AutoCAD Plant 3D Success -A Checklist Manifesto

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Class summary (and learning objectives)

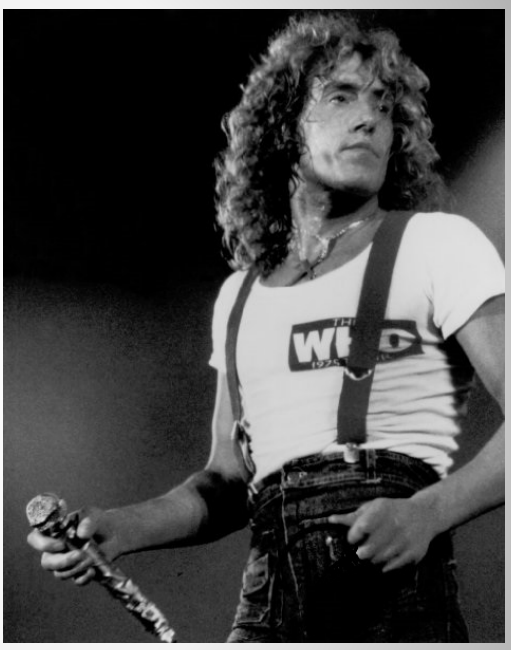
- Workflows and tips for getting a Plant 3D project underway successfully & using a "**checklist**" approach
- Best practices for project directory & drawing setup
- Incorporate Revit and Advance Steel models
- Tips on Plant 3D orthographics
- Workflow on working w/ large coordinates
- Isometrics at large coordinates

Who am I?

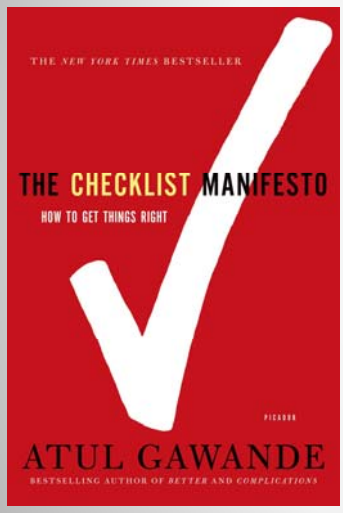
- 3 years as technical support specialist at Autodesk
  - Focus on Plant Design Suite / AutoCAD Plant 3D
- Instructor at Autodesk Technical Academy
- Licensed architect for 20 years
- CAD manager / project manager
- AutoCAD production for 25 years
  - First ACAD workstation

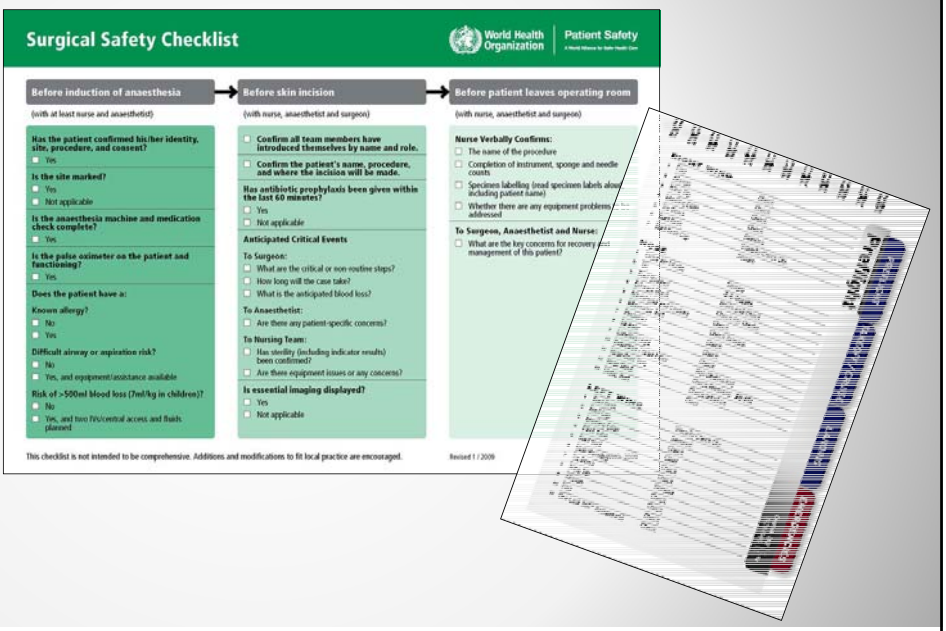
Who are you?

- Plant 3D experience level?
  - New to Plant 3D, <1 year
  - 1 – 3 years
  - over 3 years



The Checklist Manifesto





The (Plant 3D) Checklist Manifesto

Use checklists with AutoCAD Plant 3D (or P&ID, or Plant Design Suite) to help *get things right!*

Plant 3D-related checklists can help ensure the life and wellbeing of a Plant 3D project.

The (Plant 3D) Checklist Manifesto

What a checklist <u>is</u>:

- A tool to recall important steps & considerations.
- A tool to help set standards and get consistency between users.
- A time-saver.
- A tool to build on, revise, and expand.

What a checklist <u>is not</u>:

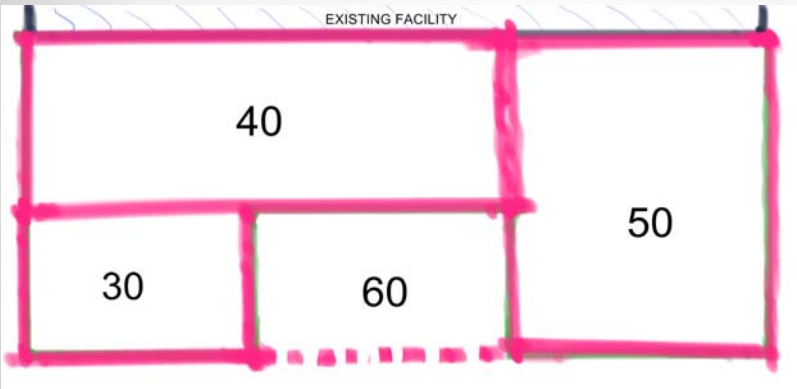
- Not a replacement for training.
- Not a replacement for whitepapers/references.
- Not a challenge to anyone's skill or experience.
  - (Some surgeons opposed the use of checklists).

Start your engines

- ❑ Demo project available online
- ❑ Detailed class handout online
- ❑ Slides are "quick reference" checklists.
  - ❑ Handout has same 'quick reference' checklists and *detailed, expanded* checklists, notes, and links.
- ❑ Demos also available as Screencast videos
- ❑ Q & A at end of presentation

1. Plant 3D project setup (Part One – Preflight)

- 1. Know project scope, identify Plant areas.



1. Plant 3D project setup (Part One – Preflight)

- 1. Know project scope, identify Plant areas.
- 2. Identify the project team.
- 3. Database, networking decisions.
- 4. Identify Plant 3D Administrator.
- 5. Identify training needs.
- 6. Use (certified) hefty hardware.
- 7. Use current, updated software.
- 8. Project directories, drawing setup.

2. Using a Plant Coordinate System (PCS)

- 1. Origin at 0,0 and is the control point of the Plant project.
- 2. All model drawings in relation to PCS, so everything inserts at 0,0 origin.
- 3. WCS with majority of modeling orthogonal to X and Y axis.
- 4. Model at actual Z elevations.
- 5. For modeling at an angle to the PCS, use a UCS or SNAPANG.

3. Project directory structure

- 1. Keep everything project-related in the project directory.
- 2. Can create the entire directory structure before the first drawing.
- 3. Create folders by Plant areas, disciplines, services, or other specific needs of the project.
- 4. Create dedicated folders for non-P3D drawings.
- 5. Avoid moving and renaming directories by planning ahead.
- 6. Be aware of how Project Manager (PM) & Windows Explorer (WE) interact.

4. Project Manager versus Windows Explorer

- 1. Use Project Manager (PM) to create project subdirectories.
- 2. Removing a directory or drawing in PM does not delete in WE.
- 3. Renaming directories in PM does not rename in WE.
- 4. Renaming drawings in PM does rename in WE.
- 5. Moving directories & drawings in PM does not move them in WE.
- 6. In PM, ‘copy drawing to project’ doesn’t always ‘copy’.
- 7. Production Isometrics and orthographics have their own tabs in PM and dedicated folders.
- 8. Quick Isometrics do not show up in PM, only WE.

5. Drawing organization and use of XREFs

- 1. Place model drawings within the project directory.
- 2. Create layer(s) in drawings dedicated to XREF insertion.
- 3. In model drawings use XREFs as “overlay” references.
- 4. Create Area Master dwgs out of “attached” XREF’d design dwgs.
- 5. Create a Plant Master dwg entirely out of XREF’d Area Masters.
- 6. Create discipline or piping Master dwgs if multiple dwgs per area.
- 7. Use 0,0 insertion point for XREFs.
- 8. All Plant 3D source and Master dwgs could be setup in advance.

6. Using Revit models in a Plant 3D project

- 1. In Revit, use a project base point that corresponds to Plant 3D project 0,0 origin.
- 2. In Revit, an elevation view, set first level to actual Z coordinate.
- 3. In Revit, export 3D view to DWG format, ACIS solids.
- 4. Place this DWG in the project directory.
- 5. Use this DWG as an XREF only.

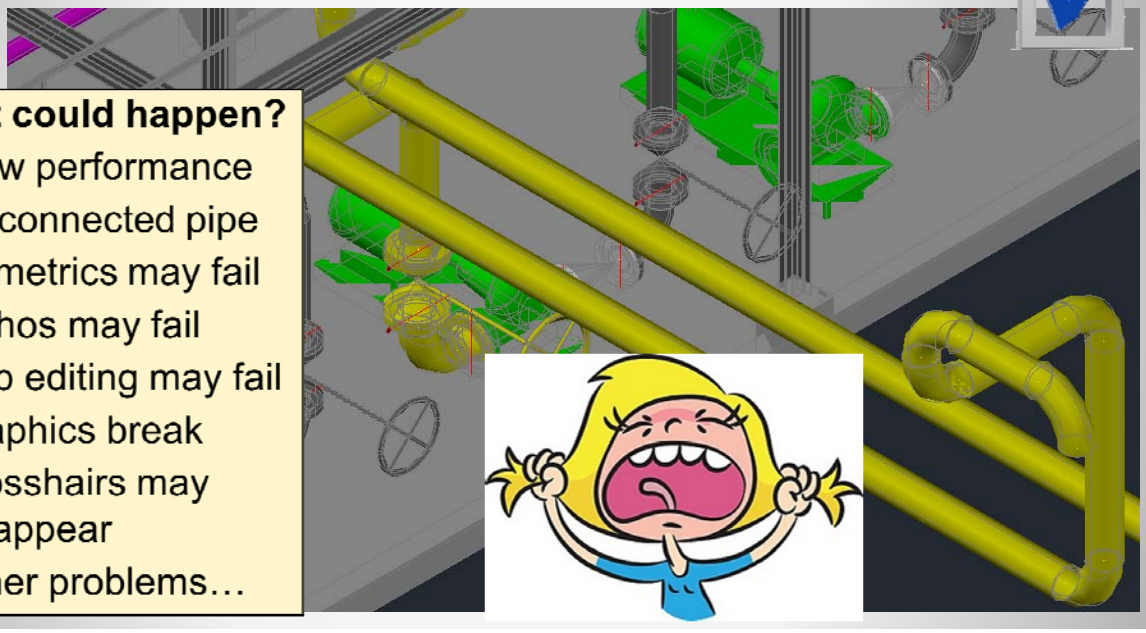
7. Using Advance Steel models in Plant 3D

- 1. In Advance Steel (AS), use matching 0,0 origin and coordinate system as the Plant 3D project.
- 2. Model at actual Z elevations to match Plant 3D project.
- 3. Place original AS drawings in Plant 3D project directory.
- 4. Otherwise, manage copies of AS drawings in project.
- 5. Use as XREFs only.
- 6. Install AS object enablers if needed.

8. Tips on Plant 3D orthographics

- 1. Keep source drawings/3D models in the project directory.
- 2. Don't move or rename source drawings.
- 3. If overwriting source drawing, use same file name.
- 4. Can generate orthos directly from Master drawings.
- 5. In an ortho drawing, avoid editing in modelspace.
- 6. Use one layout tab per orthographic drawing file.
- 7. Incorporate models from other products per proper workflows and file formats.
- 8. Develop custom ortho template(s) from existing default dwt.

9. Working with large coordinates, far from 0,0



9. Working with large coordinates, far from 0,0

- 1. Follow previous checklists 2, 3, & 5.
- 2. Create a Master SPCS drawing and a layer for XREF insertion.
- 3. Ascertain the point in SPCS that corresponds to the Plant control point (0,0 in PCS).
- 4. XREF the Master Plant drawing into Master SPCS drawing.
- 5. Move XREF so that the PCS point is positioned in the SPCS.
- 6. Rotate the XREF so that the Plant is at actual rotation.
- 7. Lock the XREF layer.
- 8. List properties of XREF to get X and Y distance from SPCS 0,0.

10. Isometrics at large coordinates

- 1. Keep all Plant 3D models in the Plant Coordinate System.
- 2. Determine the X and Y distance from 0,0 in PCS to the corresponding point in SPCS.
- 3. Determine the rotation angle of the plant on the site.
- 4. When running an isometric, use Advanced Options and enter the override location.
- 5. Or set these model placement adjustments as the default in project settings.

11. Plant 3D project setup continued (Part Two – Inflight)

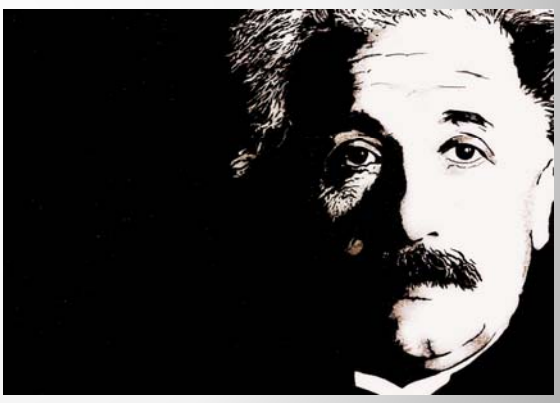
- 9. Configure & customize cautiously, and methodically.
- 10. Specs/Catalog customization.
- 11. Regular project maintenance & backups.
- 12. Good team communication!
- 13. Utilize Reseller & subscription benefits.
- 14. Update your checklists. Recalibrate.

More Checklists…

- 12. Learning Resources (see class handout).
- 13. More checklist ideas (see class handout).
- 14 - ?. Your own checklists!

"The more I learn, the more I realize how much I don't know."

-Albert Einstein



Q & A

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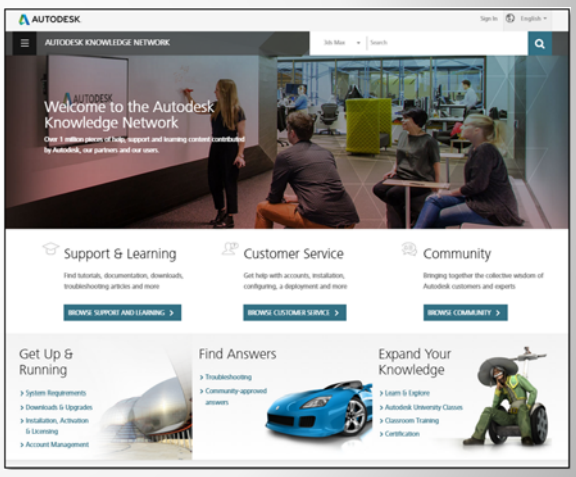

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