

CAD

PRO ENGINEER

RAED ABUSANAD

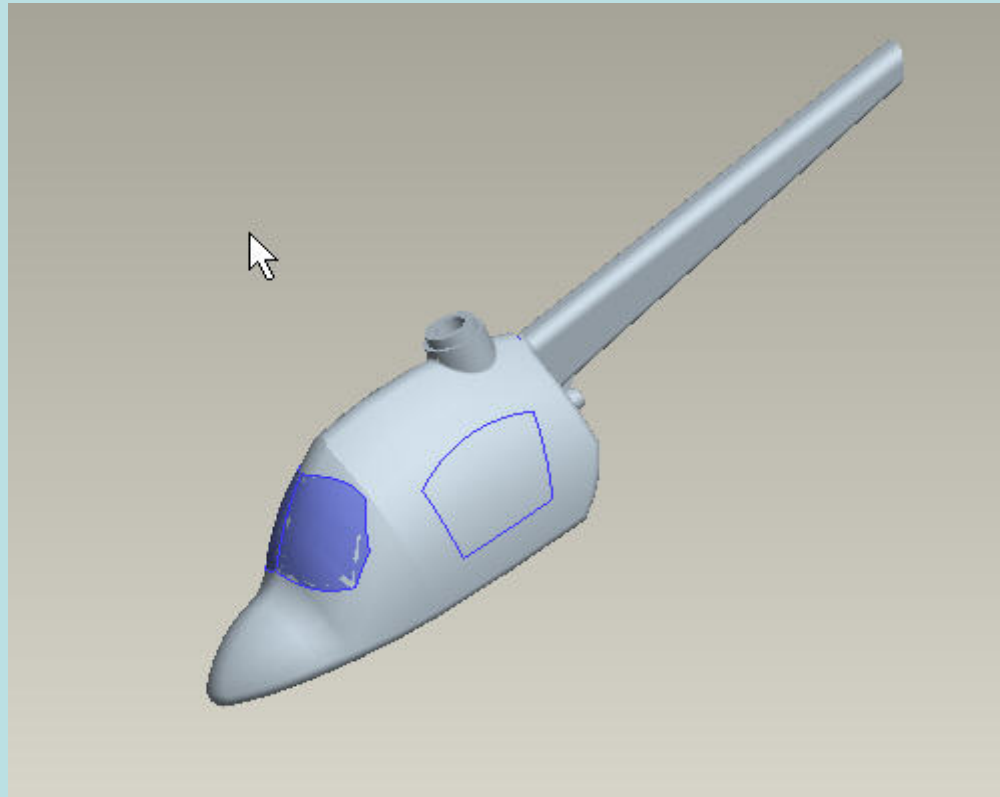
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Project 1: Helicopter

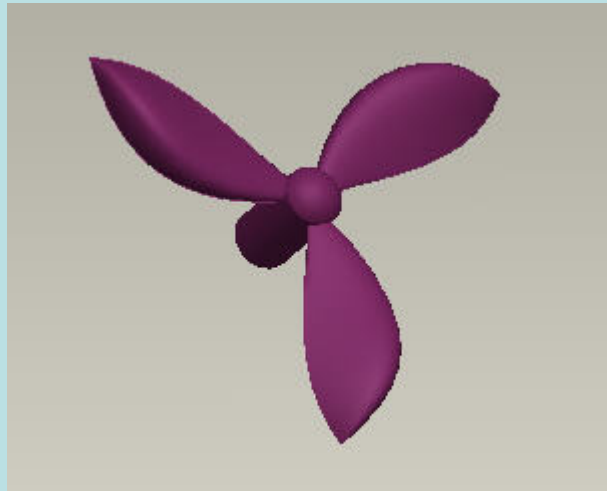
The main parts is the body . Which we could find it separately in the file (body.prt)

The first feature of the body was created with the variable section sweep command. After that I added many features to enhance the design of it. Such as rounds, fillets, Chamfers and cuts etc..

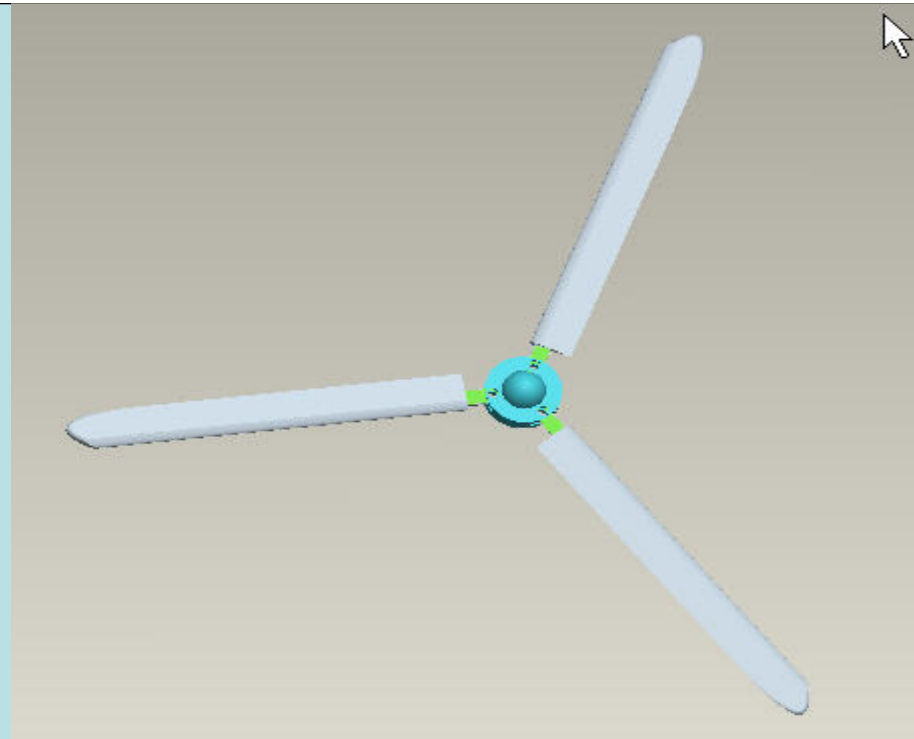
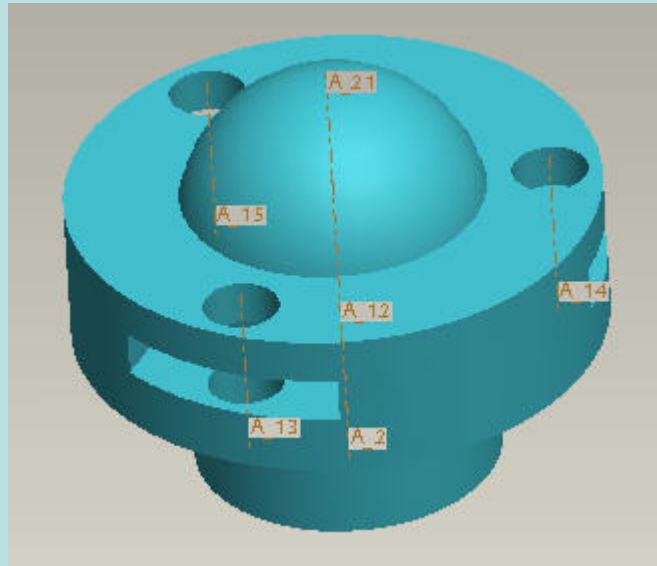


The second part was the rear fan. I used the sketch and intersect command to create

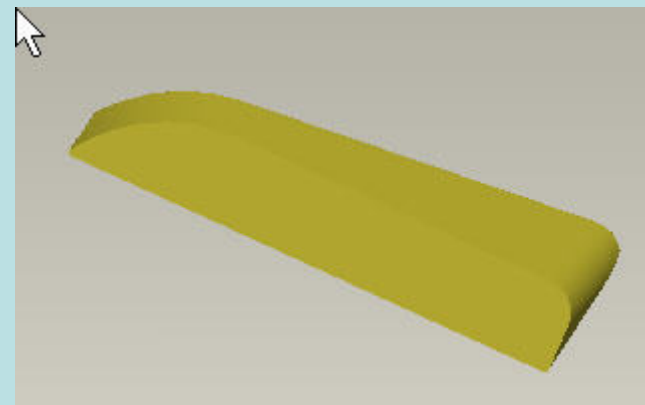
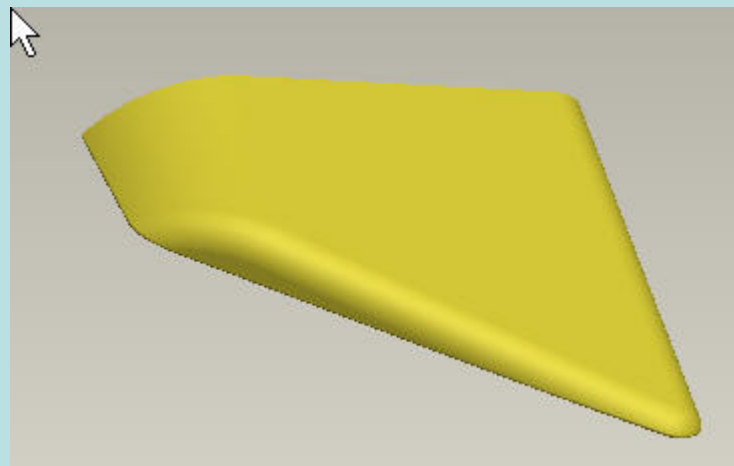
A sketch in space , after that I used the Boundary selection sweep t get the final Non uniform shape of it. Then copying to get three parts of the same shapes.



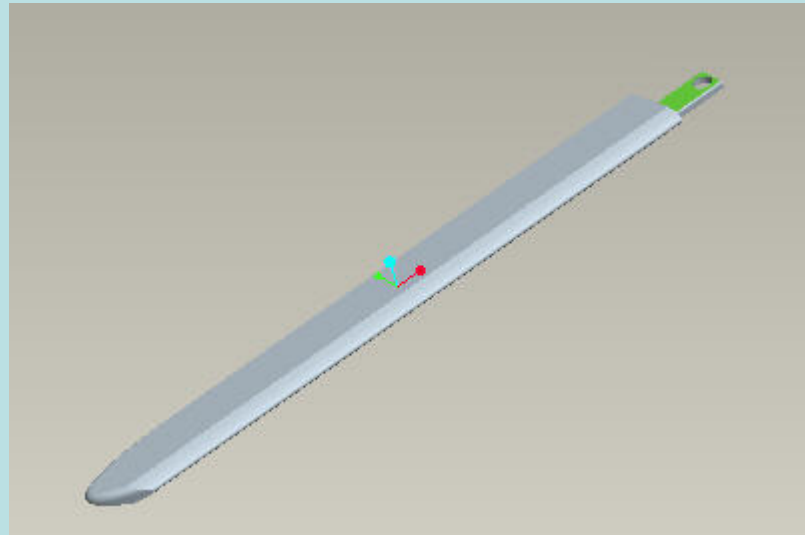
The third part is the base of blades which I used revolve and cut commands to get the Desired final shape. Moreover the connection was pin to have a rotational motion.



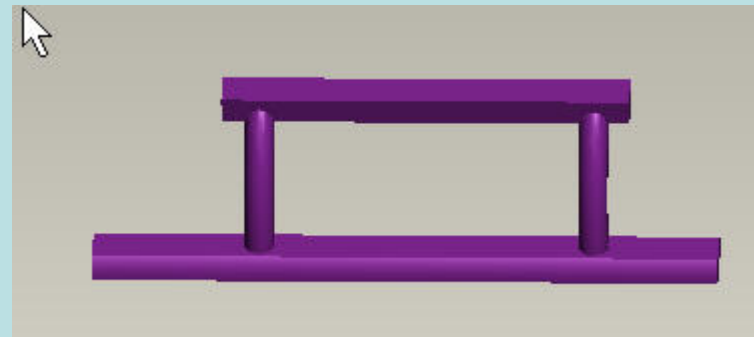
The fourth part is the small wing (right and left sides), I used the extrude and round Commands to get it.



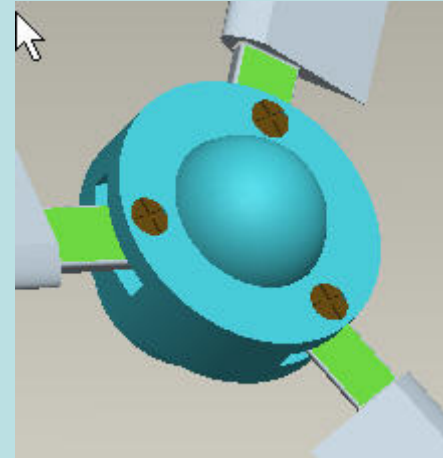
The fifth part is: blade. Was created basically with extrude and rounds..



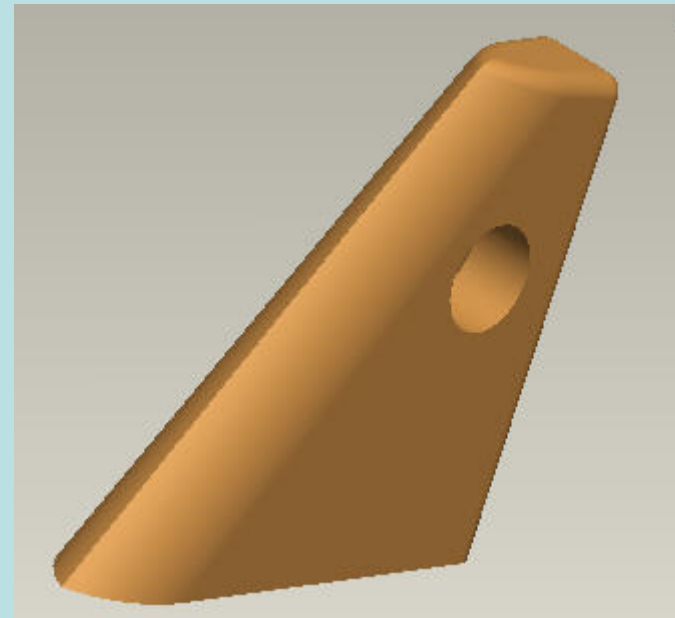
The sixth part is: stands; it's a part made of extrusions..



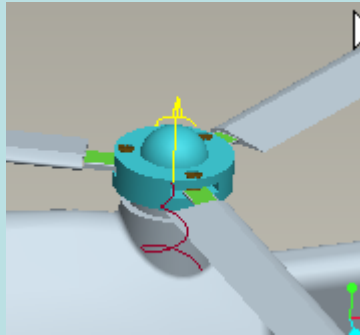
The seventh part is : screws; I used extrusion and helical sweep.. And they were Used to support the blades in the base..



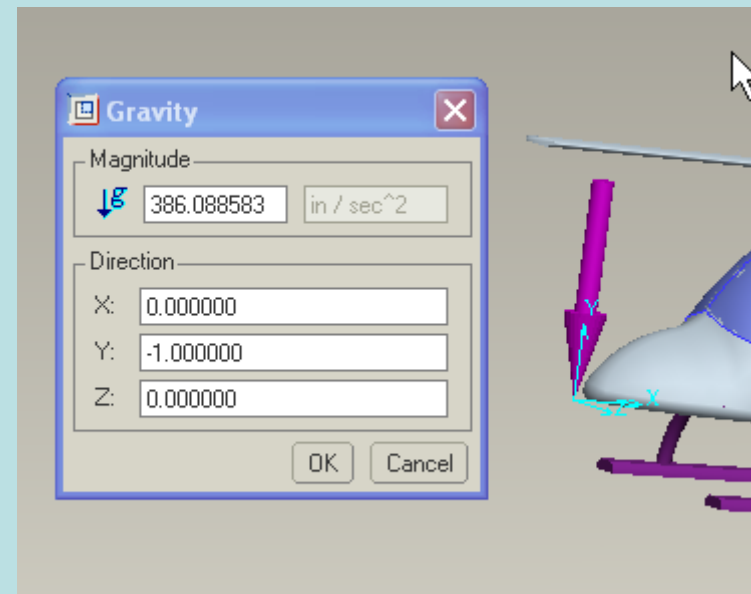
The eighth part is the tail (rear wing): it was created with extrusion and rounds To get smooth shape as I did in the small wing.



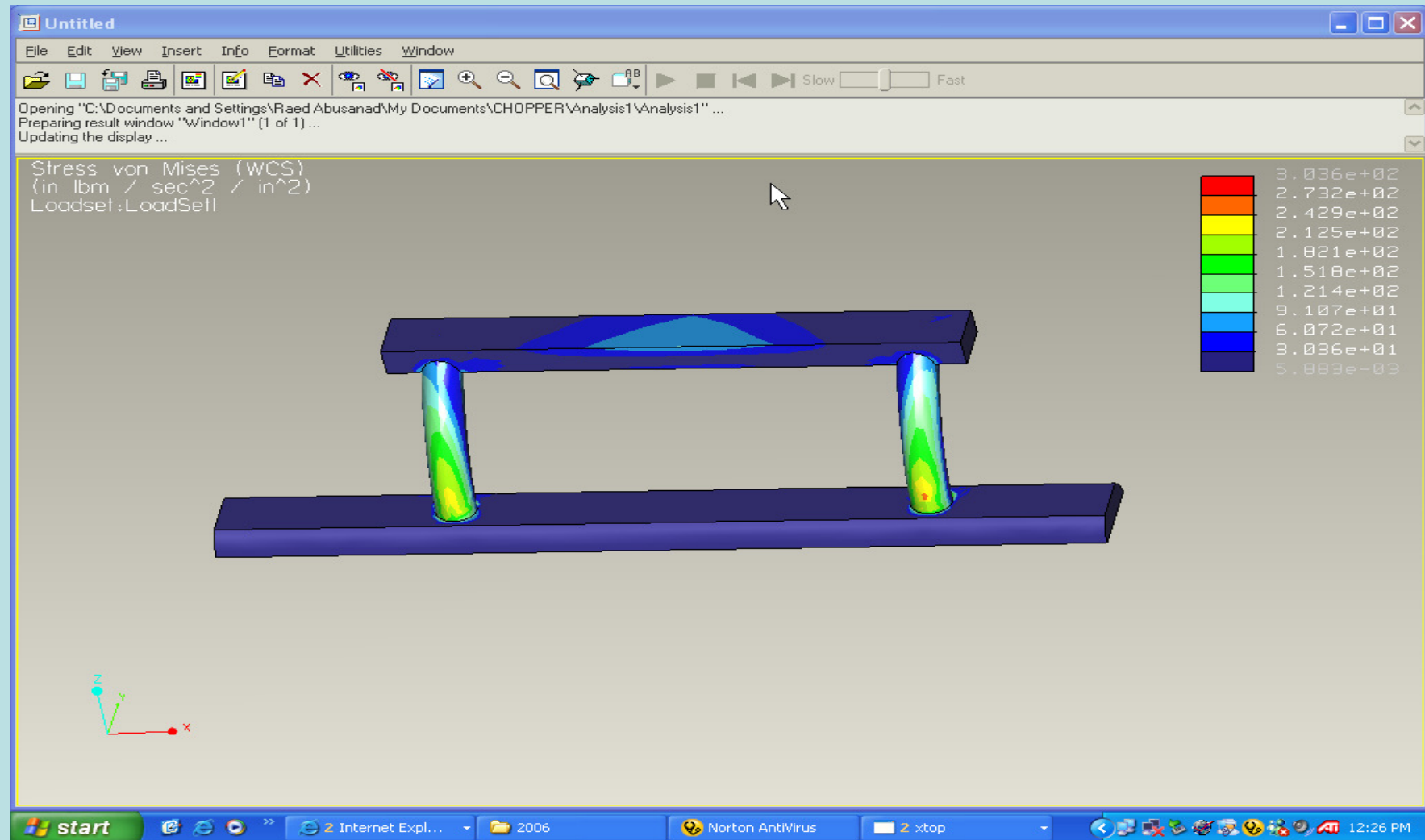
In the blade base and the rear fan I added a servo motor on their joints, (Both joints are pin). To have a more realistic design between our hands.



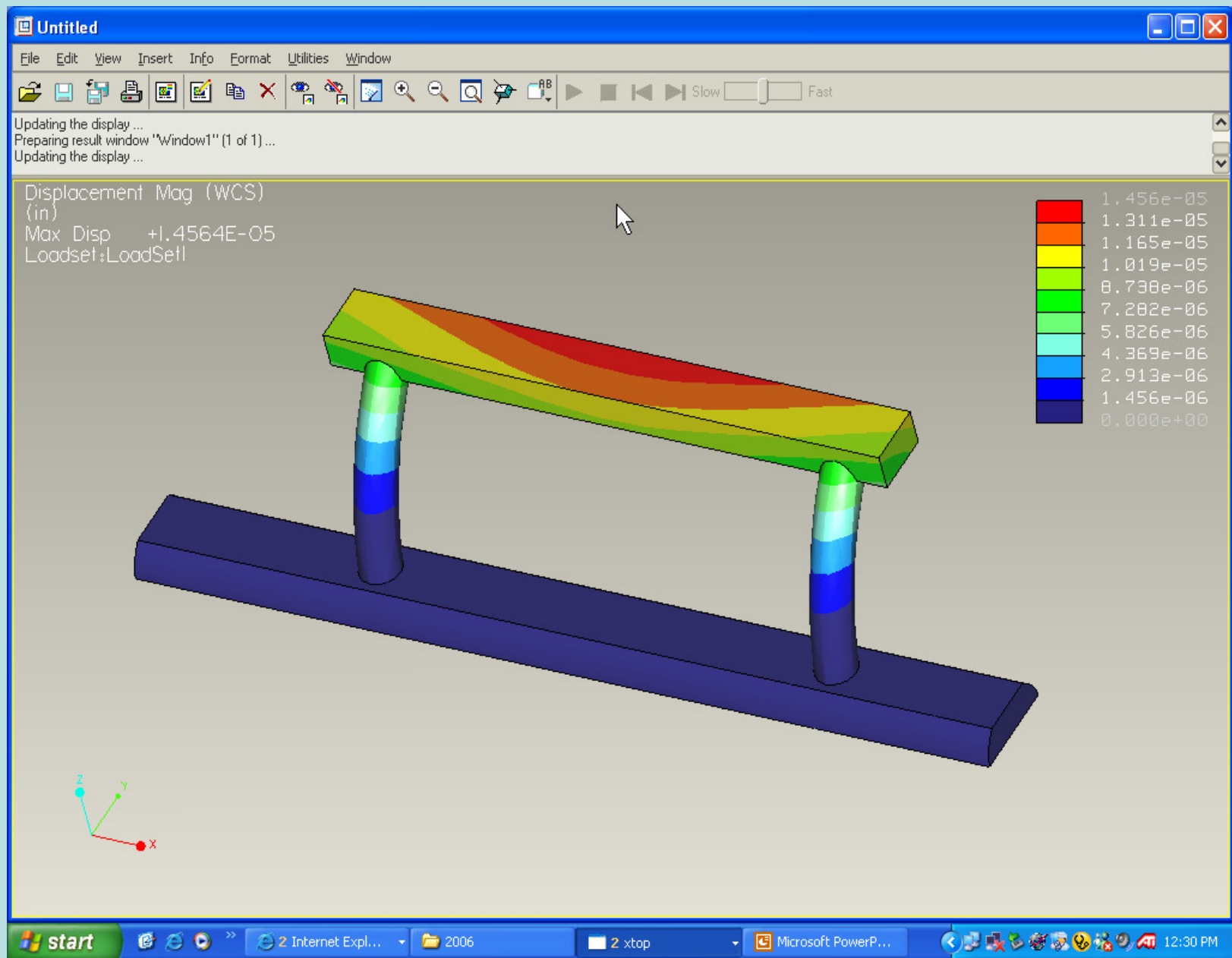
Also I assumed that the whole helicopter has a mass and I identified the gravity force, And I added a force larger than the weight ($W=m \cdot g$) in order to get the lifting force For the helicopter..



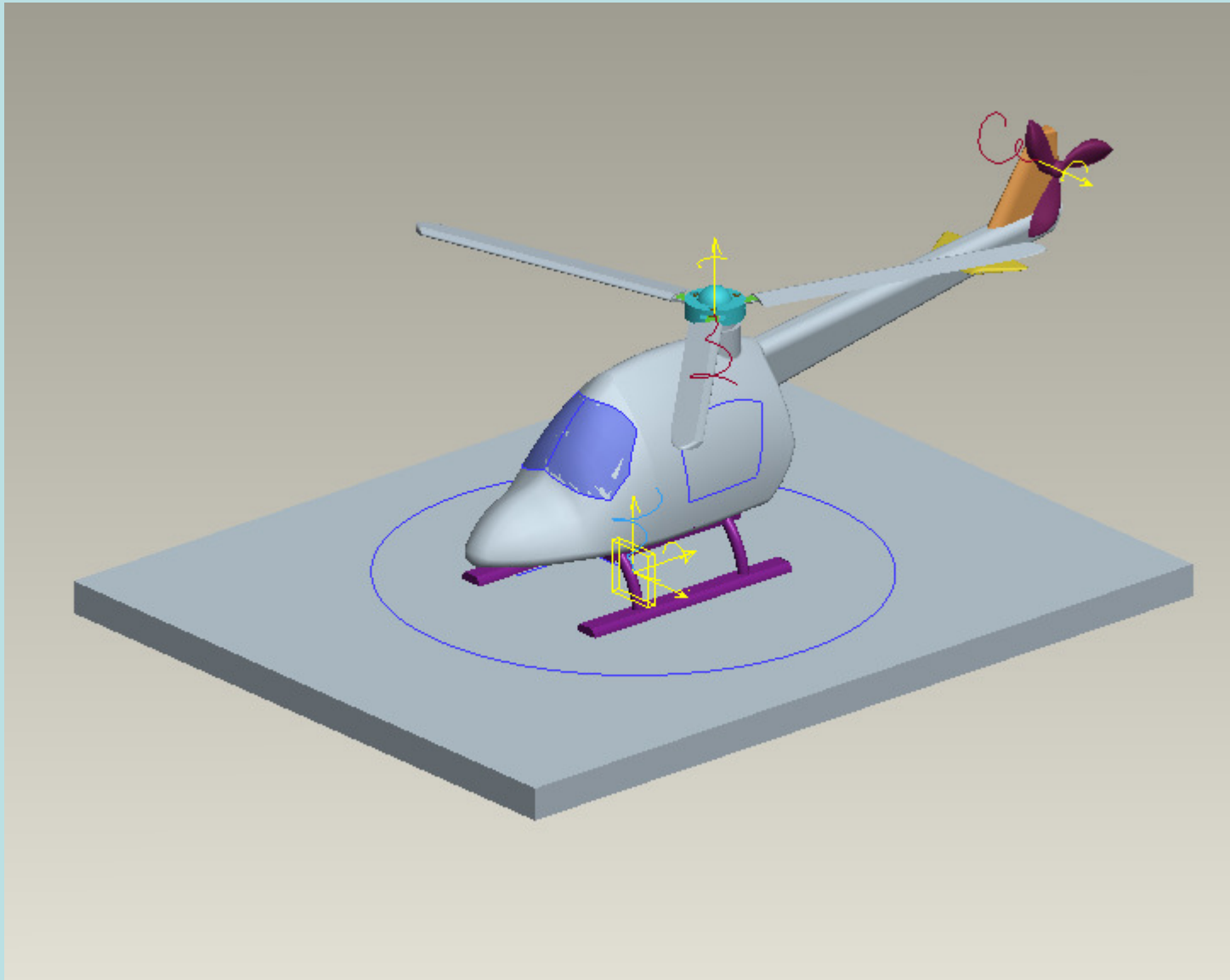
Here is also a static analysis for the stand (part 6) to show the stresses And displacement due to the Weight of the body ..



stresses



deflection



FLYING PROGRESS ILLUSTRATION



Exploded view

Good Bye