# AM STUDIO
for Creo®

AM-Studio for Creo® has been seamlessly integrated into the customary interface of Creo®
and combines all the advantages of PTC systems with the advantages of additive manufacturing.
Thus, the entire product development process has been accelerated and optimized.
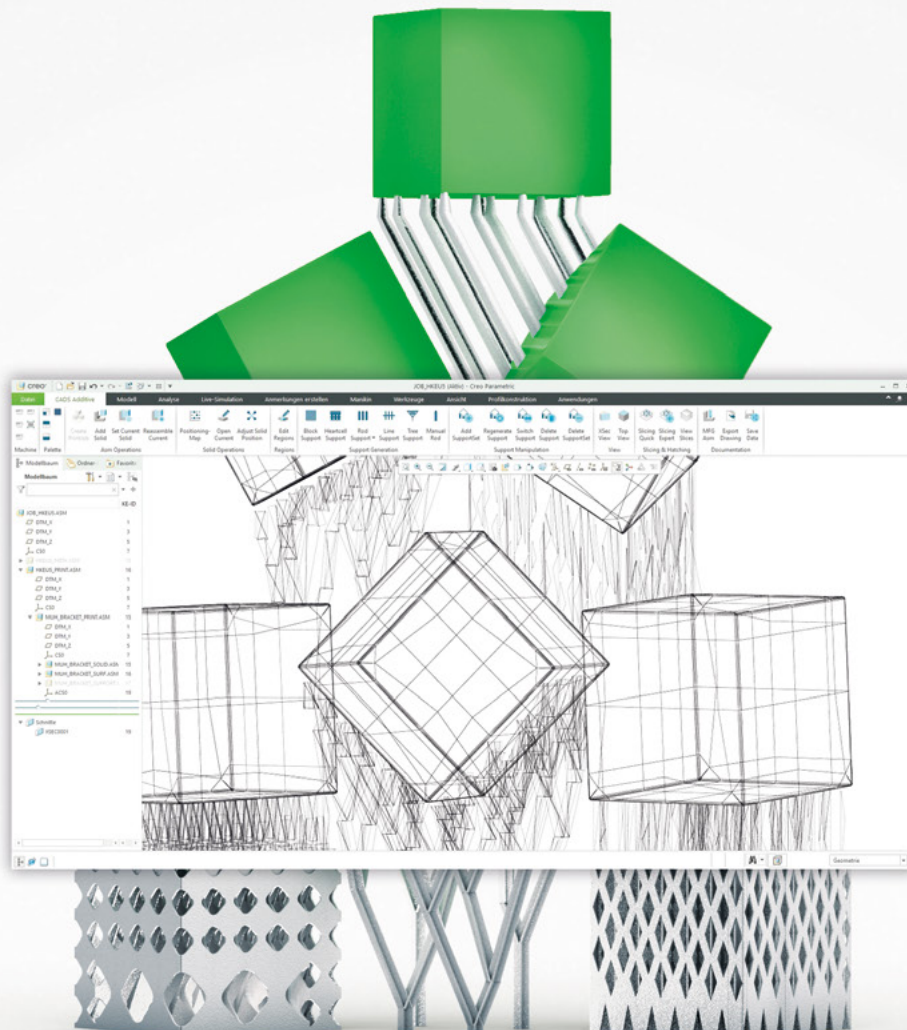
AM-Studio for Creo® Closes the Gap between the CAD Model and Additive Manufacturing.
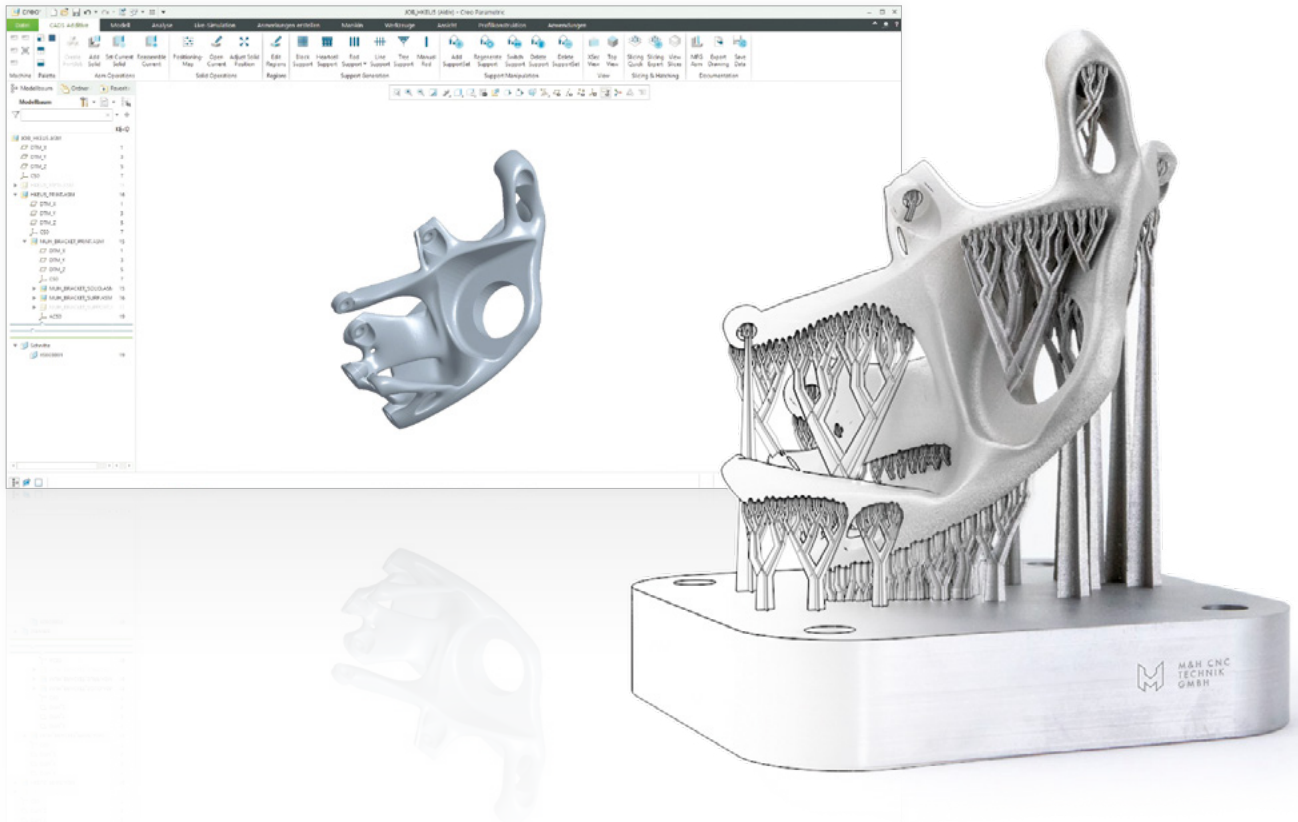
High-Performing and Resource-Saving

- **Additive.Core** offers significant speed advantages with lower requirements for computing power – particularly for highly-complex parts
- Time and thus cost savings due to the optimized support geometry

Practical and Process-Oriented

- Everything in one software environment – works on a standard data model, optimizes the data preparation process
- Changes are adaptively incorporated for the further data preparation process

Flexible and Adaptable

- Communication with all technologies of the additive manufacturing possible
- Optimized for the metal-based SLM process – other materials and processes possible upon request

User-Friendly and Intuitive

- Easy determination of the best component orientation with regards to construction time, quality, support structure, warping tendency, etc. via OrientationMaps
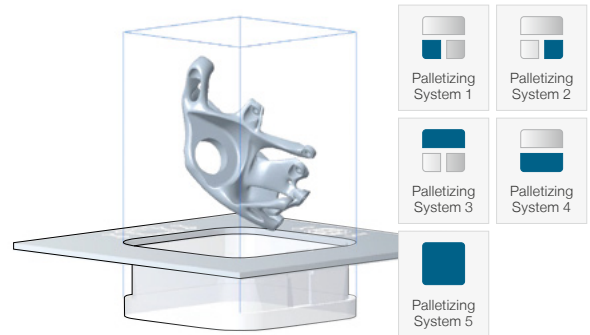- Continuous workflow

01

Import and Select Machine

During the first step, the components to be manu-factured are imported and the desired 3D printer is selected.
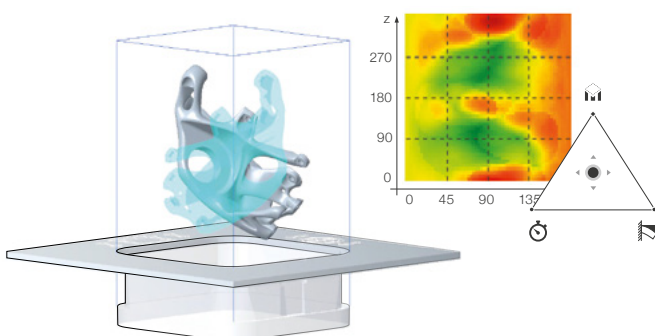
02

Usage of AM-Lock

Is your machine already equipped with the **AM-Lock** Palletizing System? If the answer is yes – on which pallet configuration is the component supposed to be printed? You have the choice between various layouts.
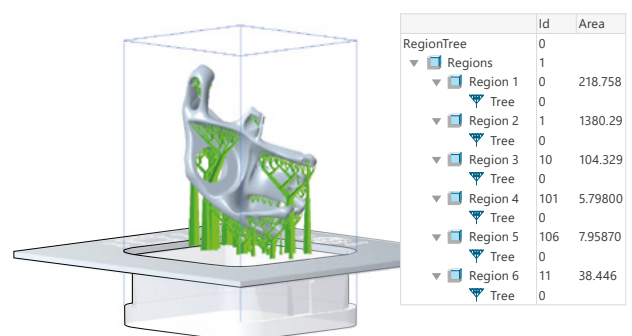
03

Orientation

The orientation selects many features of the component such as, for example, construction time, quality, support structure, warping tendency, etc. via user-friendlier OrientationMaps, the best position for the component is determined and depicted. A manual orientation is likewise possible.
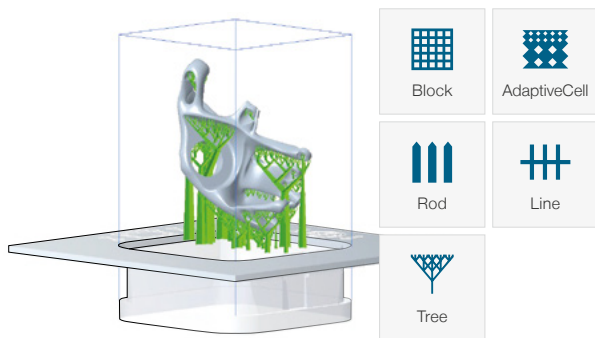
04

Support Regions

AM-Studio for Creo® groups all areas to be supported into support regions. These regions can be assigned individual support structures. The model tree offers transparent visualization.
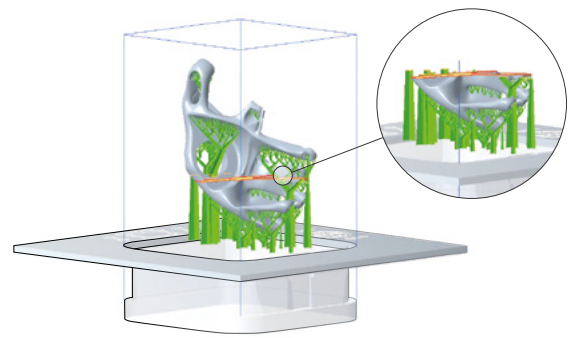
05

Block	AdaptiveCell
Rod	Line
Tree	

Support Types

The support library covers not just the standard industry support geometry types of Block, Rod and Line, but rather offers additional possibilities via the special geometries called Tree and AdaptiveCell. They save materials and time as well as also simplify the component post-processing.

06

Verification

The last step before manufacturing is the examination of the generated slices in the slice viewer. All objects and components have already been converted into slice data in Creo®. Thanks to the performance attained by Creo®, all slices can be examined. The various slice areas of Volume, Border, Down-Skin and Up-Skin are configurable and are visualized in various colors for better depiction.

07
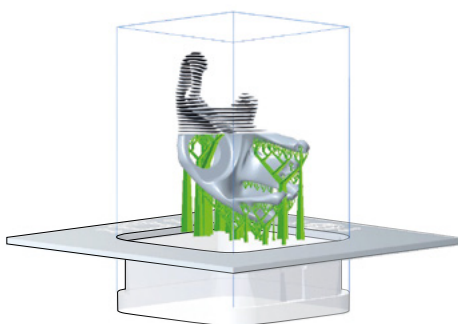
Export Formats / Documentation

After the verification, the processed data can be exported into a desired file format. A supported export format is .slm. In this regard, the format is dependent on the selected technology and/or machine. Then the data can be sent to the respective machine.

08

Post-Processing

During this step, mainly all work is implemented which occurs between the printing and the delivery. This includes the following: The removal of the support geometry structure, the milling via the Creo® CAM software or the measuring of the component via Creo® CMM. During all these steps, consistent and accurate data are required which **AM-Studio for Creo®** naturally provides.

CADS Additive for Creo®

The requirements for product development are higher than ever. The themes of lightweight construction, resource consumption and unit price demand intelligent geometry. By using additive manufacturing, topology-optimized components can be manufactured because they, in contrast to conventional manufacturing processes, enable maximum design possibilities. **AM-Studio for Creo®** is an innovative all-in-one solution for PTC Creo® (beginning with version Creo® 3.0). Analysis, support geometry generation, slicing and hatching as well as additional processes in additive manufacturing have been combined with the functional diversity of PTC Creo®. Above all with regards to post-processing procedures such as quality assurance, milling with Creo® CAM or measuring with Creo® CMM, this well-conceived combination offers the decisive additive advantage.

Best Orientation

Your success in additive manufacturing rises and falls with the suitable orientation of components in the assembly area. Based upon various quality criteria, **AM-Studio for Creo®** determines the ideal orientations in the sense of

- The construction time
- The required, but minimal support geometry
- The thermal warping to be expected
- The surface finish quality to be expected

Constantly-Updated Support Geometry

- Regions to be supported are grouped transparently
- Easy support for the individual division or entire components
- Novel, metal-optimized Tree and AdaptiveCell support services with up to 40 % time, volume and material savings
- Automated recalculation of the support geometry after changes in the geometry or the position of the component
- Support geometry is completely parametrizable
- Simplified post-processing due to the improvement of the contact points of the components
- Partially-automated support geometry generation via predefined templates
- Additional templates for support strategies freely definable

Visualization of All Slices

- Machine control data are generated in a fully-automated manner by our supplemental module called **Additive.Core**. However, this can also be outsourced as a service (e. g. the calculations take longer and are thus moved to a server).
- High speed and low resource consumption
- Large number of slicing parameter and/or configuration settings
- Depiction and validation of individual slices in Creo®
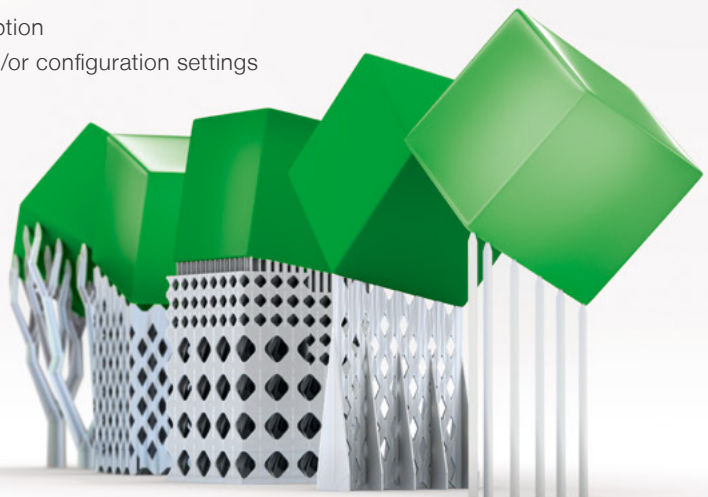
We develop highly-specialized software components for the additive manufacturing process. The components are modularly-structured and offer support along the entire process chain – from the product idea to the supplying of the finished product. They can be integrated into the existing software platforms (e.g. CAD providers) or delivered as a stand-alone software suite.

ORIENTATION MODULE
Additive. Optimo

The Foundation: AM-Optimal Component Orientation. The vision of additive manufacturing is additive-specific design and component layout based upon the criteria required by the respective AM-technology. However, as the preparer of the data, one is frequently confronted with components that have been constructed based upon classical criteria. For additive manufacturing, generally other manufacturing criteria are nonetheless valid. **Additive.Optimo** enables the fast selection of suitable component orientation based upon the quality criteria of the additive manufacturing technology that has been selected in order to enable the attainment of the best manufacturing results for these component families.

SUPPORT MODULE
Additive. Support

The Cornerstone: Stable Support Geometries. Whoever would like to obtain good final results in additive manufacturing needs both the right manufacturing strategy as well as also optimal support geometries. Thus, the **Additive.Support** module covers not just the standard industry support geometry types, but rather offers many process-related improvements. The algorithm in **Additive.Support** helps to save materials and construction time without compromising stability.

SLICING MODULE
Additive. Core

The Centerpiece: Calculation and Processing of Slice Data. In the case of complex components, the calculation and optimization of slice data result in enormous data quantities which quickly push the user's PC hardware to its limits. The **Additive.Core** module is high-performing while nonetheless requiring extremely-low resource consumption. Even very large-scale geometries can be calculated on customary industry notebooks. The resulting neutral file format can be used for various additive manufacturing processes and by diverse system manufacturers.