

Redefining the Segments Offset



The **Offset** command is used to redefine the behavior of the **Reach Mode**. The **Reach Mode's** default behavior is to make the end point of the selected segment or skin point reach the compass location. The **Offset** command allows you to transfer that "end point" to **another point** in the 3D space, which will then be used to perform inverse kinematics. An example of this would be when the manikin must perform some inverse kinematics while handling an object.

In redefining the offset, the compass may be also be snapped to **manikin skin points**. Thus, the subsequent reach operation is resolved from the skin rather than the central point of the segment.

There is the possibility to **create multiple offsets** for the same segment and to decide which one will be the active offset at the current time.

This is useful mainly in the manufacturing scenarios where the manikin is taking care of multiple tools within a same simulation or workstation. Each tool can then have its own offset specified on the manikin's hand.



- The Offset feature can be redefined for any segment or skin point of any manikin
- The Offset feature is not available on the forearm model
- The name field will allow modifying the name of the offset at creation and at edition.
- A list of those offsets will be possible with one active offset at a time.



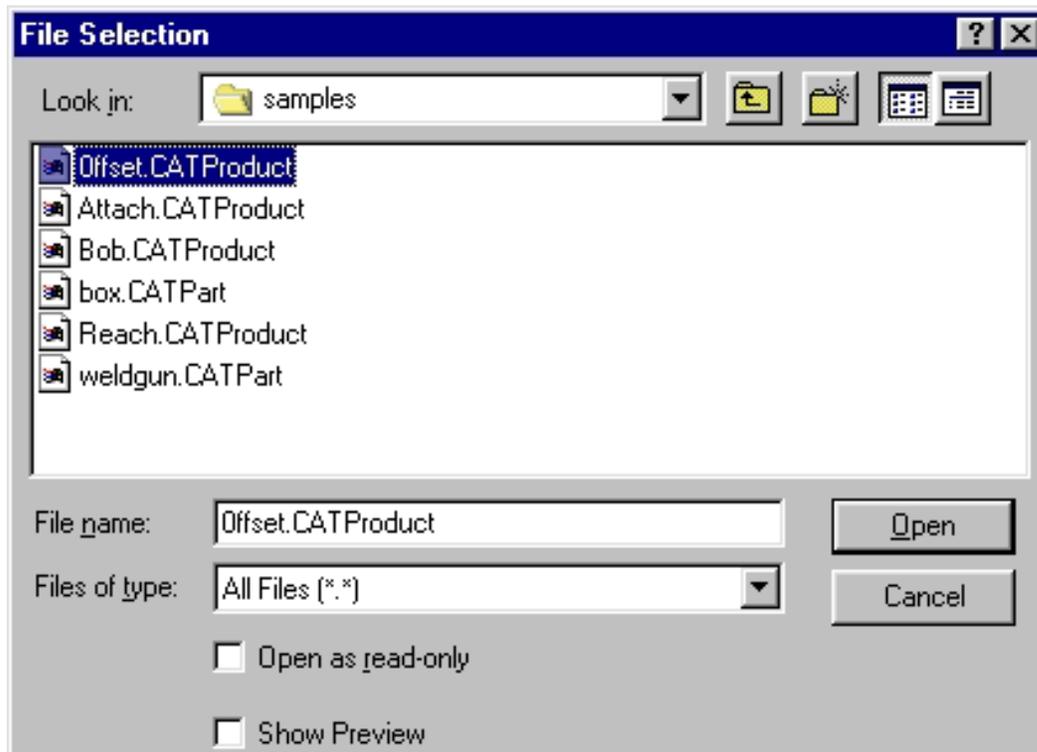
Redefining the Offset to a Point on a Part

The goal of this task is to transfer the end effector of the manikin's right hand to the tip of the tool the manikin is holding. This is done so that when the **Reach Mode** is applied to the right hand, the inverse kinematics will be transferred to the tip of the tool. The tool will then do the reach on behalf of the hand segment.



1. From the main menu, select **File > Open**.

The **File Selection** dialog box appears.



2. Select the **Offset.CATProduct** file from the samples directory.

3. Use the Open button to open the file.



4. Position the manikin with respect to the geometry that must be attached.

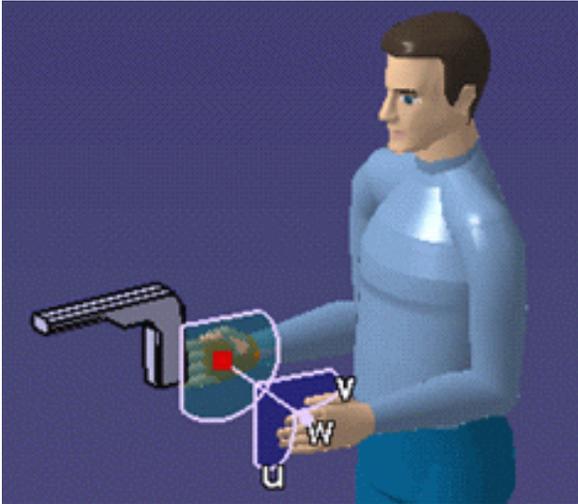
For this example, load the Attach catalog with the **Load Manikin Attributes from a Catalog**  and choose the Attach_sample posture.

This places the manikin posture so that it appears to be handling the tool with its right hand.

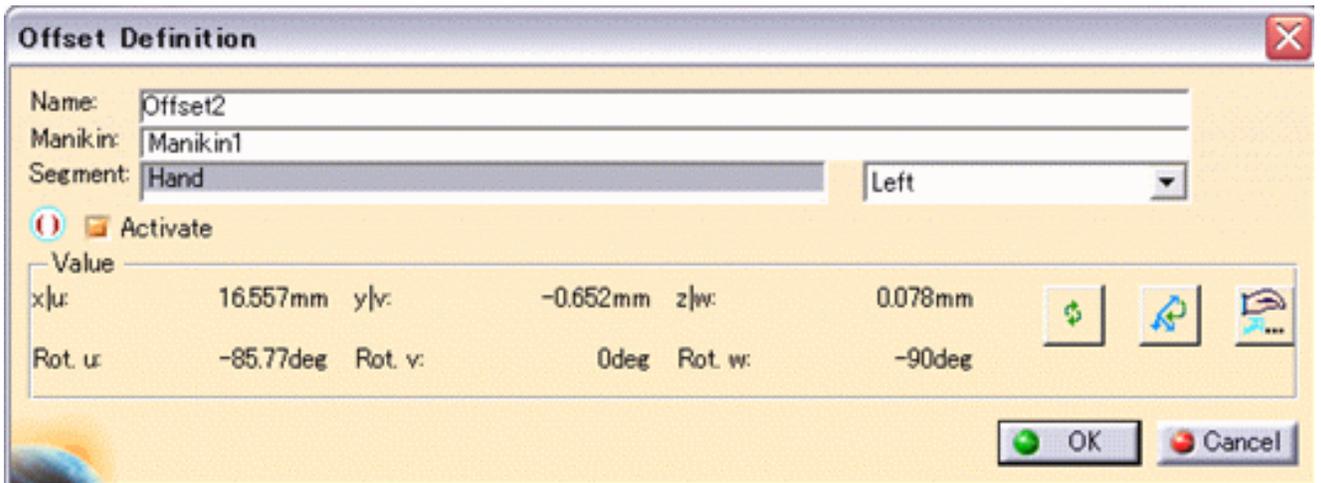


5. Select the **Attach/Detach** icon  and attach the weld gun to the manikin's right hand.

6. Select the **Inserts a new Offset** icon  and select the manikin's right hand.



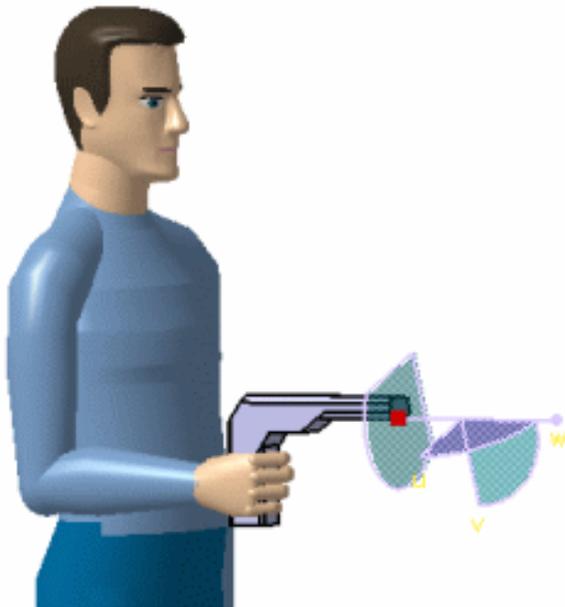
The Offset Definition dialog box is displayed and the V5 compass automatically moves to the hand location.



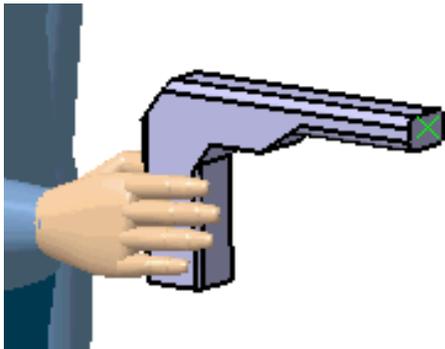
- The **Name** field is used to name the offset. The system will assign an automatic name (i.e. Offset1, Offset2,...), but you can override this name at your convenience.
- The **Manikin** field indicates the name of the manikin owning the offset. By selecting this field, you can switch manikins, that is, transfer the offset to a different manikin. The **Segment** field (and the Right/Left combo beside it) indicates the current segment that owns the offset being created/edited (in the snapshot above, the offset will be created on the right hand segment). By selecting this field, you can change the segment assignment of the offset, or transfer the offset to another segment.
- The **Activate** checkbox allows you to toggle the activation and deactivation of the offset. In the snapshot above, the offset is currently active.
- The **Value** frame displays the current location of the offset, in terms of translation (first row) and rotation (second row). This frame also incorporates:

- a **Reset Position** button , which repositions the offset back to the origin of the segment
 - a **Reverse Compass** button , which reverses the Z direction of the compass
 - an **Export as Hand Grasp Offset** button , which enables you export the specific offset as applying to the hand grasp.
- The **Cancel** button cancels the creation/editing operation.

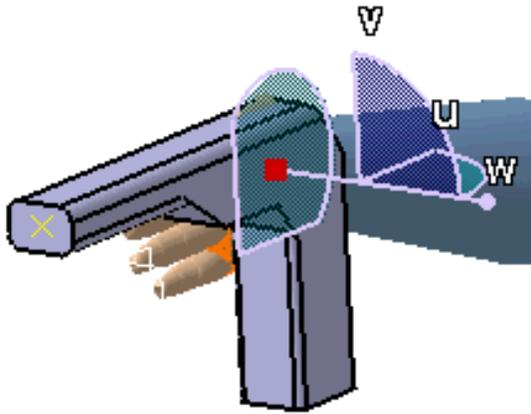
7. Place the compass at the tip of the tool. This is the desired location for the inverse kinematics.



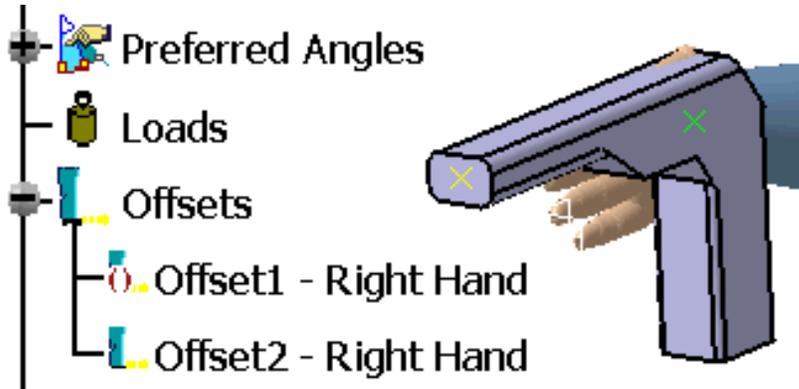
8. Select the **OK** button. The offset is now transferred from the hand to the tip of the tool (green X).



9. Following these procedures, create an offset on the side of the gun as shown.

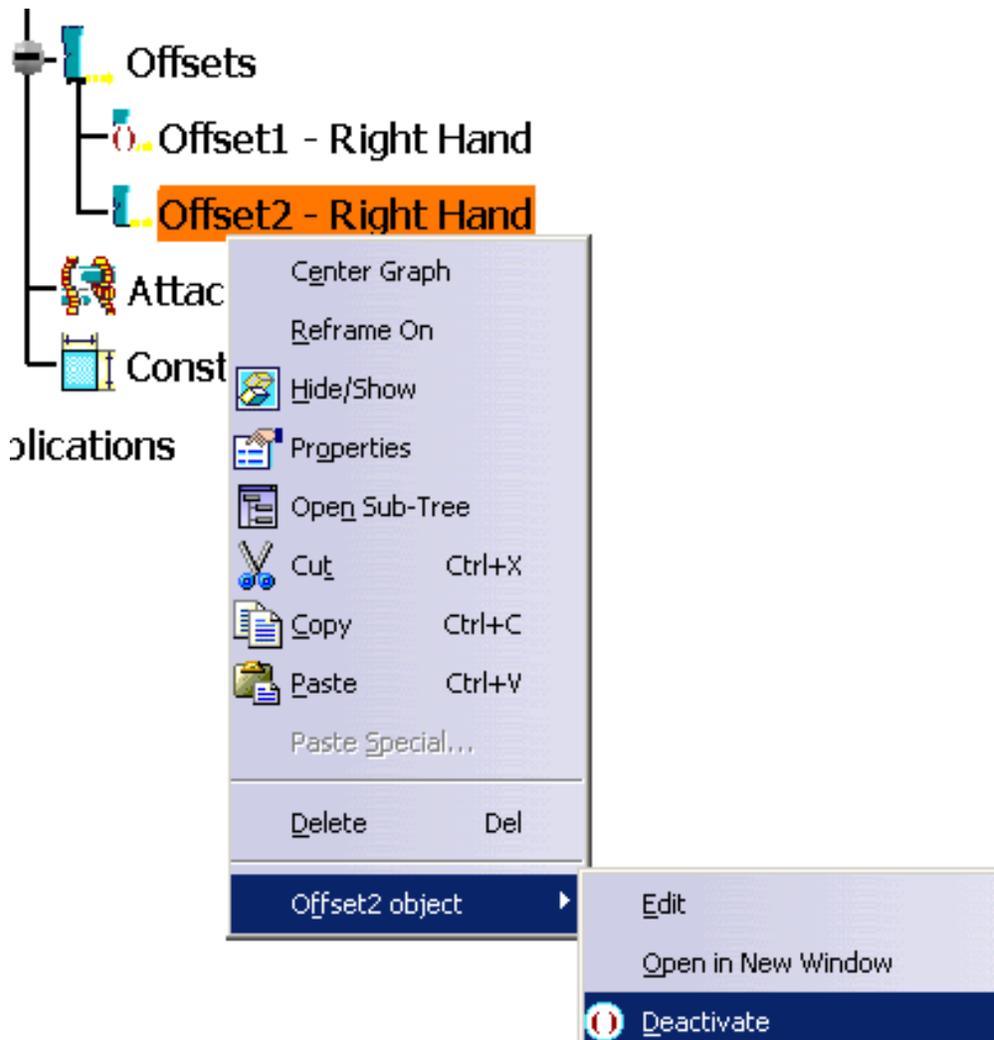


In the PPR tree, the two offsets are shown.



10. Notice that **Offset1** is deactivated, and **Offset2** is activated.

11. To deactivate **Offset2**, right-click on **Offset2** for the contextual menu, and select **Deactivate**.



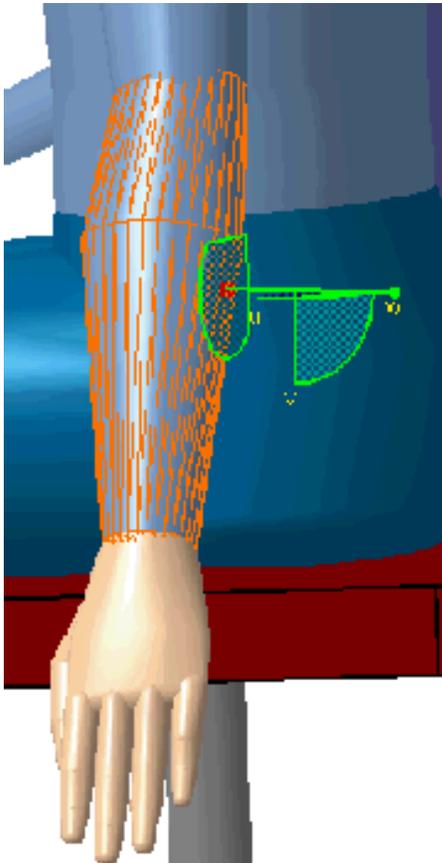
12. This could also would Activate a Offset that is Deactivated.

Redefining the offset to a point on the skin

1. From the samples directory, open the [OffsetSkin.CATProduct](#) file.



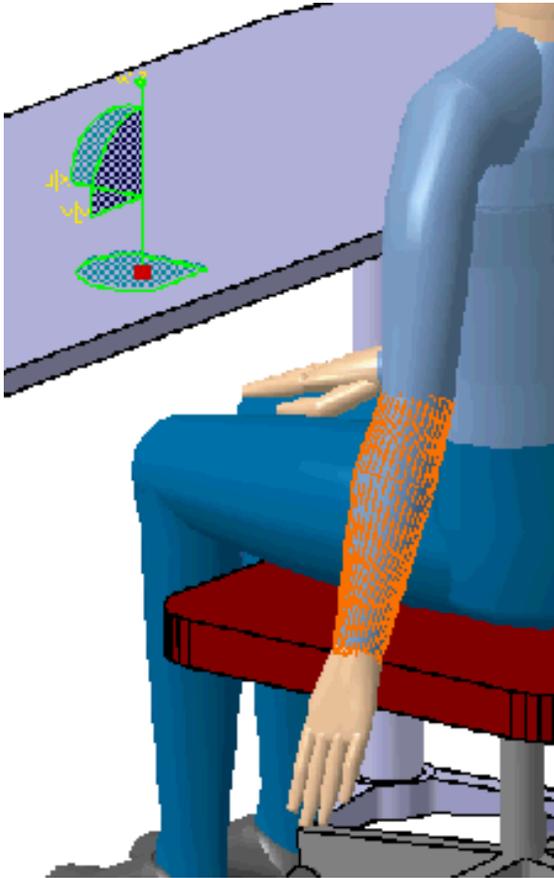
2. Select the desired segment: for this example, the forearm and the Offsets node.
3. Follow the procedures for [Insert a new Offset](#).
4. Using the red handle, drag the compass to the desired point on the skin surface of the forearm.



5. In the dialog box, select **OK**.

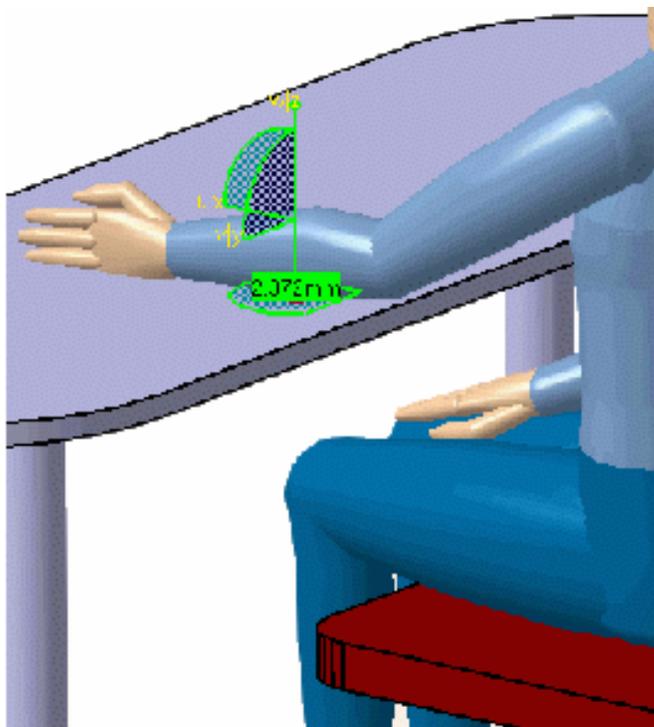


6. From the Manikin Posture toolbar, select the Reach (position only).
7. Using the red handle, move the compass to the top surface of the table.



8. Select the manikin's forearm.

The forearm's offset point reaches the compass point on the table.





When editing the offset of any segment, the compass is automatically placed at the current offset location. The default offset location is the end point of the segment being edited.

To reset the offset back to its default value, open the **Offset** dialog box on the segment and click the **Reset Position** button .

Select **Close** to close the dialog box.

The **Reverse Compass** button  reverses the current orientation of the compass. This feature is typically used when the geometry is manipulated in design mode where the compass goes inside the geometry when snapped to an object.

