

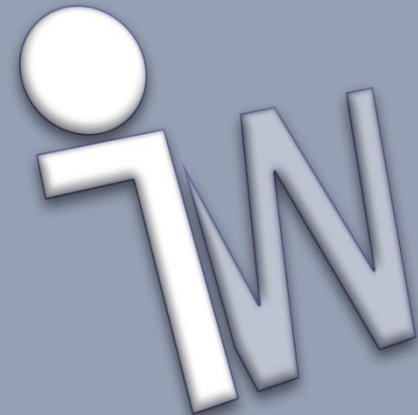
Autodesk Inventor

Large assemblies

Stefaan Boel

Senior Designer – Atlas Copco

www.inventorwizard.be

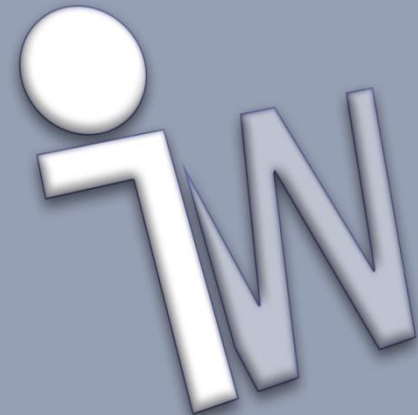


Agenda:

- Tegen de lamp lopen
- Gebruikte configuratie
- Instellingen
- Best practice
- Van derived assy's tot LOD's
- Unit Skeleton
- Constraint sets
- Modular Skeleton



Tegen de lamp lopen

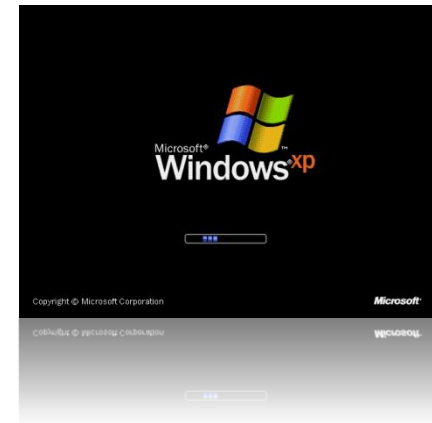


Tegen de lamp lopen

Situatie Atlas Copco 2010



- +120 licenties Autodesk Inventor met subscription contract
- Pc's tussen de 1-4 jaar oud
- 4GB Ram
- Windows XP 32-bit
- Inventor 11
- 400GB aan Inventor bestanden
- We kunnen ons nog behelpen met /3Gb switch
 - volle 3GB extra kan niet gebruikt worden
 - max. 2,4 tot 2,6 GB



Tegen de lamp lopen

Eind 2010: testen Inventor2011



- Maar één versie van Smarteam op uw PC
- Testen PDM op office Pc's met kleine datasets
- Training Key-users Inventor 2011
- Nieuwe Smarteam in orde samen met Inventor 2011
Key-users klaar om vlak na Nieuwjaar training te geven
Filemigratie 400Gb Inventor bestanden gestart

→ **GO for upgrade**



Tegen de lamp lopen

Eind 2010: Deployment



- Tussen kerst en Nieuwjaar 2010
 - deployment alle Pc's met nieuwe Smarteam en Inventor 2011
 - back-up en migratie van laatst aangemaakte bestanden klaar
- Eerste werkdag na Nieuwjaar
 - halve dag update cursus door key-users gegeven
 - later krijgen alle designers nog een 2 daagse cursus

**WE ARE
LIVE!**

Tegen de lamp lopen

Januari 2011: Noodlot slaat toe

Atlas Copco

- Meerdere meldingen over samenstellingen & tekeningen die niet meer open gaan met Inventor 2011
- /3Gb Switch ook niet voldoende voor de meeste datasets

→ **Crisismeeting!**

- Dringende Akties:
 - instellingen Inventor 2011 aanpassen → minder geheugen verbruik
 - zij-applicaties (lotus notes, outlook, office,...) zo min mogelijk openlaten
 - internet afschuimen voor feedback en oplossingen
 - rondbellen (cf Arcelor Mittal)
 - testen uitvoeren
 - integreren

→ **Nog steeds niet voldoende!**



Tegen de lamp lopen

Hoe moeten we verder?



- EXTRA INVESTERING: nieuwe PC's met 64bit OS
- Win 7 pas 2012 → XP64 bit
- Recente pc's uitbreiden met 12GB RAM + nieuwe FX card
- Testen XP64bit met Smarteam, Inventor, Office, Lotus Notes, ...
- Nieuwe installatie deployments maken
- Tussentijds training geven in werken met Inventor shrinkwrap

→ **Begin maart 2011, alle designers hebben een nieuw of uitgebreid systeem!**



Tegen de lamp lopen

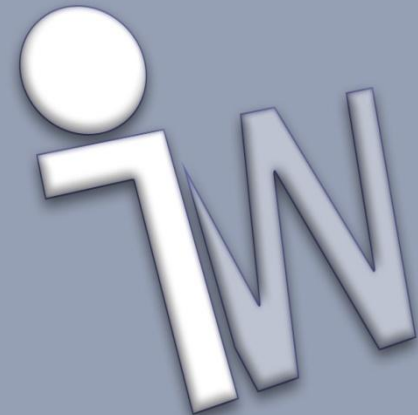
Conclusie:



- Inventor draaien op een 32bit OS...vergeet het maar
- **Nood aan training en werkmethodeken voor “Large Assemblies”**
- Testen Win7 64bit
- Testen SSD → eerste tests...VET!
- Extra tips:
 - hou 20% van uw HD vrij
 - hou videokaart up 2 date



Gebruikte Configuratie



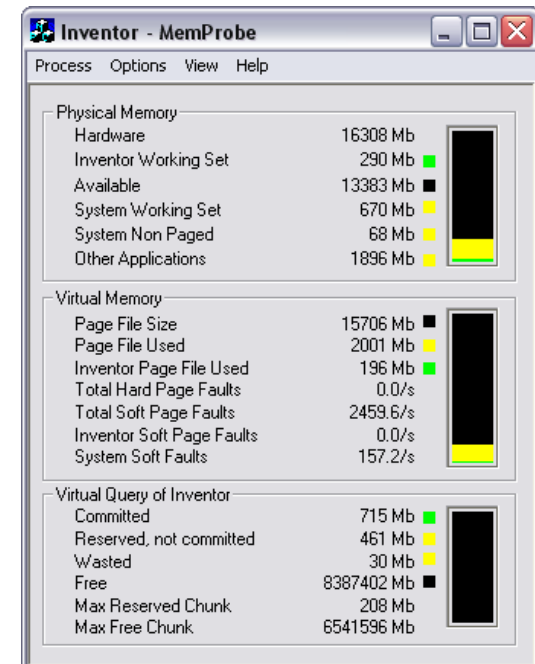
Gebruikte configuratie

Atlas Copco

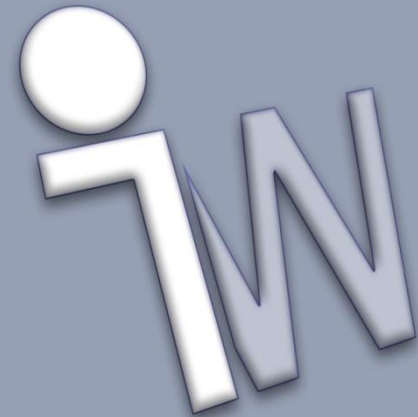
- Inventor 2011
- XP 64 bit
- Dell Precision M6500
 - intel i7 processor
 - 16GB ram
 - 129GB SSD
 - Nvidia Quadro FX 2800M

- Geheugen meter: Inventor - MemProbe

(C:\Program Files\Autodesk\Inventor 20xx\Bin



Instellingen



Instellingen

Undo File Size

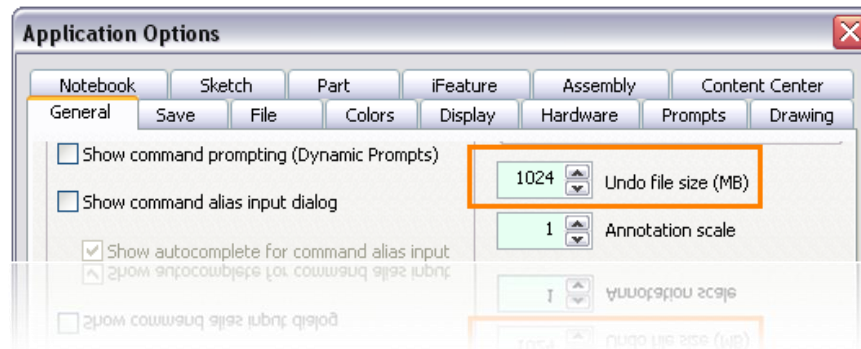
- Ruimte om undo acties bij te houden

Kleiner:

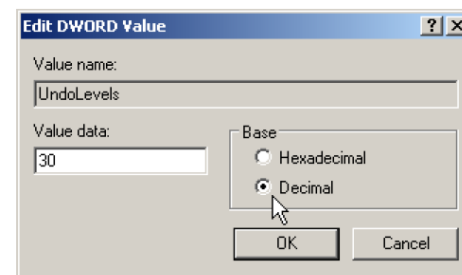
- minder undo acties
+ meer geheugen vrij

Groter:

- minder geheugen vrij
+ meer undo acties

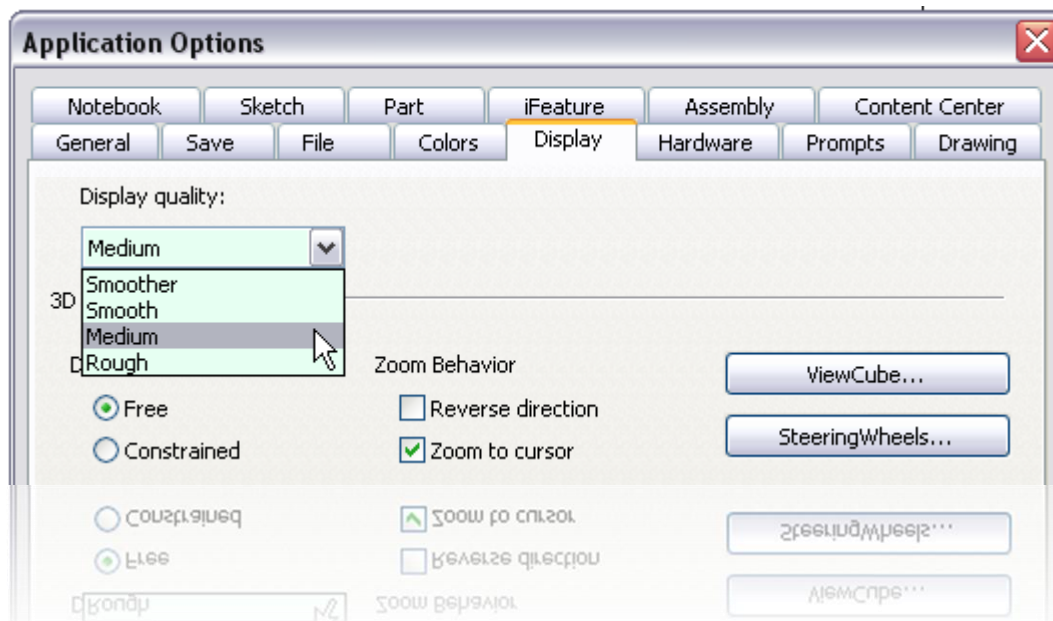
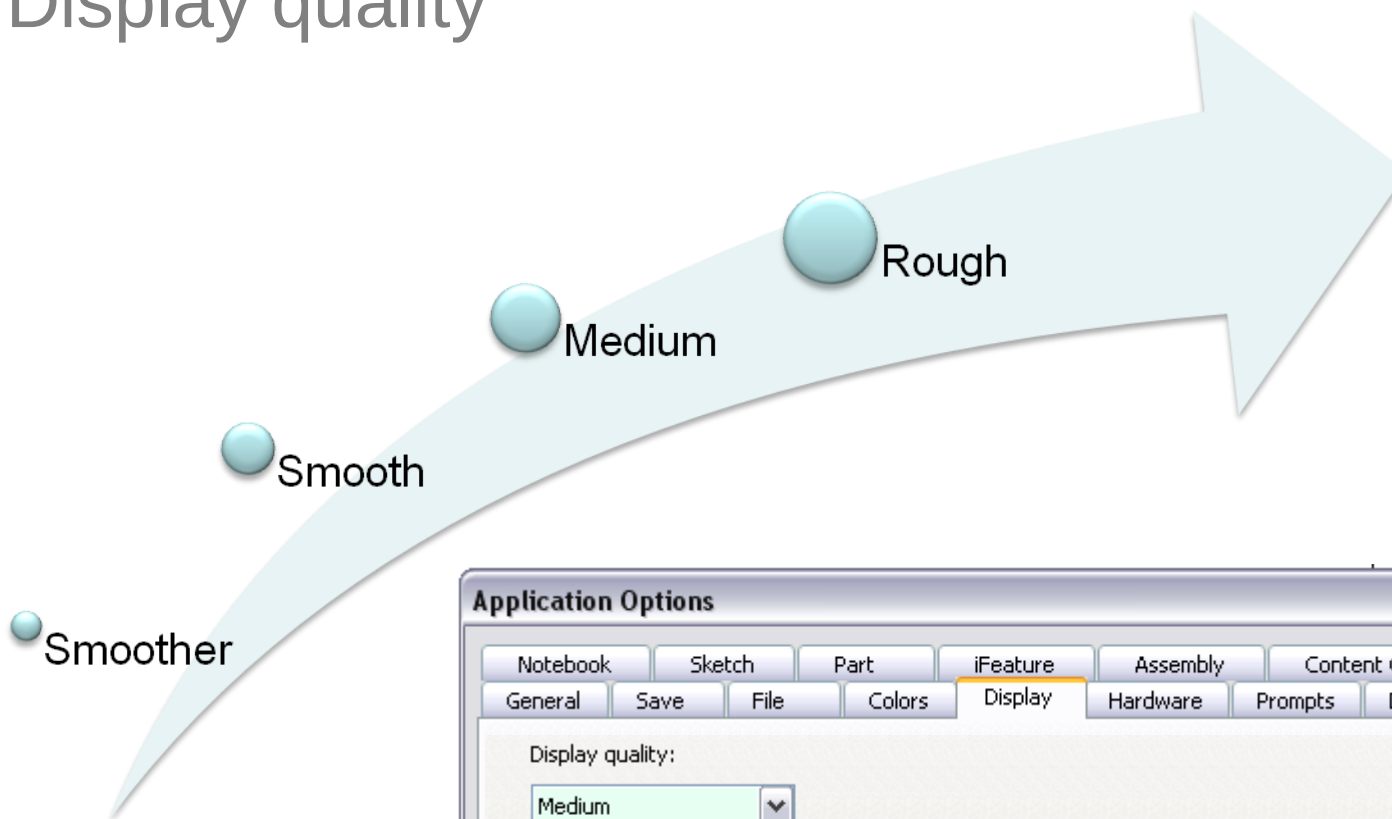


HKEY_CURRENT_USER\Software\Autodesk\Inventor\RegistryVersionX.X\System\Preferences\Transactions\UndoLevels	
Registry Key	Value Data
XX	Aantal toegelaten UNDO akties



Instellingen

Display quality

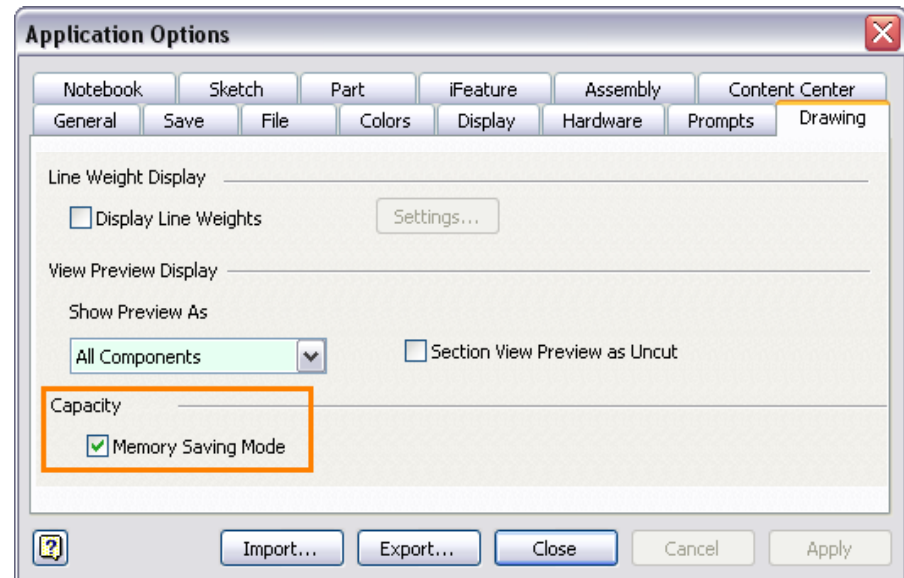


Instellingen

Memory saving mode

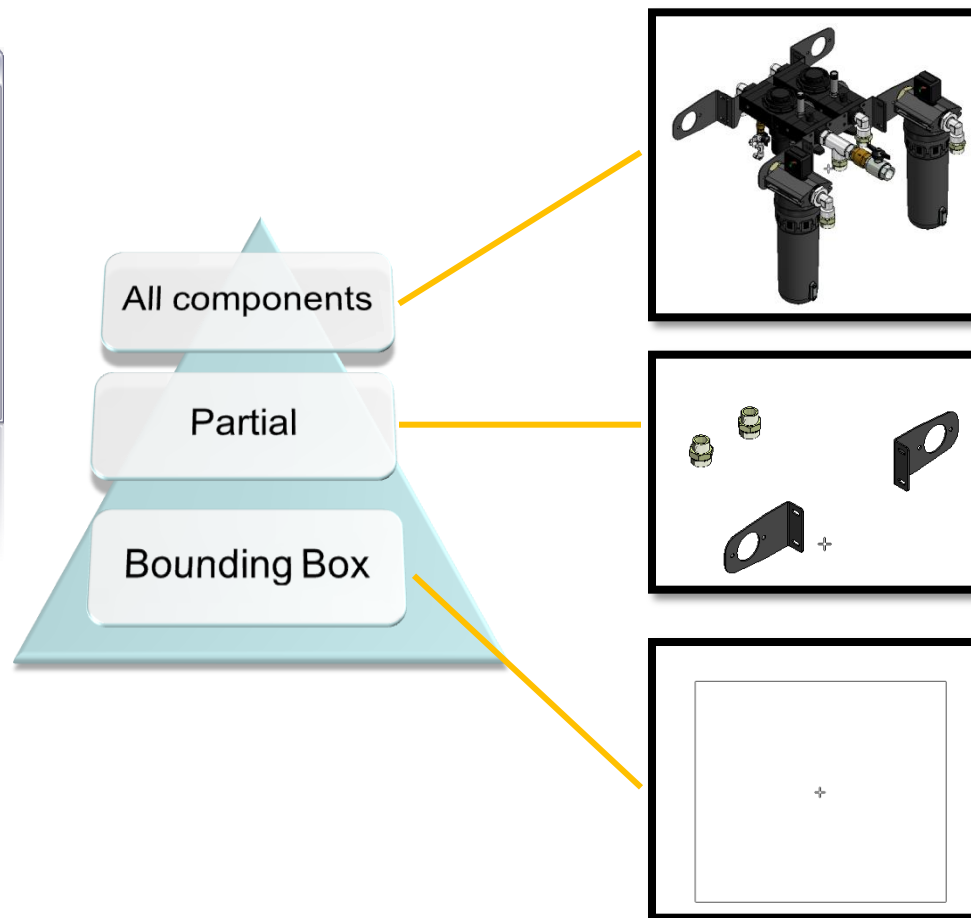
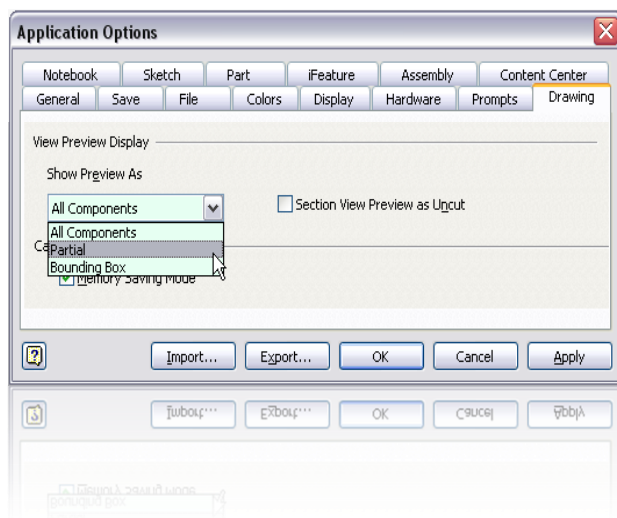
- De "Memory Saving Mode" optie onder de tekening tabblad wordt gebruikt om de manier te veranderen waarop Autodesk Inventor aanzichten creëert en bewerkt
 - Uitgeschakeld: + maximale prestatie
 - Inventor geeft geheugen niet vrij, houdt elke component in geheugen
 - Ingeschakeld: + geheugen wordt terug vrijgegeven
 - + aanzichten aanmaken van grotere samenstelling mogelijk
 - aanmaken en editeren van aanzichten gaat trager

- **Conclusie:**
enkel opzetten wanneer u tekeningen van grote en complexe samenstellingen moet maken



Instellingen

Preview display + section preview as uncut

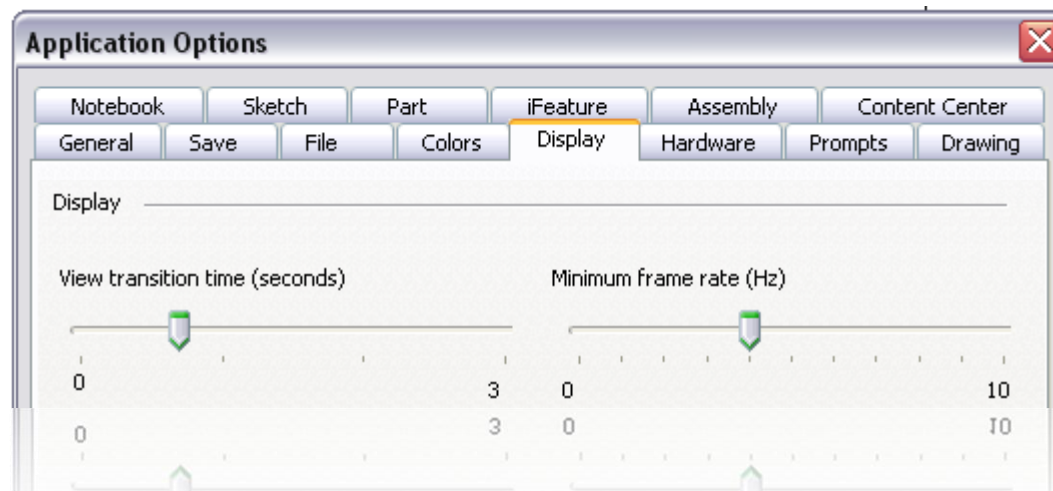


Instellingen

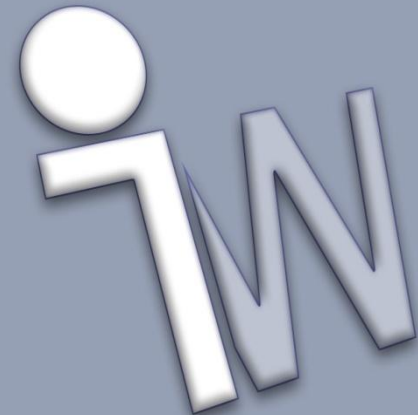
Display settings

- View transition time
 - snelheid waarmee Inventor overgaat tussen verschillende view
 - ikzelf prefereer sneller dan de standaard waarde...
- Minimum frame rate
 - max instellen: bij roteren zal beeld dan min 10frames/sec aanhouden
 - wanneer dit niet mogelijk blijkt: vereenvoudiging van het beeld

Beiden zijn afhankelijk van uw video kaart!



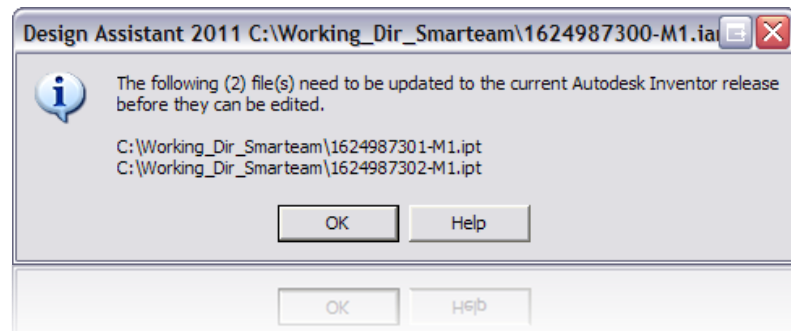
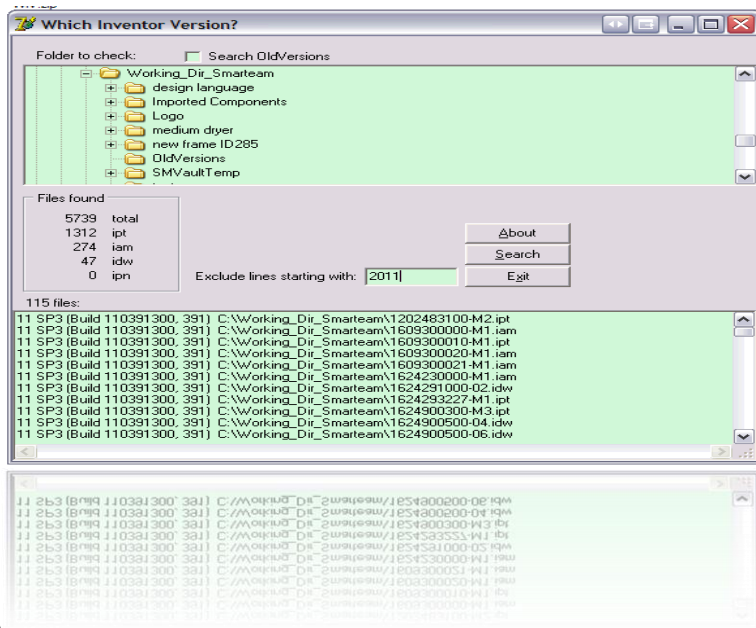
Best Practice



Best Practice

Migreer uw dataset

- 50% sneller openen
- Minder geheugen verbruik

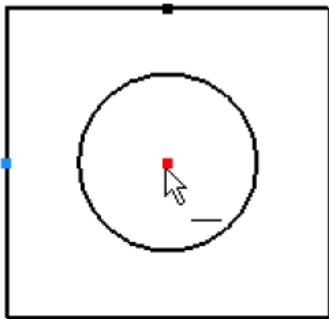


- Which Inventor Version checker?

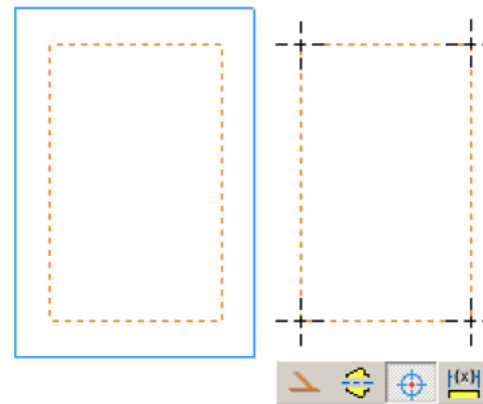
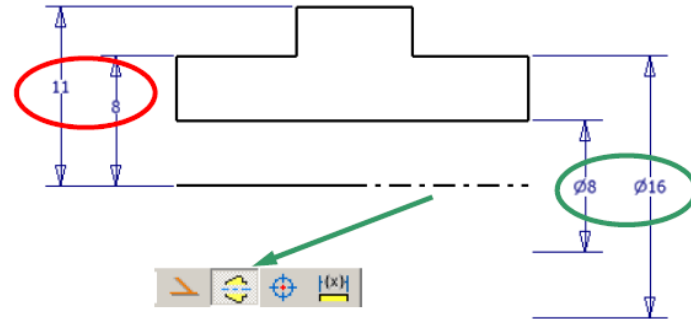
Best Practice

Sketch omgeving

- Maak schetsen zo eenvoudig mogelijk



- Kies een constraint boven een dimensie

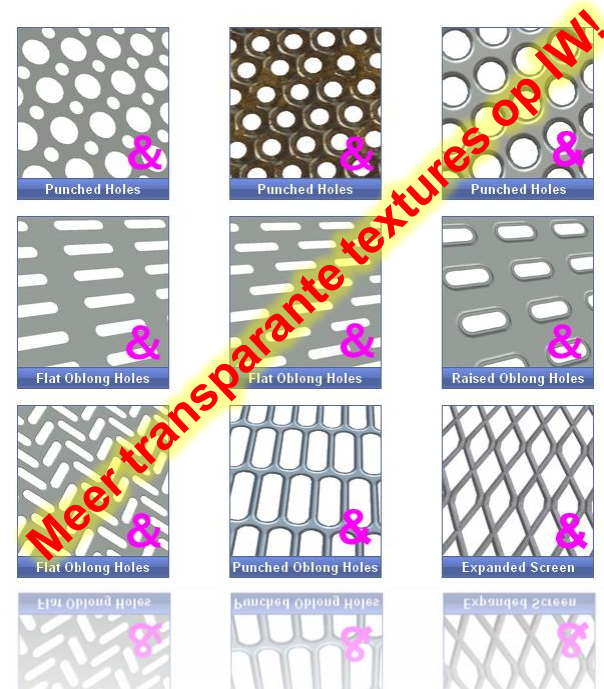
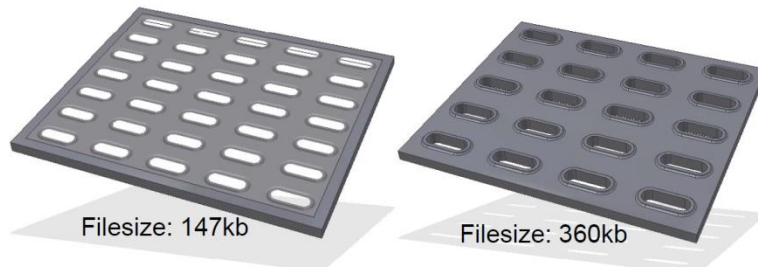


- Gebruik constructie lijnen

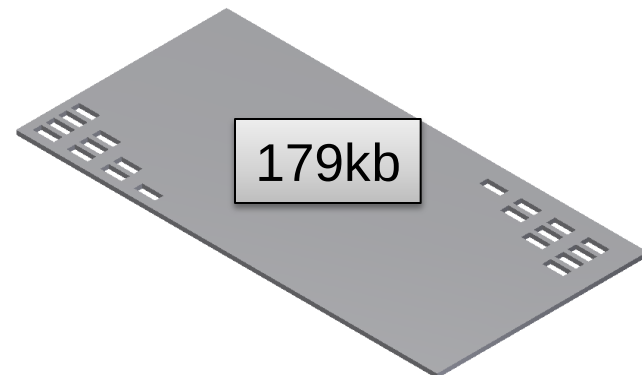
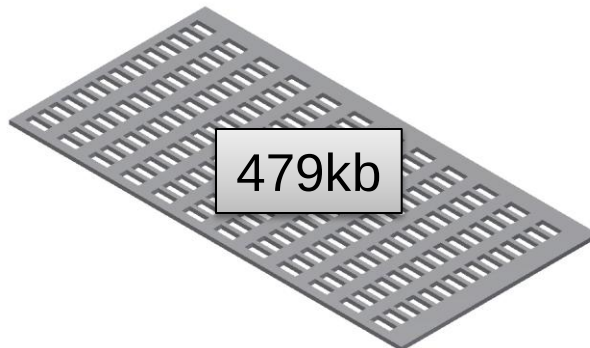
Best Practice

Part omgeving

- Gebruik textures waar mogelijk (enkel zichtbaar wanneer aanzicht shaded staat in tekening)



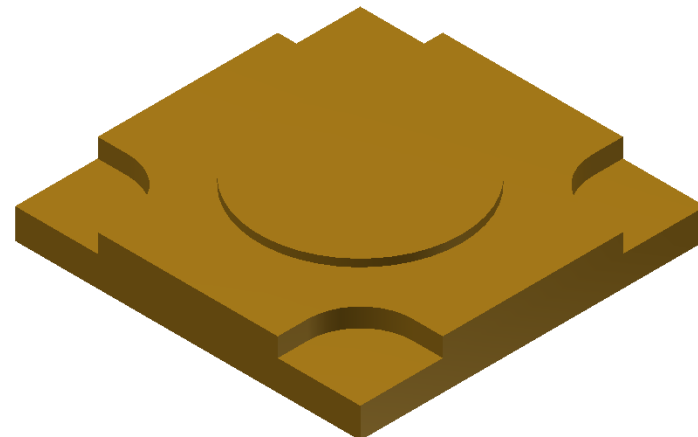
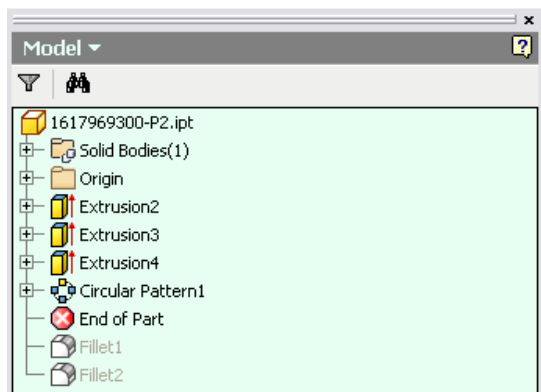
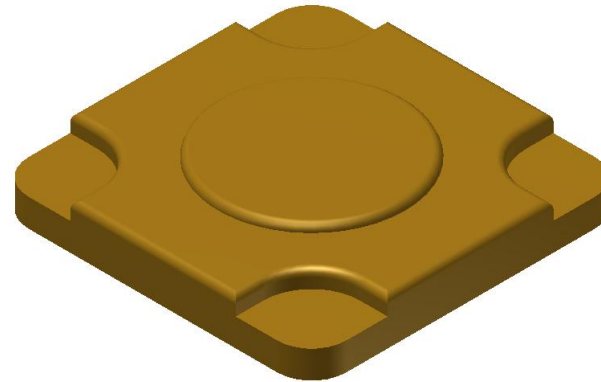
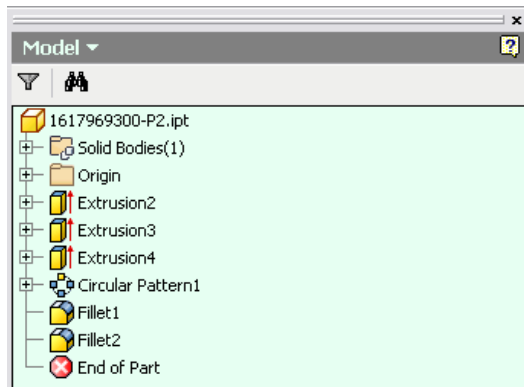
- Optimized patterns of vereenvoudigd patroon



Best Practice

Part omgeving

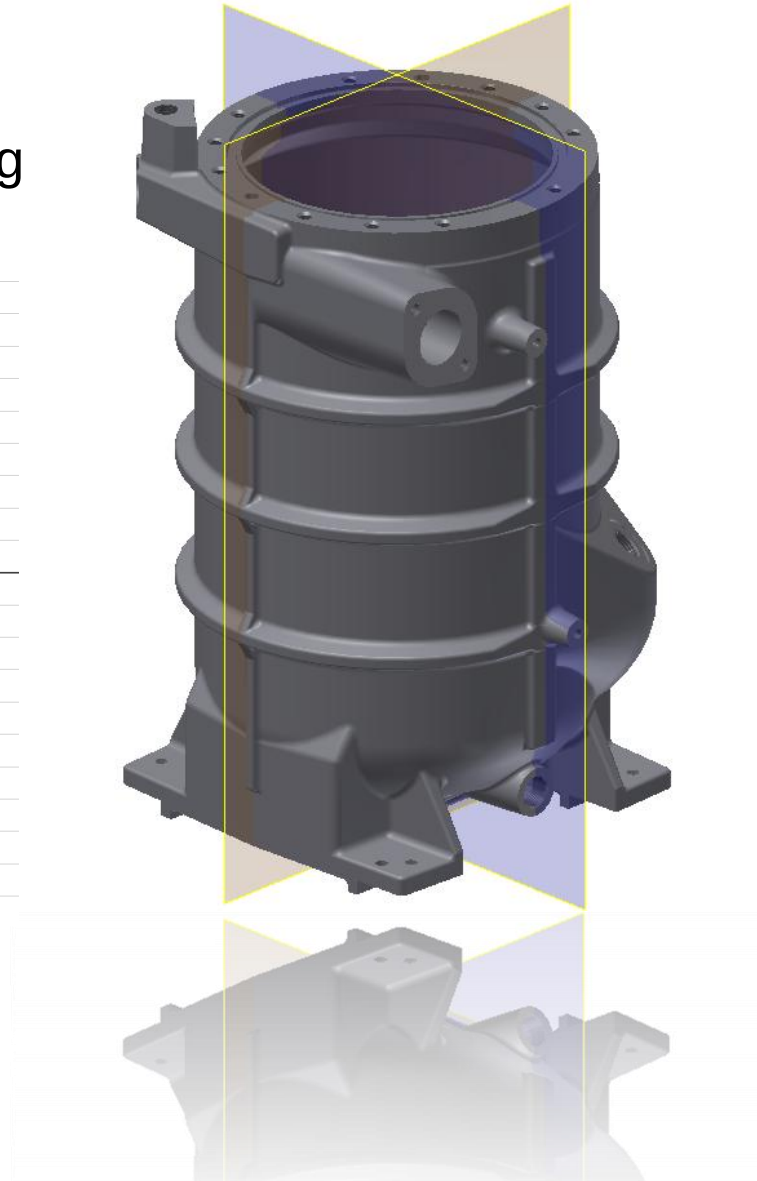
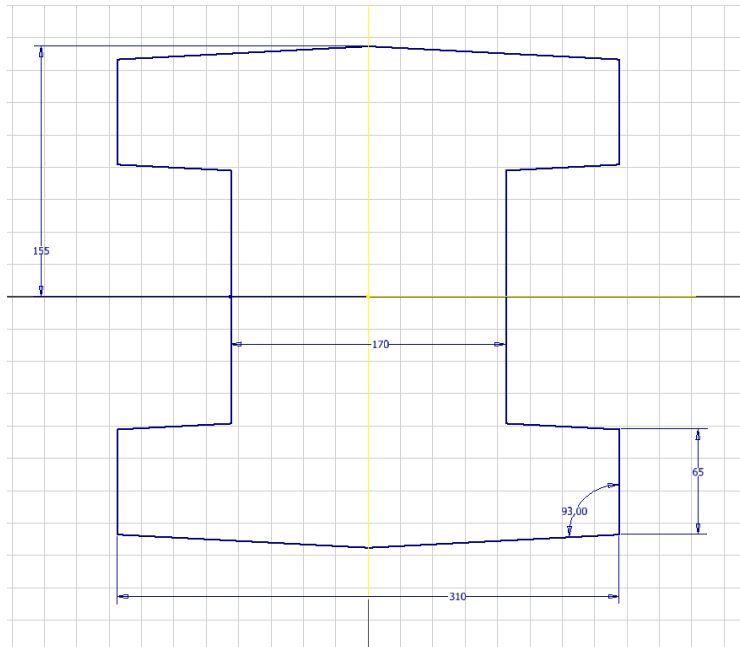
- Fillets en chamfers zo laat mogelijk toevoegen



Best Practice

Part omgeving

- Positioneer sketch rond oorsprong
 - vermijd extra workfeatures



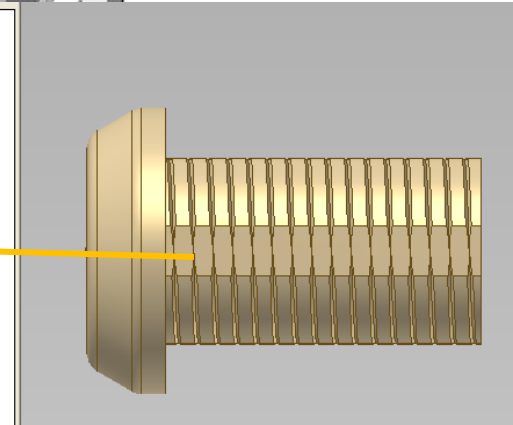
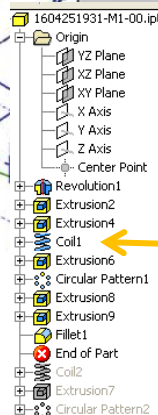
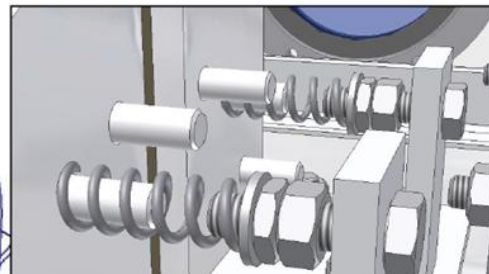
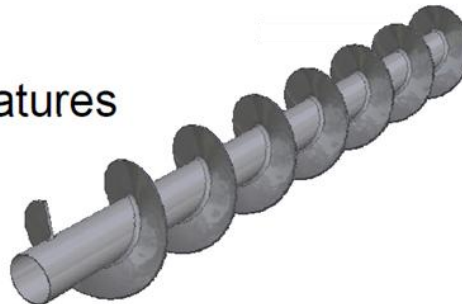
Best Practice

Part omgeving

Tracht zoveel mogelijk de basisfeatures te gebruiken bij het modelleren.

Features zoals Loft, Sweep, Coil en Patterns verzwaren de Parts aanzienlijk.

Ze vorderen meer rekenprestaties en nemen veel meer geheugen in beslag



Best Practice

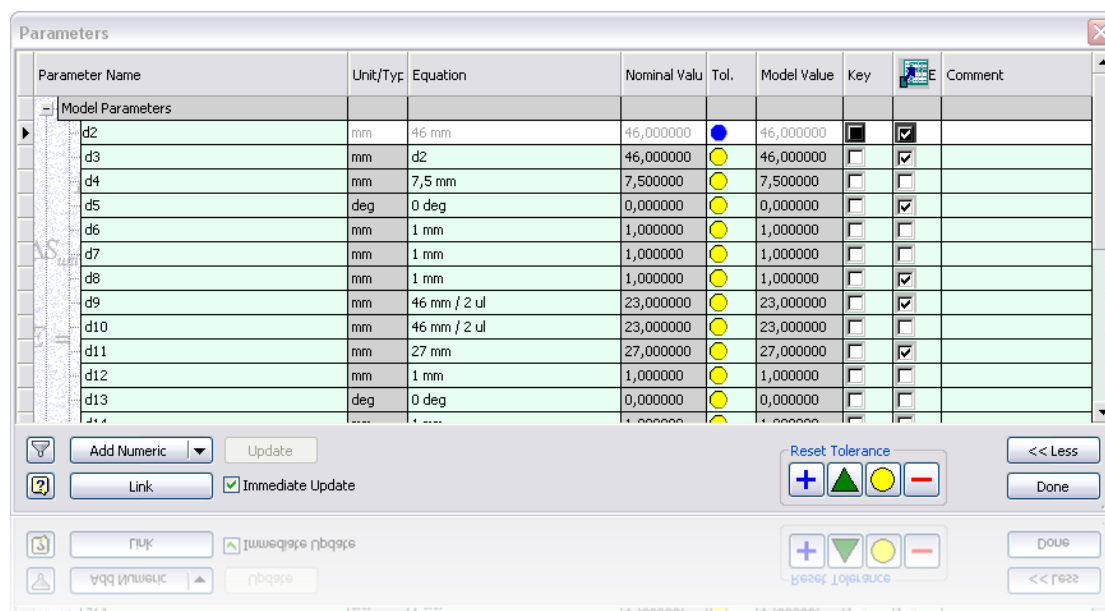
Part omgeving

- Parameters aansturen

Via Excel

	A	B	C	D	E	F
1	Inventor Wizard blok generator					
2						
3		Parameter	Waarde	Eenheid		
4		Lengte	500	mm		
5		Breedte	300	mm		
6		Hoogte	100	mm		
7		Chamfer	50	mm		
8		Hoek	50	deg		
9						

Via derived component
of part linken

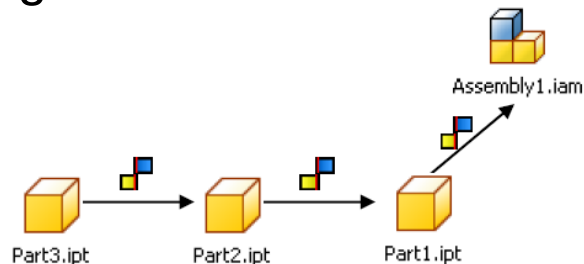


Best Practice

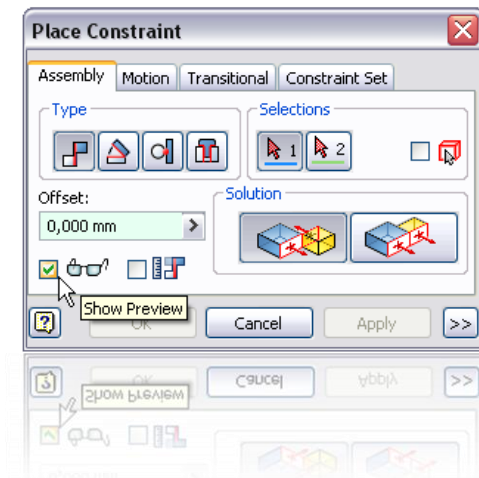
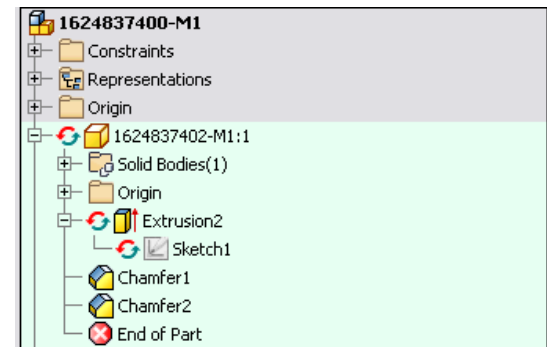
Assembly omgeving

- Adaptiviteit
 - schakel uit indien niet meer nodig
 - kan altijd terug opgezet worden

- Vermijd kettingconstraints



- Show Preview afzetten



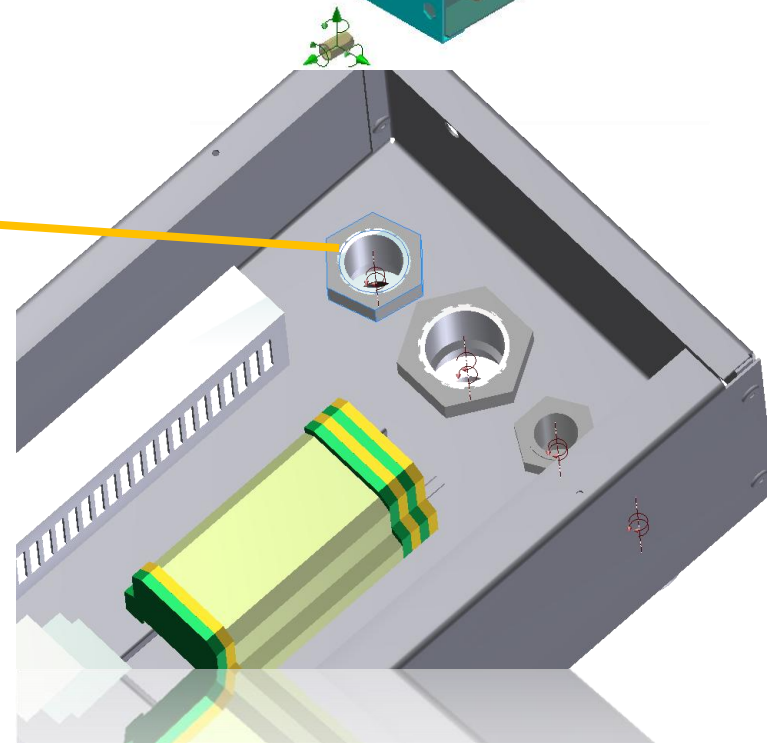
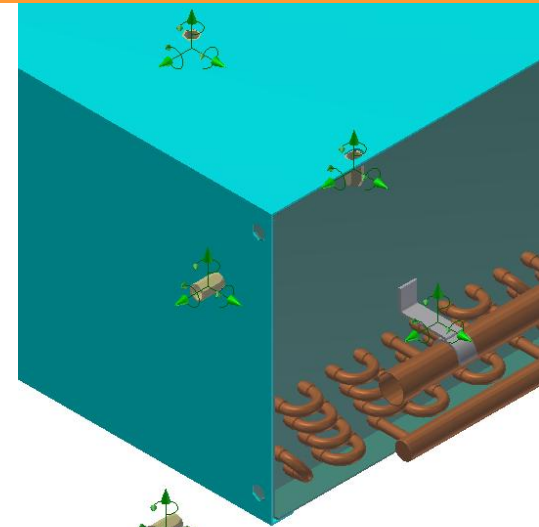
Best Practice

Assembly omgeving

- Zorg ervoor dat er geen DOF's meer zijn

Beweging component

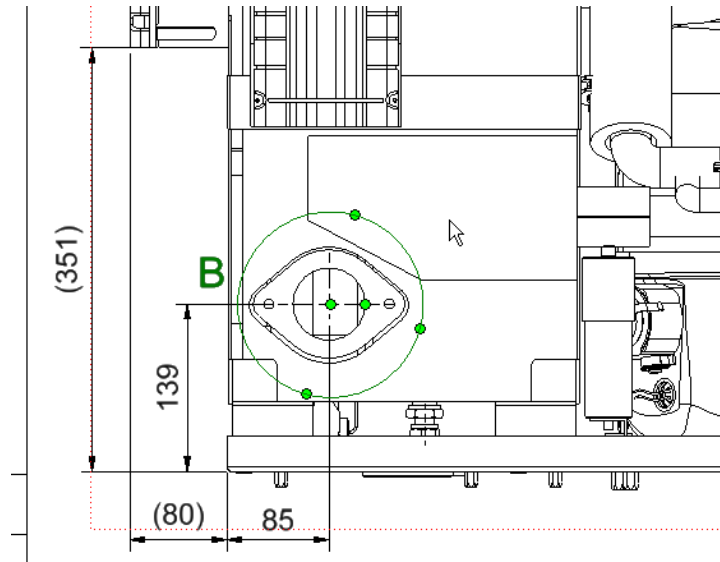
→ Update top level! ←



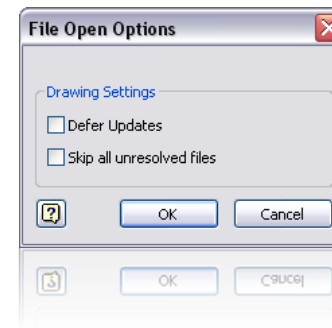
Best Practice

Drawing omgeving

- Attach detail zichten



- Updates
 - annotate blijft beschikbaar!
 - controle over update design/stuklijst

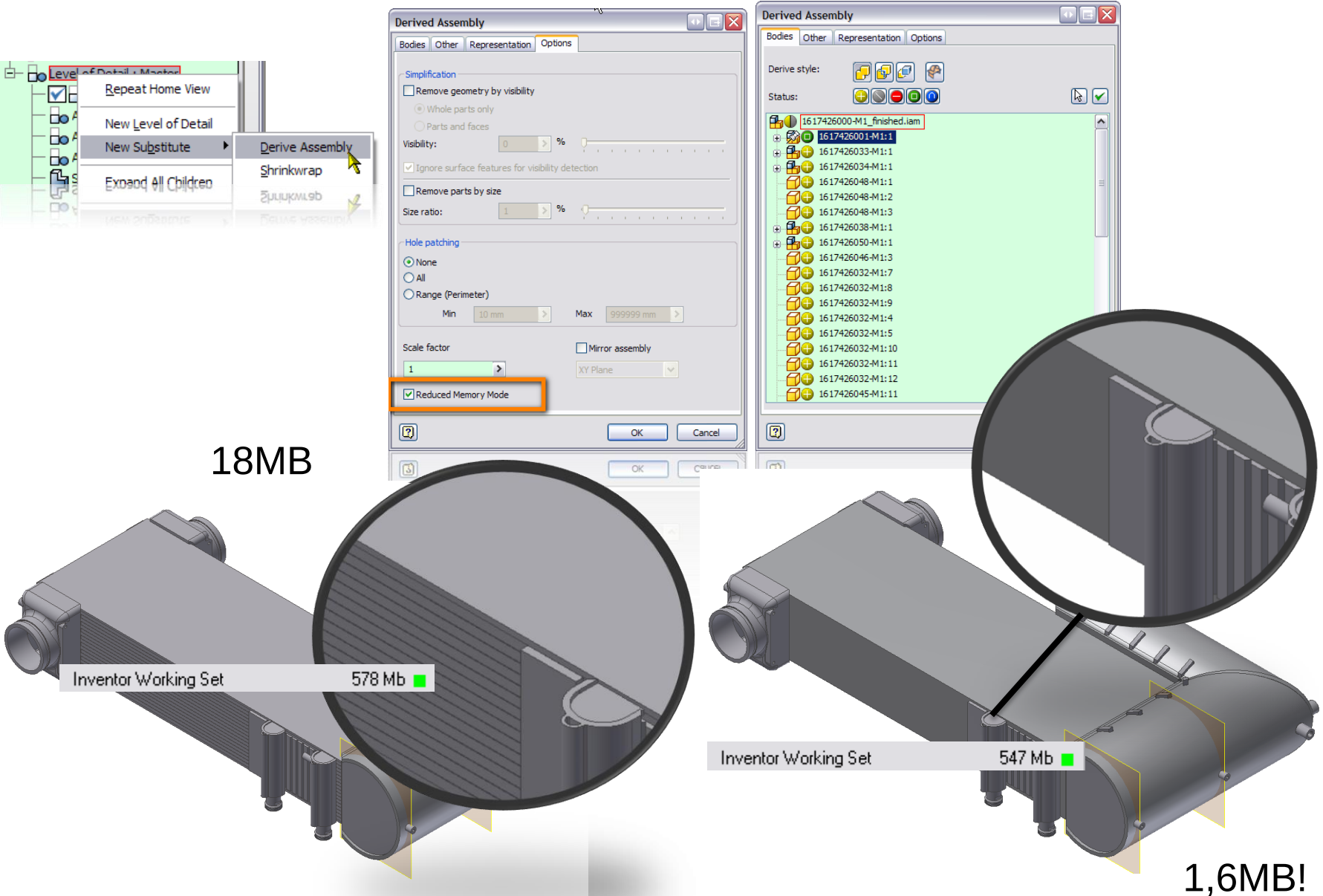




Van Derived assy's tot LOD's

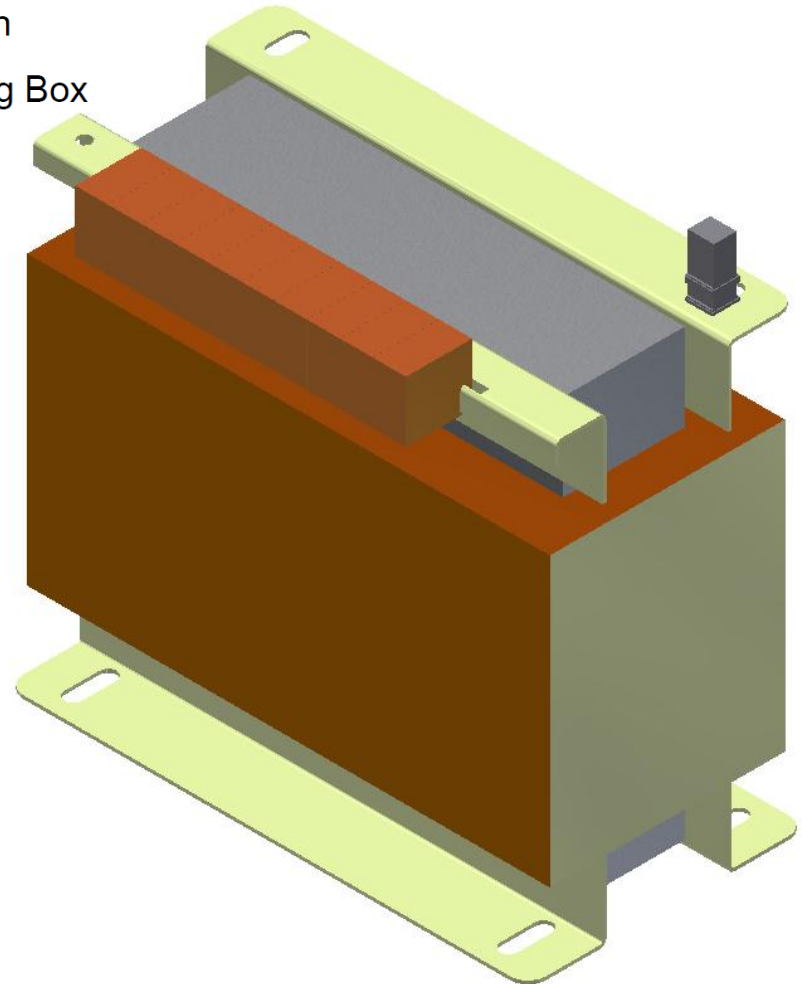
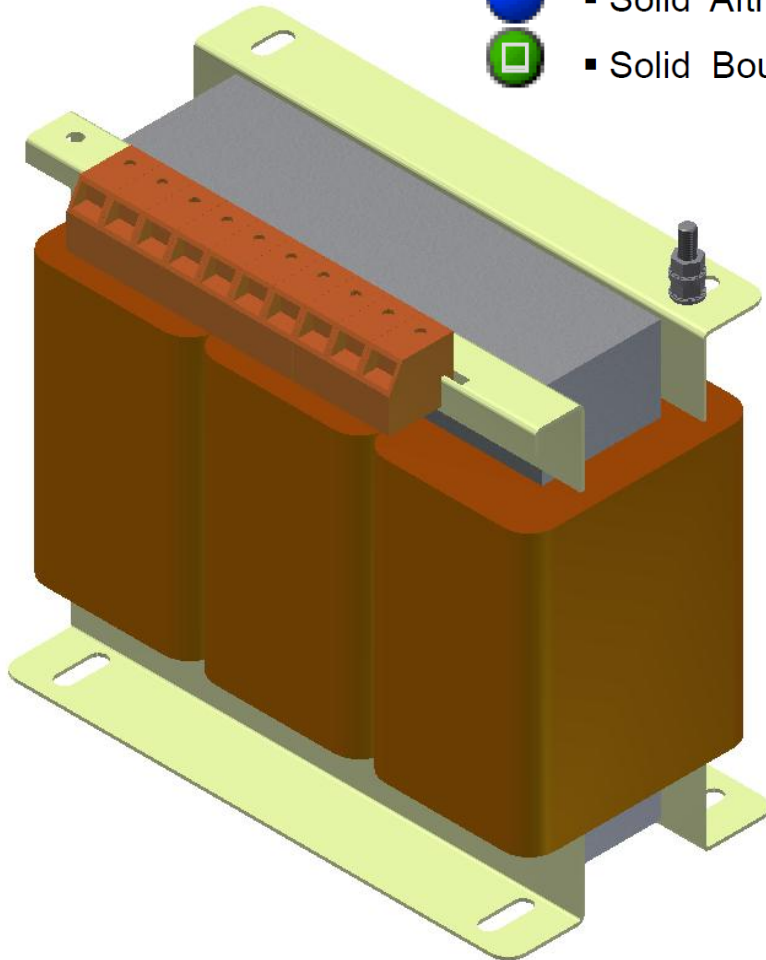


Derived Assembly/Bounding box

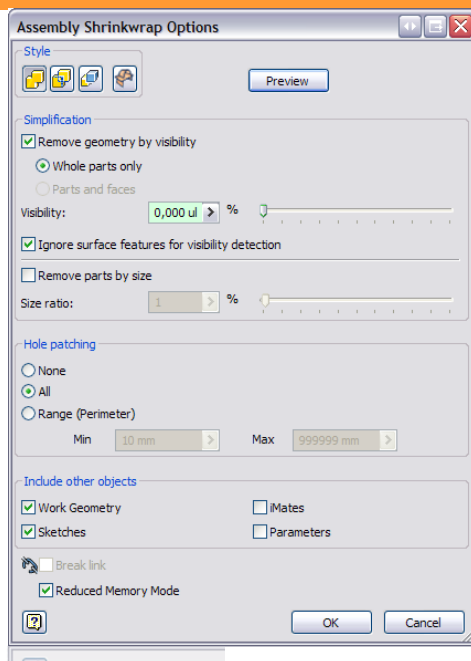
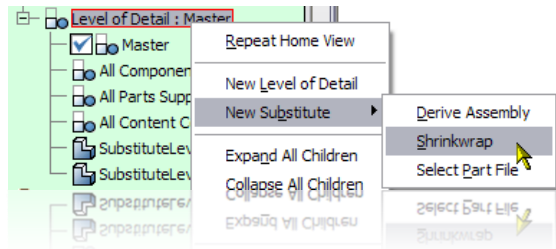


Derived Assembly/Bounding box

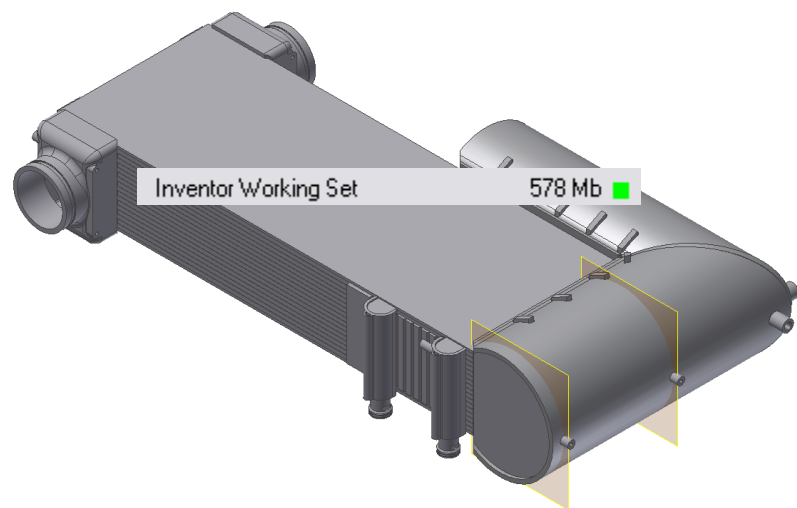
- Solid Toevoegen
- Solid Negeren
- Solid Aftrekken
- Solid Bounding Box



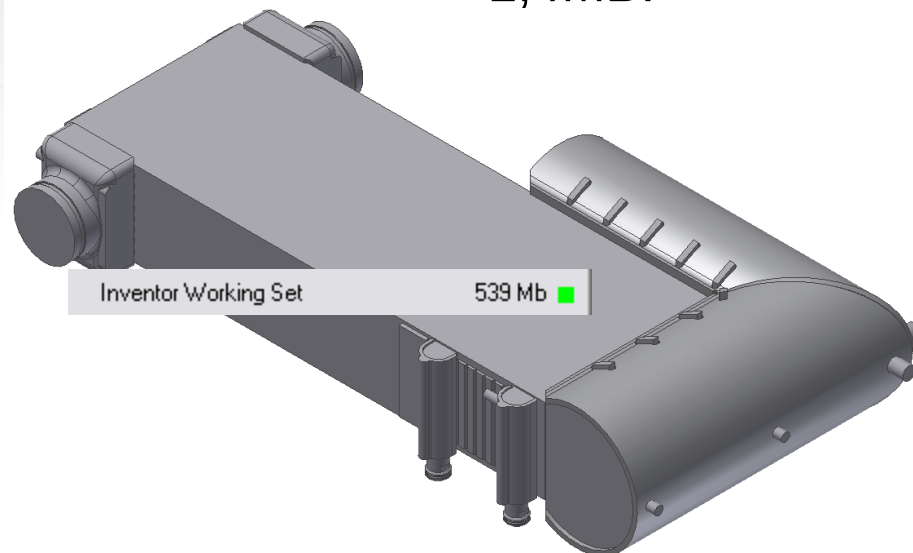
Shrinkwrap



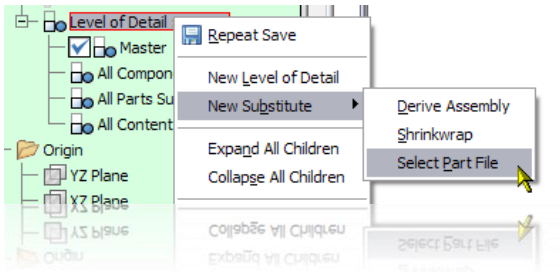
18MB



1,4MB!

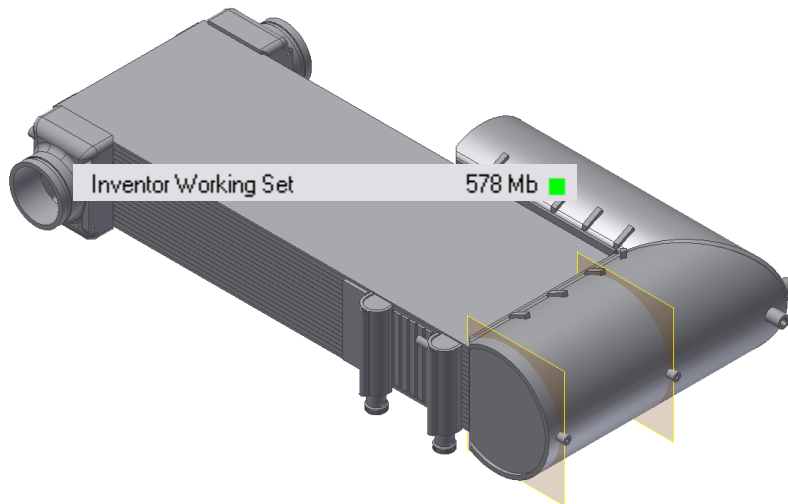


Substitute Part

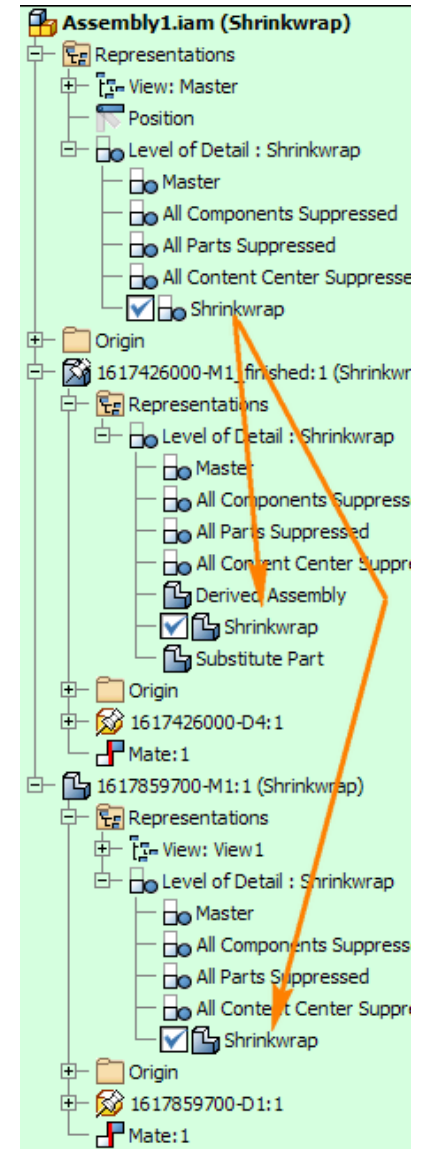
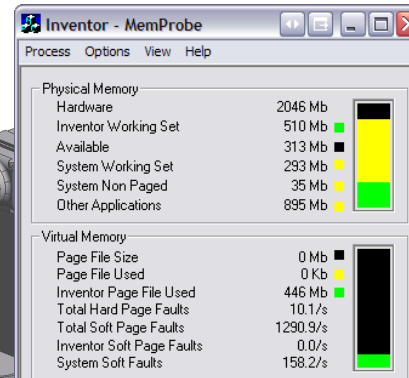
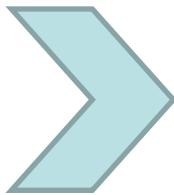
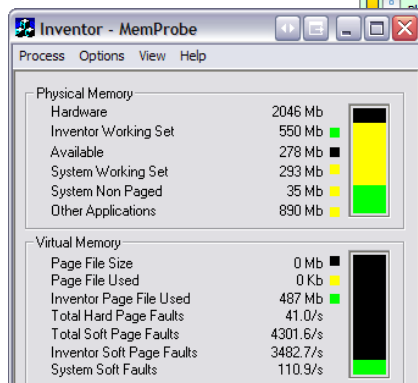
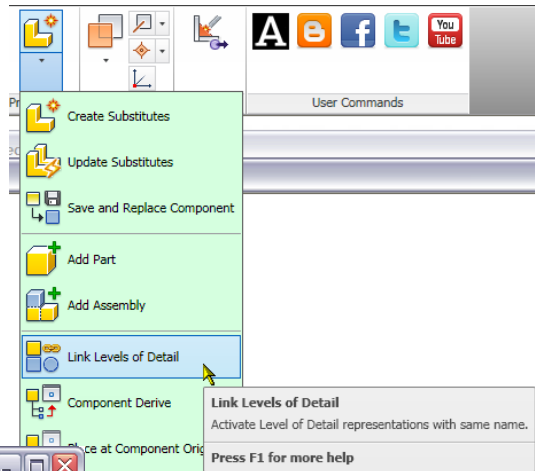


As small as you can!

18MB



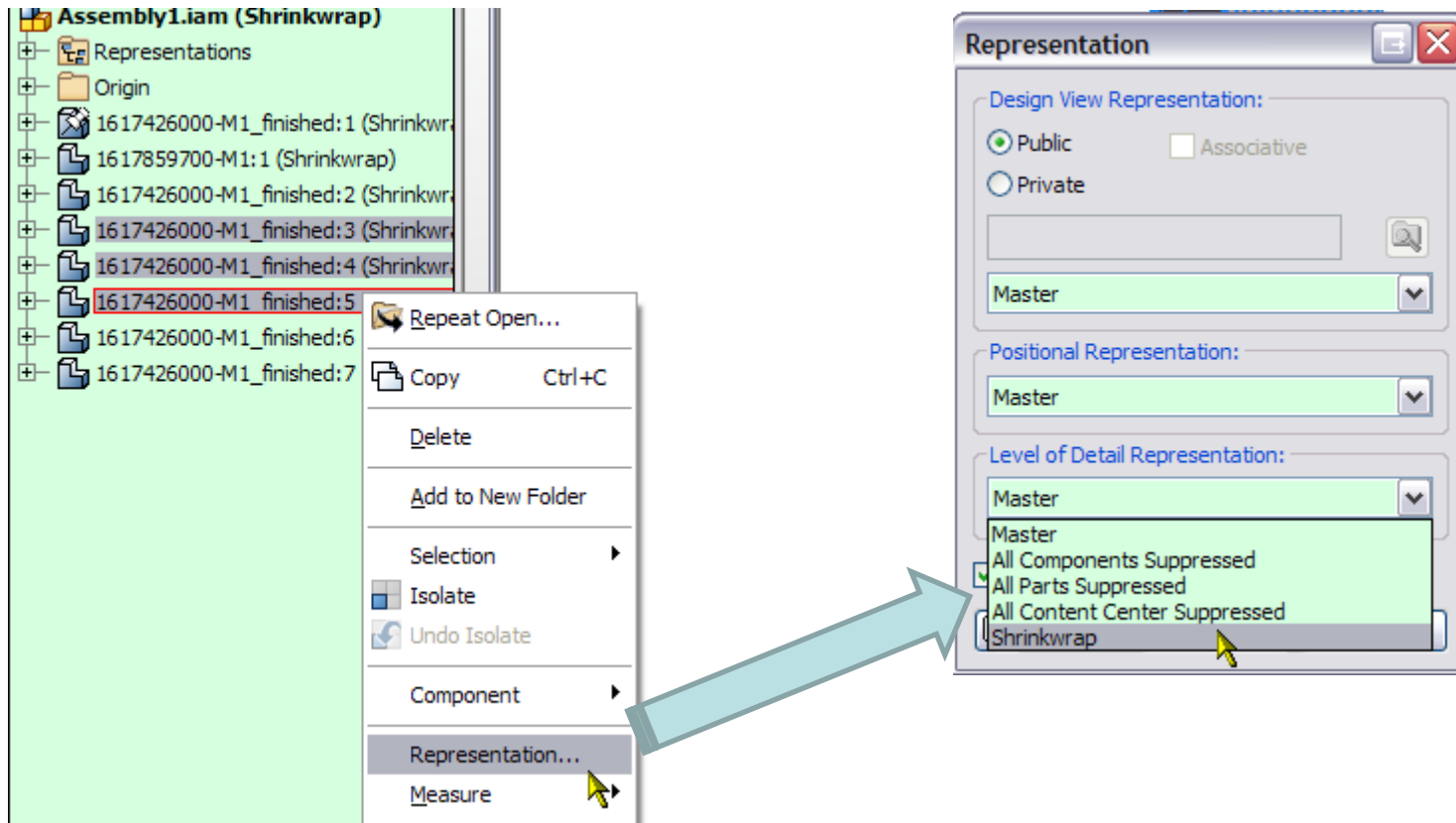
Link LOD's



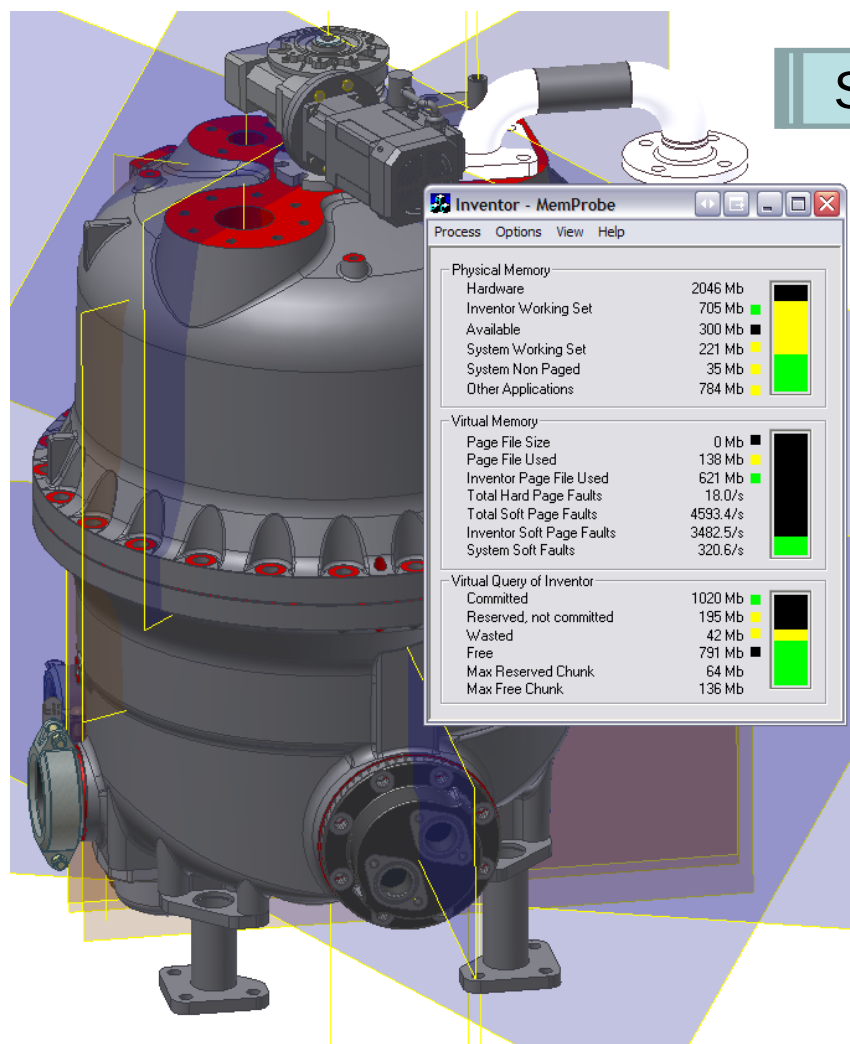
476 55

4 53

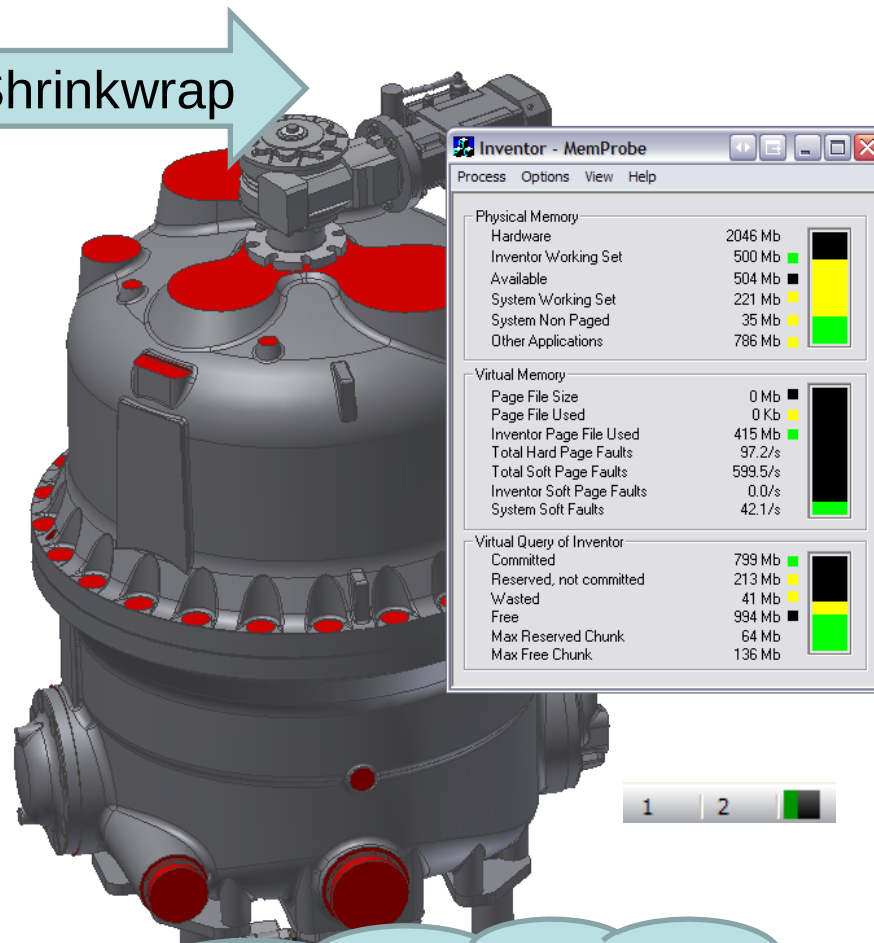
Easy to change



You gain!

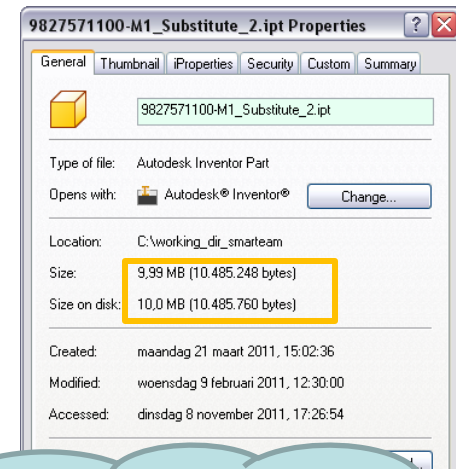
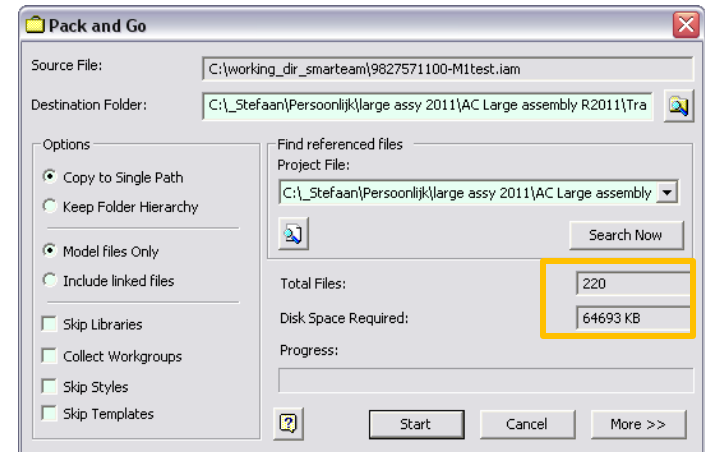
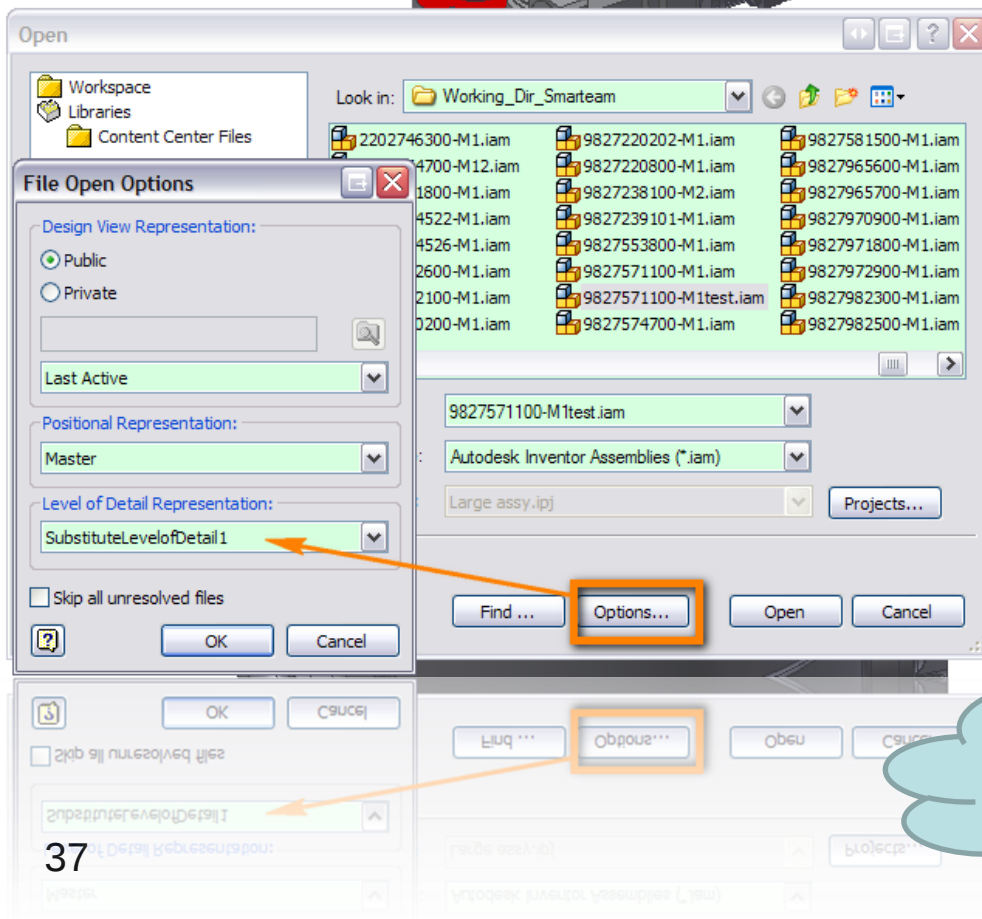


Shrinkwrap



30% RAM saving!

You gain!



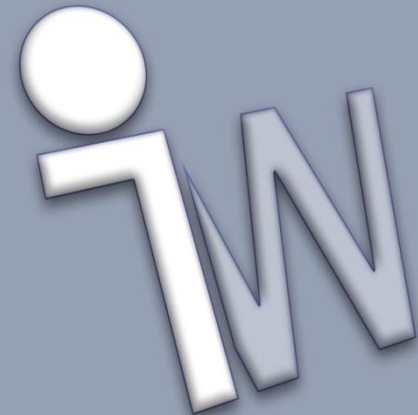
77% down in file size
30% less loading
time



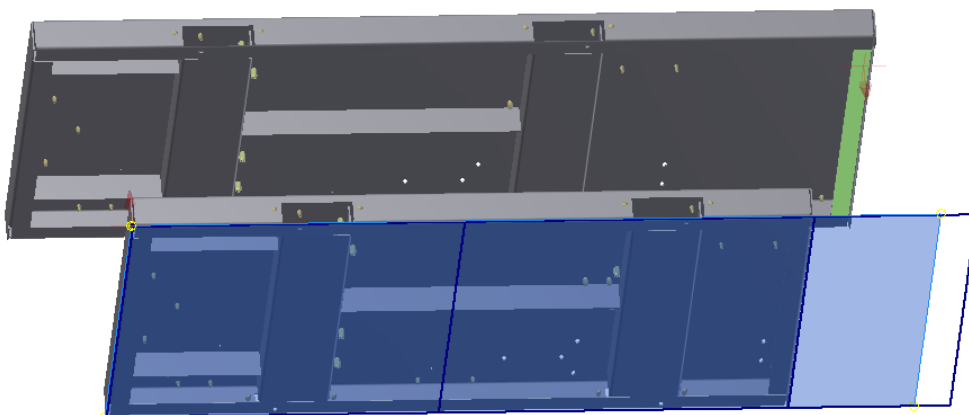
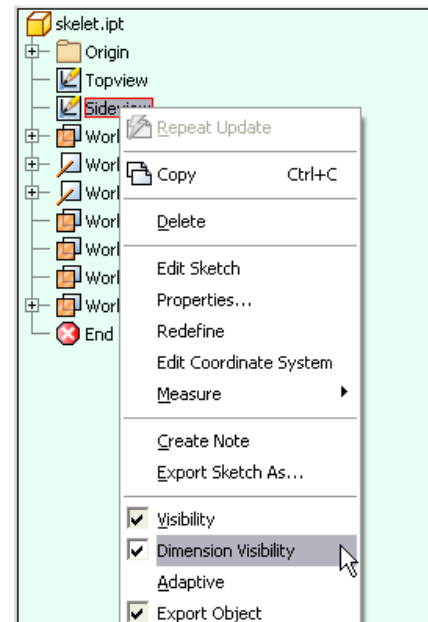
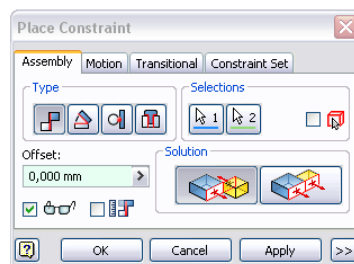
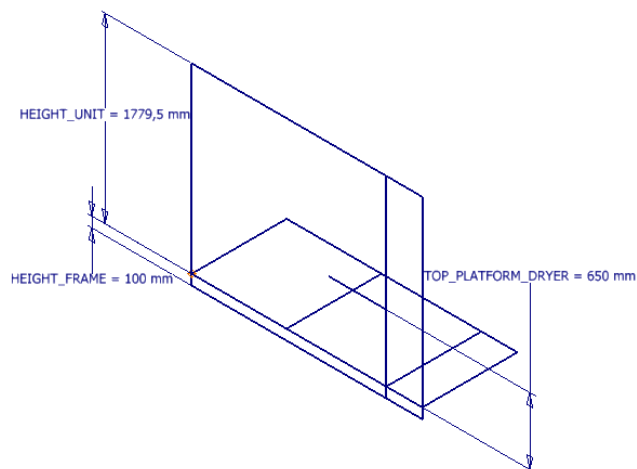
Unit skeleton



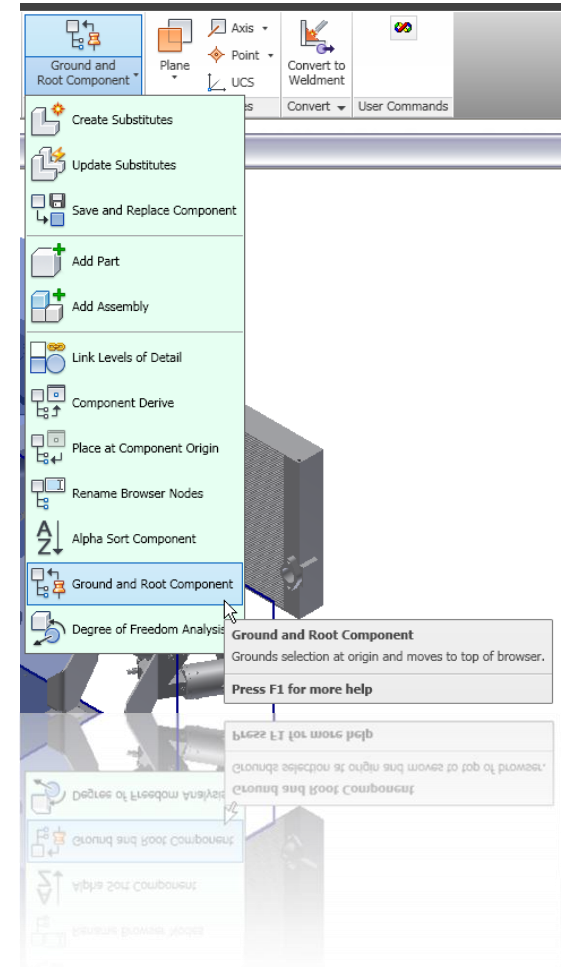
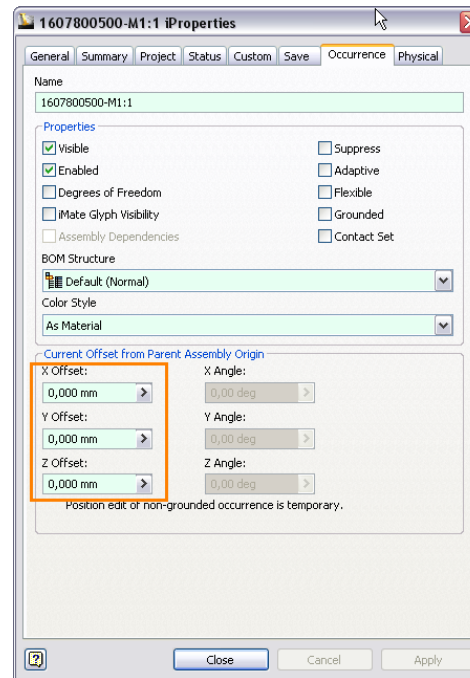
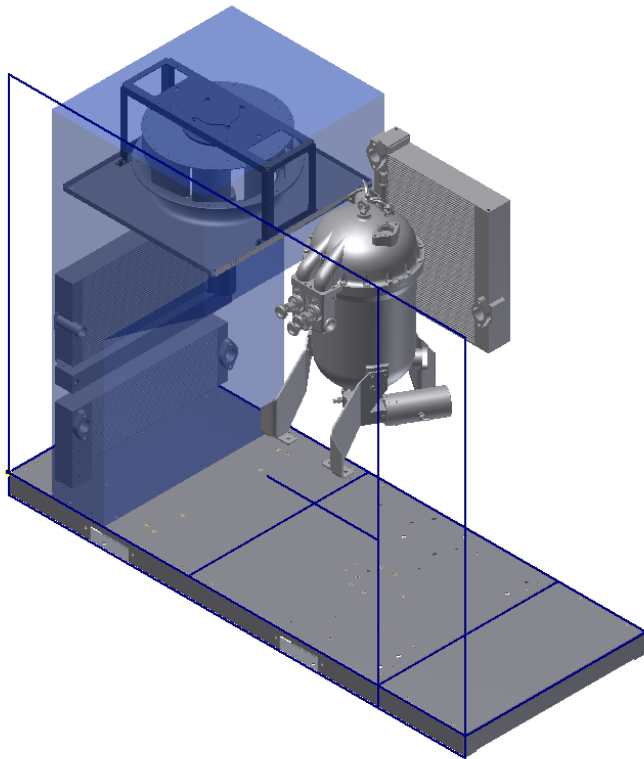
Definitie: Een skeleton sketch gebruiken om posities van onderdelen vast te leggen



Unit skeleton

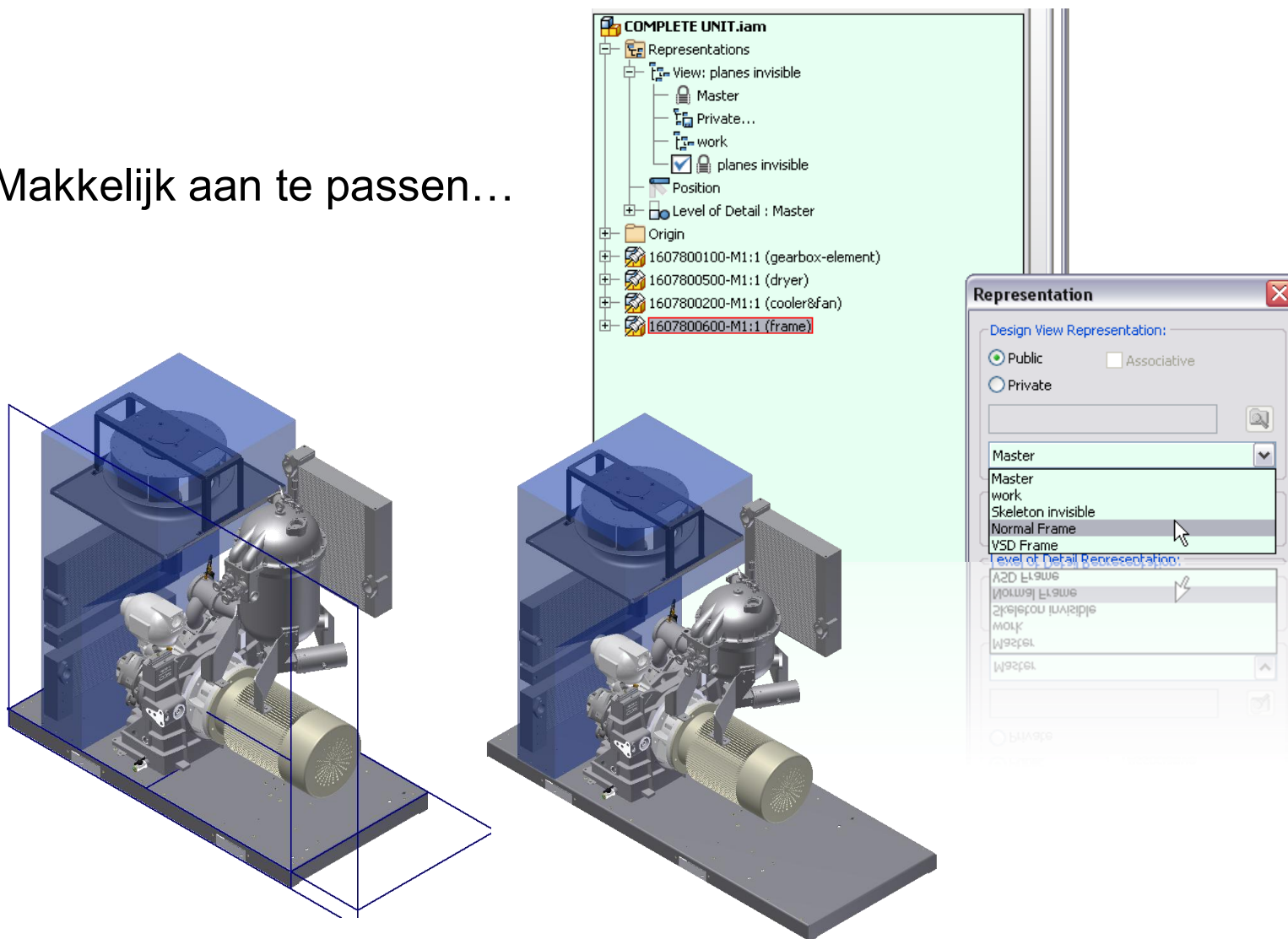


Unit skeleton



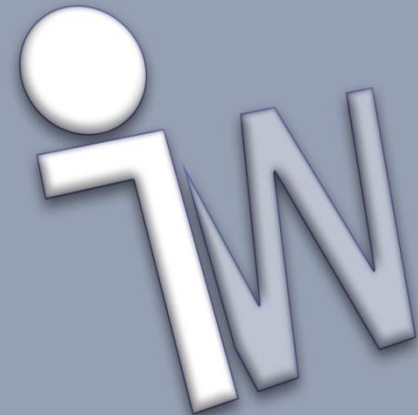
Unit skeleton

- Makkelijk aan te passen...

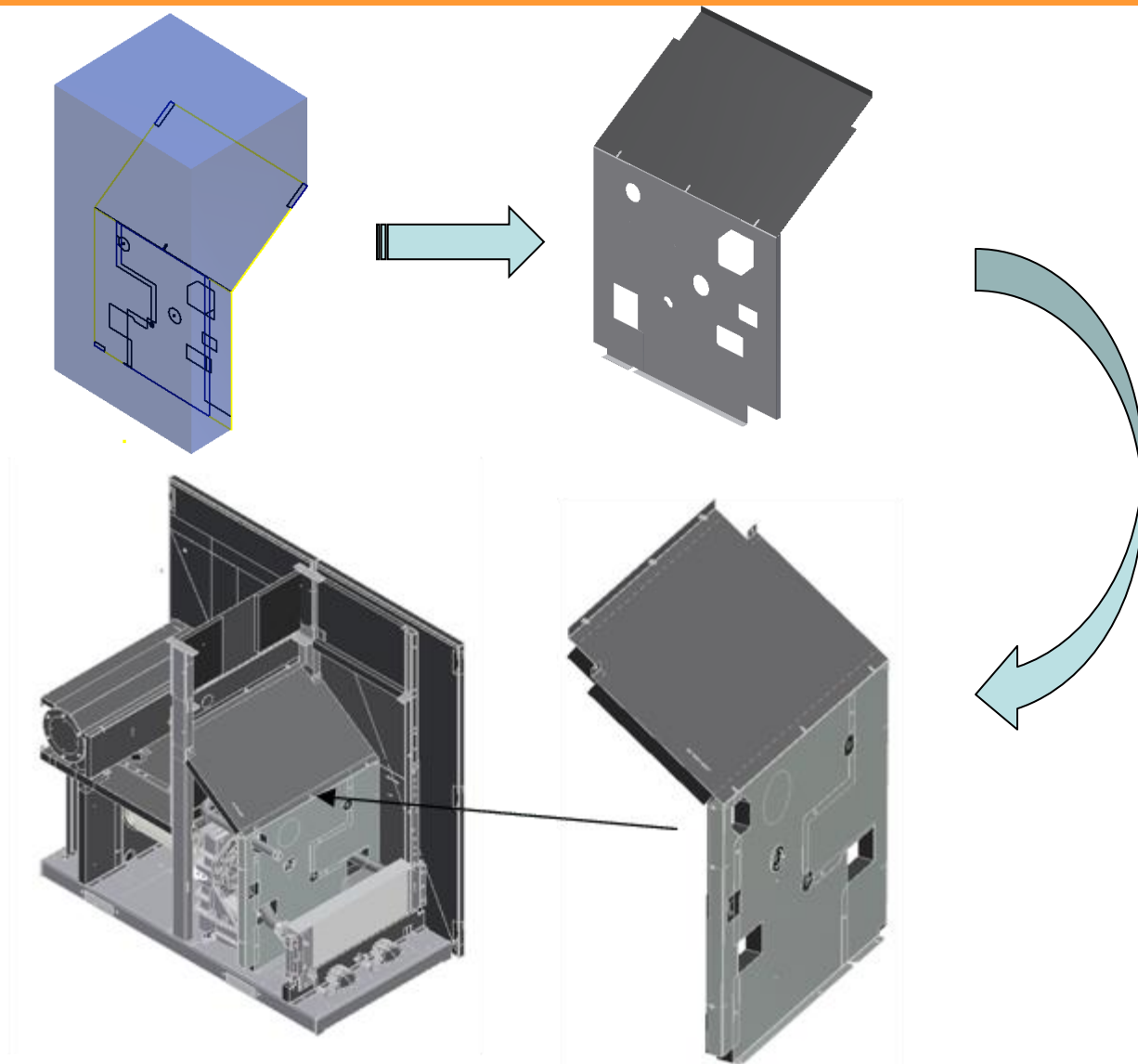


Modular skeleton

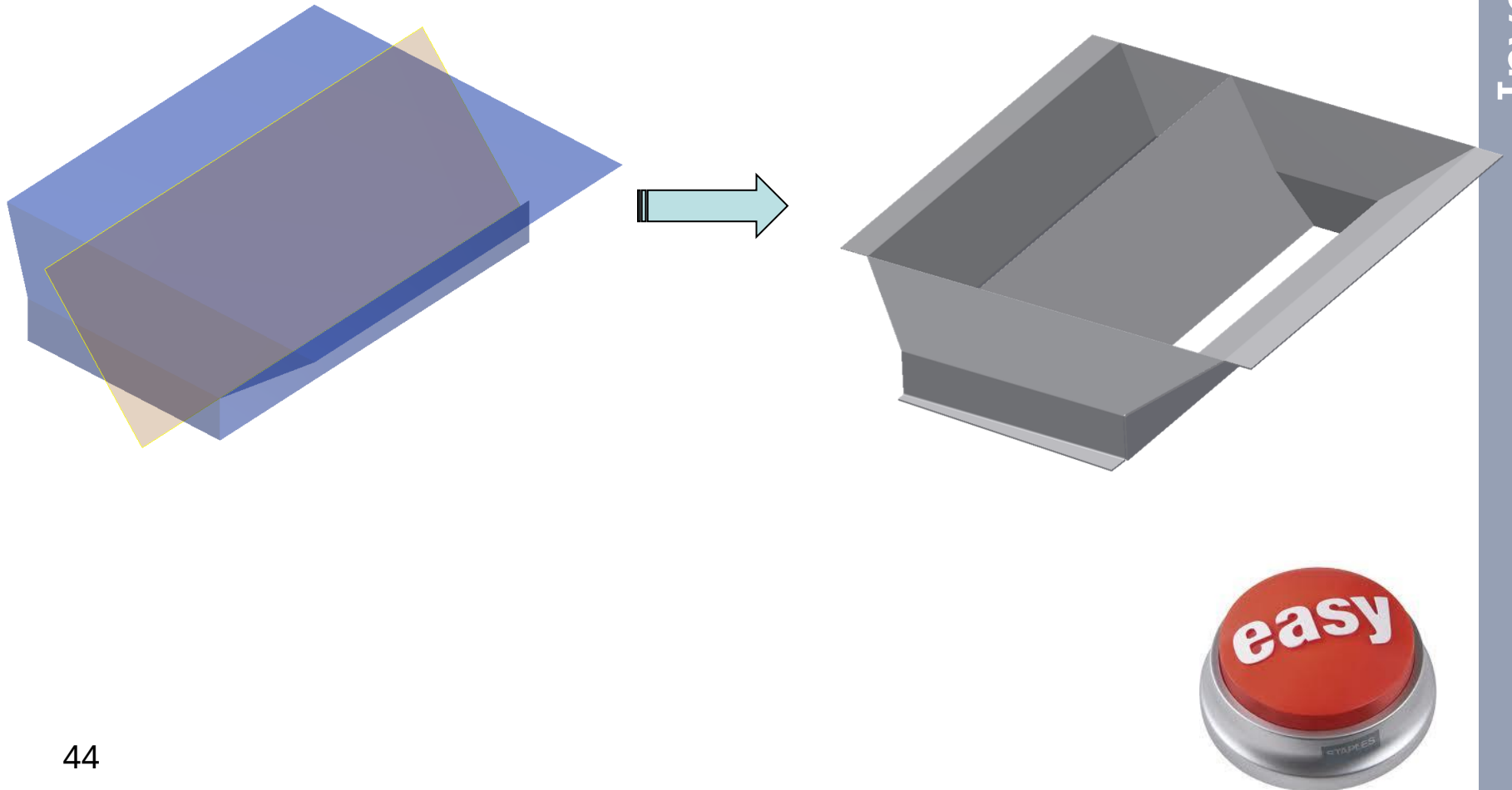
Definitie: Een vorm of sketch gebruiken om verschillende onderdelen te modelleren



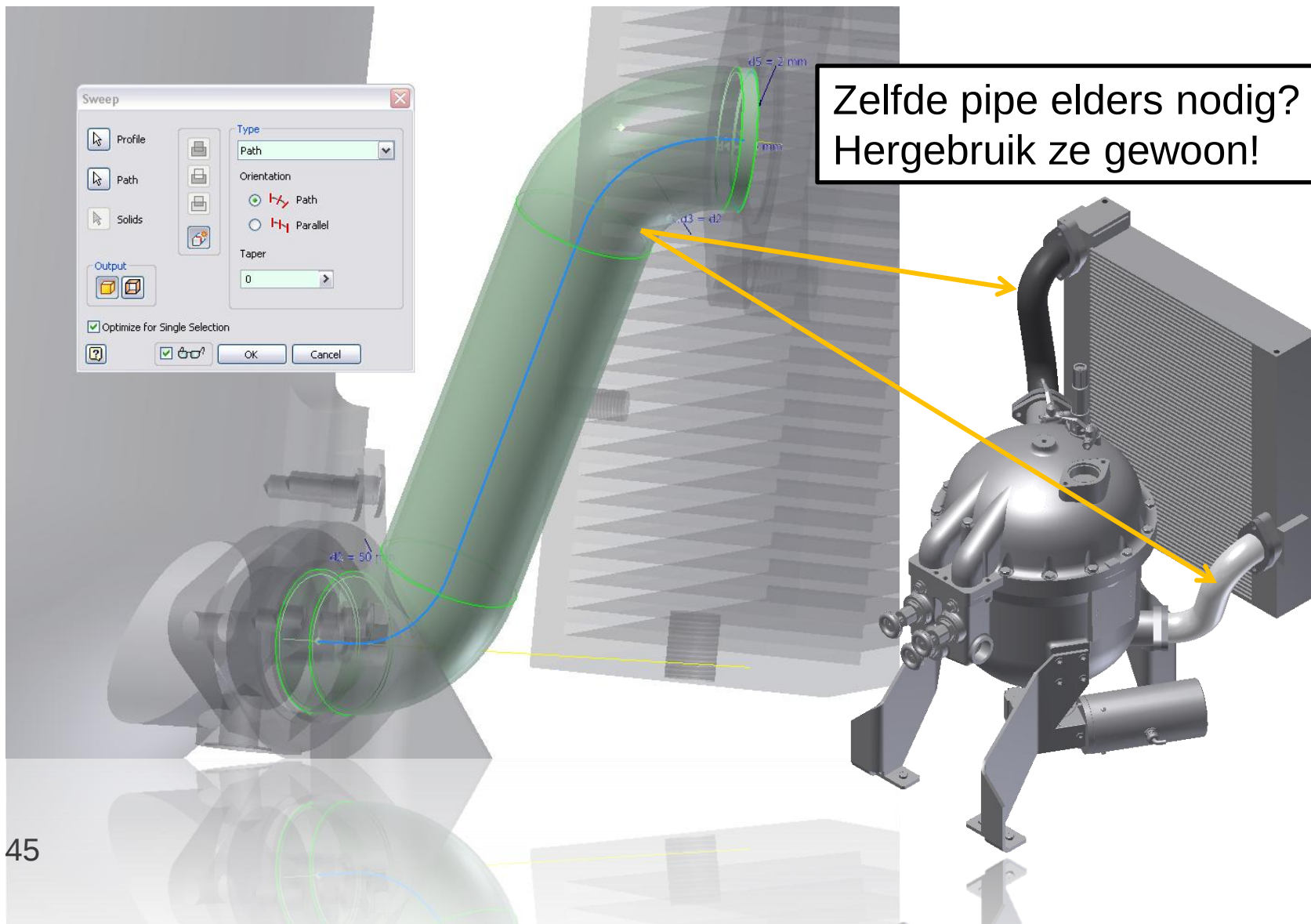
Modular Skeleton



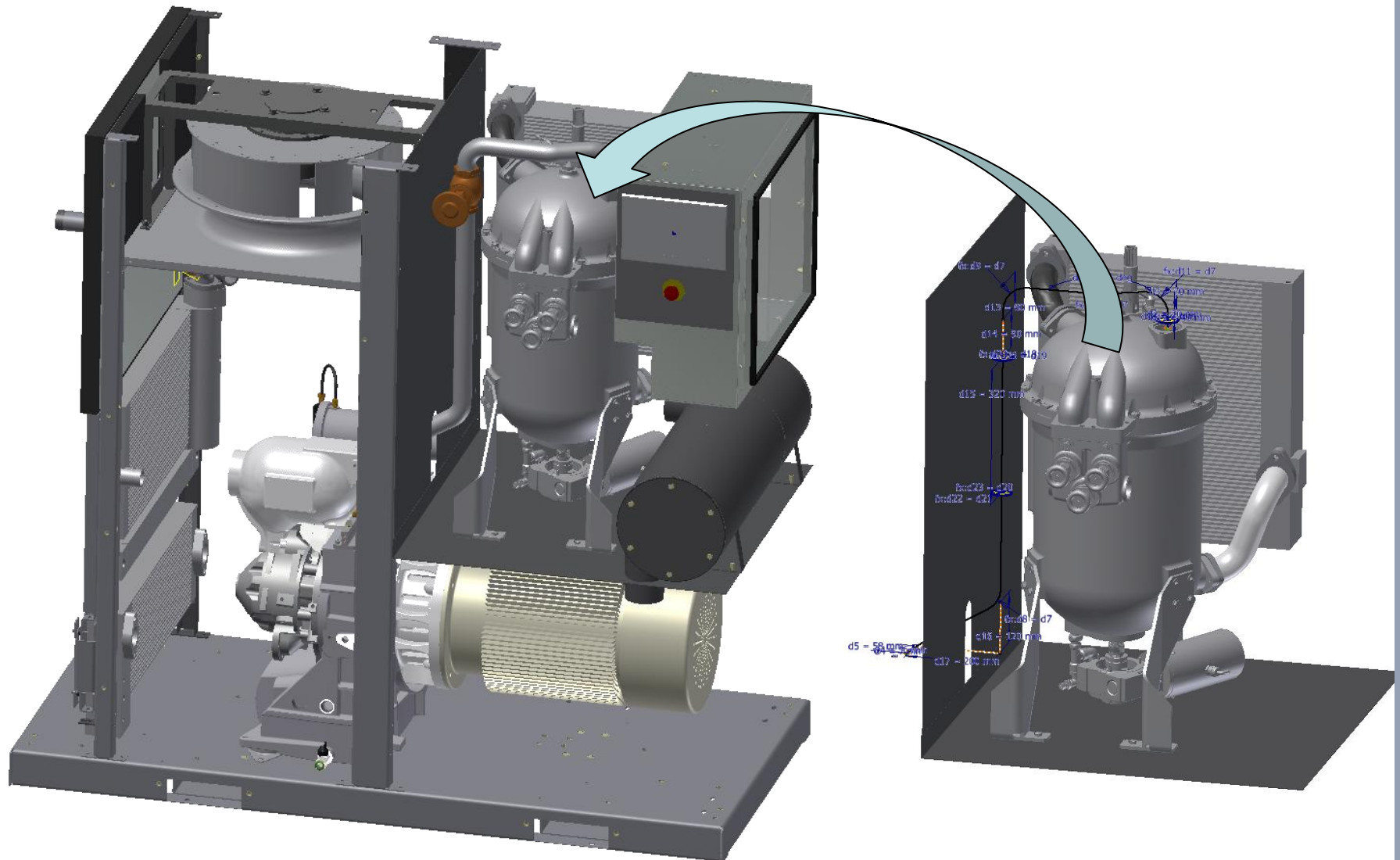
Modular Skeleton



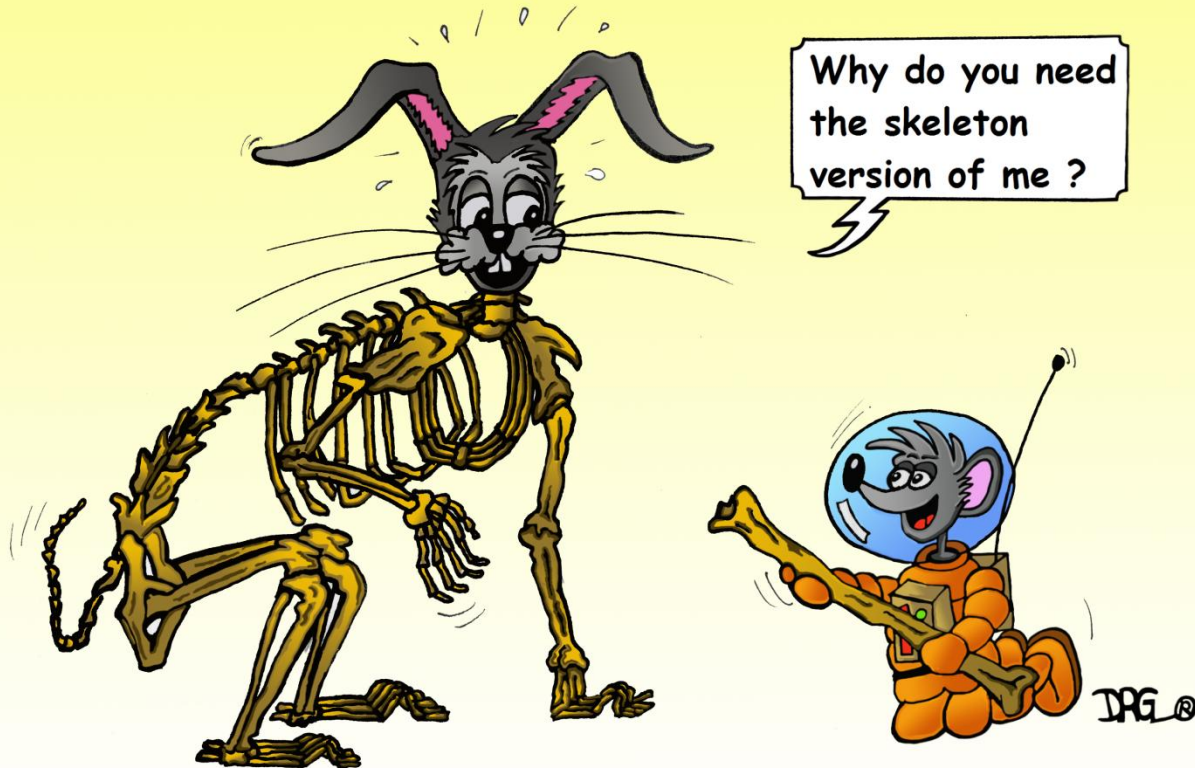
Piping tussen onderdelen



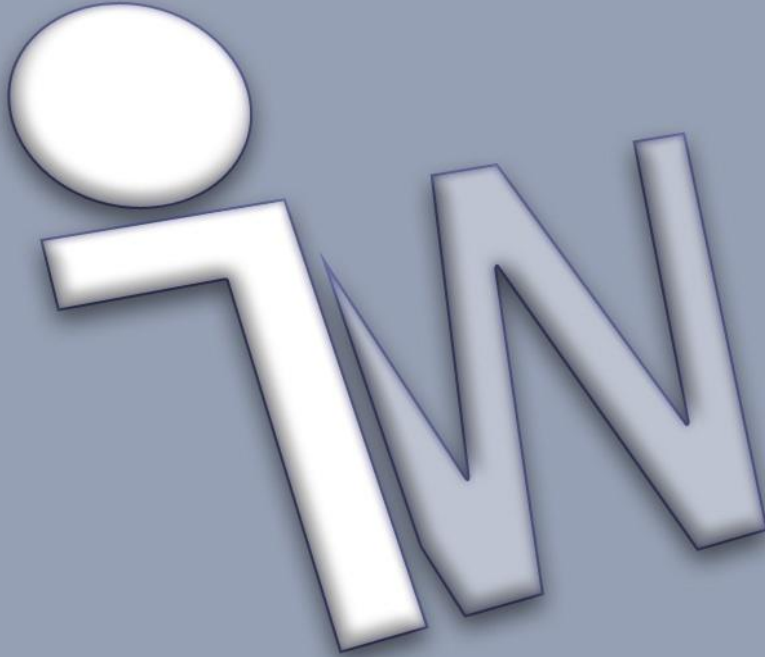
Piping tussen modules



Dank voor uw aandacht!



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