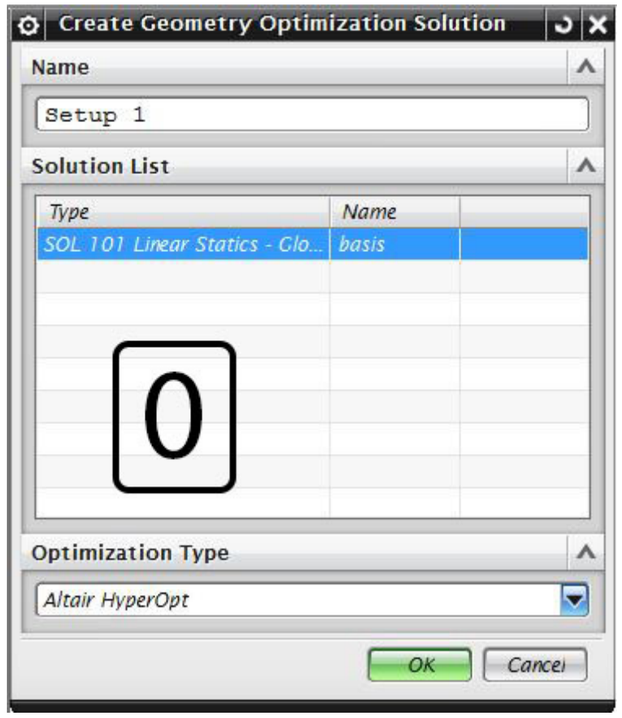
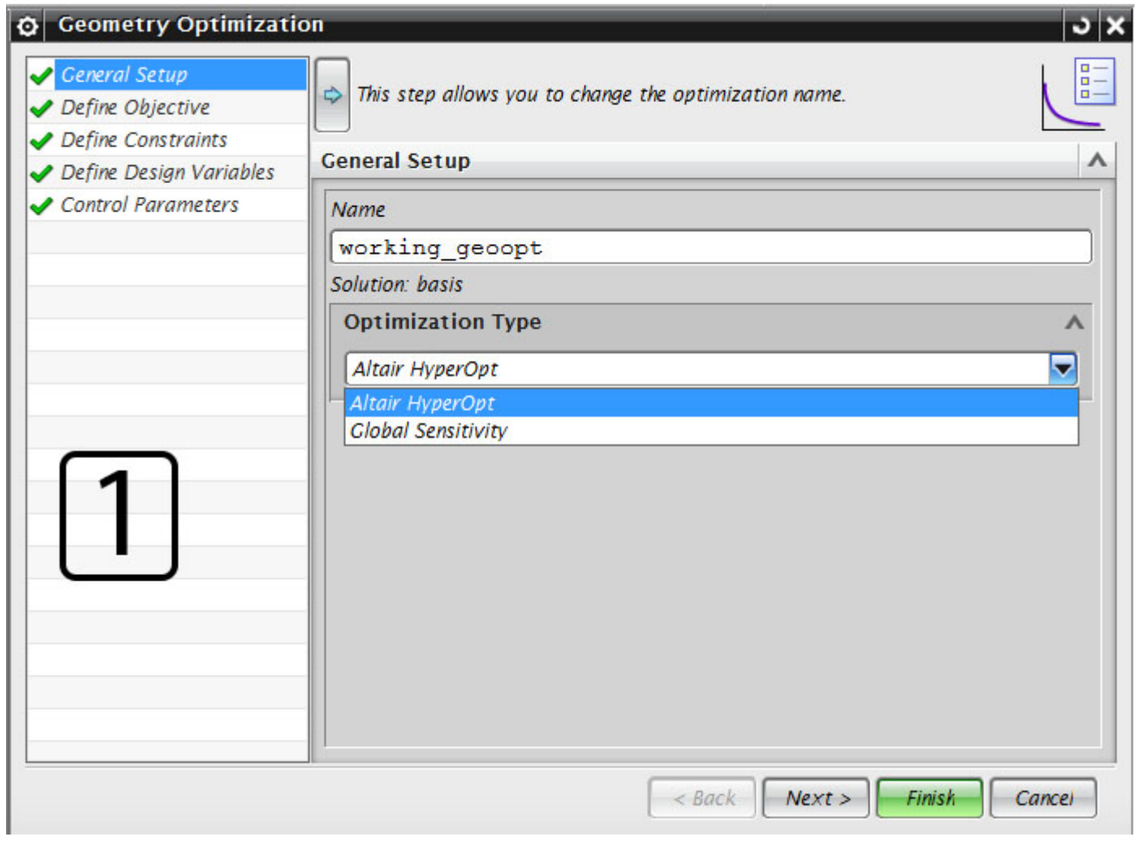
Geometry Optimization

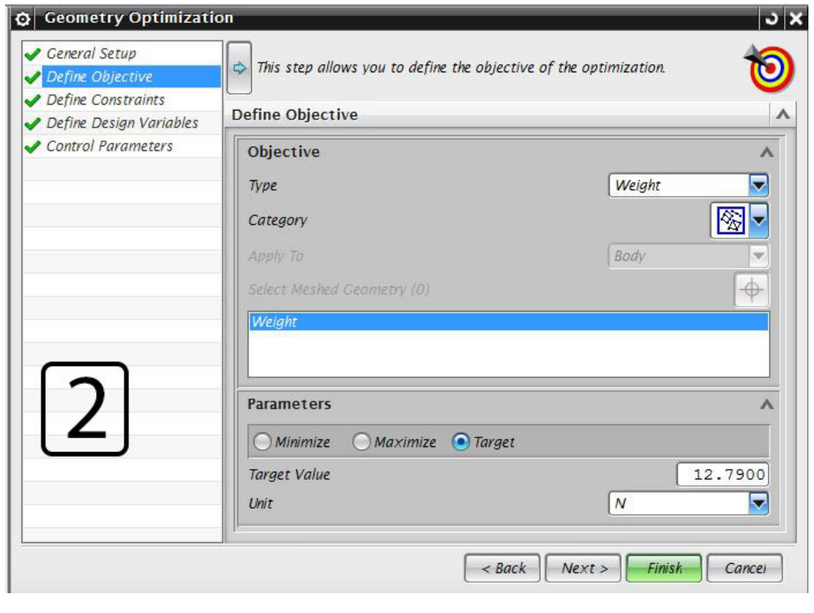
Topic: NX8.5 Optimization Brief	Approved By: Terje Rølvåg	Name: Espen Nilsen, Carl Skaar	Date: March 2013

To perform a geometry optimization in NX it is nescessary to do a initial standard linear simulation with the correct load cases. This is because the geometry analysis uses this as a base line. This is shown in step 0.

1. First off you get to choose what type of optimization you want - choose Altair Hyperopt
2. In this next step it is possible to define your objective. Based on experience it is best to define a target rather than just minimize.







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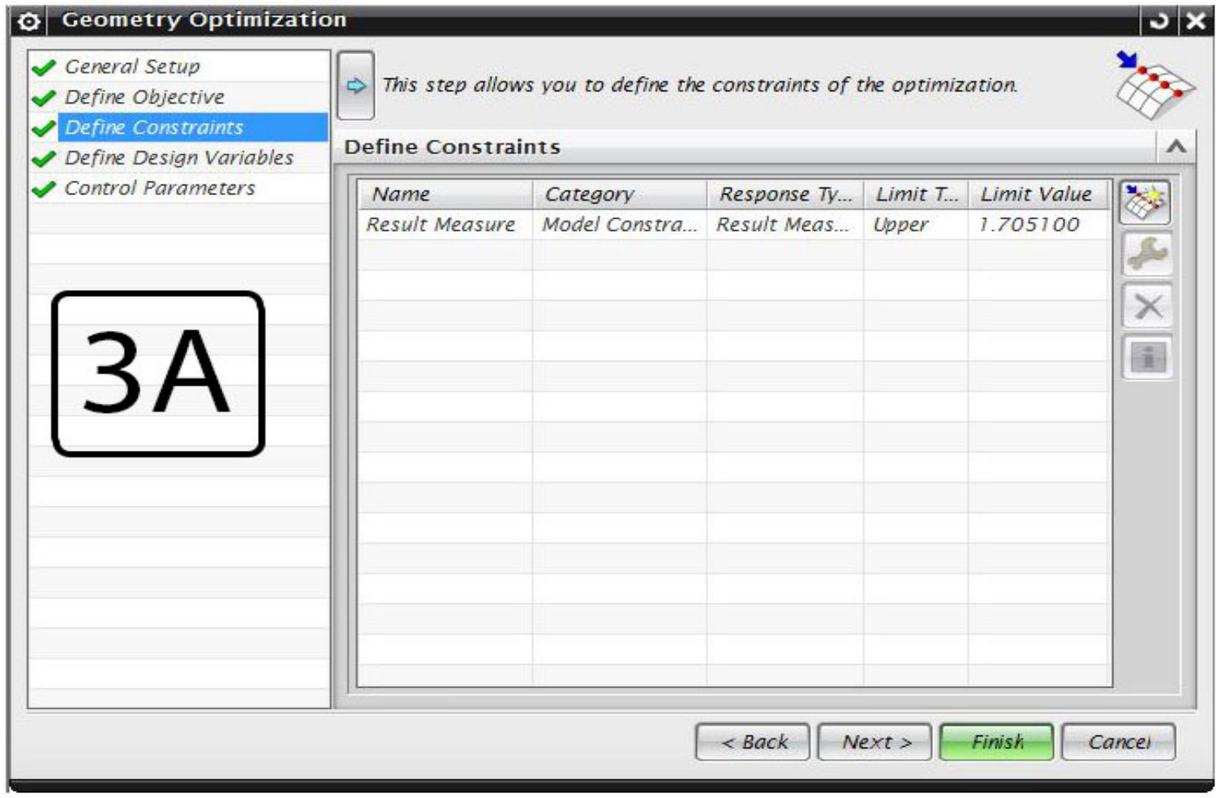
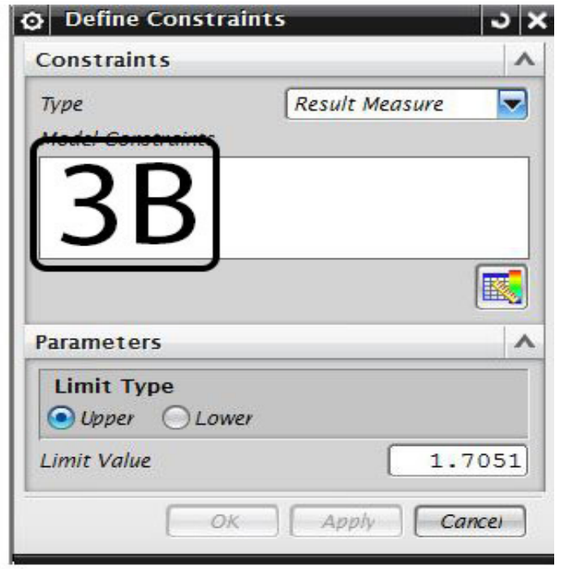
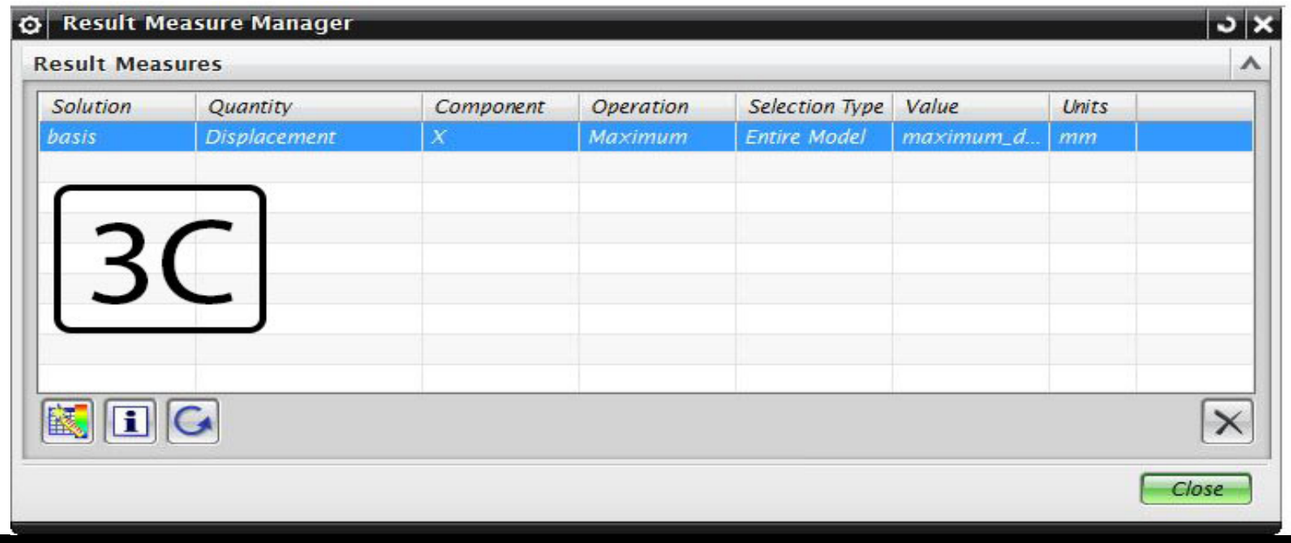
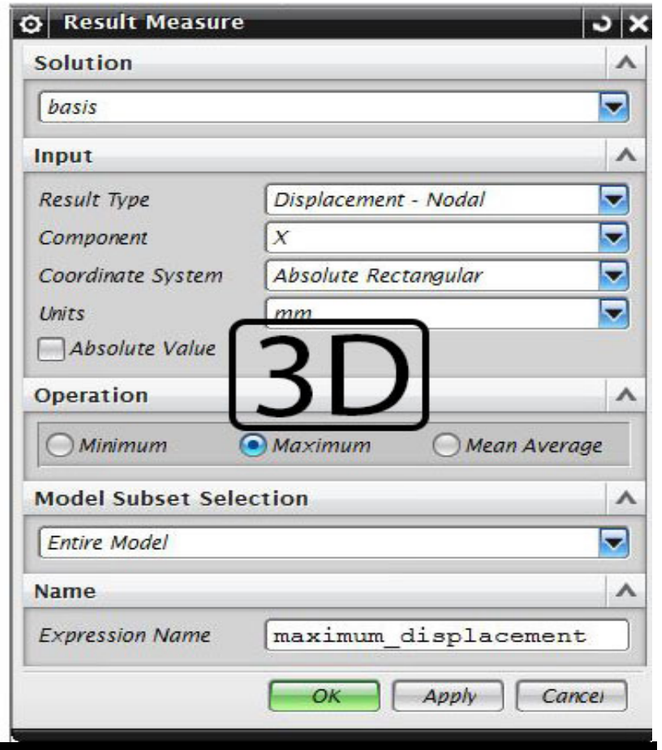
3. This step is where you link your requirement to the base line that were run before the optimization creation. It is also possible to define which coordinate system the solution should use. In the menu shown in picture 3B it is possible to define some leeway in the constraint for the solution.









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4. Here is the tab that lets you define which variables to define as your design space. The easiest thing is to use expressions that is associated with the model.

5. This is the last step containing some more options. None of these seem to have an enormous impact on the solution, but might help you to some extent. Number of iterations can be kept high since it seldom seem to exceed 30 iterations. Max constraint violations tells NX how much more deviation from target it can tolerate. Relative and absolute convergence decides when NX is satisfied with the results and terminates the iterations. Perturbation fraction is how big percentage of the predefined design space(proportion between upper and lower limit of the design variables) it is allowed to alter between each iteration.

Right click on the geometry solution icon to solve.