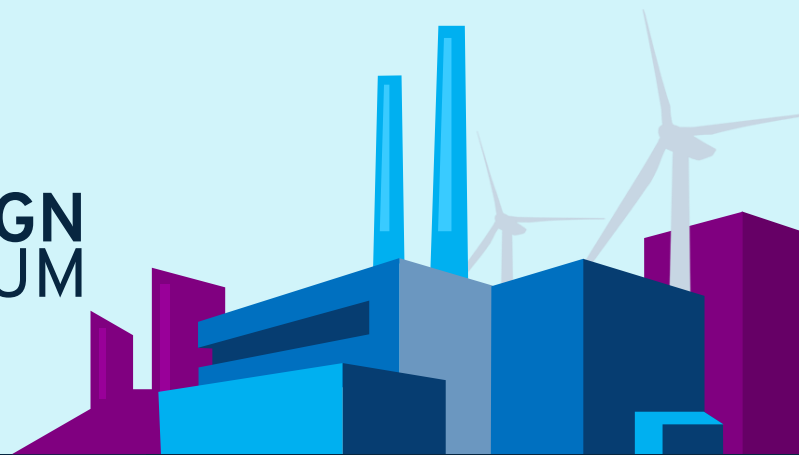




2022  
INDUSTRI&DESIGN  
FORUM



# Processer og forandring

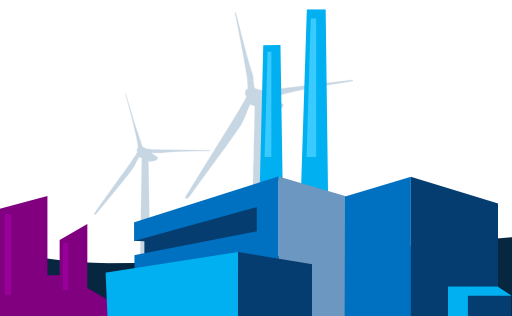
*Produktdesign, konstruktion og produktion*



WHO AM I ?!

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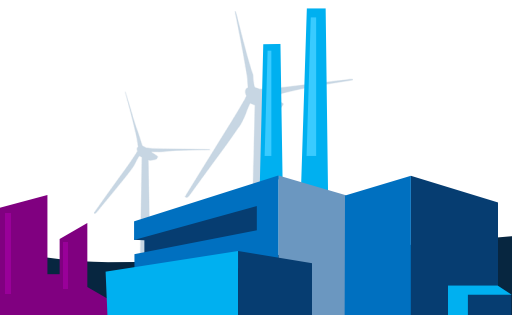
- René Dyrup Jensen
- 14 years at NTI A/S
- Head of Consultancy in DK
- 22 consultants in the D&M team



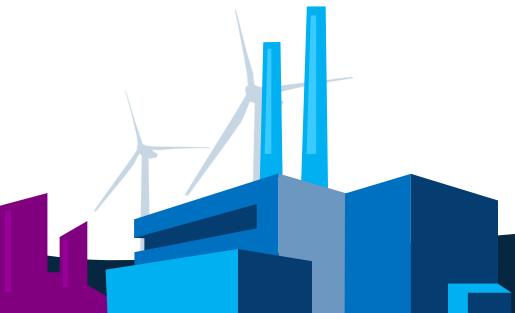
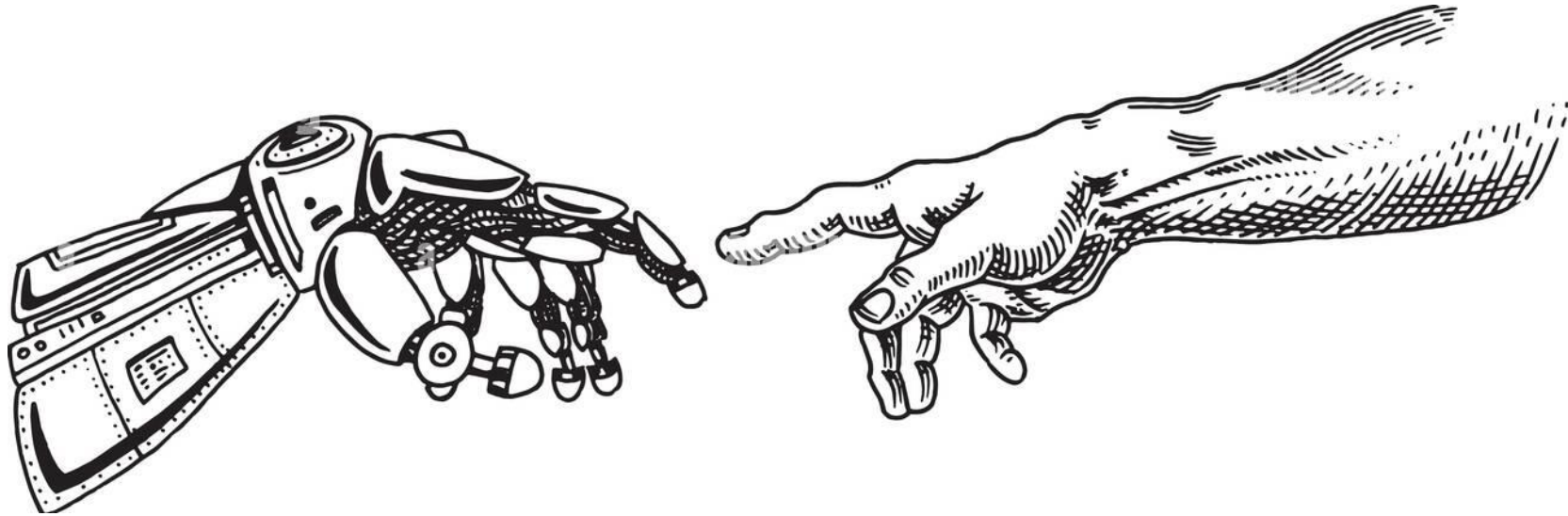
# Agenda



- Mennesker og teknologi
- Integrationer og muligheder
- Datakvalitet
- Samarbejdsplatform



# Mennesker VS. Teknologi





# Landskabet

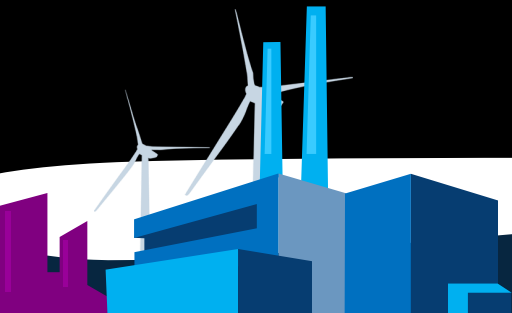
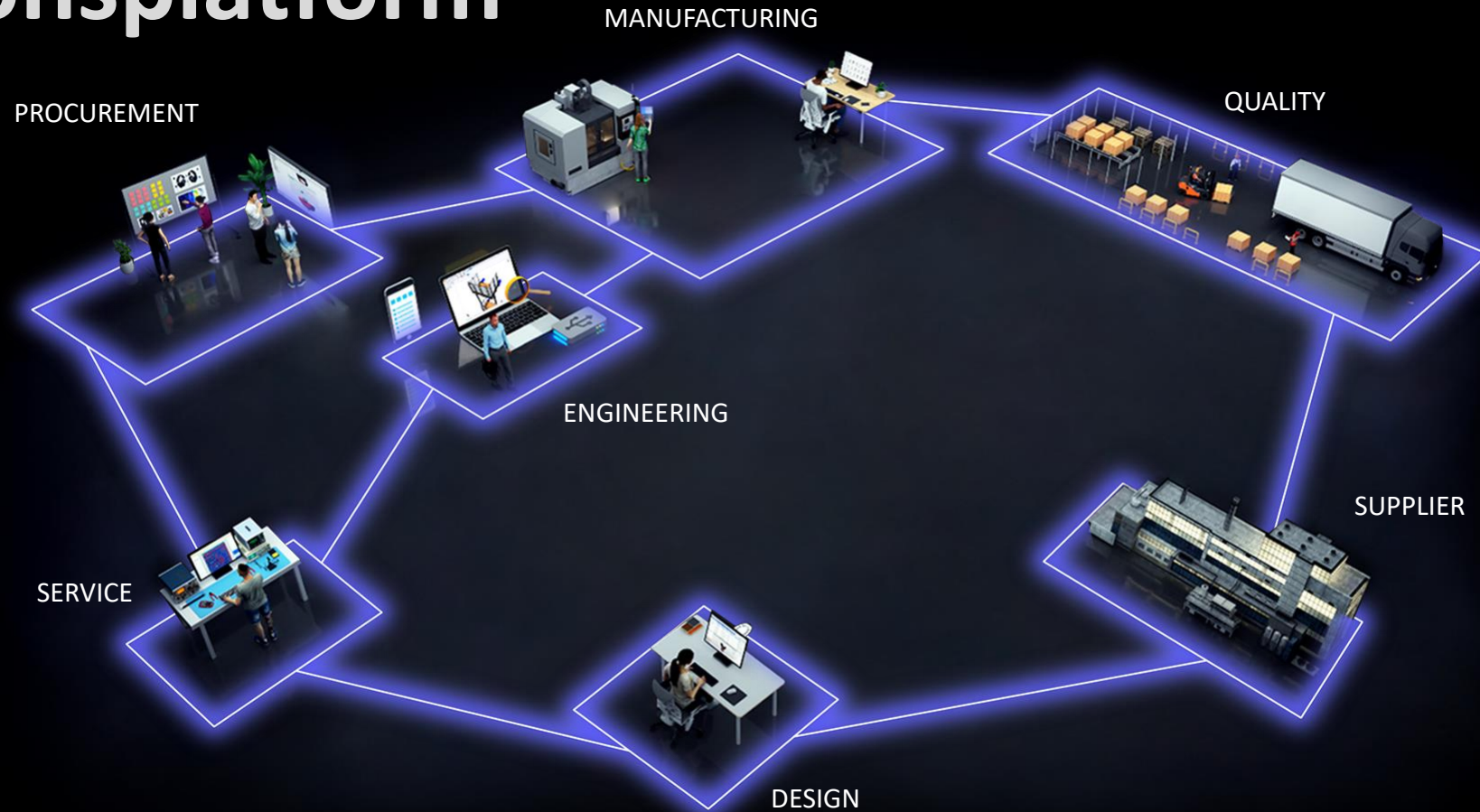


# Siloer





# Integrationsplattform

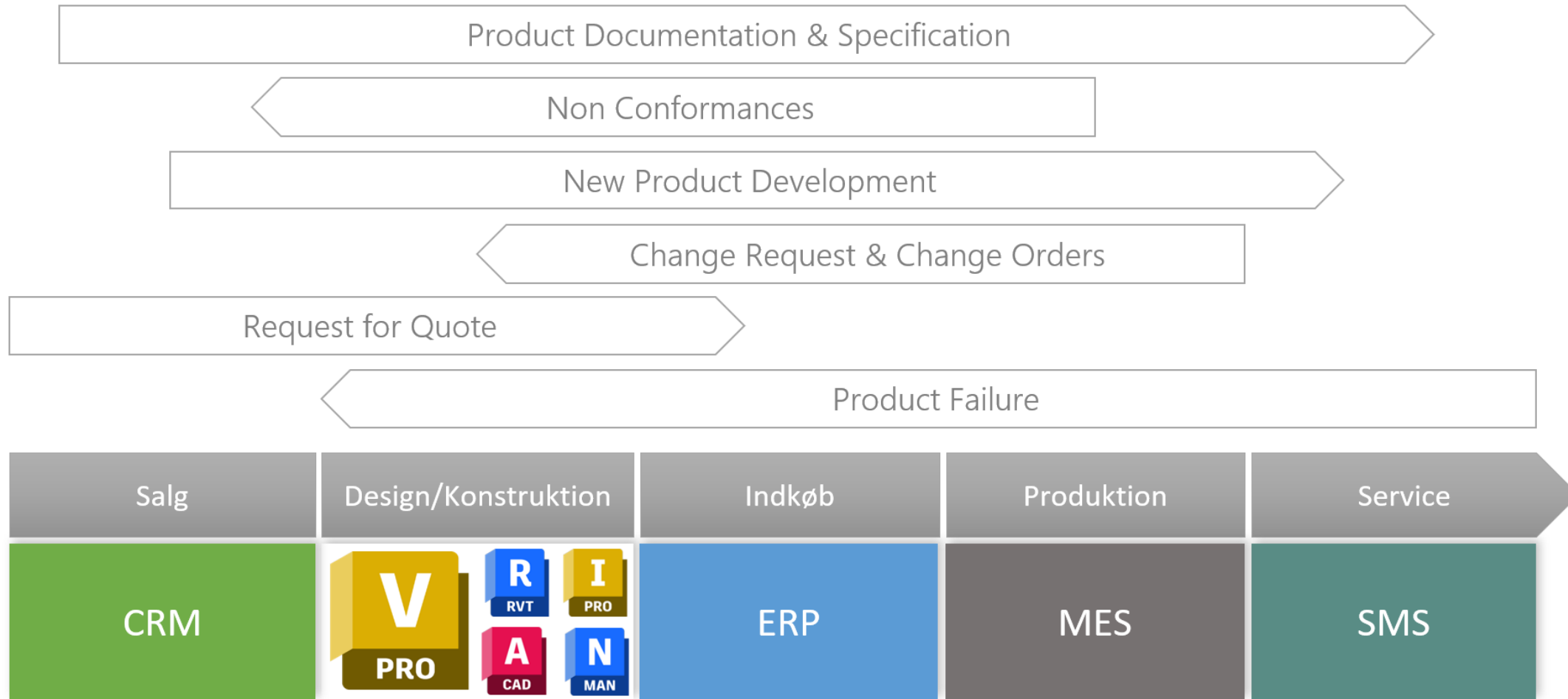


# Anvendte Systemer





# Processer på tværs af siloer og systemer



# Tilgang i 3 steps

## Digitalisering

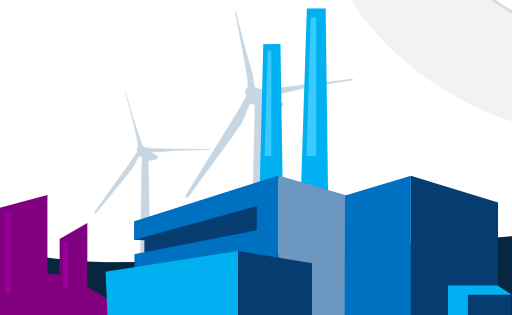
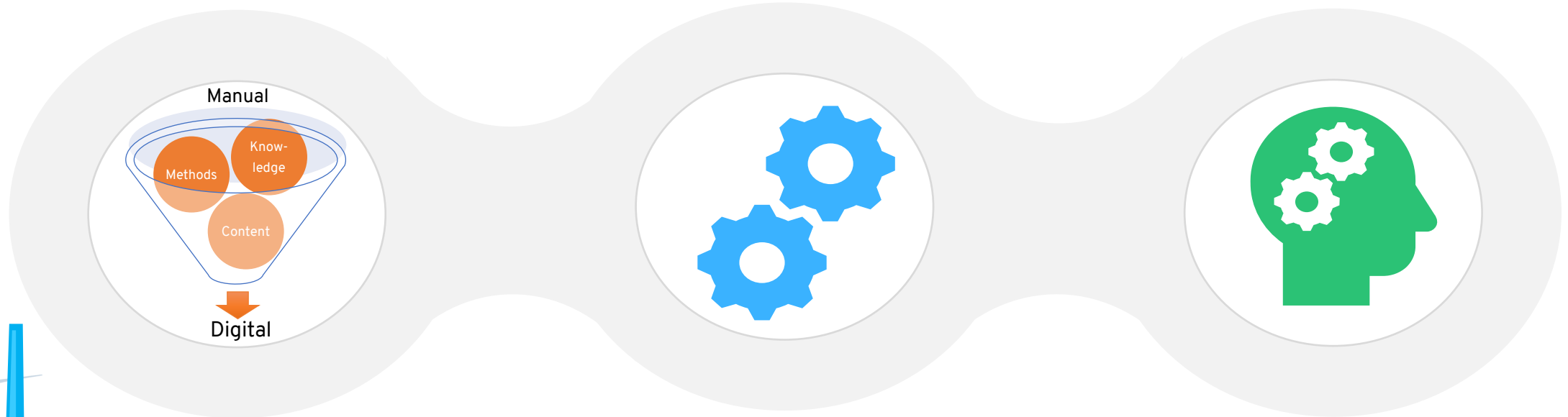
Organisering og standardisering af data / processer / viden – digitalt. Ofte manuelt håndteret.

## Automatisering

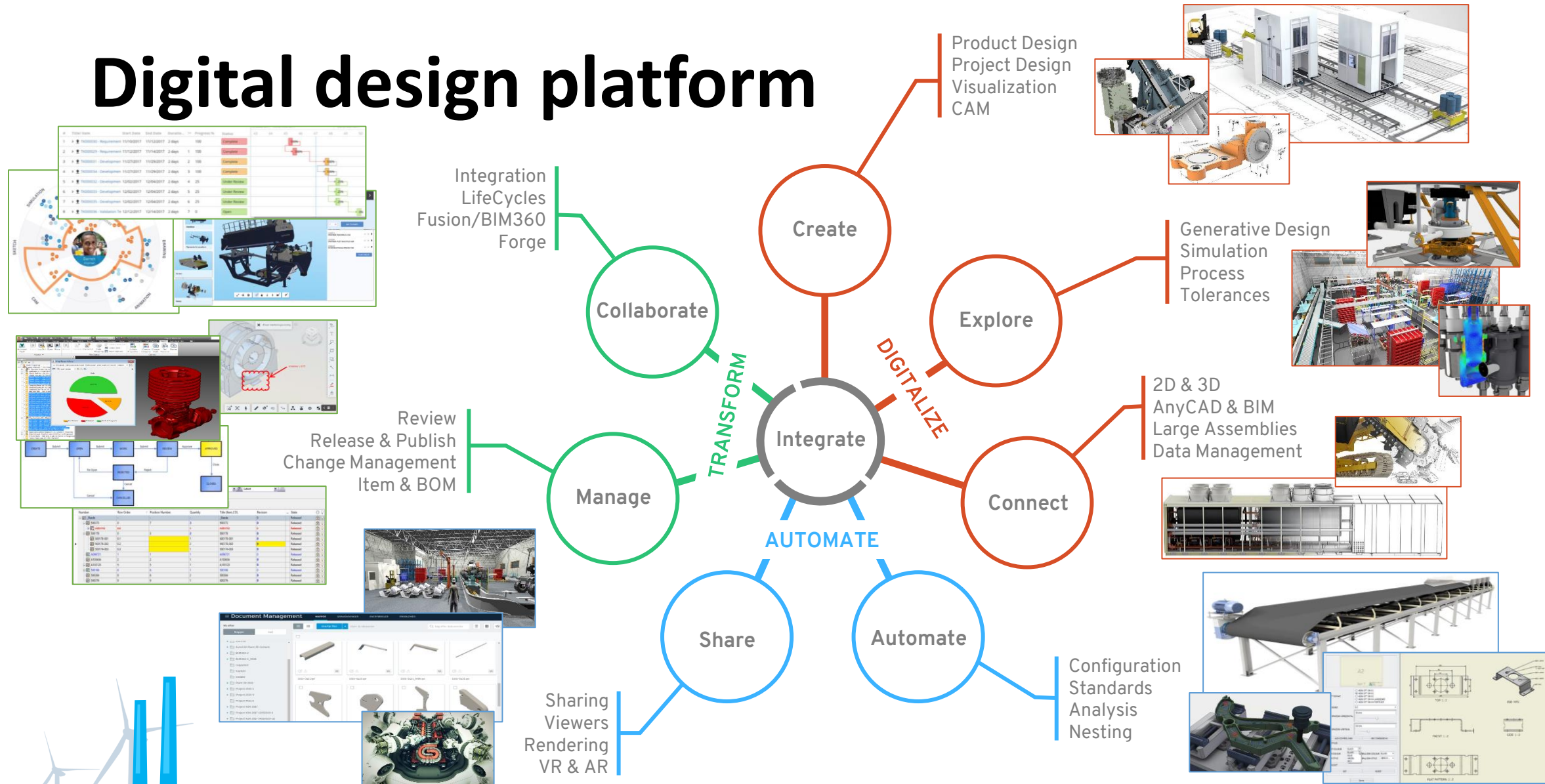
Sæt strøm til håndtering af data og metoder. Oprettelse, vedligehold, proces ...

## Transformation

Integrering og optimering med nye muligheder. Beslutte aktivt at bruge og optimere metoder og forretning i relation til digitale muligheder.



# Digital design platform





A photograph of two young children sitting at a table. The child on the left has curly brown hair and is wearing a purple shirt with pink polka dots. The child on the right has straight blonde hair and is wearing a blue shirt. Both children have their hands near their mouths, appearing to be in deep thought or listening intently. On the table in front of them are several colorful markers. The background is a plain, light-colored wall.

# Hvad skal man vælge?



# BOM, (Bill of Materials)



A	B	C	D	E	F	G	H	I
Item	Level	Number	Description	Unit of Measure	Quantity	Revised	Release Date	Lifecycle
440	3.2	001-00C-0101	Rotating Window Sub-Assembly	Each	0.0	WIP	12/12/2014	Work
441	3.2	001-00C-0102	Rotating Window Sub-Assembly	Each	0.0	WIP	12/12/2014	Work
442	3.4	001-00C-0103	Rotating Window Moulding	Each	1.0	WIP	12/12/2014	Work
443	3.4	001-00C-0104	Magnet 1/8" x 1/8" x 1/4"	Each	1.0	WIP	09/02/2015	Work
444	3.6	001-00C-0105	Window Sealing Plastic	Each	1.0	WIP	12/12/2014	Work
445	3.6	001-00C-0106	Low Seam Beading - 120mm OD x 1/4" Bead	Each	1.0	WIP	09/02/2015	Work
446	3.8	001-00C-0107	M3 x 1/4 Socket Countersink 019P191	Each	0.0	WIP	09/02/2015	Work
447	3.8	001-00C-0108	Epoxy Adhesive	Quintal	0.0	WIP	09/02/2015	Work
448	3.8	001-00C-0109	M3 1/4 Hex Washer	Each	2.0	WIP	09/02/2015	Work
449	3.8	001-00C-0110	Door Seam Assembly	Each	1.0	WIP	12/12/2014	Work
450	3.8	001-00C-0111	2.55MM CLC-MAT Series, Wire-to-Banded Housing, Single Row, Positive Lock, 2 Cuts	Each	1.0	WIP	12/12/2014	Work
451	3.8	001-00C-0112	2.55MM CLC-MAT Series, Wire-to-Banded Countersink, Terminal Lead	Each	1.0	WIP	12/12/2014	Work
452	3.8	001-00C-0113	Black Heatshrink - 3mm inner diameter	Foot	1.0	WIP	12/12/2014	Work
453	3.8	001-00C-0114	Proximity Sensor - Hamlin S9145	Each	1.0	WIP	12/12/2014	Work
454	3.8	001-00C-0115	001-40Y-0027 Label	Each	1.0	WIP	12/12/2014	Work
455	3.8	001-00C-0116	Spill Protection Seal Assembly	Each	1.0	WIP	12/12/2014	Work
456	3.8	001-00C-0117	Spill Protection Seal Assembly	Each	1.0	WIP	12/12/2014	Work
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462	3.8	001-00C-0123	Spill Protection Seal Assembly	Each	1.0	WIP	12/12/2014	Work
463	3.8	001-00C-0124	Spill Protection Seal Assembly	Each	1.0	WIP	12/12/2014	Work
464	3.8	001-00C-0125	Spill Protection Seal Assembly	Each	1.0	WIP	12/12/2014	Work
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569	3.8	001-00C-0230	Spill Protection Seal Assembly	Each	1.0	WIP	12/12/2014	Work
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576	3.8	001-00C-0237	Spill Protection Seal Assembly	Each	1.0	WIP	1	

nti



# Kvalitet i data



CAD Application  
Create

## Property typer

Automatiske properties

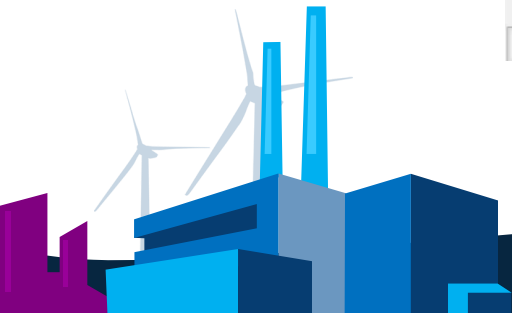
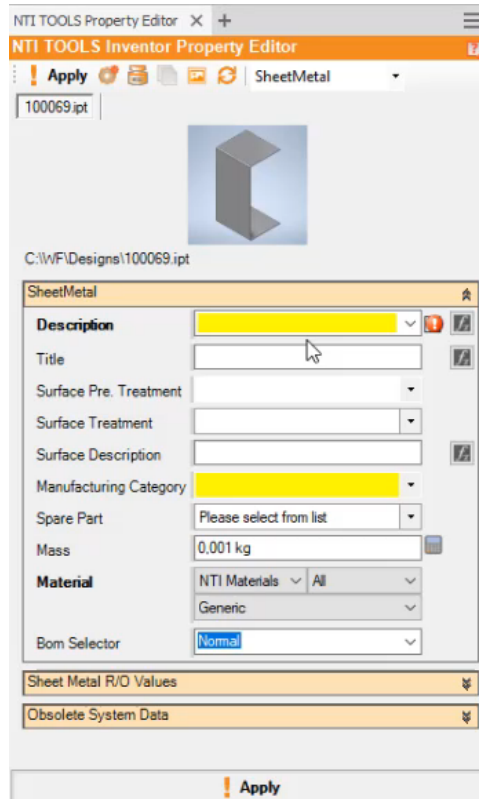
- Create data
- Created by
- Revision

Brugerhåndterede properties

- Description
- Surface treatment
- Spare Part
- Materiale
- Bom structure

Kalkulerede properties

- Sheet Metal Area, width, length and thickness
- Consumption
- Cut Length



# PDM Workflow, data kontrol



Autodesk Vault Professional, PDM  
Prepare data

## Item Data

- Definition af vare samlet et sted
- Afledte filer (PDF, DXF, STP osv.)
- Materialecertifikater
- Beregninger

## Export af Item data til

- ERP
- Excel
- PLM

The screenshot displays the Autodesk Vault Professional 2021 interface. The main window shows a list of items under the '4711 NTI' folder. The list includes columns for Name, Title, Description, Material, Date File Created, and Date Modified. The selected item is '100081.ipt' with the title 'Udstyr båndbane' and material 'EN AW-6082'. The right-hand pane shows the properties for this item, including System, User Defined, and various technical specifications like Length, Mass, and Material.

Name	Title	Description	Material	Date File Created	Date Modified
501-1001-001.iam		Etage Layout		27-08-2020	27-08-2020 15:09
501-1001-001.idw				27-08-2020	27-08-2020 15:09
100026.iam		Layout		15-07-2020	22-04-2021 15:35
100026.idw				17-07-2020	22-04-2021 15:35
100027.iam		Etage Layout		15-07-2020	26-08-2020 15:32
100027.idw				17-07-2020	26-08-2020 15:31
100045.iam		Layout		30-09-2020	30-09-2020 09:24
100045.idw				30-09-2020	30-09-2020 09:24
100081.ipt	Udstyr båndbane	Bakke	EN AW-6082	22-04-2021	22-04-2021 17:41
Material Certific...				22-04-2021	22-04-2021 17:36

Property	Value
Aera	52239,3
Aera Consumption	52239,3
Application Version	2021.2 (Build 252289000, 289)
Area Number	
Author	RDJ
Comments	
Consumption	0,073
Date File Created	22-04-2021
Description	Bakke
Designer	RDJ
Document SubType	(9C464203-9BAE-11D3-8BA...
Document SubType Name	Sheet Metal
ERP Mass	0,073
File Previous Name	
Group Number	
Length	348,3
Manufacturing Category	Laser Cut
Mass	0,073 kg
Material	EN AW-6082
Part Number	100081
Rev Number	0
Spare Part	Standard Spare Part
Supplier Name	
Supplier Number	
Surface Description	RAL 5015
Surface Pre Treatment	Sand blasted
Surface Treatment	Painted
Thickness	0,5
Title	Udstyr båndbane
Unit Aera	mm^2
Unit Aera Consumption	mm^2
Unit Consumption	kg
Unit ERP Mass	kg
Unit Length	mm

# Overblik, NTI TOOLS Vault



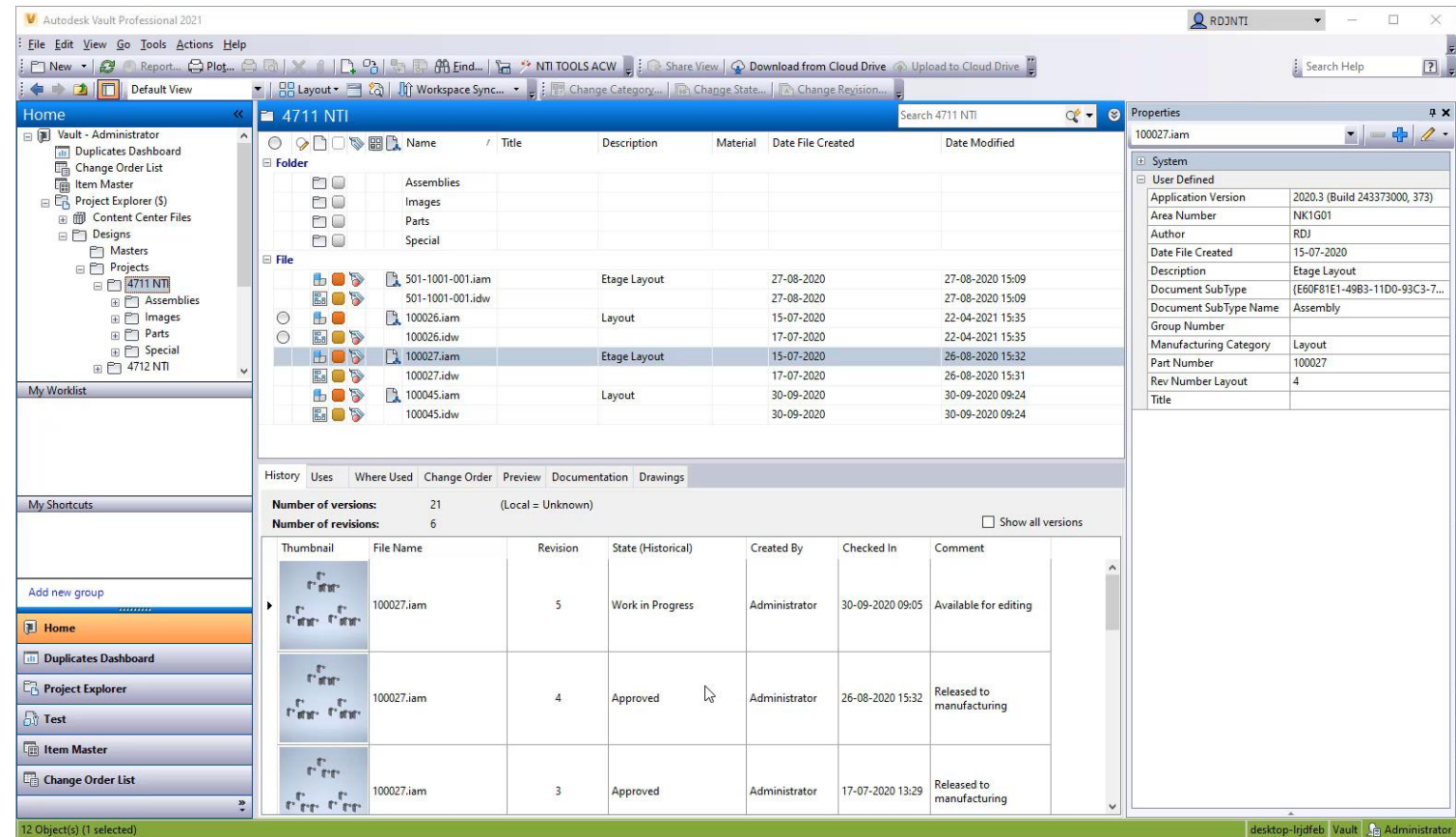
Autodesk Vault Professional, PDM  
NTI TOOLS VAULT

## Overblik

- Er tegninger og modeller opdateret
- Oprydning af lokal folder
- Overvågning
- Er item data opdateret
- Four eyes check
- Eksport af Item data

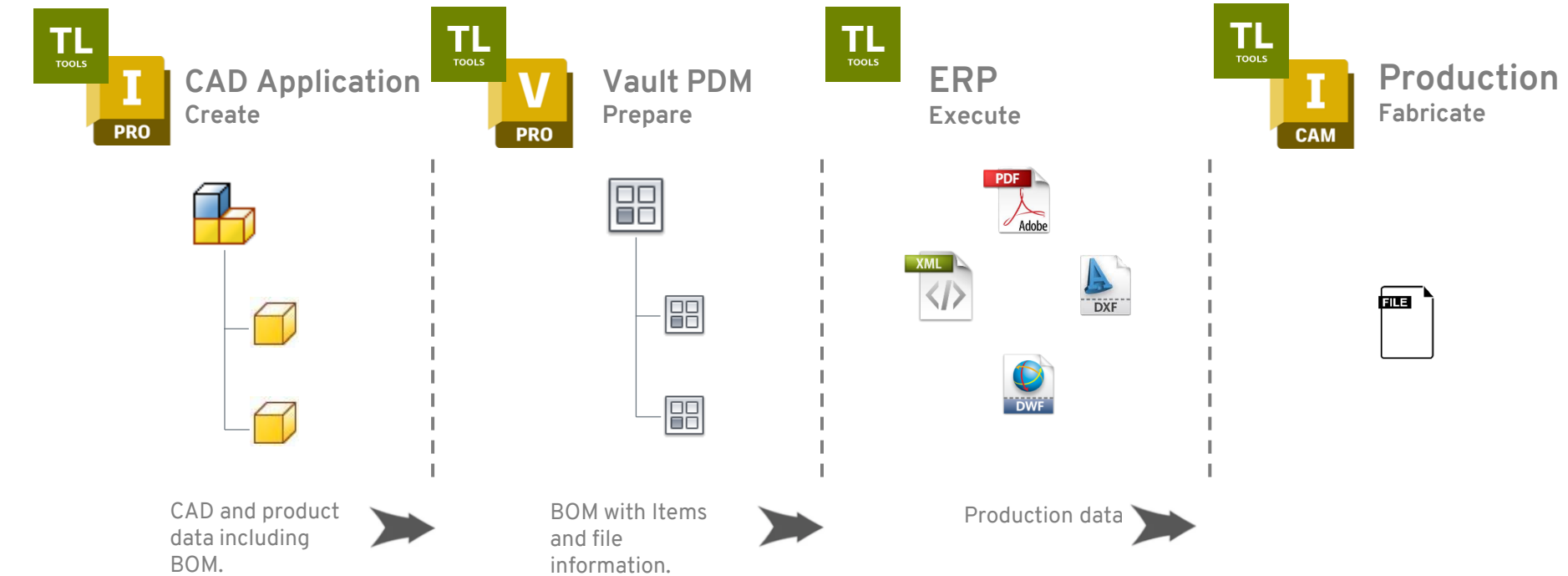
## Generelle værktøjer

- Reservere numre
- Tegningslister
- Eksport af afladte filer til f.eks. mail





# Silobaseret proces



## Product definition

- Item number
- Description
- Material quality
- Surface treatment
- Spare part
- Supplier information

## Data management

- Meta data
- BOM management
- Approve procedure
- Item data

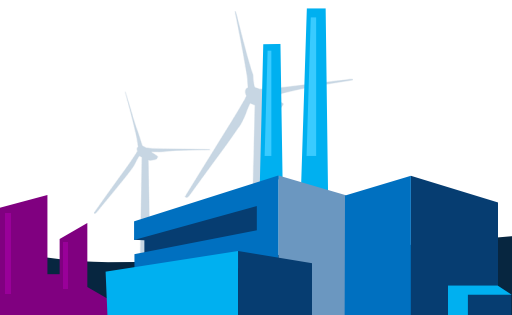
## Behov og eksekvering

- Purchase
- Production
- Calculation of needs
- Traceability
- Storage

## Production data

- Laser cutNesting
- CAM
- Derived Inventor data

# Styklister og integrationer



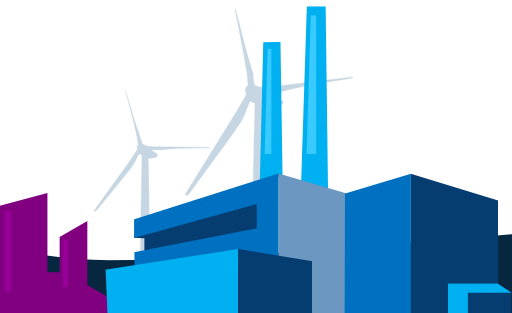
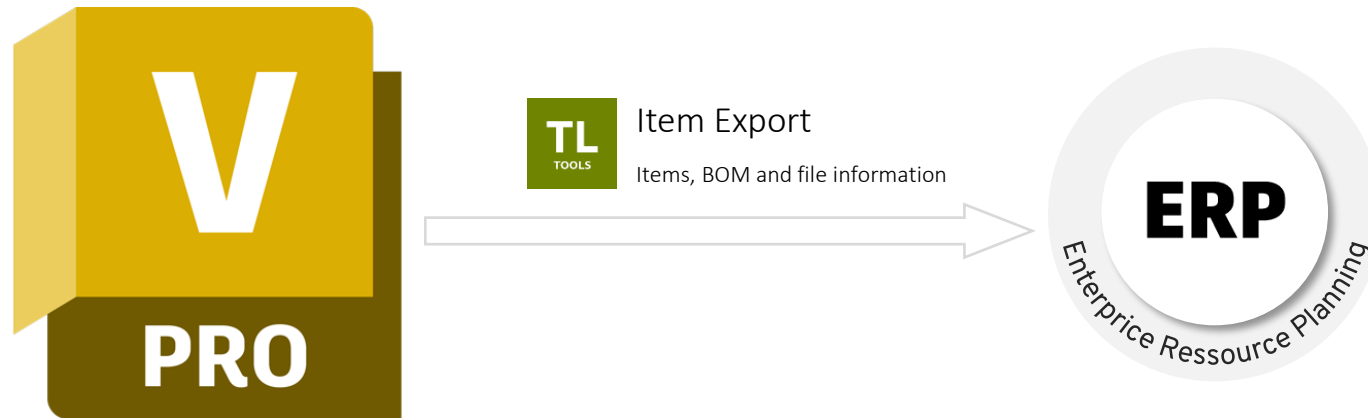
# Spærring af vare i ERP

## Fordele

- Nemt at implementere
- Varen kan ikke produceres eller købes

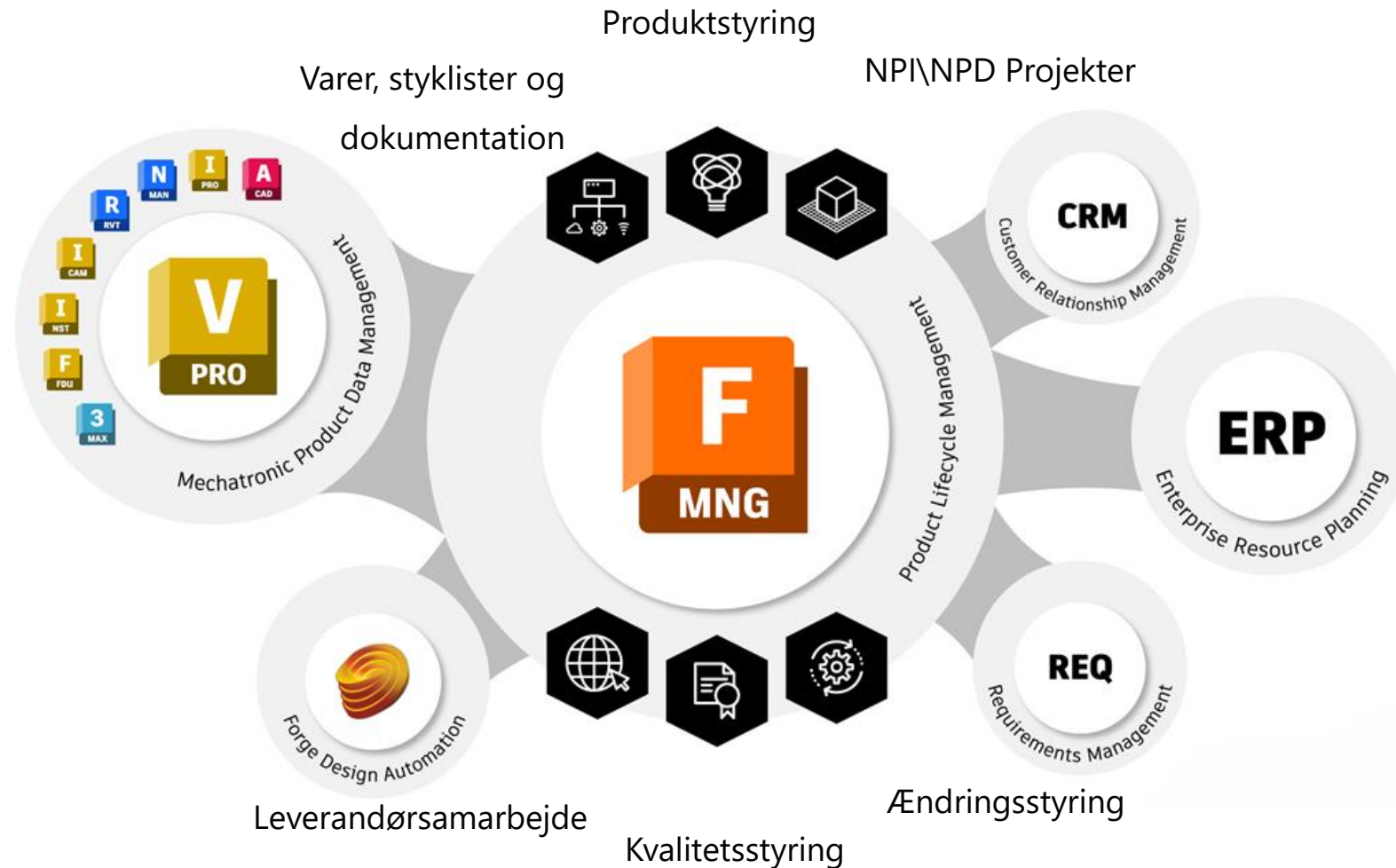
## Ulemper

- Hvem ser det?
- Hvad nu hvis ændringen ikke kun vedrøre engineering?





# Autodesk Fusion Manage (PLM)



# Mekatronik - varer og styklister

Home > Items and BOMs

001-ASY-0001 - EMBER Printer [REV.B]

Locked 04/06/2022 Production

Item Files (0 / 2) Bill of Materials (15) Where Used (2) Critical Components (15) Related Changes (3) Relationships (0) Change Log

Edit Add Remove

Views: Basic

Basic as of Today using the Released Revisions configuration

#	Descriptor	Icon	Revision	Lifecycle	Quantity
0.0	001-ASY-0001 - EMBER Printer [REV.B]	PG	B	Production	
1.0	001-ASY-0002 - Resin Tray Assembly [REV.B]	M	B	Production	
1.1	001-ASY-0004 - Assembled Printer [REV.B]	M	B	Production	1.0
1.2	001-DOC-0002 - Packaging Assembly Document [REV.A]	PG	B	Production	0.0
1.3	001-PKG-0002 - Packing Tape [REVA]	PG	A	Production	6.0
1.4	001-ELC-0056 - Power Supply [REVA]	E/E	A	Production	1.0
1.5	001-ELC-0058 - USB Cable [REVA]	E/E	A	Production	1.0
1.6	001-PKG-0008 - Printer Bag [REVA]	PG	A	Production	1.0
1.7	001-PKG-0032 - Desiccant [REVA]	PG	A	Production	3.0
1.8	001-PKG-0033 - Rotating Window Shipping Tape [REV.A]	PG	A	Production	1.0
1.9	001-DOC-0136 - Serial Number Label [REV.B]	PG	B	Production	1.0
1.11	001-ASY-0038 - Build Head Assembly [REV.B]	M	B	Production	2.0
1.12	001-DOC-0348 - Stocking Label [REV.B]	PG	B	Production	1.0
1.13	001-ASY-0051 - Packaging Assembly [REV.B]	M	B	Production	1.0
1.14	001-DOC-0347 - Branding & Certification Label [REV.A]	PG	B	Production	2.0
1.15	001-DOC-0363 - User Manual and Calibration Post...	PG	B	Production	1.0

Basic

Export

Basic

Technical Details

Compliance

Sourcing

Service

#	Number	Description	Quantity	Unit of M...	Revision	Lifecycle	Release Date	Effectivity Date	Ref Des	RoHS	REACH	Conflict Minerals
0.0	001-ASY-0001	Top level printer		Each	B	Production	04/06/2022	04/06/2022		Compliant	Not Compliant	Not Required
1.0	001-ASY-0002			Each	B	Production	04/06/2022	04/06/2022		Compliant	Not Validated	Not Validated
1.1	001-ASY-0004		1.0	Each	B	Production	04/06/2022	04/06/2022		Not Validated	Not Validated	Not Validated
1.2	001-DOC-0001		0.0	Each	B	Production	04/06/2022	04/06/2022		Not Required	Not Validated	Not Validated
1.3	001-PKG-0002		6.0	Foot	A	Production	03/02/2015	03/02/2015		Not Required	Not Validated	Not Validated
1.4	001-ELC-0056		1.0	Each	A	Production	12/12/2014	12/12/2014		Compliant	Not Validated	Not Validated
1.5	001-ELC-0058	USB 3.0 connect...	1.0	Each	A	Production	12/12/2014	12/12/2014		Compliant	Compliant	Compliant
1.6	001-PKG-0008		1.0	Each	A	Production	03/02/2015	03/02/2015		Not Required	Not Validated	Not Validated
1.7	001-PKG-0012		3.0	Each	A	Production	12/12/2014	12/12/2014		Not Required	Not Validated	Not Validated
1.8	001-PKG-0013		1.0	Foot	A	Production	05/02/2015	05/02/2015		Not Required	Not Validated	Not Validated

#	Descriptor	Icon	Revision	Dimensions (LxWxH)	Material	Weight [grams]	Total Weight	Quantity	Unit of Measure
3.3	001-STR-0043 - Spill Glass...	M	A	1 ft				1.0	Each
2.30	001-FST-0035 - M4 x 30m...	M	A		A2 (188) SS			8.0	Each
2.31	001-FST-0036 - M4 Washe...	M	A	1 ft	A2 (188) SS			4.0	Each
2.32	001-FST-0073 - Torx M3.12...	M	A		A2 Stainless			2.0	Each
2.33	001-FST-0076 - No.4 x 0.31...	M	A					4.0	Each
2.34	001-DOC-0147 - Branding ...	PG	B					1.0	Each
2.35	001-FST-0085 - M6x18mm ...	M	A		A2 Stainless			4.0	Each
2.36	704-000003 - MPI - Ember...	SW	A					1.0	Each
1.2	001-DOC-0001 - Packaging...	PG	B					0.0	Each
1.3	001-PKG-0002 - Packing T...	PG	A					6.0	Foot
1.4	001-ELC-0056 - Power Sup...	E/E	A					1.0	Each
1.5	001-ELC-0058 - USB Cable ...	E/E	A	800 mm x 20 mm x 8 m		12.0	12.00	1.0	Each
1.6	001-PKG-0008 - Printer Ba...	PG	A					1.0	Each

Approved Manufacturer Parts (AML) (3 of 6)

#	Manufacturer P/N	Manufacturer	Reference	Description	Cost	Datasheet	Link	Octopart ImageView
1	IR2110PBF-ND	Digi...	Approved		0.0000 (\$)			
2	146175-0001		Approved	Antenna Wireless 3dBm/4.29dB Gain 2483.5MHz/5... Chip T/R	0.6781 (\$)	Datasheet >>	Link >>	
3	BCK321UE632...		Approved	BCK321UE6327 Series 16 V 25 mA 30 MHz Surface Mount LED Driver - SCL-6	0.2474 (\$)	Datasheet >>	Link >>	
4	DPP3022000		Approved	TE Connectivity DPP3022000, HTU01 Temperature &	13.3000 (\$)	Datasheet >>	Link >>	

Octopart

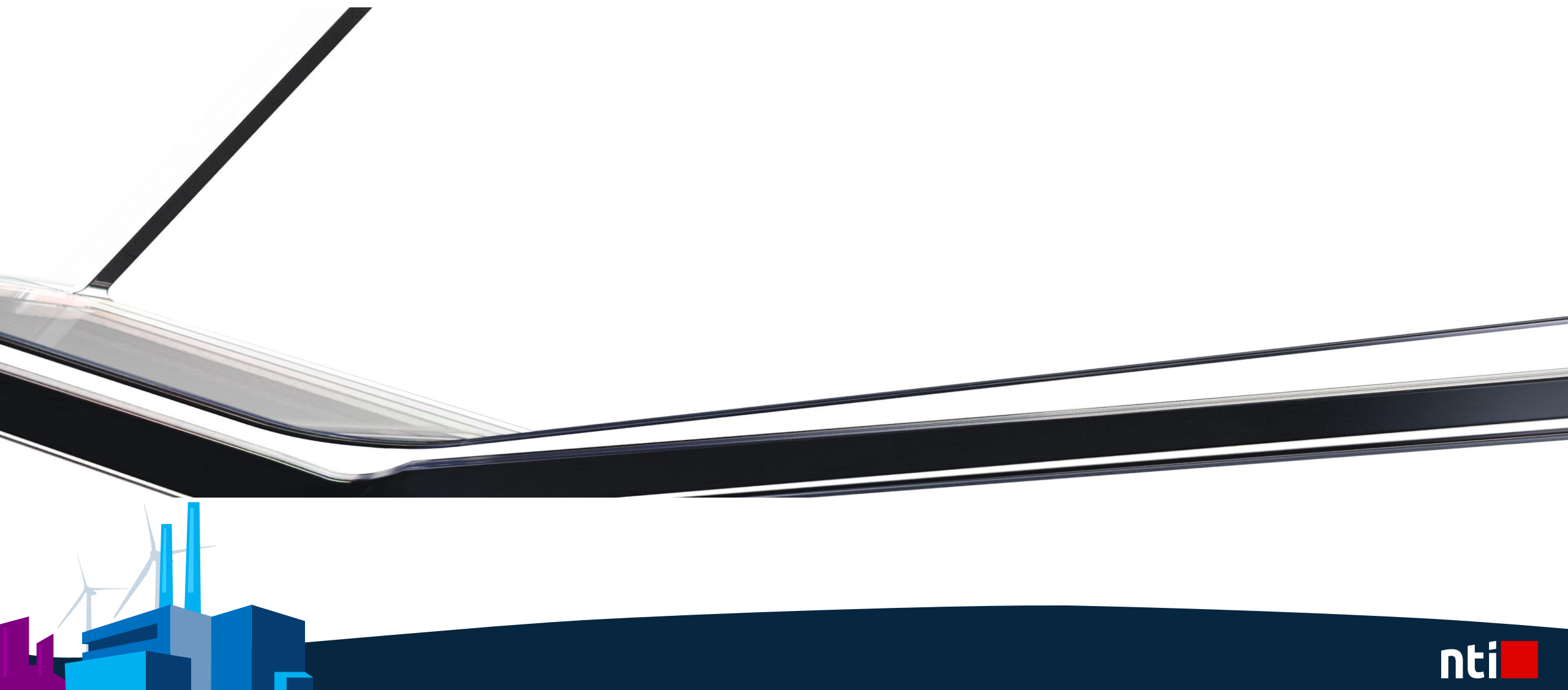
146175-0001

Price & Stock

Authorized Distributors	Part #	Stock	Unit Price	Lead Time
Arrow Electronics	146175-0001	35,000	\$0.68	1-2 weeks
RS Components	146175-0001	11,000	\$0.68	1-2 weeks

#	Descriptor	Icon	Lifecycle	Make or Buy	Component type	Total Cost	Lead Time	Manufacturer P/N	Manufacturer	Vendor	Quantity
0.0	001-ASY-0001 - EMBER Print...	PG	Production	Make	STD LIT SP	0.90	4	001-ASY-0001			
1.0	001-ASY-0002 - Resin Tray As...	M	Production		STD LIT SP			001-ASY-0002			
2.1	001-DOC-0003 - Resin Tray As...	PG	Production		STD LIT SP						0.0
2.2	001-STR-0001 - Resin Tray [R...	M	Production	Make	STD LIT SP			001-STR-0001			1.0
2.3	001-ASY-0035 - PDMS Windo...	M	Production	Make	STD LIT SP			001-ASY-0035			1.0
2.5	001-FST-0060 - Resin Tray Pla...	M	Production		STD LIT SP			1559T32			1.0
2.6	001-DOC-0151 - Resin Tray Ser...	PG	Production		STD LIT SP			Identco: TTL145-423-25			1.0
1.1	001-ASY-0004 - Assembled Pr...	M	Production	Make	STD LIT SP			001-ASY-0004			1.0
1.2	001-DOC-0001 - Packaging As...	PG	Production		STD LIT SP						0.0
1.3	001-PKG-0002 - Packing Tape ...	PG	Production		STD LIT SP			5-445			6.0
1.4	001-ELC-0056 - Power Supply ...	E/E	Production		STD LIT SP			GS120A12-R78			1.0
1.5	001-ELC-0058 - USB Cable [RE...	E/A	Production	Buy	STD LIT SP	0.90	4	A784-74310-U	Microchip	Vishay	1.0

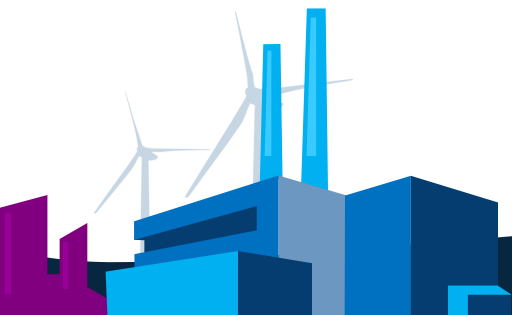
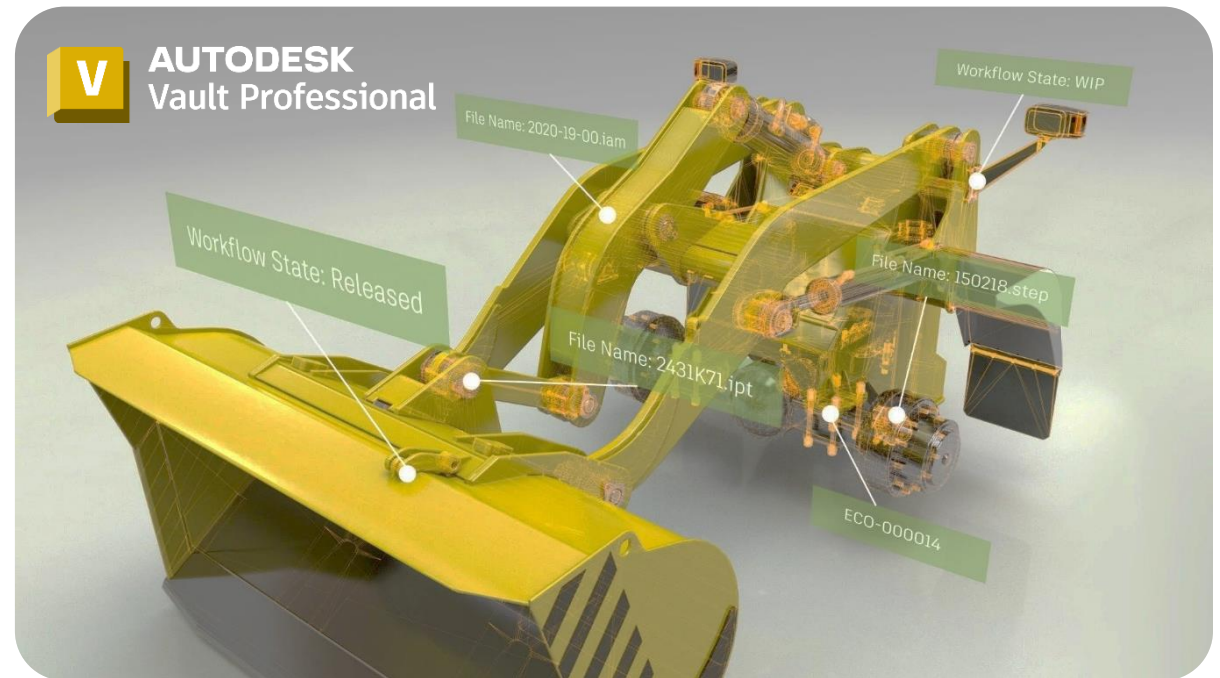
# Samarbejdsplatform



# Autodesk Vault Professional

Vault Product Data Management (PDM) - software hjælper med at strømline arbejdsgange. Alle arbejder fra en central kilde til organiseret data – samarbejde, reducerer fejl og sparer tid.

- Avanceret Inventor Filhåndtering
- Mobil og Web Adgang
- Engineering Change (ECO's)
- Design Genbrug
- CAD Integration
- Duplicate Search
- Multi Site Miljø
- Arbejdsgange for Eksternt Samarbejde

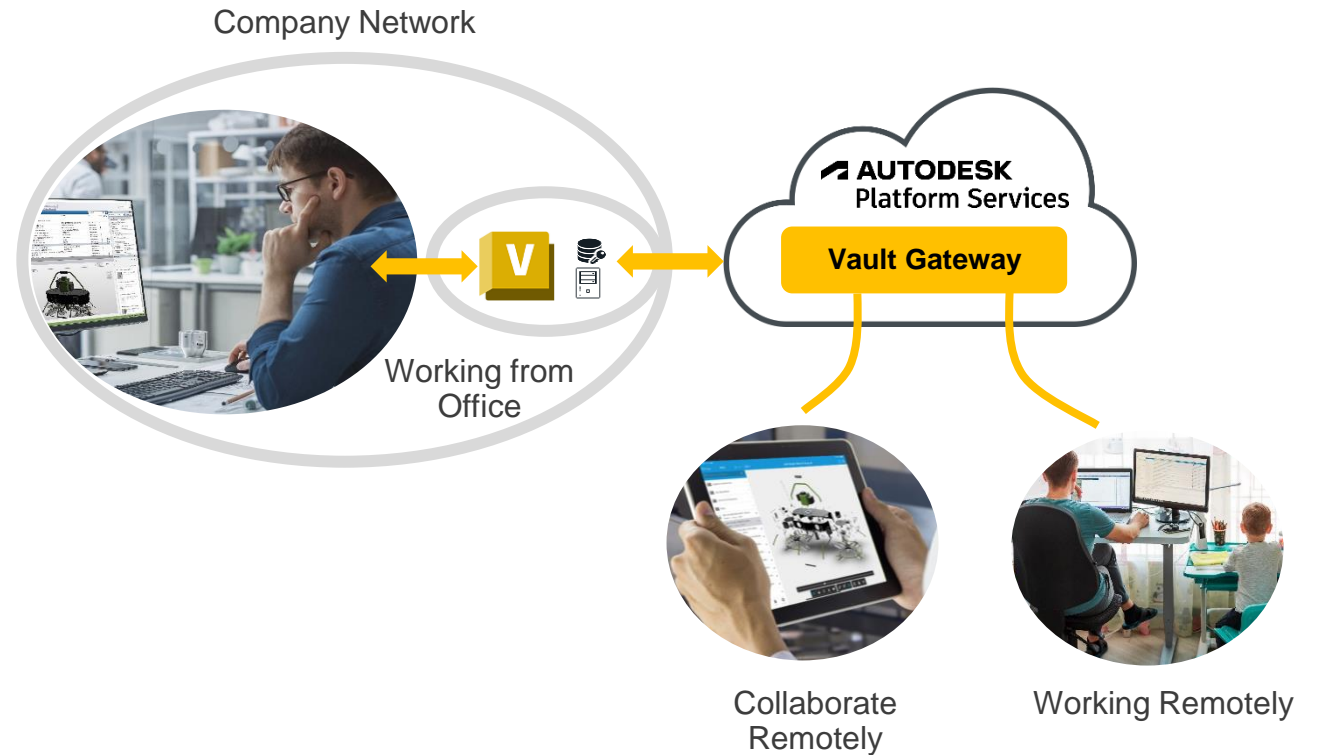




# Vault Gateway

## Formål og værdi

- Vault Gateway er udviklet til at give sikker fjernadgang til brugere, der arbejder eksternt.
- Fjernbrugere kan oprette og administrere designdata i Vault og få samme oplevelse som på kontoret.
- Derudover tillader Vault Gateway VPN-fri adgang til Vault data bag
- Vault Gateway giver mulighed for bedre samarbejde med leverandører og tredjeparts samarbejdspartnere.
- Der er ingen grund til at oprette domænekonti for disse brugere og give dem VPN-adgang



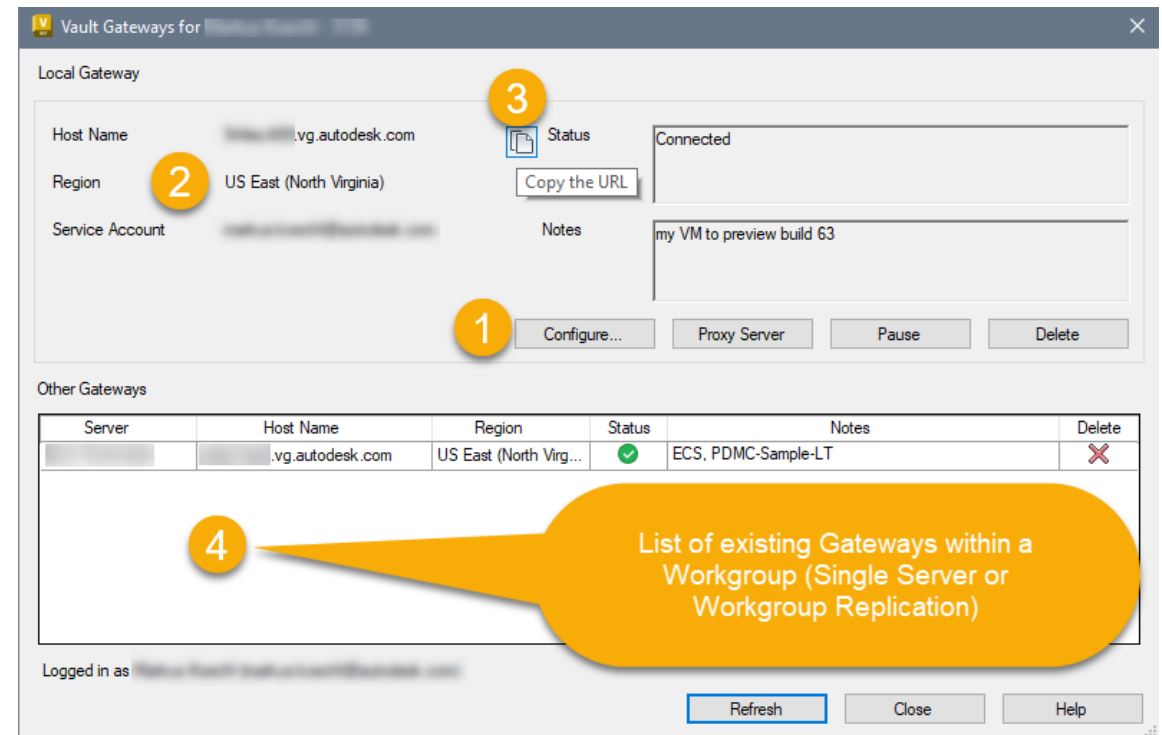
# Vault Gateway opsætning

## Konfiguration

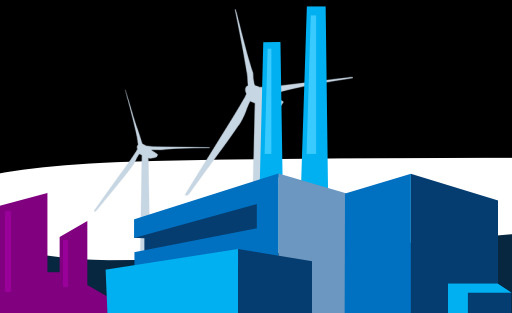
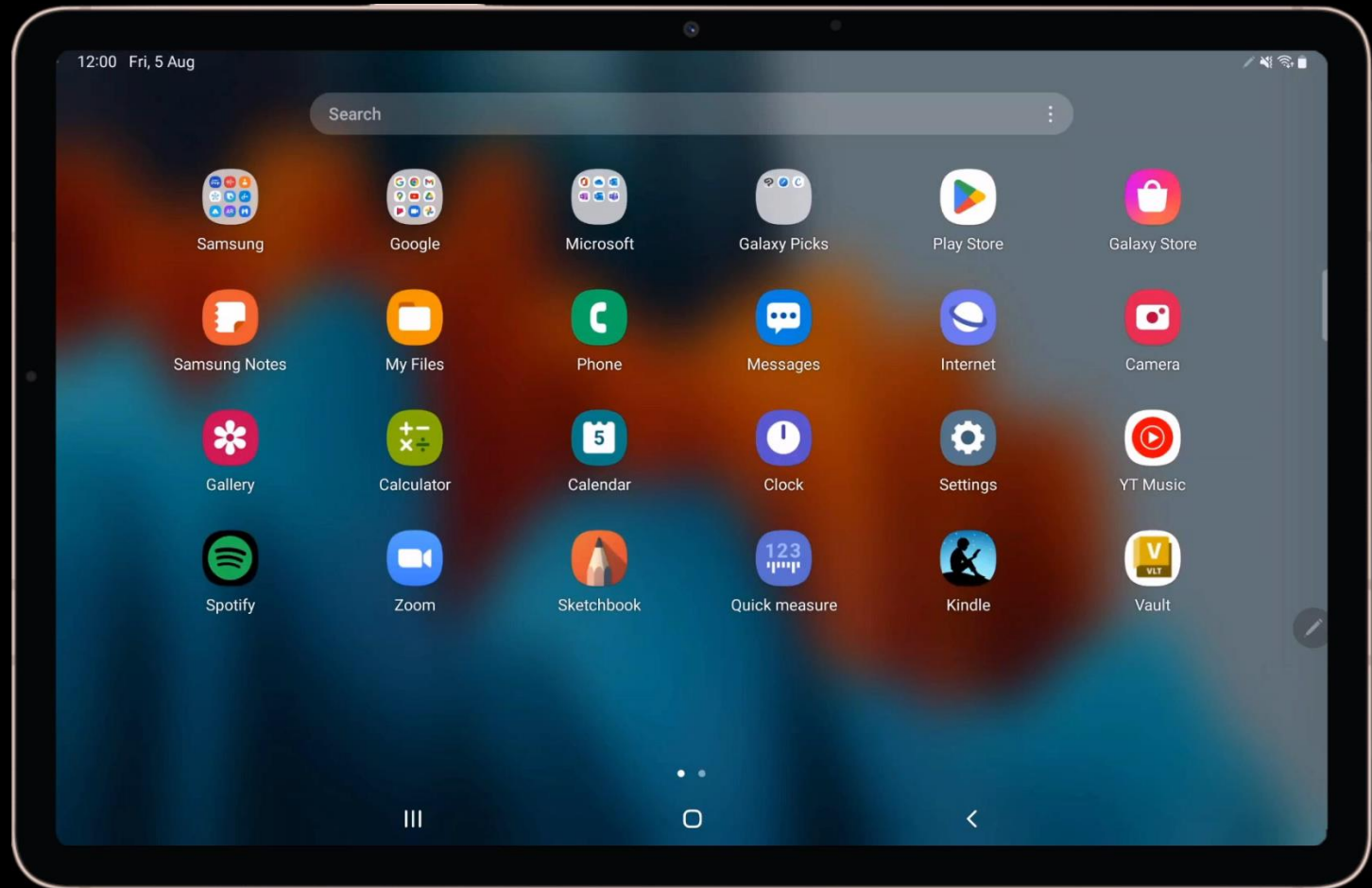
- Log på med en service account og tilføj konfiguration. (1)
- Vælg region (US - North Virginia, Ireland - Dublin) (2)
- Del URL for sikker forbindelse (HTTPS) (3)

Gateway Administrator = Autodesk Account team administrator

- Få overblik over eksisterende Gateways på platformen (4)



# Vault Mobile



# Markup, Vault PRO og TC

## Markup Browsing Panel

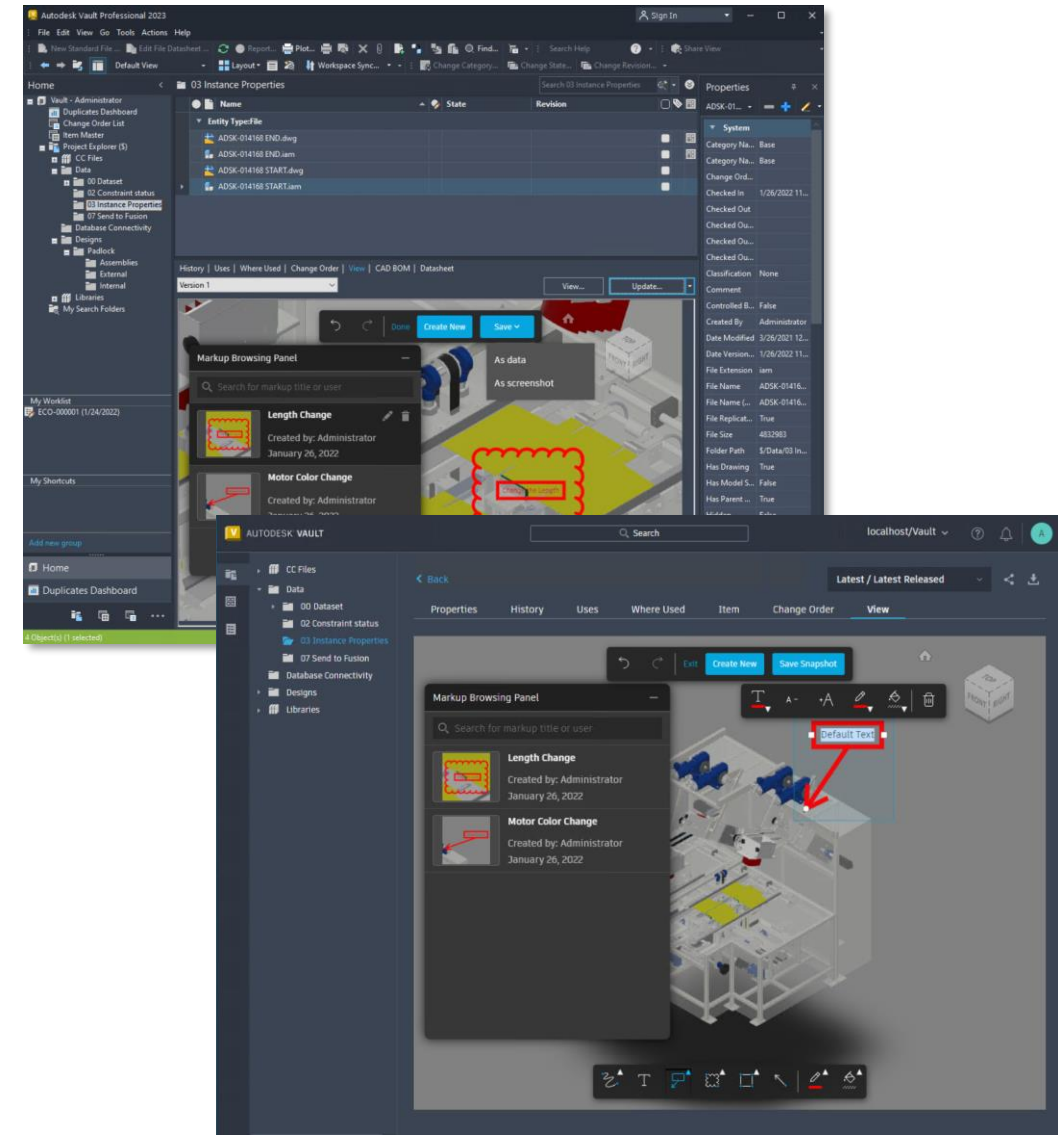
- You can filter markups based on who created the markup and the creation date. You can view, rename, and delete the markup through the panel. You can also collapse/expand the panel window.

## Saving Markups

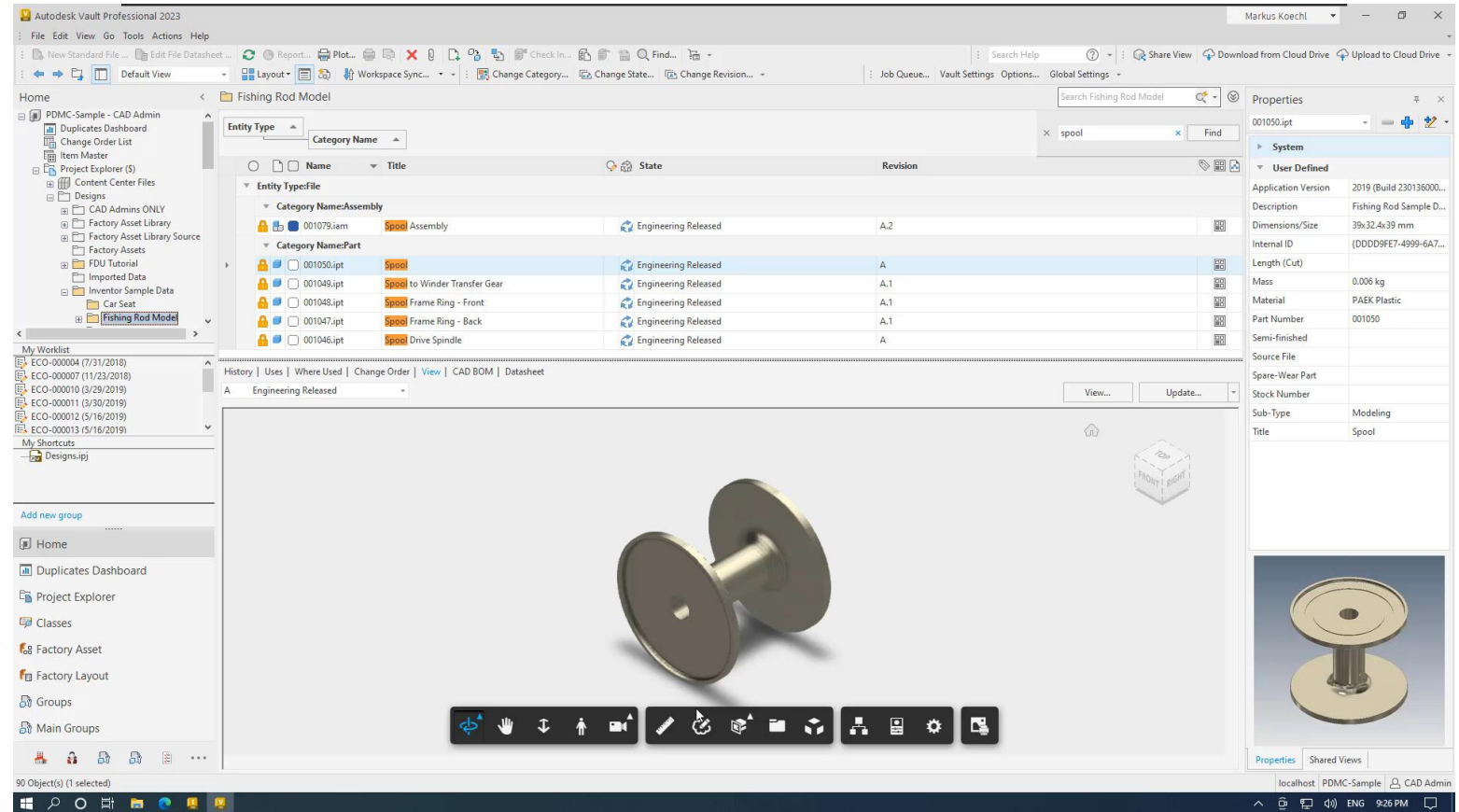
- You can save the markup as an image on your local machine or save it as data on the Vault. The markup saved as data is listed in the Markup Browsing Panel.

## Markup in Change Orders

- You can view markup within a Change Order using Autodesk Viewer, make changes to the markup, and save it as data in the Vault.

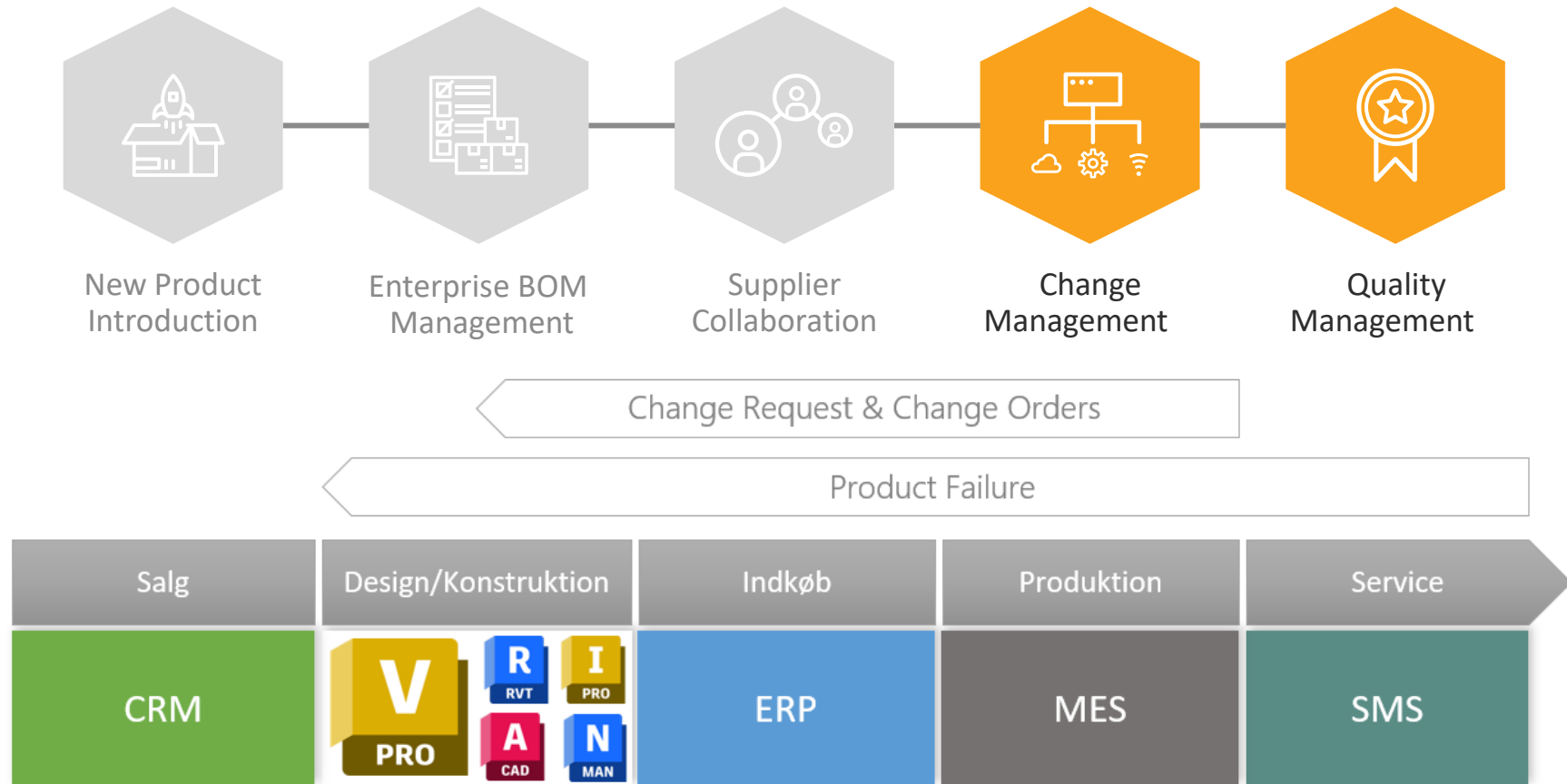


# Vault ECO og Markup





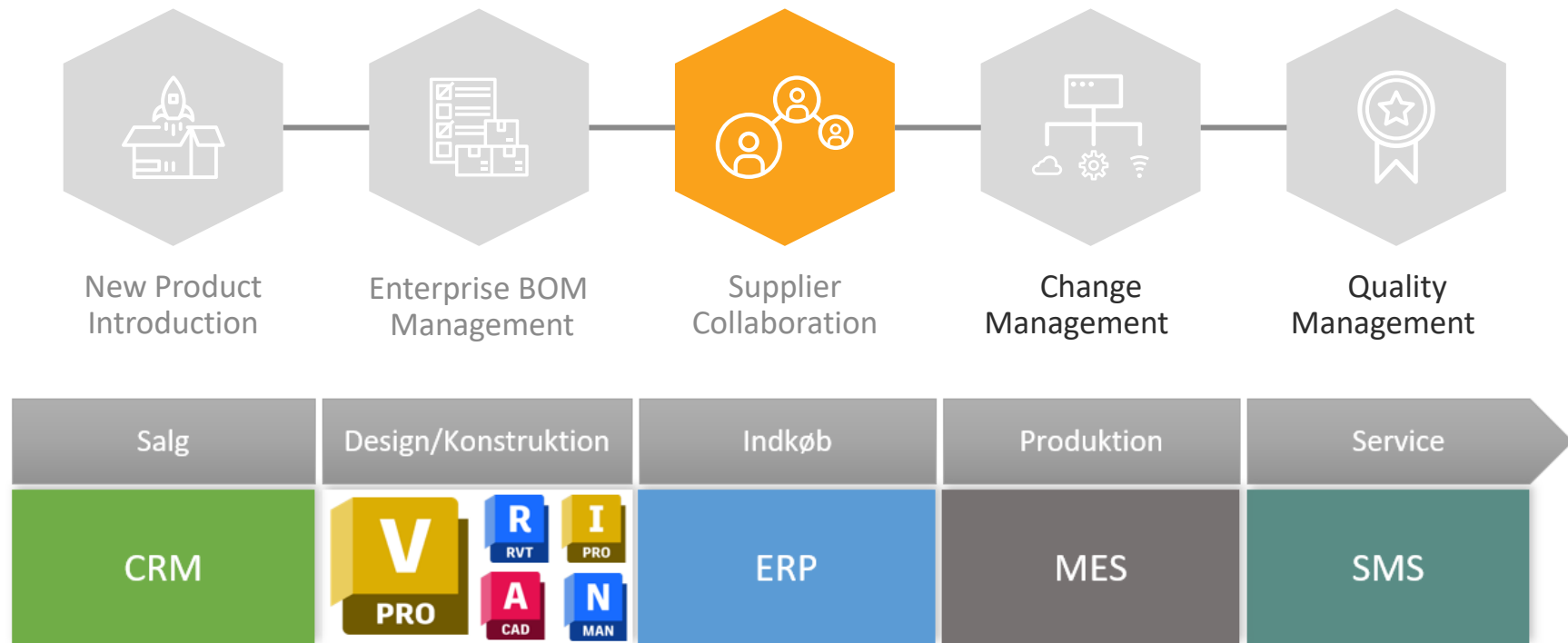
# Autodesk Vault PLM



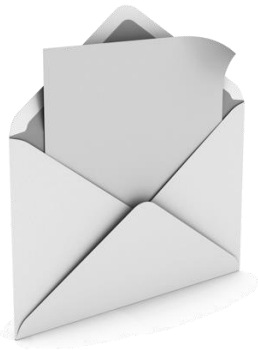
# Leverandørsamarbejde



# Fusion Team, Cloud Collaboration



# Anvendte værktøjer for samarbejde



E-mail



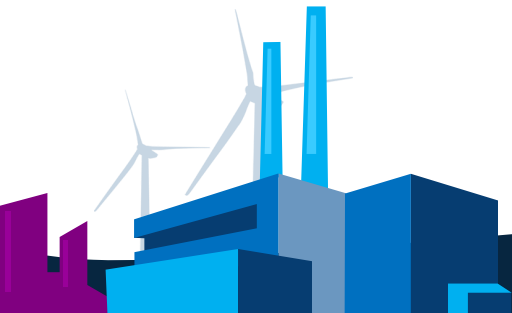
Sharepoint



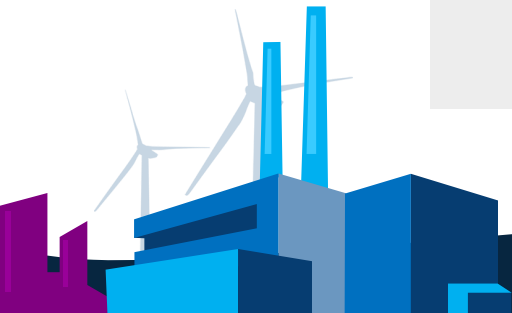
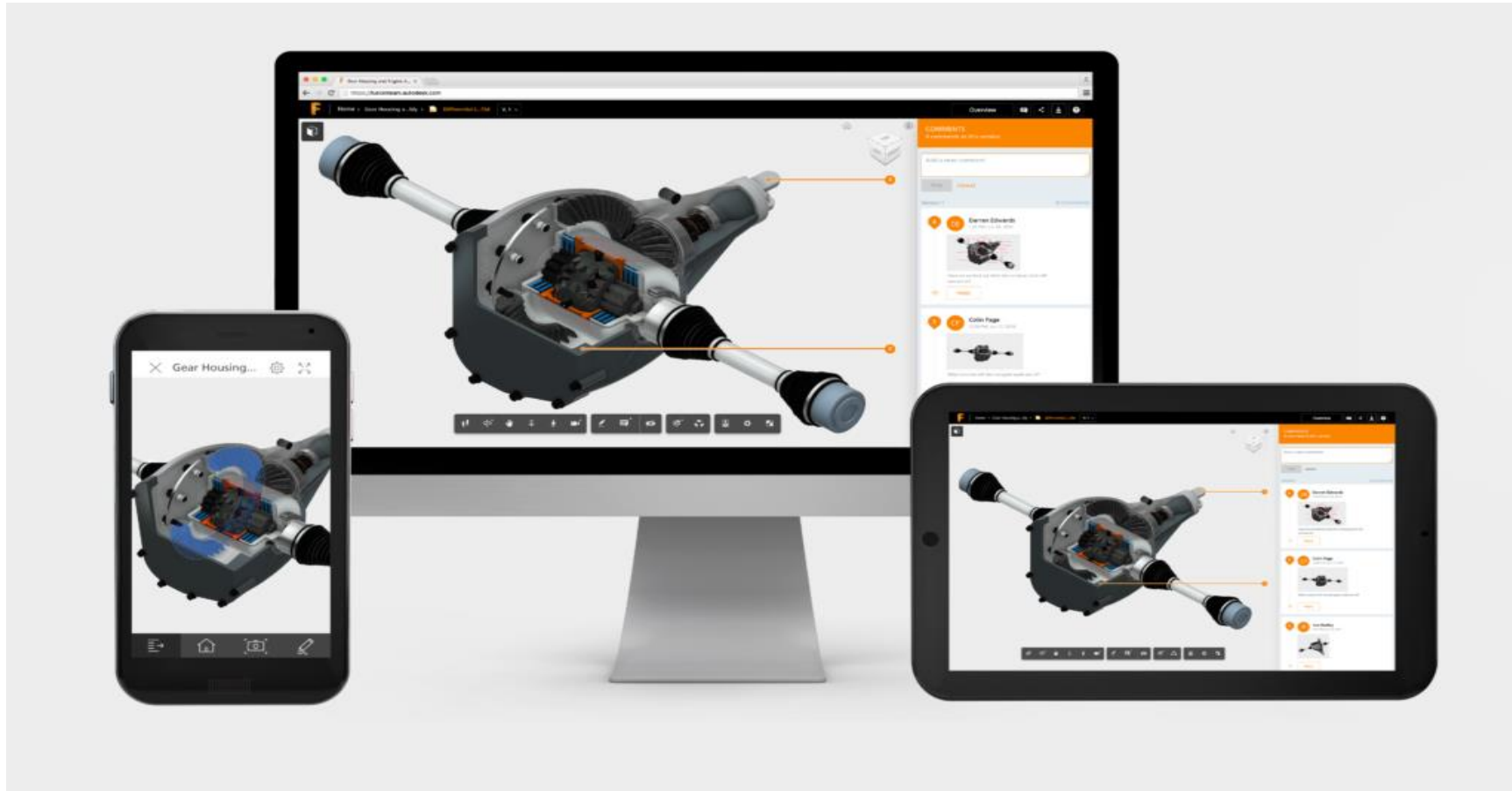
Network Drives



Basic Cloud Storage



# Autodesk Fusion Team

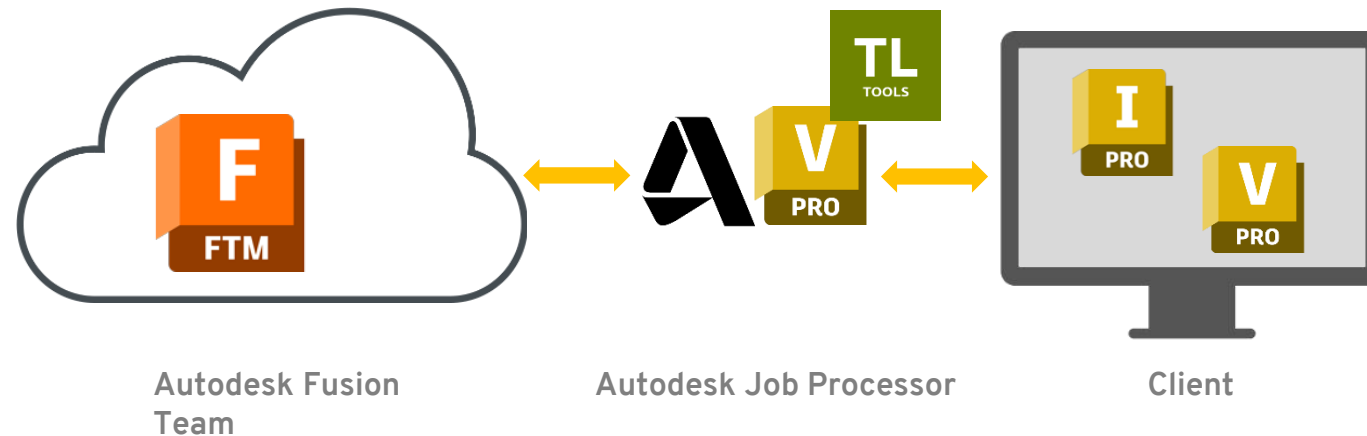




# Fusion Team, Vault Integration

## Optimere processen for ekstern og intern review

- Via release proces i Autodesk Vault Professional publiceres layouts og produkter til Fusion Team
- Publicering sker via Autodesk Job Processor
- Kan også ske manuelt



# Fusion Team, Cloud Collaboration

Autodesk Vault Professional 2021

File Edit View Go Tools Actions Help

New Report... Plot... Check In... Find... NTI TOOLS ACW Share View Download from Cloud Drive Upload to Cloud Drive Search Help

Home

Item Master  
Project Explorer (\$)  
Content Center Files  
Designs  
Masters  
Projects  
4711 NTI  
Assemblies  
Images  
Parts  
Special  
4712 NTI  
4713 NTI  
Purchased Components  
Standard Components

My Worklist

My Shortcuts

Add new group

Home

Duplicates Dashboard

Project Explorer

Test

Item Master

Change Order List

32 Object(s) (1 selected)

Assemblies

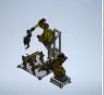
Search Assemblies

Name	Title	Description	Material	Date File Created	Date Modified
Folder					
200-101					
File					
000-000f.iam	Welding Robot fo...	Welding Station		12-10-2004	24-09-2020 21:30
000-000f.idw				24-09-2020	24-09-2020 21:39
000-001f.iam	FINAL ASSEMBLY	TWO STATION CLA...		09-02-2005	24-09-2020 21:30
100-150f.iam	JIG ASSEMBLY	MAIN JIG		02-04-2004	24-09-2020 21:30
100-200f.iam	JIG ASSEMBLY	VERTICAL MOUNTI...		02-04-2004	24-09-2020 21:30
200-000.iam	ROBOT	WELDING ROBOT		18-10-2004	24-09-2020 21:33
200-001.iam	WELDED ASSEMB...	MAIN SUB-FRAME		23-01-2005	24-09-2020 21:30
200-101.iam	JIG ASSEMBLY	LOCATOR, TYPE-3		01-04-2004	24-09-2020 21:30
200-102.iam	CLAMP ASSEMBLY	ARM, TYPE-1		19-09-2004	24-09-2020 21:32
200-103.iam	PIN BLOCK ASSE...	SHORT PIN		15-09-2004	24-09-2020 21:32
200-106.iam	WELDED ASSEMB...	ANGLE BRACKET		11-10-2004	24-09-2020 21:33
200-200.iam	LOCATOR ASSEMB...	TYPE-2		17-09-2004	24-09-2020 21:32
200-201f.iam	WELDED ASSEMB...	VERTICAL MOUNTI...		09-10-2004	24-09-2020 21:32

History Uses Where Used Change Order Preview Documentation Drawings

Number of versions: 4 (Local = Unknown)

Number of revisions: 1 ☐ Show all versions

Thumbnail	File Name	Revision	State (Historical)	Created By	Checked In	Comment
	000-000f.iam	0	For Review	Administrator	24-09-2020 21:57	Under review

Properties

000-000f.iam

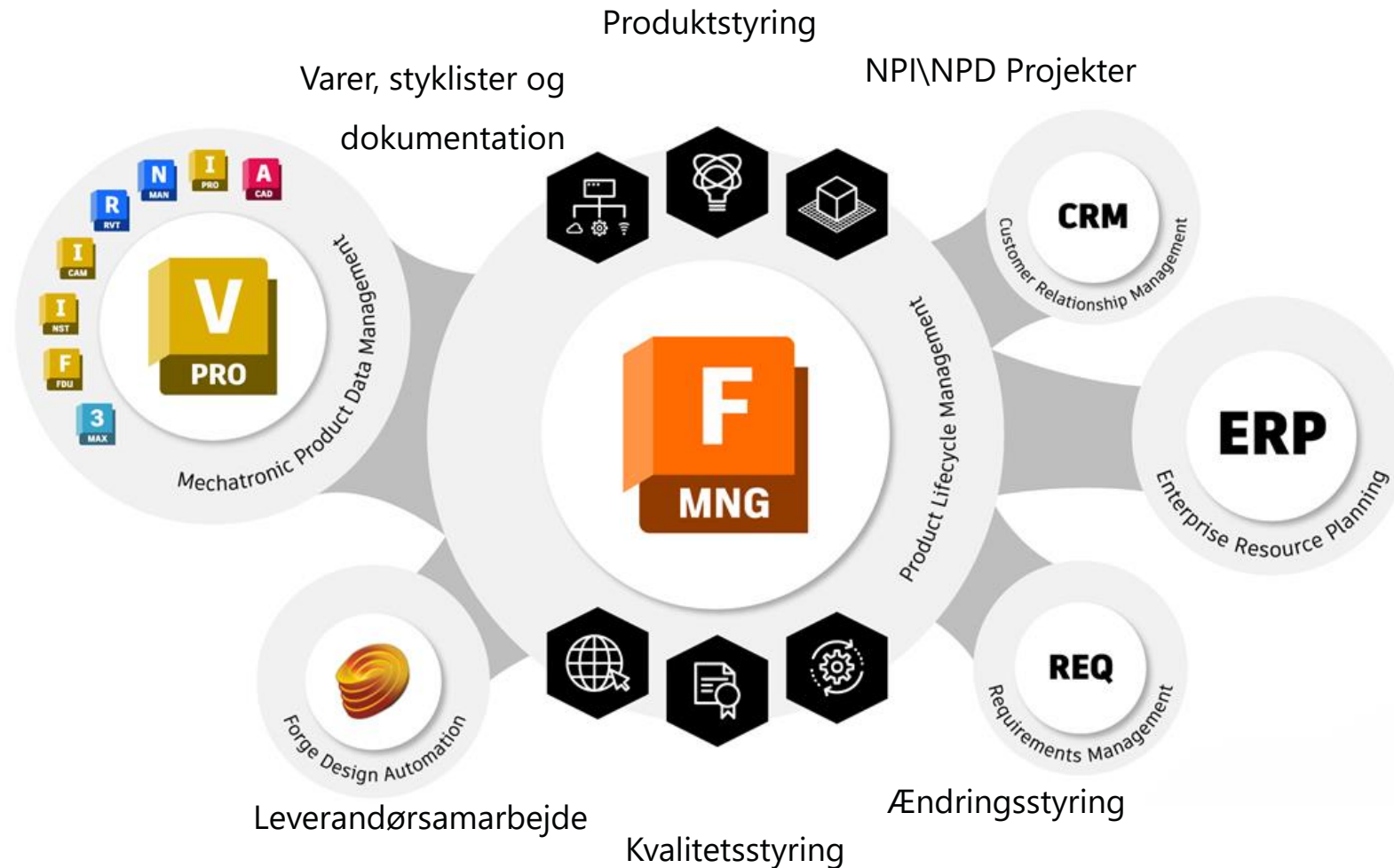
System

User Defined

Application Version	2020.3 (Build 243373000, 373)
Area Number	
Author	SCHNEIDER K.
Date File Created	12-10-2004
Description	Welding Station
Document SubType	{E60F81E1-49B3-11D0-93C3-7...
Document SubType Name	Assembly
Group Number	
Manufacturing Category	Layout
Part Number	00-000-000f
Rev Number Layout	
Title	Welding Robot for car parts

desktop-lrjdfeb Vault Administrator

# Autodesk Fusion Manage (PLM)



# Begrænsningen ligger ikke i teknologien!

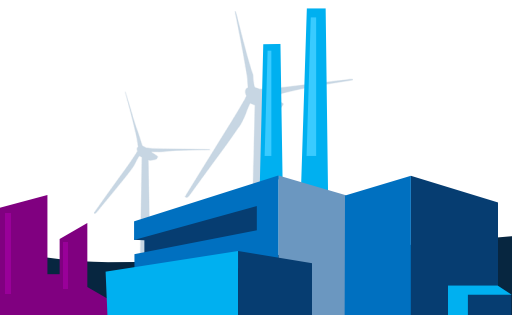
Spørg jer selv om følgende

- Er jeres data klar?
- Er jeres platform klar?
- Er i, som organisation klar?

Tænk over hvordan data tilgås i og udenfor virksomheden

Brug NTI A/S som partner.

- Vi tegner visionen og rejsen sammen med jer.



Q&A

