

## Irvine Royal Academy—Technical Department

### Graphic Communication—Advanced Higher

# Libraries

In Graphics there are a variety of libraries that can be of use to the Graphic Designer. This theory sheet gives some more information on these.

#### CAD Library

A CAD library is a collection of small drawings or components that are regularly used in drawings. For example, an architect will have a selection of pre-drawn symbols for trees, bathroom furniture, windows, etc. This will save him having to redraw the items every time he creates a new house, etc.

Some CAD programmes already have a selection of items saved in a library, eg Inventor has a collection of nuts and bolts, etc.

It is also possible to make your own library and save parts in it.

Sometimes manufacturers of particular components will supply drawings of their products to architects and designers so that they will use their product in their drawings. This sometimes allows the company to gain sales of their product.

#### 3D CAD Library

If you are using a 3D CAD package, such as Inventor, then you will need to make sure the items in the CAD library are compatible with your programme. Inventor components are saved as .ipt files. A 3D CAD Library may have some .ipt files in it, but it will also have files created by other programmes. Often different programme files cannot be opened by a different drawing package.

Examples of 3D CAD libraries are

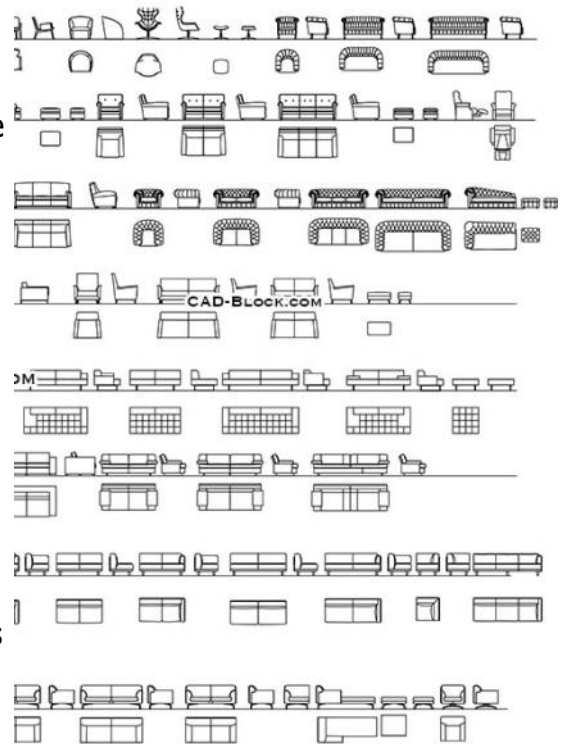
GrabCAD [grabcad.com], traceparts [traceparts.com/en], 3dcontentcentral [3dcontentcentral.com], Free3D [free3d.com], and others.

Many of these parts are referred to a **Standard Components**.

#### Step or stl files

If the CAD library file is not saved in the format that your programme uses (eg .ipt in Inventor) you may still be able to import a file in a different format. A common file type that can be read on most 3D drawing packages is the STEP or STL file. Files with the .step extension are usually 3D model files created in the STEP file format. STEP stands for Standard for the Exchange of Product Data. This ISO standard exchange format is used to distribute 3D data files (such as CAD files) in a format that can be viewed by a variety of software applications. The .step file extension is interchangeable with the .stp file extension.

Another popular format that can be opened is the STL file. This stands for standard tessellation language. .stl files are used in 3D printing.



GRABCAD

**Libraries****STL files**

The STL file format has become the Rapid Prototyping

(3D printing) industry's defacto standard data transmission format. This format approximates the surfaces of a solid model with triangles. For a simple model such as the box shown in figure 1, its surfaces can be approximated with twelve triangles, as shown in figure 2. The more complex the surface, the more triangles produced, as shown in figure 3. If the settings chosen increase the number of triangles, then the file size will increase and the model will have a more accurate surface shape (when curves are used).

Almost all of today's CAD systems are capable of producing an STL file. For the user the process is often as simple as selecting File, Save As, and STL. Below are steps for producing high quality STL files using Inventor. In all cases, export your STL file as a Binary file. This saves on time and file size.

- Save Copy As
- Select STL
- Choose Options >Set to High
- Enter File Name
- Save

**Image Library**

Graphic Designers may use an image or photo-library to obtain pictures. There are many of these, such as iStock, Shutterstock, Pexels, Veer, Getty Images, Fotolia, etc.



Most sites charge for the use of pictures, as that is how the photographers or designers make their money, but some may offer free images, such as RGBStock and Morguefile.

**Advantages and Disadvantages**

Very often a question will appear in an exam about libraries and it will ask about advantages and disadvantages. These are listed below:

**Advantages**

- Image is already created
- Saves time in trying to get an image
- May be cheaper to get image
- A more experienced person may have created image/file
- Millions of images available
- Possible to get images from worldwide sources
- You control copyright

**Disadvantages**

- Image is not unique to you
- A cost is involved unless free
- Image may not be exactly what you want
- Unable to claim copyright on image
- You don't have control over quality
- Your competitor could use same image

**Other File Types**

- |    |             |   |
|----|-------------|---|
| 2D | <b>DXF</b>  | Drawing Exchange Format -often used for laser cutters, etc. |
| 2D | <b>SVG</b>  | Scalar Vector Graphic                                       |
| 3D | <b>IGES</b> | Initial Graphics Exchange Specification                     |
| 3D | <b>3DS</b>  | 3D Studio   |

