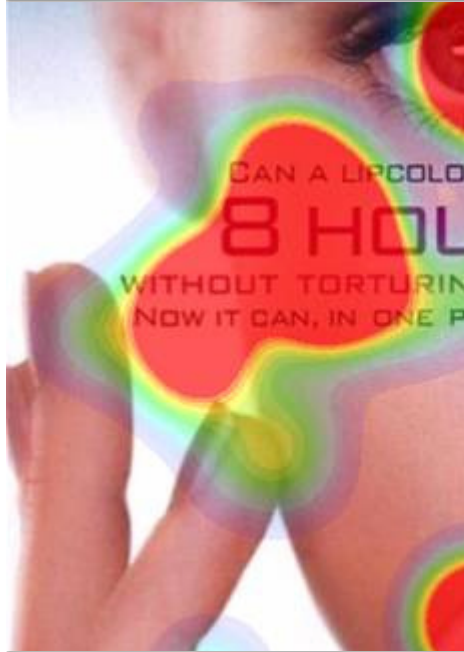



# Eyetracking Technology



SMI Experiment Suite v3.0

Feb 2011

- SMI Experiment Suite 360° = SMI Experiment Center + SMI BeGaze
- New License type – Floating network license
- New Web Analysis for static and dynamic web sites (new package)
- PDF as new stimulus element
- Task based design and execution
- Segmenting and grouping of eye tracking data in BeGaze
- RTA – Retrospective Think/Talk Aloud (new package incl. Observation package as well)
- Enhanced BeGaze Player Control incl. audio channel
- Automatic Check for Updates
- External video up to 1080p

- Single License and Network Floating License available!
- Network Floating License price = Single License price + 20%
- What is a Single License?
  - This type of license allows you to start one instance of Experiment Center and BeGaze on a computer. The license is protected by a dongle connected to the computer where the programs are executed. This can be extended by a network floating license.
- What is a Network Floating License? 
  - A network floating license is a license to execute BeGaze and Experiment Center on any computer attached to the local network. This enables a group of users to share the use of a program. Network licenses are counted in terms of concurrent users. If a department owns a single network license then only one user can execute the program. Other users who attempt to execute the program while a copy is currently running will be denied.

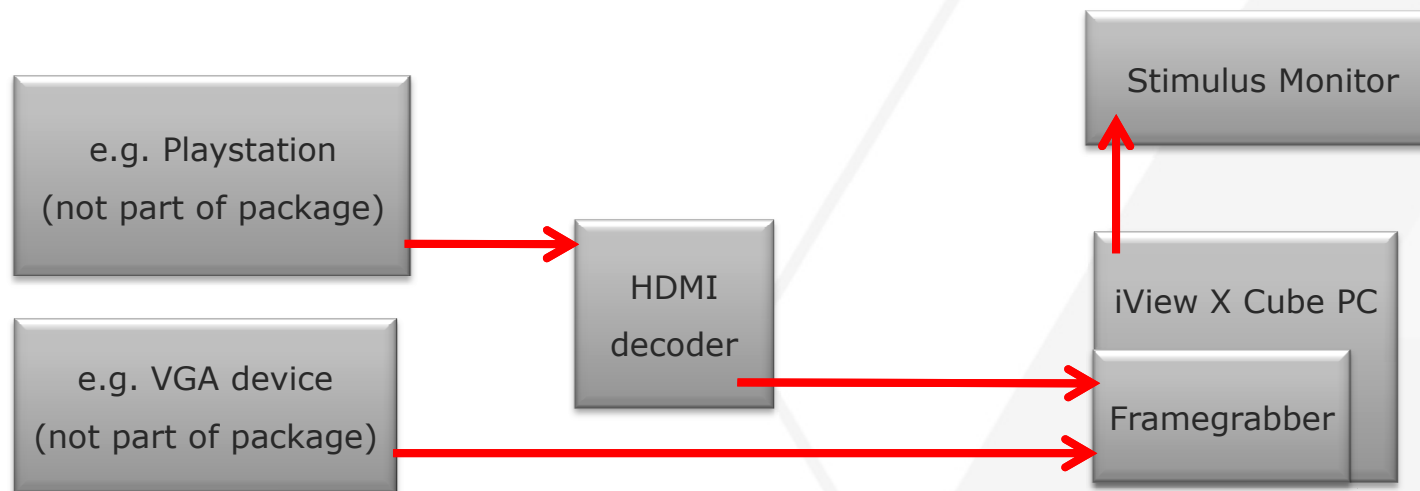
## ■ Web analysis package

- New package that need to be licensed individually
- Enables Web as stimulus element in Experiment Center and allows website grouping in BeGaze
- BUT the upgrade is for free for existing customer
  - NO need to update the dongles (existing „old“ dongles are compatible with the new web package)

## ■ RTA and Observation package

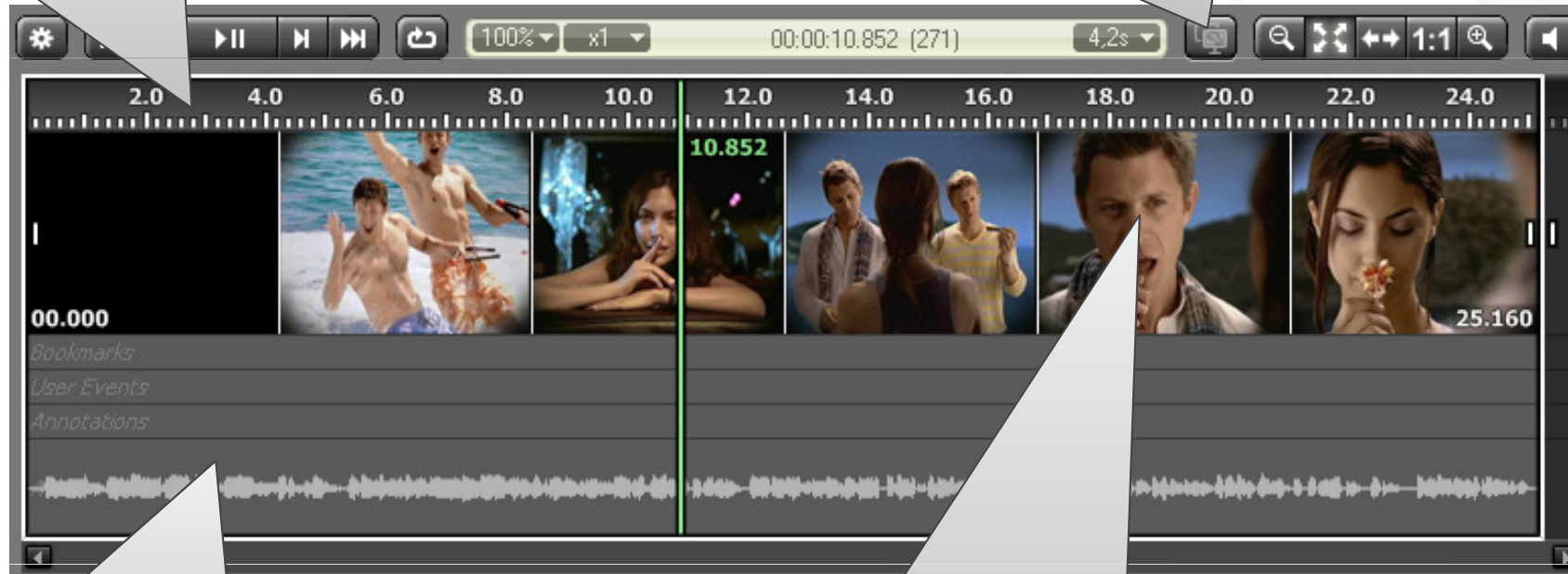
- New package that need to be licensed individually
- Enables RTA recording in BeGze
- The package also includes the Observation package
  - Nevertheless, Observation package can also be licensed without RTA

- Connects external video sources as a stimulus element to Experiment Center, e.g. Playstation, X-Box
- Records external video sources with gaze cursor overlay up to 1080p (1920 x 1080 pixel)
- Package contains all necessary external HW components (PCI Framegrabber, HDMI converter, cables)
- Video analysis package license is included in Frame grabber package



**New**  
Timeline with snap-on functionality

**New**  
Full screen playback on  
secondary screen

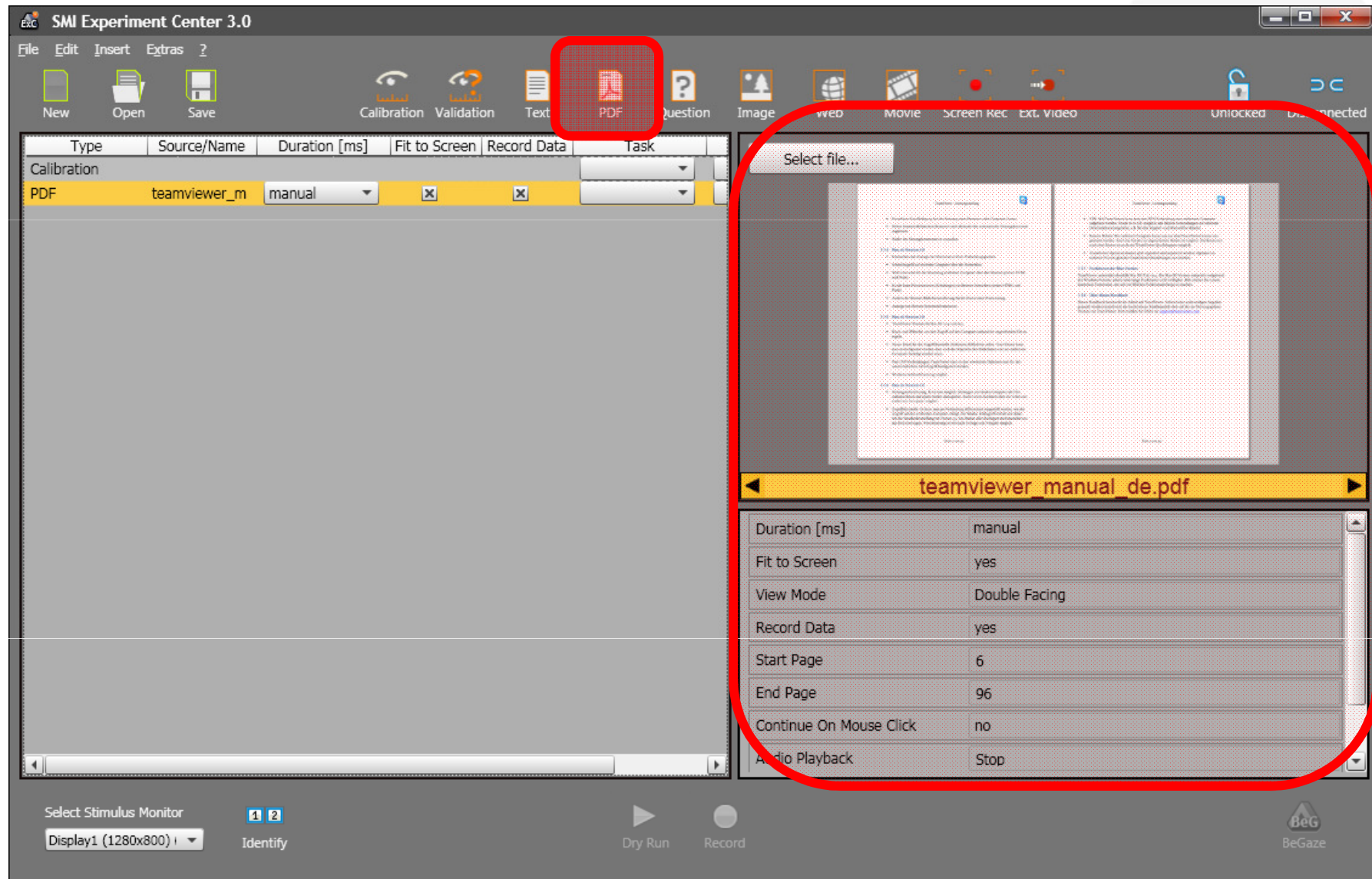


**New**  
Audio visualisation channel

**Improved**  
Thumbnail channel is only shown when stimuli content is  
dynamic (video)

- Un-used channels are automatically hidden

- Use case:
  - Web and Software mockup testing
  - User Manual and Quick guide testing
- Properties
  - Display mode: Single or double page (facing, non-facing)
  - Set start and end page
  - Support of Links within the pdf file
  - Continue on mouseclick (for webpages, e.g. a mouseclick on a button triggers the end of a task)
  - High quality rendering and screenshots of pdf pages
  - Intuitive and simple navigation between the pages



The screenshot shows the SMI Experiment Center 3.0 interface. A red circle highlights the PDF icon in the toolbar and the PDF configuration panel on the right. The configuration panel includes a file selection area, a table of settings, and playback controls.

Type	Source/Name	Duration [ms]	Fit to Screen	Record Data	Task
PDF	teamviewer_m	manual	x	x	

Select file...

teamviewer\_manual\_de.pdf

Duration [ms]	manual
Fit to Screen	yes
View Mode	Double Facing
Record Data	yes
Start Page	6
End Page	96
Continue On Mouse Click	no
Audio Playback	Stop

Select Stimulus Monitor: Display1 (1280x800) | Identify

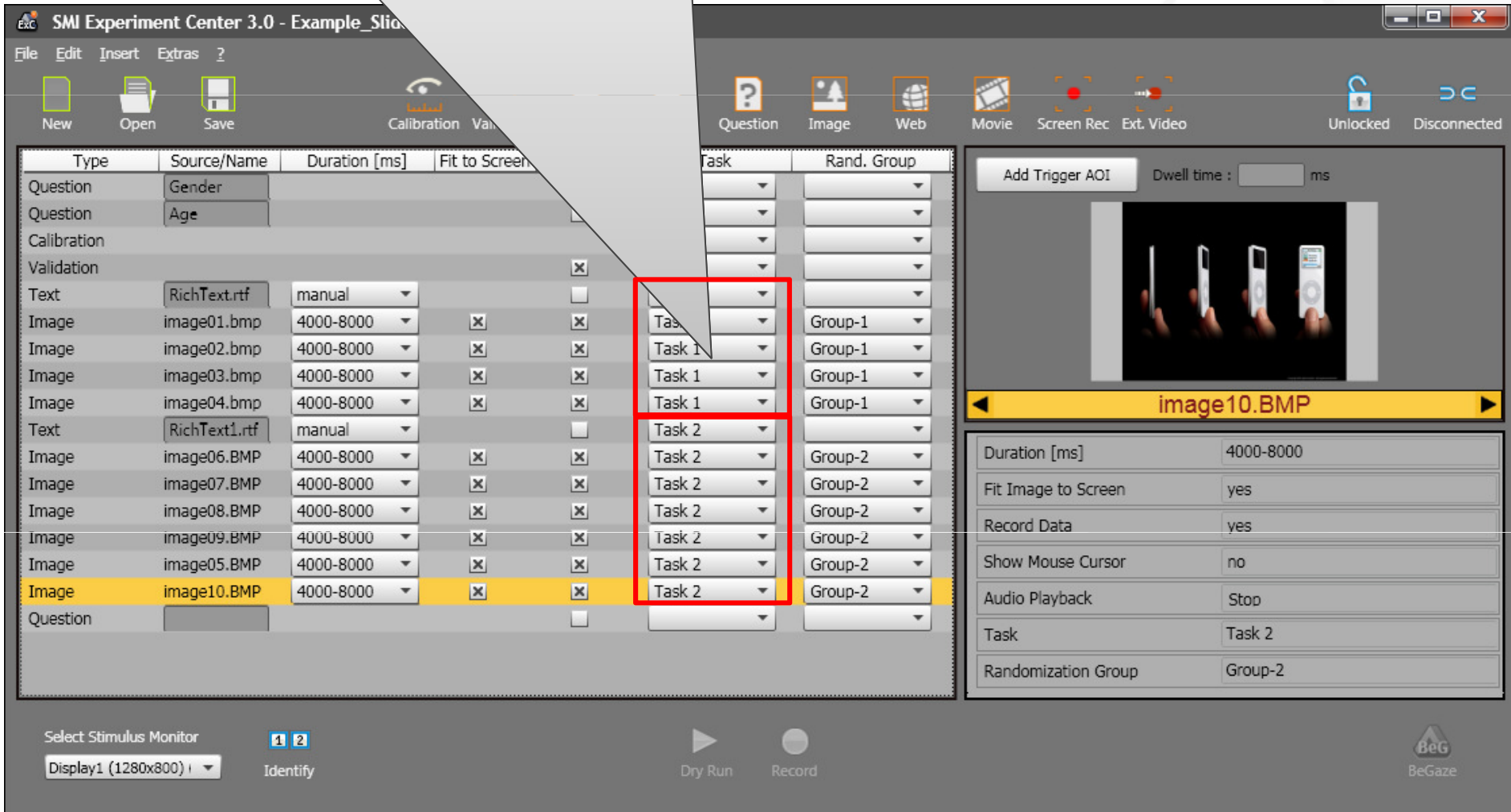
Dry Run | Record

BeGaze BeGaze

- Standard methodology in usability and psychology
- Design your experiment with as many tasks as you want
- Each element/stimulus in the experiment can be assigned to a task
- When recording starts, the operator decides which tasks has to be performed for each individual participant. The other tasks are skipped.
- The results are automatically collected and correct assigned in BeGaze
- Tasks can be filtered in BeGaze (similar to subject properties)

## Define tasks -

(„empty“ fields are always been presented to participant)



The screenshot displays the SMI Experiment Center 3.0 interface. The main window is titled "SMI Experiment Center 3.0 - Example\_Slides". It features a menu bar (File, Edit, Insert, Extras, ?) and a toolbar with icons for New, Open, Save, Calibration, Validation, Question, Image, Web, Movie, Screen Rec, Ext. Video, Unlocked, and Disconnected. The central area is divided into a task list table and a detailed task configuration panel.

Type	Source/Name	Duration [ms]	Fit to Screen	Task	Rand. Group
Question	Gender				
Question	Age				
Calibration					
Validation			<input checked="" type="checkbox"/>		
Text	RichText.rtf	manual			
Image	image01.bmp	4000-8000	<input checked="" type="checkbox"/>	Task 1	Group-1
Image	image02.bmp	4000-8000	<input checked="" type="checkbox"/>	Task 1	Group-1
Image	image03.bmp	4000-8000	<input checked="" type="checkbox"/>	Task 1	Group-1
Image	image04.bmp	4000-8000	<input checked="" type="checkbox"/>	Task 1	Group-1
Text	RichText1.rtf	manual			
Image	image06.BMP	4000-8000	<input checked="" type="checkbox"/>	Task 2	Group-2
Image	image07.BMP	4000-8000	<input checked="" type="checkbox"/>	Task 2	Group-2
Image	image08.BMP	4000-8000	<input checked="" type="checkbox"/>	Task 2	Group-2
Image	image09.BMP	4000-8000	<input checked="" type="checkbox"/>	Task 2	Group-2
Image	image05.BMP	4000-8000	<input checked="" type="checkbox"/>	Task 2	Group-2
Image	image10.BMP	4000-8000	<input checked="" type="checkbox"/>	Task 2	Group-2
Question					

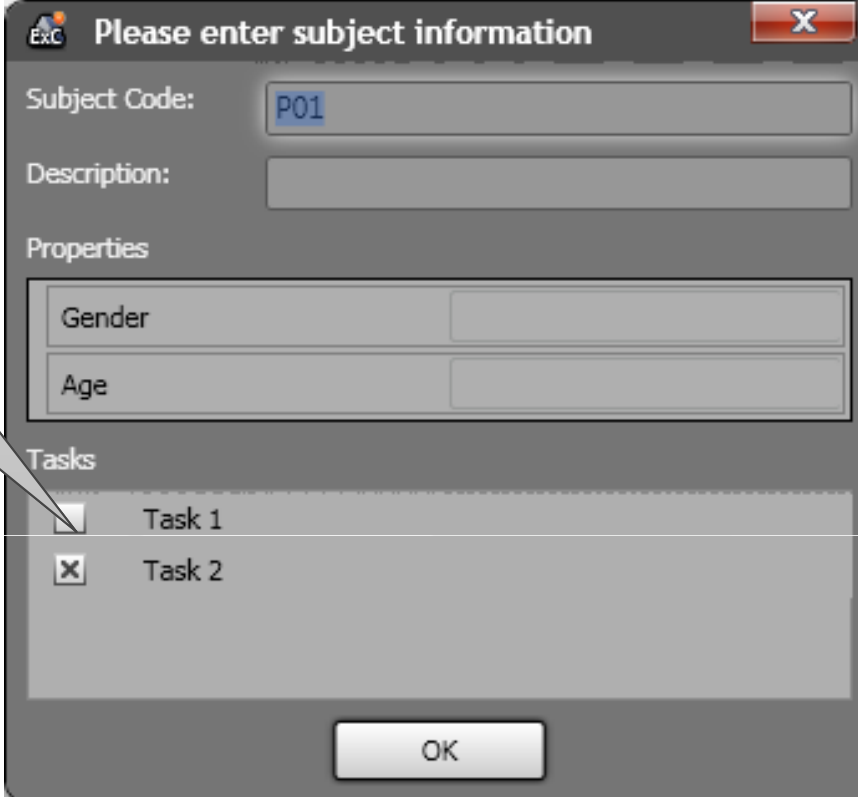
The detailed task configuration panel for "image10.BMP" shows the following settings:

- Duration [ms]: 4000-8000
- Fit Image to Screen: yes
- Record Data: yes
- Show Mouse Cursor: no
- Audio Playback: Stop
- Task: Task 2
- Randomization Group: Group-2

At the bottom of the interface, there is a "Select Stimulus Monitor" dropdown set to "Display1 (1280x800)", an "Identify" button, and "Dry Run" and "Record" buttons. The BeGaze logo is visible in the bottom right corner.

# Task based execution

When experiment is started,  
you can select which tasks have to be executed  
(= shown to the participant)



The screenshot shows a dialog box titled "Please enter subject information" with a close button (X) in the top right corner. The dialog contains several input fields and a list of tasks. The "Subject Code" field contains "P01". The "Description" field is empty. Under the "Properties" section, there are two rows: "Gender" and "Age", each with an empty input field. Under the "Tasks" section, there are two rows: "Task 1" with an unchecked checkbox and "Task 2" with a checked checkbox (marked with an 'X'). An "OK" button is located at the bottom right of the dialog.

Field	Value
Subject Code	P01
Description	
Gender	
Age	
Task 1	<input type="checkbox"/>
Task 2	<input checked="" type="checkbox"/>

- Full flexibility in web testing – nearly no limitations
- Use of external browser (MS Internet Explorer) – fully configurable
- Capturing of all open browser windows, pop-ups and multiple-tabs within the browser
- All websites are recorded as static images (with scroll and position compensation) plus session screenrecording for alternative analysis (e.g. highly active content) in BeGaze
- Optimized website „screenshot“ options – during loading, when loaded, when initialized, operator triggered, when leaving

# BeGaze: Stimulus selection and web content association

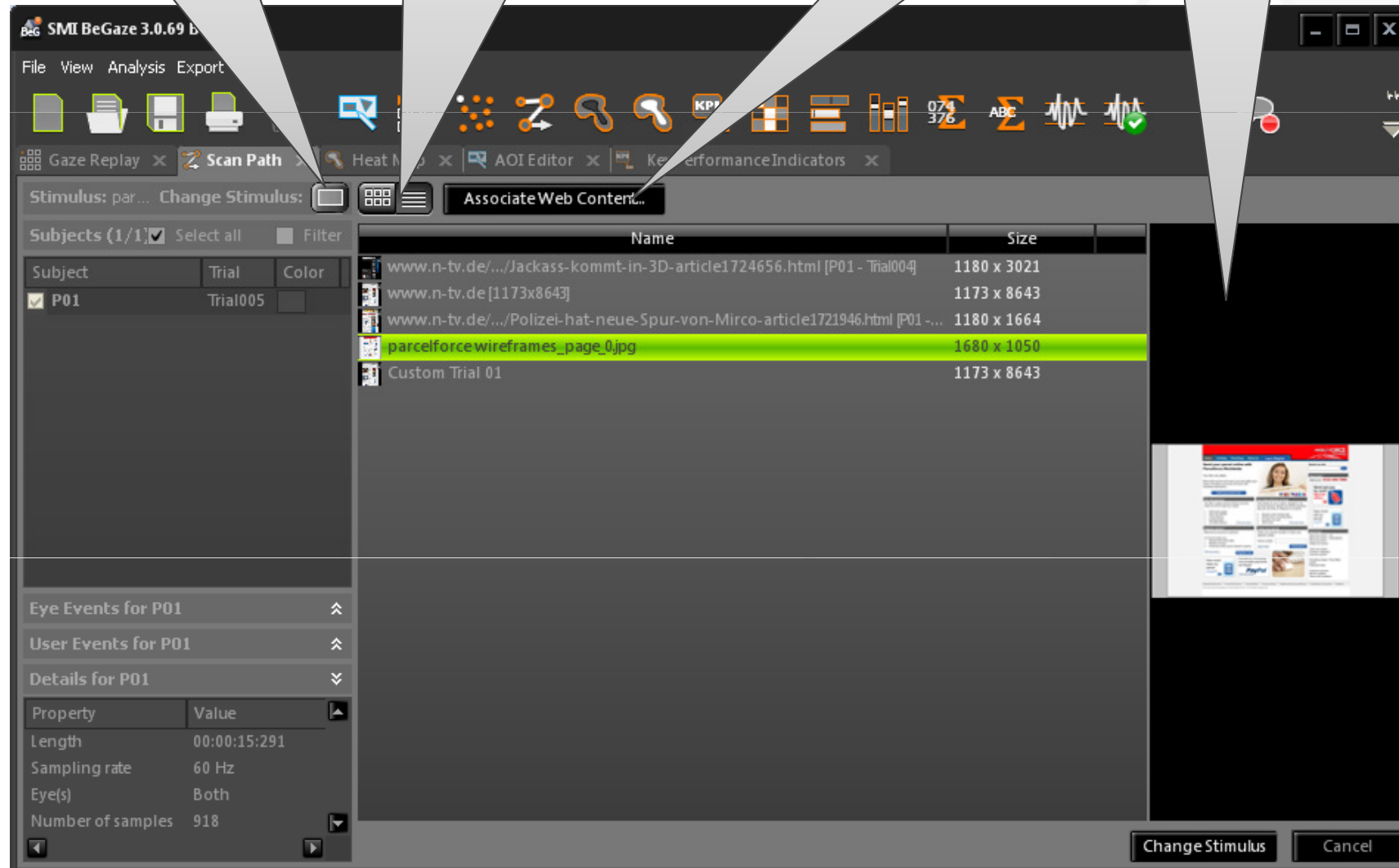
Press stimulus selector

### Two Modes

- Thumbnail view
- List view (new)

Website association  
(see next slide)

Stimulus preview  
(in list mode)



The screenshot shows the SMI BeGaze 3.0.69 software interface. The main window displays a list of stimuli with columns for Name and Size. The selected stimulus is "parcelforce wireframes\_page\_0.jpg" with a size of 1680 x 1050. The interface includes a menu bar (File, View, Analysis, Export), a toolbar with various icons, and a sidebar with options for Subjects, Eye Events, User Events, and Details for P01. A "Change Stimulus" button is visible at the bottom right.

Name	Size
www.n-tv.de/.../Jackass-kommt-in-3D-article1724656.html [P01 - Trial004]	1180 x 3021
www.n-tv.de [1173x8643]	1173 x 8643
www.n-tv.de/.../Polizei-hat-neue-Spur-von-Mirco-article1721946.html [P01 - ...]	1180 x 1664
parcelforce wireframes_page_0.jpg	1680 x 1050
Custom Trial 01	1173 x 8643

Overview of associated participant-trials to website groups

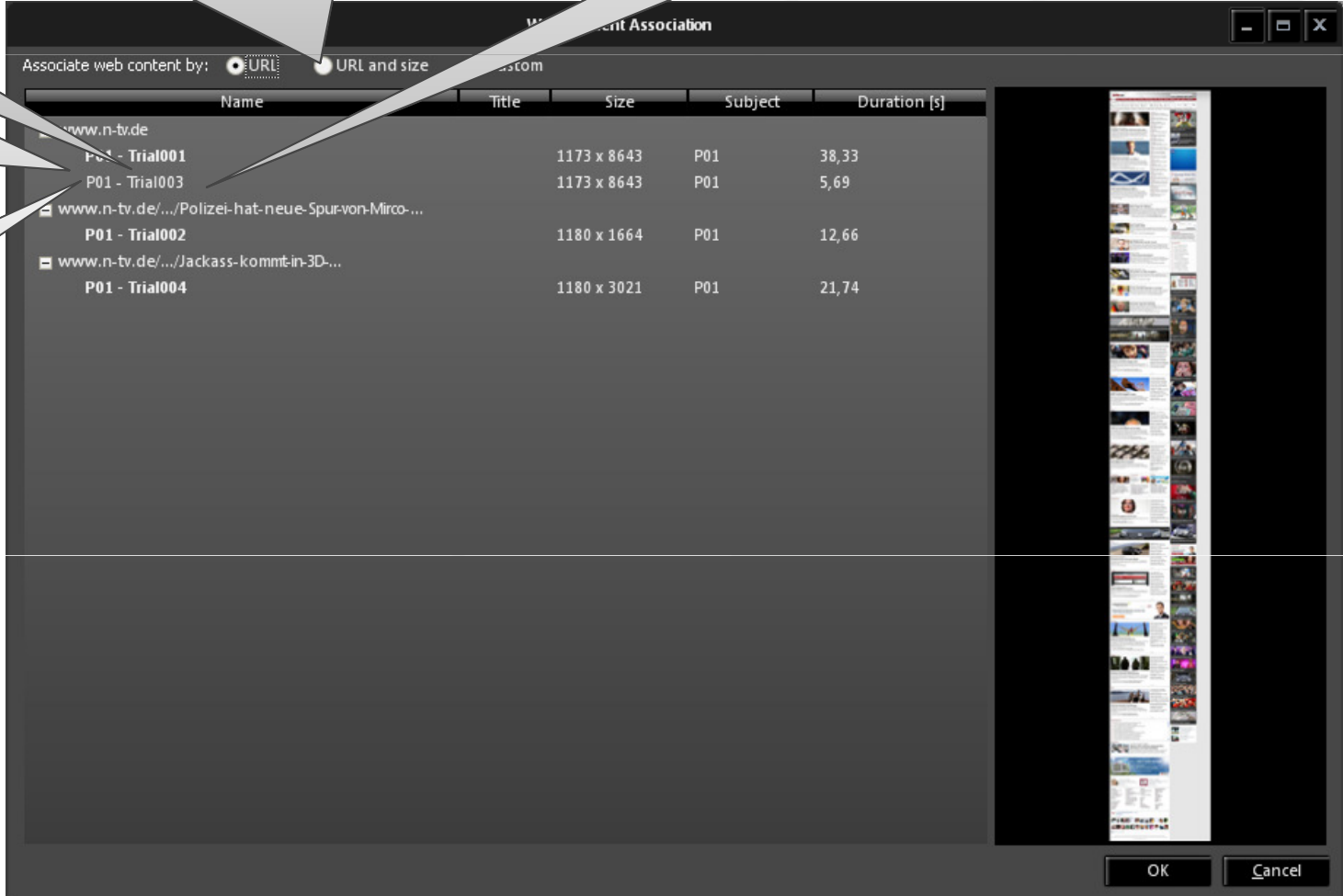
Website grouping (sorting) options

- URL
- URL + size of stimulus
- Fully custom

Mark two participant-trials to see the differences of images to the right

Select a participant-trial to see the corresponding stimulus image to the right

Select the group background image by double clicking on a participant-trial



Name	Title	Size	Subject	Duration [s]
www.n-tv.de P01 - Trial001		1173 x 8643	P01	38,33
P01 - Trial003		1173 x 8643	P01	5,69
www.n-tv.de/.../Polizei-hat-neue-Spur-von-Mirco-... P01 - Trial002		1180 x 1664	P01	12,66
www.n-tv.de/.../Jackass-kommt-in-3D-... P01 - Trial004		1180 x 3021	P01	21,74

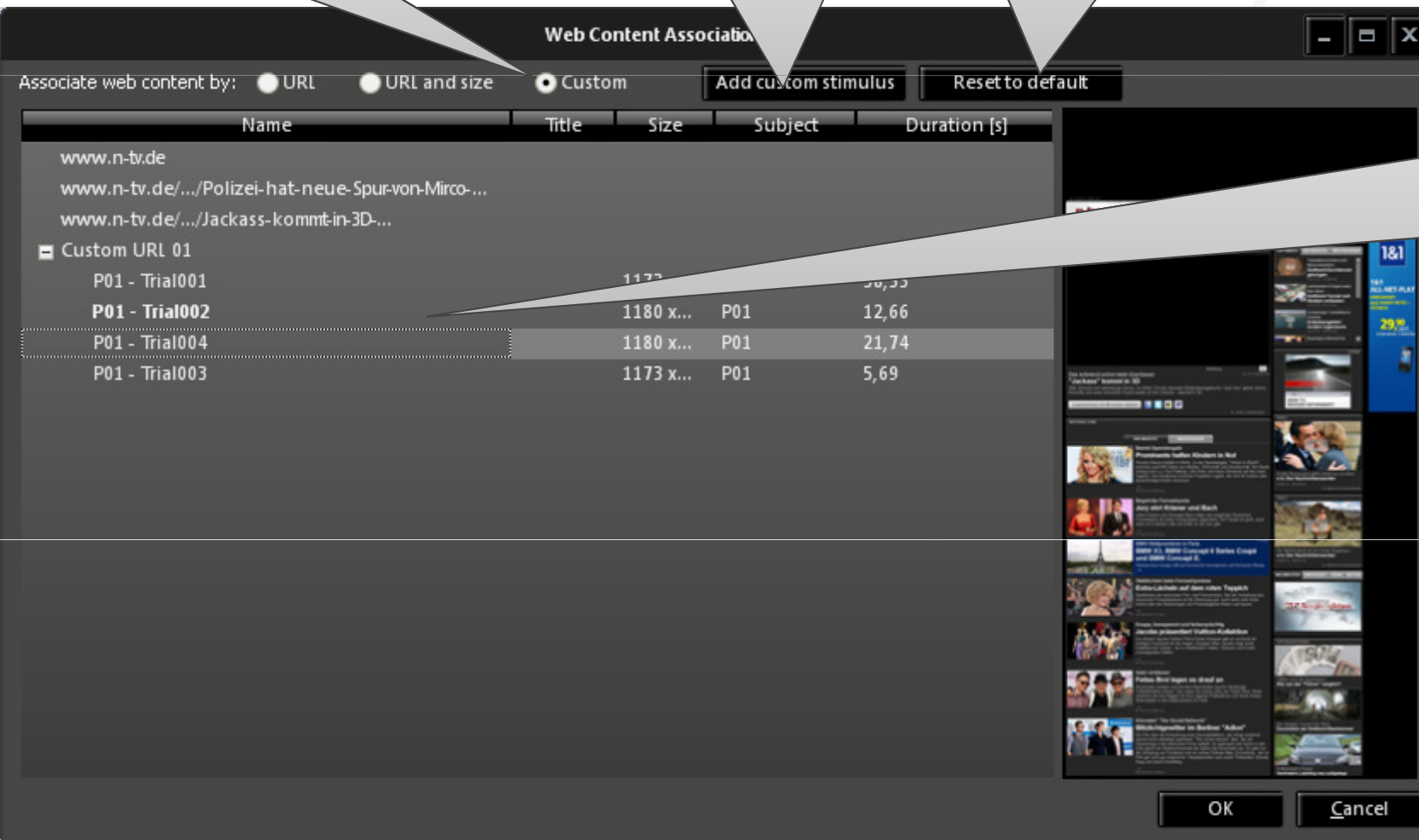
# BeGaze: Custom web content association

Select custom to define custom stimulus groups

Add new custom stimulus group

Press reset to undo all custom grouping

Assign participant-trials to custom stimulus group with drag and drop from other groups



Web Content Association

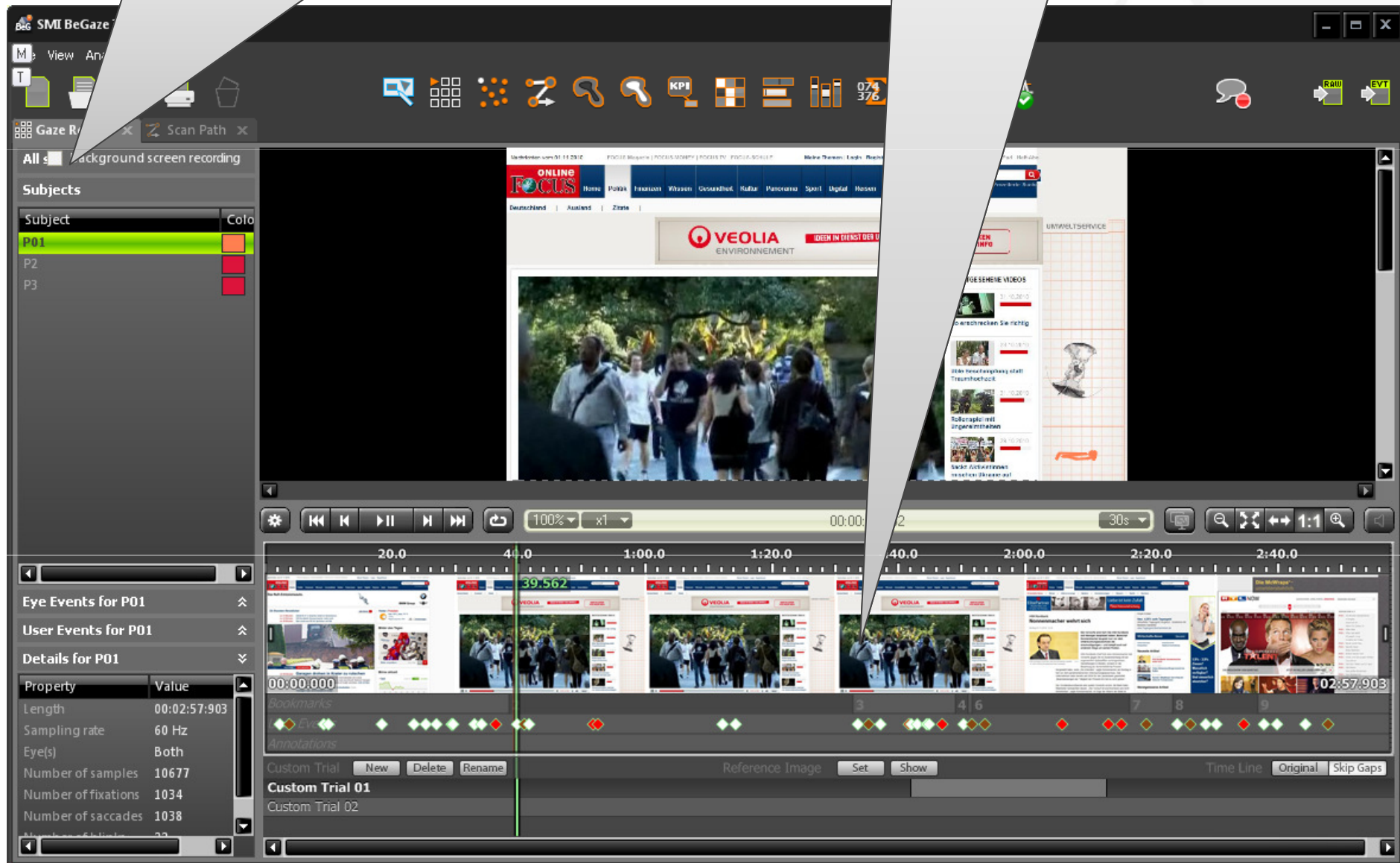
Associate web content by:  URL  URL and size  Custom

Name	Title	Size	Subject	Duration [s]
www.n-tv.de				
www.n-tv.de/.../Polizei-hat-neue-Spur-von-Mirco...				
www.n-tv.de/.../Jackass-kommt-in-3D...				
Custom URL 01				
P01 - Trial001		1173 x...		20,33
P01 - Trial002		1180 x...	P01	12,66
P01 - Trial004		1180 x...	P01	21,74
P01 - Trial003		1173 x...	P01	5,69

# BeGaze GazeReplay: Switch between Website and background screenrecording

Switch on demand: Use background screen recording alternatively to website view ...

... either website or background screenrecording is shown



The screenshot displays the SMI BeGaze GazeReplay software interface. The main window is split into two panes. The left pane shows a website view of the 'ONLINE FOCUS' portal, featuring a 'VEOLIA ENVIRONNEMENT' advertisement and a video of a crowd. The right pane shows a background screen recording of the same website, with a 'RAW' button and an 'EVT' button in the top right corner. Below the main panes is a timeline with a playhead at 00:00:00. The timeline includes a 'Bookmarks' section with green diamond markers and an 'Annotations' section with red diamond markers. A 'Custom Trial' section is visible at the bottom, with buttons for 'New', 'Delete', and 'Rename'. The interface also includes a sidebar on the left with 'Subjects' (P01, P2, P3) and a 'Details for P01' section with a table of properties and values.

Property	Value
Length	00:02:57:903
Sampling rate	60 Hz
Eye(s)	Both
Number of samples	10677
Number of fixations	1034
Number of saccades	1038

- Available in GazeReplay – one or more parts of the whole run for each participant can be marked (=Segments)
- The segments are associated to a custom (artificial) generated trial
- For Web – it is possible to switch on demand between background screenrecording and full screen webpages, scrolling is automatically compensated
- Use case:
  - Task grouping: Cut out parts of the data that correspond to a specific task
  - Condense dynamic content – Cut out parts of videos (e.g. screenrecording) and align participants together

1. Press „New“ to create a new custom trial. Select a custom trial channel.

For each participant in gaze replay:

2. Mark data segments in original timeline



- 3a. (Original time) Segments are copied to the selected custom trial while data samples remain in their original position

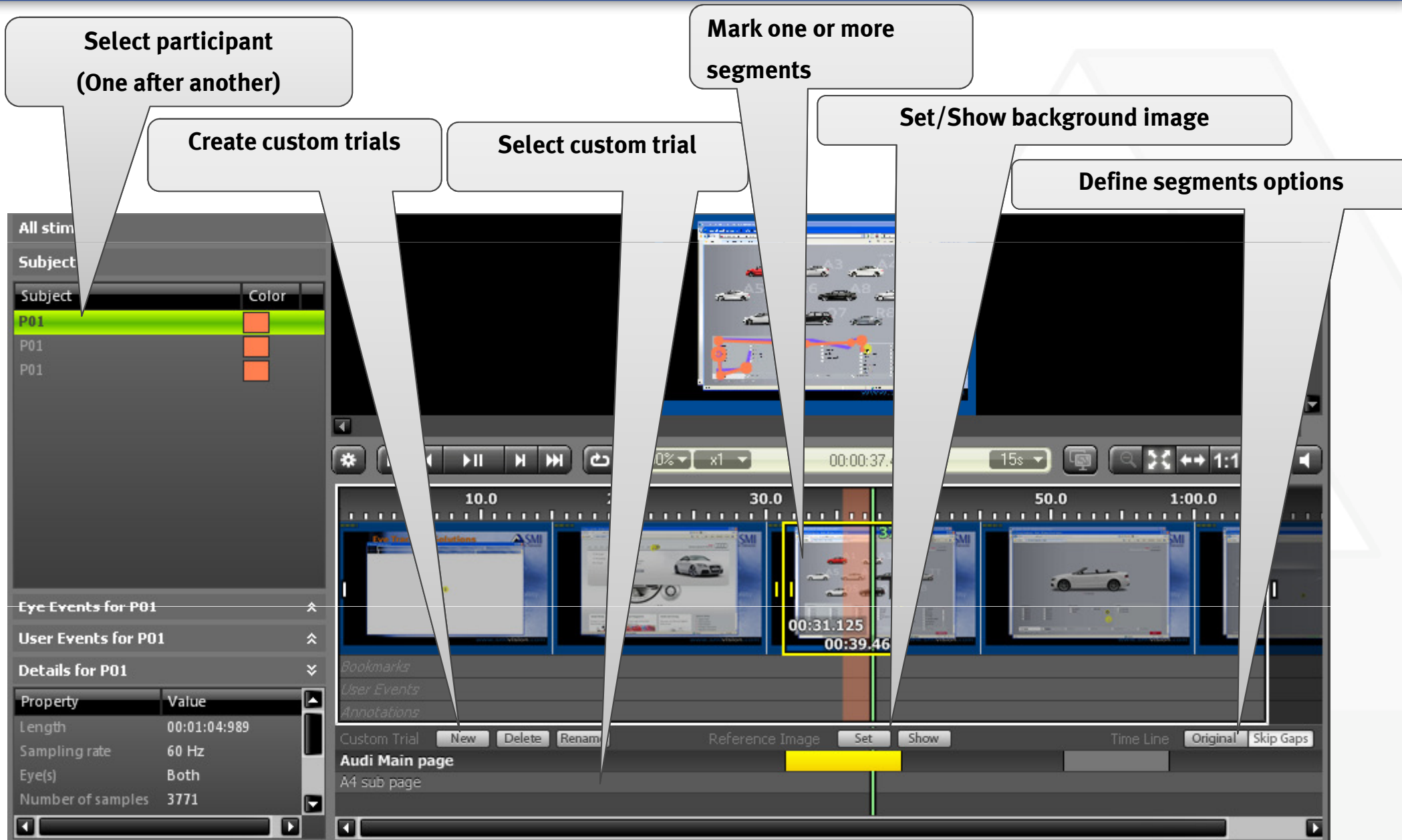


- 3b. (Skip gaps) Segments are copied to the selected custom trial while segments are concatenated and first segment is set to time zero.



4. Press „set“ to select the background image for the custom trial. Press „show“ to show the currently associated background image
5. The custom trials are available in all other plugins (e.g. scan path, heatmap, AOI editor, KPI ...) for further analysis

# BeGaze: Segmenting in gaze replay



The screenshot shows the BeGaze software interface with several callout boxes pointing to specific features:

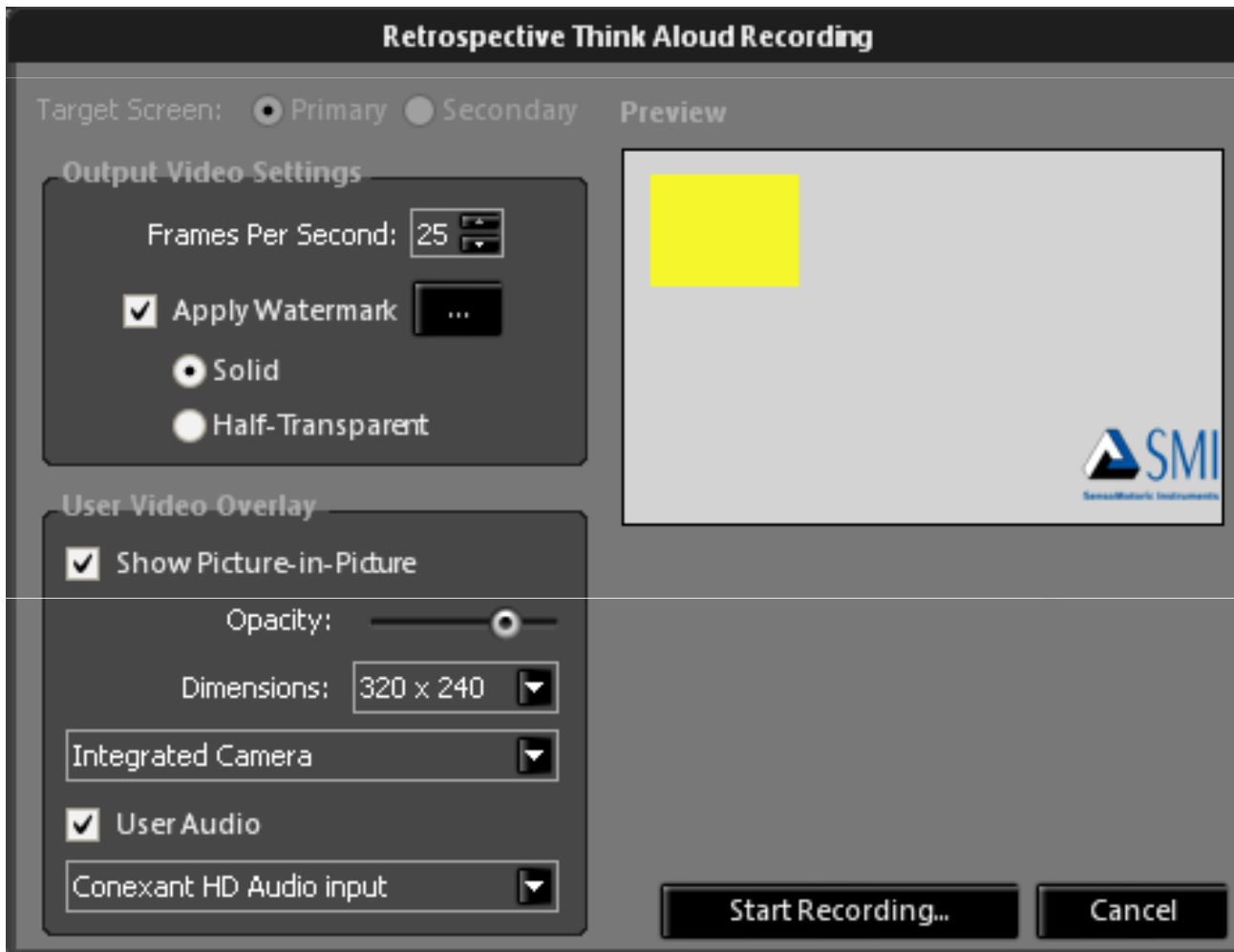
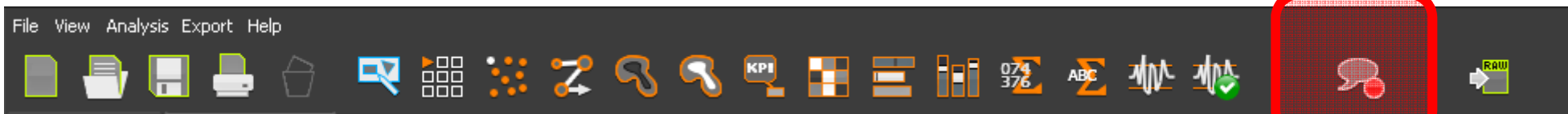
- Select participant (One after another)**: Points to the 'Subject' list on the left, where 'P01' is highlighted in green.
- Create custom trials**: Points to the 'Custom Trial' section at the bottom, which includes buttons for 'New', 'Delete', and 'Renam'.
- Select custom trial**: Points to the 'Audi Main page' and 'A4 sub page' entries in the trial list.
- Mark one or more segments**: Points to a yellow box on the timeline, which highlights a segment between 00:31.125 and 00:39.46.
- Set/Show background image**: Points to the 'Reference Image' section at the bottom, which includes 'Set' and 'Show' buttons.
- Define segments options**: Points to the 'Time Line' section at the bottom, which includes 'Original' and 'Skip Gaps' options.

The interface also displays a list of subjects, eye events, and user events for the selected participant (P01). The main display area shows a video replay of a car advertisement with a timeline below it.

## Wikipedia

„Retrospective Think Aloud is a technique used in usability, and eye tracking in particular, to gather qualitative information on the user intents and reasoning during a test. It's a form of think aloud protocol performed after the user testing session activities, instead of during them.”

- **Use case:** gather data in usability testing in product design and development, in psychology and a range of social sciences (e.g., reading, writing and translation process research)
- **RTA recording is Multimedia video recording (avi)**
  - Screen recording of primary or secondary monitor
  - + Audio recording of RTA session
  - + User video overlay (webcam) from RTA session
  - + Logo or Watermark overlays
- **If desired, original session can be replayed on Stimulus (secondary) monitor**
  - with or without gaze
  - With or without mouse clicks
- **No limitations/restrictions in computer or software usage during interview**
  - RTA recording is running unobstrusive in the background



1. Press RTA icon in icon bar
2. Define your recording options
3. Press Start Recording button
4. ....
5. Press RTA icon again to stop recording
6. RTA as avi video file is saved

- Experiment Center and BeGaze are checking if a new version of Experiment Suite is available for download
- The computer must be connected to the internet and the firewall must allow access to the update location (http)
- Checking is done ...
  - Automatically when BeGaze or Experiment Center is started but not more than once a day
  - When „check for updates“ is executed from the menu
- If an update is available, the user can decide to download and install it

- „Rename“ Experiment
- Configurable LPT trigger port address
- Configurable „Next stimulus“ and „Stop Experiment“ function keys