

# zSpace 200™ Experience:

## Content implementation with 3DVIA Composer



## User Guide

Version: 1.2.0  
Modified: December 1st, 2014  
Author: Michael Adrian and Shuji Mochida

## Table of Contents

This Manual.....	3
About Desktop versus 3D Space .....	4
About zSpace Experience Ribbon Menu .....	4
How to Launch 3DVIA Composer .....	5
About composing for the zSpace .....	5
Importing the zSpace Virtual Guide .....	5
Paper space and 2D actors.....	9
Adjusting the zSpace Virtual Guide.....	11
Transforming 3D actors.....	12
Aligning Markups, Annotations and Measurements .....	12
Cleaning the project.....	14
A word about colors.....	15
Publishing for the first time to the zSpace Composer Player .....	17
Appendix A.....	21
General features not published to 3DVIA Studio.....	21
Actors not published to 3DVIA Studio .....	21
Other limitations.....	21

## Introduction

### This Manual

In this manual, you will learn how to create a new experience with *3DVIA Composer* content running on the zSpace 200 station. It is based on the commercially available *3DVIA Composer* and 3DVIA Studio workflow, as well as the standard Immersive Virtuality (iV) features of 3DVIA Studio.

This document is addressing to *3DVIA Composer* users who are familiar with the basic functionalities of this product.

This document does not cover the use of 3DVIA Composer.

This experience has been developed and certified by the iV Lab at Dassault Systèmes. For any feedback, please contact this document's writer.

## Experience description

**This demo is showcasing the creation of 3DVIA Composer content running on zSpace 200 station.** It is based on Immersive Virtuality (iV) features from 3DVIA Studio.

## Prerequisites

This experience requires a computer with **STY license** for 3DVIA Studio Pro V6R2013X (it is the .LIC file to be copied in the directory `C:\ProgramData\DassaultSystemes\Licenses`) and a zSpace 200 station.

Beforehand you must do the zSpace 200 installation following the file:  
`zSpace_Composer_Starter_Kit`

## How to install the 3DVIA Composer zSpace Add-in

In order to help you author models for zSpace experiences, an Add-in component is provided to add functions in *3DVIA Composer*.

1. Open the directory `Composer zSpace addin` located in the directory `E:\ZSPACE_Experience_Package\`
2. Execute `setup.exe` to install the add-in component

## How to author for the zSpace Composer Player

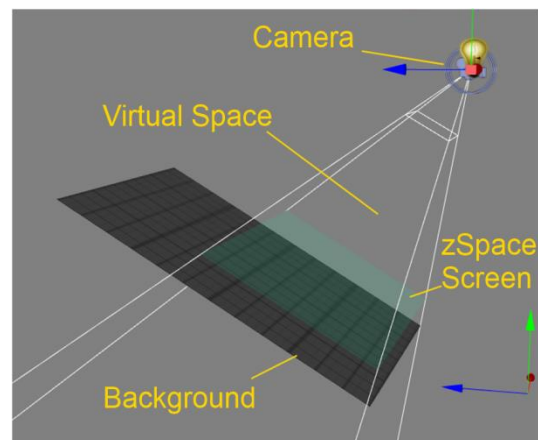
This section describes how to create new or modify existing content in *3DVIA Composer* in order to display it on the zSpace device.

**NOTE:** The zSpace template for 3DVIA Composer is subject to ongoing improvement.

### About Desktop versus 3D Space

An iV experience differs from a typical desktop application in several ways. The biggest difference is the way the user interacts with the 3D space and the content. The aim of an immersive application is to give the user the illusion of interacting in a virtual space with virtual objects.

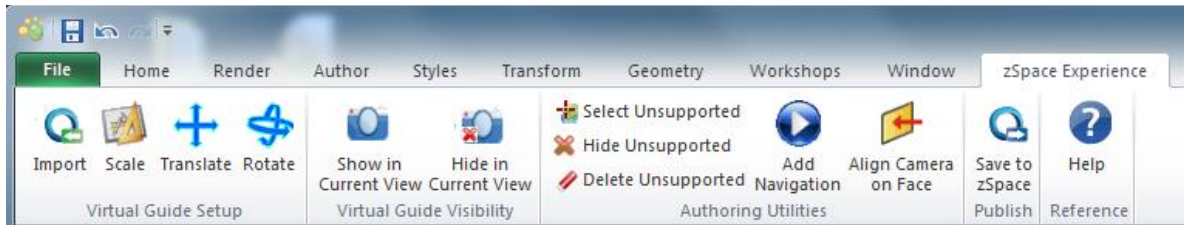
With the zSpace, this virtual room is spanned between the background of the virtual scene and the user's eyes and has the shape of a stretched pyramid as shown on the picture on the right.



To give the user some control on how objects are positioned in this virtual space, the zSpace Virtual Guide is provided in *3DVIA Composer*.

### About zSpace Experience Ribbon Menu

With the *Composer-zSpace-addin* component, the zSpace Experience Ribbon menu appears in your Composer window.



The functions available in this menu help you import authoring your models for zSpace experiences.

## How to Launch 3DVIA Composer

1. Click *3DVIA Composer zSpace Addin* icon on your desktop
2. Launch *3DVIA Composer* with special Ribbon menu dedicated to convenient authoring for zSpace experiences.



## About composing for the zSpace

To illustrate the composition of a zSpace ready Composer scene, we'll use the well known Gearbox example coming with your installation of *3DVIA Composer*.

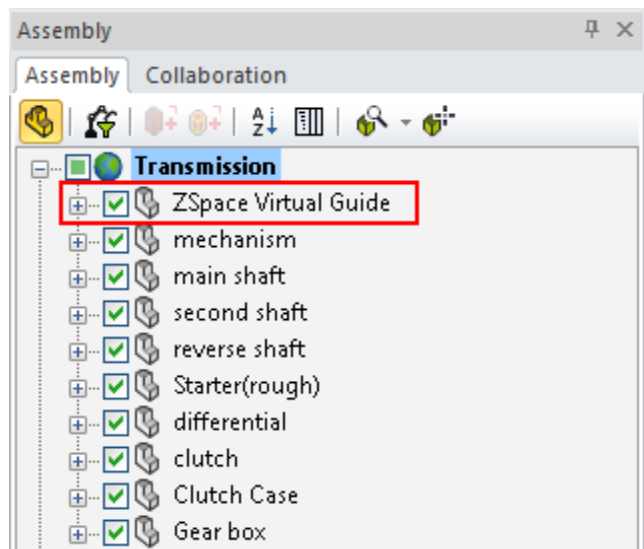
**NOTE:** After loading your Composer scene, you might want to save it under a different name to preserve the original data.

## Importing the zSpace Virtual Guide

1. Click on the menu **Import** in the zSpace Experience Ribbon to import the zSpace Virtual Guide
2. Choose the posture you want: sitting or standing position, depending on how you want to use the zSpace.

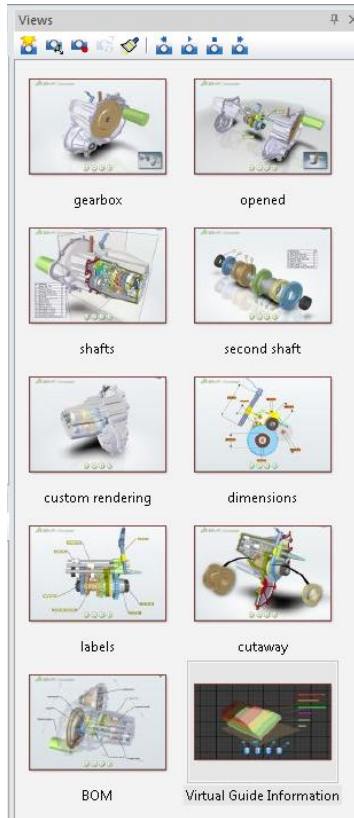


**NOTE:** The imported zSpaceVirtual Guide selected or unselected in the Assembly panel.

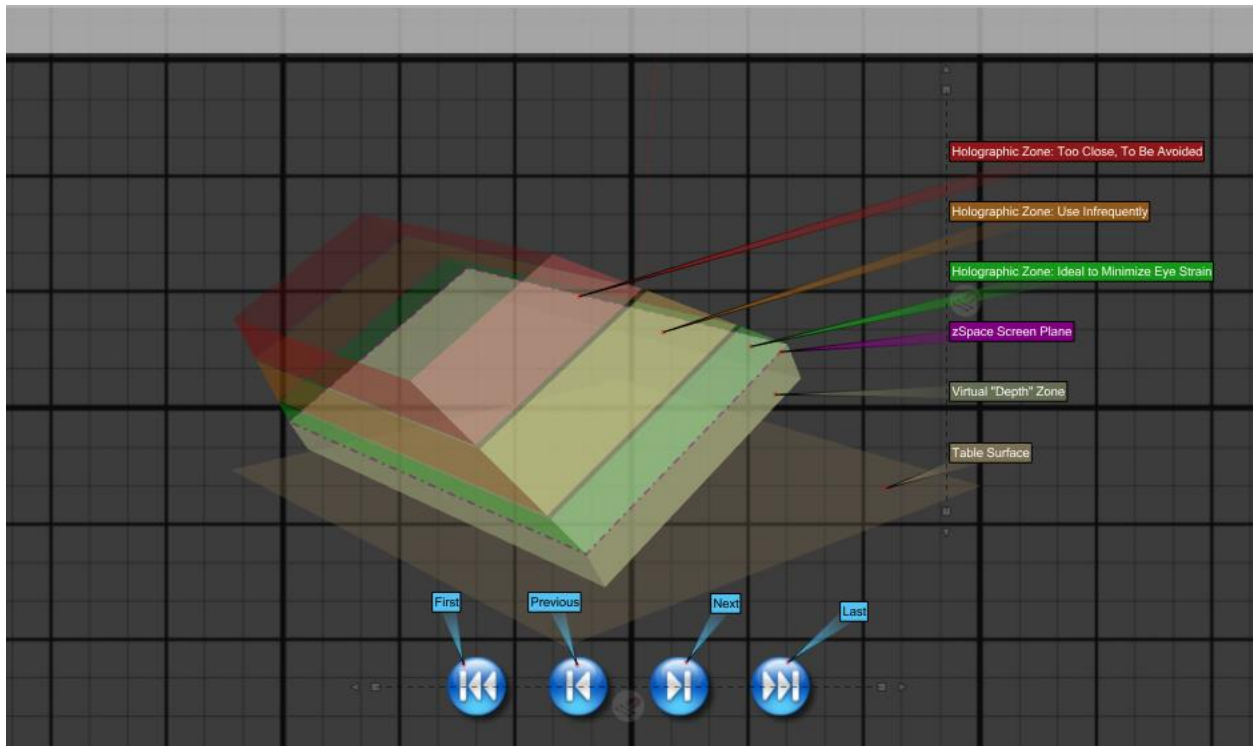


After importing the zSpace Virtual Guide, you can also see that a new view Virtual Guide Information is added to the Views panel.

# ZSpace™ Experience: Content Implementation with 3DVIA Composer



The view Virtual Guide Information gives you guidance on how you can place your model so that it can be viewed in the zSpace screen in an appropriate manner.



## ZSpace™ Experience: Content Implementation with 3DVIA Composer

To visualize your model in the zSpace scene, the model has to be included within the space defined by 4-colored zones indicated on the figure above.

- **The green-colored holographic zone** is the best place to position your model because eye strain is minimized.
- **The grey-colored visual “depth” zone** is reserved to give outer depth behind the model as a background space.
- **The orange-colored holographic zone** is the zone where the user of the zSpace can bring the target actor in front of his/her eyes.
- **The red-colored holographic** indicates that the zone is too close to the user’s eyes and therefore should be avoided.

**NOTE:** When you import the zSpace Virtual Guide, four navigation buttons are also imported and the paper space is automatically adjusted. (See the section [Paper space and 2D actors](#))

To show the zSpace Virtual Guide, click Show in Current View.



**NOTE:** The ZSpace Virtual Guide group has to stay as a direct child of the root node (If not there, please drag & drop it so it becomes a child of the root.). Also it should not be renamed since the *zSpace Composer Player* detects it by its name.



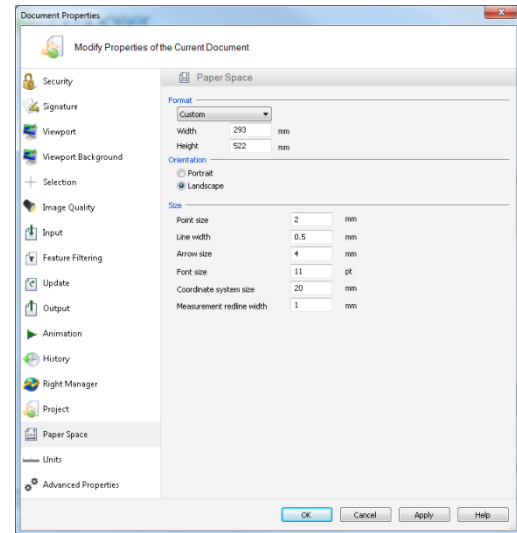
## Setting up Paper space and 2D actors

To display 2D actors properly on the zSpace screen the paper space is aligned to the size of the device by the zSpace Experience add-in when the zSpace Virtual Guide is imported.

1. To confirm, go to File > Properties > Document Properties
2. Select the correct dimensions:  
Width: 293  
Height: 522

After the paper space has been set the 2D actors need to be repositioned.

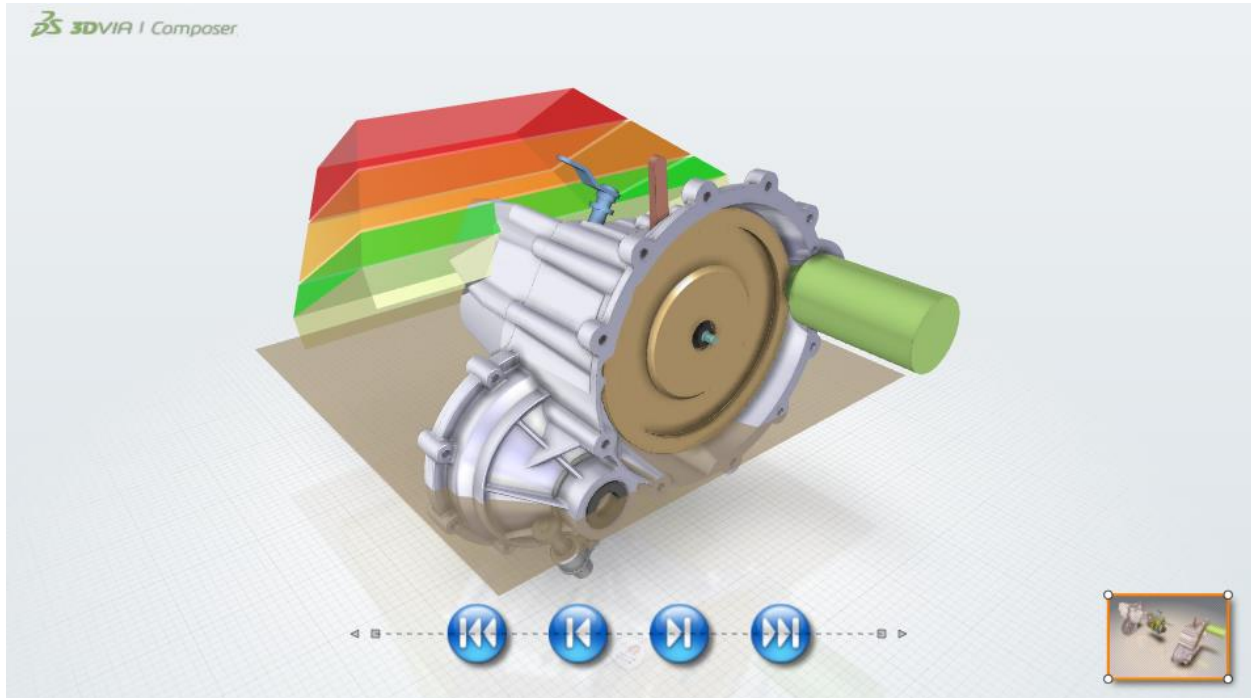
**NOTE:** Unlike other 2D actor images, BOMs and buttons are positioned relative to paper space. On the zSpace they will appear aligned to the screen surface.



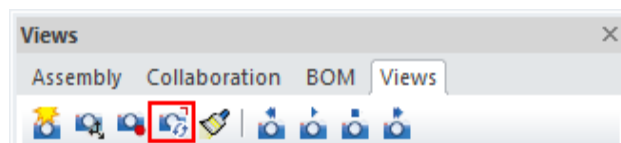
## ZSpace™ Experience: Content Implementation with 3DVIA Composer

3. Click the Add Navigation icon in the zSpace Experience ribbon menu to position the 4 navigation buttons.
4. Since the existing green navigation buttons are small for zSpace, hide: Image 2D 2, Image 2D 4, Image 2D 6, and Image 2D 8 from the Collaboration panel.

After this your first view should look like in the picture below:



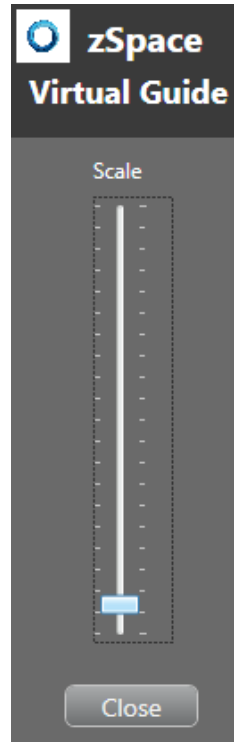
5. To make your changes active in all views, select the modified 2D actors and all other views.
6. Select Update Views with Selected Actors from the top of the Views pane:



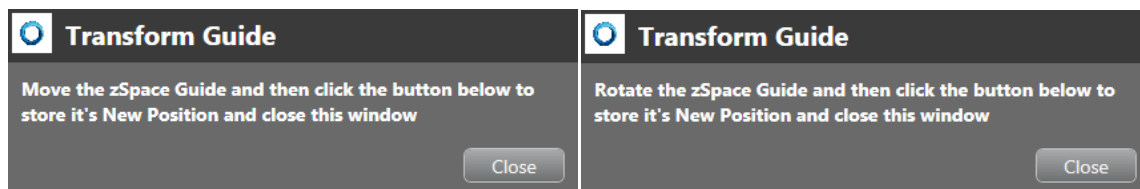
## Adjusting the zSpace Virtual Guide

1. From Virtual Guide Setup menu, click **Scale**, **Translate**, and **Rotate** to adjust the zSpace Virtual Guide in the Viewport so that the model fits inside the zSpace screen.

The Scale function enables you to enlarge or shrink the zSpace Virtual Guide with the easy slide-bar operation.



By clicking the **Translate** icon or the **Rotate** icon, you can move or rotate the zSpace Virtual Guide.

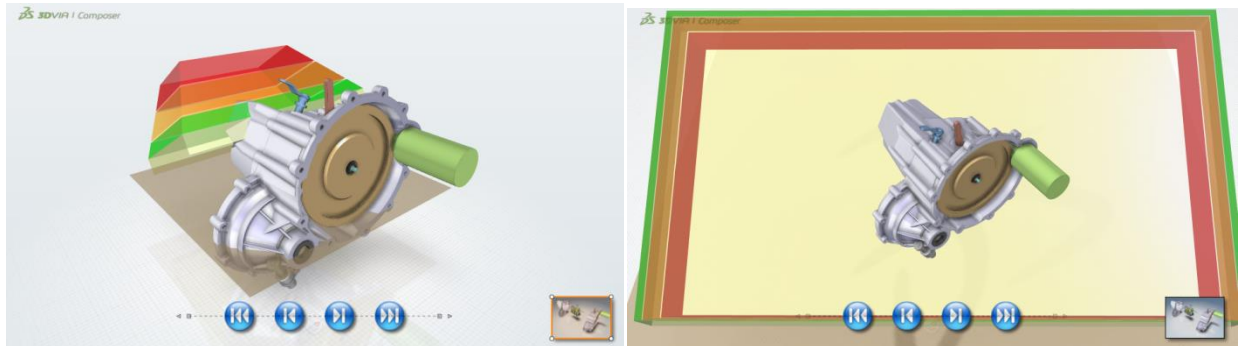


After each operation, you can click Close to finish adjustment.

## Transforming 3D actors

Now that we are operating in a 3D space and that our 3D actors are no longer presented on a flat 2D screen, we have to re-arrange the scene. All assemblies (except the zSpace assembly) have to be transformed so that they fit into the virtual object space of the zSpace.

The two pictures below depict the gearbox before and after transformation and the adjustment of zSpace Virtual Guide.



**NOTE:** do not position objects too far away from the zSpace screen. Objects being too close to the observers' eyes will cause eyestrain due to the difference between the distance the pupils are accommodated to and the converging point of the eyes.

1. After transforming the assemblies, click the **Set as Neutral Properties** button in the properties pane to validate the transformations in all views.
2. Check all views to see if 3D actors are affected by the transformations. If not (for example if geometry has been exploded), you need to correct these cases manually. You can ignore misplaced 2D elements like callouts since they require a special treatment.



## Aligning Markups, Annotations and Measurements

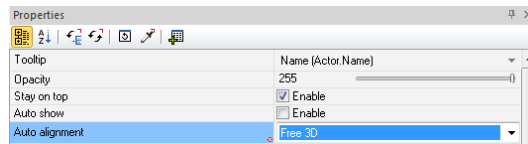
Markups, Annotations and Measurements are somehow 2D-3D hybrids. Their 2D part (like the text of a callout) can stick to the 2D screen, while their anchor (like the anchor of a callout) sticks to the 3D world.

In a virtual space, objects that do stick to the screen can lead to heavy confusion since it is one of the prior goals of iV technology to make the screen disappear. This is why the *zSpace Composer Player* only accepts true 3D actors (except images, buttons and BOMs as mentioned before). To see how to proceed with these actors please switch to the view `second shaft`:

# ZSpace™ Experience: Content Implementation with 3DVIA Composer

If you turn the scene, you can see that the callouts keep their position on the screen, while the geometry itself is rotating. This behavior is undesirable in an iV application.

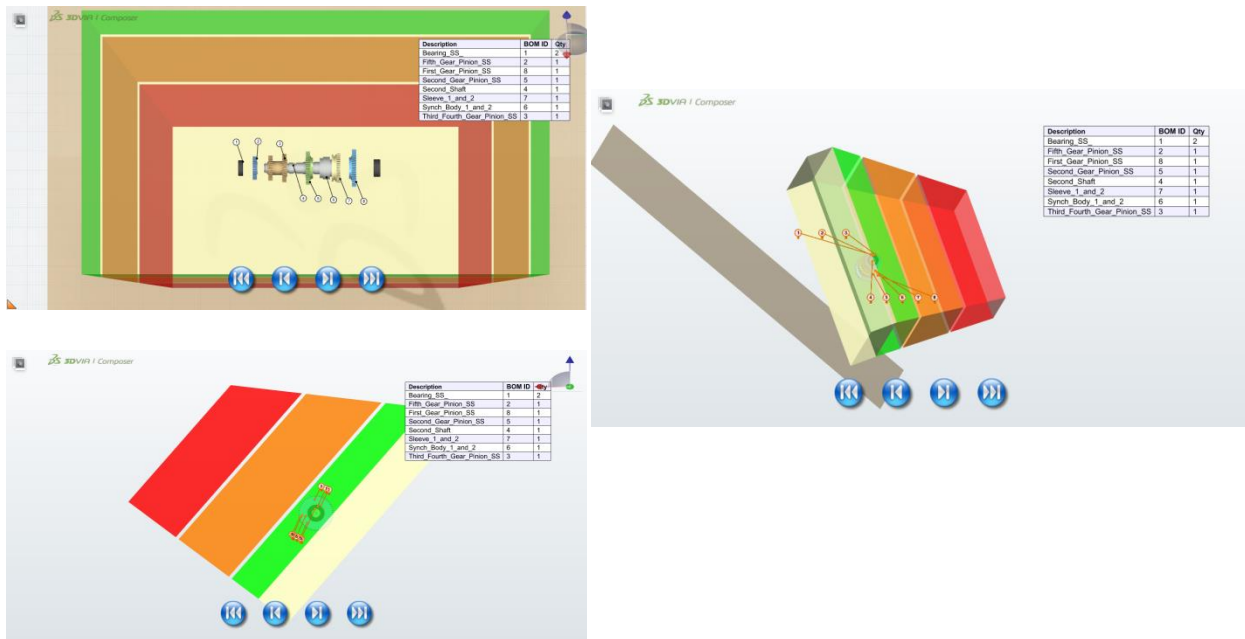
1. Delete magnetic lines
2. Select all callouts
3. In the Properties panel, change the Auto alignment from Free 2D to Free 3D



The callouts are now transformed the same way the 3D actors are.

The next step is to align the callouts relative to the zSpace screen. In general you are free to decide where to position them but it is more convenient for the viewer if they are placed close to the zSpace screen surface. A good practice to position callouts and similar actors is to do this in two different views.

The next three pictures are showing the callouts after being re-positioned (Left: View orthogonal to the zSpace screen. Right: View from the right. Bottom: 3D view):





You can modify all similar actors as described above. One exception is the treatment of dimensions view. The picture below shows the final arrangement of the actors in this view.



The zSpace Virtual Guide has been transformed to include the model with the opening directed toward the axis of the gears.

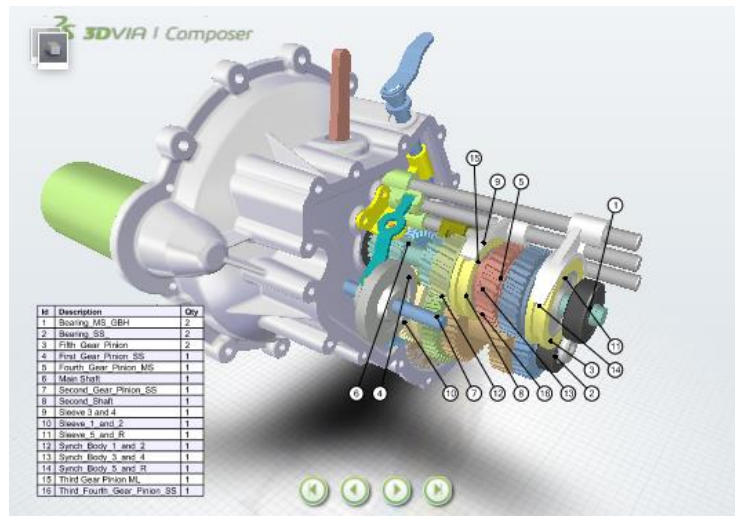
## Cleaning the project

The original *Composer Player in Studio*, which delivers the base for the *zSpace Composer Player* does not support all actors offered by *3DVIA Composer*. To avoid malfunction, it is recommended to delete all views using these unsupported actors. As for the Gearbox example, we need to perform the following steps to clean the project.

# ZSpace™ Experience: Content Implementation with 3DVIA Composer

**NOTE:** In the zSpaceExperience Ribbon menu, you can find *Select Unsupported*, *Hide Unsupported*, and *Delete Unsupported* functions in the *Authoring Utilities* section. These functions help easily identify actors not supported by the zSpace Composer Player. You can find an exhaustive in the Appendix A.

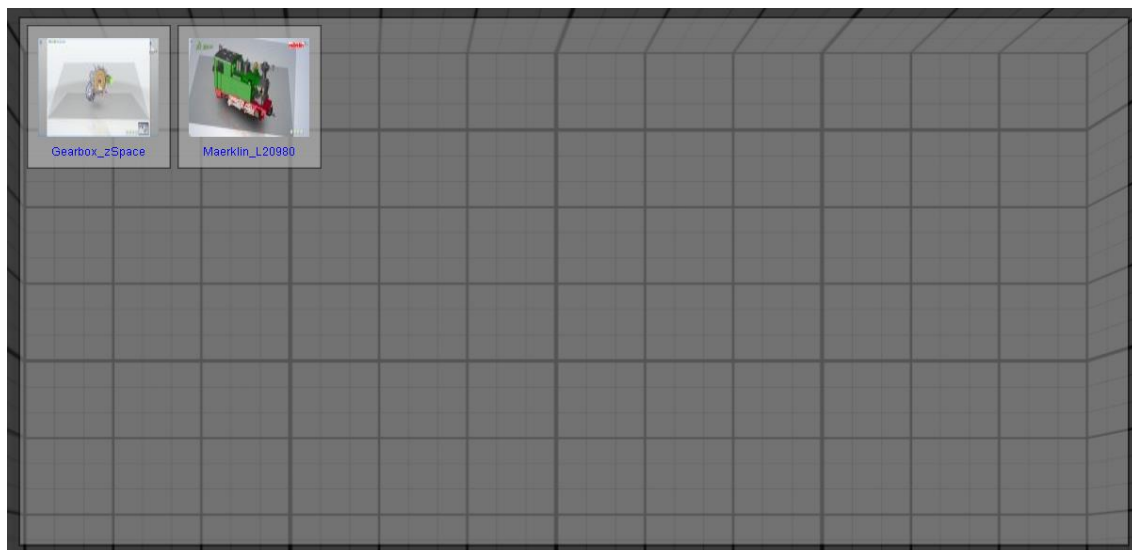
1. **View 3 Shafts:** Delete the two cut-planes since cross-section views are not supported. You should also make the “Gear Box “assembly group invisible to allow viewing the inner assemblies:



2. **View 8 Cutaway:** Delete the complete view, it contains several unsupported actors.

## About colors

The background of the *zSpace Composer Player* is an open box textured with a black and grey grid:





## ZSpace™ Experience: Content Implementation with 3D VIA Composer

The two viewing channels you need for stereoscopy are separated by circular polarization filters in the glasses and the zSpace screen. This technique has a weakness in matters of a high contrast between background and objects. This weakness is called ghosting and results in the fact that one eye sees a ghost picture from the channel dedicated to the other eye.

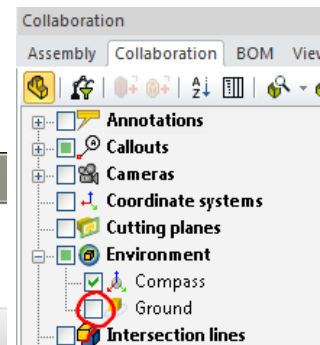
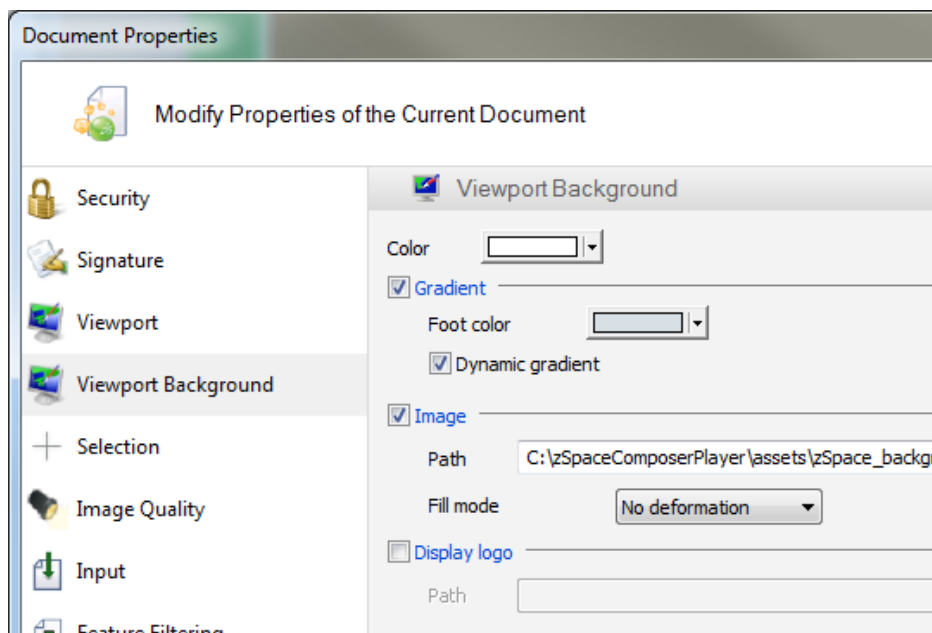


The higher the background-scene contrast becomes, the worse you will perceive this “cross-talking” effect.

The black and grey background chosen for the *zSpace Composer Player* minimizes this effect.

As a consequence, it is highly recommended to change some colors of actors like annotations or measurements to avoid poor color contrast. The easiest way to find appropriate colors is to load the zSpace background texture into composer.

1. Select File -> Properties -> Document Properties
2. Change the background to Image.
3. In “E:\ZSPACE\_Experience\_Package\assets” select “zSpace\_background.bmp”.



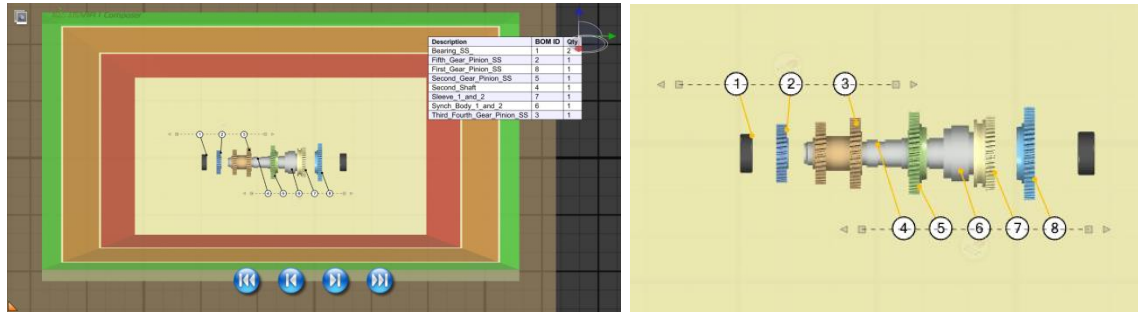
4. Disable the Ground feature in the Collaboration Environment.



# ZSpace™ Experience: Content Implementation with 3DVIA Composer

After these modifications, the view `second shaft` should look like the picture on the left.

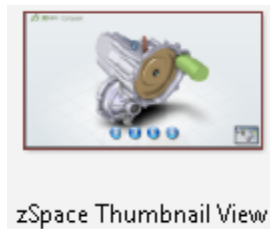
5. Change the sizes and the colors of the annotations to achieve a view close to the picture on the right.



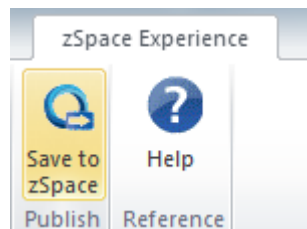
After changing the colors of similar actors, the experience is ready to be published on the zSpace device.

## Publishing for the first time on the zSpace Composer Player

1. Create a view with the name “zSpace Thumbnail View”.  
zSpace will use this view as a thumbnail corresponding to the model inside the zSpace screen.



2. In the zSpace Experience ribbon menu, click `Save to zSpace` to create the thumbnail.

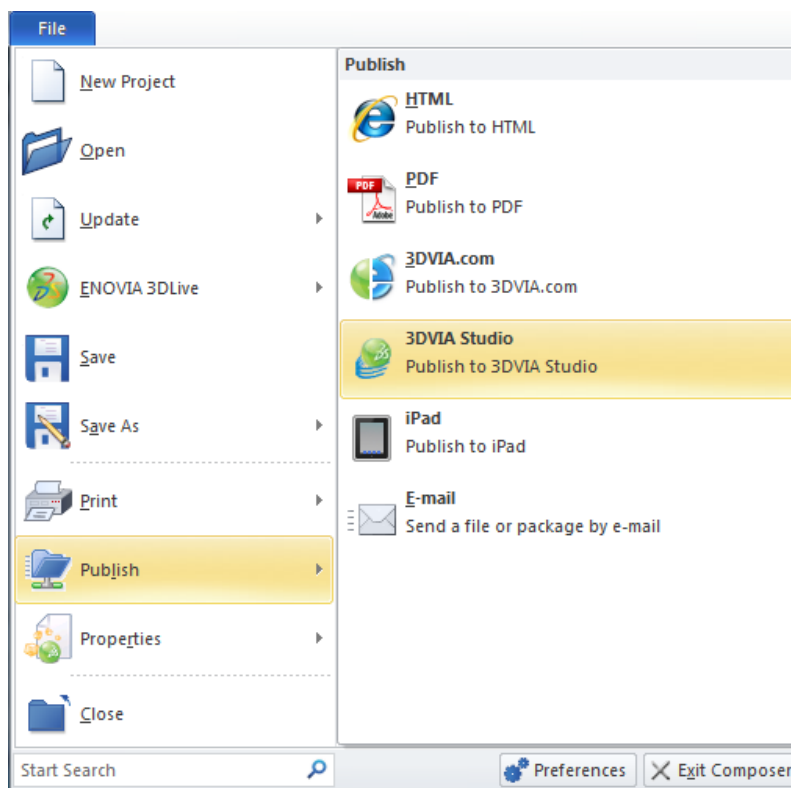


## ZSpace™ Experience: Content Implementation with 3DVIA Composer

After the thumbnail is created, the following message appears to indicate how to publish the model for zSpace experience.



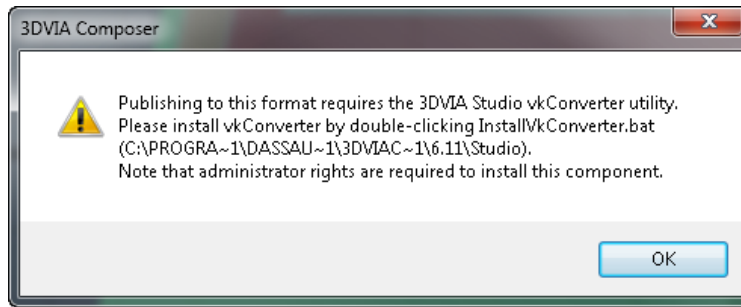
3. To publish to the *zSpace Composer Player*, select File -> Publish -> 3DVIA Studio:



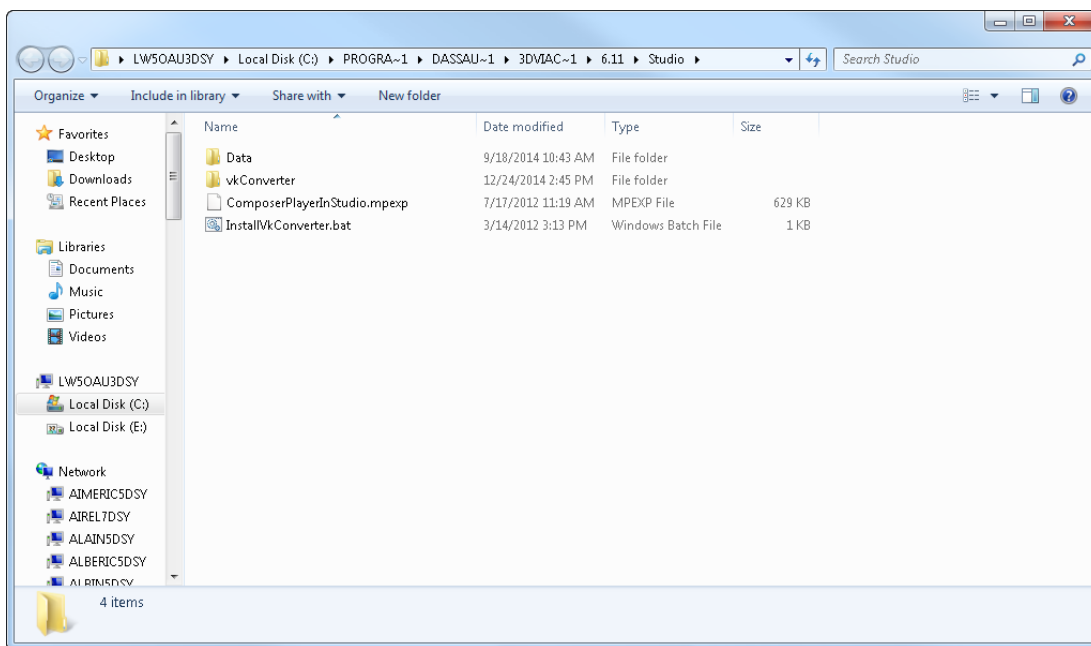
4. Pick `C:\zSpaceComposerPlayer\media\studio` as the destination folder and pick some meaningful title.

# ZSpace™ Experience: Content Implementation with 3DVIA Composer

A message appears:

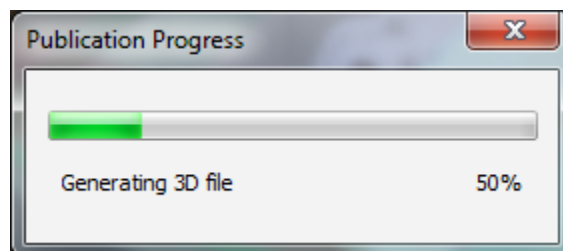


5. Click on OK.  
A directory opens.



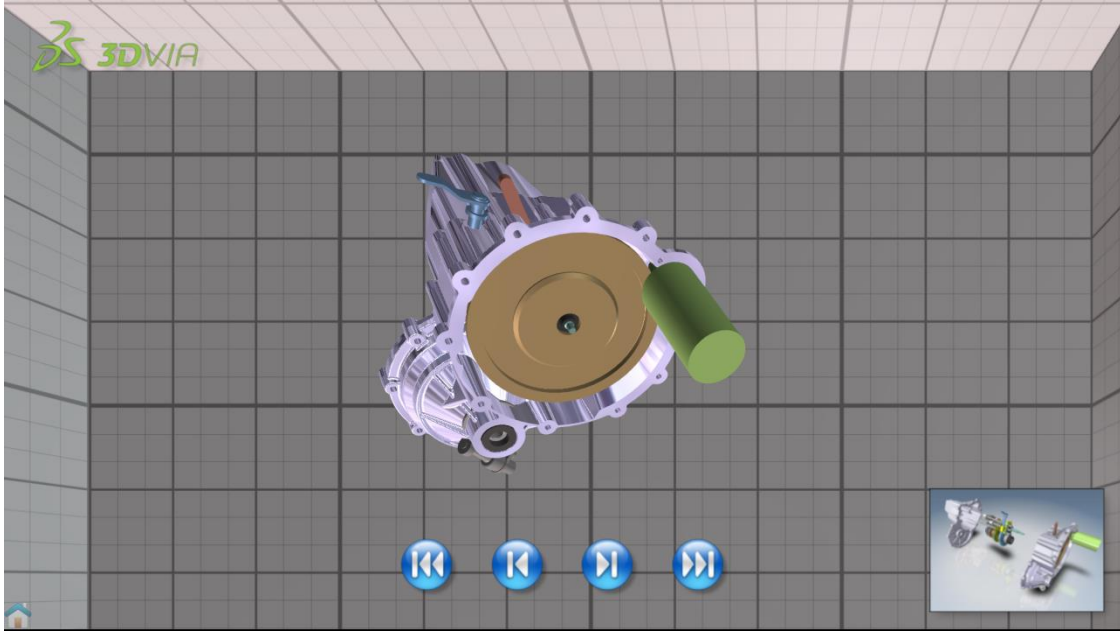
6. Double click on InstallVkConverter.bat
7. publish again: File -> Publish -> 3DVIA Studio
8. Pick C:\zSpaceComposerPlayer\media\studio

Composer start packaging the application:



# ZSpace™ Experience: Content Implementation with 3DVIA Composer

After the publishing, your experience is ready to be displayed on the zSpace.



## Appendix A

### General features not published to 3DVIA Studio

- 3DVIA Studio has no built-in mechanism for navigating views. Include navigation buttons or linked panels in your documents to navigate multiple views.
- *3DVIA Composer* animations are not published.
- Advanced OpenGL hardware acceleration is required to publish 2D panels.
- Published documents always use Smooth render mode.

### Actors not published to 3DVIA Studio

- Redlines, 3D image panels, 3D vector image panels, some measurements (such as plane-related measurements and arc length), associative paths, coordinate systems, user-created lights (custom lighting), geometry primitives, PMI, intersection lines, cutting planes, grids, magnetic lines, and the compass.

### Other limitations

- Not all properties of published actors are supported. For example, the following are not published: text 2D panel shadows, GDT symbols, polyline back-line styles, link icons, arrow borders, and ground shadow/mirror/grid. Also, all attach lines are single, straight lines (no bends or arcs), and 2D vector image panels are published with an empty file path.
- The following CAD objects are not published: points, axes, and curves/wires.
- Sizes and positions of actors created in 3DVIA Composer V6R2010x or earlier (before the introduction of paper space) might be incorrect.
- Sizes and positions of geometry actors with non-uniform scaling (aspect ratio not maintained) might be incorrect.