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White Paper

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Revit Performance Tips

General tips and tricks to help improve the way Revit performs.

Autodesk Revit Architecture, MEP and Structure Users

The following information is based on all the Revit platforms Architecture, MEP and Structure up to versions 2012 and has been taken from Autodesk technical information. Please this information is up to date to the date highlighted on the document and may not be compatible with later versions of Revit.

1. Hardware

It's important that the hardware on which the Revit platform is running is up to at least the minimum system requirement set by Autodesk.

To help users Autodesk has put together minimum system requirements for all Revit platforms on both 32bit and 64bit systems.

Revit Architect: System Requirements

Revit MEP: System Requirements

Revit Structure: System Requirements

Check your Graphics Card is on the Autodesk Certified Hardware list. You can check by clicking this link

Revit Modelling Best Practices

2. General Management (Memory)

Just like running AutoCAD for those who currently use it it's a good idea to close the program at least once day (ideally when you take a lunch break) and before undertaking a memory intensive task(s):

- ✓ Printing
- ✓ Rendering
- ✓ Exporting
- ✓ Upgrading a model from an earlier Revit platform.

Autodesk also recommend before performing any of the operations listed above, performance can be improved by reducing memory usage if do the following:

- ✓ Close other applications running
- ✓ Shutting down or restarting your machine at the end of the day releases system resources.
- ✓ Turn off shadows for all printed views if not absolutely necessary
- ✓ Detach local copies from central before printing and exporting to limit network resources and reduce project chatter between local and central files. *Use this tactic with caution because changes subsequent to detachment cannot be saved to the central file.*

3. General Guidelines

The following characteristics can affect performance:

- ✓ Complex geometry

  Improve performance by ungrouping and removing the parametric associations of copied objects.
- ✓ Multiple parametric relationships
- ✓ Multiple constraints

  Minimize the constraints within a model.
- ✓ Linked files

  (See linking and importing)

4. Templates

- ✓ When setting a template, don't over load it with families.
- ✓ The standard template just needs to have the general/standard things which would be used on most if not all projects. Then anything else can be loaded in when or if required.

5. Linking and importing

- ✓ Minimize the number of linked or imported files in a Revit model.
- ✓ Only import in clean AutoCAD DWG's, make sure all unnecessary layers and blocks are deleted and DWG is purged and audited beforehand.
- ✓ Think about what's part of the DWG before you insert it into Revit try and avoid importing unnecessary data such as hatching or AutoCAD® specific linework such as construction lines.
- ✓ Try to avoid exploding the geometry imported from DWG files, as exploding will create a lot more additional elements.
- ✓ Only link essential DWG files into necessary views.

- ✓ Switch off visibility of 2D AutoCAD DWG's in perpendicular views. A 2D AutoCAD file linked into a plan view will show as collinear lines in elevation, causing performance degradation.
- ✓ Unload all links if they aren't being used and reload them when required.
- ✓ When working on large projects think about breaking the model into separate project models and then linking them into one single central file.
- ✓ Don't link or import unnecessary files or families into your model.
- ✓ When working in a linked file environment use the Wireframe or Shading display modes. Wireframe and Shading modes can be 3 times faster than the Hidden Line or Shading with Edges modes.

6. Views

- ✓ Minimize the view depths to avoid showing unnecessary information.
- ✓ Close hidden views, as any changes to the model done not only updated the current view but will also update any views affected by those changes.
- ✓ Turn off shadows in views and when printing unless absolutely necessary.
- ✓ When working in a 3D view, don't have shadows switched on, it will just slow the model down as it will have to redraw the shadows every time do something.

7. Families

- ✓ Create a family component instead of in-place families for repetitive components. When an in-place family is copied (which may itself be problematic), it makes an entirely new entity each time, as opposed to referencing the type information from the first instance.
- ✓ Limit the use of detailed/nested/parameterized families to necessities.
- ✓ Families require fewer resources than groups. Use families instead of groups, where possible. Groups are very powerful, but updating large quantities of group instances consumes significant computing resources.
- ✓ When creating a family in 3D think does it really need to be 3D, if it's only going to be shown 2D then you don't need a 3D view. Creating a 2D version of a family is 20% smaller than the 3D version, so if you had multiple families in a project the 3D version would increase the models size considerably.

8. Don't Over Model Things

- ✓ Don't use 3D geometry when detailing will be sufficient.
- ✓ Cut down on constraining within the model.
- ✓ When creating detail views, model hatches with filled regions rather than lines.
- ✓ Limit joined geometry in your model; don't just join something think does it need to be joined.
- ✓ Consider break up the model into multiple files, especially on large models. For example if you have a building with multiple wings model those in separate models and link them into central model.

9. Workset & Worksharing

- ✓ Use worksets to allow multiple users to work on a single model at any one time. This is a valuable tool which can help with workflow as different users to take ownership of different elements within model, allowing them to edit those elements before relinquishing them back to the central file.
- ✓ When creating a workset, leave the Visible by default in all views option selected. Clearing this option can render the workset completely invisible and problematic in multi-discipline workflows where feature visibility can be of paramount importance.
- ✓ It's a good idea to create a new local file from the central model every few days.
- ✓ Regularly compact the central and local files to reduce file size and memory usage.

10. Revit Warning Messages

- ✓ If Revit flags up with a warning as you're modelling don't just ignore it, as later on down the line you may find out that something has gone wrong.

11. Purge & Audit

- ✓ Just like in AutoCAD it's a good idea to run a *Purge* and *Audit* regularly to help reduce the files and reduce the chances of the file becoming corrupt.

The final thing really that is key so all the above should just fall into place and that's make sure all the users are properly trained on how to use Revit and make sure they follow the correct company standards.