Active Shutter 3D System and 3DEXPERIENCE: How to implement 3D Active stereo in your lab

3DEXPERIENCE R2015x

Environment Requirements

In order to set up this experience, you will need:

- One of the following versions:
  - V5-6R2015
  - V6 R2013x
  - **3D**EXPERIENCE R2015x

- An access to the following servers:
  - ENOVIA V6R2013x server
  - **3D**EXPERIENCE Cloud

- The following license:
  - CATIA PLM DISCOVER

- To import on your computer:
  - Stereo_model.3dxml *(provided in the course)*

- To install on your computer:
  - AMD Drivers *(provided in the course)*

- To download and install on the internet:
  - Logitech Drivers

Table of Contents

Following is the list of topics covered:

1. What is active shutter 3D system
2. How does it work
3. What is in this package
4. Where to buy the components
5. How to set up the devices
6. How to set up the stereo:
   - V5-6R2015
   - V6 R2013x
   - **3D**EXPERIENCE R2015x
7. Tips to improve the experience in 3D

What is Active shutter 3D system?

An active shutter 3D system is a must-have tool in project-based learning, electronic prototyping and making.

▷ It is a technique of displaying stereoscopic 3D images.

▷ When the image intended for the left eye is displayed, the right eye's vision is blocked and vice versa. This process is repeated so rapidly that the interruptions do not interfere with the perceived fusion of the two images into a single 3D image.

▷ Modern active shutter 3D systems generally use liquid crystal shutter glasses. Each eye's glass contains a liquid crystal layer which becomes opaque when voltage is applied, or, otherwise, remains transparent.

▷ A timing signal allows the glasses to alternately block one eye, and then the other, in synchronization with the refresh rate of the screen. The timing synchronization to the video equipment may be achieved via a wired signal, or wirelessly by either an infrared or radio frequency transmitter.
In our case the signal will be transmitted wirelessly by the TV thanks to the 3D graphic card.

Passive polarizations/color filters are different 3D methods

How does it work?

- ▷ **Desktop Computer**
  - ☐ The desktop computer represents the structure of this 3D Experience.
  - ☐ It has to be powerful enought to run CATIA.
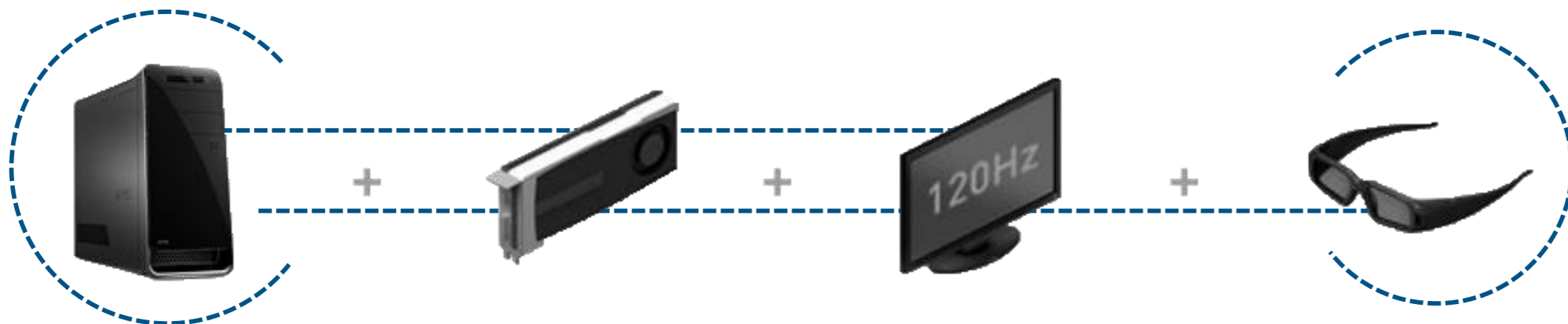
- ▷ **3D Graphic Card**
  - ☐ The 3D graphic card represents the heart of this 3D Experience.
  - ☐ It will replace the standard graphic card you have on your current desktop computer.

- ▷ **3D Screen**
  - ☐ Connected to the 3D graphic card, it will decode the active signal and display the images.
  - ☐ At the same time, it will transmit another signal, coming from the 3D graphic card, to the 3D glasses.

- ▷ **3D Glasses**
  - ☐ The 3D glasses will use the signal coming from the graphic card to switch from the right-eye image to the left-eye image.

What is in this package?

In this package you will find:

- AMD dedicated drivers for the 3D graphic card
- Logitech dedicated drivers for the space mouse (optional)
- A 3D Model to test your configuration

Where to buy components

Example of configuration:

Component	Price
Desktop Computer: DELL PRECISION TOWER 5810 *Intel® Xeon® CPU E5-1620 v3 @ 3.50GHz – 16 GB – 64-bit OS* *http://www.dell.com/us/business/p/precision-t5810-workstation/pd?refid=precision-t5810-workstation&baynote_bnrank=0&baynote_irrank=0&~ck=baynoteSearch&isredir=true*	$1199
Graphic Card: **AMD FirePro W7100 (FireGL V)** *http://www.amd.com/en-us/products/graphics/workstation/firepro-3d/7100#* *http://shop.amd.com/en-us/search/100505724*	$659.99
HDMI Cable 1.4 3D version: *http://www.amazon.com/IBRA%C2%AE-PRO-GOLD-RED-1-5M/dp/B0031APPM4/ref=sr_1_4?ie=UTF8&qid=1430987332&sr=8-4&keywords=hdmi+1.4*	$14.95
HDMI to DisplayPort Adaptator: **Active DisplayPort to HDMI Male to Female Adapter** *http://www.amazon.com/Cable-Matters%C2%AE-Plated-DisplayPort-Adapter/dp/B00EDT0072/ref=sr_1_1?ie=UTF8&qid=1430987617&sr=8-1&keywords=active+hdmi+to+displayport*	$19.99
FR : 400 Hz Active 3D Screen: **UE75H6400** *http://www.samsung.com/fr/consumer/tv-audio-video/television/tv-led/UE75H6400AWXZF* US: 400 Hz Active 3D Screen: **LED F7100 Series** *http://www.samsung.com/us/video/tvs/UN75F7100AFXZA*	$3799.99
Rechargeable 3D Active Glasses (optional): **SSG-3570CR/ZA** *http://www.samsung.com/us/video/tvs-accessories/SSG-3570CR/ZA*	$49.99
Mouse and Keyboard Wireless (optional): **Logitech Wireless Combo MK520** *http://www.amazon.com/Logitech-Wireless-Combo-Mk520-Keyboard/dp/B003VANO7C/ref=sr_1_1?ie=UTF8&qid=1430987835&sr=8-1&keywords=mk520*	$34.99
Space mouse (optional): **SpaceMouse Wireless 3D Mouse (3DX-700043)** *http://www.amazon.com/3Dconnexion-SpaceMouse-Wireless-Mouse-3DX-700043/dp/B00FJRRVII/ref=sr_1_2?ie=UTF8&qid=1430991829&sr=8-2&keywords=space+navigator*	$93.00
Wall mount (optional): **75inch** *http://www.amazon.com/Impact-Mounts-Lockable-Installers-Throughout/dp/B00BT0RT8Q/ref=sr_1_22?s=electronics&ie=UTF8&qid=1430989851&sr=1-22&keywords=wall+mount*	$21.99

Where to buy the components

Prerequisites for the TV:

In our lab we use this screen:
FR : 400 Hz Active 3D Screen : **UE75H6400**
http://www.samsung.com/fr/consumer/tv-audio-video/television/tv-led/UE75H6400AWXZF

2 300 €

You can find this model in the US:
US: 400 Hz Active 3D Screen : **LED F7100 Series**
http://www.samsung.com/us/video/tvs/UN75F7100AFXZA

$3799.99

If you want another TV model you will need:
120 hz screen
3D active

How to set up the devices

▷ **Installing the drivers**

  ▢ Launch the AMD shortcut and follow the instructions (no custom installation)

  ▢ Launch the LOGITECH shortcut and follow the instructions (no custom installation)

▷ **Installing the graphic card**

  ▢ In your computer, replace the old graphic card by the new W7100 3D graphic card

▷ **Connecting the desktop computer to the screen**

  ▢ Use the 1.4 HDMI cable to connect the screen to the adaptor

  ▢ Connect the adaptor to the new graphic card you have installed in computer

How to set up the stereo

Use the following steps to set up your version of CATIA V5:

1. Click on **Tools > Options > General > Display > Visualization**
2. Click on the **Devices** tab
3. Click on **On** next to **Stereo** option to enable steroscopic viewing
4. Click on **OK**
5. Restart your session to save your settings
6. Enter the following command: **c:Stereoscopic** in the power input field and press **Enter**
7. Set the **Stereo** option to **On** to enable steroscopic viewing
8. To set the distance between your eyes in **Manual mode**, type it in the corresponding field.
9. Click on **OK**

How to set up the stereo

Use the following steps to set up your version of CATIA V6:

1. Click on **Tools** > **Options** > **General** > **Immersive Virtuality**
2. Click on the **Immersive Configuration** tab
3. Check the box to enable stereoscopic display
4. Click on **OK**
5. Restart your session to save the settings
6. Go to tab **View** > **Toolbars** > **General** > **Immersive Virtuality**
7. Check the box **Immersive Virtuality** to display the associate toolbar
8. Click on the little arrow to open a submenu and set up this type of 3D:

This cursor appears:
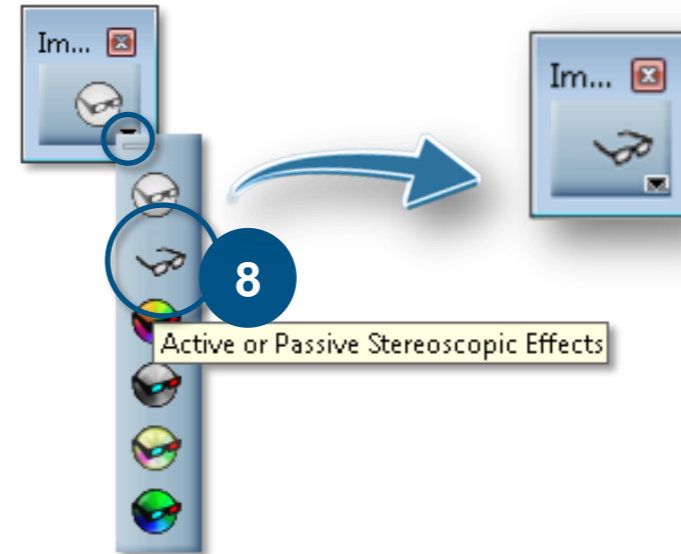
How to set up the stereo

Use the following steps to set up the **3D**EXPERIENCE:

1. Click on profile picture and select **Preferences**
2. Click on the **Immersive Configuration** tab
3. Check the box to enable stereoscopic display
4. Click on OK
5. Restart your session to save your settings
6. Go to panel called View
7. Click on this arrow [ ] to display the submenu
8. Click on the little arrow next to this button: [ ]
9. Set the **Active** or **Passive Stereoscopy**
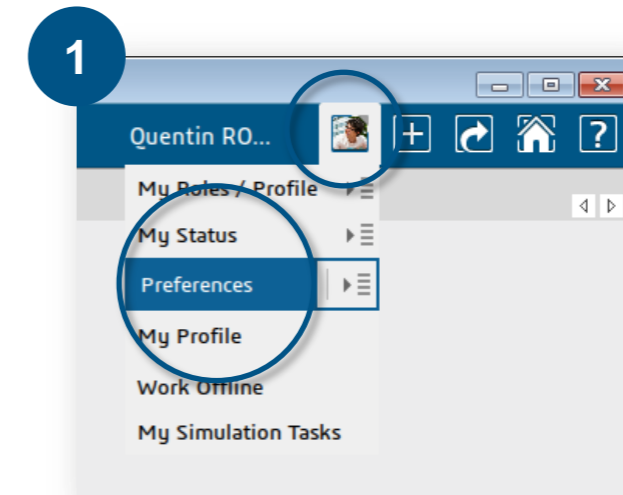
This cursor appears: [ ]
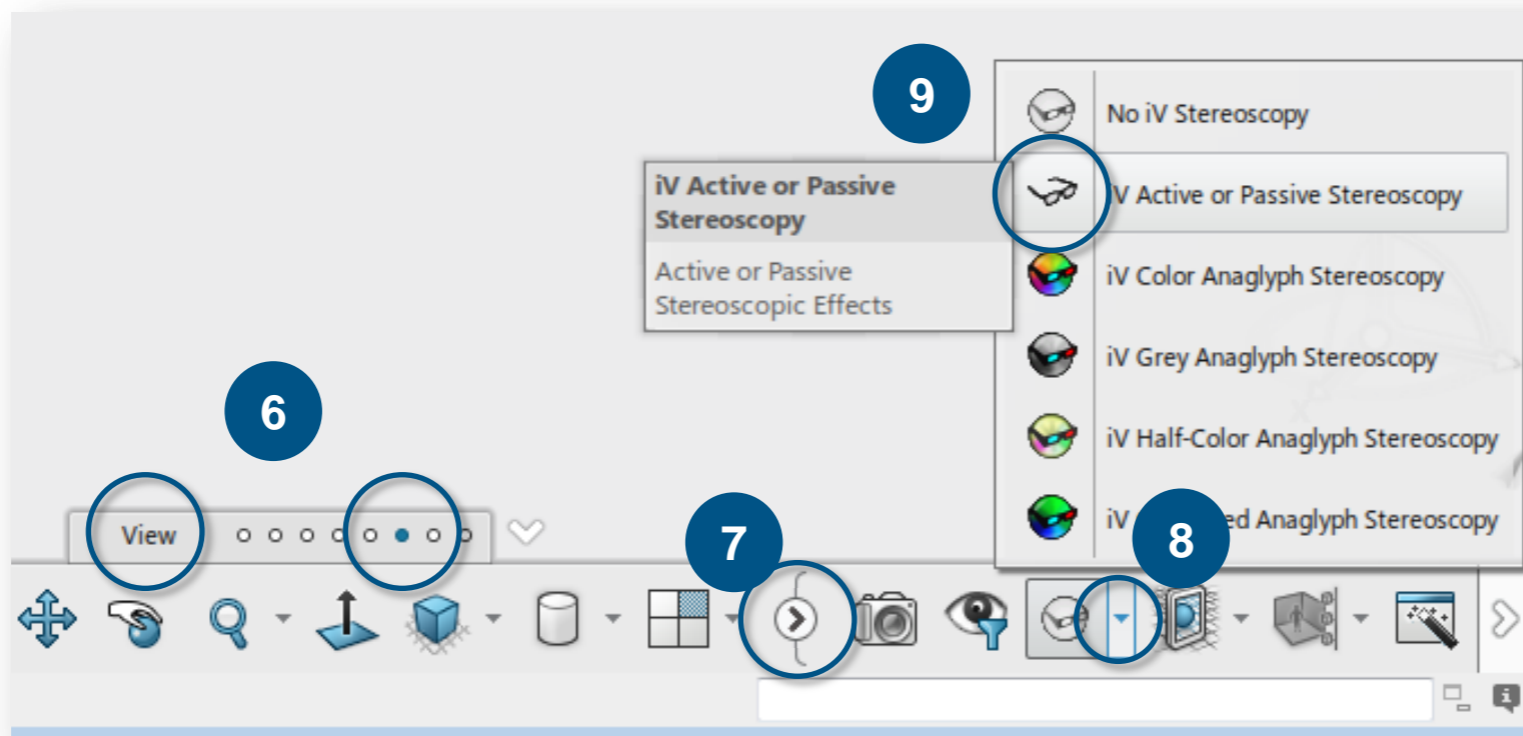
Tips

To improve your stereoscopic experience, here are some tips:

▷ 3 buttons mouse without secondary buttons on the wheel:

▷ Click on the wheel button to refocus the 3D: