

AutoCAD Plant 3D Success -A Checklist Manifesto

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AUTODESK UNIVERSITY 2015

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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



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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 

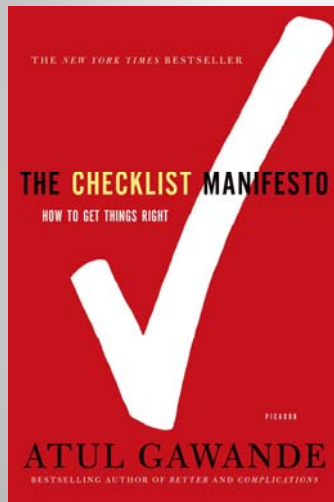


Who are you?

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



The Checklist Manifesto



Surgical Safety Checklist World Health Organization Patient Safety

Before induction of anaesthesia (with at least nurse and anaesthetist)

- Has the patient confirmed his/her identity, site, procedure, and consent?
 - ☐ Yes
 - ☐ No
- Is the site marked?
 - ☐ Yes
 - ☐ Not applicable
- Is the anaesthesia machine and medication check complete?
 - ☐ Yes
 - ☐ No
- Is the pulse oximeter on the patient and functioning?
 - ☐ Yes
 - ☐ No
- Does the patient have an:
 - Known allergy?
 - ☐ No
 - ☐ Yes
 - Difficult airway or aspiration risk?
 - ☐ No
 - ☐ Yes, and equipment/assistance available
 - Risk of >500ml blood loss (Drilling in children)?
 - ☐ No
 - ☐ Yes, and two 1500ml access and fluids planned

Before skin incision (with nurse, anaesthetist and surgeon)

- Confirm all team members have introduced themselves by name and role.
 - ☐ Confirm the patient's name, procedure, and where the incision will be made.
- Has antibiotic prophylaxis been given within the last 60 minutes?
 - ☐ Yes
 - ☐ Not applicable
- Anticipated Critical Events**
 - To Surgeon:
 - What are the critical or non-routine steps?
 - How long will the case take?
 - What is the anticipated blood loss?
 - To Anaesthetist:
 - Are there any patient-specific concerns?
 - To Nursing Team:
 - Has sterility (including indicator results) been confirmed?
 - Are there equipment issues or any concerns?
 - Is essential imaging displayed?
 - ☐ Yes
 - ☐ Not applicable

Before patient leaves operating room (with nurse, anaesthetist and surgeon)

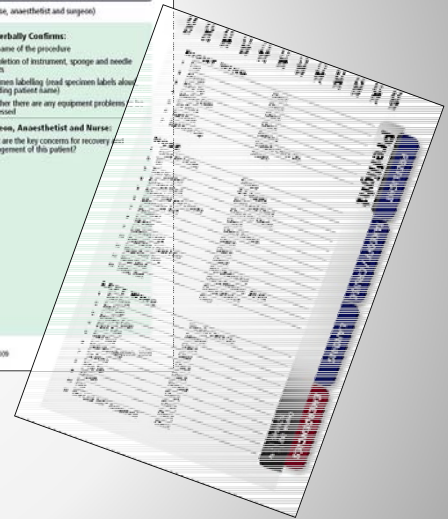
Nurse Verbally Confirms:

- The name of the procedure
- Completion of instrument, sponge and needle counts
- Specimen labelling (oral specimen labels allow including patient name)
- Whether there are any equipment problems addressed

To Surgeon, Anaesthetist and Nurse:

- What are the key concerns for recovery management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged. Revised 1/2008



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 is:

- 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 is not:

- 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

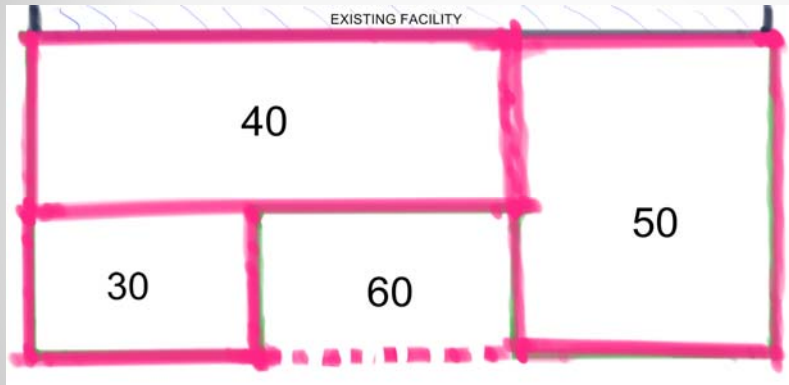
- ☐ Demo project available online
- ☐ Detailed class handout online
- ☐ Slides are “quick reference” checklists.
 - ☐ Handout has same ‘quick reference’ checklists and *detailed, expanded* checklists, notes, and links.
- ☐ Demos also available as [Screencast videos](#)
- ☐ Q & A at end of presentation



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



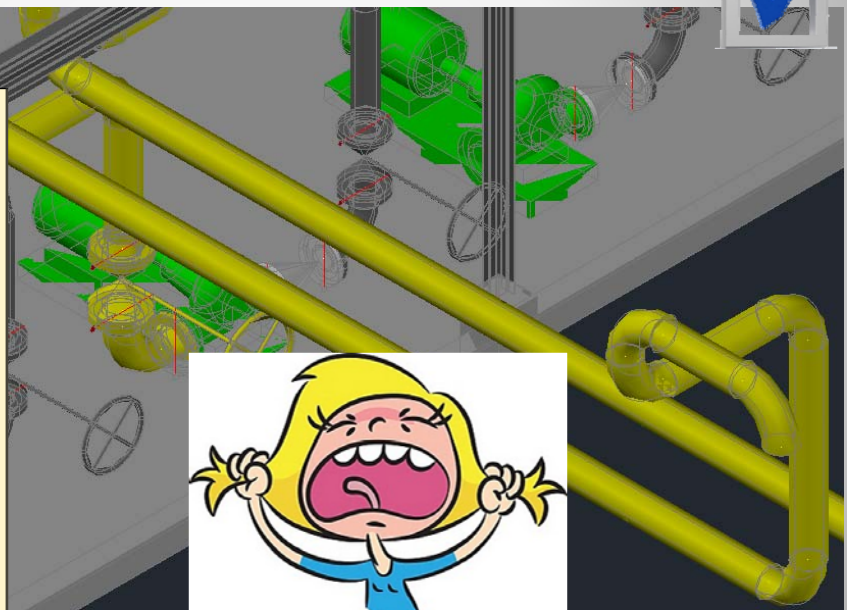
- ☐ 1. Keep source drawings/3D models in the project directory.
- ☐ 2. Don't move or rename source drawings.
- ☐ 3. If overwriting source drawing, use same file name.
- ☐ 4. Can generate orthos directly from Master drawings.
- ☐ 5. In an ortho drawing, avoid editing in modelspace.
- ☐ 6. Use one layout 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



What could happen?

- Slow performance
- Disconnected pipe
- Isometrics may fail
- Orthos may fail
- Grip editing may fail
- Graphics break
- Crosshairs may disappear
- Other problems...



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.

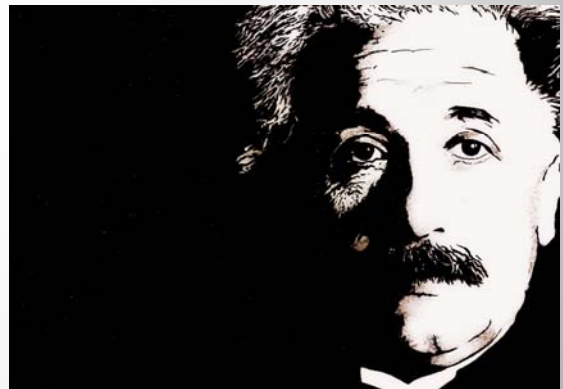


More Checklists...

- ☐ 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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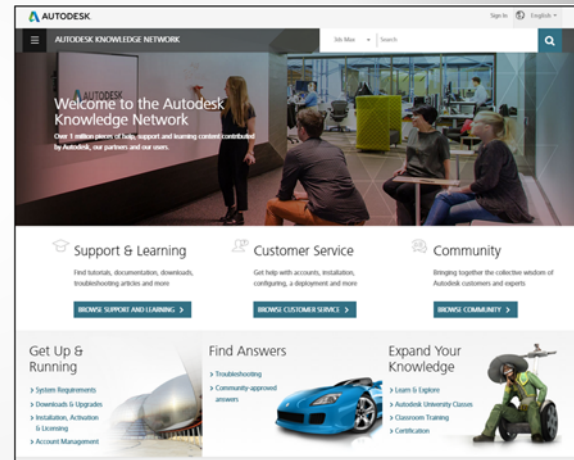
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