

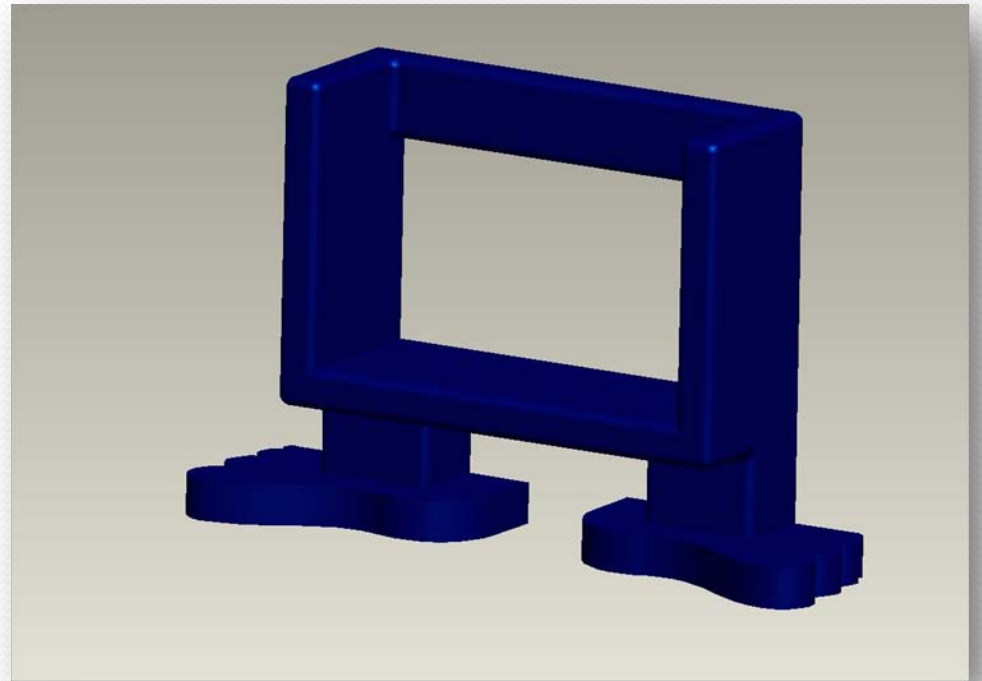
My Mobile Mate

A Design & Technology Project Idea
A mobile phone / Cell phone stand

Using RapMan



Mobile Mate



Brief

- Design a desk stand for a mobile phone ¹.

- ¹ International....
- Cell Phone (USA)
- Handy (DE)
- Mobile Phone (UK,FR, IT, ES)
- Mobiele Telefoon (NL)



Research

- Produce a “Moodboard” with examples of mobile phones and/or stands.
- Analyse these phones/stands to find out what features are common to the different designs or manufacturers.
- Carry out some consumer research to find out what different target users would like their “Mobile Mate” to do.


Specification

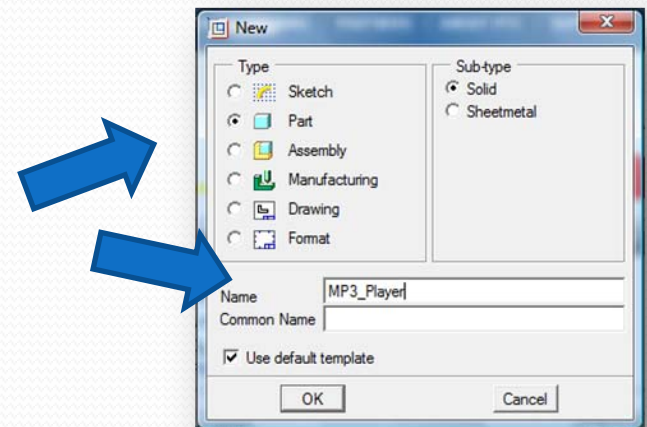
- Write a specification for your new design of “Mobile Mate”.
- Don’t forget to specify who will be your target user group.
- Specify the main features that your “Mobile Mate” should include.

Modelling ideas

- Sketch some initial design ideas. Think about shape, size and function of your design.
- Think about how your “Mobile Mate” will balance, find out about “centre of gravity”, how might this effect your design?
- Produce a 3D model of your best design (use quick modelling materials such as styrofoam, card, modelling clay, etc.)

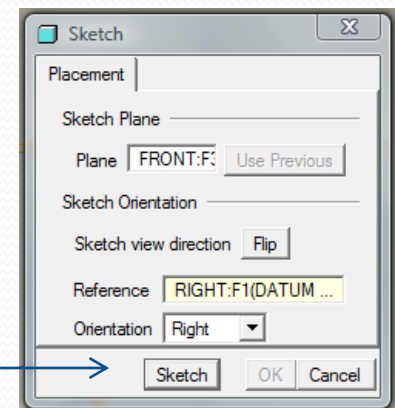
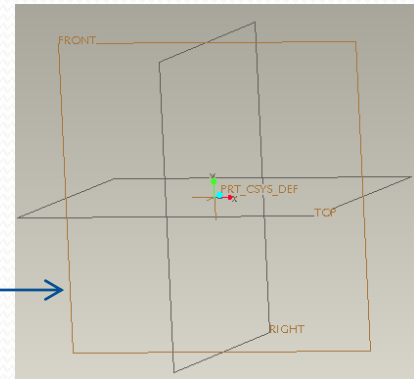
Design with Pro/ENGINEER

- Now that you have a good idea of what your design would look like you need to create your design in Pro/ENGINEER.
- Set up a new folder to save your work in.
- Start Pro/ENGINEER
- Set the folder you created as your “working directory”
- Click on the “New” button. 
- Select “Part” and also type a name



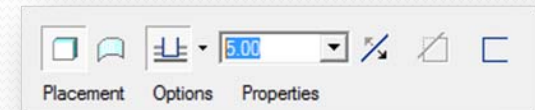
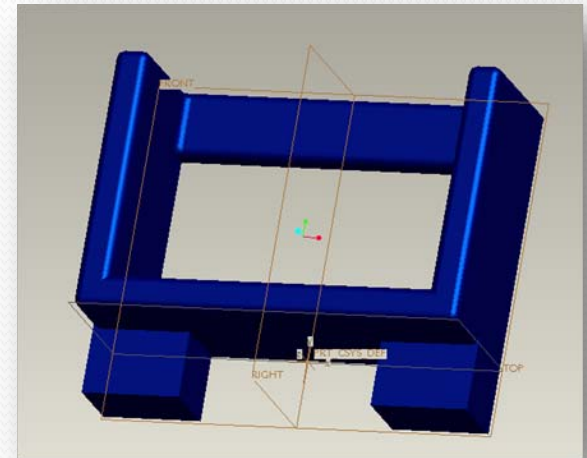
Design hints

- To make manufacturing easier on the RapMan it is best to construct your design on the “Front” workplane.
- Use the “Extrude” tool to create the basic shape of your Mobile Mate.
- Right click on screen and select “Define Internal Sketch” from the menu.
- Pre-highlight (light blue) the front workplane and then click on it.
- Click “sketch” in the popup window accepting the default settings



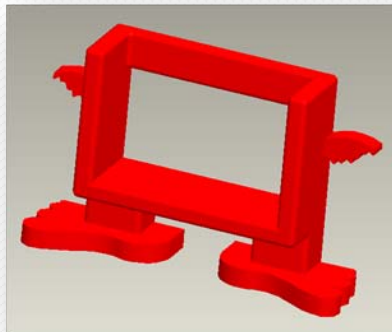
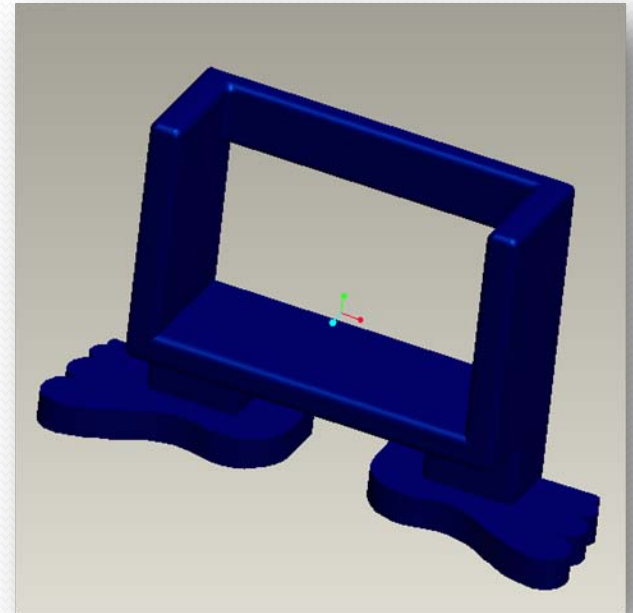
Sketching the body shape

- Inside the sketcher draw the front view of your Mobile Mate.
- Don't forget to use the dimensions to “control” the shape and size of your design.
- Do NOT add any details to the design at this stage.
- When you have completed the shape click the blue tick to finish sketching.
- Set the height of the extrusion in the settings dialogue and then click the green tick to finish the extrusion.



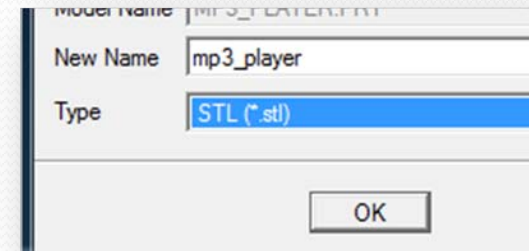
Hands, feet and other parts

- Use Extrude to add or remove material to the body shape to add features to your design such as hands or feet
- These can also be modified with rounding or chamfers.
- And maybe add a logo.



Preparing for manufacture

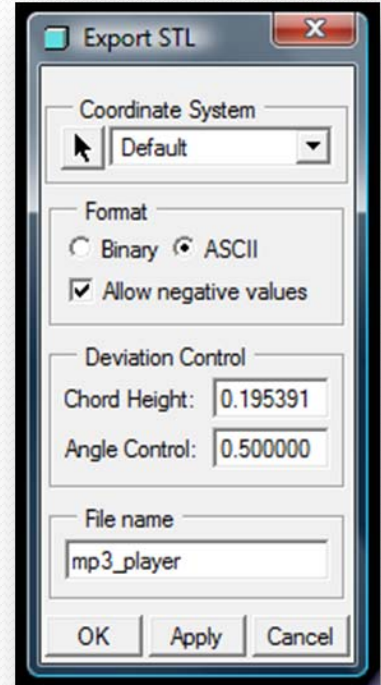
- The programme that is used to convert your Pro/ENGINEER design into a set of instructions (called G-Code) is called Skeinforge.
- Skeinforge does not understand Pro/Engineer files so you will need to convert it into a Stereo Lithography file (usually known as .stl).
- In Pro/ENGINEER make sure that your design is open then click on “File” and select
- “Save a copy”. When the popup
- window opens select STL and
- click OK.



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Preparing for manufacture 2

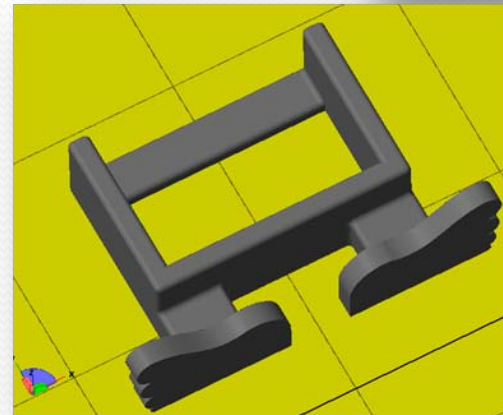
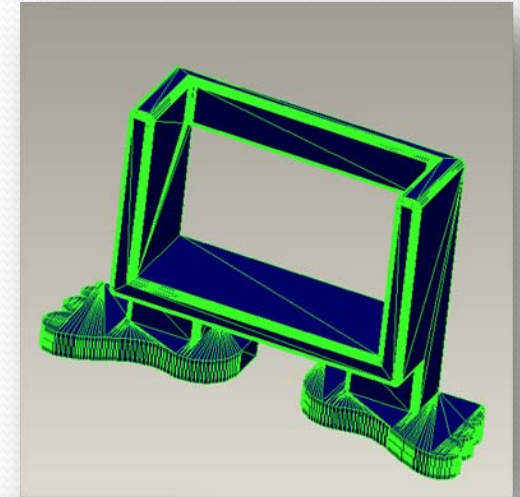
- To export the .stl file you then need to edit a few options.
- Change the format to ASCII
- Type “o” (zero) into the “Chord Height” box and press enter (Pro/ENGINEER will automatically select the smallest value that is possible. This makes the shape as smooth as possible.)
- Click “OK” and the STL file will be automatically saved to your working directory.



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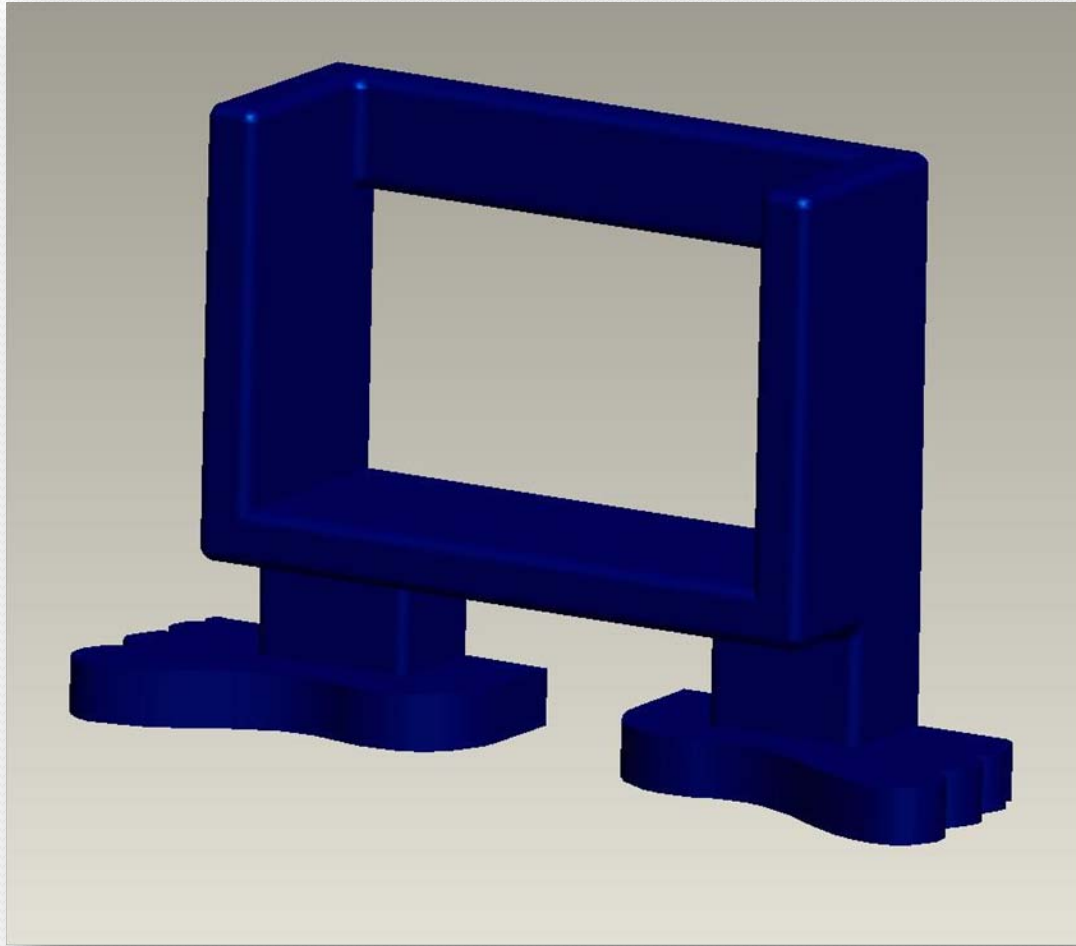
Preparing for manufacture 3

- Pro/ENGINEER will have now converted your design into an STL file. The shape is now just a surface made up of loads of triangles.
- STL files are the standard files used by most Rapid Prototyping machines... Including RapMan.



My “Mobile Mate”

Can you do better?



Converting to G-Code

- The STL file now needs to be converted to G-Code (the instructions that control the RapMan. This is covered in a separate PowerPoint- “Skeinforge and Printing”.



RapMan

- RapMan is a low cost 3D printer available from Bits from Bytes www.bitsfrombytes.com
- Further assistance can be found on the BfB forum and wiki.

Forum

<http://www.bitsfrombytes.com/fora/user/index.php>

Wiki <http://www.bitsfrombytes.com/wiki>