashboard
- Print improvements
- CATI improvements
- Testing Tool
- Implicit Data Conversion
- Miscellaneous

Artificial Intelligence



Artificial Intelligence

- Everyone is doing it!
- Possible uses for Blaise
  - Suggest code in the Control Center (like Copilot)
  - Generate pieces of code based on questions (like ChatGPT)
  - Search the help system (also like ChatGPT)
  - Analyze audit trail data
  - …

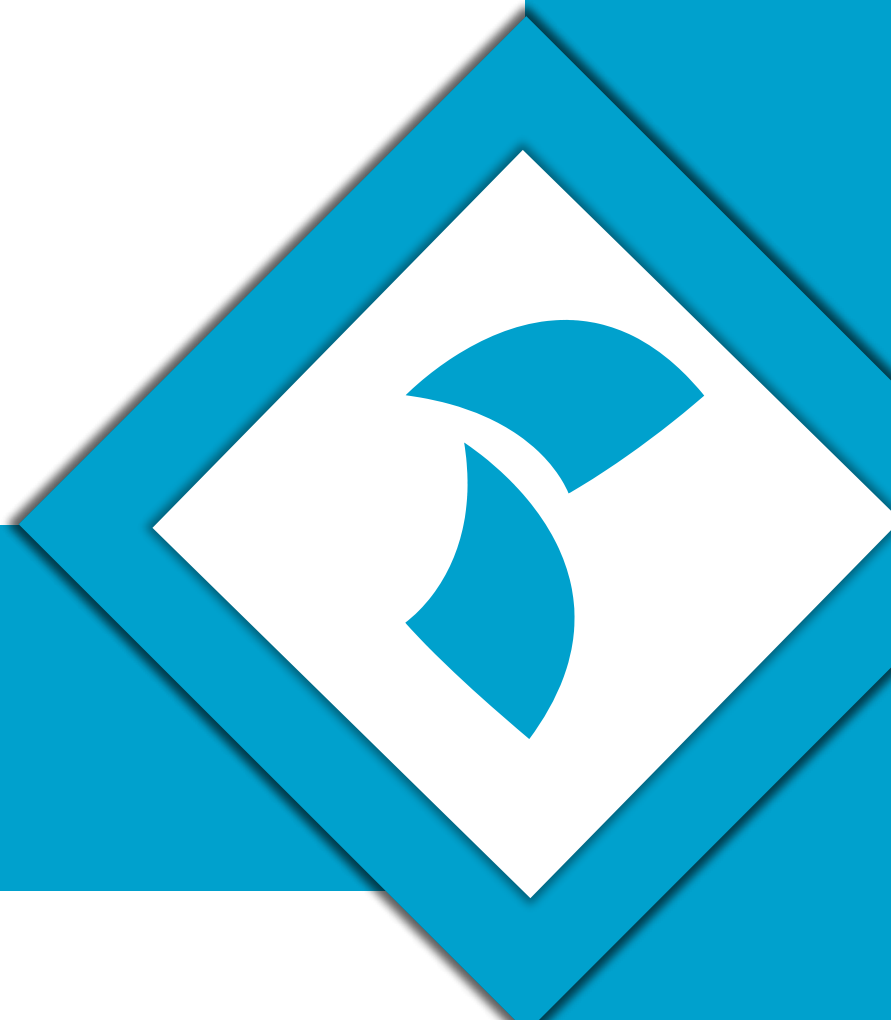
Planned Features

- Code Generation
  - Upload documents which can be processed and converted to Blaise code
  - Auto questionnaires: Upload any unstructured pdf/docx file and let Okki extract relevant information and create questions about it
- RAG (Retrieval Augmented Generation) so it can access external datasources or online information
- Function calling (for example: Calling Blaise API's to create a new project and return a zip file with the contents)
- Support for Manipula (has been out of scope for now)
- Save output to .bsol, .bproj, .blax, .incx etc.
- Many more helper instructions (i.e. 'Add Portuguese, French and Spanish to this block and translate it', better support for ROLES etc)

Want to help Okki learn?

- Okki is always looking to learn new code: Mainly (advanced) functions, procedures, manipula
- Technical documents which describe questionnaires (In any format, i.e. Excel, Word, PDF or Database structures)
- Donations would be appreciated to acquiring GPU power so Okki can learn faster and can switch to a larger base model
- Find Okki on Discord here https://discord.gg/jMRABHHg for updates and to discuss ideas
- Questions by mail can be addressed to markdurlinger@live.com

Privacy & Security



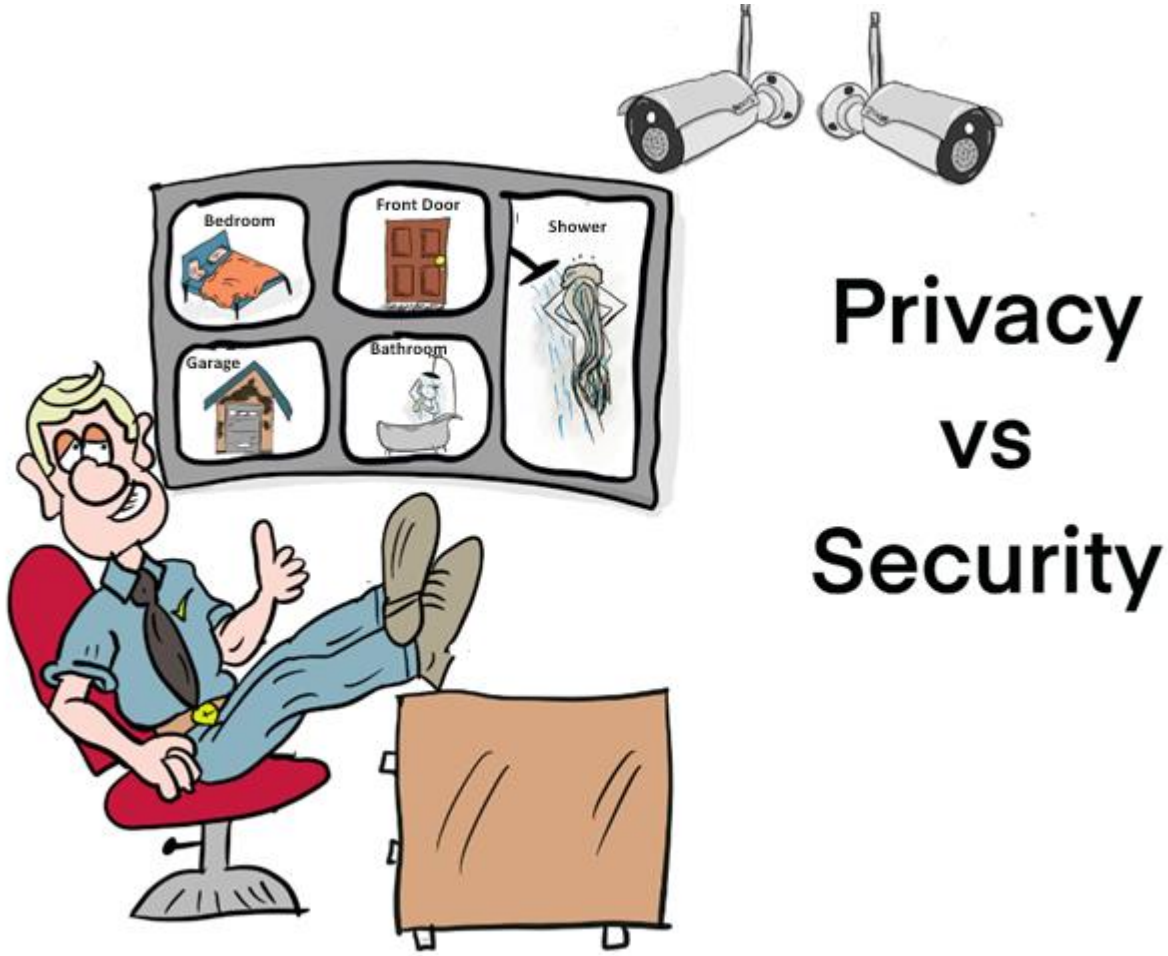
Privacy

- What is privacy?
  - In The Netherlands, privacy is a fundamental right
  - Statistics Netherlands is obligated to protect personal data
  - Statistics Netherlands is also obligated to protect data of organizations
- AVG
  - Dutch law for privacy protection
  - Organizations can be fined if they break this law

Security

- What is security?
  - All the measures that are taken to protect an organization
    - Scanning luggage, access passes, security clearance, …
    - Firewalls, virus scanners, network segmenting, …
    - Vetting people (employees and visitors)

Privacy vs. Security

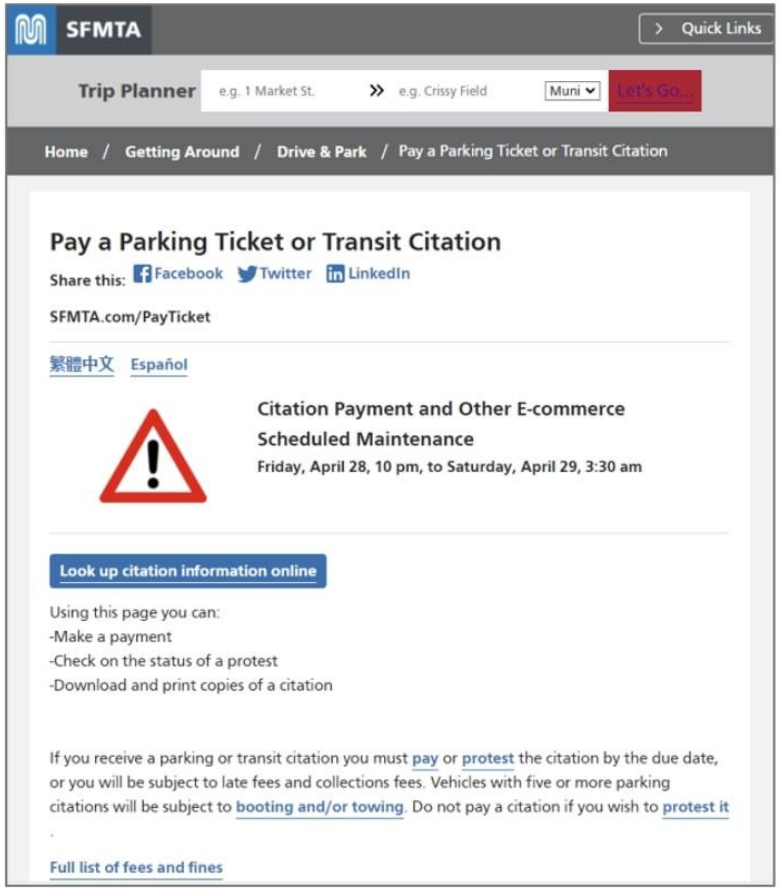


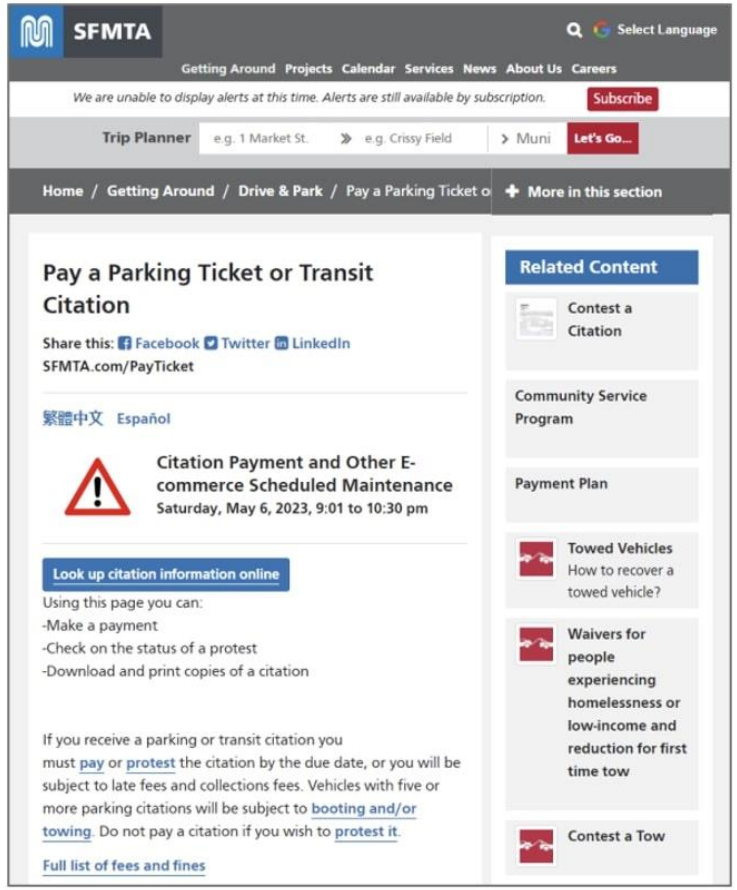
Social Engineering / Fishing

- https://www.youtube.com/watch?v=lc7scxvKQOo&ab_channel=oraclemind

QR-Code scams

- Restaurants
  - Mimic menus
- Parking tickets
  - San Francisco





Software Vulnerabilities

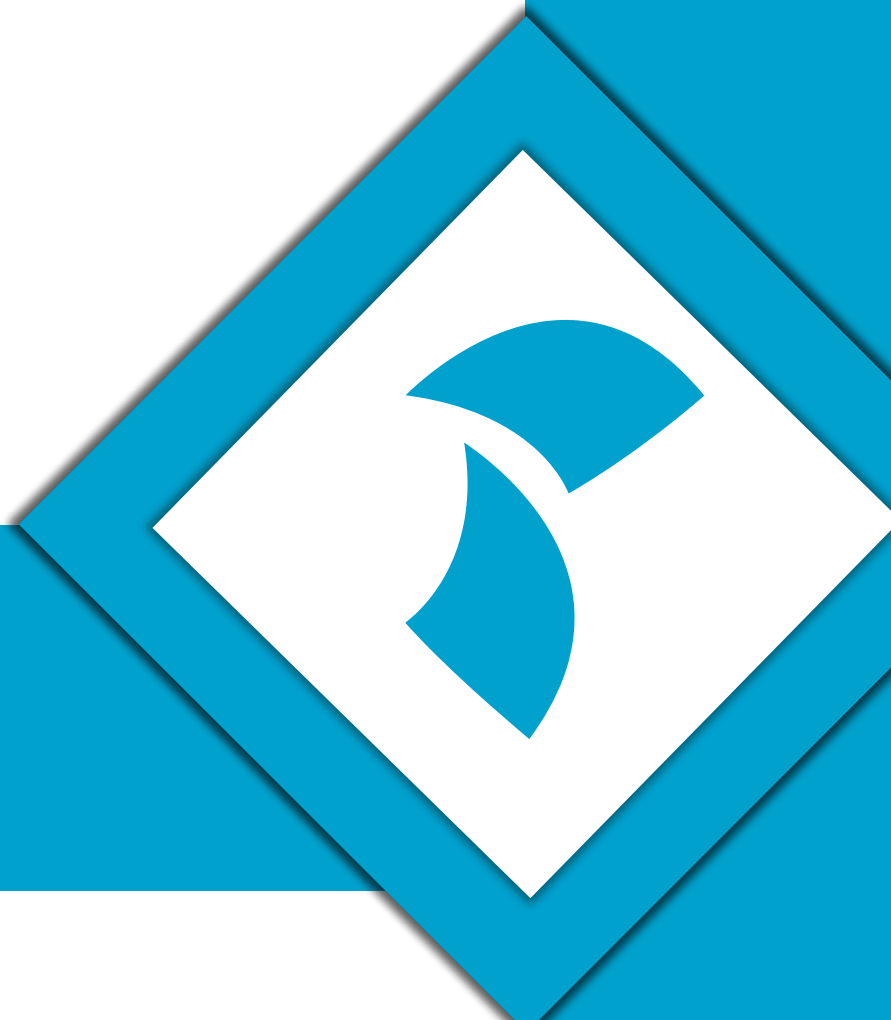
- ProxyShell, Log4J, …
- Zero-day leaks
- Viruses
- Ransomware

- CVE Security Vulnerability Database

Blaise Security Strategy

- Blaise 4
  - We haven’t released a new version of Blaise 4 since 2018!
  - The basic system uses only a few third-party components
    - MSXML is the one that was most troublesome
  - The Web version (Blaise IS) should not be used anymore!
- Blaise 5
  - Web version: we check third-party packages using npm audit
    - Some packages cannot be upgraded to the latest version (i.e. Angular)
  - Windows version / Apps: we check third-party Nuget packages for updates
  - Cloud version: we check the base images for vulnerabilities/updates
  - Github: use Dependabot

Performance



Performance

- Server-side performance
  - Messaging system
  - Writing session data
- Client-side performance
  - Startup-time of the data entry program
  - Page rendering time
- Manipula

Messaging system

- Current messaging system is based on WCF & DataContract Serializers
  - Not promoted by Microsoft anymore
  - Not supported in newer .NET versions
- Better alternative: REST protocol & protobuf
  - Our test case shows that this is 30% faster

Writing Session Data

- Session data is written in a background process
  - If session data is being written, a new request has to wait for this process to finish
  - Increase SessionUpdateFactor to limit the number of times session data is written (default = 1, which means every time)
  - We are investigating if we can abort writing session data when a new request arrives
- At the moment, the complete session data is generated when page is submitted to the server
  - We are investigating if we can update the session data with the parts that have changed, making the overall performance better

Startup-time of the data entry program

- Pages are stored in XML format
  - This makes it easy to add new properties and controls
- We use XmlSerializers to deserialize these pages. The first time, the serializers have to be initialized, and that takes some time
  - Agent mode helps to solve this problem (Windows DEP only)
  - Changing the format could probably help (backward compatibility!)

Page Rendering Time

- Large tables produce many controls that have to be rendered
  - Blaise 4: Only 1 control was actually created, and then moved around the page
  - The visible part of the table was rendered by drawing lines and text.
  - This was possible because the layout in Blaise 4 was very limited

- Blaise 5: minimize the number of controls on a page
  - We will think about ways to improve the load time

Page Rendering Time

- For the web version, we have introduced CSS Grids
  - To accommodate for browser differences, we used a component named SizeTree
  - Loops over all controls on a page, and makes sure that the sizes of those controls are correct
  - Slow for large tables

- New technology: CSS Grids
  - Let the browser handle the size and position of controls
  - There are minor differences between browsers
  - Much faster for large tables
  - This is the default for new projects. Older projects use the SizeTree for backward compatibility reasons

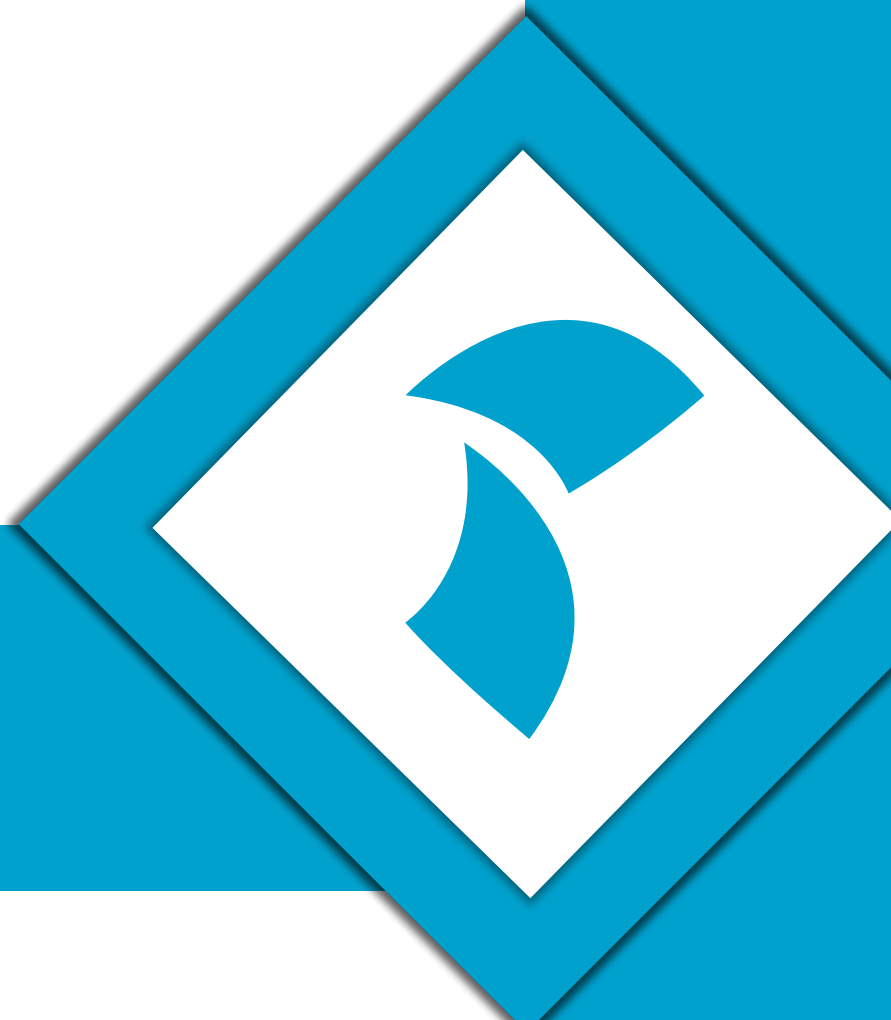
Manipula

- Blaise 5 Manipula performance is much worse than Blaise 4

- Blaise 4
  - Records are stored as a byte stream (in bdb file)
  - Records are read into memory by transferring the byte stream
  - Updating fields in a record is done by manipulating the byte stream
  - Record are written to file by transferring the byte stream

- Blaise 5
  - Records are stored as a zipped XML document (in bdbx file)
  - Record are read into memory by unzipping the XML document and deserializing the XML document, thus creating objects for every field in the XML document
  - Updating fields in a record is done by manipulating the objects
  - Records are written by serializing the objects to an XML document, zipping the document, and writing it to the database

Video Interviewing



Video Interviewing

- Mix between CAPI and CATI

- BCLUB Working Group
  - Specifications have been made
    - Browser based
    - Zoom/Teams
    - Scheduling options
    - Consent
    - Privacy mode
    - Advanced options (audit trail, whiteboard, recording, …)

Video Interviewing

- Different scenarios
  - Respondent only sees interviewer's face / Interviewer only sees respondent's face
    - Two devices: one for video, one for interview
  - Share screen
    - Easiest option
  - Respondent sees different screen than the interviewer
    - NZ Showcard example
    - Multiple persons in one session

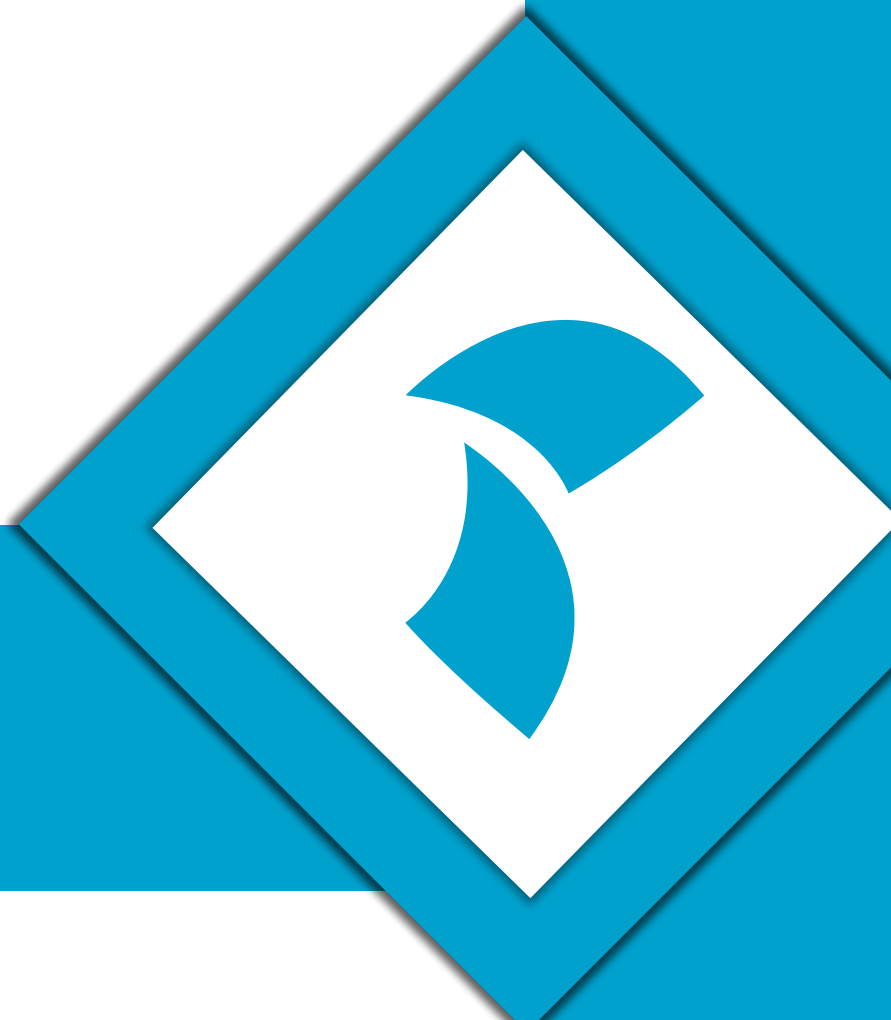
Multiple people in one session

- Different screen sizes
- Different number of questions on a screen
  - Should not be allowed
- Control should be either with the interviewer or with the respondent
  - Options for taking (or giving) control
- Changes on one end should be reflected immediately on the other end
  - Events needed on all controls
- Allows for supervisors to also join the session

Video Interviewing

- Initial thoughts
  - Aera on the screen where video can be displayed (popup)
  - Special data entry program that has Video Interviewing functionality incorporated
- Zoom & Teams licenses
  - We’re waiting for Statistics Netherlands to get these
- First results expected in Blaise 5.15

Multimode Case Management



Multimode Case Management

- Blaise has supported multimode for quite a while, but the case magament system around that had to be built by users themselves
- Blaise 5.14 will contain the basics needed for a flexible and extensible case management system
- It’s based on work from Mark Pierzchala for the Case Management working group, University of Michigan and Statistics Netherlands, and works with three concepts
  - Fielding strategies
  - Multimode launcher
  - Event driven

MMCM – Fielding Strategies

- A template for contacting respondents
  - When can respondents be contacted and through which mode?

- Current modes: CAWI (web), CATI (telephone) and CAPI (in person)
- Future mode: CAVI

- Fielding strategies can be sequential or concurrent (or a combination). When using concurrent modes, you want modes to be aware of each other. We introduced the **multimode launcher** for that

MMCM – Multimode Launcher

- A launcher on top of existing CATI and CMA launchers
- When using CATI or CMA launchers, a multimode launcher record will automatically be added
- When starting with a multimode launcher, it is possible to fill the CATI and CMA launchers from there
- The multimode launcher will contain an up-to-date status for cases, this is achieved by an **event driven** approach

MMCM – Event driven

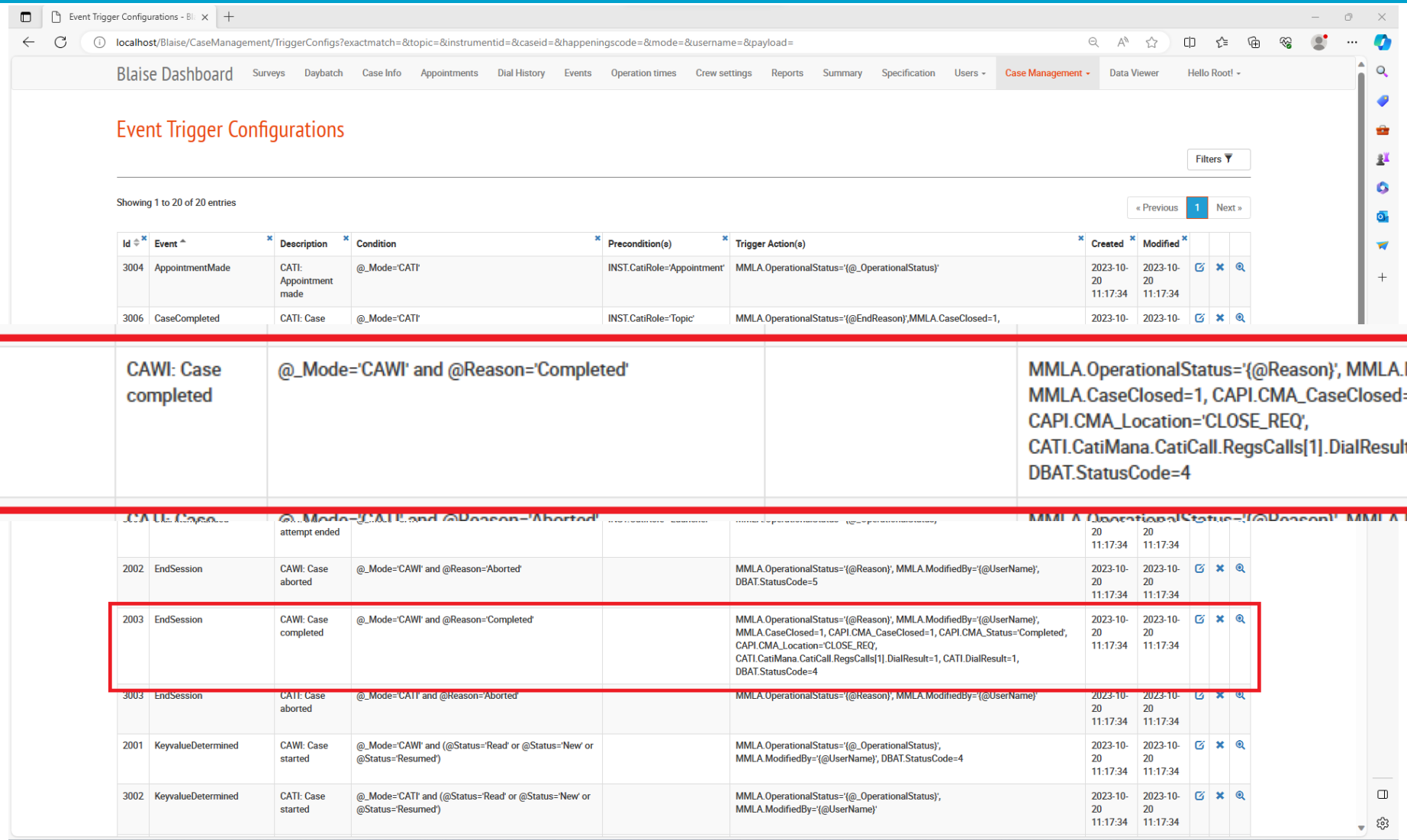
- Whenever something relevant happens to a case, an event is sent by the system
  - When a case is downloaded for a CAPI visit
  - When a case is issued through CATI
  - When a case is started on the web
  - When a case is included in or excluded from a daybatch
  - …
- Triggers can be defined that execute some action(s) whenever an event is received that fulfils a specified condition
  - Actions can be updates of database records, executing a Manipula script, …

MMCM – Event driven (2)

- When a case is completed on the web, you want the following things to happen:
  - Make sure it's no longer available for CAPI
  - Remove the case from the daybatch in CATI if it's in there
  - Make sure the case can't come back in a daybatch in the future

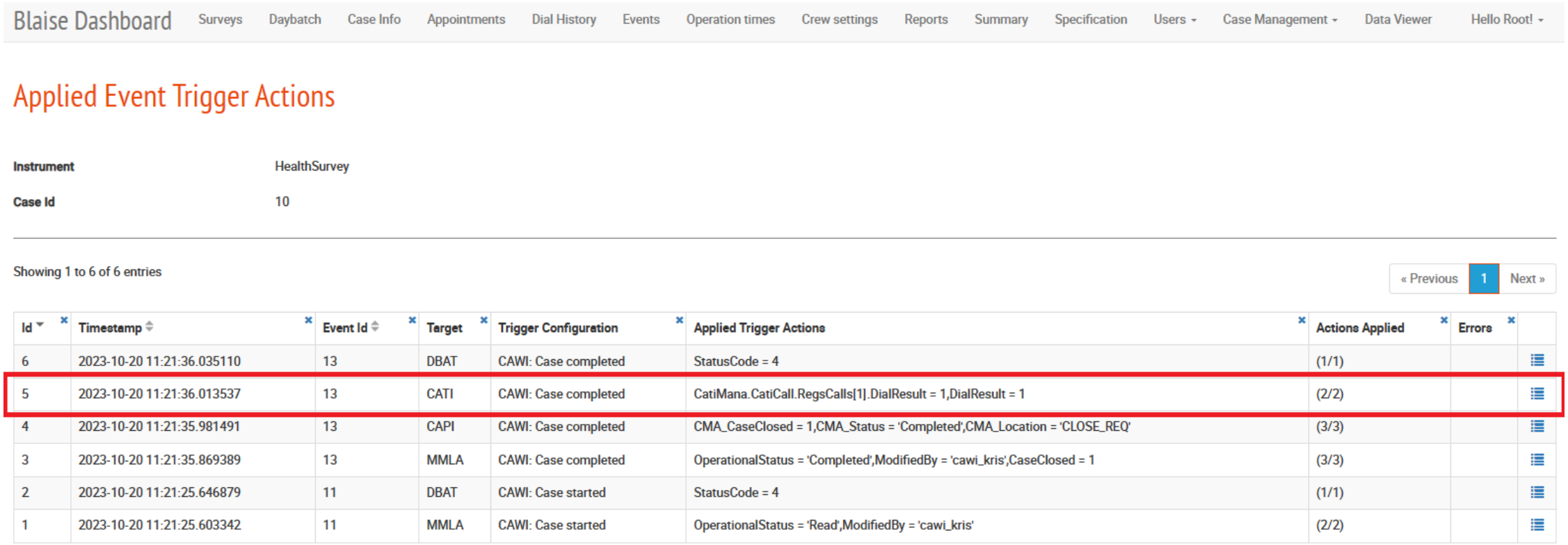
- To achieve this, you can react to the EndSession event under the condition that the mode is CAWI and the Reason is Completed and trigger the following actions:
  - CAPI.CMA_CaseClosed=1, CAPI.CMA_Status='Completed', CAPI.CMA_Location='CLOSE_REQ'
  - CATI.CatiMana.CatiCall.RegsCalls[1].DialResult=1, CATI.DialResult=1
  - DBAT.StatusCode=4

MMCM – Event driven (3)



MMCM – Event driven (4)

- The system keeps track of all triggers that were applied to a case

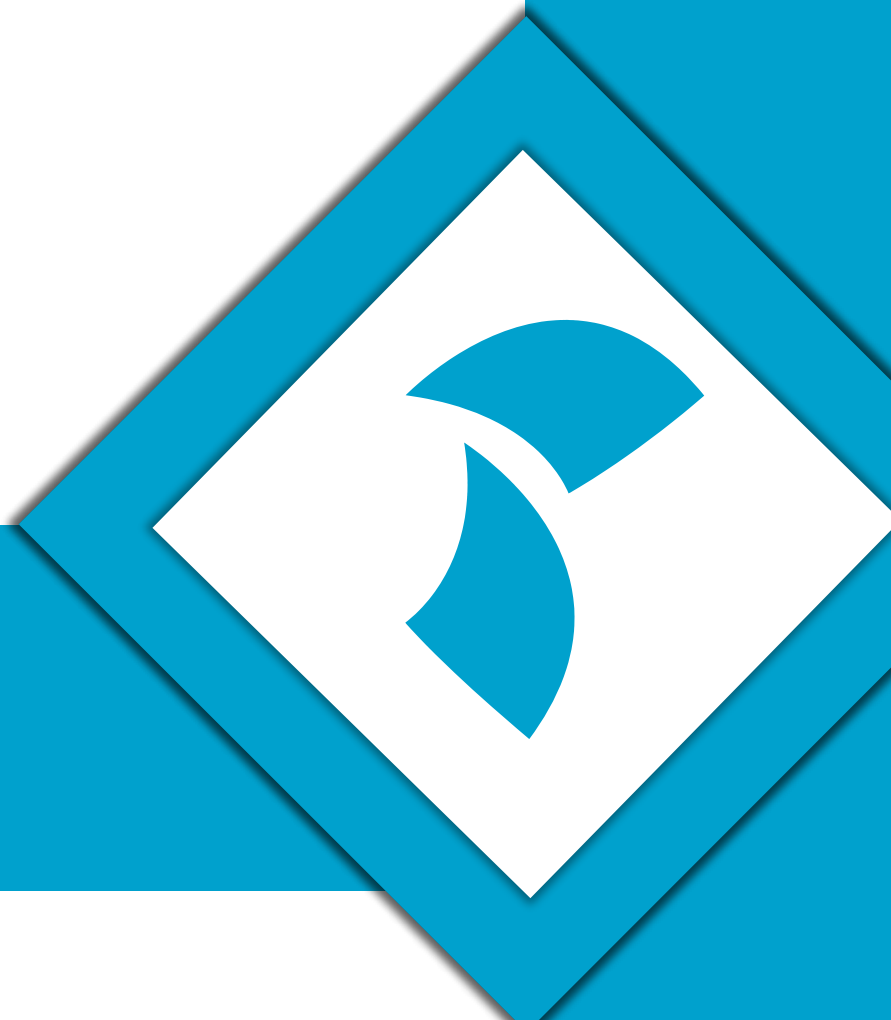


Id	Timestamp	Event Id	Target	Trigger Configuration	Applied Trigger Actions	Actions Applied	Errors
6	2023-10-20 11:21:36.035110	13	DBAT	CAWI: Case completed	StatusCode = 4	(1/1)	
5	2023-10-20 11:21:36.013537	13	CATI	CAWI: Case completed	CatiMana.CatiCall.RegsCalls[1].DialResult = 1,DialResult = 1	(2/2)	
4	2023-10-20 11:21:35.981491	13	CAPI	CAWI: Case completed	CMA_CaseClosed = 1,CMA_Status = 'Completed',CMA_Location = 'CLOSE_REQ'	(3/3)	
3	2023-10-20 11:21:35.869389	13	MMLA	CAWI: Case completed	OperationalStatus = 'Completed',ModifiedBy = 'cawi_kris',CaseClosed = 1	(3/3)	
2	2023-10-20 11:21:25.646879	11	DBAT	CAWI: Case started	StatusCode = 4	(1/1)	
1	2023-10-20 11:21:25.603342	11	MMLA	CAWI: Case started	OperationalStatus = 'Read',ModifiedBy = 'cawi_kris'	(2/2)	

MMCM – Event driven (5)

- We will ship a predefined configuration, but you can change/extend it to fit your own needs
- The Blaise 5.14 test release will contain this feature. In the future, we will probably extend the system with (some basic form of) sample management as well
  - This would allow linking of multiple cases within a survey (e.g. multiple respondents in a household) or multiple cases in multiple surveys to be filled in by the same person
- Users are invited to try this new feature and suggest improvements and extensions

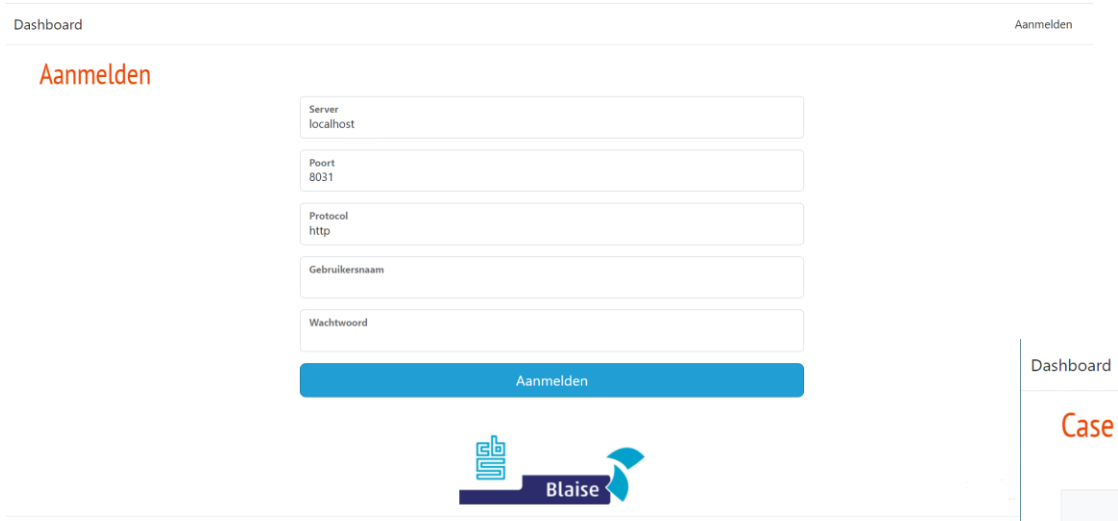
Dashboard

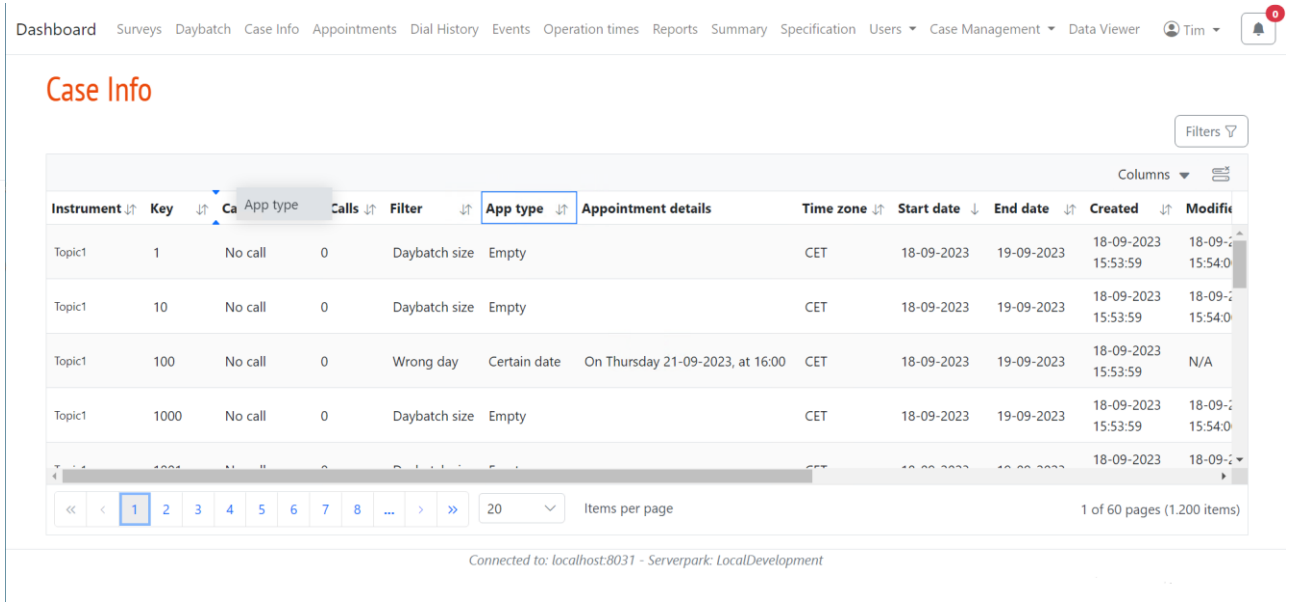


Dashboard

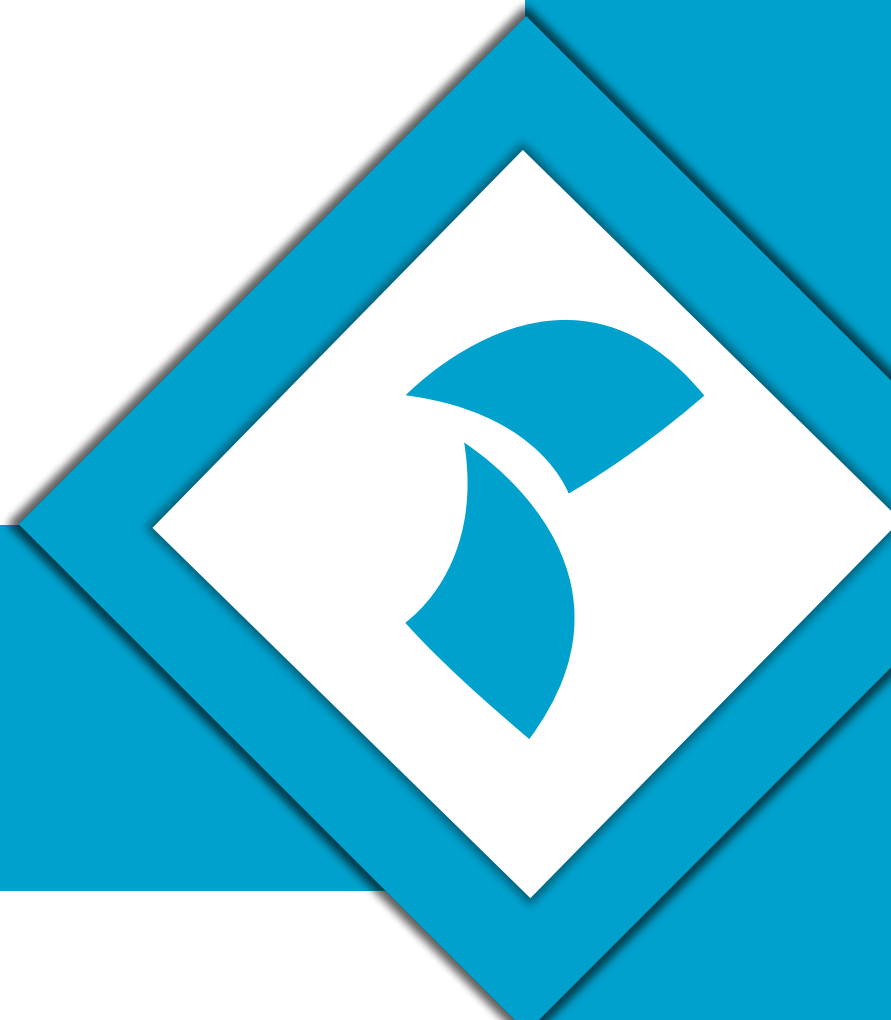
- New technology
  - Will allow hosting on other platforms than Windows in the future
- More contemporary look and feel
- More customizability
  - customize order of columns
- Still in the process of porting, we will probably include both the old and new dashboard in 5.14

Dashboard (2)


Dashboard
Aanmelden
Aanmelden
Server
localhost
Poort
8031
Protocol
http
Gebruikersnaam
Wachtwoord
Aanmelden
Blaise


Dashboard
Surveys
Daybatch
Case Info
Appointments
Dial History
Events
Operation times
Reports
Summary
Specification
Users
Case Management
Data Viewer
Tim
Case Info
Filters
Columns
Instrument
Key
Ca
App type
Calls
Filter
App type
Appointment details
Time zone
Start date
End date
Created
Modifie
Topic1 1 No call 0 Daybatch size Empty CET 18-09-2023 19-09-2023 18-09-2023 15:53:59
Topic1 10 No call 0 Daybatch size Empty CET 18-09-2023 19-09-2023 18-09-2023 15:53:59
Topic1 100 No call 0 Wrong day Certain date On Thursday 21-09-2023, at 16:00 CET 18-09-2023 19-09-2023 18-09-2023 15:53:59 N/A
Topic1 1000 No call 0 Daybatch size Empty CET 18-09-2023 19-09-2023 18-09-2023 15:53:59
1 2 3 4 5 6 7 8 ... 20 Items per page 1 of 60 pages (1.200 items)
Connected to: localhost:8031 - Serverpark: LocalDevelopment

Print Improvements

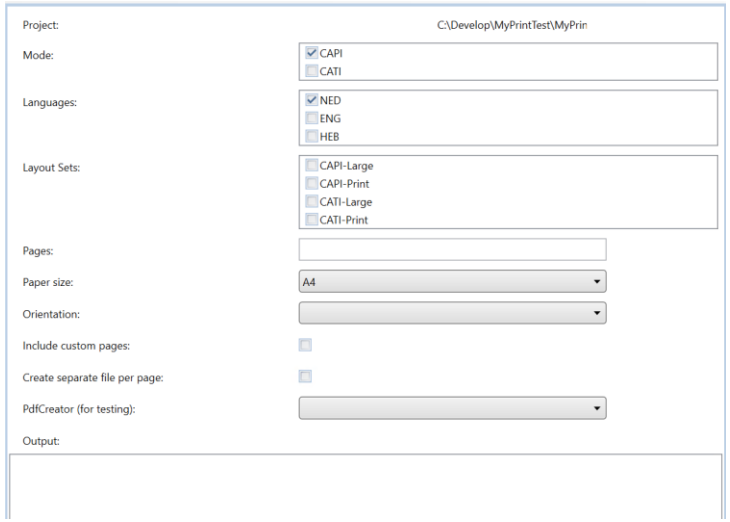


Print improvements

- Print design of your questionnaire
- Include parallels at the point where you call them

Print improvements (2)

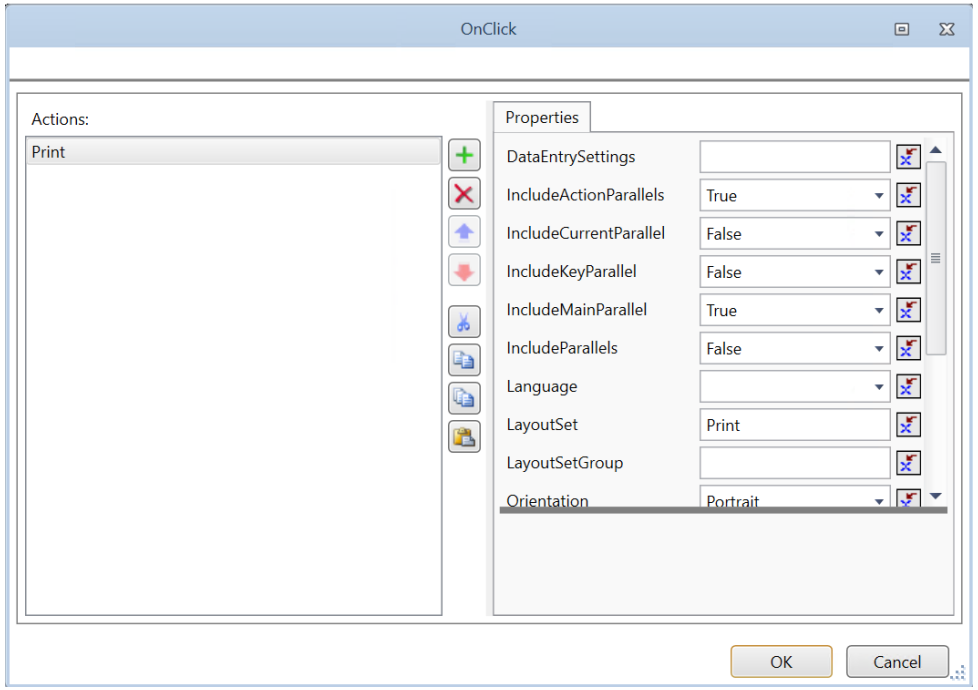
- Print design of your questionnaire
  - From command line with either project file or .bmix/.blax.layout/.blrd
    - InstrumentPrinter.exe -P:MyPrintTest.bproj -L:NED -PS:A4
    - InstrumentPrinter.exe
      -BF:"C:\MyPrintTest\MyPrintTest.bmix"
      -LF:"C:\MyPrintTest\MyPrintTest.blax.layout" -RD:"C:\MyPrintTest\MyPrintTest.blrd"
      -M:CAPI -L:ENG -PS:A4
  - From Layout Designer in Control Centre



- Demo

Print improvements (3)

- Include parallels at the point where you call them
  - IncludeActionParallels property
  - Will look for controls that have a SetParallel action and inserts the corresponding parallel behind that page (if Enabled is True and Visibility is Visible)

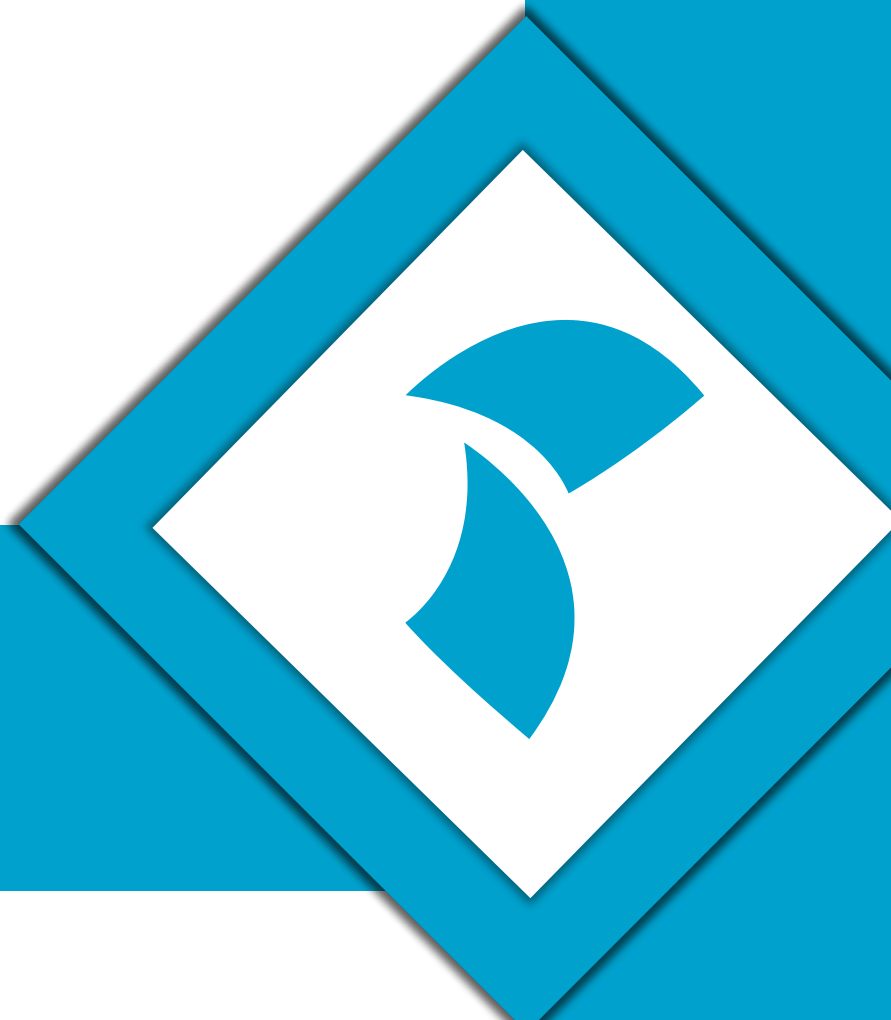


- Demo

Print improvements (4)

- Still working on:
  - Pagination improvements
  - Shrink-to-fit functionality

CATI Improvements



CATI improvements

- FieldMappings at block level
- CrewSettings (for appointment limiters)

FieldMappings at block level

Field Mappings in the CATI specification used to be field to field, so if you have a complete block with many fields or an array of blocks, it was quite tedious to specify them

Therefore, FieldMappings at block level were introduced

DM1_BlockOrArrayA:DM2_BlockOrArrayB

If DM1_BlockOrArrayA is a block, all fields within the block will be mapped to DM2_BlockOrArrayB with the same local field names. If the target field name does not exist, the field will not be mapped

If DM1_BlockOrArrayA is an array field, all instances of the block will be mapped to DM2_BlockOrArrayB with the same array index

FieldMappings at block level (2)

Dial survey

```
BLOCK BCallInfo
   FIELDS
    MadeBy: STRING[10]
    DayNumber: 1..999
    DialTime: TIMETYPE
    NrOfDials: 0..9
    DialResult: TCallResult
 ENDBLOCK

CallHistory.Calls.Calls:
        ARRAY[1..5] of BCallInfo
```

HealthSurvey (Cati.incx)

```
BLOCK TCall
 FIELDS
   WhoMade: STRING[10]
   DayNumber: 1..999
   DialTime: TIMETYPE
   NrOfDials: 0..9
   DialResult: TDialResult
ENDBLOCK

CatiMana.CatiCall.RegsCalls:
        ARRAY[1..5] of TCall
```

CatiMana.CatiCall.RegsCalls:CallHistory.Calls.Calls

This will map all fields in the CatiMana.CatiCall.RegsCalls block/array in the main datamodel to CallHistory.Calls.Calls. Only fields with the same name are included so “WhoMade” will not be mapped, because there is no such field in the target block

FieldMappings at block level (2)

To map **only named fields** within a block you can use the postfix

[FieldA,FieldB]

Example:

CatiMana.CatiCall.RegsCalls[DayNumber,DialResult]:CallHistory.Calls.Calls

Short for:

```
CatiMana.CatiCall.RegsCalls[1].DayNumber : CallHistory.Calls.Calls[1].DayNumber
CatiMana.CatiCall.RegsCalls[1].DialResult      : CallHistory.Calls.Calls[1].DialResult
                                                ..
CatiMana.CatiCall.RegsCalls[5].DayNumber : CallHistory.Calls.Calls[5].DayNumber
CatiMana.CatiCall.RegsCalls[5].DialResult      : CallHistory.Calls.Calls[5].DialResult
```

FieldMappings at block level (3)

To map **all fields except a few** named ones you can use the postfix

[-FieldA,-FieldB]

Example:

CatiMana.CatiCall.RegsCalls[-DialResult,-NrOfDials]:CallHistory.Calls.Calls

Short for:

CatiMana.CatiCall.RegsCalls[1].DayNumber : CallHistory.Calls.Calls[1].DayNumber
CatiMana.CatiCall.RegsCalls[1].DialTime : CallHistory.Calls.Calls[1].DialTime
..
CatiMana.CatiCall.RegsCalls[5].DayNumber : CallHistory.Calls.Calls[5].DayNumber
CatiMana.CatiCall.RegsCalls[5].DialTime : CallHistory.Calls.Calls[5].DialTime

FieldMappings at block level (4)

To map a **specific field inside the block to another local field** name in the target block, you can use use the postfix

[FieldA:MappedFieldA]

Example:

CatiMana.CatiCall.RegsCalls[WhoMade:MadeBy]:CallHistory.Calls.Calls

This will map only the WhoMade fields in the array to the MadeBy fields

FieldMappings at block level (5)

To map **all fields and map specific fields inside the block to other local field** names, you can use the postfix

[*|FieldA:MappedFieldA]

Example:

CatiMana.CatiCall.RegsCalls[*|WhoMade:MadeBy]:CallHistory.Calls.Calls

This will map all fields in the RegsCalls block where the WhoMade field will be mapped to the field MadeBy

FieldMappings at block level (7)

CatiMana.CatiCall.RegsCalls[1].WhoMade:CallHistory.Calls.Calls[1].MadeBy;CatiMana.CatiCall.RegsCalls[1].DayNumber:CallHistory.Calls.Calls[1].DayNumber;CatiMana.CatiCall.RegsCalls[1].DialTime:CallHistory.Calls.Calls[1].DialTime;CatiMana.CatiCall.RegsCalls[1].NrOfDials:CallHistory.Calls.Calls[1].NrOfDials;CatiMana.CatiCall.RegsCalls[1].DialResult:CallHistory.Calls.Calls[1].DialResult;CatiMana.CatiCall.RegsCalls[2].WhoMade:CallHistory.Calls.Calls[2].MadeBy;CatiMana.CatiCall.RegsCalls[2].DayNumber:CallHistory.Calls.Calls[2].DayNumber;CatiMana.CatiCall.RegsCalls[2].DialTime:CallHistory.Calls.Calls[2].DialTime;CatiMana.CatiCall.RegsCalls[2].NrOfDials:CallHistory.Calls.Calls[2].NrOfDials;CatiMana.CatiCall.RegsCalls[2].DialResult:CallHistory.Calls.Calls[2].DialResult;CatiMana.CatiCall.RegsCalls[3].WhoMade:CallHistory.Calls.Calls[3].MadeBy;CatiMana.CatiCall.RegsCalls[3].DayNumber:CallHistory.Calls.Calls[3].DayNumber;CatiMana.CatiCall.RegsCalls[3].DialTime:CallHistory.Calls.Calls[3].DialTime;CatiMana.CatiCall.RegsCalls[3].NrOfDials:CallHistory.Calls.Calls[3].NrOfDials;CatiMana.CatiCall.RegsCalls[3].DialResult:CallHistory.Calls.Calls[3].DialResult;CatiMana.CatiCall.RegsCalls[4].WhoMade:CallHistory.Calls.Calls[4].MadeBy;CatiMana.CatiCall.RegsCalls[4].DayNumber:CallHistory.Calls.Calls[4].DayNumber;CatiMana.CatiCall.RegsCalls[4].DialTime:CallHistory.Calls.Calls[4].DialTime;CatiMana.CatiCall.RegsCalls[4].NrOfDials:CallHistory.Calls.Calls[4].NrOfDials;CatiMana.CatiCall.RegsCalls[4].DialResult:CallHistory.Calls.Calls[4].DialResult;CatiMana.CatiCall.RegsCalls[5].WhoMade:CallHistory.Calls.Calls[5].MadeBy;CatiMana.CatiCall.RegsCalls[5].DayNumber:CallHistory.Calls.Calls[5].DayNumber;CatiMana.CatiCall.RegsCalls[5].DialTime:CallHistory.Calls.Calls[5].DialTime;CatiMana.CatiCall.RegsCalls[5].NrOfDials:CallHistory.Calls.Calls[5].NrOfDials;CatiMana.CatiCall.RegsCalls[5].DialResult:CallHistory.Calls.Calls[5].DialResult;Person.PhoneNumber:PhoneNumber;Person.WorkPhoneNumber:WorkPhoneNumber

Can be replaced by

CatiMana.CatiCall.RegsCalls[*|WhoMade:MadeBy]:CallHistory.Calls.Calls;Person.PhoneNumber:PhoneNumber;Person.WorkPhoneNumber:WorkPhoneNumber

Crew Settings

- Functionality was requested to limit the number of appointments that can be made in a specific time slot
- For this, Crew Settings were (re)introduced and can be defined
  - for all instruments
  - for a specific launcher (with all topic instruments that use that launcher)
  - for a specific instrument

  - for a specific date
  - for one or more weekdays (possibly between a start and/or end date)

Crew Settings (2)

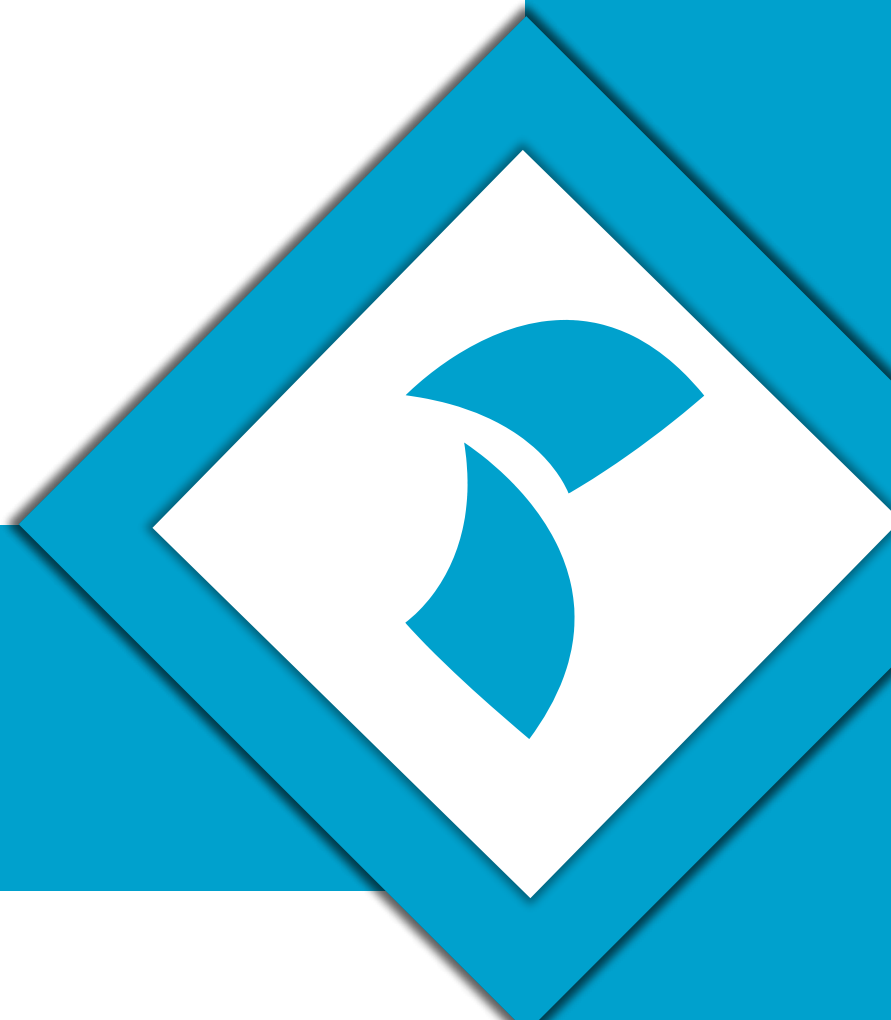
- In Crew Settings, two numbers can be defined
  - MaxConcurrentHardAppointments
    - Defines how many hard appointments at the same time are allowed
  - MaxTotalSoftAppointments
    - Defines how many soft appointments are allowed for the whole timeslot
- The most specific Crew Settings for an instrument apply
  - Topic > Launcher > General
  - Specific date > Weekdays

Crew Settings (3)

- In the Appointment control, a message will show if an attempt is made to set an appointment in a time slot that has reached the maximum number of allowed appointments

- Demo

Testing Tool



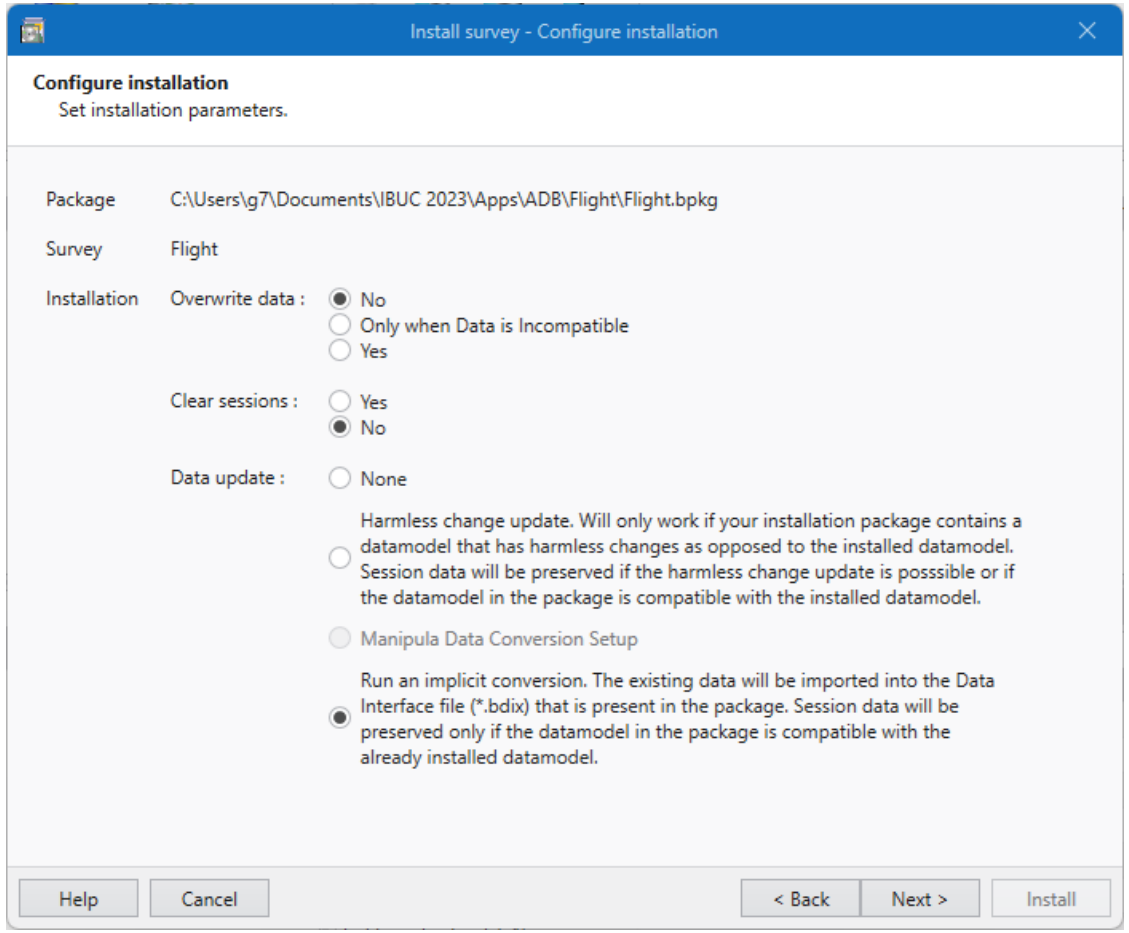
Testing Tool

- Generate records so all fields in your datamodel are on route at least once
- Generate random data records
- Visualize differences between two versions of a datamodel
- Start Data Entry client to run a session up to the point, e.g. where a difference occurs (using the field values required to get to that point)
  - Less cumbersome to test a specific page, especially late in the questionnaire

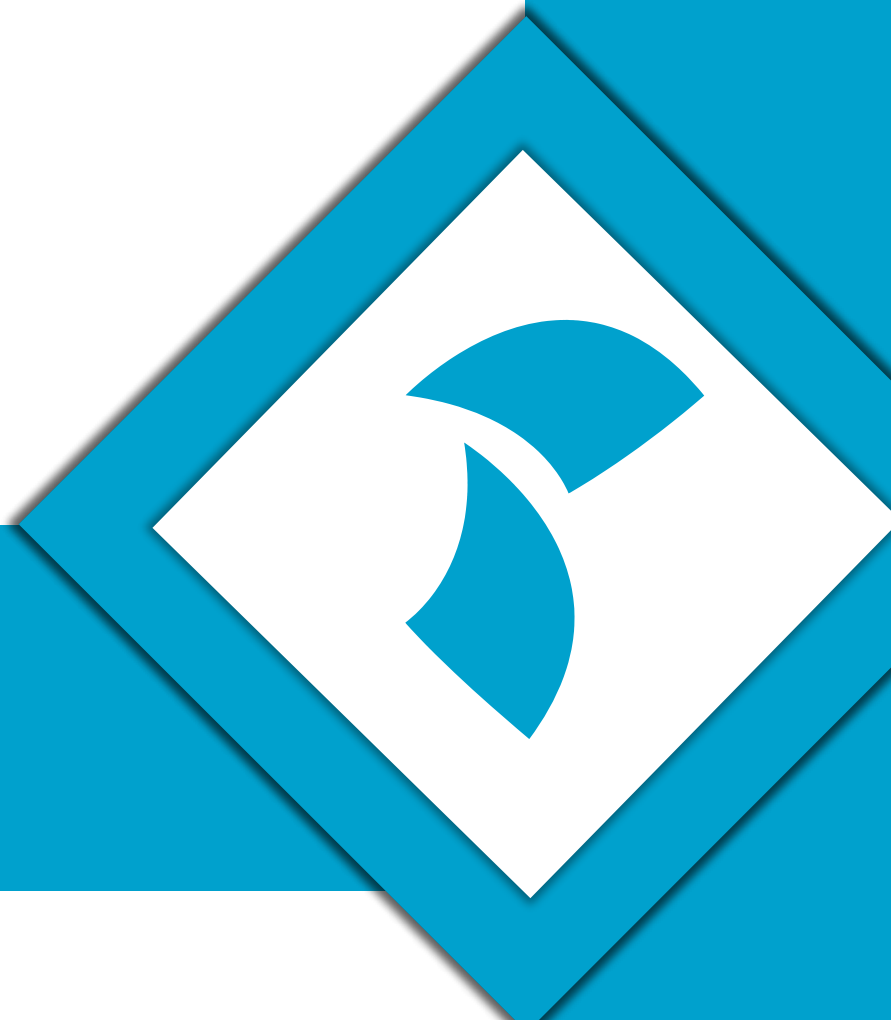
Implicit Data Conversion

Implicit Data Conversion

- None
- Harmless change update
- Data Conversion Setup
  - Installation package contains an incompatible datamodel and a Manipula data conversion setup
  - Setup is executed to perform the data update
- **New option in 5.14: Implicit data conversion**
- Last two options have a two step installation process
  - The data conversion is executed on the first install. Once completed, the survey is still running with the old meta and data files.
  - At this point you can look whether the conversion was executed succesfully
  - The second install will update the survey and data files at the deploy location with the converted data.



Miscellaneous

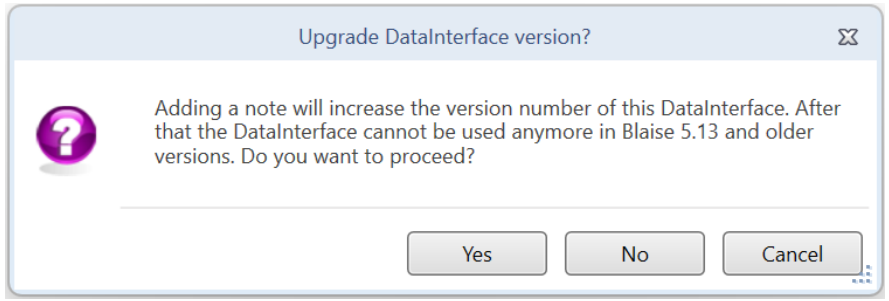


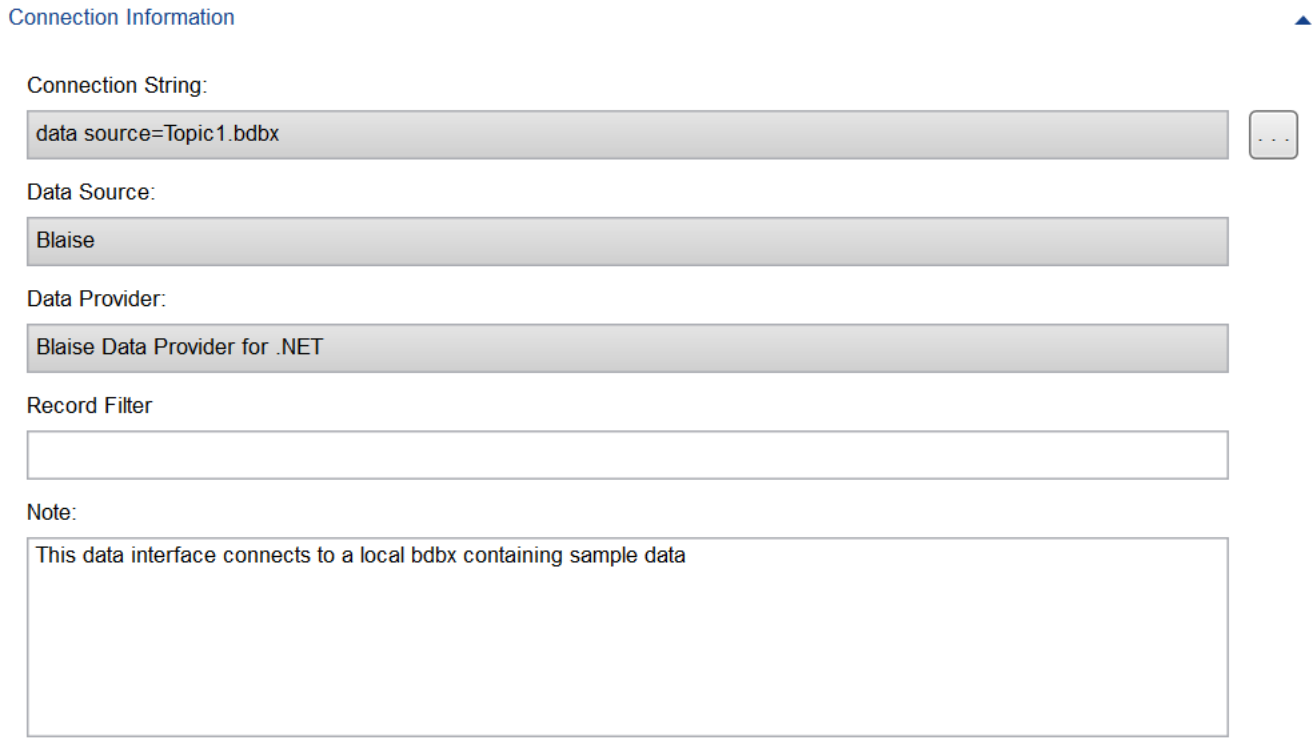
Miscellaneous

- Notes for .bdix
- Extended info in Solution Explorer
- No Titlebar for Windows DEP
- Multi Layout Set Layout Instructions
- Auto expand in Session and Data Viewer

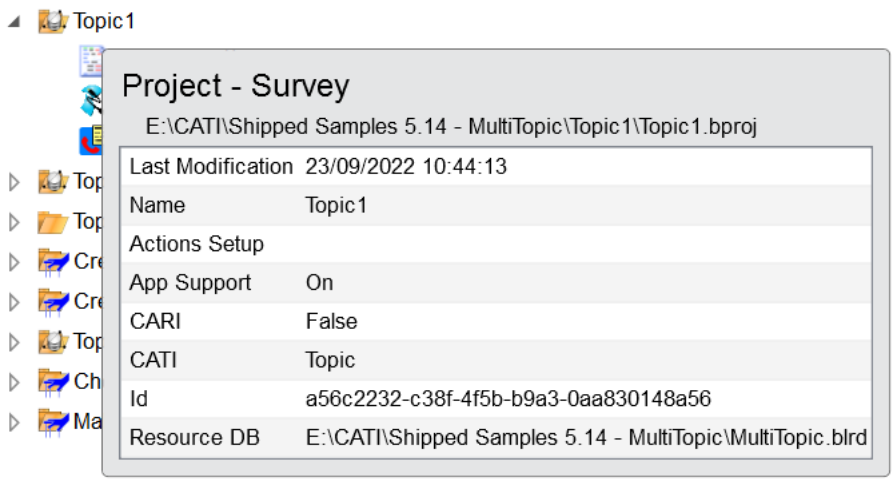
Notes for .bdix

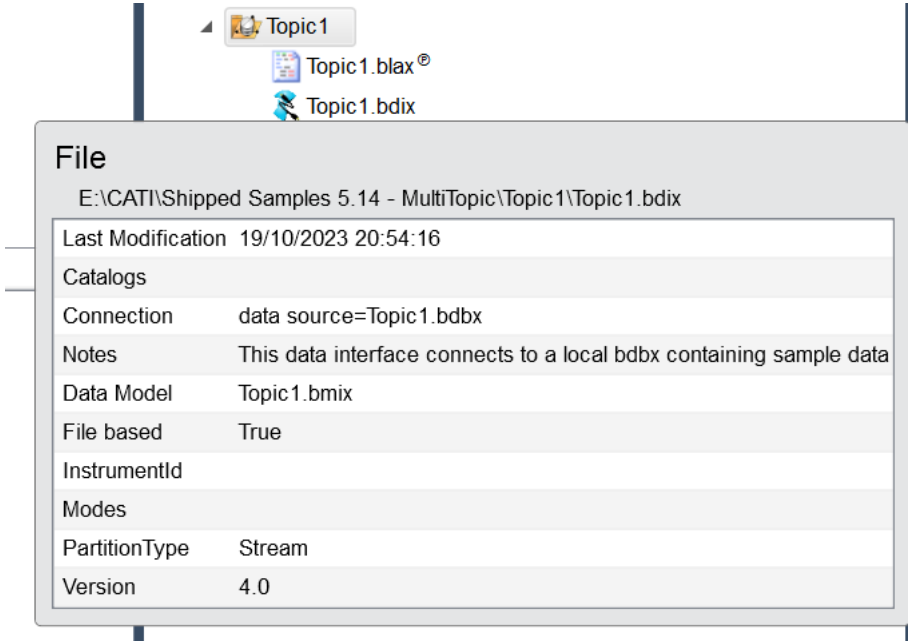
- It is now possible to provide notes in a Data Interface file (.bdix)





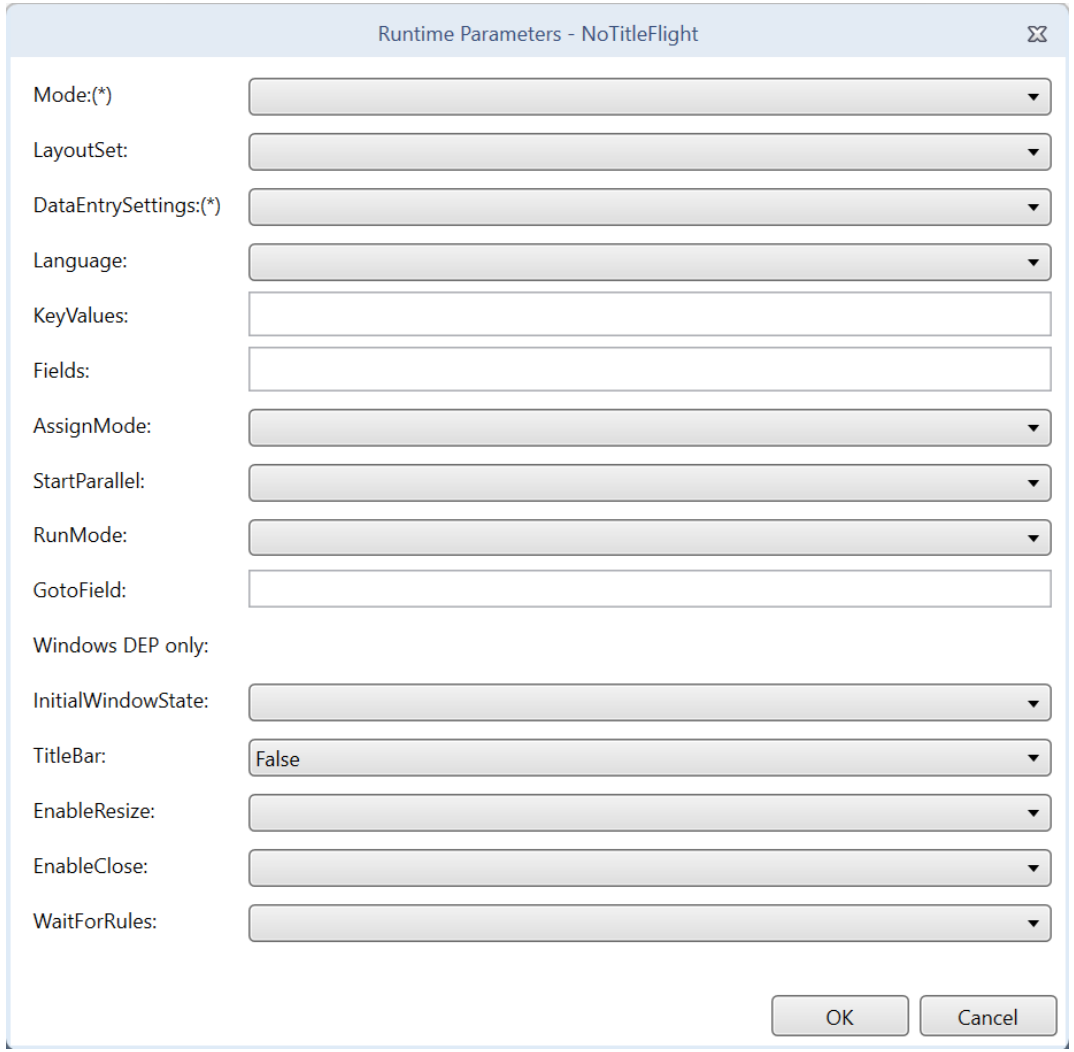
Extended info in Solution Explorer





No TitleBar for Windows DEP

- We have added a command line option to show no title bar for the Windows DEP
  - -TitleBar:False

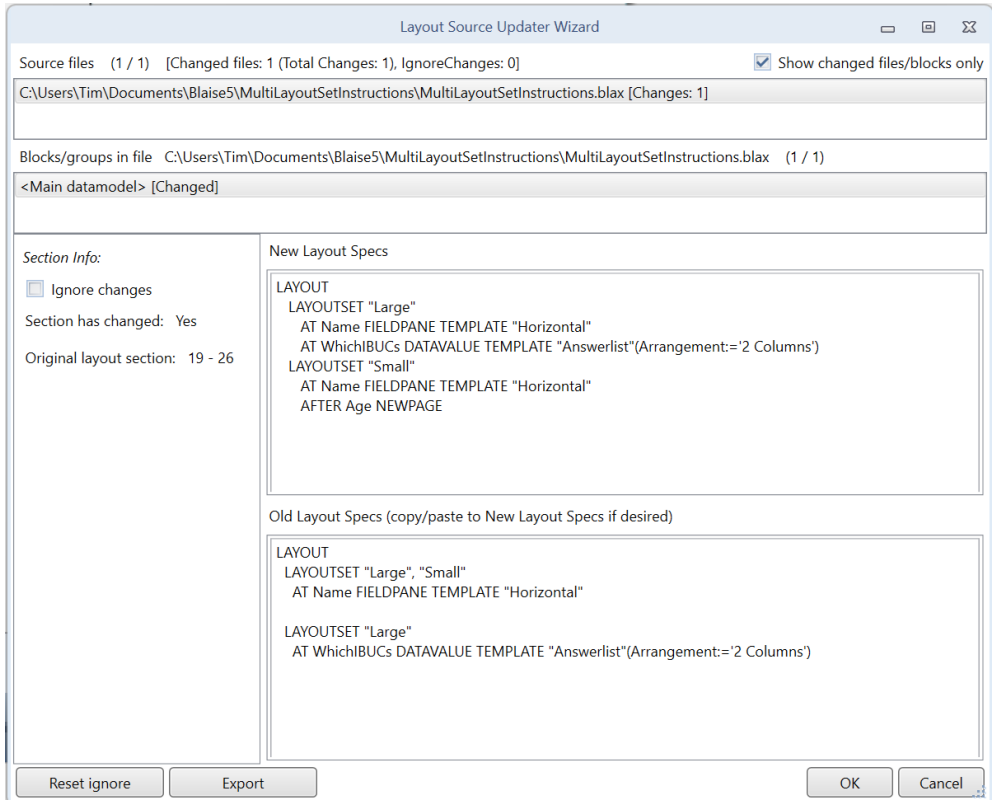


Multi Layout Set Layout Instructions

- Layout instructions for multiple layout sets
  - Comma separated list of layout set names
- Only one-way: from layout section in .blax to layout

```
LAYOUT
  LAYOUTSET "Large", "Small"
    AT Name FIELDPANE TEMPLATE "Horizontal"

  LAYOUTSET "Large"
    AT WhichIBUCs DATAVALUE TEMPLATE "Answerlist"(Arrangement:='2 Columns')
```



- Demo

Auto expand in Session and Data Viewer

- An option was added to automatically expand the tree view
- Possible future improvement: automatically focus a selected field or block