



DESIGNSPARK 3D Modeling

Presented by Steve Edwards
July 12, 2014

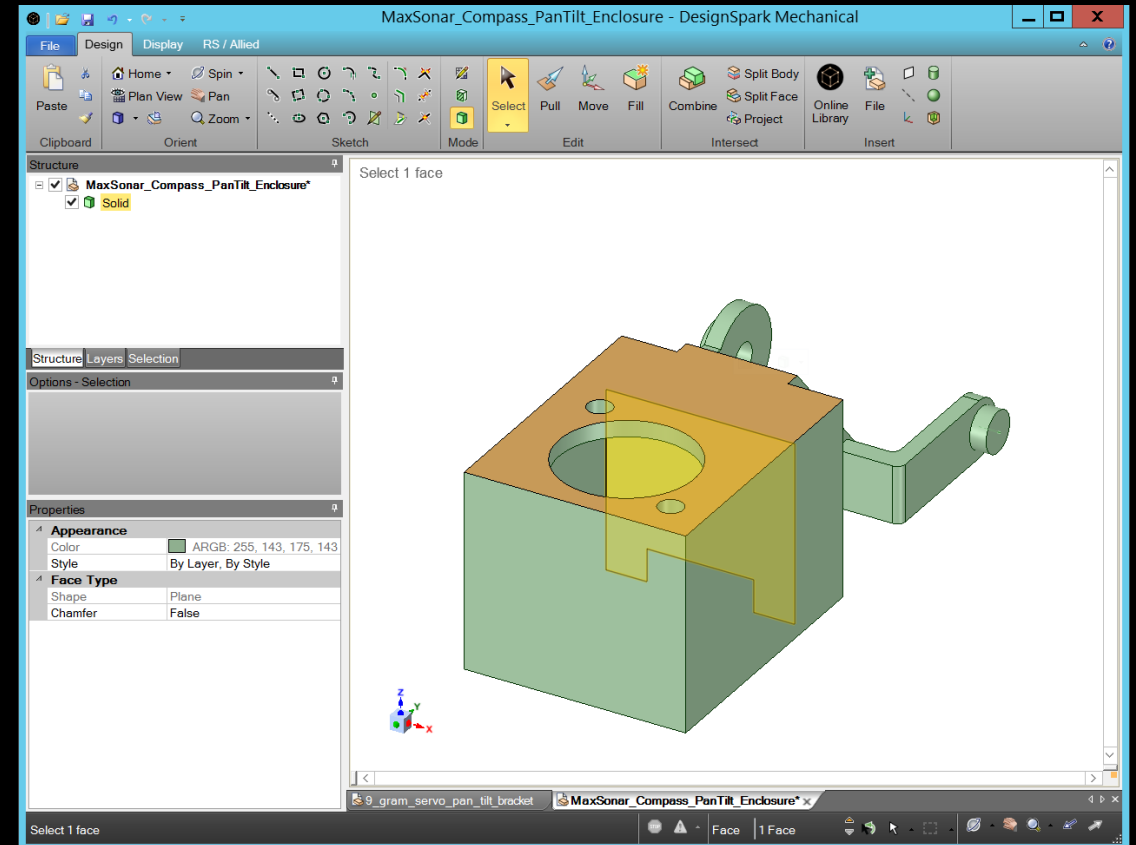
Agenda

- DesignSpark Overview
- Installation and System Requirements
- User Interface basics
- Getting Started with your first 3D model
- Exporting designs for 3D printer or Laser cutting
- Additional Resources

Overview

What is DesignSpark?



- 3D mechanical modeling software
 - Gesture Based
 - Super Simple Interface
 - Deceptively capable
 - Can't beat its price point... FREE




Overview


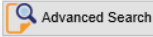
Other than 3D modeling, what are some cool features?

- Online Database of existing models
 - 1000's of parts in 2D or 3D
 - Search by category & manufacturer



English |  



Catalog My account

your search...  

RS Components > Enclosures, Storage & Material Handling > Enclosures > PCB Mounting Enclosures


  RS Components Ltd.
Birchington Road, Corby
NN17 9RS
Northants
United Kingdom
www.rs-components.com







Distributor of electronic components







Add this catalog to my favorites
Add this product category to my favorites







Title
Manufacturer
Manufacturer part number
RS stock number
Search

PCB Mounting Enclosures

Display mode Sort by 

   Raspberry Pi enclosure base, black
  

   Raspberry Pi enclosure base, blue
  

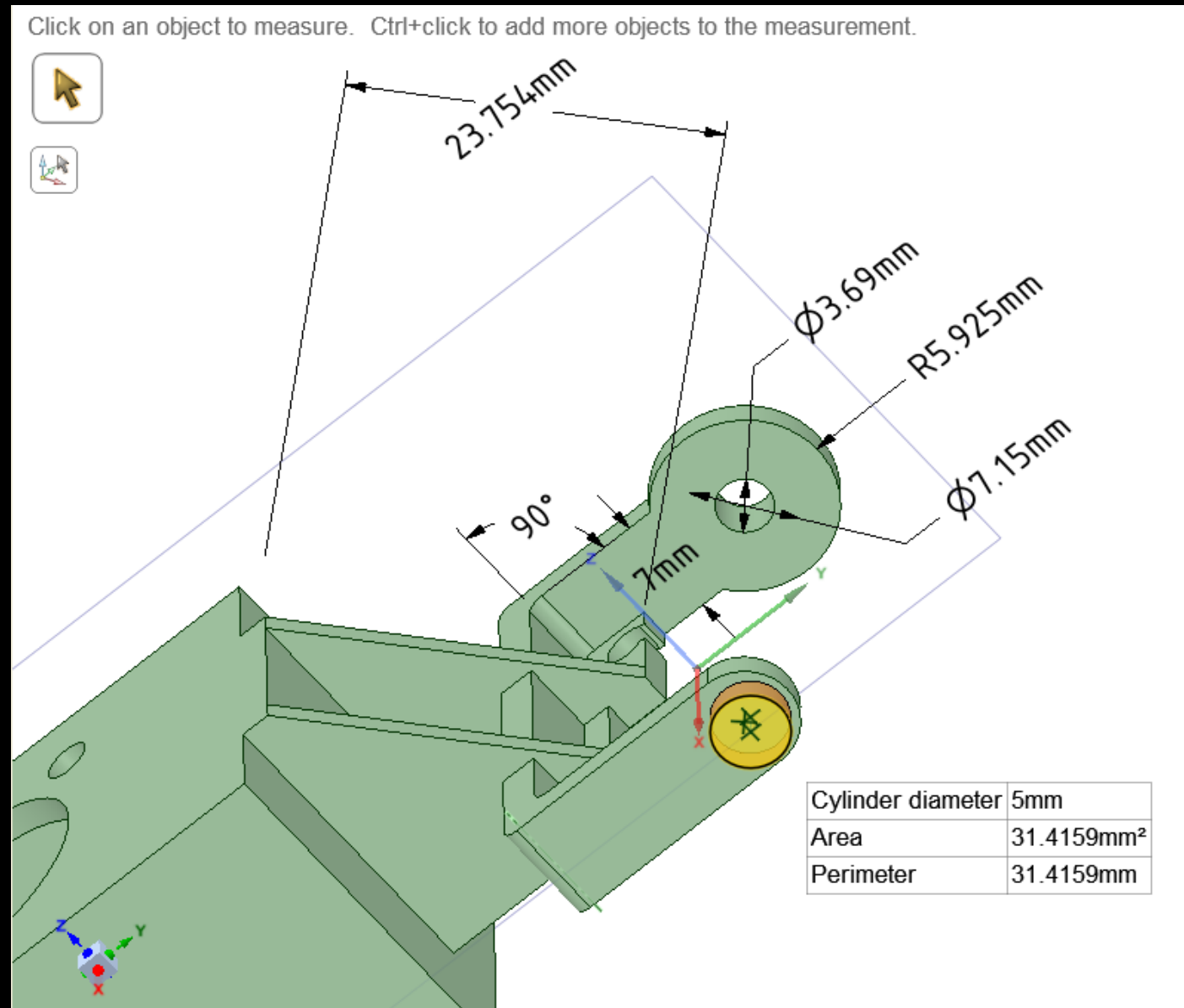
   Raspberry Pi enclosure base, carbon fibre
  

- RS Components
 - Automation & Control Gear
 - Cables & Wires
 - Enclosures, Storage & Material Handling
 - 19-Inch Racking
 - Cabinet Hardware
 - Enclosures
 - Consoles & Desktop Enclosures
 - DIN Rail Enclosures
 - Enclosure Accessories
 - Enclosure Mounting & Installation
 - Floor Standing Enclosures
 - General Purpose Enclosures
 - Hand Held Enclosures
 - Instrument Cases
 - PCB Mounting Enclosures**
 - Pedestals & Plinths
 - Potting Boxes
 - Shielding Enclosures
 - Wall Boxes
 - Levelling & Vibration Control
 - Fuses, Sockets & Circuit Breakers
 - HVAC, Fans & Thermal Management
 - Lighting
 - Relays
 - Switches
 - Batteries
 - Connectors
 - Displays & Optoelectronics
 - PCB Prototyping
 - Passive Components
 - Power Supplies & Transformers
 - Semiconductors
 - Safety, Security, ESD Control & Clean Room
 - Test & Measurement
 - Fasteners & Fixings
 - Plumbing & Pipeline
 - Pneumatics, Hydraulics & Power Transmission
 - Tools
 - Miscellaneous
 - Extended Range

Overview

Other than 3D modeling, what are some cool features?

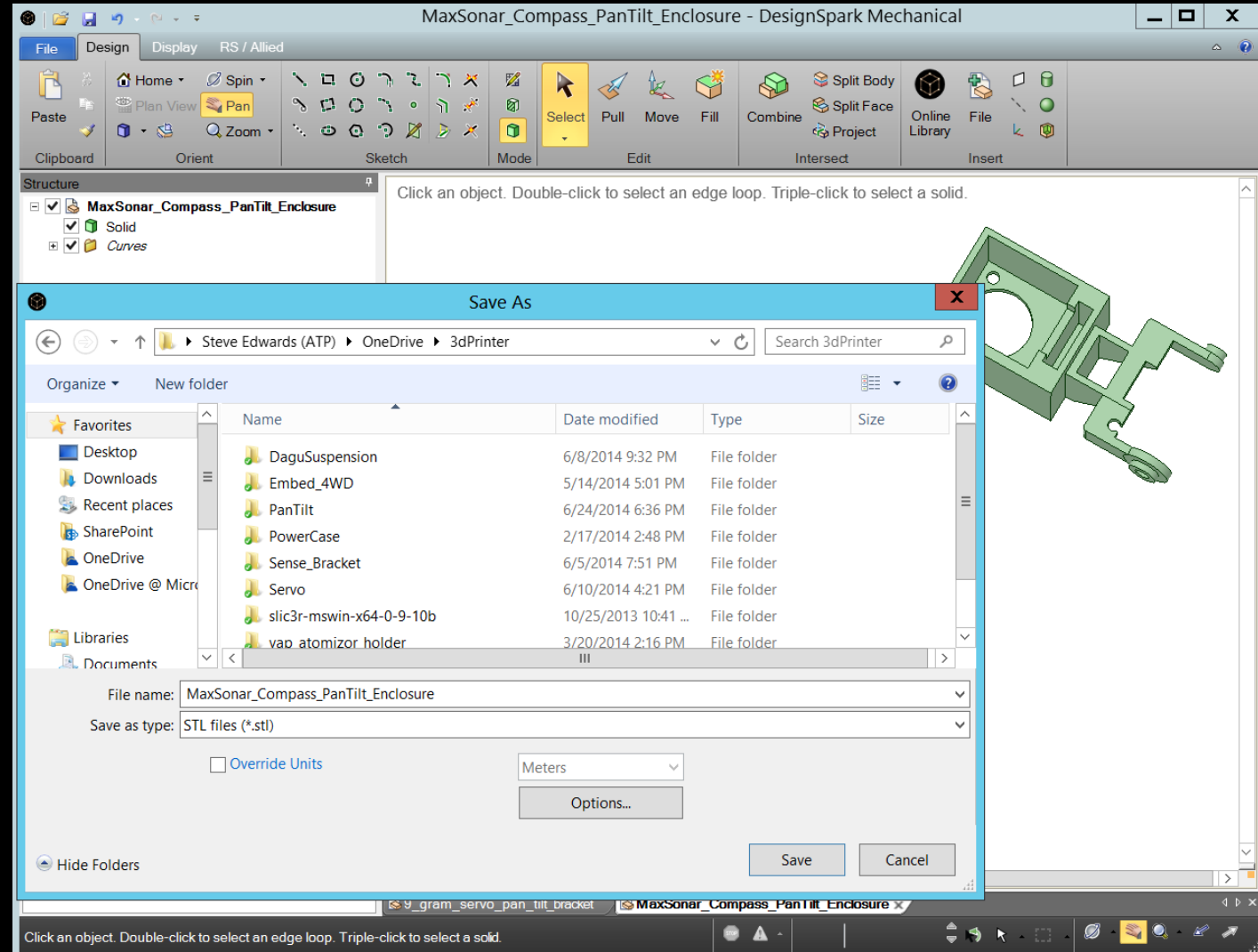
- Powerful measurement tools
 - Create a documentation plane with dimensions
 - Measure precisely with digital calipers



Overview

More cool features?

- Full support to export models to many popular formats
 - STL for 3D printing
 - DXF for Laser cutting
 - SKP for Sketchup
 - OBJ, PDF, PNG, JPG, XAML



Installation & System Requirements

Hardware Requirements

- CPU: Pentium® 4 2.0 GHZ or Athlon® 2000+ or faster,
 - 32-bit (x86) or 64-bit (x64) processor
- RAM:
 - Minimum: 512MB RAM (32-bit) / 1Gb RAM (64-bit)
 - Recommended: 2GB RAM or higher
- Video Card:
 - Full DirectX® 9c, Shader Model 3.0 hardware support, 256 MB of graphics memory or higher,
 - 32 bits per pixel, 1024x768 minimum resolution.
 - Direct3D Acceleration should be enabled.

Installation & System Requirements

Software Requirements

- Operating Systems:
 - Microsoft® Windows XP with Service Pack 3,
 - Microsoft® Windows Vista™,
 - Microsoft® Windows 7,
 - Microsoft® Windows 8, 8.1
- DesignSpark Mechanical is not supported on virtual platforms.

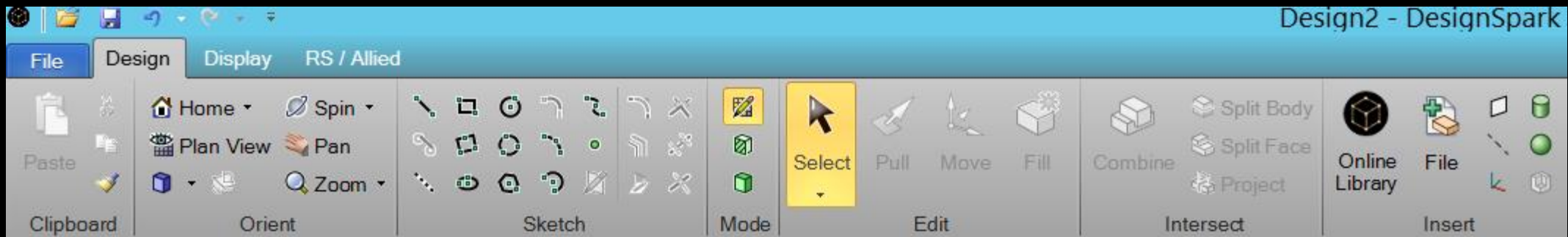
Installation & System Requirements

Installation

- Installer location
 - <http://www.rs-online.com/designspark/electronics/eng/page/mechanical>
 - 32 bit installer: http://eda.designspark.com/receiver/dsm_dl.php?v=32&loc=eng
 - 64 bit installer: http://eda.designspark.com/receiver/dsm_dl.php?v=64&loc=eng
- You will need to create a RS-Online account, required after installation.
 - <http://www.rs-online.com/designspark/electronics/eng/register>

User Interface Basics

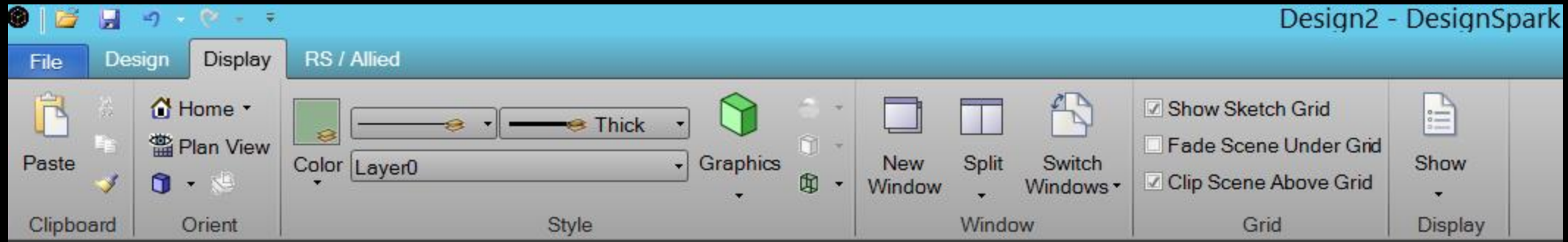
Ribbon Bar



- Tabs
 - Design – Main tab used to model components

User Interface Basics

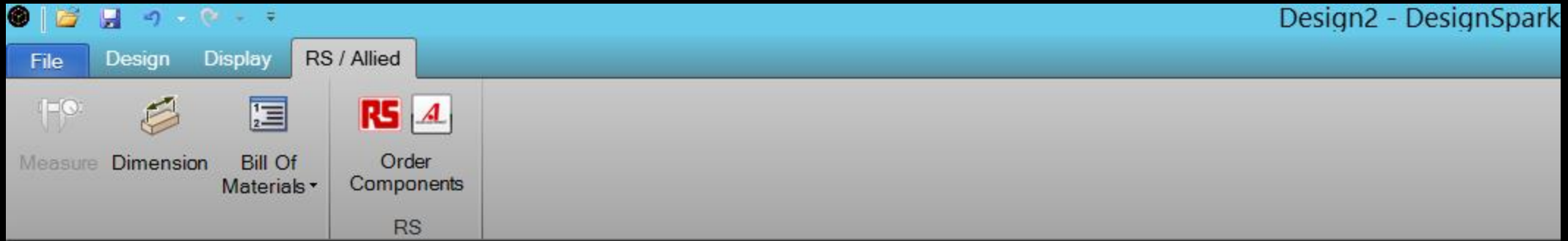
Ribbon Bar



- Tabs
 - Display – Control for grid, layers, and styles

User Interface Basics

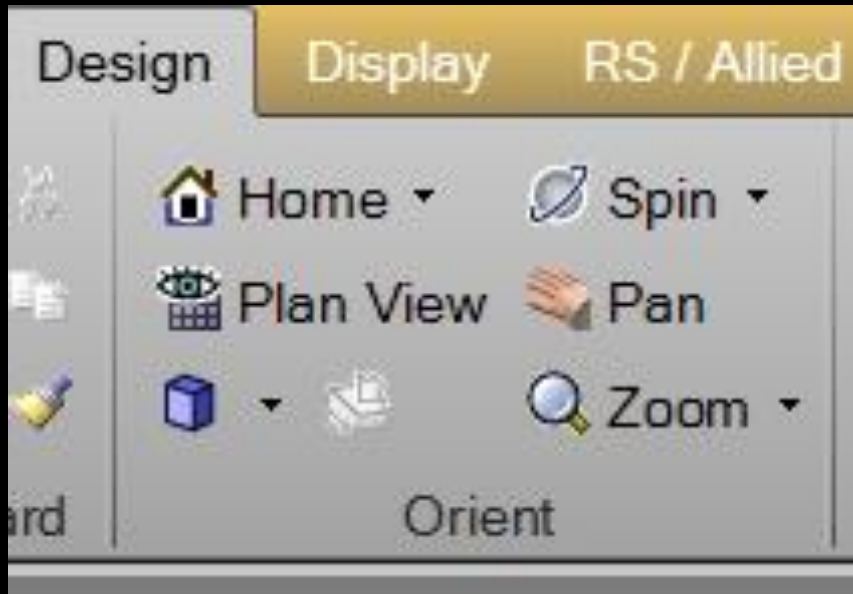
Ribbon Bar



- Tabs
 - RS / Allied – Measurement and Dimension tools, as well as interfaces to order 3rd party components and BOM management tools

User Interface Basics

Orientation Tools



- **Home:** returns the model to its original orientation within the screen
- **Plan:** is useful if you are sketching as it presents the face directly to the screen
- **Spin:** is used to spin the model on various axis
- **Pan:** is useful if you need to move the camera view without affecting the placement or location of the 3d model.
- **Zoom:** allows you to zoom in or out of your model

User Interface Basics

Sketch Tools



- these offer a range of geometric options for sketching either onto the grid for the original design or onto a face to develop a model further.
- Primitives such as **Line, Rectangle, Circle, Arc, Points, & Splines**
- More complex tools such as Three-Point geometry (Arcs, Rectangles, and Splines)
- And more

User Interface Basics

Mode Tools



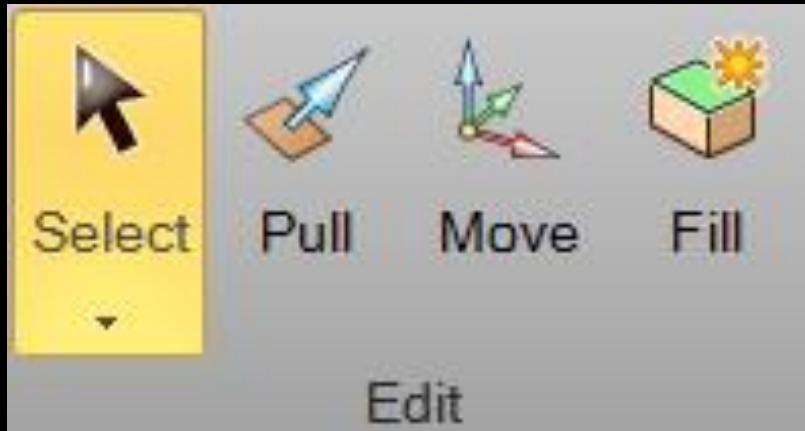
Mode select

- **Sketch** – select to enable the sketch tools in the ribbon
- **Section** – Edit solids by working with their faces
- **3D** – Allows you to work directly with 3D objects

3D mode and Sketch mode will be the most often used when modelling.

User Interface Basics

Edit Tools



- **Select** – will allow selection of faces, edges and points to be selected using a conventional point and left click method. This selection method remains active when using the other edit tools.
- **Pull** – tool is used in a number of ways. Initially you will use this to “pull” a 2D sketch into a 3D shape. Once a 3D shape is formed the **Pull** tool can be used to extend or reduce the shape by pulling on a face, modify edges by rounding or chamfering and add features by pulling a sketch out from, or into, a face.
- **Move** – allows you to engage the **Move Anchor** and enable a range of linear and radial moves depending on
 - a) what part of the model has been selected
 - b) where the hub of the **Move Anchor** is positioned
 - c) which axis of the **Move Anchor** is manipulated
- **Fill** is a tool which can be used for simple removal of features or more complex modifications to a shape

User Interface Basics

Intersect Tools



- **Combine** – Combine two object into a single object
- **Split Body** – Allows you to use one object as a cutter to split the body of another object.
- **Split Face** – Allows you to select a face and then another object to split it with.
- **Project** – Allows you to select a face, surface, or edge and project it's edges perpendicularly.

Project is an extremely powerful tool to learn and understand. This tool will help you master symmetry in your designs.

User Interface Basics

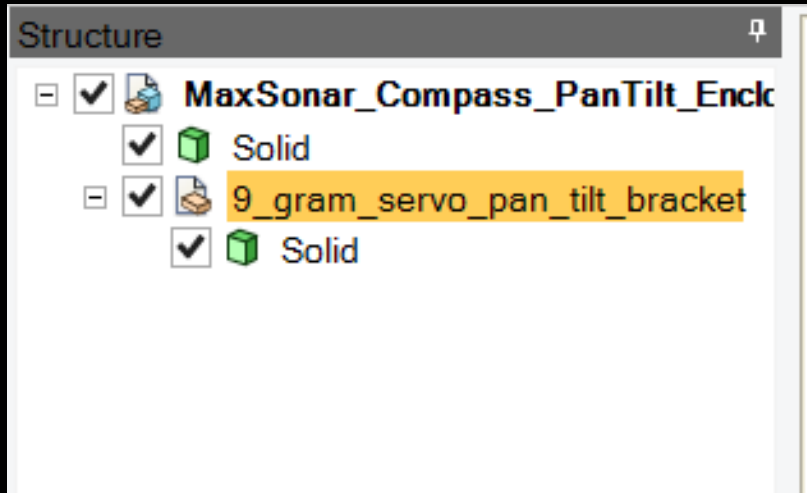
Insert Tools



- **Online Library** – third party 3d models and components
- **Add File** – combine multiple files to the project
- **Plane** – adds a plane perpendicular to the selected face
- **Primitives** – creates 3d primitives for cylinder & sphere
- **Axis** – creates an axis from the selected line or edge
- **Origion** – create a coordinate system at the center of an object or at the intersection of two panes
- **Shell** – allows you to quickly create a shell based on the selected object

User Interface Basics

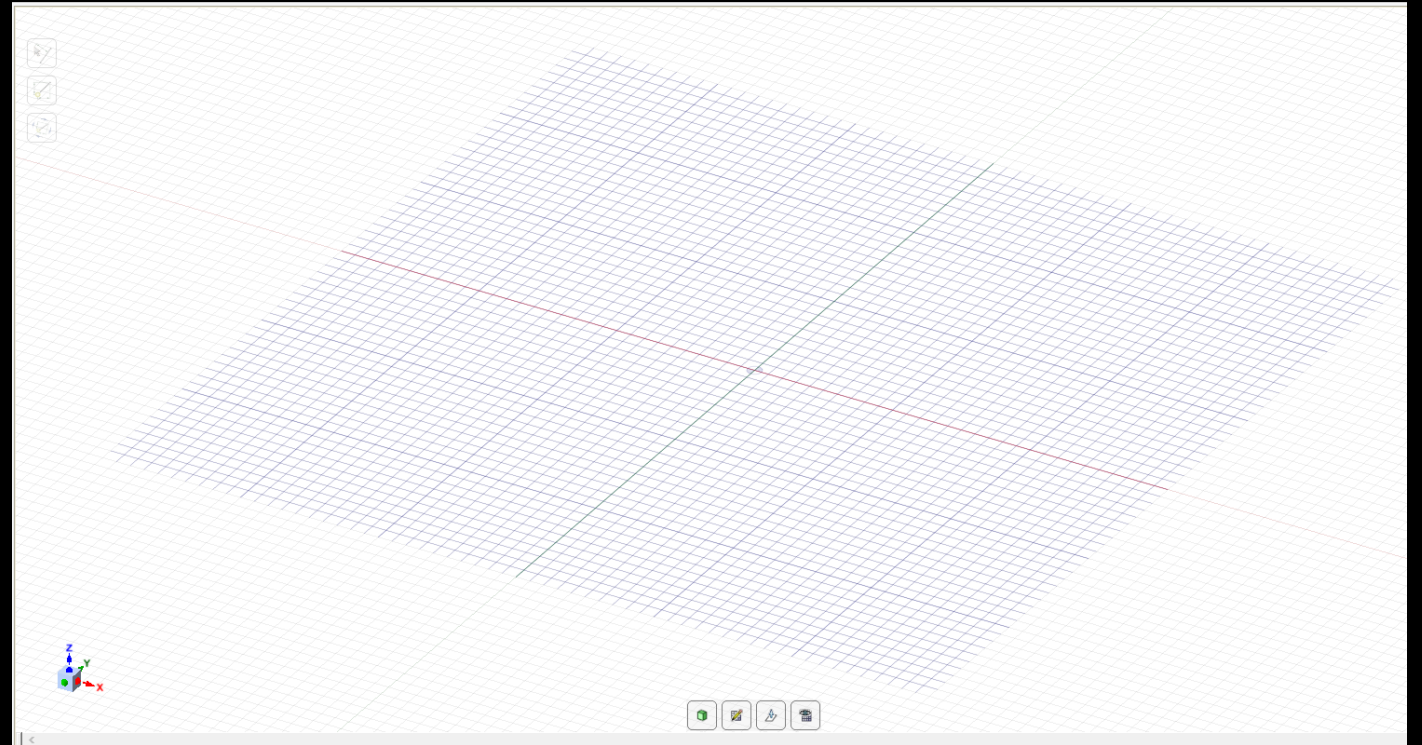
Project Structure



User Interface Basics

Design Workspace

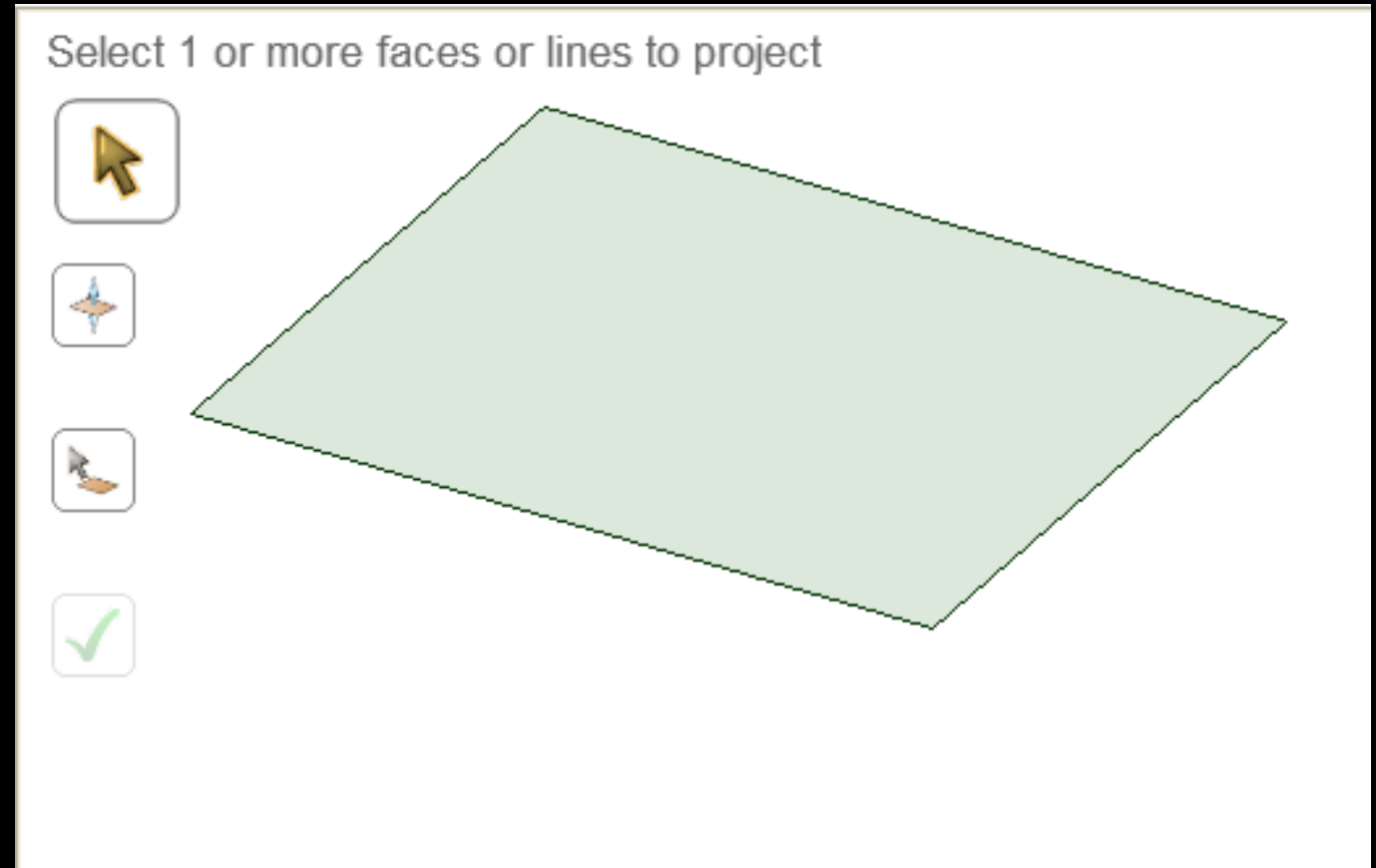
- Main workspace where 3d models and sketches will be displayed and manipulated



User Interface Basics

Design Workspace

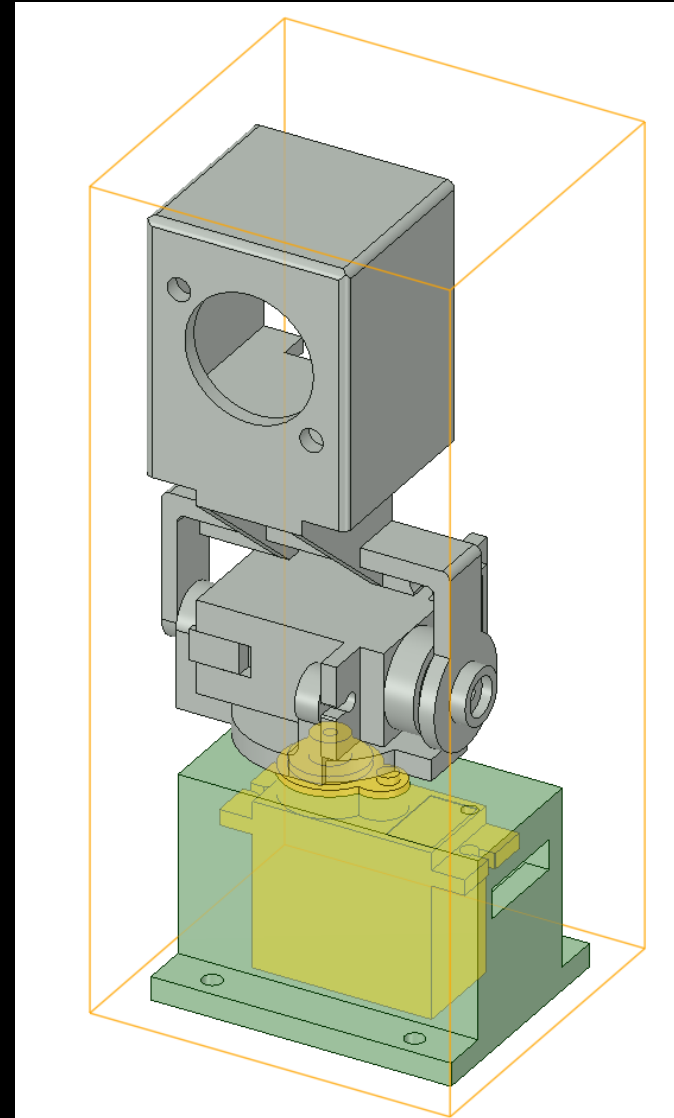
- interactive tool experts and wizards



Getting started on your 1st 3D model

Live Demo

- Next we will work step-by-step to create parts of a Pan & Tilt enclosure I've designed using DesignSpark Mechanical to hold a Maxbotix Sonar and a small I2C Compass sensor.
- What will you need?
 - A decent pair of Digital Calipers
 - DesignSpark Mechanical
 - Sensors and Servo's you are using in your project
 - A little time and patients



Exporting for 3D and Laser

Live Demo

- Next we will export a couple different models depending on the expected use.

Additional Resources

Links – <http://www.rs-online.com>

- DesignSpark Mechanical Frequently Asked Questions
 - <http://www.rs-online.com/designspark/electronics/eng/knowledge-item/DesignSpark%20Mechanical%20Frequently%20Asked%20Questions>
- Many more Tutorials
 - <http://www.rs-online.com/designspark/electronics/eng/page/mechanical>
- Model Source
 - <http://www.rs-online.com/designspark/electronics/eng/nodes/view/type:design-centre/slug:modelsources>
- DesignSpark Mechanical Help and Support
 - <http://www.rs-online.com/designspark/electronics/eng/knowledge-item/designspark-mechanical-help-and-support>