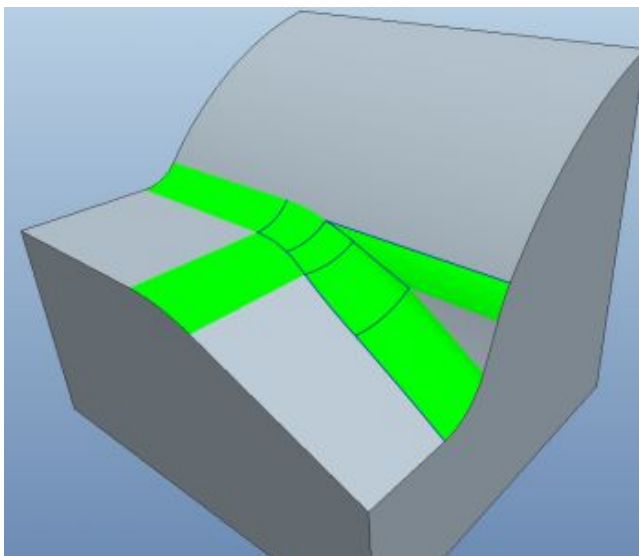
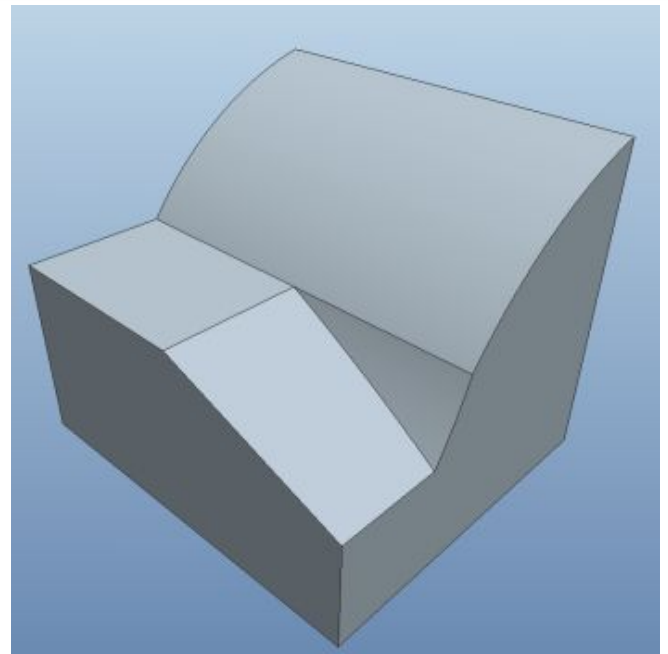




This time complex transition between many surfaces are going to be discussed. This tutorial is the first one of many related to this subject.

One can ask - has it not be already discussed by Advanced fillets? Well, partly yes, because fillets are special type of transitions.

Fillets are surfaces which transitions are smooth and tangent to each other. In this chapter special fillets transition will be taken and investigated. The base conditions are seen to the right.



On the left one can see fillets generated by ordinary Round tool. This time we are going to focus on improving the quality of transition between four rounds.

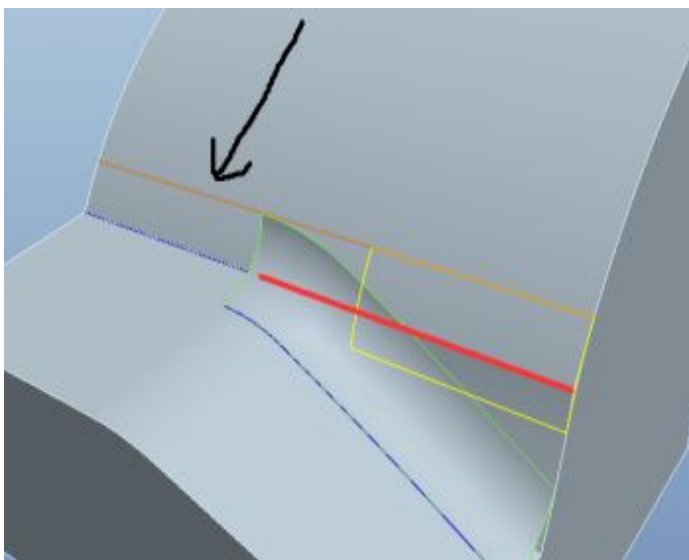
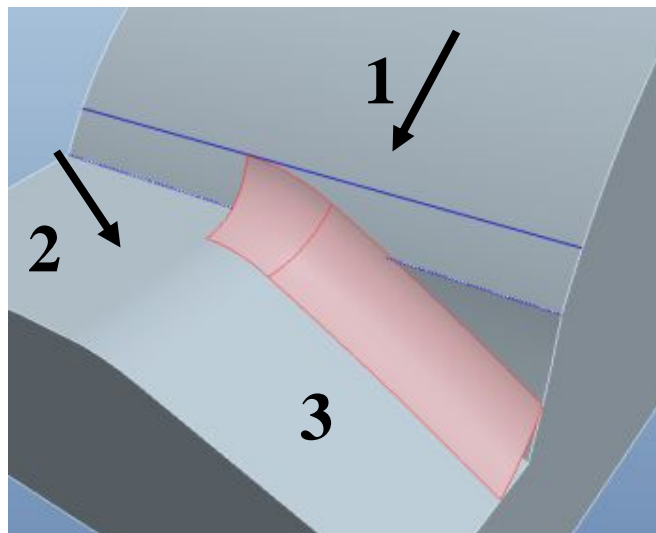
This tutorial takes advantage of information included in following article:

http://aliasdesign.autodesk.com/learning/tutorials/details/Two_Blendings_Run_Into_One_Shape_136001/

It is important to make upper fillets follow the same edge, thus first step is to create a curve indicated as 1.

Second step - make first round, it is indicated as 2.

Third step - make second fillet highlighted in red color, as separate surface.

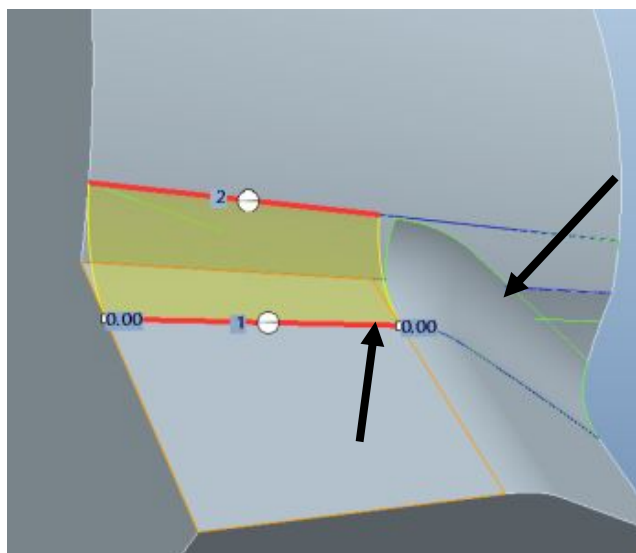


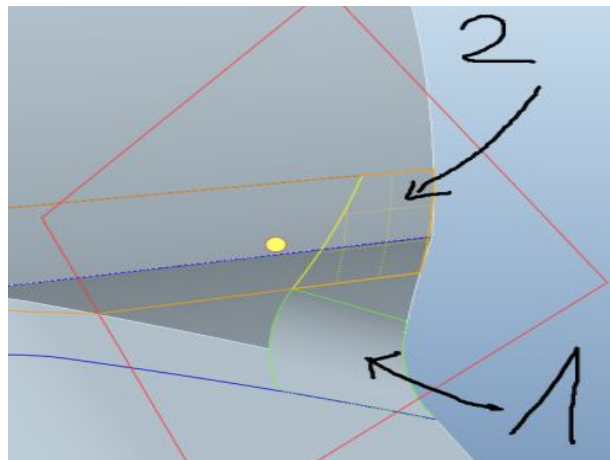
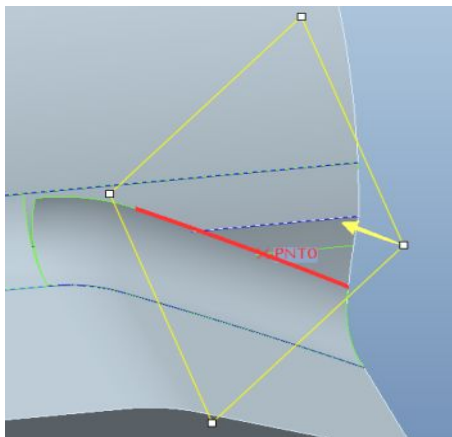
Next round should follow the curve - Sets > Through Curve. Notice there is then no control over fillet radius!

In addition make this round as separate surface!

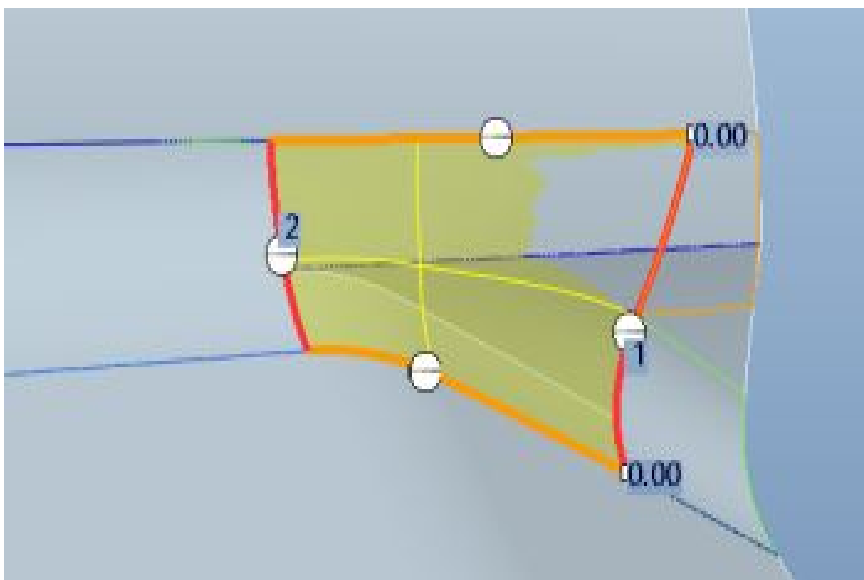
Last round should follow top curve and share same vertex with second round to allow them join smooth. To make it possible create second curve which share mentioned vertex and is tangent to second round.

Make last round as a surface by Boundary Blend tool.



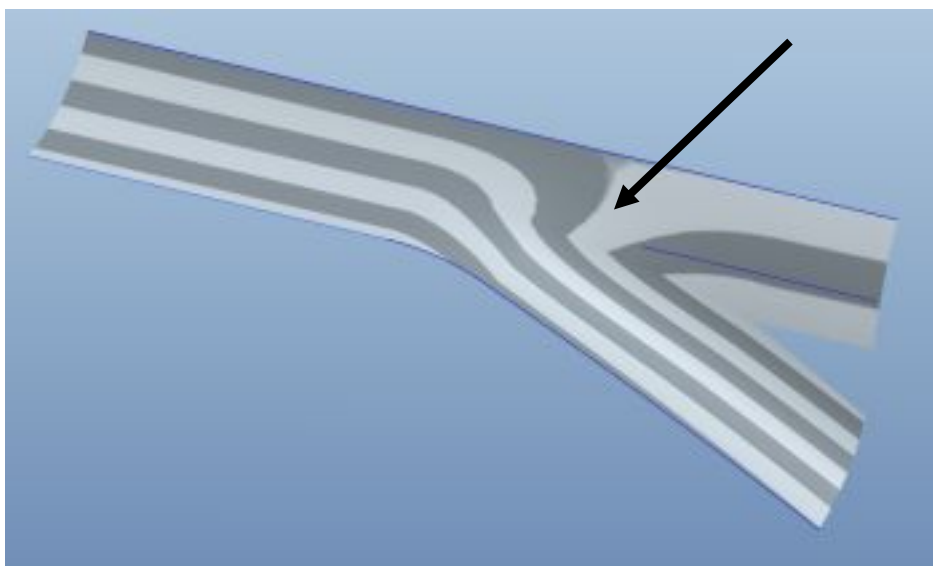


Surfaces are ready and it is a time to trim them back. Create Datum point on intersection of two rounds. Create Datum plane through it and perpendicular to edge of round. Trim both surfaces.

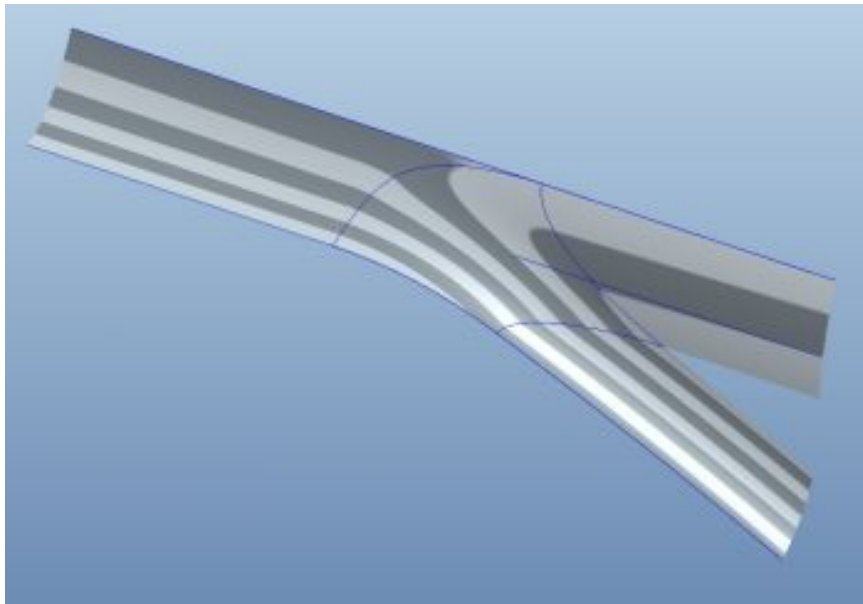


Last step - make surface on prepared conditions. This procedure was discussed before in previous tuts, so should be well known..

The point is to check the quality of this surface.

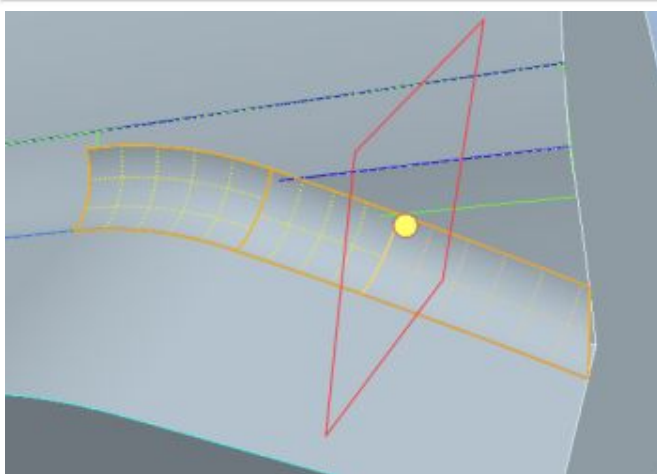


Zebra analysis provides interesting information. There is sharp transition between plots, which I caused by extra edge created in the middle of surface.

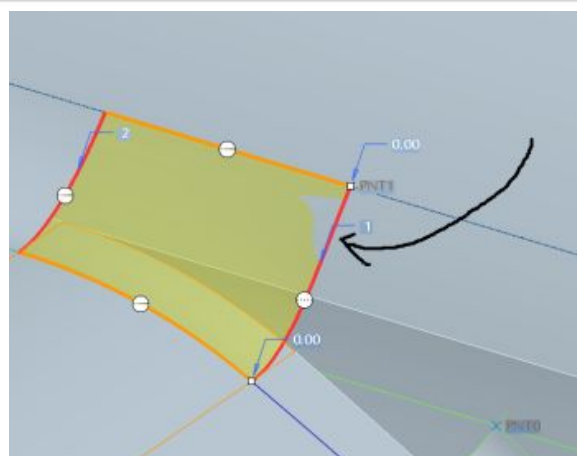


There similar geometry to the left but with much different reflections. Why?

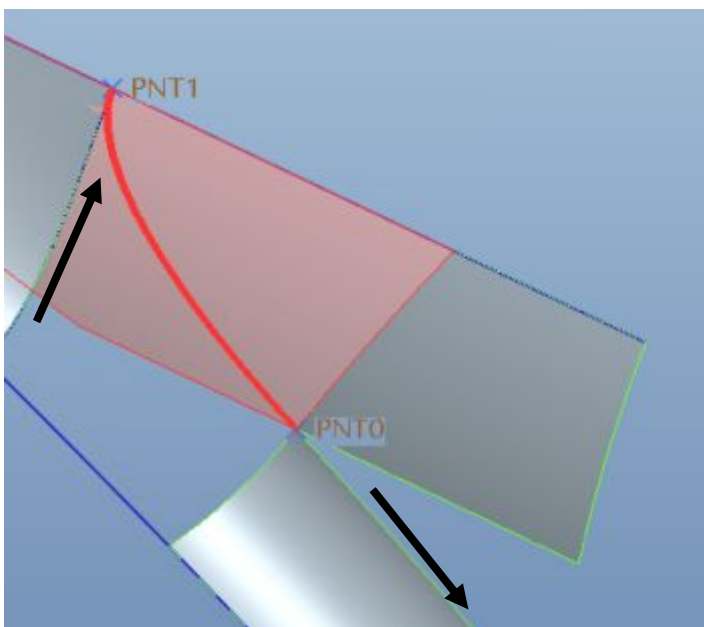
Answer - another type of transition. Let`s take closer look on that.



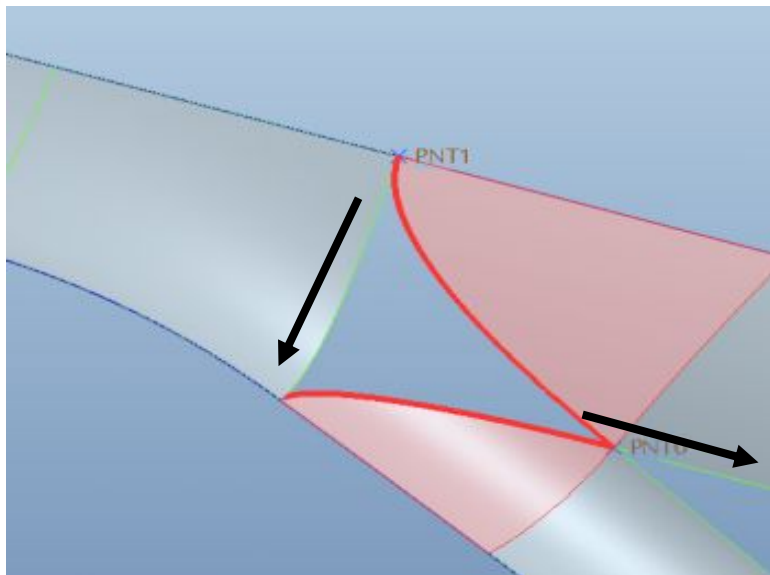
As said - main geometry conditions are left the same. The first difference is no trimming the fillets, but splitting them into two halves.



Second - extra auxiliary surface has to created. To make it possible additional curve is required, tangent on its both ends.

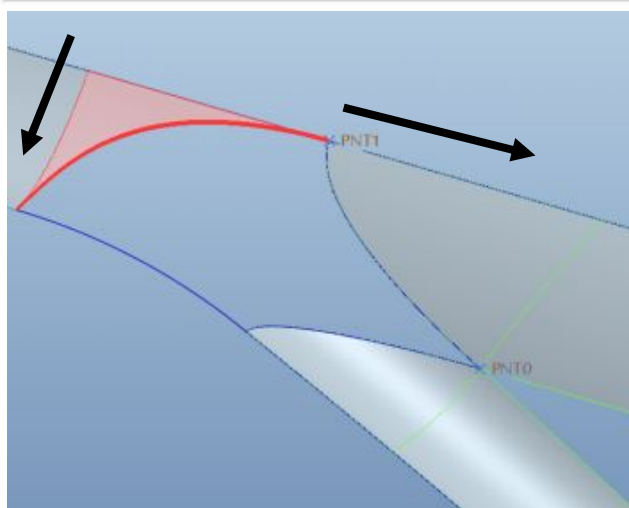


Now, use splited fillets to create two curves. The first one on Top fillet, tangent on its ends as indicated on the picture.



Second curve should share the surface of bottom fillet and maintain tangency on its both ends either, as indicated on the picture.

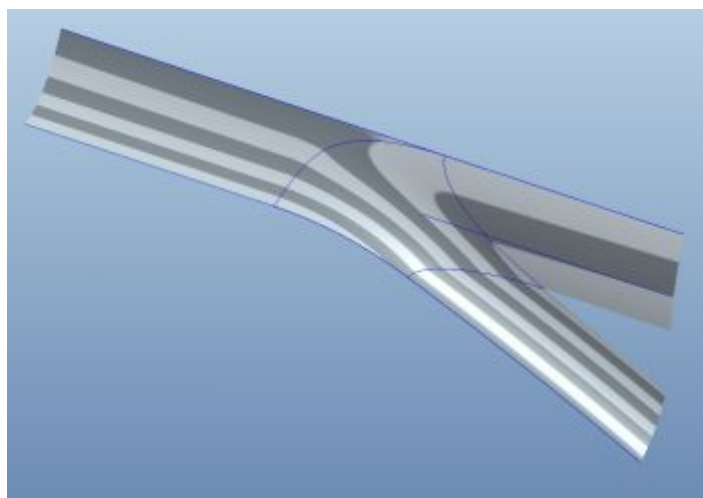
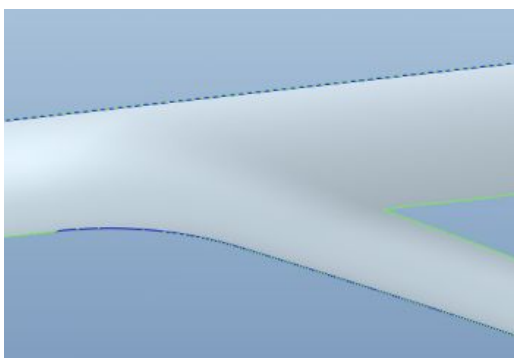
Use curves to trim fillets back .



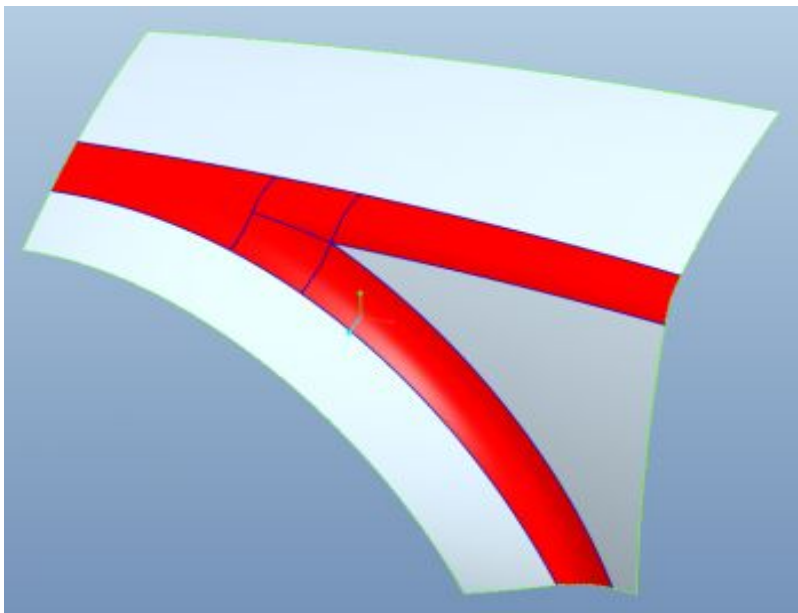
Last curve should be created on auxiliary surface, with tangency on its both ends. Then trim auxiliary surface back.



Well, time for last patch. Use prepared boundaries to create surface tangent on all sides..

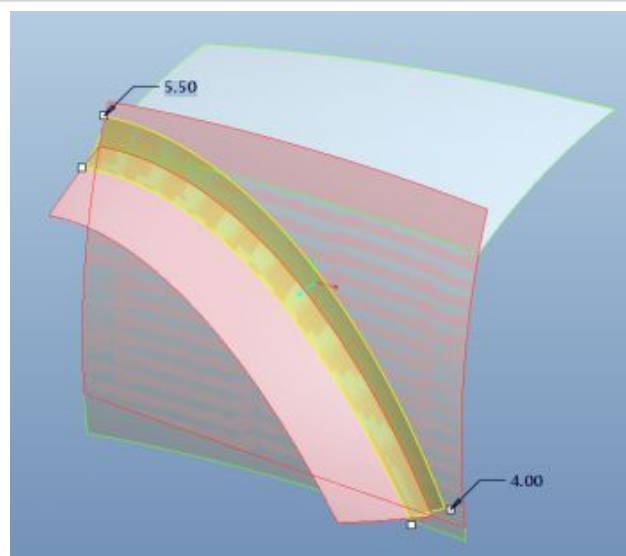
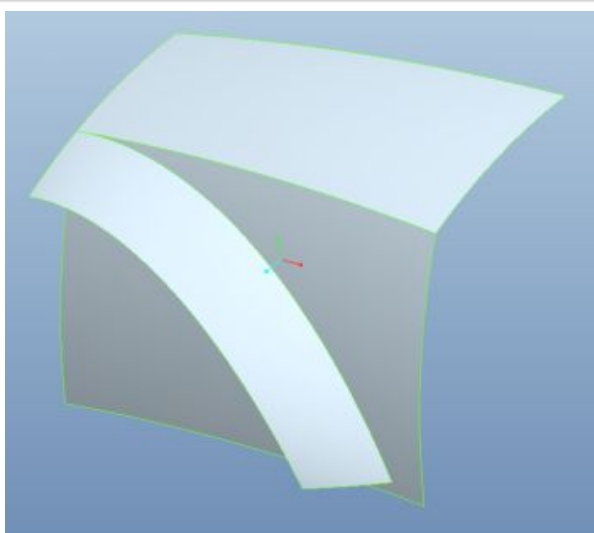


It is apparent that this patch has got a lot better quality.



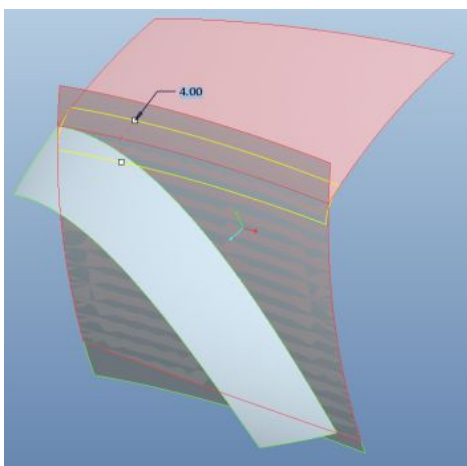
Type of transition between fillets discussed in this tutorial is very common in cars body.

Such case - visible on the left was introduced and discussed in following post on Mcad Central http://www.mcadcentral.com/proe/forum/forum_posts.asp?TID=33379&KW=0&PN=0&TPN=14

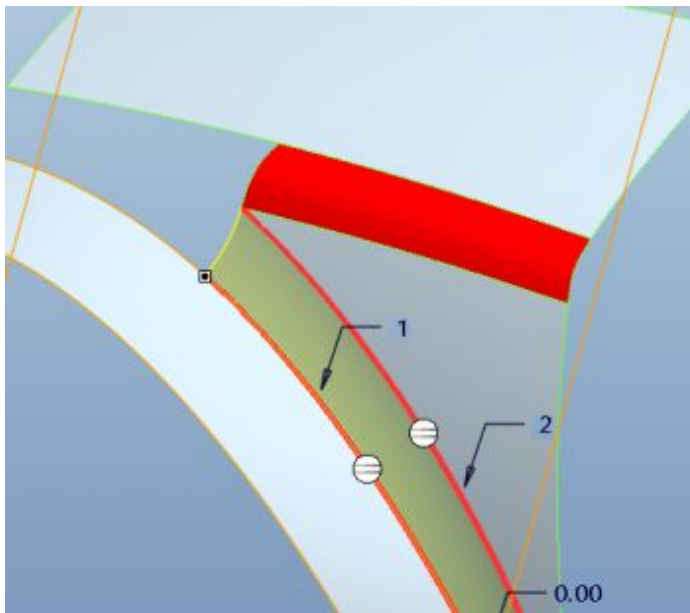


First picture introduced start conditions.

The very first step is to create fillet visible on the picture to the right - make it as separate surface.

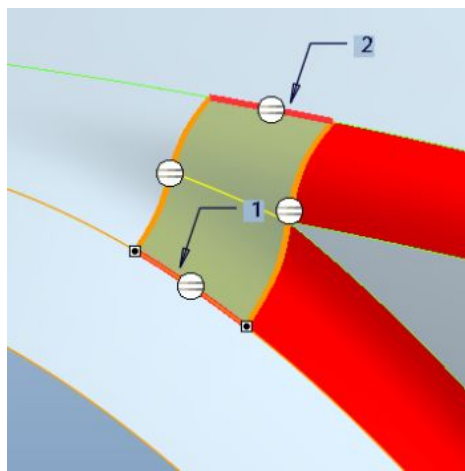
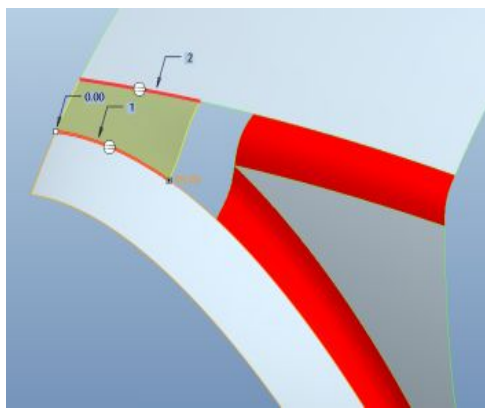


Create second fillet - also as separate surface. Use fillets edges to trim base surfaces back.



Take existing boundaries as advantage and create two surfaces visible to the left.

You can increase the quality of surfaces by setting curvature transition..



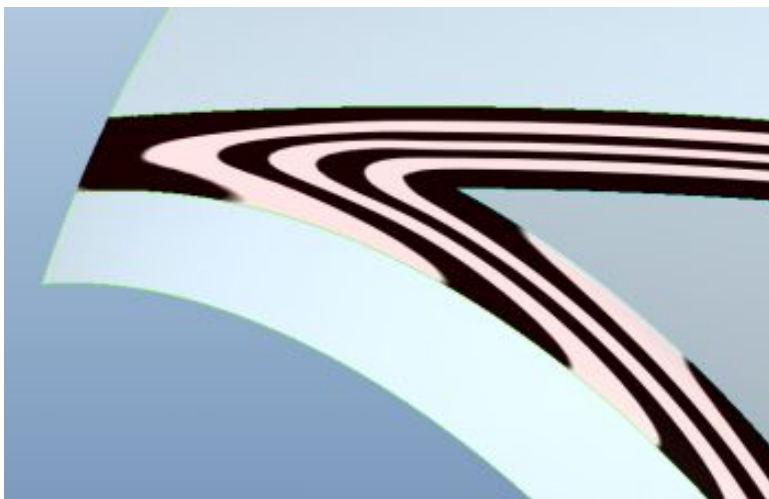
Entiti...	Surfaces
1	Default Surf:F35(BOU...
2	Default Surf:F34(BOU...

Stretch value 1.00

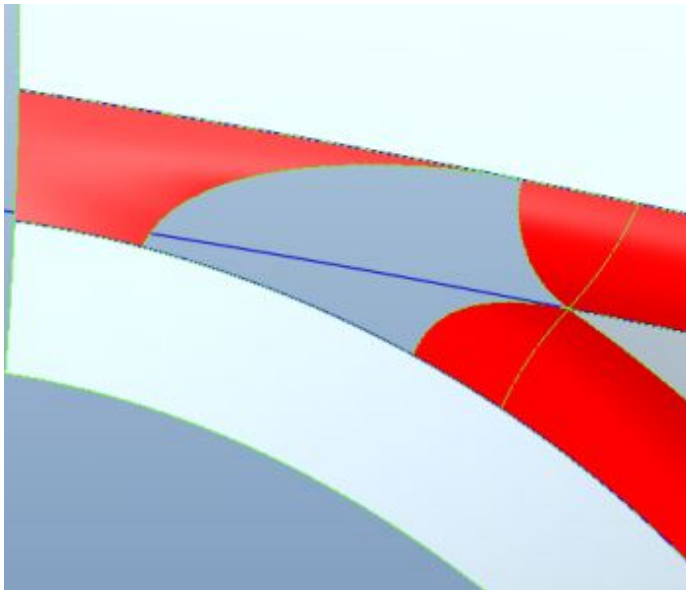
Add side curve influence

Add inner edge tangency

Time for missing patches. At first create a surface displayed on the picture to the left, then the one visible on middle picture. It is wise to deselected Add inner edge tangency to improve surface quality.

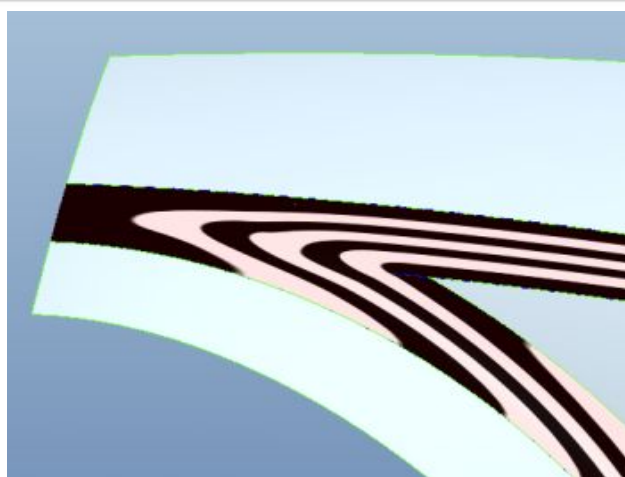
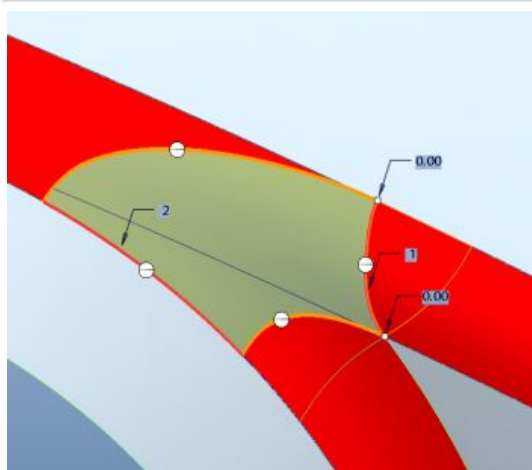


Zebra analysis introduces missing of smooth transition between stripes in the area where two edges of fillets intersect each other .



This is right moment for second approach.

Prepare boundaries as visible to the left.



The very first visible thing is not present extra edge created in approach before, which now is missing. Second thing - Zebra stripes have much smoother transitions in-between.

Models are now Available to Download! -

<http://www.3dexport.com/img-pro-engineer-tutorials-models--part-2-23560.htm>