



# ADDITIVE MANUFACTURING CAPABILITIES IN CREO

**CREO CLOSES THE GAP BETWEEN 3D CAD AND ADDITIVE MANUFACTURING.  
WITH CREO, WHAT YOU DESIGN IS ACTUALLY WHAT YOU PRINT.**

With Creo you can design, optimize, validate, and run a print-check all in one environment, reducing overall process time, tedium, and mistakes. When you're ready, simply send the file straight to the 3D printer.\* You can design for additive manufacturing in polymers and in metal and then connect directly to your chosen printer with its optimized printer profile and support structures. No switching between software packages, and no hassle. Our metal printing capabilities cover 70% of the metal printers currently on the market.

# >>> THE CREO ADVANTAGE

Creo is a 3D CAD solution that helps you build better products faster by accelerating product innovation, reusing the best of your design and replacing assumptions with facts. Go from the earliest phases of product design to a smart, connected product with Creo. And with cloud-based augmented reality in each seat of Creo, you can collaborate with anyone, instantly at any step in the product development process. In the fast-changing world of the Industrial IoT, no other company can get you to substantial value as quickly and effectively as PTC.

Description	Creo 3.0	Creo 4.0	Creo 5.0	Creo 6.0
<b>Creo Parametric</b>				
Direct Connect to Stratasys Plastic Printers (understand material usage and Print Times)	✓	✓	✓	✓
Create Print Trays		✓	✓	✓
Print Check	✓	✓	✓	✓
Direct Connect to 3D System Plastic Printers (understand material usage and Print Times)		✓	✓	✓
Direct Connect to i.materialize Print Bureau		✓	✓	✓
Direct Connect to Plastic Printers in the Materialise Library (Manage print drivers and profiles)			✓	✓
Direct Connect to 3D Systems ODM Print Bureau			✓	✓
<b>Creo Additive Manufacturing Extension</b>				
Lattice Modeling (2 ½ D and 3D Beam lattices)		✓	✓	✓
Formula-based (Gyroids, Primitive and Diamond)				✓
Advanced beams lattices (Stochastic – conformal and foam, transitions )				✓
Homogenized lattice representation for fast simulation and light weight files storage				✓
Custom defined cells (based on Creo .prt files)				✓
Modify, Manage and Save Print Tray Assemblies		✓	✓	✓
Automatic Positioning and Nesting in Print Tray Assemblies		✓	✓	✓
Global Interference Check		✓	✓	✓
Define the Print Build Direction in Part Mode and direct placement in the Print Tray				✓
3MF Core specification export			✓	✓
3MF Materials and colors extension support				✓
3MF beam lattice extension support				✓
Windows 10 driver support for 3D printing				✓
<b>Creo Additive Manufacturing Plus Extension for Materialise</b>				
Direct Connect to Metal Printers in the Materialise Library (Manage print drivers & profiles)			✓	✓
Generate and Customize Metal Support Structures			✓	✓
Optimization of the Print Build Direction in Part Mode and direct placement in the Print Tray				✓
<b>Creo Topology Optimization Extension</b>				
Topology Optimization in parts			✓	✓
Semi-Auto Geometry Conversion			✓	✓
Enable Geometry Reconstruction from Facet within Freestyle				✓
Topology Optimization in Assemblies				✓

Please visit the [PTC support page](#) for the most up-to-date platform support and system requirements.

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# CREO ADDITIVE MANUFACTURING CAPABILITIES:



## CREO PARAMETRIC >>>

### Direct Connect to Stratasys Plastic Printers, 3D Systems Plastic Printers, and to i.materialise and 3D Systems Print Bureaus

- Out-of-the-box (OOTB) functionality: print parts, assign materials, colors, and calculate build and building material directly from Creo.
- Ability to direct order parts from i.materialise and 3D Systems on demand manufacturing (ODM) print bureaus

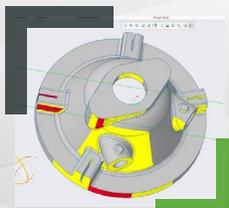
### Direct Connect to Plastic Printers in the Materialise Library

- OOTB functionality: print plastic parts directly from Creo
- Manage print drivers and profiles for plastic printers in the library
- Ability to print support structures requires *Creo Additive Manufacturing Plus Extension for Materialise*
- Materialise provides optimized printer profiles for each printer in the Materialise library. Build processors available from Materialise.

## PTC Additive Manufacturing Partners



## CREO ADDITIVE MANUFACTURING EXTENSION >>>



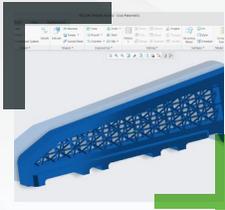
### Build Direction

- Define the optimal orientation for printing your design

# CREO ADDITIVE MANUFACTURING CAPABILITIES:

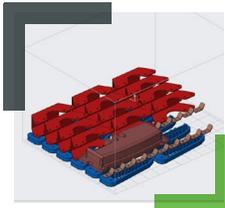


## CREO ADDITIVE MANUFACTURING EXTENSION >>>



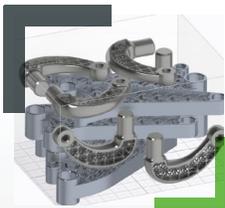
### Lattice Modeling

- Create parametrically-controlled lattice structures, fully-detailed parts with accurate mass properties. With variability control you can optimize the lattices to achieve your engineering goal.
- Use the full spectrum of cellular structures such as: 2 ½ D, 3D beam-based, Formula-driven, Stochastic and Custom-cell type.
- Take advantage of lattice transitions between beam-based lattices and the supported downskin patches of a model, based on the build orientation and critical angle.
- Improved FEA Simulation of very dense full BREP beam-based lattices using homogenized representation, coupled with Creo Simulate to analyze the linear, static, and modal response of a part



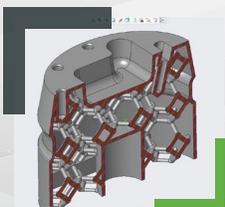
### Create, Modify, Manage, and Save Print Tray Assemblies

- Define print tray specific to printer, where the tray assembly is the repository for the 3D print job.
- Add parts at any time, define positioning and rotations, assign materials/ colors, etc.



### Automatic Positioning and Nesting in Print Tray Assemblies

- Optimize the orientation of parts in print tray according to printer specifications
- Nest parts in print tray assemblies (assumes printer supports nested parts)



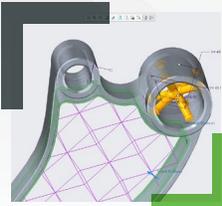
### Global interference checks

- Check whether components will interfere with one another
- 3MF and CLI Export. Export Creo geometry according to 3MF format. Two new 3MF extensions are supported: 3MF materials and properties extension, and 3MF beam lattice extension
- Export the parts placed on the Tray Assembly using the CLI format, which is widely used by metal printer manufacturers.

# CREO ADDITIVE MANUFACTURING CAPABILITIES:

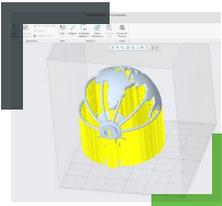


## CREO ADDITIVE MANUFACTURING PLUS EXTENSION FOR MATERIALISE >>>



### Direct Connect to Metal Printers in the Materialise Library

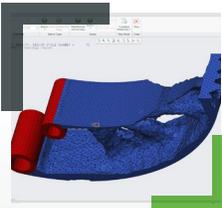
- Out-of-the-box (OOTB) functionality: print parts, assign materials, colors, and calculate build and building material directly from Creo.
- Optimized printer profiles for every printer in the Materialise library. Build processor available from Materialise.



### Generate and Customize Metal Support Structures

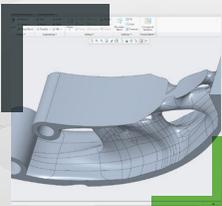
- Materialise-based support structures (point, line, gusset, web, contour & block) are generated in the tray assembly once the part is placed in the tray and the printer is selected
- Supports are created in Creo and update when models are changed
- Support parameters are dependent on the specific printer, and modifiable by the user
- Users can modify specific support structures if needed.

## CREO TOPOLOGY OPTIMIZATION EXTENSION >>>



### Topology Optimization

- Easily find the best material distribution in a given design space within a single part or on an assembly
- Save weight, lower costs, and encourage innovation
- Fast optimization set-up
- Rapid concept development
- Ability to stay within the Creo design environment



### Semi-automatic Geometry Conversion

- Rapidly convert topology optimization results into rich CAD data directly from a Topology Optimization analysis or utilize the reconstruction process for any imported faceted model to automatically create BREP geometry.