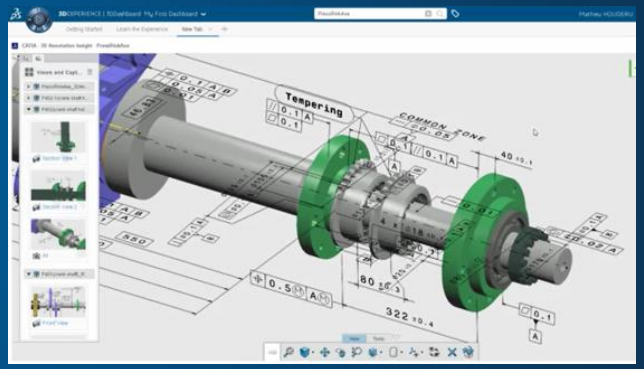
3D Product Definition with Semantic

3D Master with CATIA



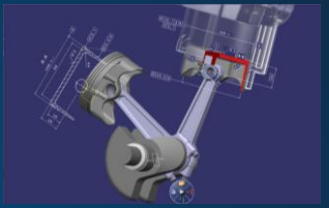
3DEXPERIENCE®

3DEXPERIENCE® CONFERENCE
DESIGN, MODELING & SIMULATION
NOVEMBER 19-21, 2019 | DARMSTADT, GERMANY

November 2019

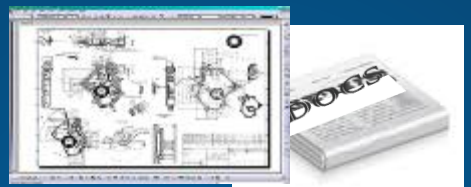
Peter STUEHN
CATIA Mechanical Systems Modeling & Simulate Centre of Excellence

Evolution of the design process

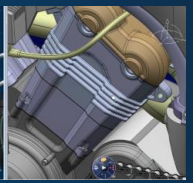


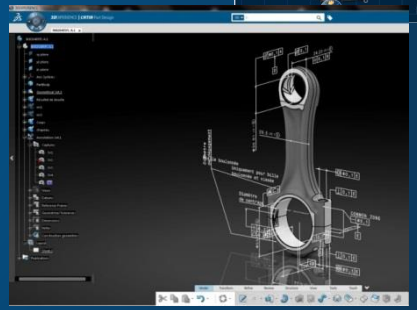
2D Design

2D Master 3D Design



3D Master 3D Design





1970

1990

Today

What is the current deployed process ?

"**2D Master**" as a **reference**

- 2D as a **universal language**
  - Standardized
  - Shared, learned and approved for a long time
  - Evolving with disciplines and cultures

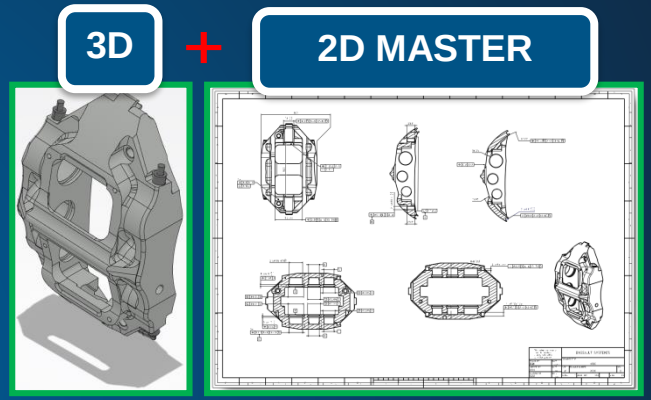
- 2D is **the reference** during product development

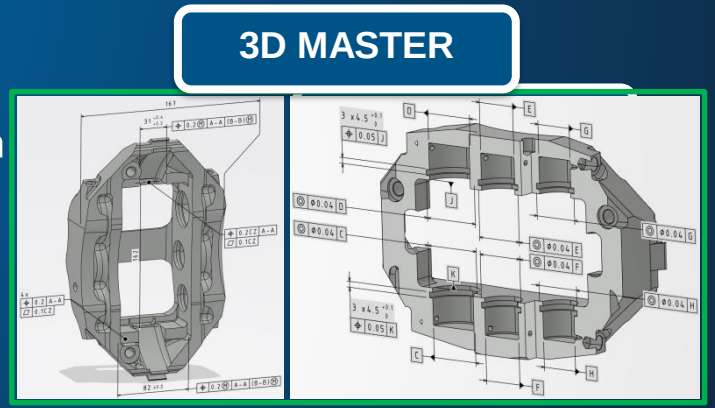
But 2D as reference fails to support new challenges

Customer Pains with 2D as a Master

- ✗ Final cost / quality / delay are impacted by:
  - ✗ No continuity among an increasing number of stakeholders
  - ✗ Misinterpretation due to 2D drawings as a reference
  - ✗ Cost of maintaining the integrity of 2D drawings during the change process
  - ✗ Multiple formats complicates the re-use

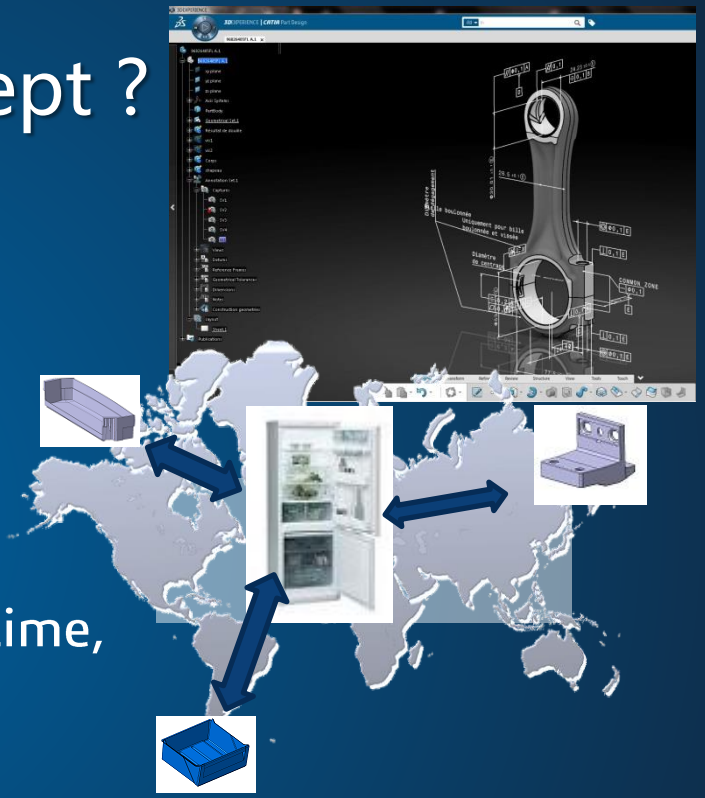
- ✓ Digital continuity with 3D semantic information
  - ✓ Straightforward and easy to understand information
  - ✓ One single source of information in 3D





What is the “3D Master” concept ?

- **One single reference in 3D**
- **100% Product information in 3D for**
  - Accurate & annotated geometric definition
  - Compliance with regulations & standards
  - Manufacturing & work instructions
- **2D** only for **presentation**
- Reference in 1 **database** for anyone, anytime, anywhere
- Maximum **data reuse**
- Direct feed for **downstream applications**



Why consider 3D Master (Model Based Definition)?

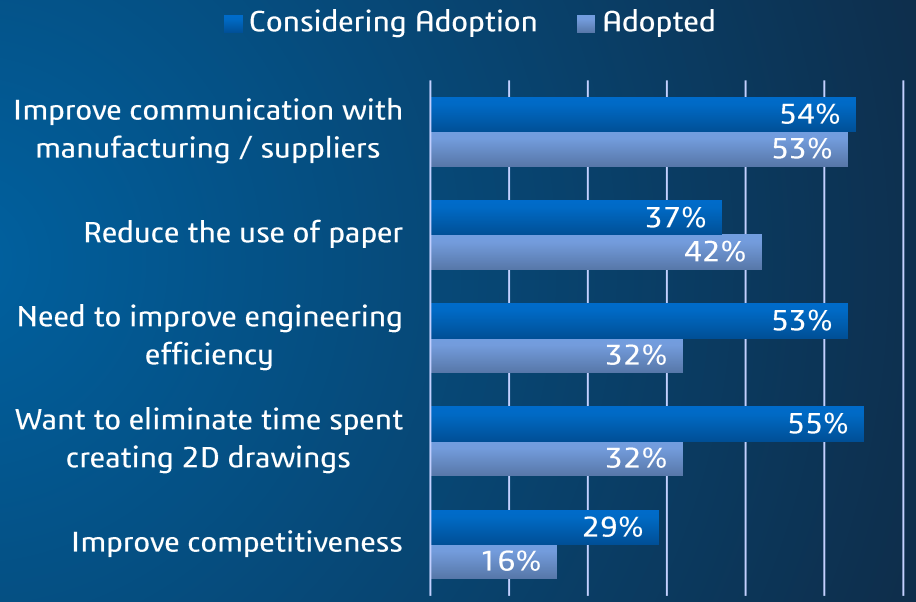
Customers' Drivers to 3D Master Adoption

#1 Optimize Engineering Efficiency

- Reduce time spent on 2D drawings and focus more effort on value-added tasks, improving design and competitiveness
- Get product quality at the best cost
- Maintain compliance with security regulation

#2 Improve Collaboration within and between departments

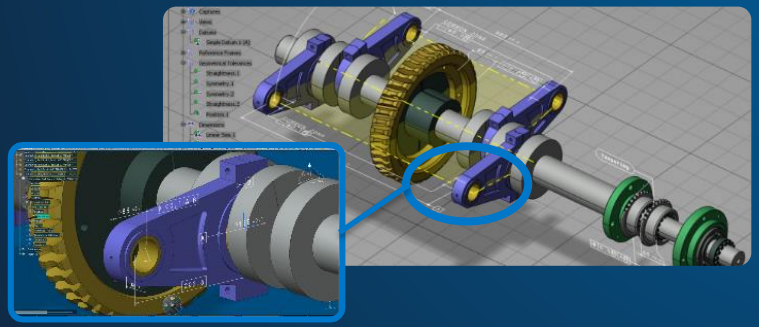
- Compared to a 2D drawing, a 3D model makes it easier to visualize the final product.
- Less room for misinterpretation for things like assembly procedures.
- More environmentally friendly policies & reduce costs by reducing paper documentation.

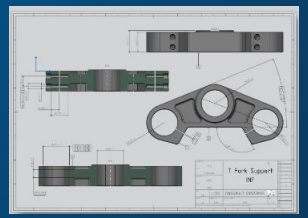


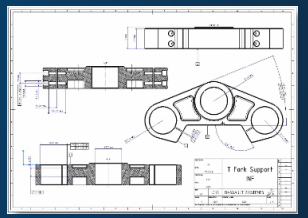
Analysis from Tech-Clarity - an independent research firm

3D Master | Optimize Engineering Efficiency

- Generate a full Tolerancing of the product from **parts up to assembly** level.
- Get support from the **Semantic Tolerancing Advisor** to be compliant with standards such as ISO, ANSI/ASME and JIS
- Use intuitive 3D definition understanding with a **cross-highlight** of the 3D geometry and related annotations
- Protect the company know-how and Intellectual Property (IP) thanks to **3D data filtering** capabilities
- Improve the productivity for part's family by an easy **duplication** of 3D tolerances and annotations
- Generate drawings **on demand**
- **Eliminates works to generate and update 2D documents** accordingly to the 3D geometry definition
- **100% Product Manufacturing information** in 3D for accurate & annotated geometric definition
- Increases the quality of manufactured products with **less Tolerancing and drawing interpretation errors**







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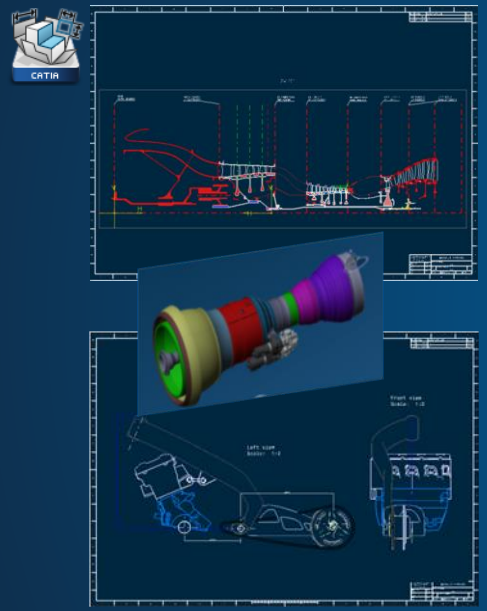
3D Master | Improve Collaboration

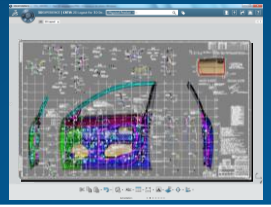
- **3D as a single source of reference** (2D is used only when it's necessary)
- Review enables users to **access to exact geometries without modifying original geometrical definitions** - including markups, measurement, and sectioning
- **Maximum reuse of data** in downstream applications (simulation, manufacturing)
- **Share 3D Information with non-CAD users** - Output with different free formats
- **2D only for presentation** - The recipient can decide to print out in paper to use as a 2D drawing

3D Master 3DEXPERIENCE Apps overview

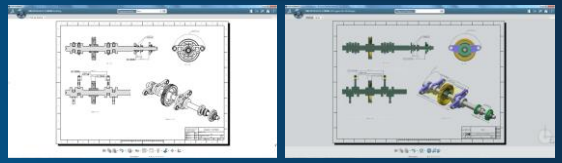
Conceptual & preliminary design
2D Layout for 3D Design



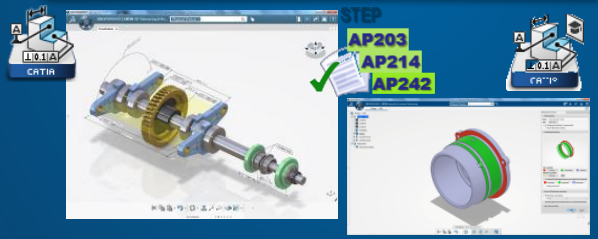
3D Master product definition
2D Layout for 3D Design



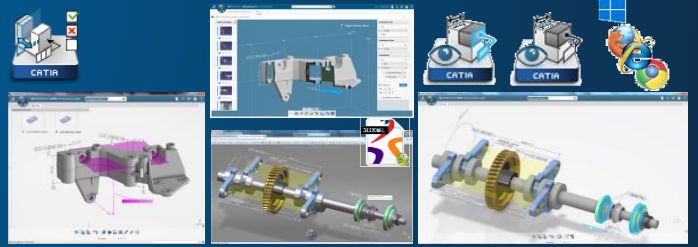
Product 2D presentation
Drafting, 2D Layout Insight



3D Master product definition
3D Tolerancing & Annotation



Product 3D review & analysis
Free players, 3D Annotation Experience, 3D Play (2020x)



Specify the product

Define the product

Capitalize/Exchange/Archive

Present/Review/Analyze

Share/Document/Consume

IP Protection
Engineering IP Control

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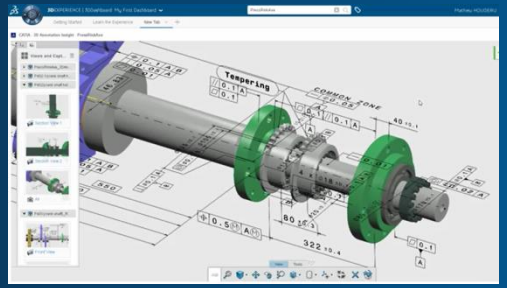
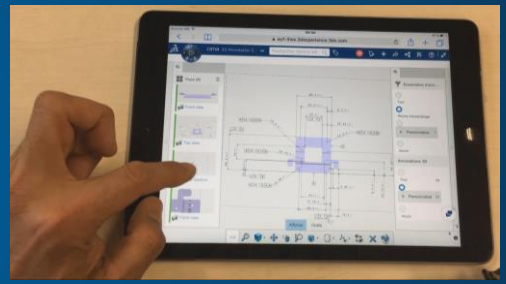
Web Applications in 3D Dashboards

Annotated
3D is the reference



3D Tolerancing & Annotation

3D Annotations for non 3D Specialist



3D Annotation Experience

3D Play 2020X

Success Story: Gripen Project at Saab Aerospace

http://www.gripenblogs.com/Lists/Posts/Post.aspx?ID=885

- Paper Is Passe - Model-Based Development (MBD) Keeps The Gripen E Programme On Time
  - Higher quality of parts (assembly verification done using simulators etc.)
  - Assembly work instruction is more user friendly
  - Reduced lead time for changes

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3DEXPERIENCE Conference for Design, Modeling & Simulation 2020

WHEN	November 10 - 12, 2020
WHERE	Darmstadtium, Darmstadt, Germany
WEB	3ds.com/events/

WE ARE LOOKING FORWARD TO SEE YOU AGAIN!

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