



**Description:** This application note provides an introduction to the settings of a HoloLens device, and to controlling GraphWorX64 displays using gestures and voice commands.

**General Requirement:** HoloLens device (HL), MobileHMI client license (UWP application equivalent), MobileHMI server.

## Introduction

The Microsoft HoloLens together with ICONICS GENESIS64 software allows users to work in augmented reality.

By using the ICONICS MobileHMI Universal Windows application on a HoloLens, device you can visualize and control GraphWorX64 displays (2D and 3D).

## Remember Gestures

Controlling the displays and moving in augmented reality requires the use of 2 main types of gestures:

1. "Click" gesture (confirm / select)

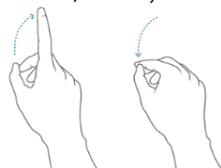


Figure 1 – Click gesture

2. "Bloom" gesture (exit / suspend)

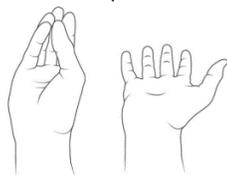


Figure 2 - Bloom gesture

## Before you can start

1. From your HoloLens, visit the (Windows) Store.
2. Search for the MobileHMI application.
3. Install the application on the device.

**NOTE:** You don't need to configure any advanced settings in GraphWorX64 or Workbench on the server. You do need to have a .gdfxp display placed on the MobileHMI Server, using the same steps as with displays for standard MobileHMI clients.

## Start using MobileHMI in HoloLens

1. In your HoloLens, select the MobileHMI app.
2. Use the "click" gesture to pin the application somewhere around you.
3. When the application loads, add a MobileHMI Server (as in the standard Universal Windows Platform application).

**NOTE:** The server address you use must be available in the network. You can use the machine name or IP address.

4. When you connect to the server and the layout is opened, choose your tile to load a GraphWorX64 display (.gdfxp). 2D displays will look flat, as in the standard MobileHMI Universal Windows Platform application, but if your display contains a 3D Viewer, the 3D content it will be automatically shown in holographic view.

**NOTE:** For HoloLens holographic view, only one 3D Viewport is supported per display.

5. You can switch from 3D to 2D using the "Set View" command attached to a 3D model with following command properties.

- Zoom Type = ZoomToNamed
- ViewName = \_2DView

6. To switch back from 2D to 3D the same "Set View" command can be used.

- ViewName = \_HolographicView

**NOTE:** You can exit a hologram and go back to 2D using the "bloom" gesture. This will leave the MobileHMI app asleep. You will need to click on the window to wake it back up.

## 3D Menu options

The MobileHMI menu comes up after a long click gesture (hold the click gesture for a few seconds) on a 3D object.

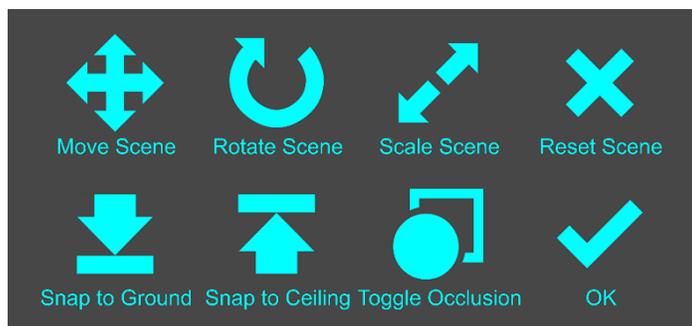


Figure 3 - 3D Menu

- *Move Scene* – enables the user to “click and drag” the model in order to change its translation.
- *Rotate Scene* – enables the user to “click and drag” the model in order to change its rotation.
- *Scale Scene* – enables the user to “click and drag” the model in order to change its scale.
- *Reset Scene* – removes all the custom (user created) transforms from the model.
- *Snap to Ground* – aligns the bottom of the model with the floor.
- *Snap to Ceiling* – aligns the top of the model with the ceiling.
- *Toggle Occlusion* – turns on/off the hologram-object occlusion.
- *OK* – cancels the current transformation method and hides the menu.

All of the previous commands (except for “OK”) are also available as voice commands. Simply say the command, for example “Move Scene”, and the cursor will change allowing you to interact with the hologram.

## Design consideration

While developing a 3D scene you should consider following points:

- The [0,0,0] coordinate is position of the user’s head.
- The color black is transparent on a HoloLens and will not be visible in the scene.
- Annotation of objects does not support the full set of control objects. As a workaround you can place controls in the 2D part of the display.

## Audio options in HoloLens

### Voice commands

Voice commands can be used to execute standard Pick actions.

Properties relating to Voice commands can be found under “Execution Trigger – Natural UI” in the properties of a standard pick action:

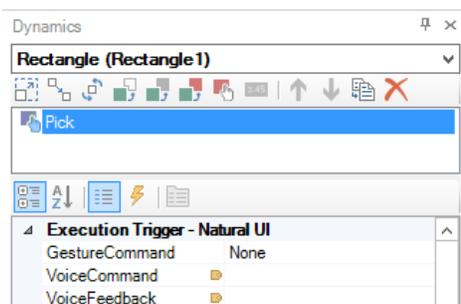


Figure 4 – Natural UI properties

When developing displays for HoloLens it’s recommended to work with the `.gdfxp` display format. When the display has been saved as `.gdfxp`, the “Execution Trigger – Natural UI” section is visible by default.

**VoiceCommand** = the command the user can say to execute this pick action. It is not case sensitive.

**VoiceFeedback** = what HoloLens’ synthesized voice will answer as confirmation after action was executed.

If a single object has more than one pick action with the same voice command, all pick actions will be executed for that command, and their voice feedbacks will be merged. Pick actions are executed in order from the top-first to the last one.

If an object has a voice-enabled pick action, and you focus on that object for a couple seconds a popup with the text of the voice command will appear.

### Spatial sound in the holographic view

A pick action with a “Play sound” command attached to a 3D model will produce sound coming from the direction of that model’s location. Mono sound files must be used.