

# Quick Start Guide

# InspectionWare

Version: QSG-BC-rev1.5

Quick Start Guide introduces the basic components of the InspectionWare NDE Development Platform and helps you to get started using a C-Scan example.



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## INTRODUCTION

### To InspectionWare components

There are only three types of components used when developing an InspectionWare system.

Manager Windows, a Toolbox and Custom User Interfaces replace the rigid structure of dialog boxes and menus commonly found in other NDT systems. Managers are where the action happens. Tools are the building blocks. User Interfaces are custom panels, which you create, to make systems simpler and more productive.

This, in our view, is the best way of building both custom and simplified NDE systems.

### Manager Windows

Tools dragged into a Manager Window are called nodes that connect with each other forming useful hierarchical trees or sequences to automate signal processing and inspections.

The nodes used in Managers have properties (settings) and tasks (actions). Properties are set by double clicking nodes and tasks are selected by right clicking.

### Toolbox

All tools reside in the toolbox and are organized by functionality based on how they are used in the Manager Windows such as acquisition, inspection and motion.

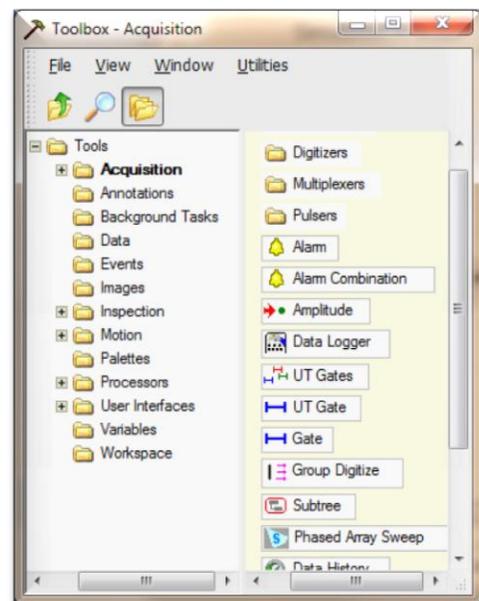
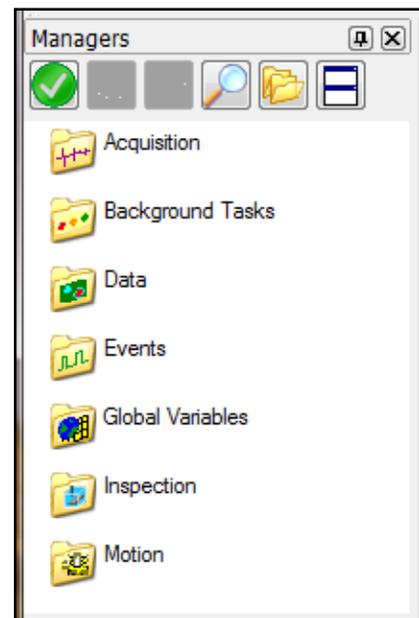
### User Interfaces

User Interfaces start as blank panels and contain only the controls you place on them to do a particular job.

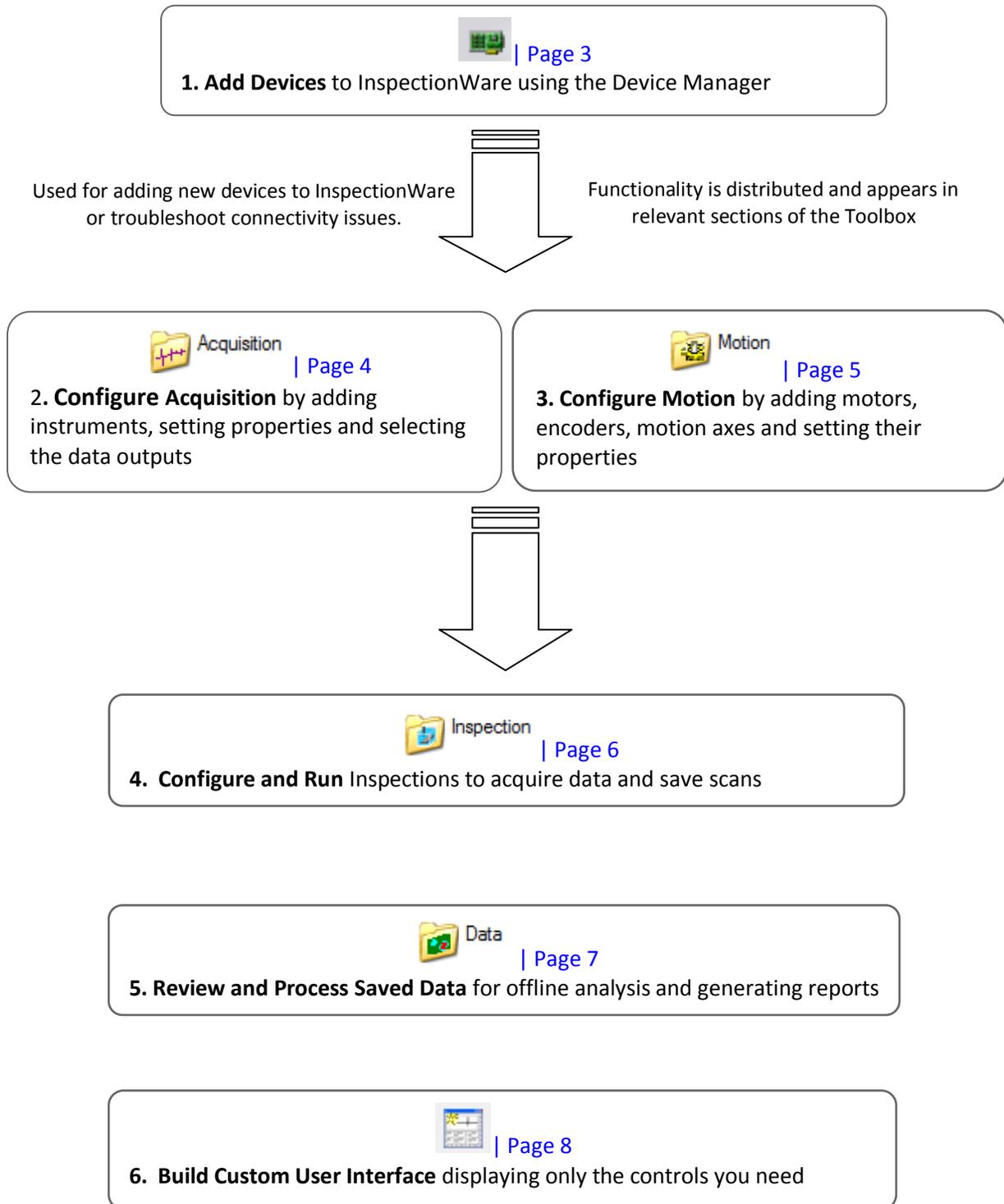
### InspectionWare Desktop

When a node is dragged from a Manager into the InspectionWare Desktop (Blue Space), an appropriate window is automatically created for displaying A-Scans, B-Scans, C-Scans, Strip Charts or Motion Control.

These are default windows for advanced users or they are used by developers when first configuring systems.



This example demonstrates how InspectionWare components are used to build a simple C-scan application.



## ADD DEVICES TO INSPECTIONWARE Using the Device Manager

InspectionWare can only use devices which have been defined in the Device Manager. The device's functionality is distributed in appropriate toolbox folders leading to a de-cluttered toolbox that contains only the devices that are used in your system.

### Add New Device

1. Open Device Manager:  
Menubar → Managers → Device Manager
2. Click  to open Add Device Window.
3. Select device from drop down list in Add Device Window.
4. Configure device properties. Click OK.

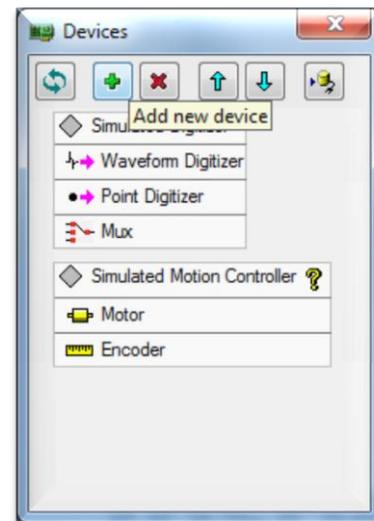


### Connect and Test Device Communication

5. Right click on the device name to connect.
6. In case of connectivity issues the following icons may appear:

 *InspectionWare is not connected to the device or is not communicating with the device.*

 *Error- Device cannot be connected or the device driver is not installed.*



### Once Added

7. Close the Device Manager. From now on, it will only be needed to troubleshoot connectivity issues or add new hardware.
8. Access device functions from the toolbox.

### C-Scan Example:

1. Add a Simulated Digitizer and Simulated motion Controller
2. Exit Device Manager

## CONFIGURE ACQUISITION

By adding instruments, setting properties and selecting the data outputs

Instruments to be used in your system must be first dragged into the Acquisition Manager.

Drag tools onto the instrument in the Manager to specify data outputs such as Gated signals, Amplitude, Time of Flight.

Set properties by double clicking nodes, execute tasks by right clicking and view related data by dragging nodes to the desktop blue space. A connected node only operates on the data output of its parent node viz. the node on which it was dropped. The hierarchy is shown by dashed connection lines. View or hide child nodes in a tree by clicking on the  $\oplus$  or  $\ominus$  symbols on the left of each parent node.

### Setup Instruments

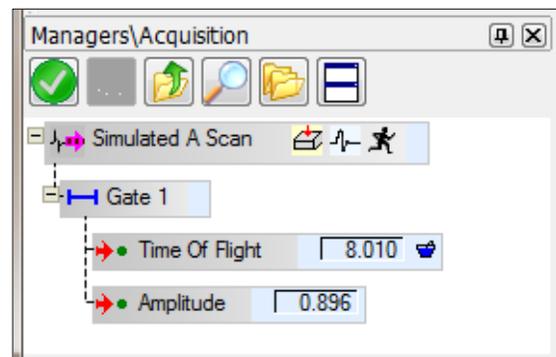
1. Drag required instruments from the Acquisition Toolbox to the Acquisition Manager.
2. Drag required data output tools such as Gate, Amplitude, and Time of Flight onto the instrument or its child nodes.
3. Double click on each node to open and set properties.



Click on any component to see its help. Hover on any component to see tooltip.

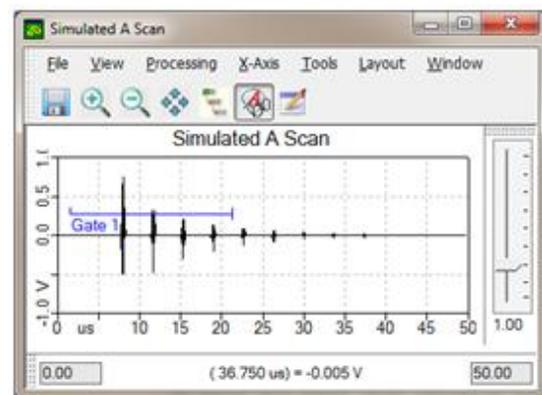


Pin/unpin window contents



### Launch Data Viewer

4. Drag instrument nodes from the Manager to the desktop blue space.
5. Selected instrument properties can also be adjusted from its data viewer such as its Gain, Gate.
6. Right-Click in the Data Viewer to display associated tasks.



### C-Scan Example:

3. Drag a Simulated A-Scan
4. Drag a Gate on Simulated A-Scan. Drag a Time of Flight and Amplitude on the Gate
5. Set Ch1 Gain in Simulated A-Scan to 1.0
6. In the Data Viewer, drag and resize the Gate to cover the first two peaks

## CONFIGURE MOTION

By adding motion axes components and setting their properties

Motors and encoders for each motion axis present in your system must be first dragged into the Motion Manager. A motor is not required if the axis is externally controlled and an encoder is not required if no position readouts are needed.

Set properties by double clicking nodes, execute tasks by right clicking and launch motion control panel by dragging a motion axis node to the desktop.

### Setup Motion Devices

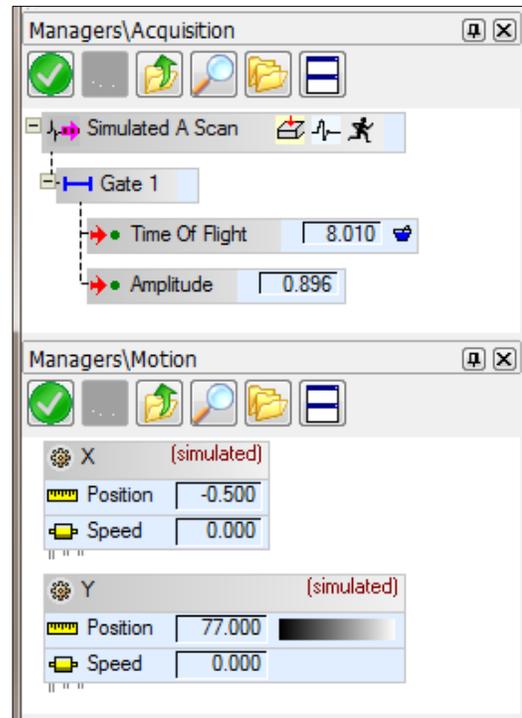
1. Drag required motion components from the Motion Toolbox.
2. Double-Click on each motion device node to set properties.



Split Manager Window

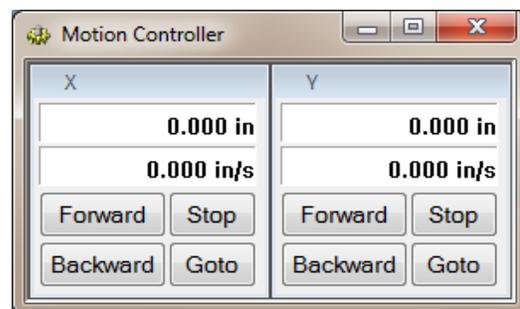


Refresh Manager Window



### Launch Motion Control Panel

3. Drag a motion device node to the InspectionWare desktop.
4. This panel provides a full set of manual controls for a motion axis.



### C-Scan Example:

7. Add two Simulated Motion Axis for Scanning and Indexing
8. Set encoder calibration units to "mm" from the motion axis properties box

## CONFIGURE AND RUN INSPECTIONS

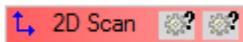
To acquire data and save scans

Scans to be performed by your system such as 1D-Scans, 2D-Scans, Timed-Scans must be first dragged to the Inspection Manager and connected with its instruments from the Acquisition Manager and motion axes from the Motion Manager. Scanning is controlled by the scans, moves, sequences and other tools placed in the Inspection Manager.

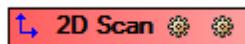
Set scan properties by double clicking nodes, execute tasks by right clicking and view scans by dragging the scan node to the desktop blue space.

### Setup Scan

1. Drag required scan types (Inspection toolbox→Scanning folder).



2. Connect with motion axis nodes to enable motion control.



3. Connect with data output nodes to enable data acquisition.



*Indicates node connection is being made*

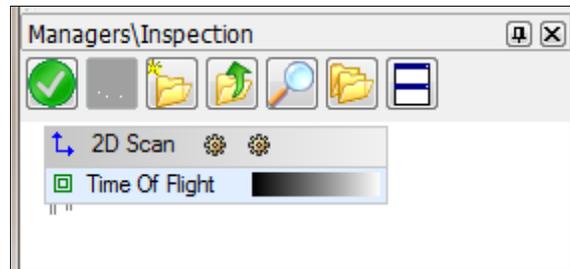


*Indicates scan is in progress*

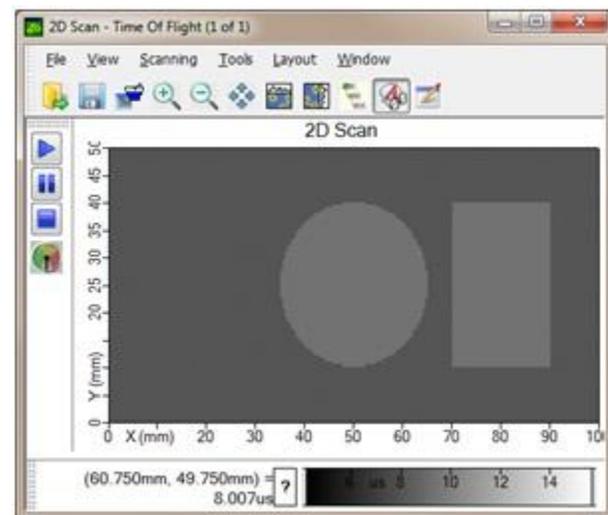
### Start Scanning

4. Drag the 2D Scan node into the InspectionWare Desktop to launch Data Viewer.

5. You can now Run , Pause  and Stop  Scans using the Data Viewer.



*Set "Save Data Prompt When Scan Completed" in the Options tab of 2D Scan properties box to True*



### C-Scan Example:

9. Drag in a 2D Scan tool to setup a C-Scan.
10. Drag Time of Flight from Acquisition Manager to the 2D Scan node.
11. Drag X and Y Axis from the Motion Manager to the 2D Scan node.
12. Set X as Scan Axis with 100mm length and Y as Index Axis with 50mm length. Set start from current position to False.

**\*\* SEE FOOTNOTE ON PAGE 7 ON HOW TO SET UP TEST BLOCK SIMULATION FOR THE ABOVE C-SCAN EXAMPLE \*\***

## REVIEW AND PROCESS SAVED DATA

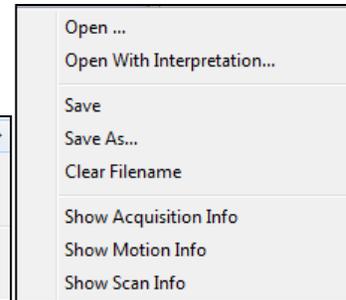
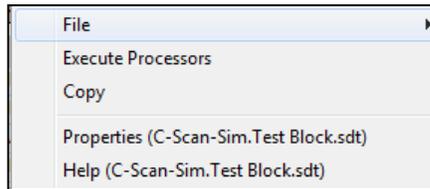
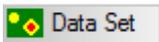
For off-line analysis and generating reports

Saved data files must be first opened in the Data Manager for viewing, post processing and generating reports. Perform data analysis by dragging data processing tools from the Processors Toolbox.

Set properties by double clicking nodes, execute tasks by right clicking and view related data by dragging nodes to the desktop blue space.

### Open Saved Data File

1. Drag Data Set tool from the Data Toolbox to Data Manager.
2. Right click on the Data Set node and select File>Open to select a saved data file.

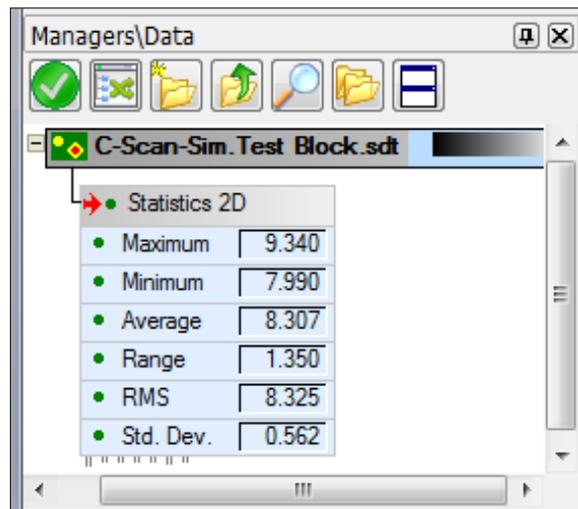


*Replaces existing node with selected tool/node*

*Cannot drop/connect selected tool/node here*

### View and Process Saved Data

3. Drag Data Set onto the Desktop to view saved Scans.
4. Drag processing tools such as Cluster Analysis, Statistics 2D from the Processors Toolbox to analyze and process the data.



### C-Scan Example:

13. Drag Statistics 2D tool (Plane Processors Folder) onto the Data Set node.

**\*\*SETUP SIMULATED TEST BLOCK TO ACQUIRE MEANINGFUL C-SCAN DATA FOR THE EXAMPLE IN THIS GUIDE:**

1. Right-click on the Simulated A-Scan node in the Acquisition Manager and select Test Block as the Simulation Type.



2. Double-click on the test block icon to open its properties. From the drop down menu set Axis 1 and Axis 2 fields to X and Y. Ensure that the Region type is Step Block with dimensions of 100mmx50mm.

## BUILD CUSTOM USER INTERFACES

### Displaying only the controls you need

Build custom user interfaces by dragging only the required controls from Manager Windows onto your user interface. Exit design mode to activate your custom interface.

Set properties by double clicking interface objects and execute tasks by right clicking when in design mode.

### Open New Interface Window

1. Open a new user interface window in design mode.



Opens new user interface (Blank) in design mode

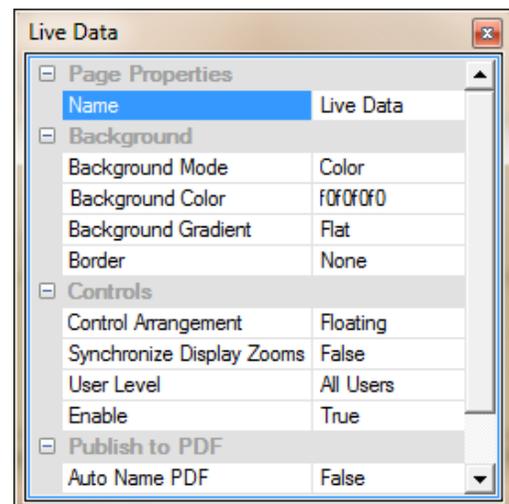


Enter or exit user interface design mode

*In design Mode: Highlight source of a user interface control by selecting "Flash Source" from the right click menu.*

### Add Controls and Start Using your Custom Interface

2. Drag Simulated A-Scan and 2D Scan from the Managers Window to the user interface.
3. Drag Tasks for e.g. Execute, Save As and properties such as Gain.
4. Right click on each object to display its Title, Label etc.
5. Select multiple objects and right click to group them.
6. Drag a Tab Page Tool from the User Interfaces toolbox. Double click the default Tab title (e.g. Page 1) to rename.
7. Exit design mode.



### C-Scan Example:

14. Create your custom C-Scan User Interface.



### Manager Window Icons

-  Refresh contents of Manager
-  Organize tree
-  Add a new folder
-  Move to parent of current subfolder
-  Opens search box for the Manager
-  Show or hide Managers tree
-  Split Manager window

### Help Window Icons

-   Previous help topic / Next help topic
-  Pin/unpin window contents
-  Help home
-  Search help

### Cursors

-  Indicates node connection is being made
-  Indicates scan is in progress
-  Can drop selected tool here
-  Can add selected tool to modify node output
-  Cannot drop/connect selected tool/node here
-  Replaces existing node with selected tool/node

### Toolbar Icons

-  Open an existing workspace
-  Save current workspace
-  Archive current workspace
-  Write workspace description
-  Show or hide Managers window
-  Show or hide Toolbox
-  Show or hide My Toolbox
-  Open new data viewer (Blank)
-  Open new user interface in design mode
-  Open motion control panel
-  Enter or exit user interface design mode
-  Show or hide help window
-  Enable or disable automatic refreshing
-  Refresh once (Single Step)