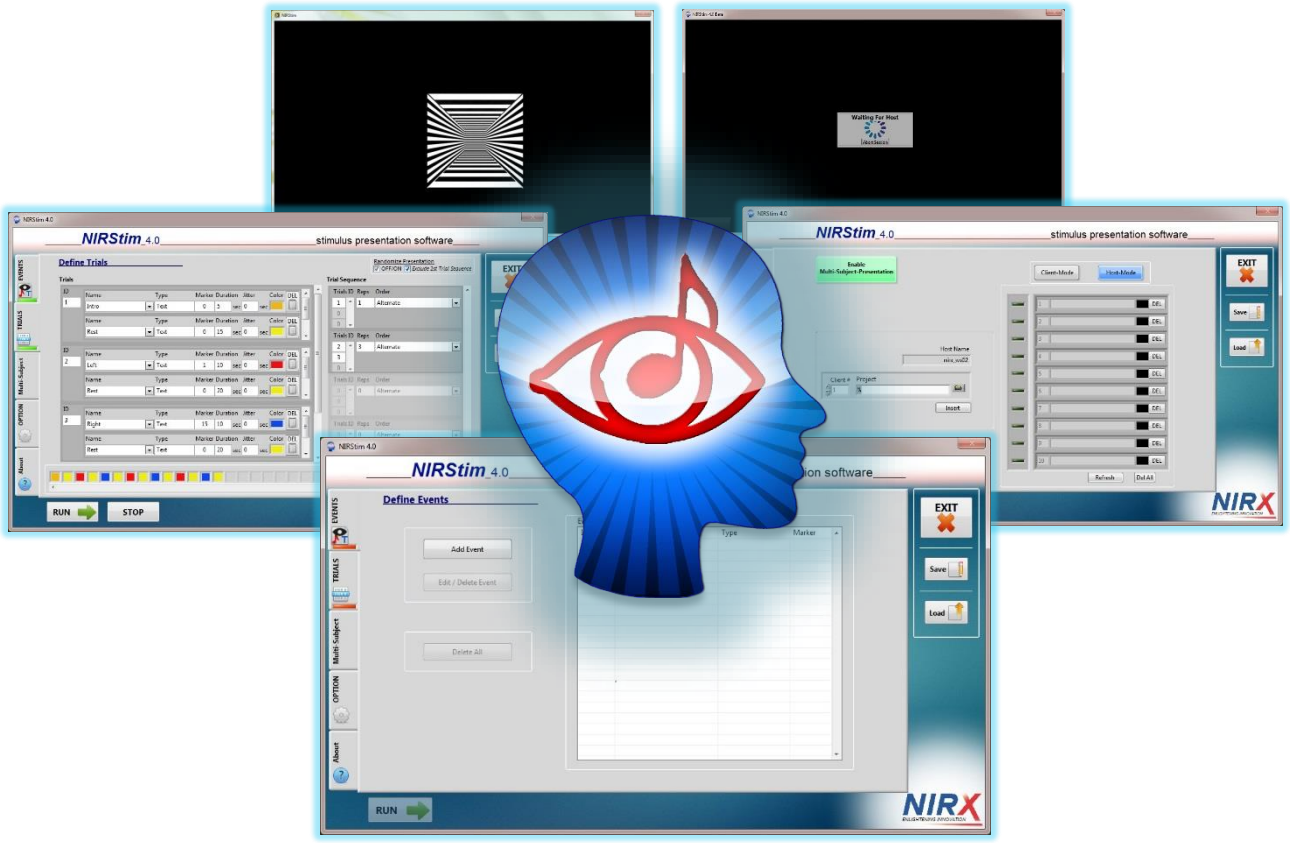


# NIRStim 4.0

## *User Manual*

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www.nirx.net

NIRStim 4-0_Manual_R1.0_2016-02-02.docx

# Table of Contents

# 1 Release Notes

## 1.1 General Remarks

This new Version of *NIRStim* includes new features, bug fixes and a performance update. Especially on tablets and notebooks the use of this new version is recommended for better timing accuracy.

## 1.2 New Features

- *Multi-Subject-Presentation*
  Up to 10 Subjects using *NIRStim 4.0* may be managed (Load/Start/Stop presentations) via network by one Host simultaneously.

- *Sound-Text-Events*
  Combines two stimuli by adding text to Sound-Events.

- *New Shuffle Modes & Randomize Presentation*
  Trials can be shuffled in three different ways and/or the presentation can be fully randomized.

- *Full Screen Mode*
  Presentations can be executed in Normal, Maximized and Full Screen.

- *2nd Output*
  A 2nd Output for triggers can be added in 'Options'-tab.

## 1.3 Improvements/Enhancements & Bug Fixes

- *Timing Accuracy*
  Delay between Triggers and Events has been significantly reduced, especially on systems with low performance such as Tablets and Netbooks.

- *Trial handling fixed*
  Bugs concerning organizing, rearranging and deleting Events/Trials in the 'Trials'-tab got fixed.

- *Instant close*
  NIRStim is now closed immediately after clicking on 'Exit'.

- *TimeLog: name and bugfix*
  The file names are changed to standardized time code.
  The "Ignore 1st Trial"-Function ignores the complete 1st Trial instead of the first Event only.

- Improved Folder- & Output-management
  Folder hierarchy and accessible Outputs are checked and refreshed when starting NIRStim.

- *Inverted order of Loop-elements in 'Define Event'*
  Loops are now built from left to right. 'Delete' still deletes the last element added.

# 2 Installation

## 2.1 System Requirements

The *NIRStim 4.0* software requires the following basic system characteristics:

- Windows XP/7/8 (32 or 64 bit)
- 1024 MB of RAM minimum for Windows XP
- At least 100 MB of hard-disk space
- Graphics adapter with more than 256 colors

For best appearance, performance and timing accuracy it is recommended to have at least:

- Windows 7
- 2,5 GHz processor
- 4096 MB of RAM
- 1024×768 pixel screen resolution
- Graphics adapter with at least 65k colors

## 2.2 Download and Updates

To obtain the software and to check for updates, please visit www.nirx.net or contact support@nirx.net.

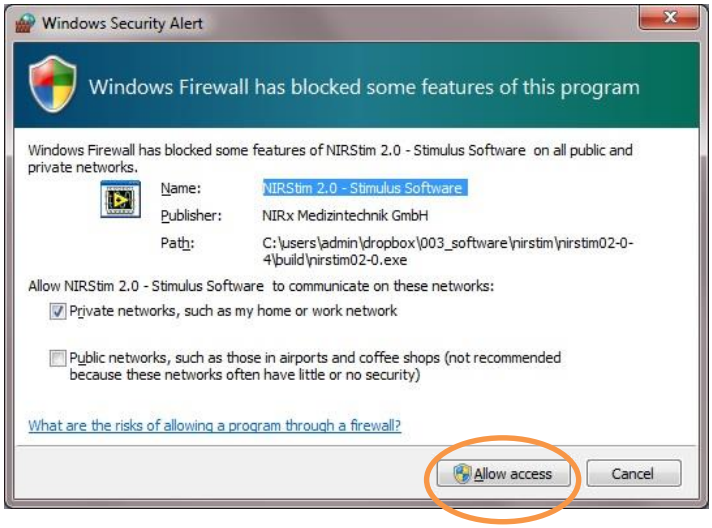
Several additional software components (e.g. National Instruments™ - *VISA Run-Time Engine* and the LabView™ *Run-Time Environment 2012*) are needed to run *NIRStim 4.0* with all its features. These components are all included into the *Installer* package. After an initial complete installation of all required components has been performed, it is sufficient to install the *Build* versions of further revisions of the software. The *Build* version can be unpacked and immediately used, without further installation.

## 2.3 Setup

Please follow the on-screen instructions during the installation process.

## 2.4 Allow access in *Windows Firewall*

When running *NIRStim* for the first time, *Windows Firewall* will ask whether network access should be allowed. Allowing access is highly recommended. It is required for using the *Shared NIRx Variable* to let *NIRStim* and *NIRStar* interact on one system.




**Using the network features of NIRStim and NIRStar (such as accessing the Shared Variable) requires an adjustment / deactivation of your Firewall!**

**[See chapter 7 -"**Adjust the Windows Firewall™**" on page 25 for further information]**

# 3 Overview

Welcome to *NIRStim 4.0*!

*NIRStim* is designed to function as a multimedia instrument that offers infinite flexibility to support your studies.

Principal features of *NIRStim 4.0* include:

- Ability to create *Events* with visual (text & pictures) or auditory content.
- Possibility to combine all defined *Events* to independent *Trials* with varying durations and extents.
- Compilation of certain *Trials* to *Trial Sequences*, determining the number of repetitions and running order.
- Display all programmed stimuli in a black presentation-window, preventing the subject being distracted by redundant influences.
- Send triggers to the parallel port (LPT), StimTracker (by Cedrus Corporation) or *NIRStar using up to two Outputs*.
- Interconnection with *NIRStar* via *Shared NIRx Variable* on one single Windows-System or network.
- Multiple-Subject-Function to manage up to 10 Subjects simultaneously (Load/Start/Stop presentations) with one Host

## 3.1 GUI Overview

*NIRStim 4.0* has two main window panels – one for creating your stimulus-setup, the other one to present them. The following pages show all controls and functions for each main- and sub-panel.

### *3.1.1 Control Window – Event Tab*

| No. | Name | Description |
|---|---|---|
| 1 | **Add Event** | Opens new window: *Define Event* – creates new *Events* |
| 2 | **Edit Event** | Opens new window: *Edit Event* – edits or deletes *Events* |
| 3 | **Events defined** | Lists all *Events* created in the current project |
| 4 | **Delete All** | Resets all settings |
| 5 | **EXIT** | Closes the software |
| 6 | **Save** | Saves current experiment (*Events*, *Trials* & *Trial Sequences*) in *.exp*-file |
| 7 | **Load** | Reads experiment data (*Events*, *Trials* & *Trial Sequences*) from *.exp*-file |
| 8 | **RUN** | Runs presentation (disabled when settings are missing) |

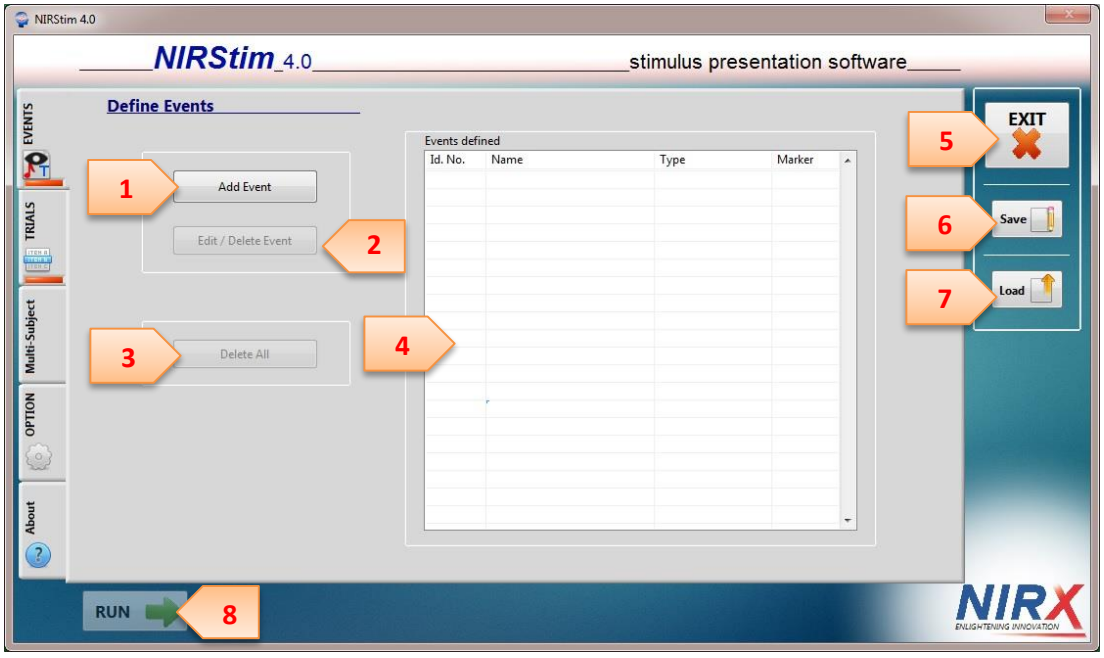



**Figure 2: Initial control panel**

## i) Define Event

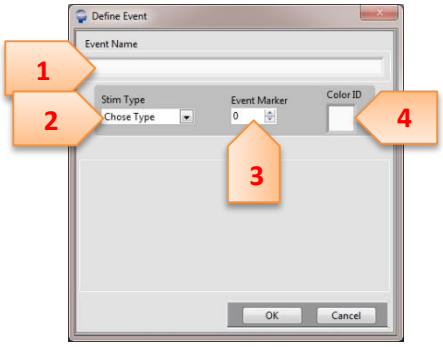



**Figure 3: Initial 'Define Event'**

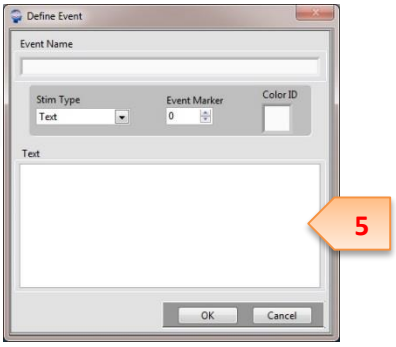



**Figure 4: text-type *Event***

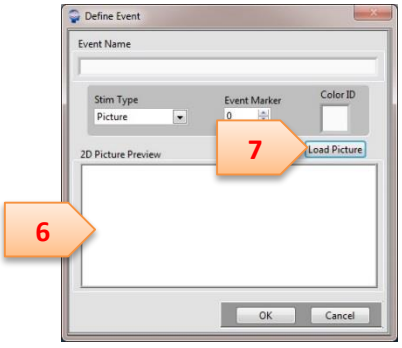



**Figure 5: picture-type *Event***

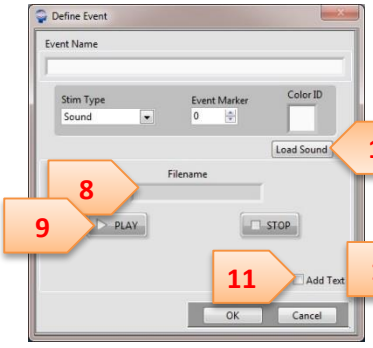



**Figure 6: sound-type *Event***

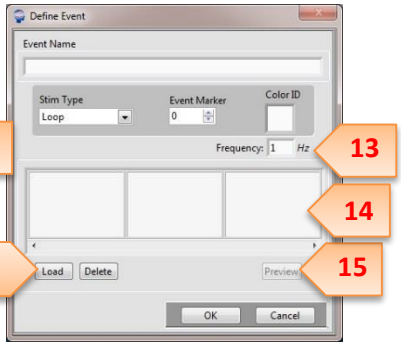



**Figure 7: loop-type Event**

| Nr. | Name | | Description |
|---|---|---|---|
| 1 | **Event Name** | | Defines Name for new *Event* |
| 2 | **Stim Type** | | Defines *Event*-type (text, picture or sound) |
| 3 | **Event Marker** | | Defines marker/trigger send to output |
| 4 | **Color-ID** | | Defines color, representing the *Event* in a presentation-overview |
| 5 | **Text** | (text-type only) | Field to define displayed text in presentation |
| 6 | **2D Picture Preview** | (pic-type only) | Shows preview of selected picture (down-scaled) |
| 7 | **Load Picture** | (pic-type only) | Browses systems for picture **(*.bmp-file only!)** |
| 8 | **Filename** | (sound-type only) | Shows file-name of selected sound-file |
| 9 | **Stop/Play** | (sound-type only) | Stops/plays loaded sound-file |
| 10 | **Load Sound** | (sound-type only) | Browses system for sound-file **(*.wav-file only!)** |
| 11 | **Add Text** | (sound-type only) | Opens a text field and adds text to the sound-event, displayed during presentation |
| 12 | **Load / Delete** | (loop-type only) | Adds picture to loop **(*.bmp-file only!)** / deletes last element |
| 13 | **Frequency** | (loop-type only) | Sets flicker-frequency |
| 14 | **Picture-Array** | (loop-type only) | Displays current pictures in loop-event |
| 15 | **Preview** | (loop-type only) | Opens new window and runs Loop-Event with current settings |

### ii) Edit Event


**Figure 8 'Edit Event'**

| Nr. | Name | Description |
|---|---|---|
| 1 | **Select Event Id.No.** | Defines the *Event* according to the *Event-List* that you want to delete or edit |
| 2 | **Delete** | Deletes *Event* belonging to the selected Id.No. from list & project |
| 3 | **Edit** | Edits *Event* belonging to the selected Id.No. By running *Define Event* again and overwrites existing settings |
| 4 | **Cancel** | Closes *Edit Event* without saving any changes |

### 3.1.2 Control Window – Trials Tab

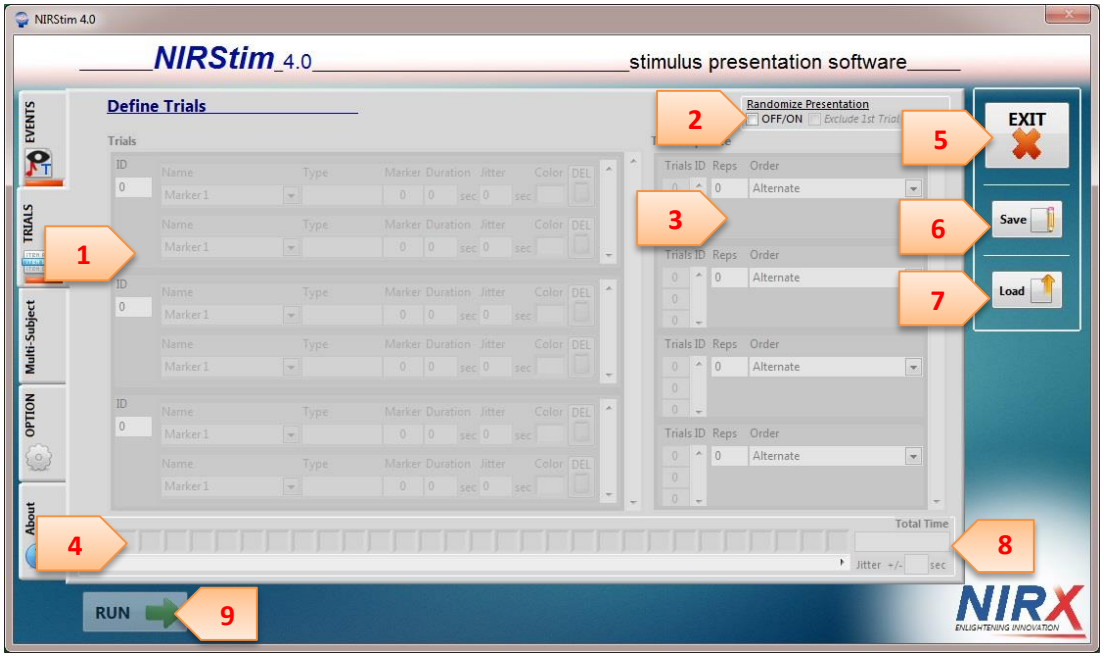
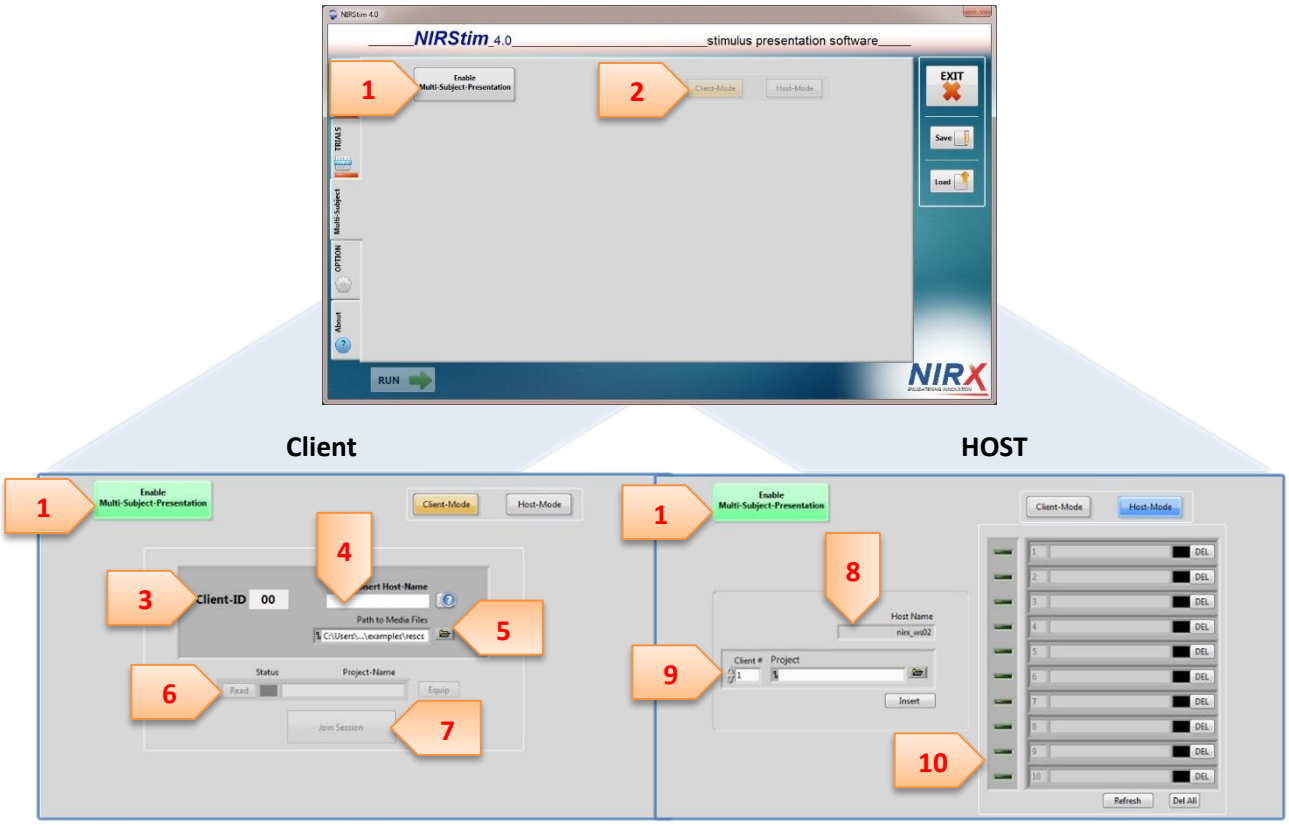



**Figure 9: Trials Tab including an experiment**

| Nr. | Name | Description |
|---|---|---|
| 1 | **Trials** | Contains all defined Trials, consisting of assigned *Events* & defines *Duration* and *Jitter* for every single *Event* |
| 2 | **Randomize Presentation** | Shuffles every Event from every Trial for each presentation. You may exclude the 1st Trial to have a fixed beginning. The Color Bar is not updated |
| 3 | **Trial Sequence** | Contains blocks, consisting of linked *Trials* which are presented in a certain order within this block & defines the number of repetitions of each block |
| 4 | **Color Bar** | Represents color-coded the total order of each event within the experiment |
| 5 | **EXIT** | Closes the software |
| 6 | **Save** | Saves current experiment (*Events*, *Trials* & *Trial Sequences*) in *.exp*-file |
| 7 | **Load** | Reads experiment data (*Events*, *Trials* & *Trial Sequences*) from *.exp*-file |
| 8 | **Total Time** | Displays estimated time for current settings |
| 9 | **RUN** | Runs presentation (disabled when settings are missing) |

### 3.1.3 *Control Window – Multi-Subject Tab*




| Nr. | Name | Description |
|---|---|---|
| 1 | **Enable Multi-Subject Presentation** | Initiates network connectivity and enables / runs Client Mode. |
| 2 | **Mode Switch** | Switches between Client- & Host-Mode. |
| 3 | **Clients-ID** | Shows the allocated ID after connecting with Host via name-field (4) |
| 4 | **Insert Host-Name** | Insert the computer's name of the system that serves as Host and press enter (pay attention to upper and lower case letters). |
| 5 | **Path to Media Files** | Define path to media files (pictures & sounds). Media files are not send via network! |
| 6 | **Status Bar** [Client] | Shows Status and Project-Name. Click on 'Equip' to take over experiment-settings from given file. |
| | | Black: Inactive / no presentation defined<br>Yellow: Presentation defined / not equipped<br>Green: Presentation successfully equipped |
| 7 | **Join Session** | Enters presentation-mode and waits for Start/Stop-command by Host. |
| 8 | **Host Name** | Displays the computer's name in network |
| 9 | **Upload Experiment** | *Client ID* defines which client-slot (1 – 10) should register the located experiment-file, *Project* locates an experiment-file and *Insert* writes defined experiment-file into client-slot |
| 10 | **Status List** [Host] | Displays active clients connected to Host |

### 3.1.4 Control Window – Options Tab

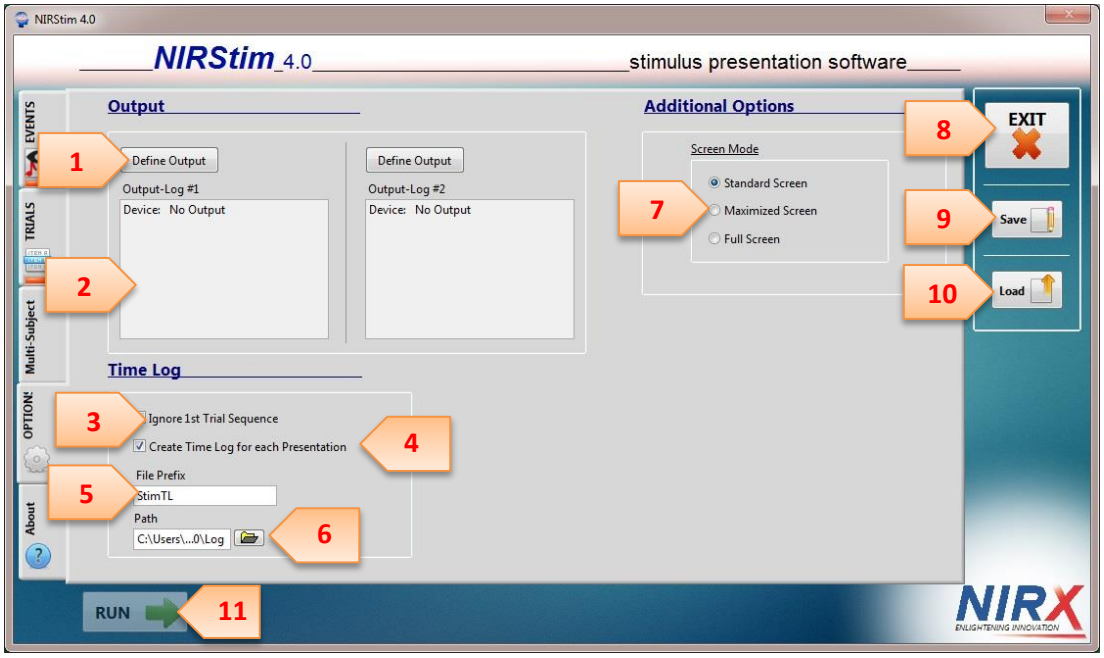



**Figure 10: Options Tab**

| Nr. | Name | Description |
|---|---|---|
| 1 | **Define Output** | Opens *Output*-window for defining output-settings |
| 2 | **Output-Log** | Summarizes important output-settings (e.g. Device and Port) |
| 3 | **Ignore 1st Trial** (Time Log) | When selected, the first Trial will not be listed in Time Log (e.g. when used to display introductions) |
| 4 | **Create Time Log for each presentation** (Time Log) | If selected, NIRStim creates a new time-log-file after each session |
| 5 | **File Prefix** (Time Log) | Defines prefix for time-log files |
| 6 | **Path** (Time Log) | Defines destination for time-log files |
| 7 | **Screen Mode** | Choose between Standard, Maximized and Full Screen window |
| 8 | **EXIT** | Closes the software |
| 9 | **Save** | Saves current experiment (*Events*, *Trials* & *Trial Sequences*) in *.exp*-file |
| 10 | **Load** | Reads experiment data (*Events*, *Trials* & *Trial Sequences*) from *.exp*-file |
| 11 | **RUN** | Runs presentation (disabled when settings are missing) |

## i) Define Output

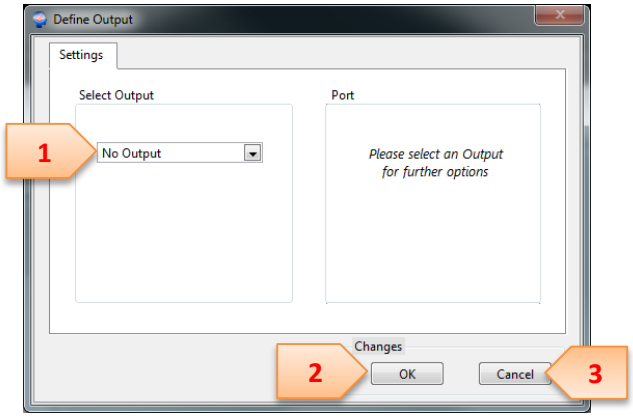



**Figure 11: Define Output (init)**

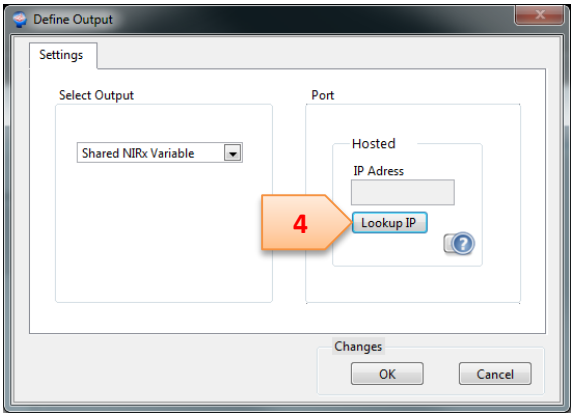



**Figure 12: Define Output (Shared NIRx Variable)**

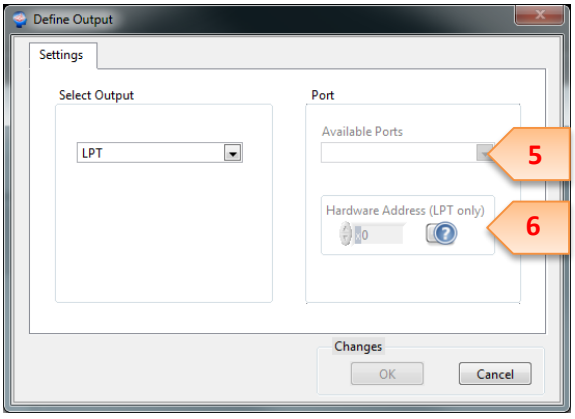



**Figure 13: Define Output (LPT)**

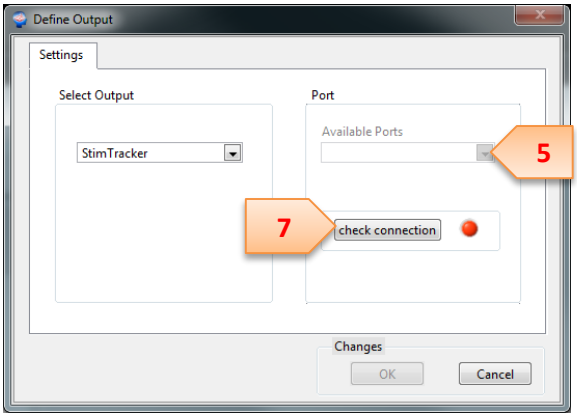



**Figure 14: Define Output (StimTracker)**

| Nr. | Name | Description |
|---|---|---|
| 1 | **Select Output** | Lists all possible Output-Devices / -Ports on system |
| 2 | **OK** | Accept settings |
| 3 | **Cancel** | Discards settings |
| 4 | **Lookup IP** | Reads current IP-address of the system (needed for network-communication with NIRStar) |
| 5 | **Available Ports** | Reads all available COM & LPT-ports from *Windows* device manager |
| 6 | **Hardware Address** | Defines the hardware-address of chosen LPT-port (32Bit system only) |
| 7 | **Check Connection** | Checks connection with Stimtracker – LED displays success or failure |

### 3.1.5 Control Window – About Tab

Information about the software and copyright notices revision can be obtained through the *About* - Tab.

### 3.1.6 Presentation Window


**Figure 15: Running presentation**

| Nr. | | Description |
|---|---|---|
| 1 | **Dark gray button** (bottom left corner) | Cancels & exits running presentation and goes back to control panels |

# 4 Quick Start Guide / Example

## 4.1 Launch *NIRStim*

**1.** If you wish to use any Output devices such as StimTracker, make sure the device is plugged in and registered in the Windows™ device manager.

**2.** Launch NIRStim 4.0, either by double-clicking on a link on the Windows™ Desktop or by calling the software from the Windows™ Start menu. After a short deployment progress, the main panel pops up.

**3.** Either **Load** an existing experiment-file (*.exp), demo-experiment (*.dex, located in NIRStim 4.0\examples) or create your own presentation by following step 4.2 & 4.3.

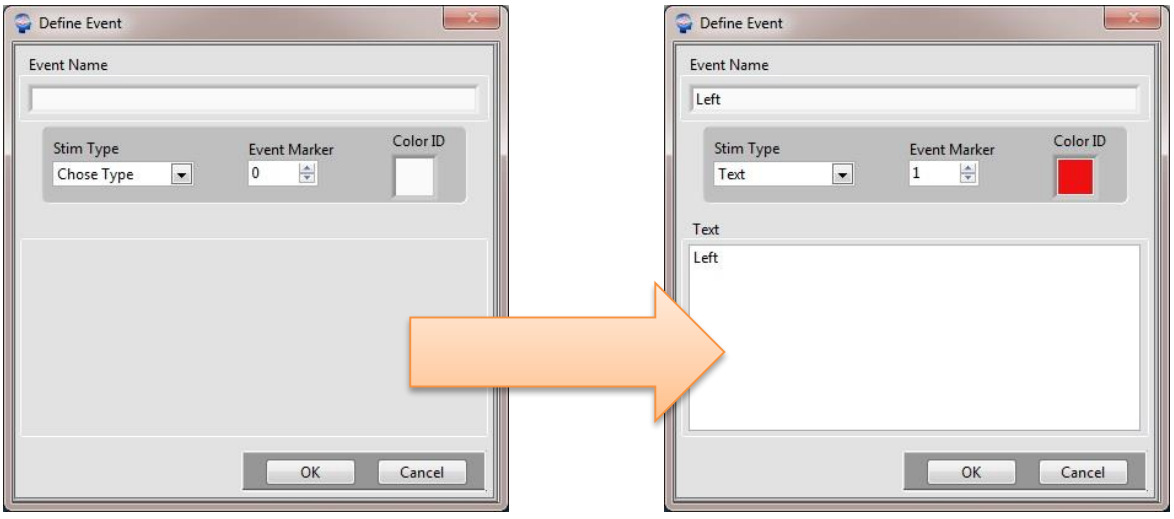
**Go to 4.4 Run & Stop the Presentation, when you loaded an existing presentation.**

## 4.2 Add Event

**1.** Left click on the *Add Event*-Button in the *Events* Tab. A new Window (“*Define Events”)* opens.

**2.** Name your *Event* and declare its Type, Marker, Color-ID and content and click on *OK* – e.g.

| **Name** | **Stim Type** | **Event Marker** | **Color-ID** | **Content** |
|---|---|---|---|---|
| Left | Text | 1 | Red | Left |



**3.** The new *Event* is now listed in the *Events defined* – list in the *Event*-Tab.

Repeat step 2 and create as much *Event*s as you need. Please keep in mind that every rest, introduction or ending needs its own event, although different durations can be defined later on.

In this example we create another three Text-*Events* containing the following attributes:

| Name | Stim Type | Event Marker | Color-ID | Content |
|---|---|---|---|---|
| **Right** | Text | 15 | Blue | Right |
| **Rest** | Text | 0 | Yellow | + |
| **Intro** | Text | 0 | Orange | "NIRx Finger Tapping DEMO Experiment" |

## 4.3 Define Trials

**1.** Switch over to the *Trials*-Tab. In the left *Trials*-table, individual trials can be created by clicking left into the *Name* section in every first inactive row of each *Trial*-section. Select your desired *Event* for your first trial by clicking on the *Event*s name.

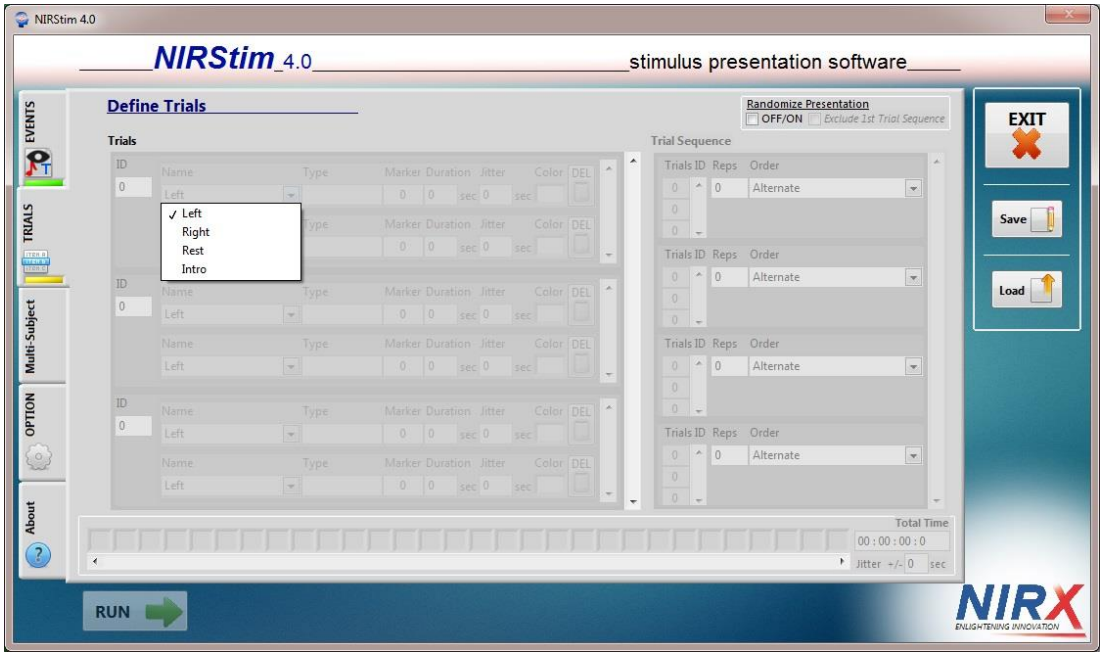



**Figure 16: Trials-Tab**

*NIRStim* will unlock the row by assigning an ID to it and enabling the controls. You can now define the order and duration of every single *Event* in the current trial. Every *Event* can be used repeatedly in more than one trial with different durations.

In this example, three trials a generated - an introductory trial and two trials for finger tapping with the left or right hand each. Every trial consists of its main *Event* and the created rest. Each finger tapping and the introduction should run for 10 seconds. The rest between the introduction and the first tapping should be 30 seconds, but after each tapping only 20 seconds. The corresponding setup can be seen in the left side of Figure 17.

**2.** After creating all essential trials for the experiment, the running order and iterations have to be defined in the *Trial Sequences* section on the left side of the *Trials*-Tab. Left click into the *Trials- ID*-field of the first block and type in the ID of the first trial you want to be presented. Add as many connected trials as you like to the same block – they will all have the same number of iterations and a certain running order.

After that, left click into the *Reps*-field and define your wished repetitions. The color-bar in the bottom of the tab should now display the current color-coded *Event*-order. With the last field – *Order* – you may change the running order of events (alternate or randomize).

Repeat step **2** for every block of interconnected trials.

In this example two blocks are needed – one for the introduction and one for the finger tapping. The introduction should only run once, followed by the finger tapping-trials with five repetitions. Therefore the first block contains the Trial-ID '1' and the second block '2' and '3'. Both blocks use an alternate running order.

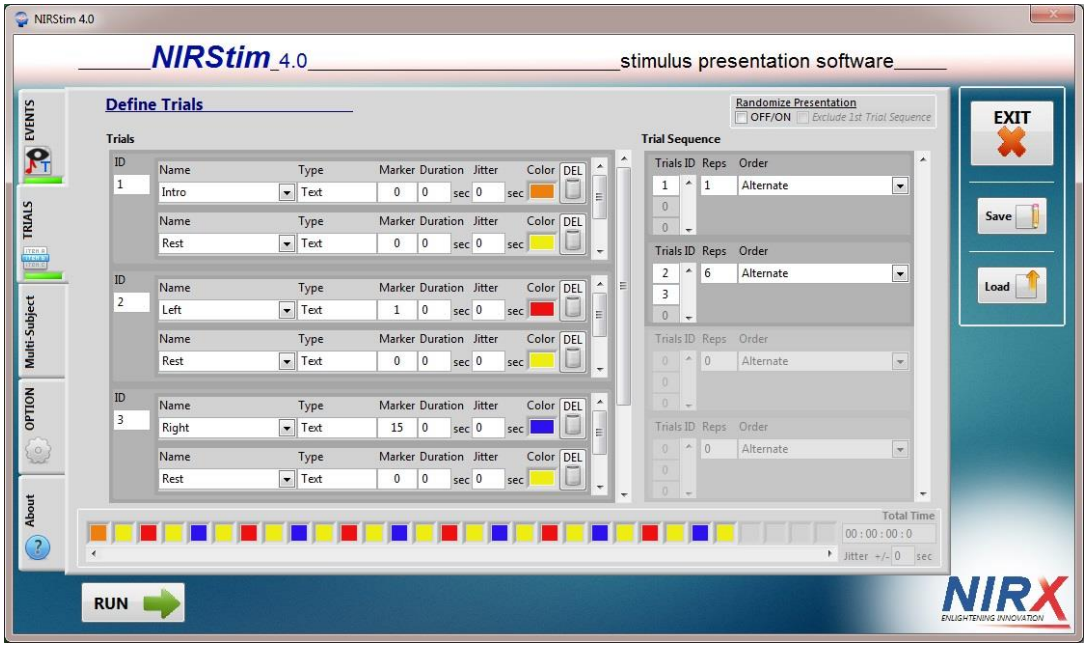



**Figure 17: Experiment in Trials-Tab**

## 4.4 Run & Stop the Presentation

After a *Trial Sequence* has been set up or loaded, the *RUN*-button in the bottom of the *NIRStim*-window becomes enabled. From now on you can simply run your presentation by clicking on this button. *NIRStim* then switches into its presentation-mode and displays your created *Events*. Once the last block of your *Trials-Sequence* has finished its last iteration, *NIRStim* switches back to its control-mode.

**There are two ways to interrupt the presentation and go back to control-mode:**

**1.** Press the ESC – key on your keyboard

**2.** Click on the dark gray button in the bottom left corner of the presentation-window

## 4.5 Define an Output

*NIRStim 4.0* does not need an output to run a presentation. Initially there is no output defined. If you want to send your markers / triggers to the LPT port or *StimTracker*, or want to share them with *NIRStar*, open the *Options*-tab and click on *Define Output*. In the new window, choose your desired device in the *Select Output* section. According to your choice, several additional preferences have to be adjusted in the *Port* section. For example, in the case of the LPT you have to select an available port and to type in a hardware address (32-Bit-system only). If all necessary information is given, the OK-button becomes enabled and the Output-Log in the *Options*-tab displays your settings.

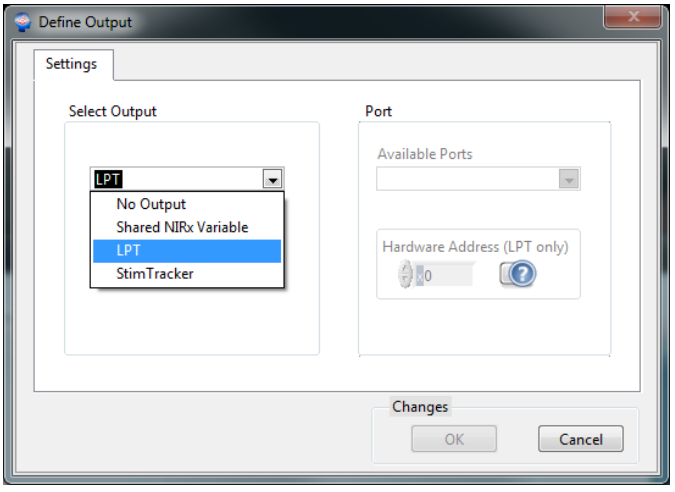



**Figure 18: 'Define Output'**

## 4.6 Save & Load your Experiment

You can save and load your current experiment anytime in the control-mode. Simply click on the Save / Load button on the left side of the window. *NIRStim 4.0* saves and reads its experiments in its own *.exp*-files.

**Pictures, sounds and output-settings are NOT saved in .exp-files! *NIRStar* only saves the paths of sound- and picture-files, so make sure you do not move the related files on your system!**

**When reading a file, your current settings will be overwritten! Make sure you save up everything important before opening another existing file.**

# 5 Shared NIRx Variable

NIRStim and NIRStar are interconnected via a shared variable. Defining the *Shared NIRx Variable* as an output, commands NIRStim 4.0 to send its markers / triggers directly to a running NIRStar-execution. There are two possible ways for NIRStar to receive data from the *Shared NIRX Variable*:

1. On the same *Windows™* system
2. Via network

**Both ways can be used in parallel.**

## 5.1 Share on same system

NIRStim 4.0 and NIRStar (Version 14.0 or higher required!) may run on the same system while being interconnected. There are no particular settings necessary, except the point that you have to "Allow access" on all public and private networks when running *NIRStim* and *NIRStar* for the first time.

**Using the Shared Variable local after using it over network, requires to set back the *.aliases-file to "Localhost"!**

(See chapter 8 "Define Host in NIRStar")

## 5.2 Share via network

NIRStim may also send its markers / triggers to one or multiple NIRStar-executions on several systems over network.

However there are a two important steps to be taken:

1. Adjust the *Windows Firewall™* on the Client- AND Host-system (**onetime**) (see chapter 7 page 25)
2. Define Host in NIRStar (**always**) (see chapter 8 page 28)

After that, define the *Shared NIRx Variable* as an Output in NIRStim, run NIRStar on every Client-system and proceed as usual.

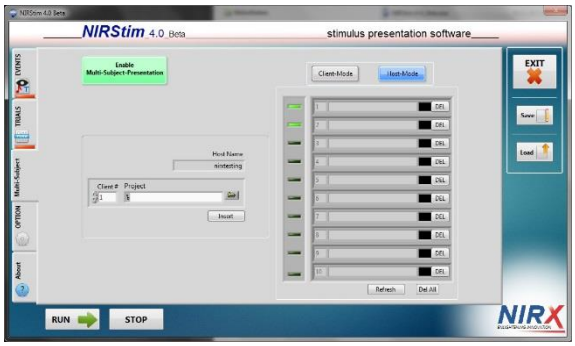
# 6 Multi-Subject-Presentation

## 6.1 Step-by-Step Guide

### HOST


**1.** Start Host Mode in NIRStim

*Multi Subject → Enable Multi Subject → Host Mode*




*Client-LED lights up when linked to Host*

**4.** Define Client-ID, browse a project und upload it into the slot via '*insert*'-button

### CLIENT


**2.** Start Client Mode in NIRStim

*Multi Subject → Enable Multi Subject → Client Mode*

**3.** Enter system's name of host in network → Client-ID is assigned automatically and Project-Bar becomes enabled


**6.** Click on 'Read' in the project-bar → Status-LED turns yellow if project is provided by Host


**5.** Status-LED lights up yellow, when Project-Upload succeeded


**7.** Click on 'Equip' to download presentation-data

**Make sure media files are stored at the given path in 'Path to Media Files'!**

→ Status-LED turns green when setup succeeded

**8.** Click on 'Join Session' to start presentation and wait for Host start command


Blue Status-LED signals all Clients in session

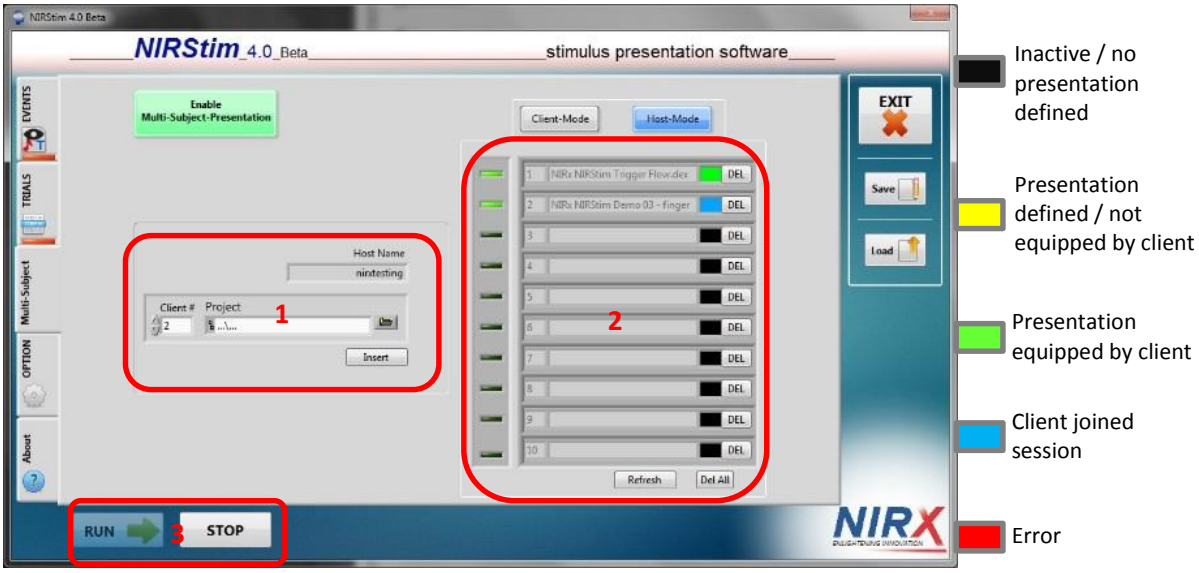
- 'RUN' sends start-command to all Clients in session
- 'Stop' stops session


NIRStim waits for start-command

- Click on 'Abort Session' or ESC-button to stop presentation

## 6.2 User Interface: Host-Mode

Every Multi-Subject-Presentation needs a leading System that arranges multiple "Client"-Systems. It hands out the individual presentations and gives a public Start/Stop-command to all defined clients.




Experiments are assigned to the individual clients by inserting the located experiment-files from section 1 into the Client-List in section 2.

*Section 1*

| | | |
|---|---|---|
| *Host Name* | Displays the computer's name in network | *The name has to be told to every client* |
| *Client #* | Defines which client-slot (1 – 10) should register the located experiment-file | |
| *Project* | Locates an experiment-file | |
| *Insert* | Writes defined experiment-file into client-slot | |

*Section 2*

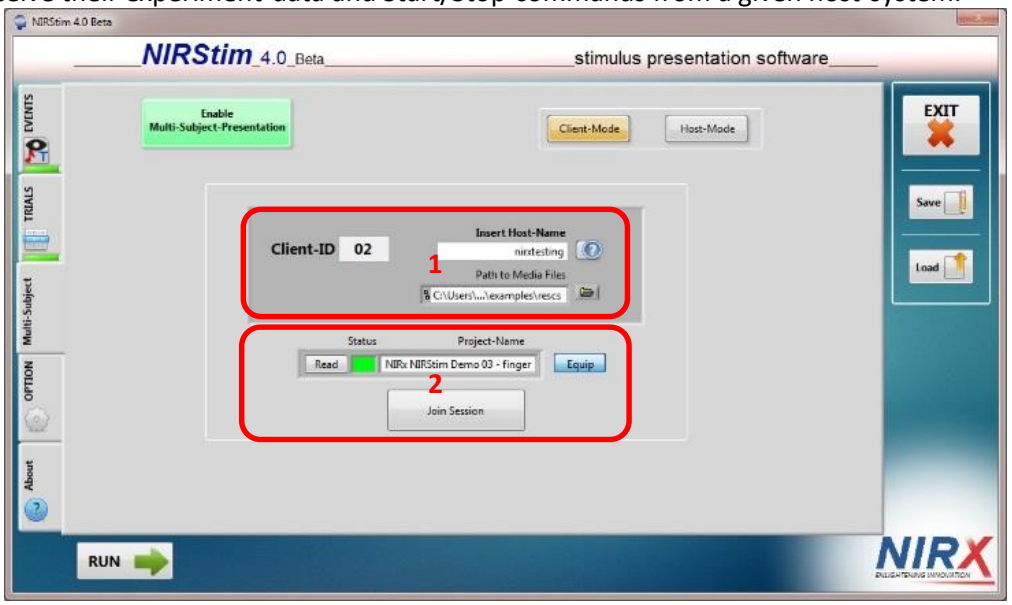
| | | |
|---|---|---|
| *Client-LEDs* | Displays active clients connected to Host | |
| *Client-List* | Displays number, experiment-name and status of every available client-slot | **Status:** Black: unused / not assigned<br>Yellow: experiment is ready to be read / opened by client<br>Green: a client has been equipped with given experiment<br>Blue: client joined session |
| *Refresh* | Updates information in Client-List | |
| *Del ALL* | Resets all settings in Client-List | |
| | | |

*Section 3*

| | | |
|---|---|---|
| *RUN* | Sends Start-command to every Client in session | Only affects clients with blue Status-Indicator |
| *STOP* | Sends Stop-command to every Client in session | Only affects clients with blue Status-Indicator and resigns them from session (Status turns green) |

### 6.3 User Interface: Client-Mode

Clients receive their experiment-data and Start/Stop-commands from a given host-system.




In this section, clients have to define their host-system, ID and a path to media files. Experiments are assigned from the host according to the selected ID.

**Media-files (pictures & sound) are not transferred by network!**
Make sure every client has all required files on its system at the given path.

*Section 1*

| | | |
|---|---|---|
| *Client-ID* | Determines assigned client-slot (see Client-List in Host-Mode) | *Slots are assigned automatically* |
| *Insert Host-Name* | Defines the host-system in network | *Pay attention on the correct spelling! Write all capital letters in lower case letters* |
| *Path to Media files* | Make sure that all needed media files (sound, pictures) are available on the system in the same directory! | *The default path leads to the "rescs"-folder in NIRStim\examples* |

*Section 2*

| | | |
|---|---|---|
| *Client-Status-bar* | Displays status and experiment-name & contains ‘‘Read”-button to load given experiment-file from host | **Status:** Black: unused / not assigned<br>Yellow: experiment is opened by client / ready for equip<br>Green: client has been equipped with given experiment |
| *Read* | Reads slot-information | Reads whether project has been provided by Host |
| *Equip* | Loads experiment-data from Host & checks for Errors | Equip fails when files or information are missed.<br>You may run the presentation (SingleMode) by clicking the ‘Run’-button |
| *Join Session* | Enters presentation-mode and waits for Start/Stop-command by Host | Click on ‘Abort’-Session or ESC-button to leave session |

# 7 Adjust the Windows Firewall™

There are two ways to prepare the *Windows Firewall™* in a way that triggers send by NIRStim 4.0 can be accessed over network.

**This has to be done on the Client- AND Host-system!**

- **Disable Windows Firewall™**

**Not recommended concerning security aspects!**

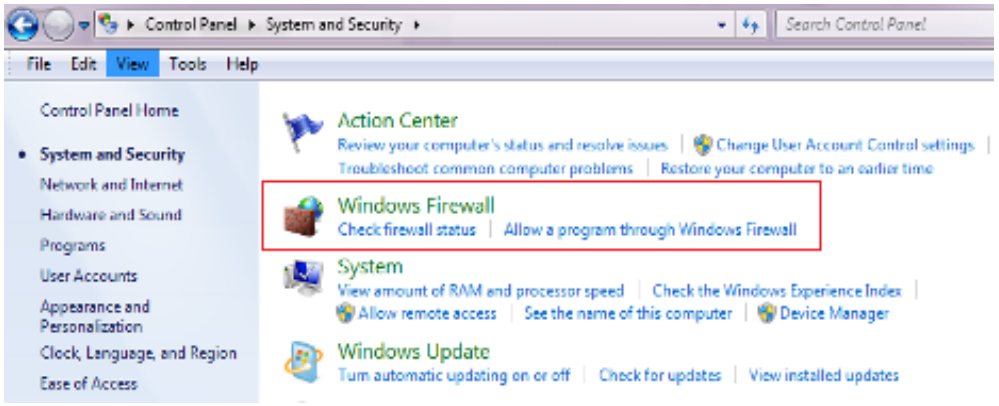
The easiest way is to disable the Firewall. Therefore click on *Start* and type *Firewall* in the *Search for Programs and Files* box. Press enter. In the found programs click *Windows Firewall*. If the *Windows Firewall* is enabled the *Windows Firewall state* will be on. Click *Change settings or Turn Windows Firewall on or off* in the left column. In the *Firewall Settings* window, select *Off* and click ok.

**Reboot your computer before running NIRStim or NIRStar!**

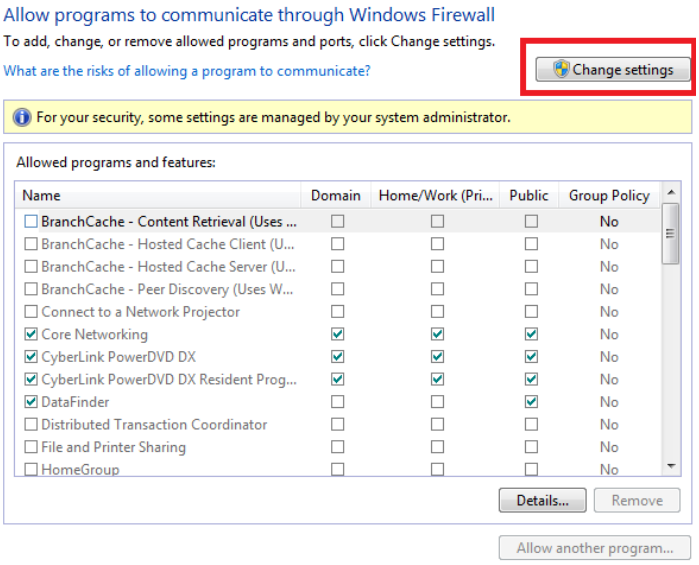
### ▪ Configure Windows Firewall™ manually

Unfortunately Windows does not allow access to all necessary files by default. As a consequence, keeping the Firewall enabled requires to adjust its settings manually. Therefore the following steps have to be done:

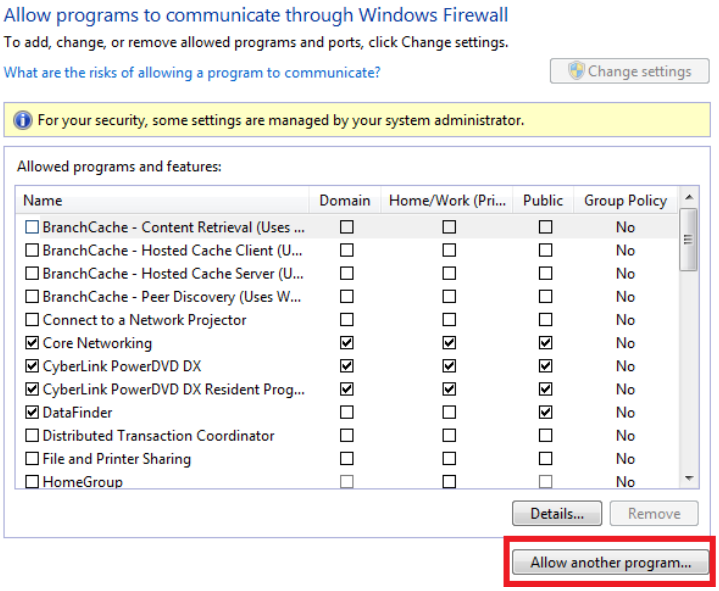
1. Open the *Windows Control Panel* by going to *Start* → *Control Panel*
2. Open *Windows Firewall*
3. Click *System and Security*
4. Click *Allow a program through the Windows Firewall*




5. Click *Change setting*




6. Click *Allow another program….*




7. Click *Browse...*
8. Navigate to and select *C:\Windows\SysWOW64\lkads.exe* → Click *Open*, then *OK*

   **Please note that for Windows 7 34 bit**, this file will be found in: *C:\Windows\System32\lkads.exe*

9. Repeat this step for:

   *C:\Windows\SysWOW64\lktsrv.exe*

   *C:\Program Files (x86)\National Instruments\Shared\Tagger\tagsrv.exe*

10. All the applications from the previous step should appear in the list of programs on the *Exceptions* tab of the *Windows Firewall* window and should have a checked box next to them. Check all of them. Finally verify that *LabVIEW x.x Development System* item is checked in the *Programs and Services* list.
11. Click *OK* and close the *Windows Firewall* window.
12. **Reboot your computer.**

# 8 Define Host in NIRStar

This has to be done every time your **Host**-system is assigned to a new IP-Address and before running NIRStar!

To be able to receive data from a Host-system, each NIRStar-Client needs to know the IP-Address of your Host-system.

1. On your main drive, go to the *NIRx*-folder and enter the folder of your latest *NIRStar*-version
2. Beside the NIRStar.exe there should be a **.aliases*-file → open it e.g. with the *Editor* or *WordPad*
3. Replace the "Localhost"-entry with the Hosts-IP-Address (e.g. “192.168.4.105”)

Keep the quotation marks!

4. Save changes and close the **.aliases*-file
5. Run *NIRStar*

# 9 Connect NIRStar with individual Client

## A. NIRStar and Client running on same system

(1) **In NIRStar**:

By Default, there is nothing to be done - but if any errors occur / no triggers are delivered, do the following steps:

a. On your main drive, go to the *NIRx*-folder and enter the folder of your latest *NIRStar*-version

b. Beside the NIRStar.exe there should be a **.aliases*-file → open it e.g. with the *Editor* or *WordPad*

c. Make sure it says: My Computer = "Localhost"

(2) **In NIRStim:**

Before run a presentation or “Equip” with host-experiment, define the Shared NIRx Variable as an Output.

## B. NIRStar and Client running different systems

(3) **In NIRStar**:

This has to be done every time your **Host**-system is assigned to a new IP-Address and before running NIRStar

To be able to receive data from an individual client-system, each **NIRStar**-Client needs to know the IP-Address of your desired system.

6. On your main drive, go to the *NIRx*-folder and enter the folder of your latest *NIRStar*-version
7. Beside the NIRStar.exe there should be a **.aliases*-file → open it e.g. with the *Editor* or *WordPad*
8. Replace the "Localhost"-entry with the Hosts-IP-Address (e.g. “192.168.4.105” – you can read out an IP-Address in NIRStim by looking it up in the “Define Output”-Section)

Keep the quotation marks!

9. Save changes and close the **.aliases*-file
10. Run *NIRStar*

(4) **In NIRStim:**

Before run a presentation or “Equip” with host-experiment, define the Shared NIRx Variable as an Output.

# 10 Troubleshooting

### A. RUN button is hidden / Front panel elements cannot be found / Arrangement looks different

Please make sure that you don't use 125% Text/Icon size!

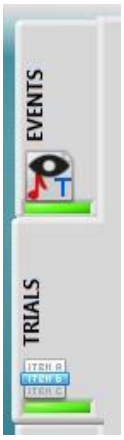
Go to Control Panel/Appearance and Personalization/ Display and make sure you use either 100% or 150%.

### B. The RUN button does not become enabled

Usually there is some information missing to perform a correct presentation when the *RUN*-button stays disabled and grayed out. Check the two indicators shown below. The *RUN*-button will stay disabled as long as both indicators are not turned green.


- **There are no *Events***
- Create one *Event* at minimum to get the first indicator turning green and the second yellow


- **There are neither *Trials* nor *Trial Sequences* declared**
- Make sure there are at minimum one *Trial* and a *Trial Sequence* (with one "*Reps*" or more)




- **All necessary information is given**

### C. *NIRStim* cannot find any Available Ports

Make sure the National Instruments™ - *VISA Run-Time Engine* has been installed. It is included in the *Installer* package (it is NOT part of the *Build* versions!). Either reinstall *NIRStim* with the *Installer* package or get the *VISA Run-Time Engine* directly from National Instruments™.

### D. *StimTracker* – 'check connection' always fails

1. Make sure the National Instruments™ - *VISA Run-Time Engine* has been installed (see **B – *NIRStim* cannot find any Available Ports**)
2. Check whether the correct COM – port has been selected, e.g. by looking up the correct port in the *Windows™* device manager

### E. *Shared NIRx Variable* does not interact with *NIRStar*

Check if you use *NIRStar 14.0* at minimum first! Older version do not support the *Shared NIRx Variable*.

Go to F. "No Network-Connection between NIRStar-/NIRStim- Software" or G "No Local- Connection between NIRStar- / NIRStim- Software" for further information.

### *F. No Network-Connection between NIRStar-/NIRStim- Software*

(1) Make sure the *Windows Firewall*™ does not block *NIRStim*. When starting *NIRStim* the first time, click on "Allow access" when the *Window Security Alert* pops up. Otherwise click on the *Start* menu, select *Control Panel*, *System and Security*, and allow the program through *Windows Firewall*.

Reboot your system after changing your Firewall-settings!

**See chapter 7 "Adjust the Windows FirewallTM", page 25, for detailed information.**

(2) Try to run NIRStim before starting NIRStar.

(3) Check NIRStars *.aliases-file and define a host *before* running it.

**For detailed information see chapter 8 "Define Host in NIRStar", page 28.**

### *G. No Local- Connection between NIRStar- / NIRStim- Software*

(1) Check NIRStars *.aliases-file and make sure "My Computer" is defined as "Localhost" *before* running the software.

**For detailed information see chapter 8 "Define Host in NIRStar", page 28.**

(2) Make sure that you always run NIRStim before starting NIRStar.

### *H. Full-Screen: Not all (Windows™-)Elements are hidden*

Depending on your operating system and design settings, it may occur that not all elements are hidden in Full-Screen Mode. Please try to hide them manually.

### *I. Multi-Subject: Client does not stop its presentation immediately when Host signals it*

Clients can receive Host signals between each Event only. Wait until Clients finished its current Event.

### J. *Multi-Subject (HOST): Status-LED does not turn green after session finished*

Due to Network Delays it may occur that the HOST does not receive all status updates. Please, either click on 'Stop' again or join a session again with all clients and click on 'RUN' and 'Stop'.