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Creating user instructions for new graphic process

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Abstract

An agricultural equipment manufacturer has started the implementation of a new Product Lifecycle Management system and new CAD software, which was brought along. In order to successfully complete implementation of new software, a new process has to be created. Thus, new user instructions have to be made. The Product Lifecycle Management system is Windchill and CAD software is CREO Illustrate and Arbortext isodraw.

The task and objective are to prepare a process and a chart for it. As well as, detailed user instructions have to be written for the parts book team of the company. User instruction had to follow global company's graphic standards.

As a research method trial and error problem-solving method was used. In this case, the start and the end points were known, the steps from start to end had to be defined. The task and objective were fulfilled, which means process and user instruction were successfully implemented into the company's activity.

Keywords/tags (subjects)

CREO Illustrate, Windchill, graphic process, user instructions

Miscellaneous

Contents

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Acronyms

PLM system - Product lifecycle management system

.cgm - CAD file type

.c3di - CAD file type

.iso - CAD file type

Toolbar - Graphical control element in the software

Infoshare – Database for drawings

.Tiff - a computer file format for storing raster graphics images

Group unit – a group or parts which belong together and are shown in one graph

Workspace – A Workspace is a private area where you can manage objects and perform data management operations.

PTC – Parametric Technology Corporation

1 Introduction

The thesis was done in the Parts Book team at a company, which produces agricultural machinery. The team's duty is to create and maintain the spare part books. The team generates the required data and graphics, which are needed in the spare part books. The company is a subsidiary company of an agricultural equipment manufacturer corporation. The corporation has started successful implementation of a shared product lifecycle management (PLM) system into the company's processes. Recently every subsidiary company of the group has had its separate product lifecycle management system.

Data transparency, communication and information exchange within the concern are one of the most important success factors in the current growing market competition. Consequently, when all members of the group use a common product lifecycle management software it makes the process of monitoring and realization of global projects easier and faster in comparison with the use of isolated product lifecycle management systems. With united software systems, the procedures of following similar business frameworks are simplified and put in order. The new software will be fully executed from the beginning of 2017.

The new corporation product lifecycle management system is "Windchill", which was developed by American software provider Parametric Technology Corporation (PTC). The best performance with "Windchill" is reached with the use of software from the same developer, such as "CREO Illustrate" and "Isodraw", which are both 3D technical software. (PTC CREO Illustrate, 2016) As a result of the implementation of new software these days, there is a need in new user instructions. (CAD Software, 2017)

1.1 Objective and research question

The objective of the thesis is to create instructions for the new graphic creating process, which contains new tools from the Parametric Technology Corporation. The software processes and tools were explained and described, which are needed to be made/used in order to achieve certain goals and results. The result has to satisfy the group standards that engineers would be able to create proper spare part books with the help of instructions of created.

Created instructions would assist team members through the routine of software usage in a correct and uniform way. Moreover, these instructions could be used for the further education of new workers in the creation of graphic processes.

Additionally, the instructions have to be written with clear and simple manner, in order to minimize and avoid possible misunderstandings, simplify and accelerate learning progress.

The objectives of the thesis were achieved by answering the following questions:

- How to create user instructions?
- What is a good process?
- What are good instructions?

By answering these thesis questions, it was possible to create graphic creating process with its diagram and user's instructions for spare parts books.

1.2 Research method

There are various scientific and nonscientific methods. Scientific methods, such as qualitative, quantitative, descriptive and analytical have to consist of formation of hypotheses. (Kothari, 2009) The hypotheses are made between collecting all the necessary data for future research and making an experiment. The experiments are held in scientific methods to check the hypothesis. After testing the hypothesis, different adjustments, reevaluations, and changing of the previous hypothesis are done. This cycle is repeated until justification if the theory was right or wrong. (Shavelson & Towne, 2002)

However, during this research, the case, when the method does not work or test might be failed is not accepted. Thus, the nonscientific method should be used, where experiments are playing a crucial role and there the hypothesis does not exist. The nonscientific method is intuition, consensus, authority, casual observation and informal logic. However, to use only one of them would not give an accurate result, which means the combination of those methods has to be used.

In order to achieve thesis´s goal, trial and error problem-solving method was used, during the creation process of user's instructions. The method was chosen due to

given circumstances. The initial task, which was to create user instructions for the two software, which he could use to achieve the goal. The trial and error problem-solving method suited the best in these conditions.

In order to apply this research method, the information was collected during process testing, made by author's and team members feedback.

The thesis considers the case when engineers in a company have a certain goal in the graphic process. For example, there is a starting point, such as raw material or set of requirements, and the needed final result. Thus, engineers have a problem/a task to create an algorithm for getting from starting point to required result. This could be solved through repeated tests of different strategies until needed/wanted result would be obtained. Such problem-solving method is called "trial and error". In other words, "trial and error" is defined as a method for achieving a proper solution or sufficient outcome through testing different approaches until the error is determined and removed, which is based on expert knowledge and practical experience rather than on theoretical basis. (Trial and error, 2013)

The main idea of trial and error problem-solving method is to check new strategies, declining options, which would lead to invalid output and not to sufficient results. The method contains two major elements:

1. Researchers constantly testing new alternative strategies and keep them, in case these strategies provide a positive outcome.

2. In case if there is an outcome drop because of strategy variation, the responsible person should begin a test of new random strategy, until the positive output is achieved. (Young, 2009)

Usually, this method is applied, when there are few possible correct solutions. And vice versa, this technique is not appropriate for an issue with a single possible solution. Mostly this method is used when there are no tight time frames.

Trial and error are one of the best approaches to acquire knowledge and experience, since a person studies and applies every method. However, this method is not appropriate for cases, when too many potential solutions are available. The possibility of testing all methodologies decreases, thus the probability of choosing reasonably best solution reduces.

There are few important aspects for applying “trial and error”. The method was created to answer the question “How?” and no “Why?” The method is suitable only for some fields, such as mechanical or production engineering, where the emphasis is process and outcome, but not the reason.

In general, this method concentrates on finding the solution through repeating attempts. Advantages of this strategy are that it does not require a lot of knowledge, although might involve a lot of patience. And an obvious disadvantage is that it has a limited number of fields of applications. (Vennapoosa, 2006)

1.3 Importance of the study

The parts book team gets new tools with which they have to start working with. And with this thesis will help them start working with the tools the correct and uniform way. Until now there hasn’t been any global process on how to create the needed graphic. Every company has used their own software’s and standards. With this new product lifecycle management system and tools, they want to that all companies in the group work the same way.

With these instructions, the company will work in a uniform way. This is already one step closer to a global standard. This thesis can then also be used as a base for the global standard.

The old tools will also be unavailable when the licenses run out. So, it is good to make the switch for to the new tools as easy as possible.

2 Theory

2.1 What is a good user instruction manual

User manuals are created as guidelines for users, which include instructions on how to operate in certain software. The Proper manual describes software application´s features and clarifies how to work efficiently with those. (How to create a user manual, 2016)

In the beginning, the target audience has to be determined. Thus, the actual purpose of usage and users´ degree of technical perception have to be identified. In order to provide clear and optimal user manual, it is necessary to use simple language with short sentences, to avoid misunderstanding and confusions. It is important to use the active voice when writing user manuals, thus verb and subject were mad clear for the reader. (Bodnik, 2015) Instructions have to be represented as a step-by-step algorithm. To simplify manual´s reader, it should be avoided to write in textbook format, use color emphasis for quicker and more effective information retrieving. Understanding of instructions is easier with an optimal number of pictures, bullet points, and diagrams, with the usage of a lot of white space and readable fonts. Moreover, highlighting of possible tricky places with warnings and cautions helps to emphasize special situations.

Hierarchically organized information helps to improve quality and speed of instruction acquisition. It includes chronological separation, the popularity of issue, functional deviation and proficiency level of the user. In general, when the reader is not able to get needed knowledge fast from manuals, the efficiency of user and software handling have a significant drop.

Things to avoid, when writing manuals:

- Passive voice,
- Long paragraphs,
- Cross-references,
- Dead-ends,
- Slang,
- Assumptions about reader´s proficiency.

In the case the manual is longer than 10 pages, the clear content of the guideline had to be provided. (Dr. Hodgson, 2016)

To improve understandability of manual, the command form had to be used, when explaining different actions. For example, “Choose a command from the list and press [ENTER]”. In addition, it is recommended to use illustrations to highlight crucial areas, it would demonstrate reader situations he will manage, previews and final results. (McMurrey, 2015)

All in all, writing of manual should be kept precise, simple and clear, this way to provide for reader smooth and unproblematic software operating.

2.2 Creation of a process and its requirements

To create a good process, it is crucial to understand what it actually is. The process is defined as:

“…a series of steps and decisions involved in the way work is completed.”

(Baird, 2014)

However, this definition cannot be full, due to the lack of main framework’s characteristics. One of the most important characteristics of the process is time organization, which determine process’s timing. Moreover, attention has to be paid on the variability of the process. (IFRS, 2010) When creating a process, different situations should be considered in order to make the process suitable for various circumstances. The last but not the least critical factor of a process is interdependency. It stands for mutual dependence between two groups or more. In other words, a process should function with various backgrounding.

Every good process obtains 4 main aspects:

- The flowchart of the process is complete and consists of series of stages and decisions,
- Variable model times (examples of possible processing times),
- The algorithm of times and dependencies between process elements,
- Allocation of resources (from where and how much resources are used). (Baird, 2014)

There is a common framework, which describes how to create a process. It consists of 8 basic steps:

1. Define a task, for which process should be created:
   In this step, it is critical to define the process, determine how detailed it should be and find out if sub-processes are needed.
2. Create detailed instructions how to proceed with a given task:
   Here step-by-step instructions are required from the starting point to the end point.
3. Find out repeating tasks and define variables:
   It is important to define repeatable and describe instructions for variables.
4. Optimize the process framework:
   Checkup what has been done already and go through the process once again, in order to spot pessimal parts of the process. Simplicity is the key factor during this step.
5. Simplify the instructions:
   Some people tend to pay higher attention to details when at the same time others do not pay any attention to small details at all. Necessary details have to be included, existing copies need to pare down. Documents have to be written as brief as possible, that bigger amount of readers gets a clear understanding of the process.
6. Distribute the process:
   The created process has to be shared not only with employees, who will work on it but as well with all other workers, who will interact with this process. In this case, it is better to over-do than under-do.

7. Implement created process:
   This step includes testing of the created instructions, proof checking that everything functions properly, as it was described in the document.
8. Repeat and memorize created instructions:
   Follow written instructions and memorize it. It helps to carry out the task effectively. (Nix, 2014)

2.3 Introduction of the used software

During the work on the thesis 3 main software were used:

- Windchill,
- Isodraw,
- CREO Illustrate.

These software's were adjusted according to the company's requirements and needs. All three programs were developed by PTC. The whole group uses the same programs, in order to improve and keep up on the high level of data flow. However, during the period of switching software's, every company of the group might need different times for the full switchover.

The first program is Windchill, which was developed to control and manage company's processes and data more accurate and effective. It is a PLM system which works through the Internet browser. The major advantages of this system are that all the product information is stored in a single source, shorter time for product engineering, decrease of mistakes, reducing the number of defects, complete integration with CREO & Isodraw and corrections and a general significant increase of work efficiency. (Windchill, 2016) (Windchill PDMLink, 2016)

IsoDraw and CREO Illustrate might seem as similar programs, however, CREO Illustrate is used only for managing 3D illustrations for its further usage in technical manuals in various formats, although it is not possible to draw any parts in CREO Illus-

trate. At the same time, IsoDraw is used to develop 2D and 3D illustrations, it updates and creates high-quality technical drawings. In other words, it is possible to import 3D models for converting them into the 2D format. This program reduces time-to-market by handling technical drawings faster, replaces long and complicated text with illustrations, automatically updates the drawing according to linked CAD files and it delivers files in various formats. IsoDraw is especially suitable for creating catalogs, instructions manuals, and spare part books. (Servigistics Arbortext Isodraw, 2016) IsoDraw contains following features, such as:

- Specially designed tools for perspective drawing (callout and shaft tools),
- Macro language to atomize the process,
- Functioning with raster graphics and photos,
- Fulfilled library with over 2200 standard parts,
- 2D and 3D animations for highlighting drawing's features and animate the process demonstration,
- Associative files between CAD and graphics software. (Arboetext IsoDraw, 2016)

However, CREO Illustrate is concentrated on combining 3D drawing with concomitant CAD information in order to supply configuration-specific graphical data. This information is used for operations, service, and maintenance. CREO Illustrate help customers and service staff to understand complicated technical illustrations easier and makes it more clear for them. (PTC CREO Illustrate, 2016) In particular, CREO Illustrate has next features:

- Numerous illustration tools;
- Publishing and export alternatives (formatting, vector illustrations);
- Sequencer capabilities (simplified and developed procedures);
- Alternative CAD usage for current 3D technical drawings and animations;
- Creation of illustrated part catalogs and call-outs;
- Generation of 3D animations
- Illustration of several parts in same illustration file;
- Various language support;
- Full integration with PLM system. (PTC CREO Illustrate, 2016)

3 Company graphic standards

When creating the Exploded view drawings, there are company's graphic standards which have to be followed. Below there is a list of things the corporate graphic standard includes:

- Line types (solid, dashed, dash dot),
- Line thickness,
- Font of text,
- Size of the text,
- Callout type,
- Callout line thickness,
- Callout size,
- Assembly callouts,
- Size of drawing area,
- Graphic identification number and position,
- Information about direction of the "front" of object,
- Orientation of the model,
- Component display,
- Amount of allowed support geometry in graphic,
- Kits accessories in graphic,
- Use of safety decals.

To make sure everyone follows the graphic standards the configuration files for Creo Illustrate and Isodraw were created. In these files, all the settings are made according to required standards. By using these configuration files, the risk mistakes and using wrong settings is minimized when creating the Exploded view drawings. Moreover, the configuration files erase lines, callout types, Orientations etc, which are not needed. Thus, it decreases the risk of using unappropriated settings by accident.

The locations where the configuration file has to be placed are:

- The file path for CREO illustrate is

C:\Users\xxxxxx\Appdata\Roaming\PTC\Illustrate

- The file path for Isodraw is

C:\Users\xxxxxx\Appdata\Roaming\PTC\Isodraw\Preferecnes

Where *"xxxxxx"* is the computer username.

When bringing the new configuration files to the locations, the old files have to be replaced.

As well as, a new toolbar was created for CREO Illustrate. The toolbar contains all the functions at the same place, which are needed In CREO illustrate. That simplifies the process for users.

The toolbar can be seen in Figure 1.

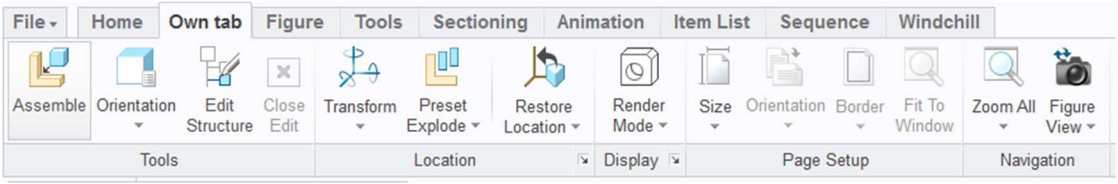

Figure 1. Creo Illustrate toolbar (Source: CAD Software screenshot)

4 The new process

Due to the implementation of new tools to company's activity, new processes have to be created with a list of its tasks. Every software follows different goals, hence it will consist of different tasks, such as:

- Windchill
    - Download 3D models from Windchill to personal computer,
    - Upload Exploded view drawings (.c3di file) back to Windchill.

- Creo Illustrate
    - Choose the right orientation for the 3D models,
    - Combine and separate parts into the 3D models,
    - Create exploded view models (Separate all parts in order make all fully visible),
    - Scale 3D models over whole drawing area,
    - Save file into .cgm file format,
    - Save file into .c3di file format.

- Isodraw arbotext
    - Add Axle lines (demonstrate the parts' connection),
    - Place part correctly in the drawing area,
    - Add annotations to the parts (Give all parts a numerical order),
    - Add image identification number (Every created graphic is given a unique identification number),
    - Save file into .tiff file format,
    - Save file into .iso file format.

The sequence of creating the new process is demonstrated in Figure 2.

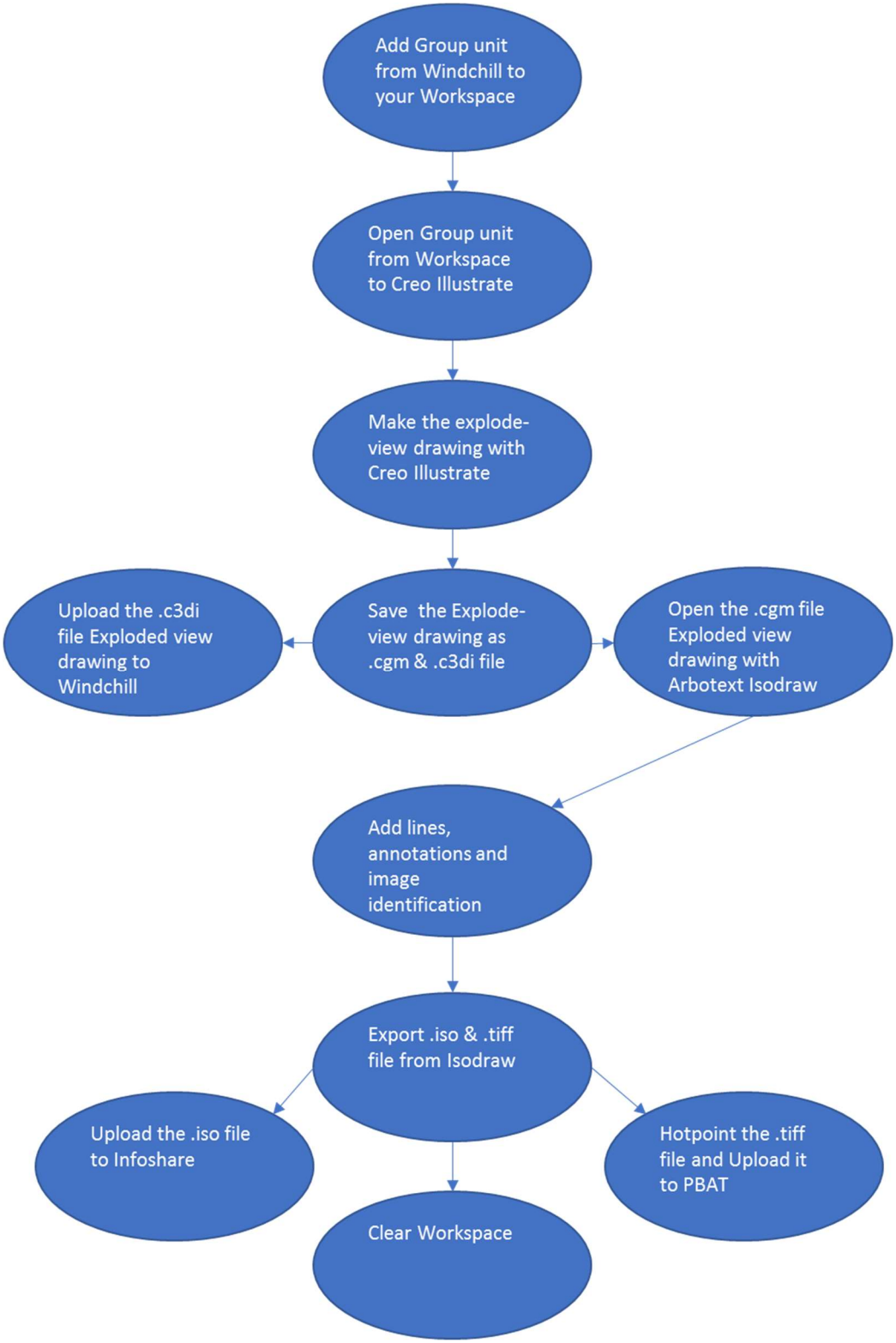

Figure 2. Process chart (Adapted from confidential source)

5 Working process

Before starting this work, the knowledge about the creation of user instructions and processes was not yet acquired. In order to proceed with this, work, existing manuals were studied and research was made about instruction's requirements and a process creation.

At the same time, the experience was not gained yet in Windchill, CREO Illustrate, and Isodraw. To correct this disadvantage and become fluent in the software, employees had to spent approximately a month to gain knowledge about software. The software training was taken, which was held by professionals. However, before starting the training, software was studied independently and as a consequence of that, the practical questions were revealed before training sessions about software's capabilities, such as:

- Are certain things possible to do with this software?
- What is the best way to do these things?
- What is the feedback about this software from other team members?

After the training was complete and the process with the user instructions was created, the need of receiving feedback appeared. It was important to find all existing mistakes and bugs in the instructions. Therefore, the instructions were tested by colleagues. After testing of the instructions, the feedback was collected and the needed changes to improve user instructions were done. This helped to make instruction more simple and clear.

6 Result and analysis

The instructions and the process were created with all relevant information and steps described, in order to create exploded-view drawings with all necessary details and according to the corporate standards. Company's stuff has testes created the new instructions and it went through successfully.

The objective of the work was to create:

- a process and its chart,
- user instructions for the spare part team,
- gain knowledge how to make a process and write user's instructions.

All objectives were achieved during work on the thesis and the host company received prepared user instructions and the process itself, which later could be used as a source when creating new unified corporate standards.

Moreover, all research question were answered during the creation of the thesis. The clear list for creating user instruction was written and described, according to the requirements and recommendations for the user instructions and new process.

During the handle of the research, it appeared that big amount of information had to be acquired before starting the creation of the process and user instructions. The main challenge was time consumption, due to lengthy training sessions and collection of the information. However, the set goal was reached and the requirements for creating a new process and good user instruction were followed, which led to the implementation of given working tasks. The outcome of the thesis was analyzed according to the main research objectives, which was a creation of new user instructions. The thesis consists mainly of practical aspect, therefore the analysis had to be short. The objectives and outcomes were matching themselves and all work was done according to the suitable theory.

7 Improvement suggestions

There are two main suggestions, which would improve and optimize the process in future. First, is to develop one of the software, where it would be possible to gather Isodraw and CREO Illustrate functions into one. Nowadays, engineers have to switch between this two software in order to complete their daily tasks. Second suggestion is to optimize work of two departments by setting correct orientation when the 3D model is created.

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Appendices

Appendix 1. User instructions

Opening drawing from Windchill to Creo illustrate

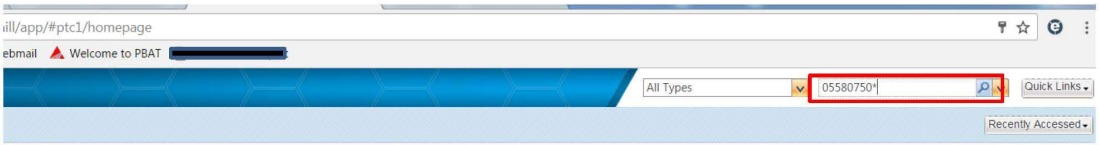
Creo illustrate instructions

Isodraw instructions

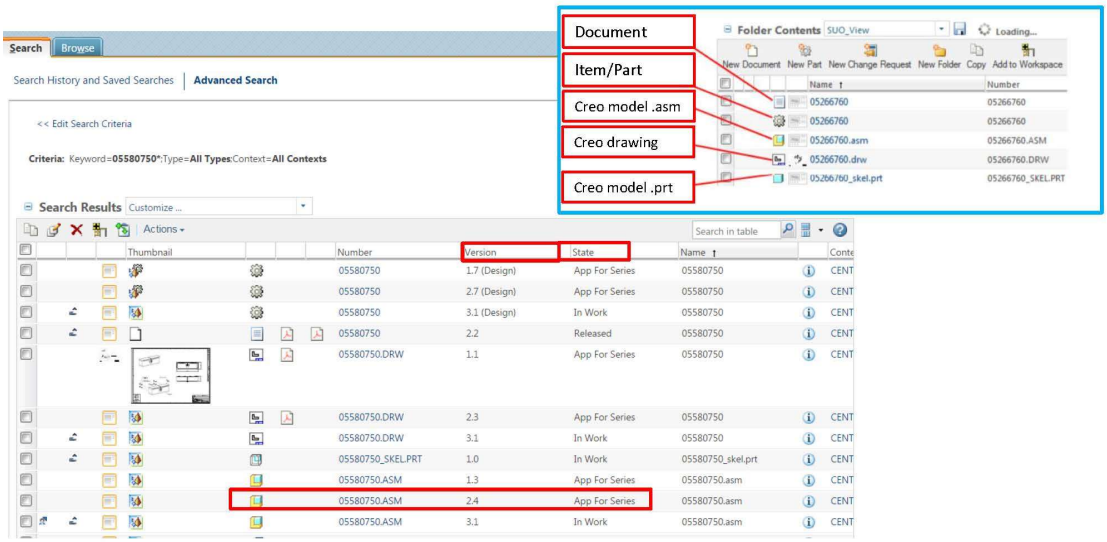
agenda

- Opening drawing form windchill
- Creo Illustrate insturctions
  - Correcting Orientation
  - Combining parts
  - Explode parts form each other
  - Finalizing part
- Isodraw instructions
  - Opening Isodraw
  - Opening a drawing
  - Item identification number & Drawing view orientation
  - Adding axle lines
  - Creating callouts
  - Saving/Exporting file

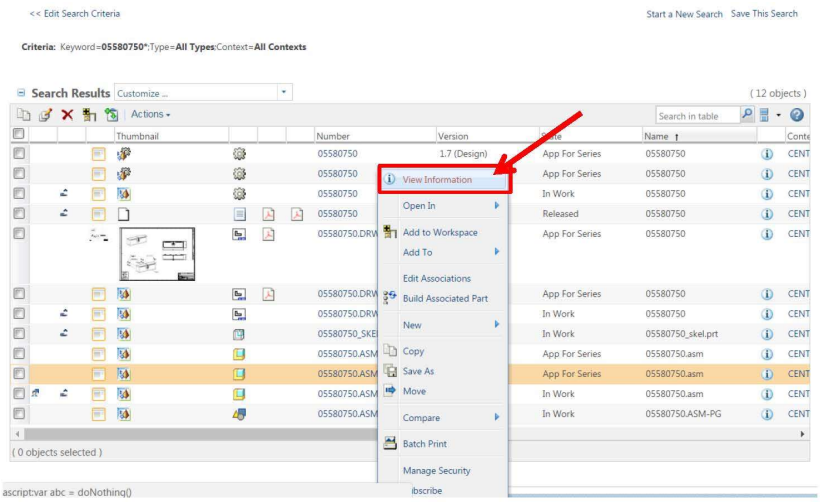
Open drawing from Windchill to Creo illustrate



- Search for the wanted Group unit on the top right corner in Windchill.
- Before searching, add to the end of the group unit the symbol (*).
- By adding (*) the search result will show all file formats, which start with the group unit.

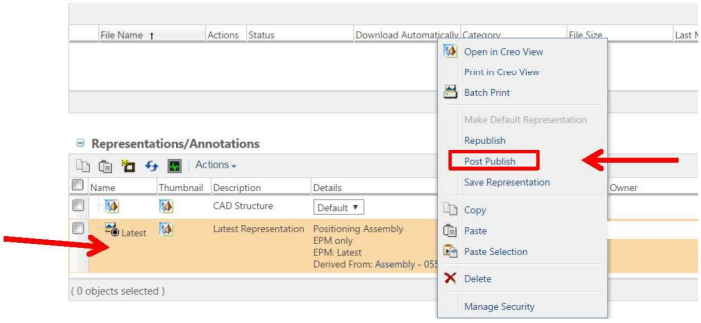


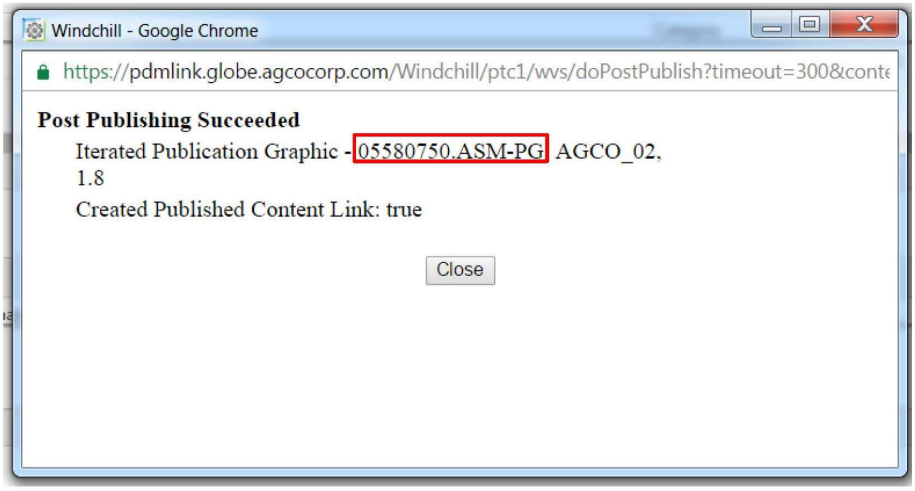
- Pick the correct Creo model from the search result
  - Choose the newest version, which is in ”**App for Series**” state
  - The Creo model files end with ”.asm”



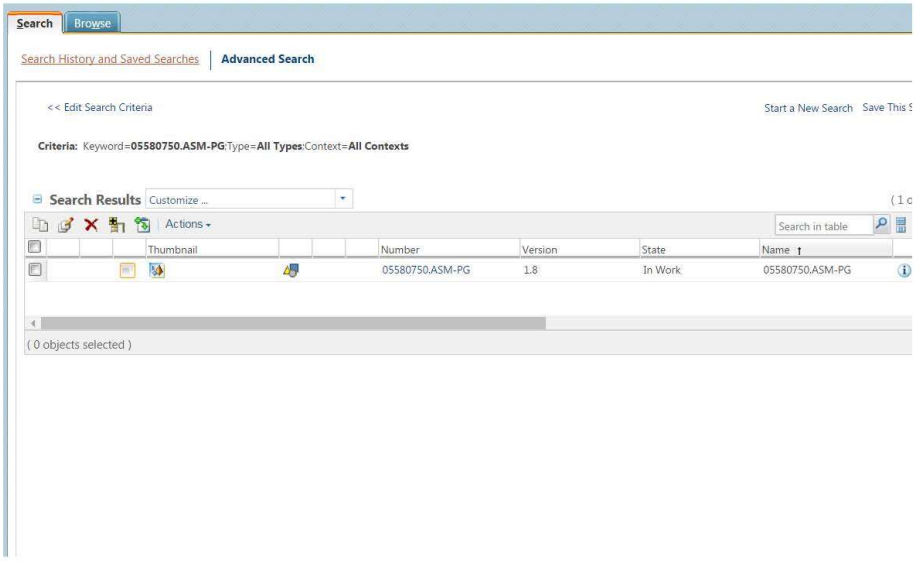
- Right click on top of the correct model and choose ”**View Information**”

- Move to the "**Content**" tab and scroll down to "**Representation/Annotations**"
- From there Right Click on top of "**Latest Representation**" and choose "**Post Publish**"



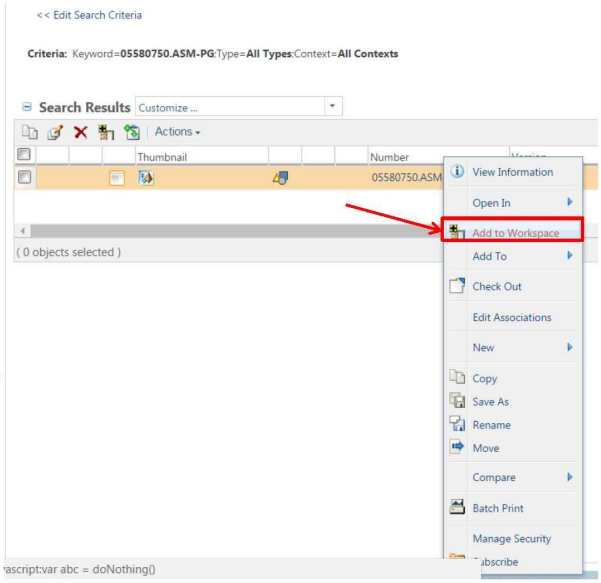


- When the "**Post Publish**" is done a pop-up window will appear
- Copy the part, which is marked in the figure above

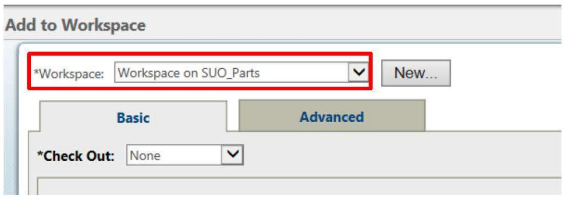


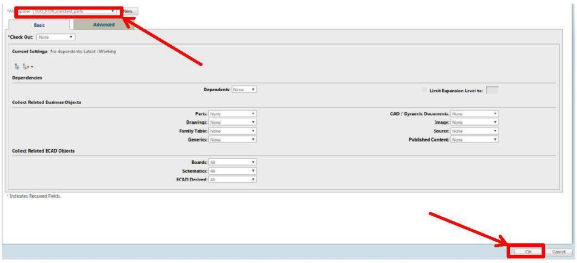
- Search for the copied object in Windchill

- Add the found file to your own Workspace
- Right click on top of it and choose ”**Add to Workspace**”



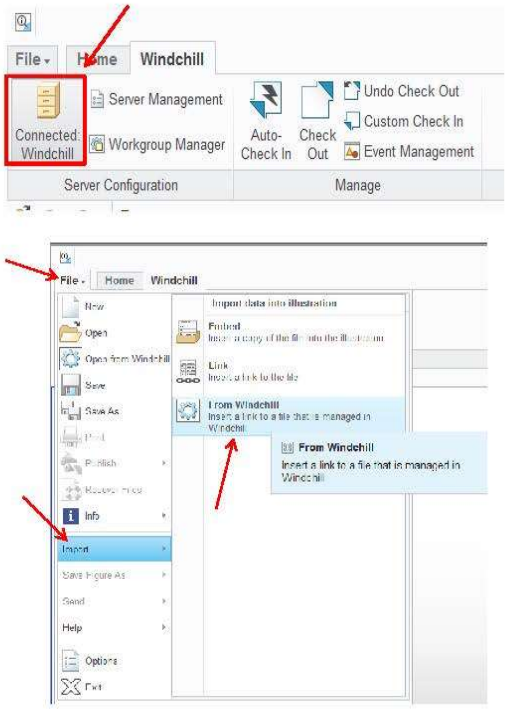
- From the opened window choose the Workspace you want to add the file to
- Confirm the Workspace by clicking ”OK”



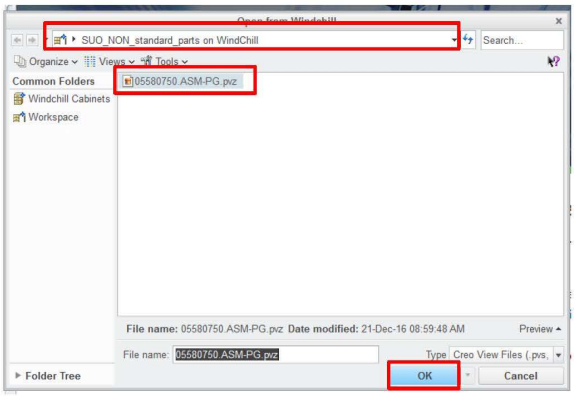


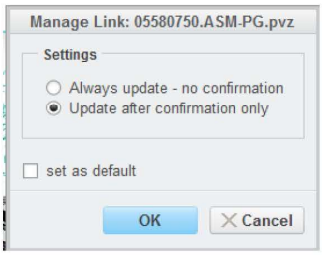
- Next, open Creo Illustrate.
- Check that Creo Illustrate is connected to Windchill.
- Open the 3D model from the path

"**File→Import→From Windchill**"

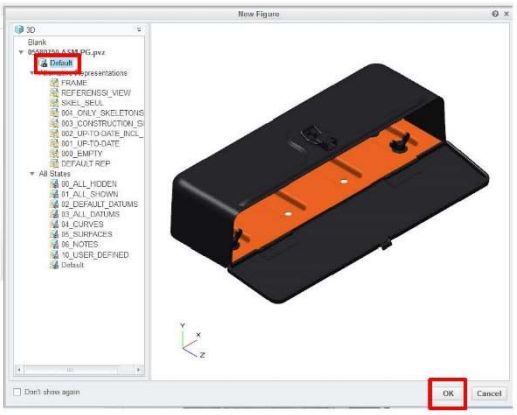


- In the next window choose the Workspace, to where the model was added.
- Choose the wanted model from there and confirm selection with the ”OK” button
- In the next window choose the prefered model update method and confirm with ”OK”





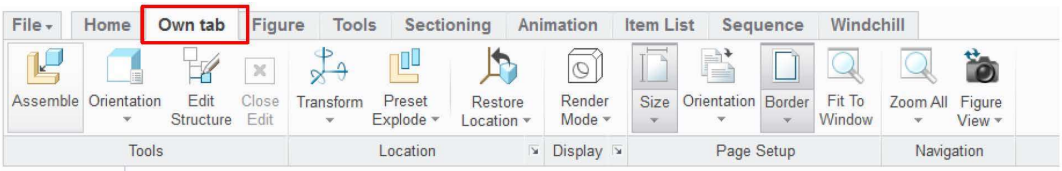
- In the upcoming pop-up window choose ”default” view and confirm with ”OK”



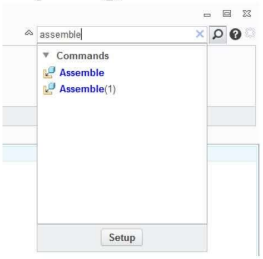
Instructions for Creo illustrate part

- Before starting the work, make sure the configuration file from the author is used to get all the correct settings

- The configuration file has to be placed in the following path:
  - **C:\Users\xxxxxx\AppData\Roaming\PTC\Illustrate**
- Where **xxxxx** is the username of the PC user

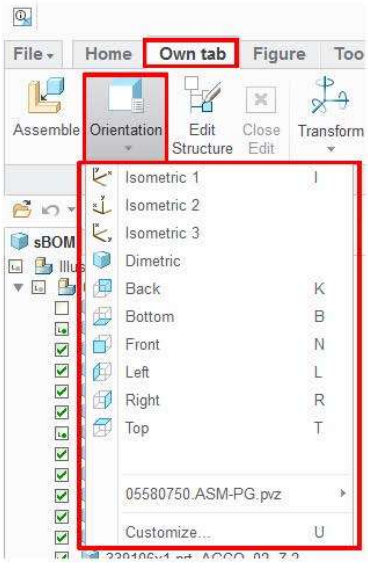


- All needed Creo Illustrate functions for this process, can be found in the created ”Own tab”
- It is also possible to search for all functions
- The search field can be found in top right corner

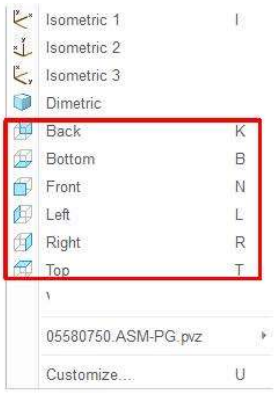


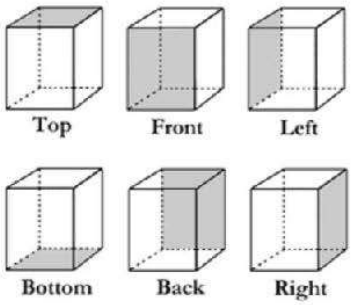
Correcting Orientation

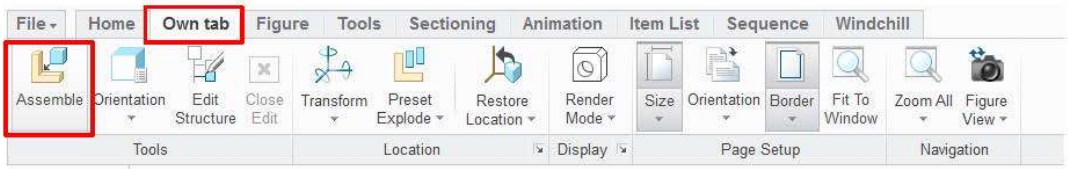
- First, check if the axonometric is correct
- Use function ”Orientation” for that



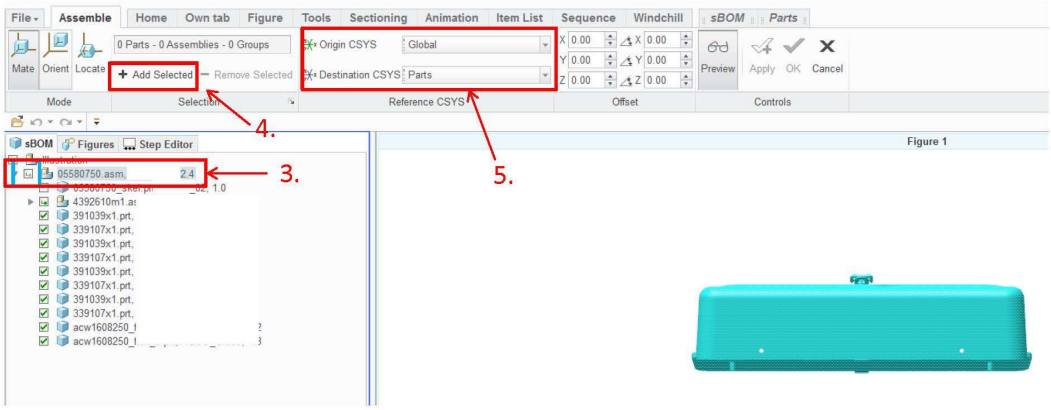
- First, choose one of the existing orientations, to check if it brings out the correct side of the model
  - (Back, Bottom, Front, Left, Right, Top)
- For example, choose the orientation "Back", as a result the back side of the object should be turned to viewer.
- If it doesn't show the right orientation, it has to be corrected.
- Example: Choose orientation "Back" and the model will be turned to the back position.
- All sides of the object could be used for that.
- If it is unknown which side is which, then open a bigger assembly and check it from there.



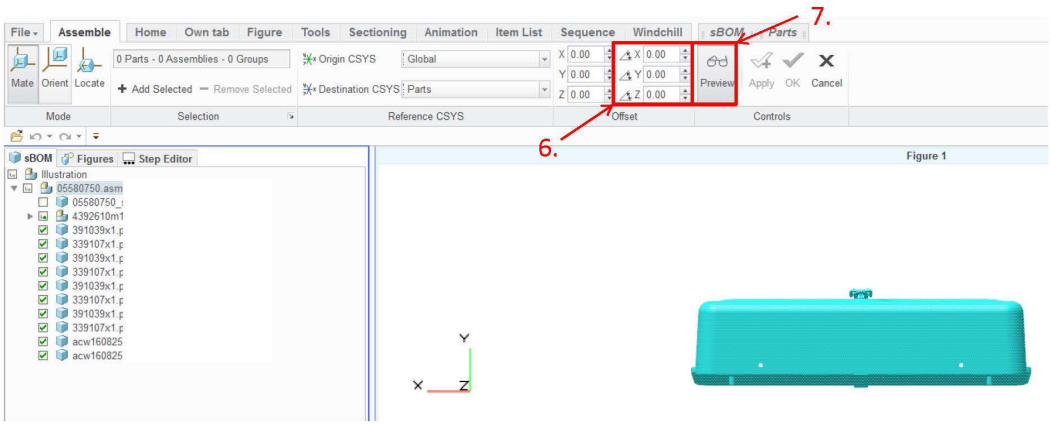




- If corrections need to be done, they are done with the "Assemble" function

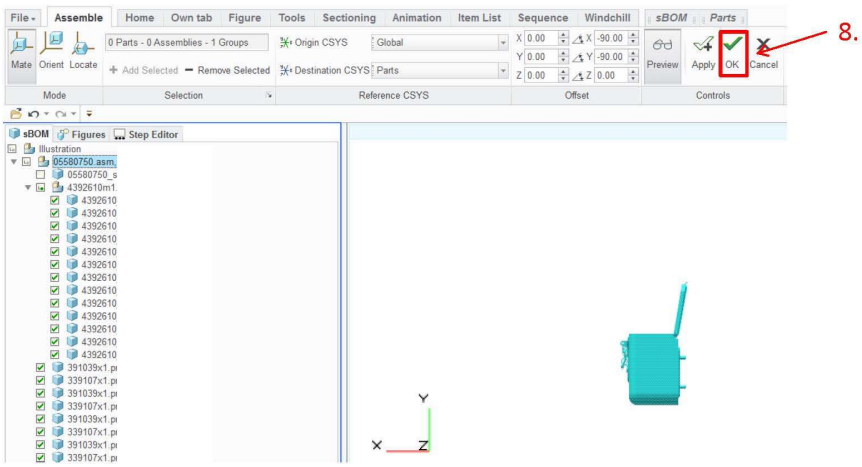


1. Choose desired Orienation with the ”Orientation” function
2. Click on ”Assemble”
3. Mark the whole model
4. Click on ”Add Selected”
5. Choose the shown Reference CSYS axels,
   - Origin to Global
   - Destination to Parts



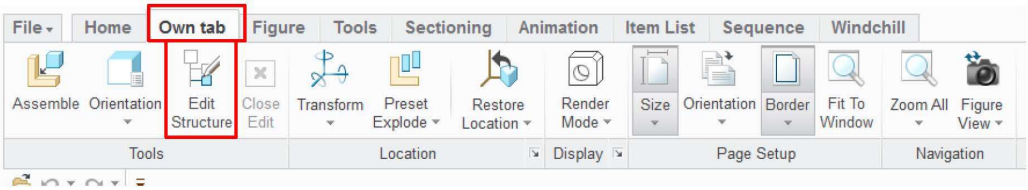
6. Mark how much the model needs to be turned on which axel (X,Y,Z)
7. With the ”Preview” button it is possible to check if the model was turned in the right direction

The axels (X,Y,Z) can be seen on bottom left corner of the drawing area



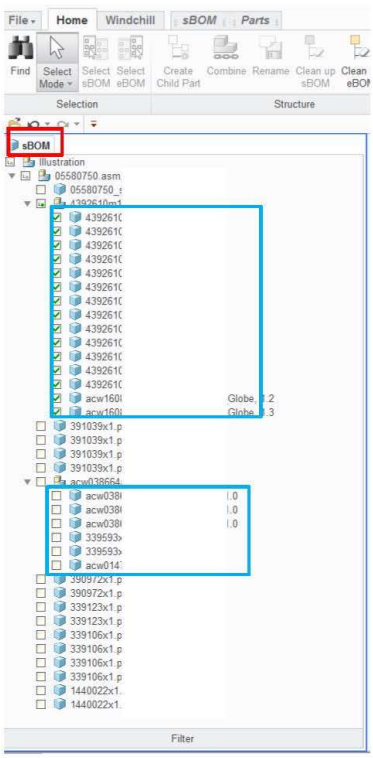
8. When the model's orientation is correct, confirm it with "OK"

Combining parts



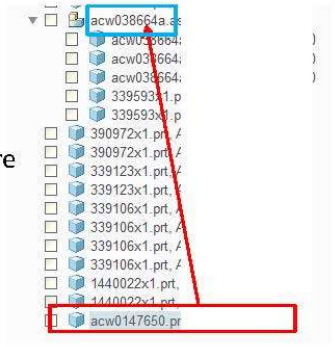
- When there is a need to combine parts in Creo Illustrate, it is done with the ”Edit structure” function
- The function can be found in ”Own tab”

- All the combination/separation is done in the ”sBOM” section
- All parts from lower level, should be combined as one.
- All parts, which are needed to be combined must be on the same level

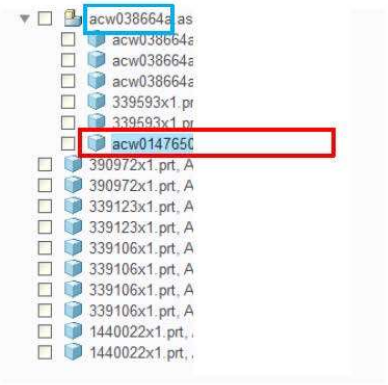


- If some parts are on the wrong level, just drag and drop them under the correct part

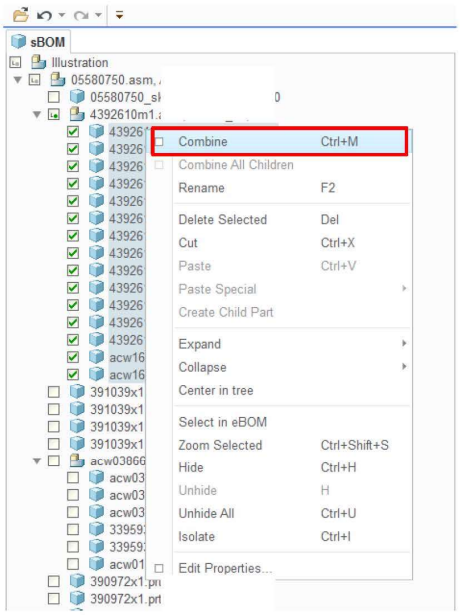
Before

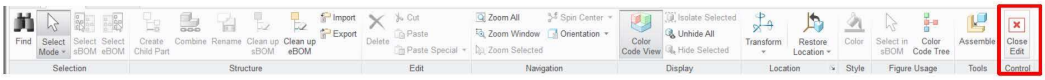


After

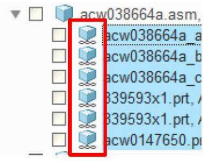


- To combine parts, mark all parts, which need to be combined and ”Right Click” and choose ”Combine” (Ctrl + M)



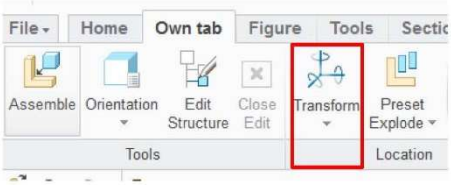


- When parts are combined, a small chain will appear
- Parts can be seperated the same way as they are combined.
- When all combinations are done , press the ”Close edit” button in the toolbar

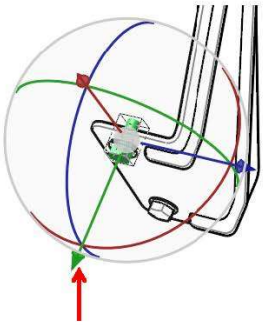


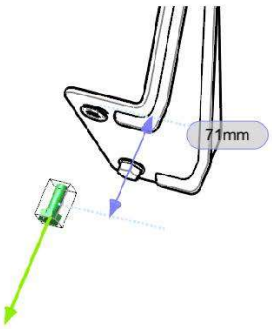
Explode parts form each other

- When exploding parts from each other, use the ”Transform” (F3) function



- For moving parts, simply pick the part, which should be moved
- Grab an axle arrow to move the part to that direction

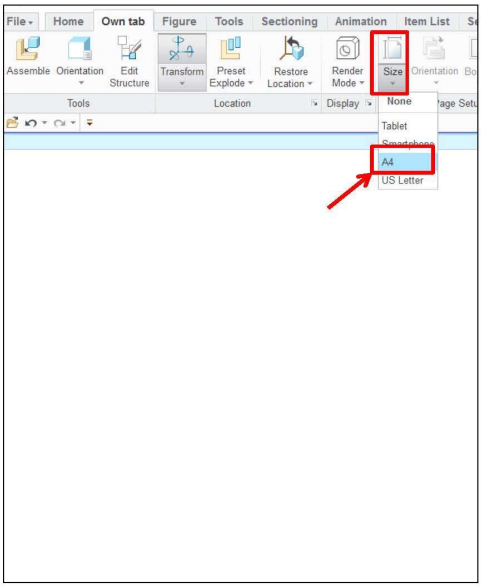




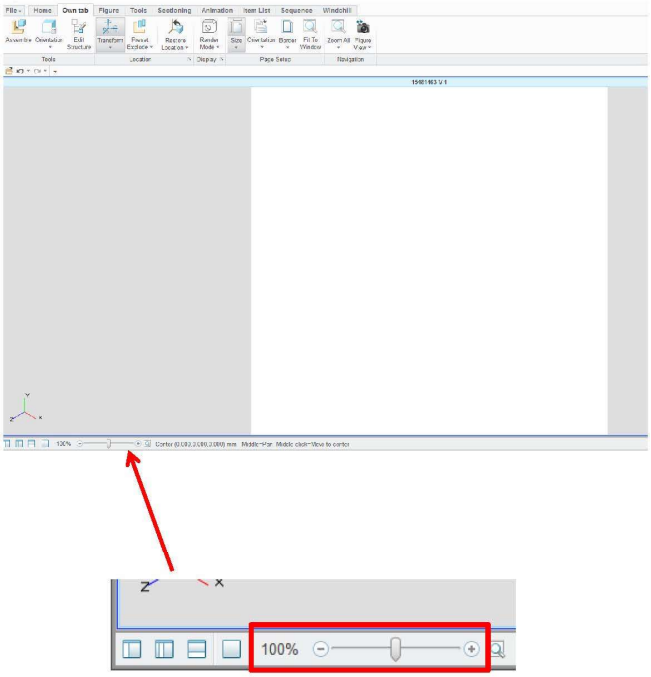
Finalizing part

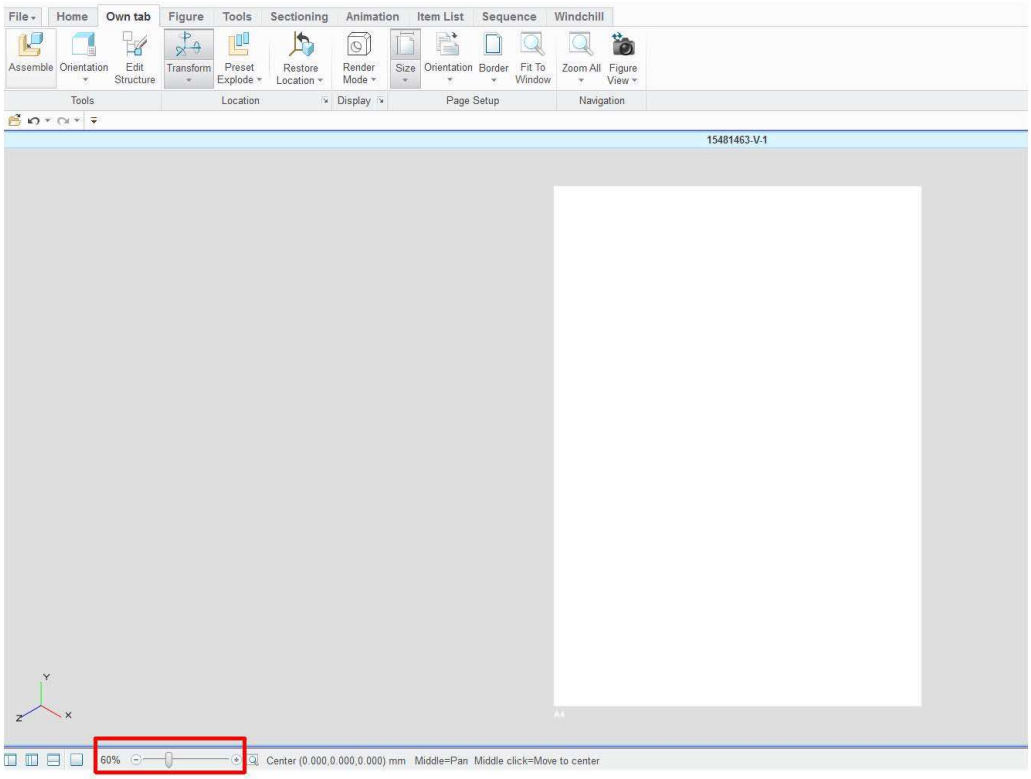
Change size of drawing area to A4

- To change the drawing area size, use the function ”Size”
- Choose size **A4**



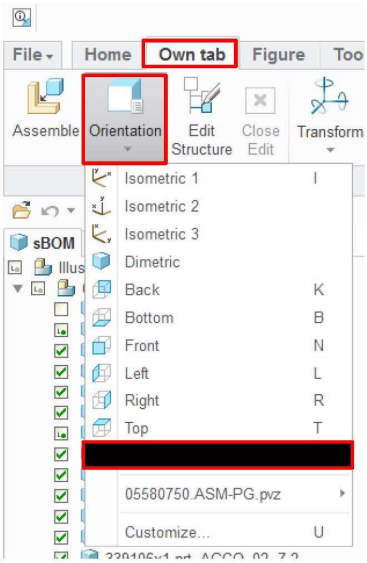
- Use the ”Zoom” function in the bottom left in Creo to see whole drawing area




File
Home
Own tab
Figure
Tools
Sectioning
Animation
Item List
Sequence
Windchill
Assemble
Orientation
Edit Structure
Transform
Preset Explode
Restore Location
Render Mode
Size
Orientation
Border
Fit To Window
Zoom All
Figure View
Tools
Location
Display
Page Setup
Navigation
15481463-V-1
Y
Z
X
60%
Center (0.000,0.000,0.000) mm
Middle=Pan
Middle click=Move to center

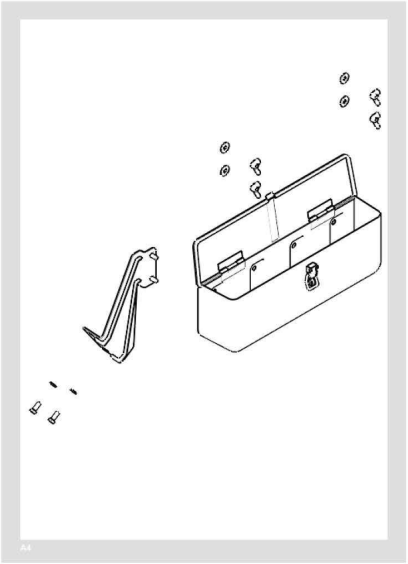
Choosing the final orientation

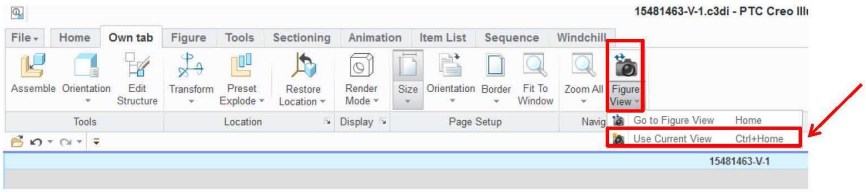
- Before the drawing can be scaled to its correct size, the final orientation needs to be chosen
- Choose the company custom view
- Choose it by using the ”Orientation” function



Scaling/moving of the model

- The scaling of the model is done by scrolling up/down with the mouse
- Scale the model as big as possible
- All parts of the model must fit inside the drawing area
- The whole model can be moved by pressing down ”Mouse 3” button (scroll wheel)





- Next choose the function ”Figure View” and pick ”Use current view” (CTRL + HOME)

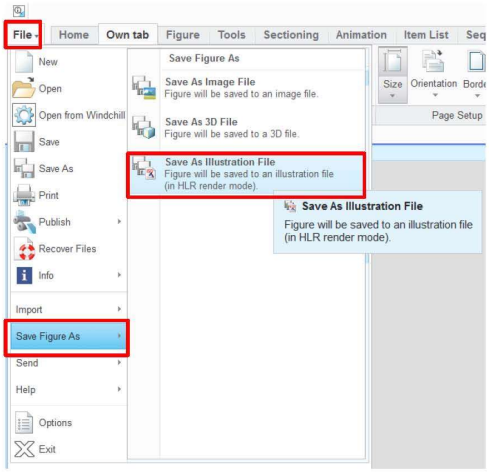
- Then save the model as .cgm & .c3di

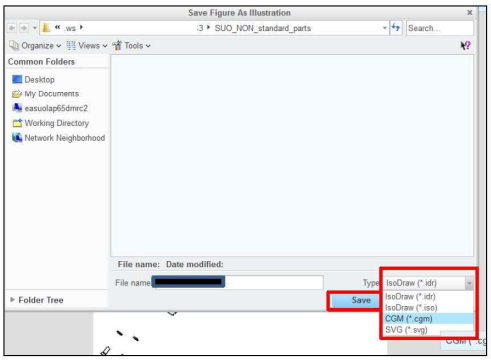
Saving file as .cgm

- Go:

File -> Save Figure as -> Save As Illustration File

- Use the Group unit as the file name
- Change file type to ”.cgm” and confirm with ”Save”



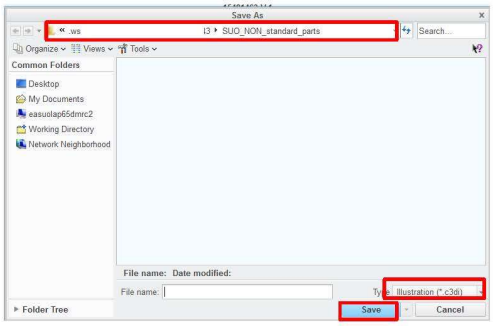


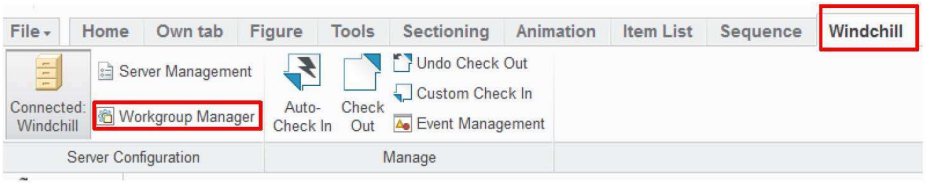
Save as .c3di

- Go:

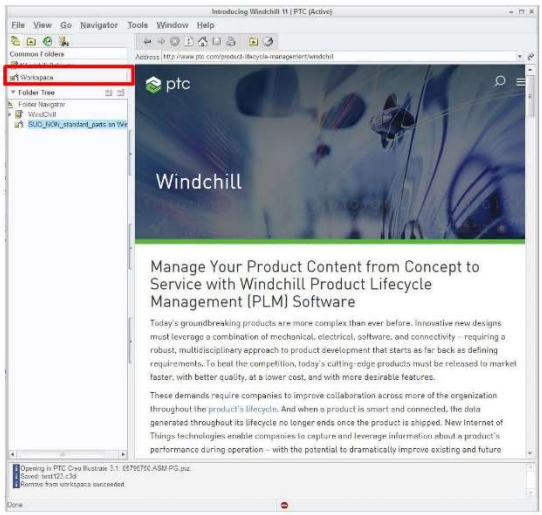
File -> Save as

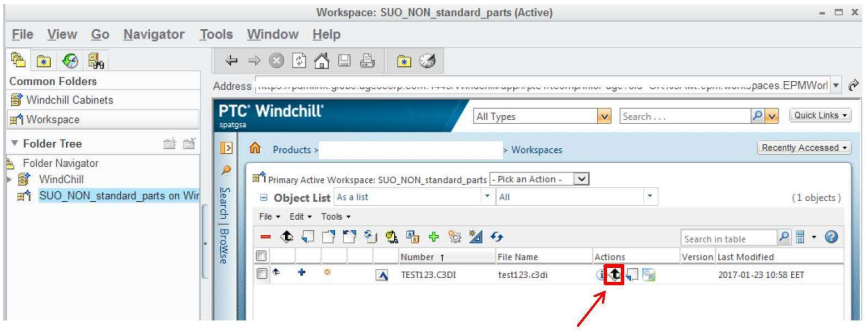
- Use the Group unit as the file name
- Change file type to ”.c3di” and confirm with ”Save”
- Save the file to your Workspace
- Next go to your Workgroup manager
  - It can be found in the Windchill tab



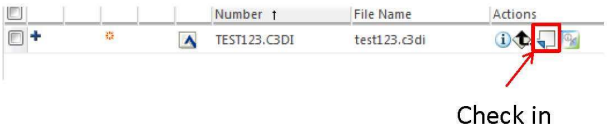


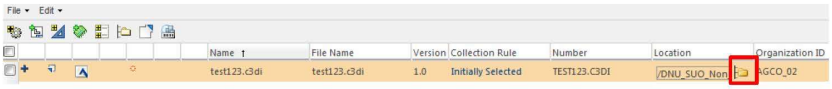
- In the Workgroup manager go to your Workspace



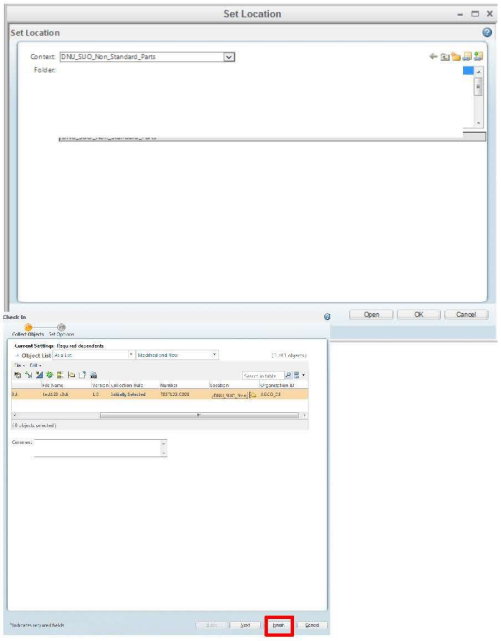


- Upload the .c3di file to Windchill
- Next Use the "Check in" function





- When doing the ”Check in”, choose the correct category from the list, in order to check in the model to the correct place
- Confirm with ”OK”
- Then confirm again with ”Finish”



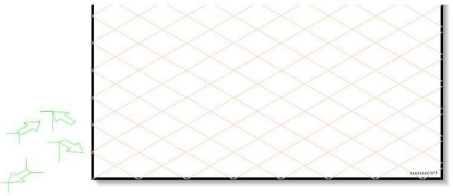
Instructions for Isodraw part

- Before starting working, make sure the author's (of the instructions) configuration file is used to get all the correct settings.

- The configuration file has to be placed in the following path:
  - **C:\Users\spatgsa\AppData\Roaming\PTC\IsoDraw\Preferences**
  - Where **xxxxx** is the username of the PC user

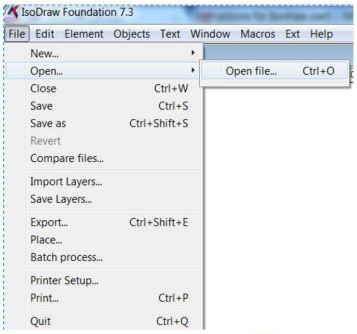
Opening Isodraw

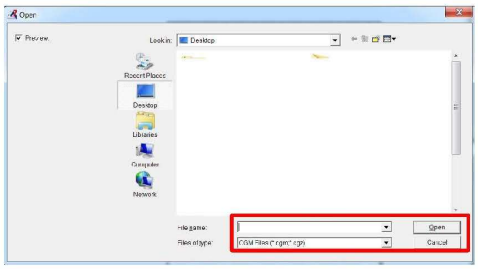
- Always open Isodraw with the Company's graphic template
- The template contains:
  - Exact place for item identification number
  - Correct drawing area
  - Drawings' view orientation

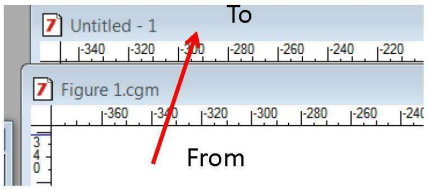


Open a drawing

- Open a drawing by going
  - **File →Open → Open file (Ctrl + O)**
- Next, choose wanted file (.cgm) and confirm with ”Open”





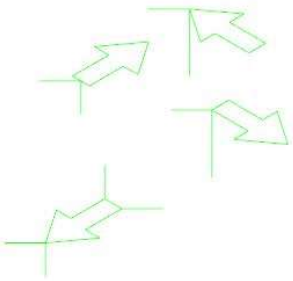


- Copy the opened drawing into the Template
- When ”Pasting” the model, hold also the ”Shift” button down so (Ctrl + Shift + v)
- The model will be placed exactly in the same position, as in original file

Item identification number & Drawing view orientation

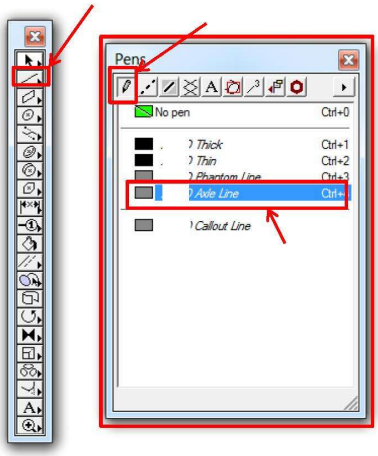
- Fill the correct item identification number
  - (PLH-V-index)

- Choose correct view orientation



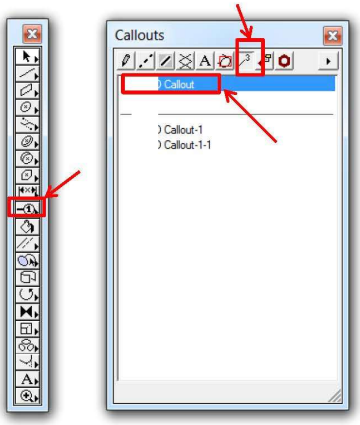
Adding axle lines

- To create axle lines use Function ”Draw of line” (2)
- Next choose the corporate Axle line (Ctrl + 4) from the ”**Attribute**” window
- Draw axle line by holding ”Mouse 1” button

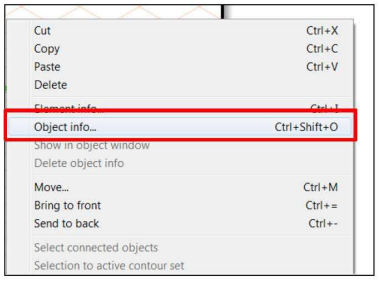


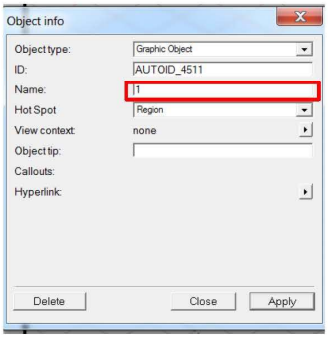
Creating callouts

- To create callouts, use function ”Callout tool”
- Choose corporate callout style from ”**Attribute**” window
- Create callout by holding ”Mouse 1” on top of part and dragging the mouse to the side of the part



- Isodraw will automatically choose next free numbers
- To manually change the callout number, right click on wanted callout and choose ”object info” (Ctrl + Shift + O)



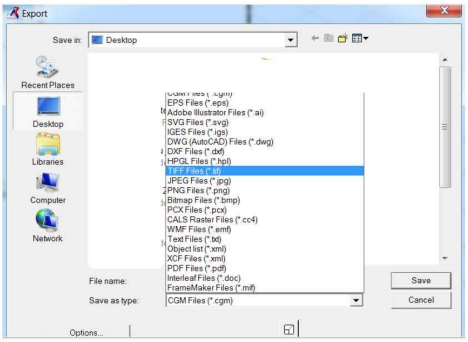


Export file as .tiff

- To export .tiff file go to:

  File → Export

- Name the file correctly (PLH-V-index)
- Change file type to .tif
- Confirm with ”Save”



Save file as .iso

- To save .iso file go to:

  File → Save as

- Name the file correctly (PLH-V-index)
- Change file type to .iso
  - Choose newest Isodraw version (7.2)
- Confirm with ”Save”