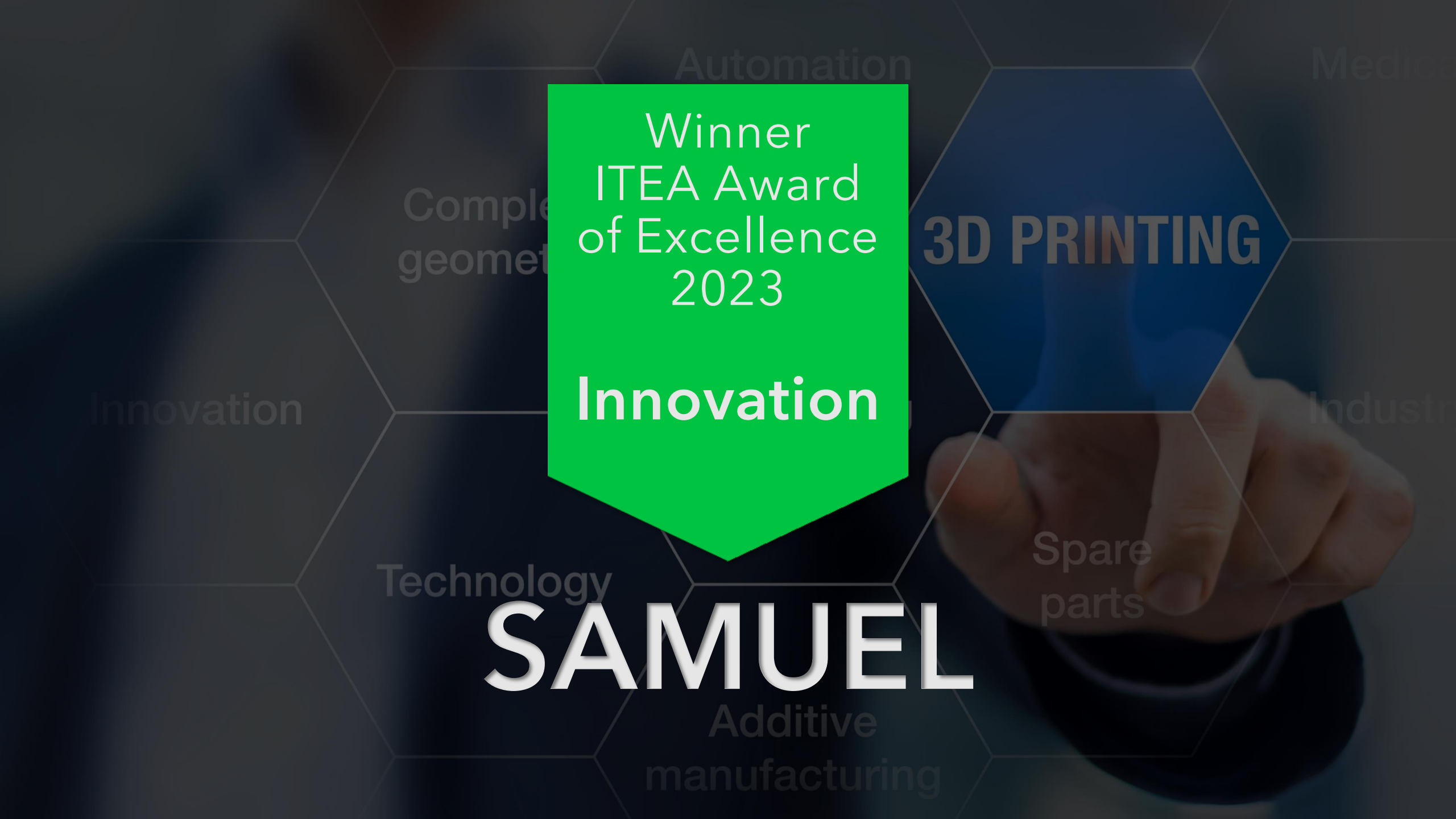


Winner
ITEA Award
of Excellence
2023

Innovation

SAMUEL

ITEA PO Days 2023

Valorise your production data and unlock your company's experience

ITEA Award of Excellence 2023 ceremony
13 September 2023
Alain Coulombe CEO 3DSemantix

25 years ITEA 4 1998–2023

SAMUEL
Project consortium

- Belgium
  - Cr3do
  - Materialise
  - Sirris
- Canada
  - CRIQ – Investissement Quebec
  - Fusia
  - FZ Engineering
  - Tekna
  - 3DSemantix

What is Additive Manufacturing (AM)?

Also known as 3DPrinting

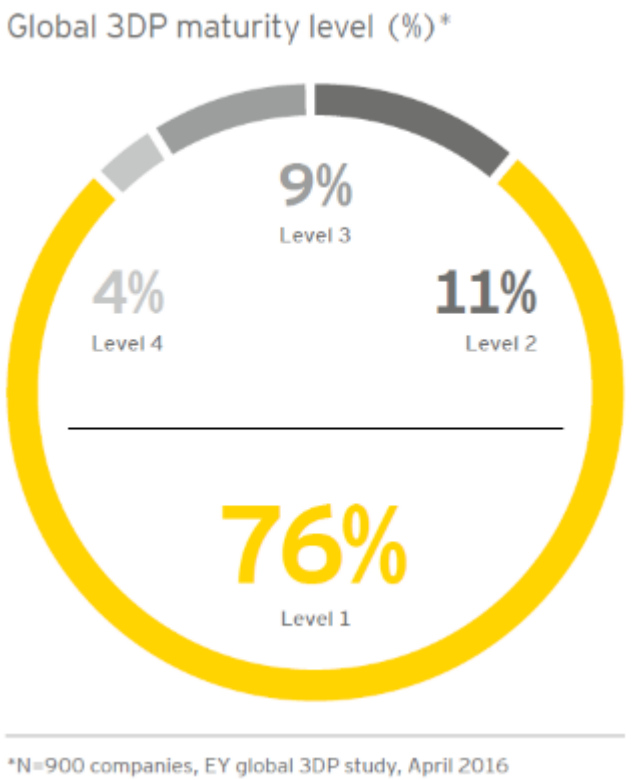
- Additive Manufacturing (AM) produces parts by adding material.
- Variety of available techniques.
- Variety of available materials.
- Can create innovative geometries.
- AM industry grew by 19.5%** in 2021.

** According to the Wohlers Report 2022

Which technology for which application?

AM industry during elaboration FPP SAMUEL

- Most companies (76%) had no experience with AM.
- > 46% said they had not enough information about the technology or **lack in-house expertise.**
- **The best way to learn design for AM is hands-on.**

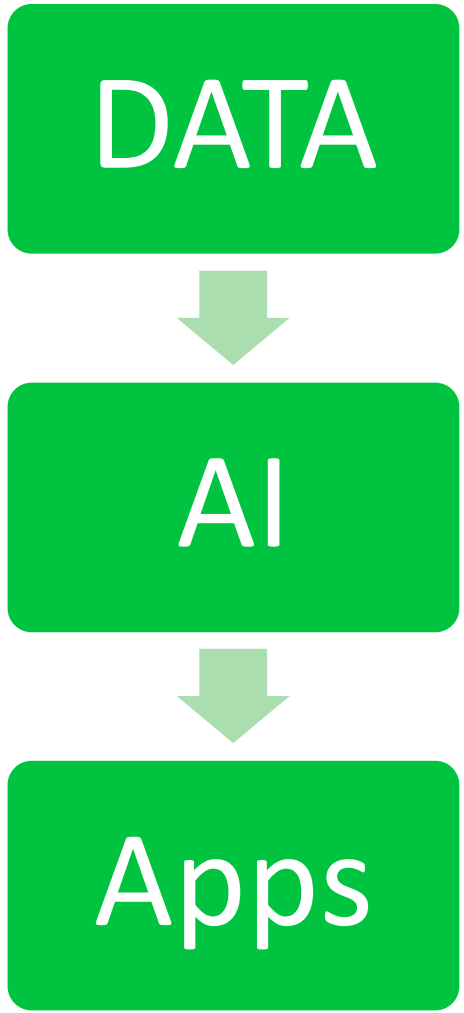


Project objectives & challenges

Leverage AM data to create AI applications

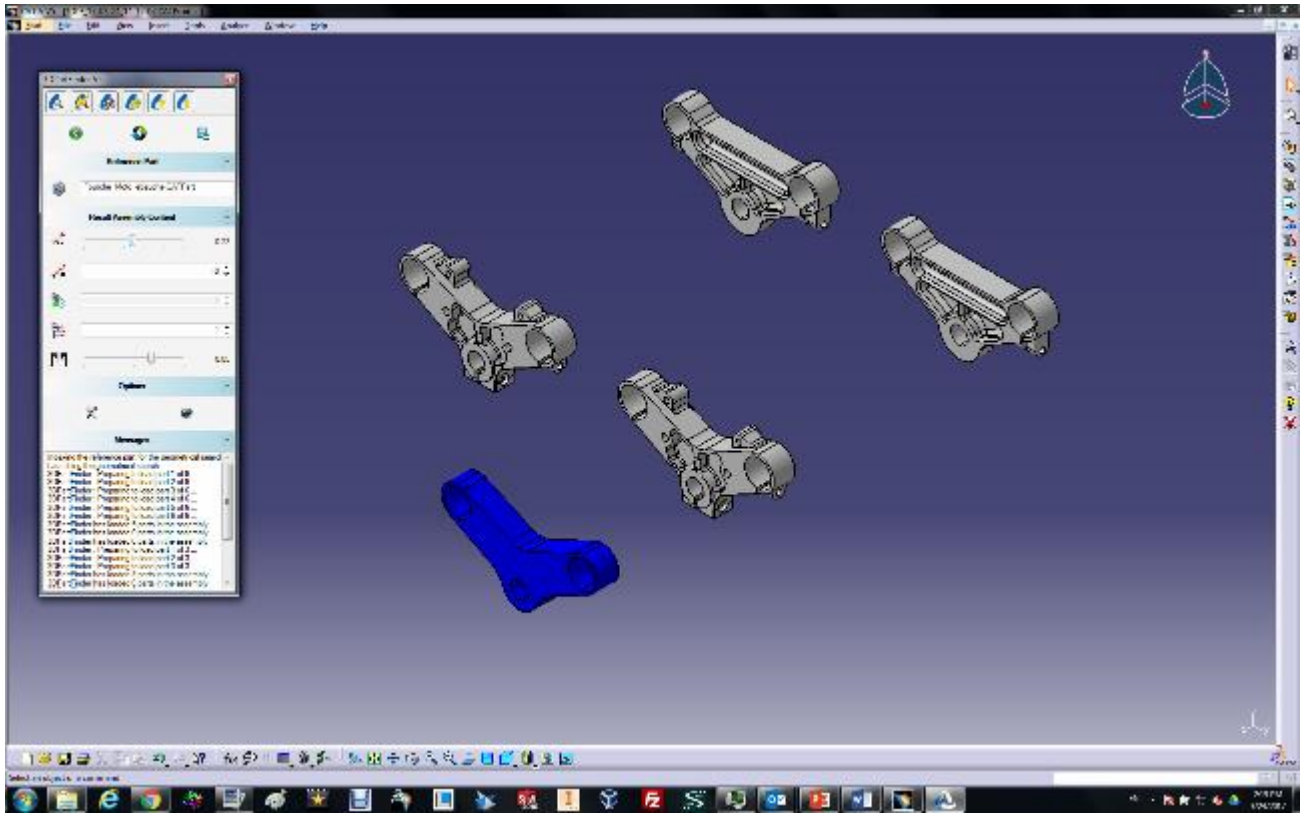
Objectives:

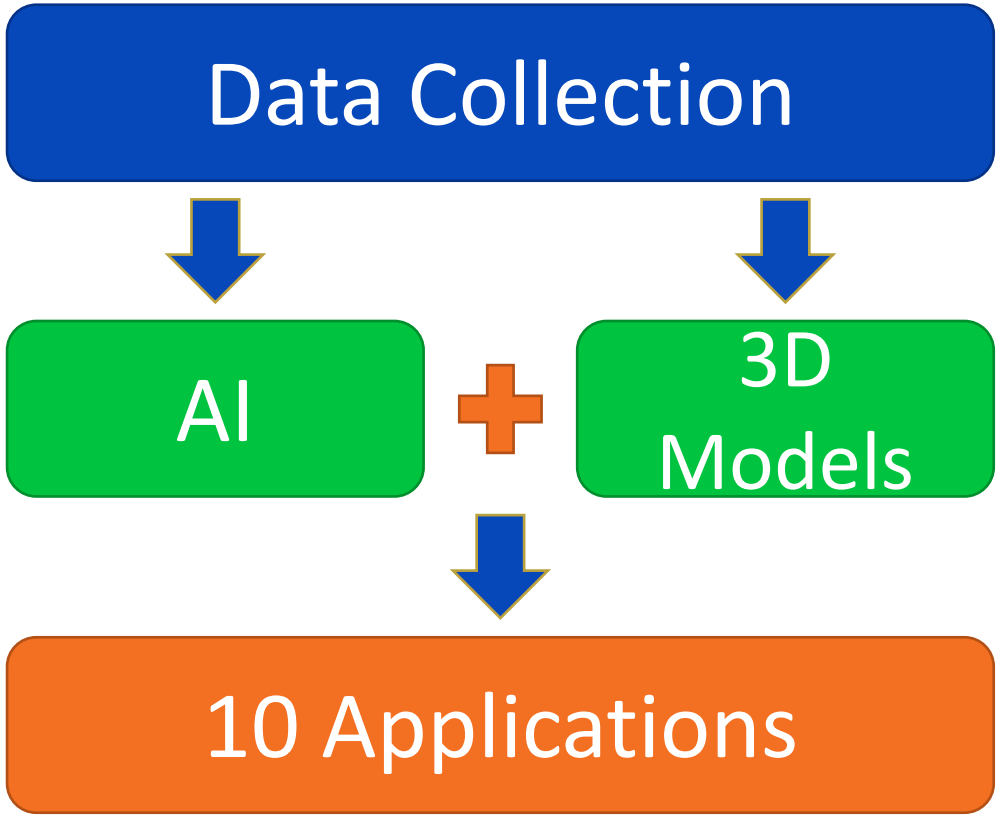
- Provide AM users with expert, useful, transferable knowledge.
- Assist stakeholders in their work along the overall AM workflow.
- Help making the AM processes be more consistent, reliable and dependable.



10 Apps created using two Technology Pillars

AI (ML) + Geometric search / 3D model analysis

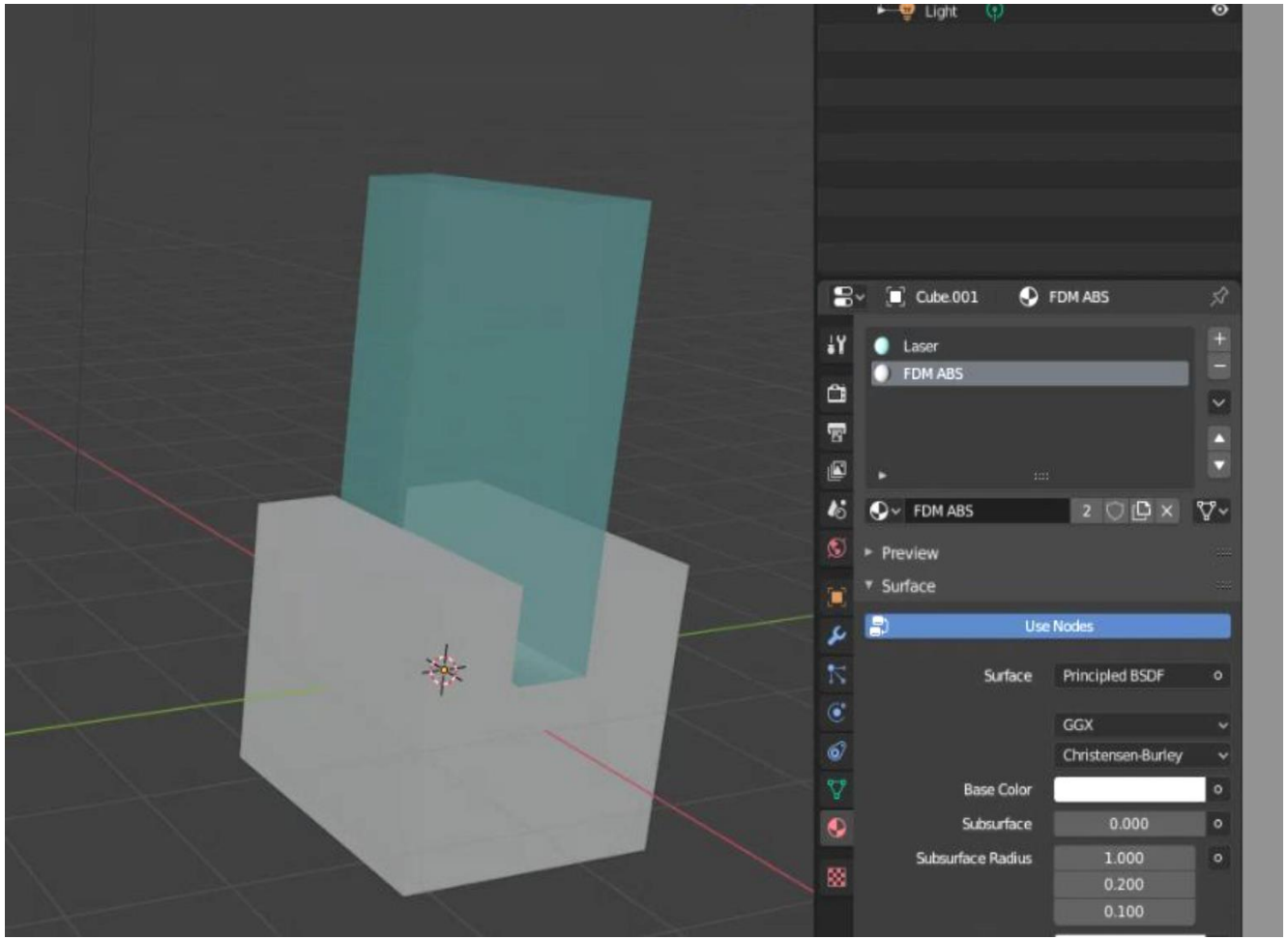




Cr3do: Design Guidelines System

Automated tool to improve settings

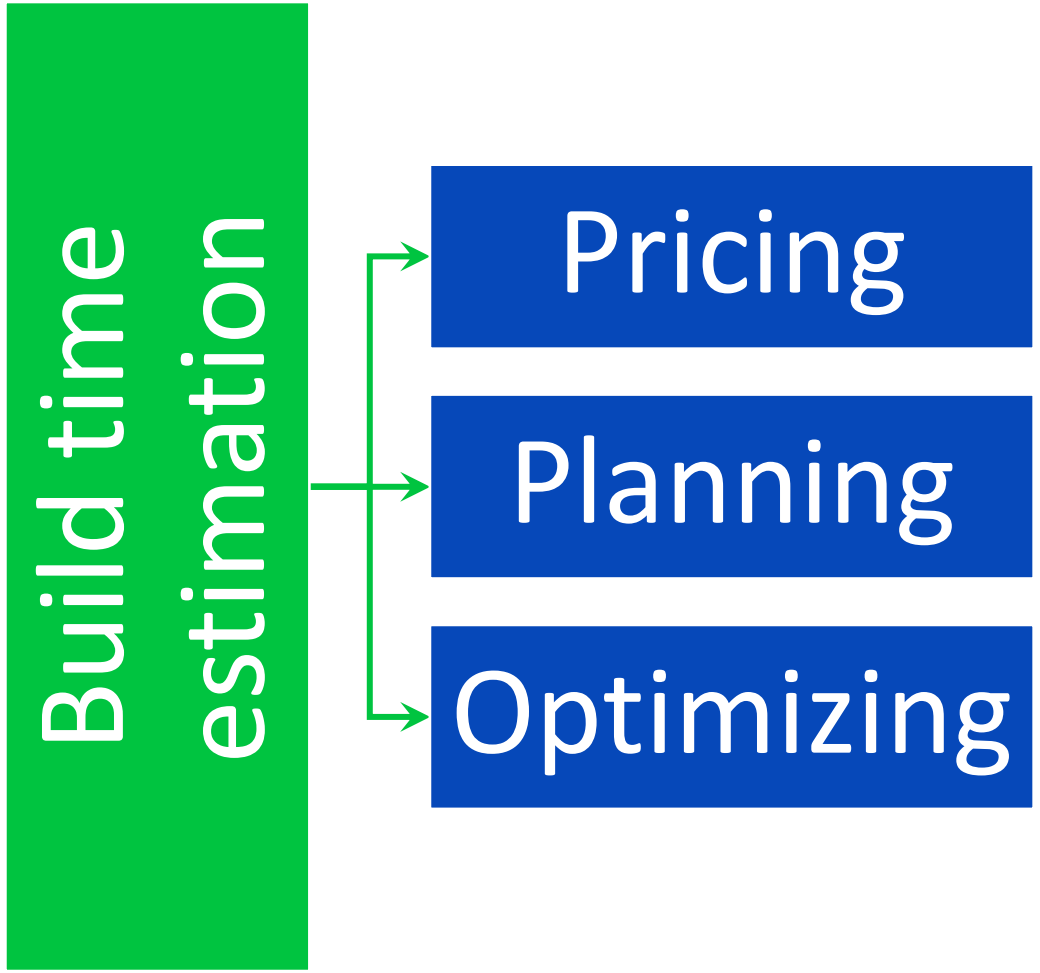
- Design error rate reduction of 67%.
- Manufacturing error rate reduction of ~ 20%.



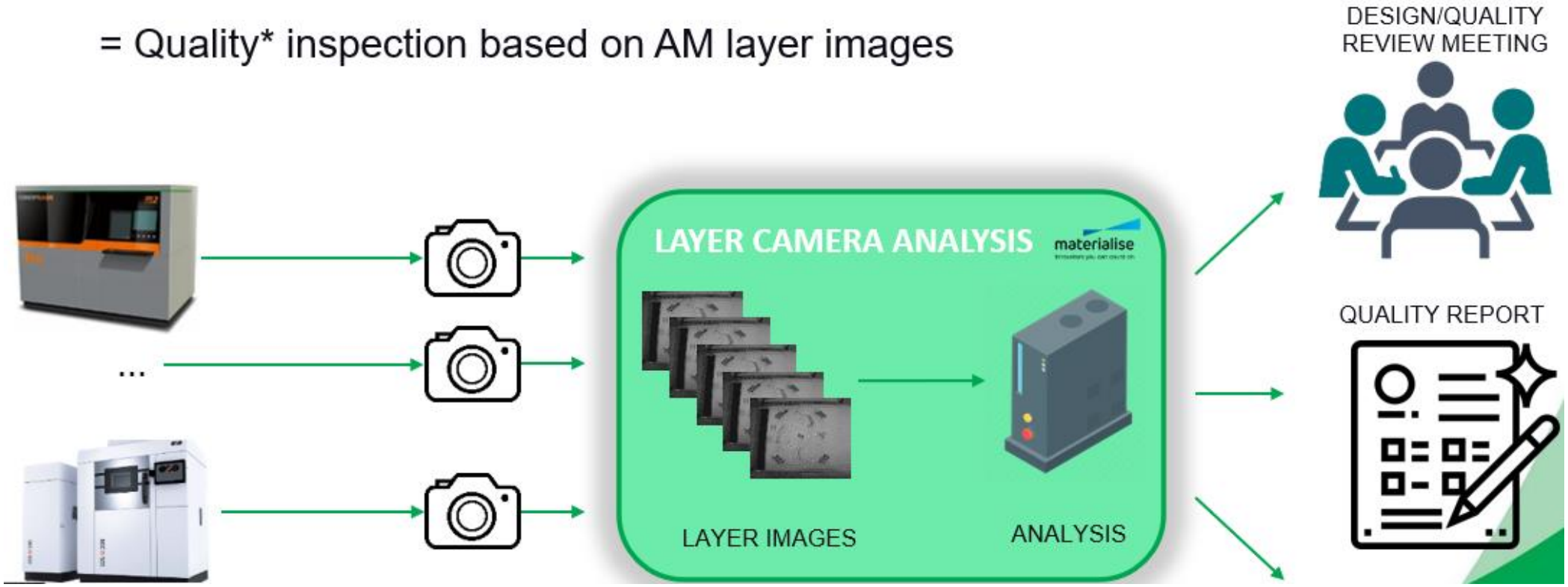
Build Time Estimation (BTE) for FDM

Materialise + Sirris + Cr3do + 3DSemantix

- FDM builds can take 3 – 4 days.
- Build time estimation for FDM builds.
- Currently requires complete build preparation.
- App results:
- MRE 3% printing time > 14 hours.

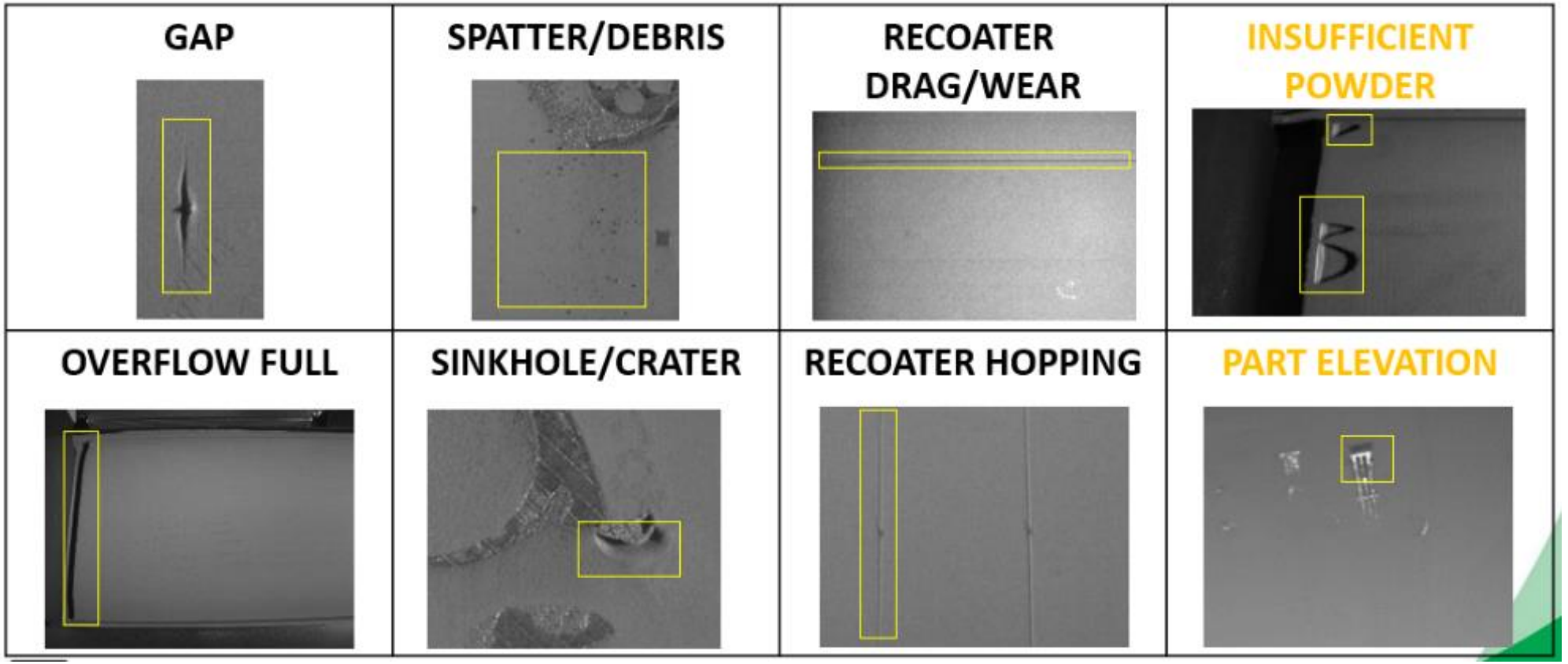


Materialise: Anomaly Detection – Build Quality Surveillance Exploitation



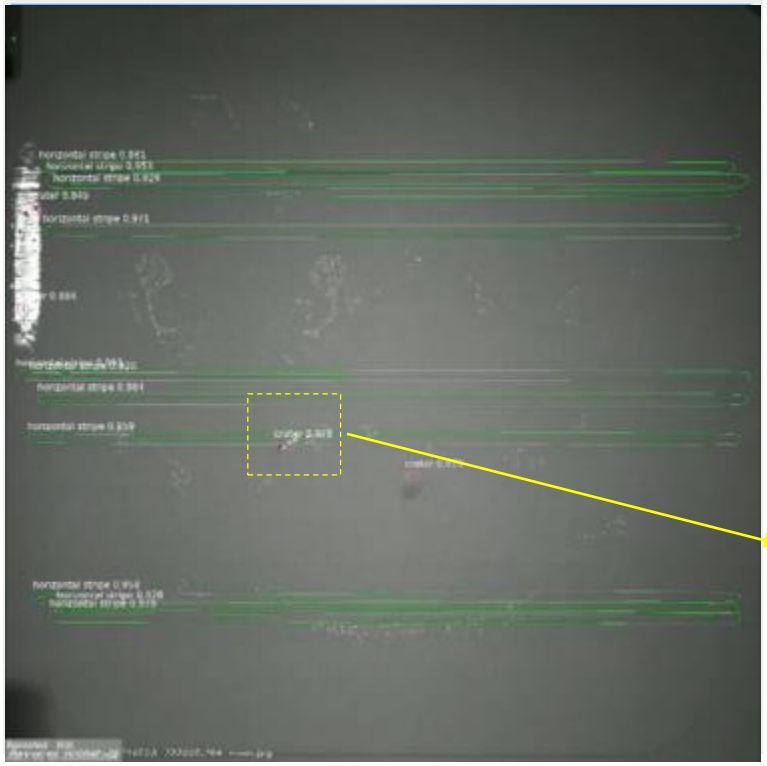
Ex. of Key Achievements and Exploitation

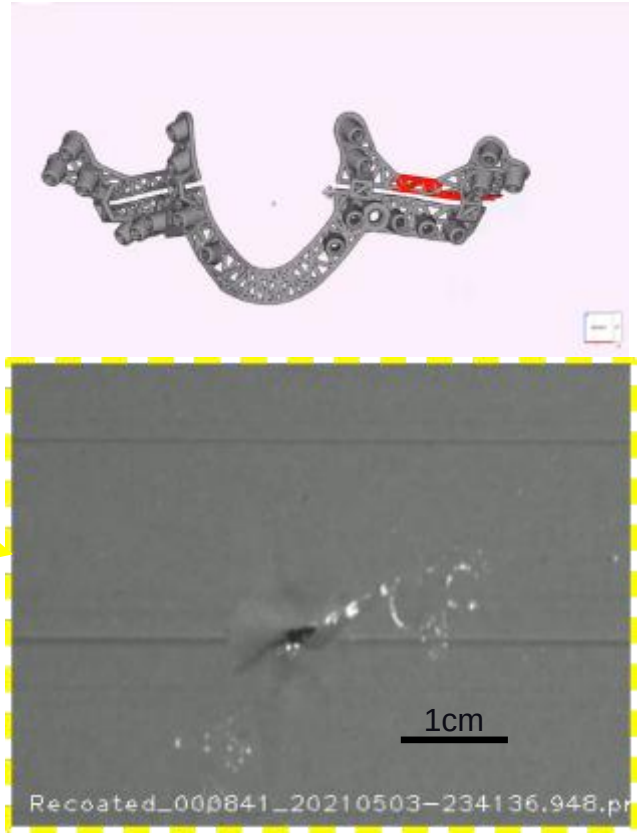
Materialise: Anomaly Detection – Build Quality Surveillance



Ex. of Key Achievements and Exploitation

Materialise: Anomaly Detection – Build Quality Surveillance



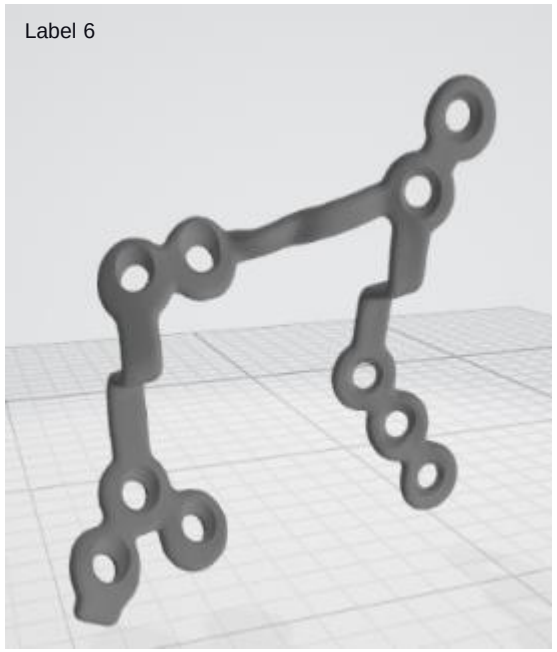


defect ID:	490
defect layers:	156
- start layer	750 (22.50 mm)
- end layer	905 (27.15 mm)
defect volume	12mm³
analysis confidence	98%

Materialise: Part recognition

Automate the part identification

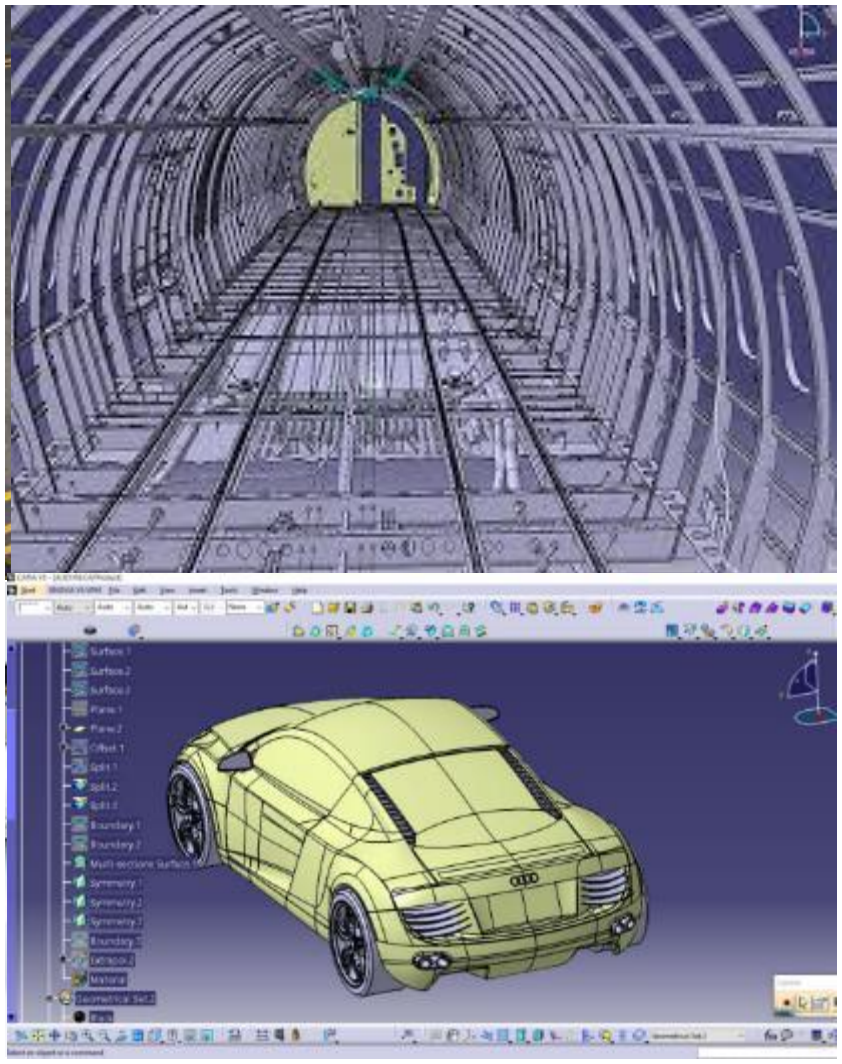
- Recognizing parts from a list
- Automatic management of builds



What do Manufacturers say when selecting Partner?

What should you consider when selecting a Mfg Partner?

How does the experience of a manufacturer translate?



Have you ever produced a part like this?

A question, if you could, you would ask to all relevant AM Partners.

Ausborne Aero needs an AM Partner to print the 3D model

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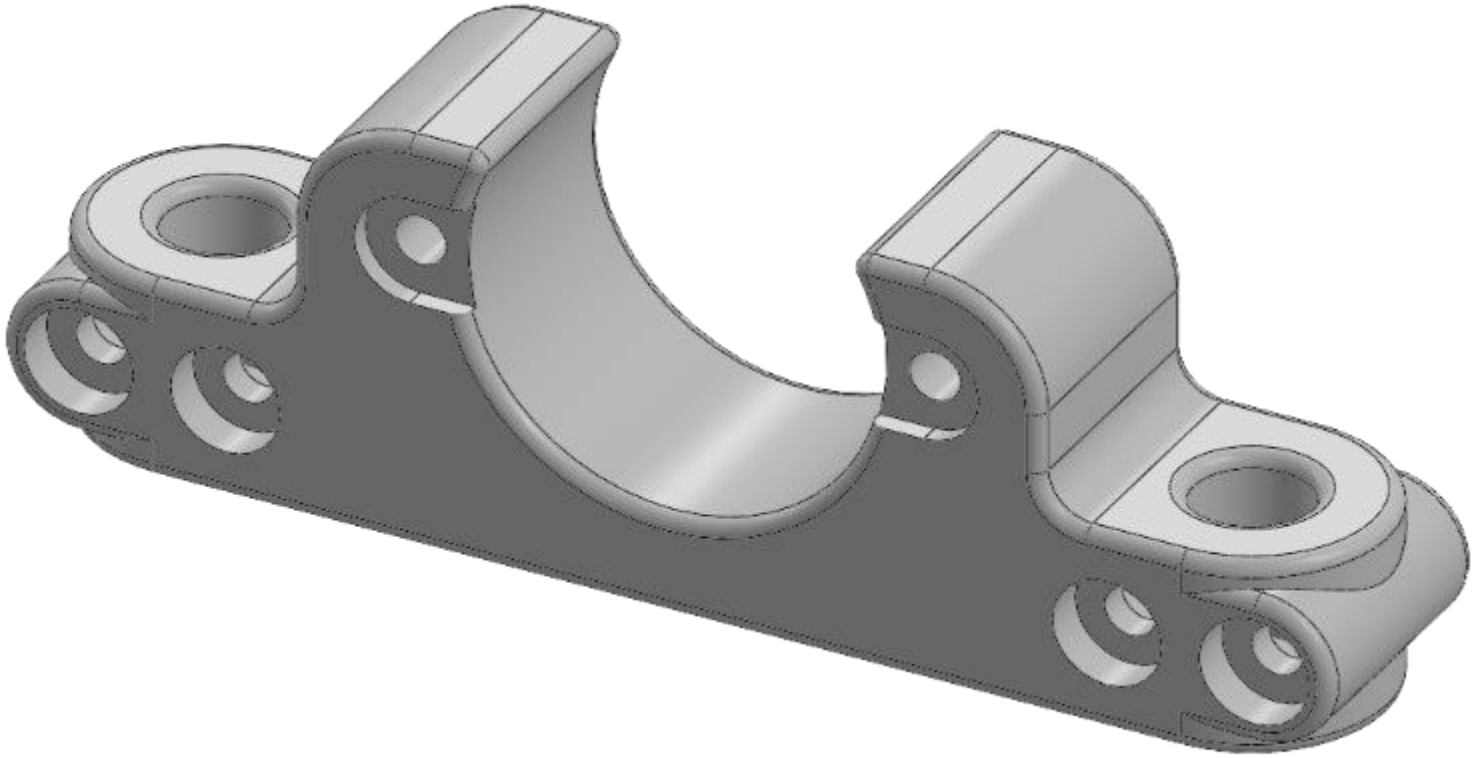
Simply upload the 3D model privately and launch a search!



25 years ITEA 4 1998–2023 | Σ

Search partners...

Catalogs | Partners | My Org

CAD Parts

Drag files to upload 3D Model

or

Browse Files

Succeeded 2

08/04/2022 3:00 PM
BindingClamp.step

09/03/2022 11:20 AM
HouseModel.stl

Filters

Materials

« Previous

- Aluminium
- Steel
- Titanium

Equipments

- ExOne
- Fabrisonic
- Optomec
- Solidscape
- Stratasys

Add A New Analysis

/ Analysis / New

New Analysis

Name

Binding Clamp

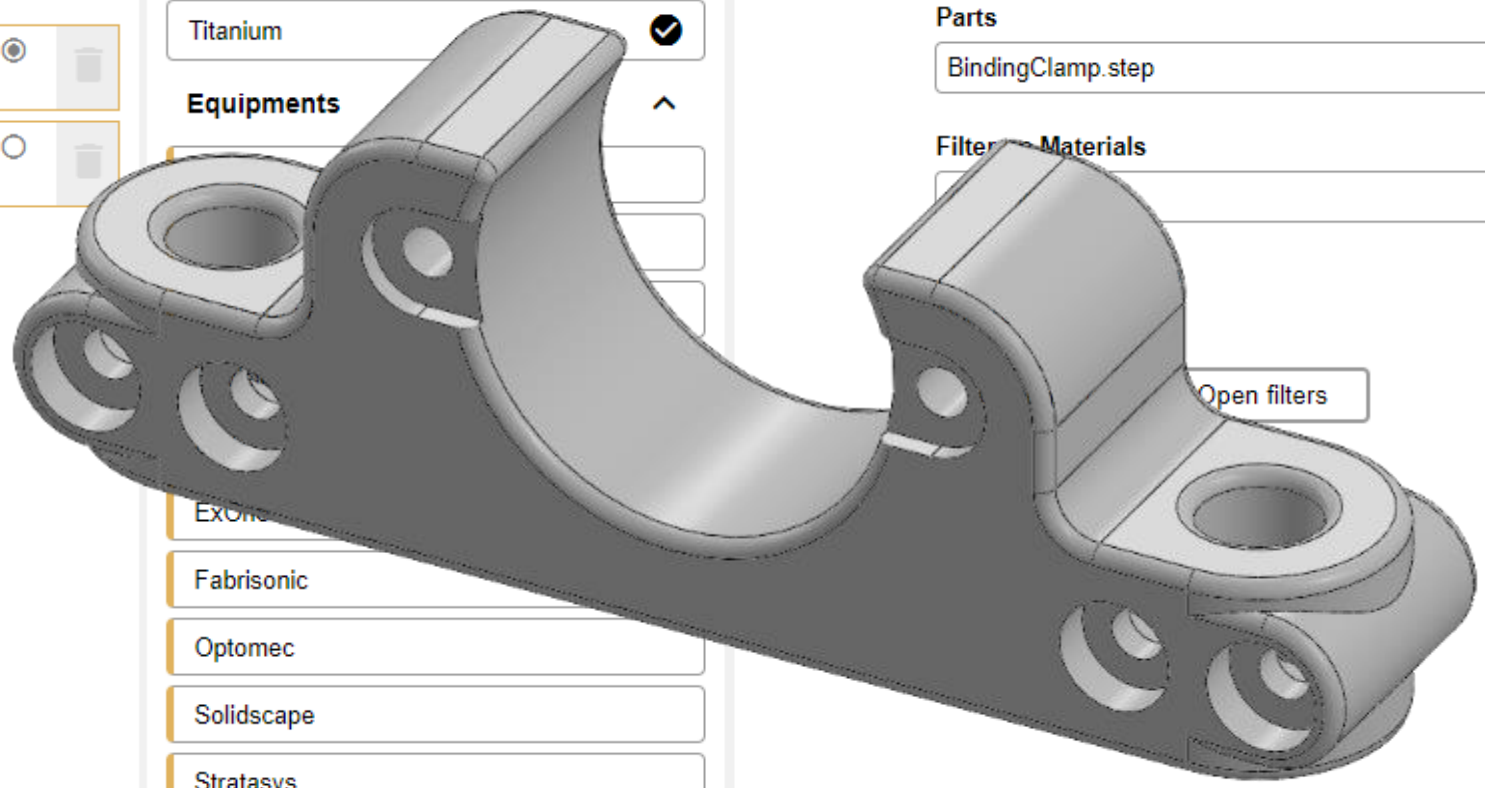
Parts

BindingClamp.step

Filter Materials

Open filters

SEND



Parts
Filters
Workspace
History

CAD Parts

Drag files to upload 3D Model
or
Browse Files

Succeeded 2

08/04/2022 3:00 PM
BindingClamp.step

09/03/2022 11:20 AM
HouseModel.stl

Results Of Binding Clamp

7:05 PM - Apr 8 2022

/ Analysis / Binding Clamp

Part BindingClamp.step

Material Aluminium

Companies with relevant production experience

FusiA

FusiA Groupe is specialized in additive manufacturing (3D printing) of metallic parts and precision machining. FusiA Groupe and its subsidiaries have got over 40 years of expertise allowing it to offer services according to aeronautical standards.

Core business

FZ Engineering

Building together an Innovative and Efficient Industrial Future. Layer by layer, we are building, with our team, our partners, and our customers, an efficient industrial future.

Core business

Materialise

Want to revolutionize your product development with one of the most comprehensive 3D printing services in the world? Talk to us about your design and production challenges. We'll help you address them by making 3D Printing a part of your engineering...

Core business

Investissement Québec - CRIQ

Investissement Québec - CRIQ carries out its R&D projects, tests, demonstrations, and specialized analyses using state-of-the-art facilities and equipment.

Skilled

Parts
Filters
Workspace
History

CAD Parts

Drag files to upload 3D Model
or
Browse Files

Succeeded 2

08/04/2022 3:00 PM
BindingClamp.step

09/03/2022 11:20 AM
HouseModel.stl

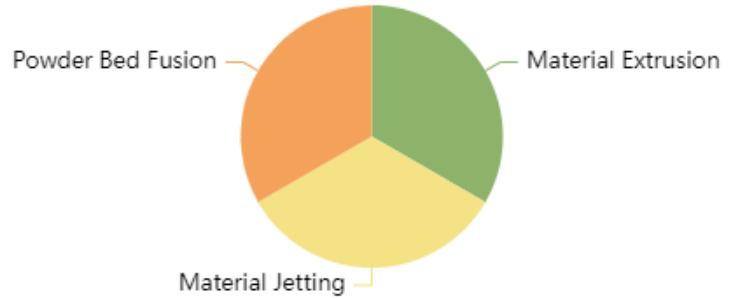
FusiA

FusiA

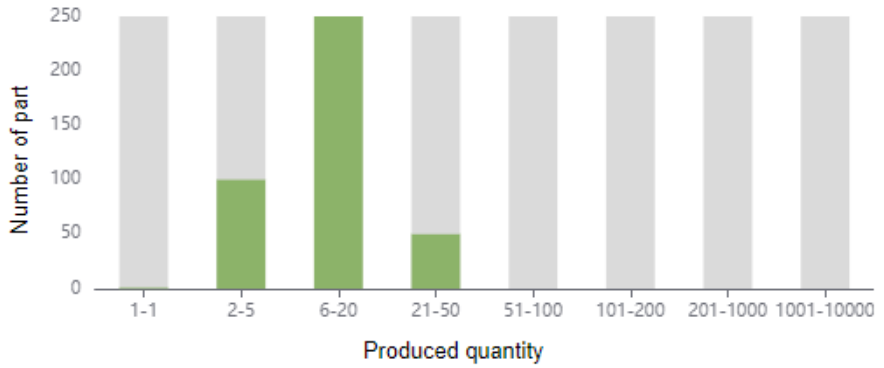
info@fusia-groupe.com
fusia-groupe.com
Saint-Eustache — Canada
180 boul. Industriel, J7R 5C2, QC

FusiA Groupe is specialized in additive manufacturing (3D printing) of metallic parts and precision machining. FusiA Groupe and its subsidiaries have got over 40 years of expertise allowing it to offer services according to aeronautical standards.

Distribution of manufacturing processes

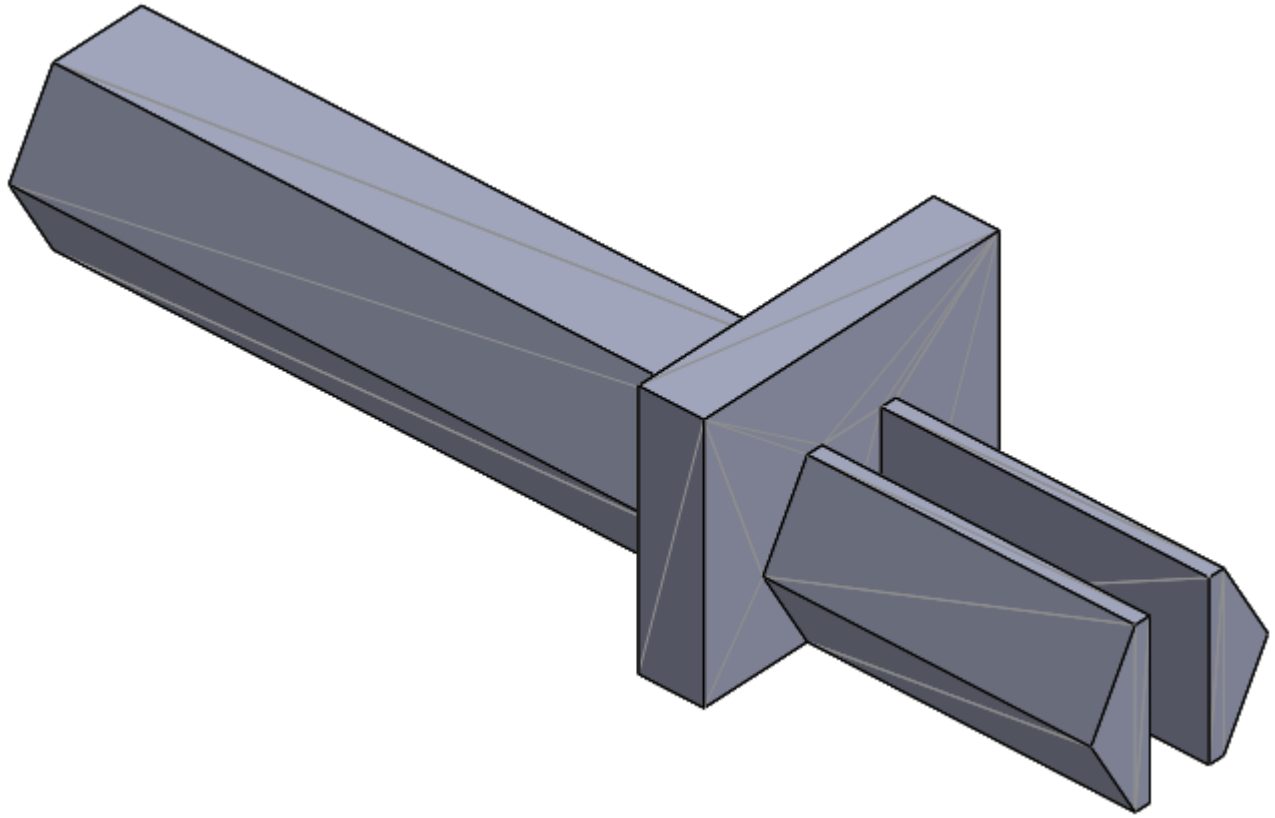


Produced quantity per part

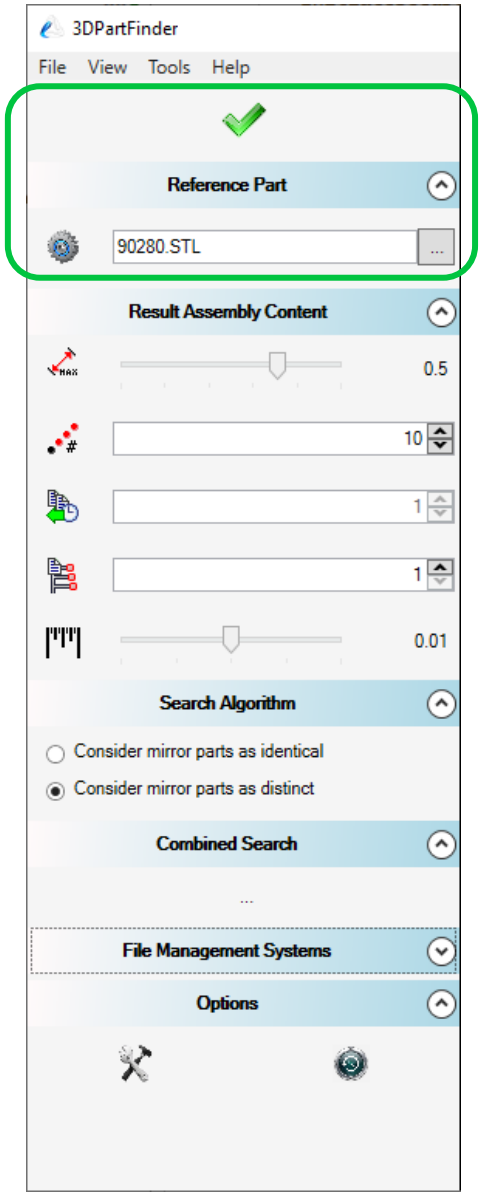


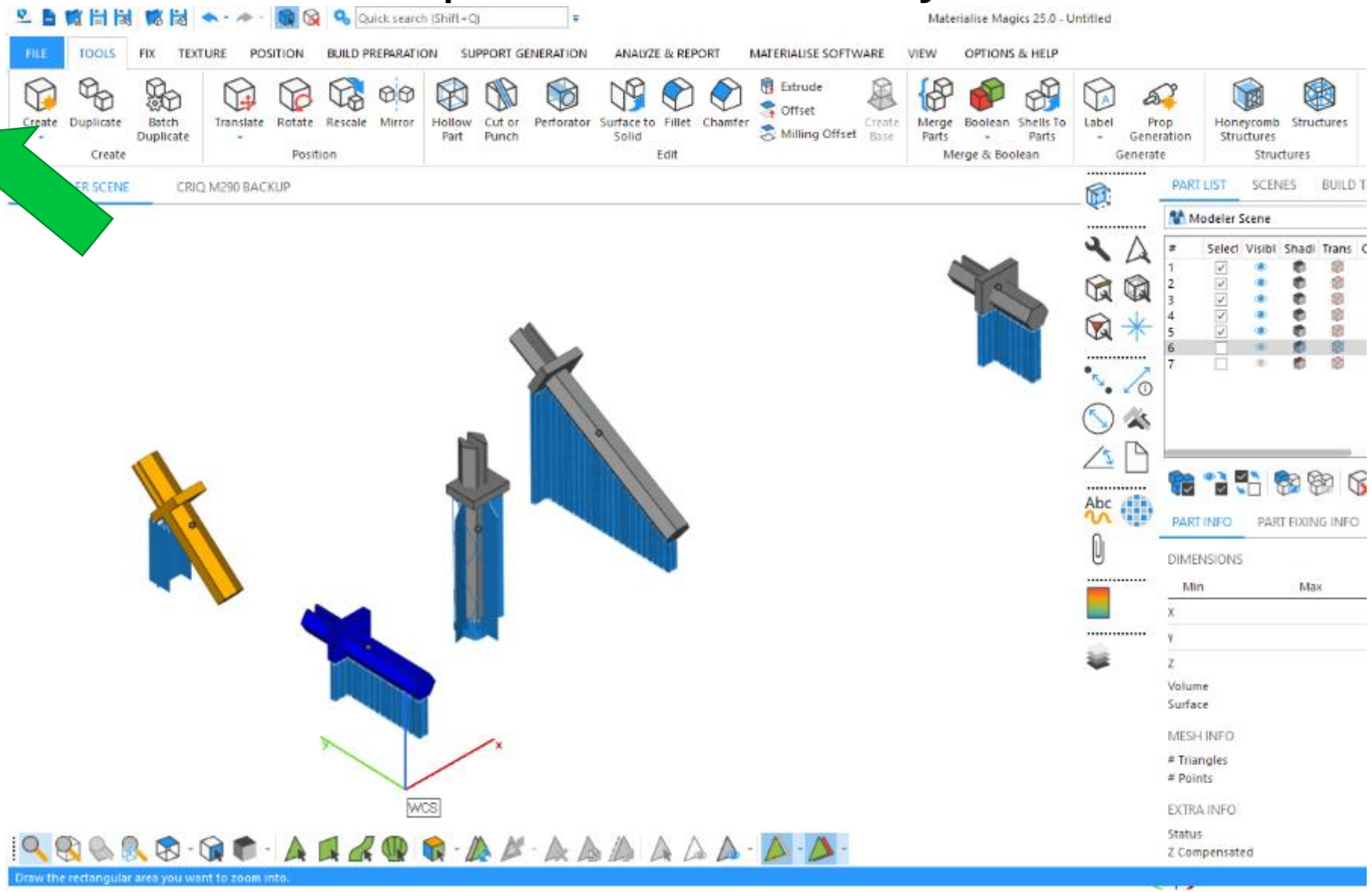
I want to quickly answer a Request for Quote

Simply use the 3D model to do a geometric search!

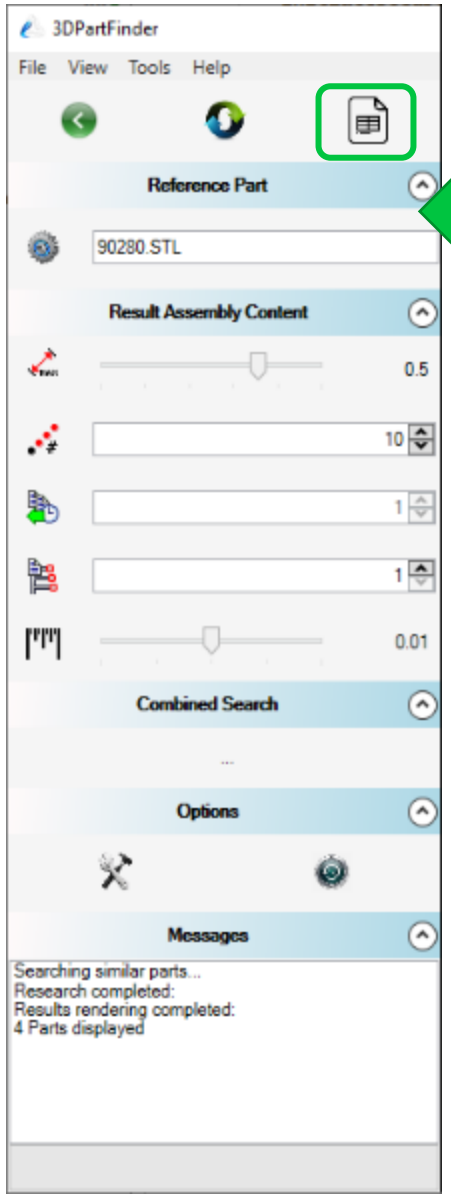


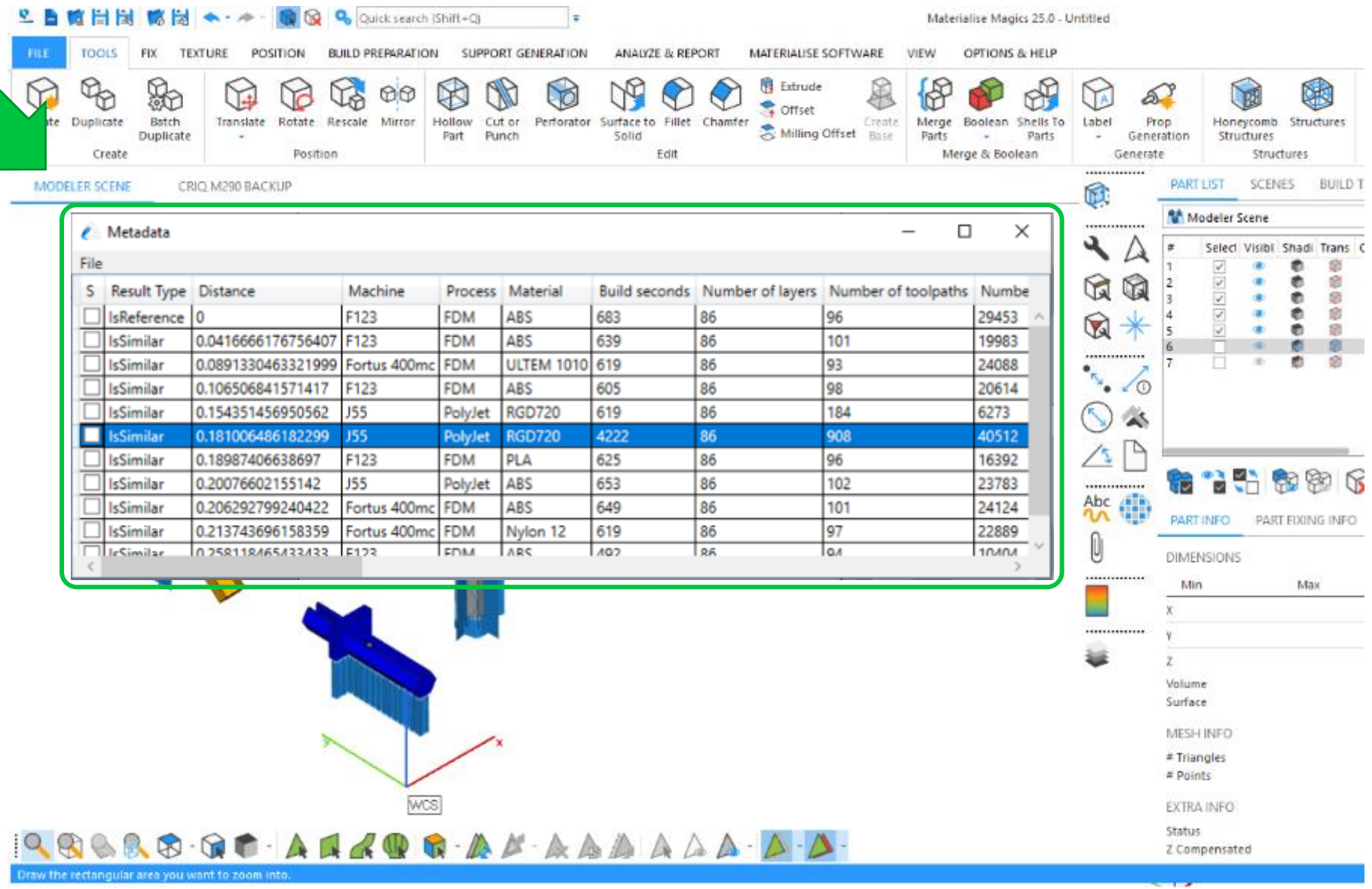
Launch a similarity search.
See and compare results directly in MAGICS.





Quickly access relevant information





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Conclusion

- Data cumulated over the years can lead to the creation of very useful applications.
- Start gathering data if you are not, but please store it in a reusable format. Doesn't need to be expensive but with a structure.

Thank you