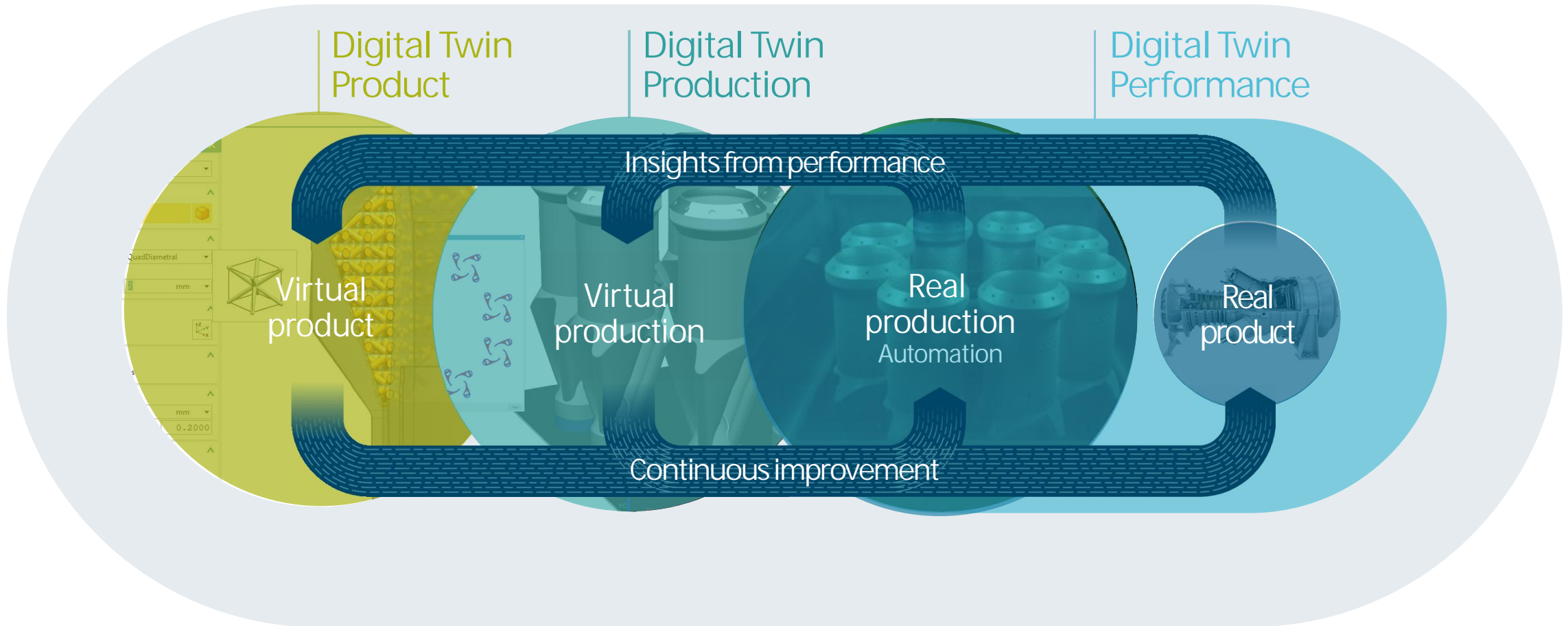


# Siemens Industrializes Additive Manufacturing

K. Heuser, A. Saar, M. Seibold, J.-Y. Clames  
Press Expert Talk, Formnext, Nov 13, 2018

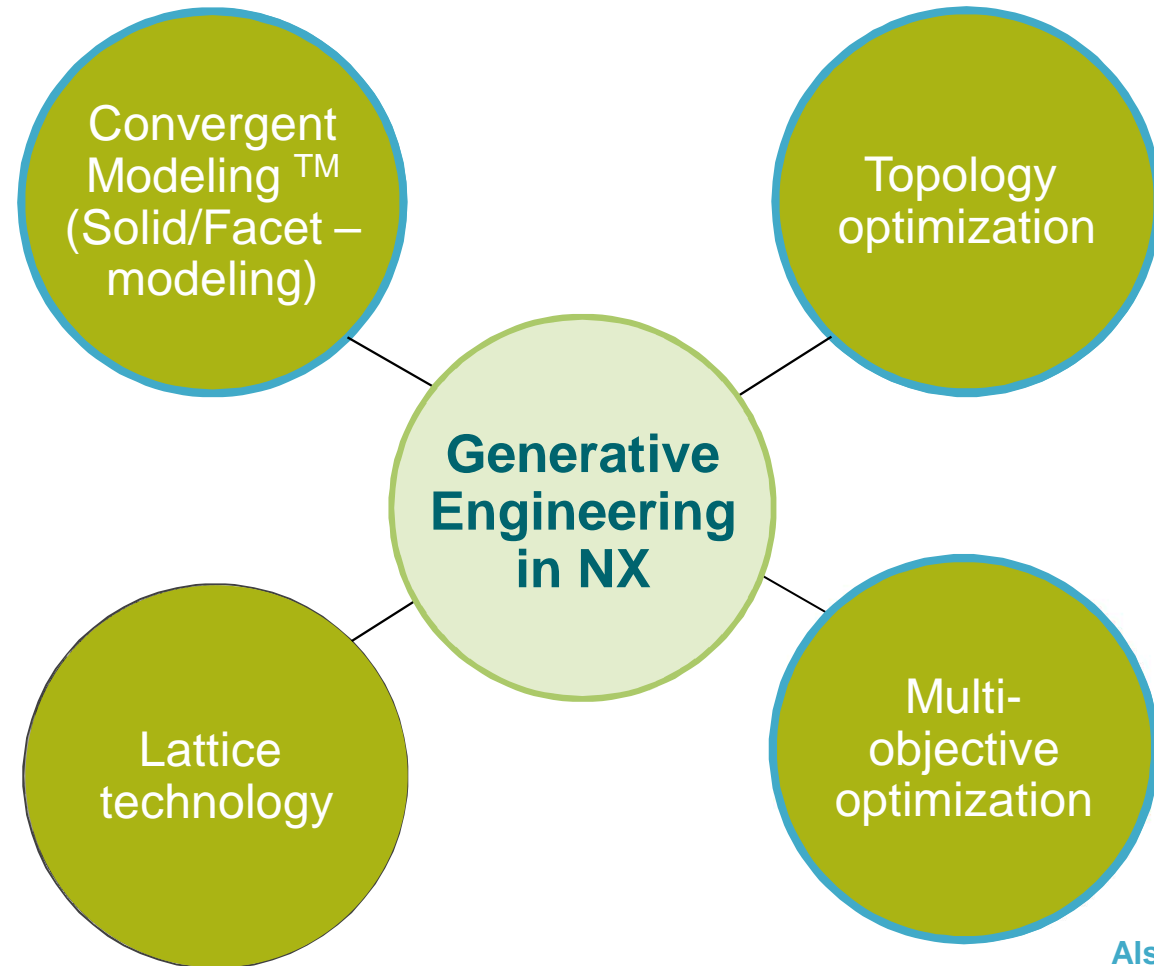
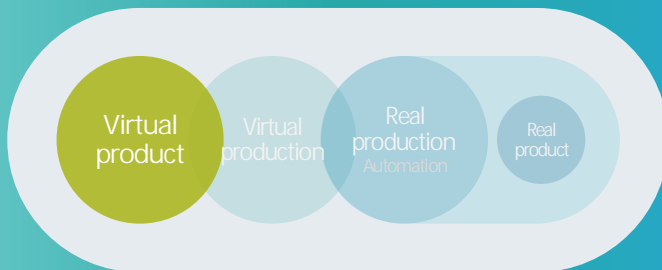
# Industrialize Additive Manufacturing: Design and produce useful parts at scale



# Designing parts optimized for Additive Manufacturing

Industrial CAD  
combined with  
powerful tools for DfAM

Design for Additive  
Manufacturing



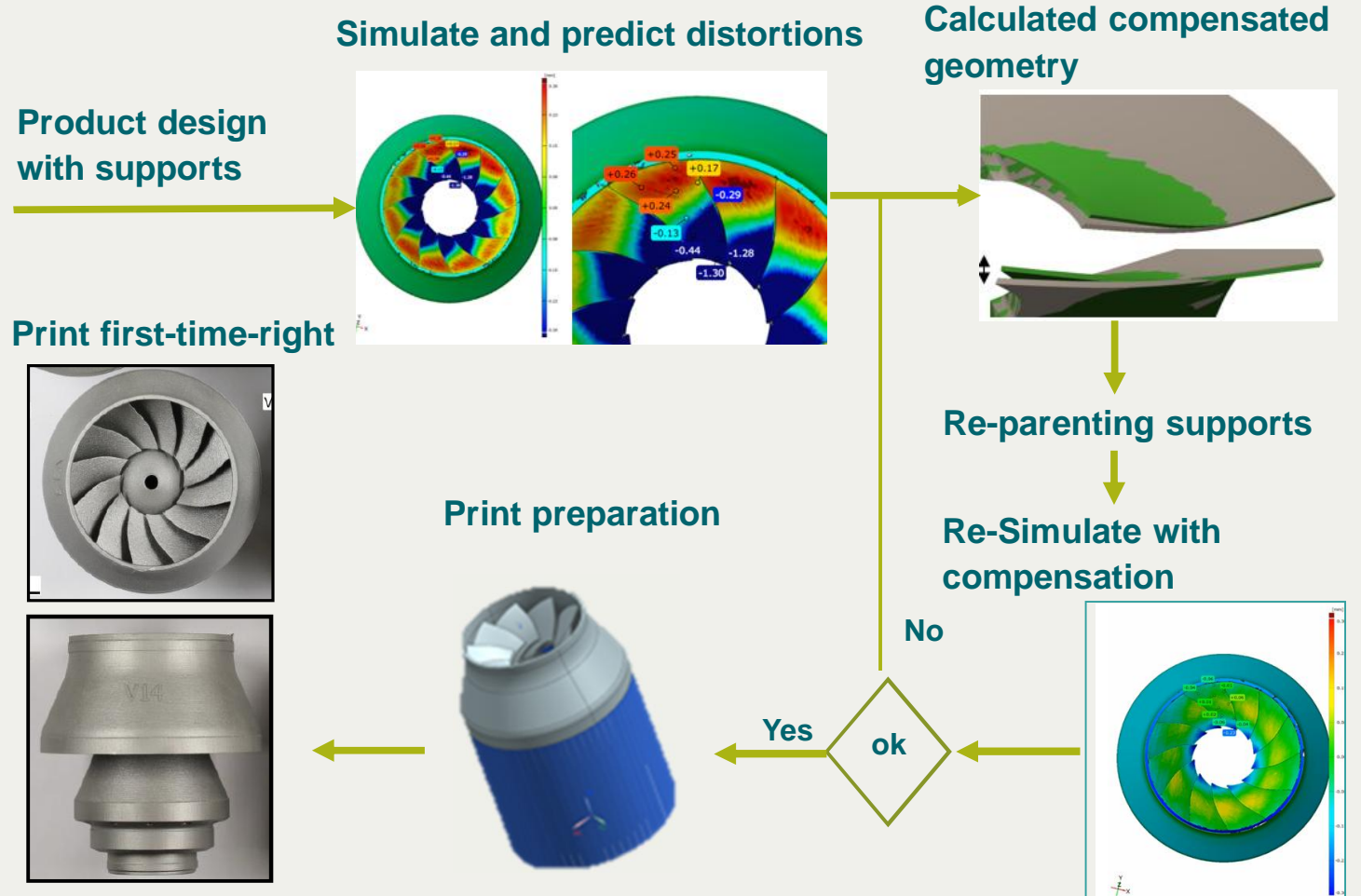
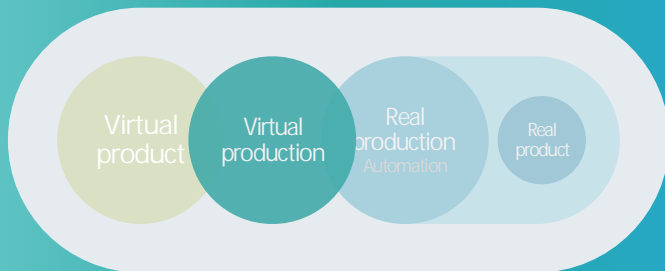
Also in  
Solid Edge

# Build process simulation ensures jobs print First-Time-Right

**SIEMENS**  
*Ingenuity for life*

Virtual detection and elimination of distortion, overheating and other defects with build process simulation leading

from “try and see” to First-Time-Right.

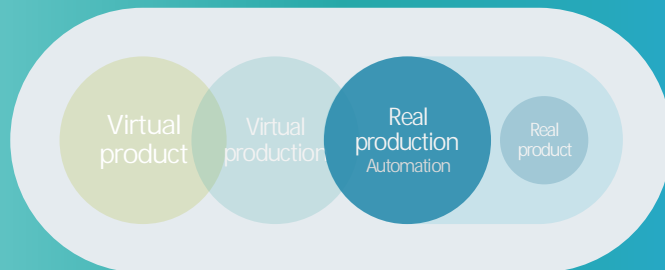




# Industrialize Additive Manufacturing by seamlessly integrated software and automation solutions



## Automated post printing processes for powder removal and support removal



### Automated powder removal



#### Controller

SIMATIC ET200SP Open Controller  
combining standard and failsafe functionality



#### Drive Systems

SINAMICS S110



#### Geared Motors

SIMOTICS S-1FG1



### Additive Manufacturing and CNC in one software - CNC controlled removal of support structures

NX CAD

NX CAM

SINUMERIK



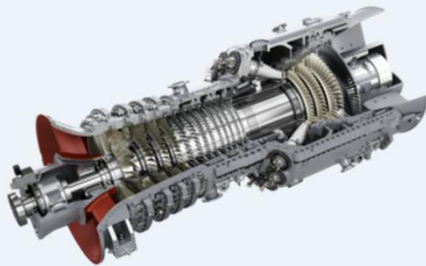
# AM Pioneers: we demonstrate with Siemens and customer applications that AM works – now it is about scaling

**SIEMENS**  
*Ingenuity for life*

## What we have achieved

SGT-9000HL  
combustion system

**NO<sub>x</sub>**  
reduction



SGT-700  
DfAM burner



more than  
**8,000**  
operating hours

## How do we industrialize?

more than  
**6** materials  
qualified for AM

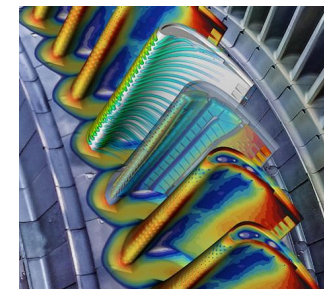
more than  
**150** people  
dedicated to AM

more than  
**110,000**  
operating hours

## What's next?



Co-develop and industrialize machines (e.g. M300-4)



Implement digital chain



Automation of de-powdering with Solukon

# Industrialize AM at Siemens Materials Solutions

## - providing customer value with digitalized factory



### Investment

State-of-the-art factory –  
opening December 2018

Manufacturing &  
Engineering Services for



Aviation &  
Space



Automotive &  
Motorsports



Tooling &  
Processing



In total

€30<sub>mn</sub>

investment

more than

4,500<sub>m<sup>2</sup></sub>

factory space

up to

50

metal AM printers

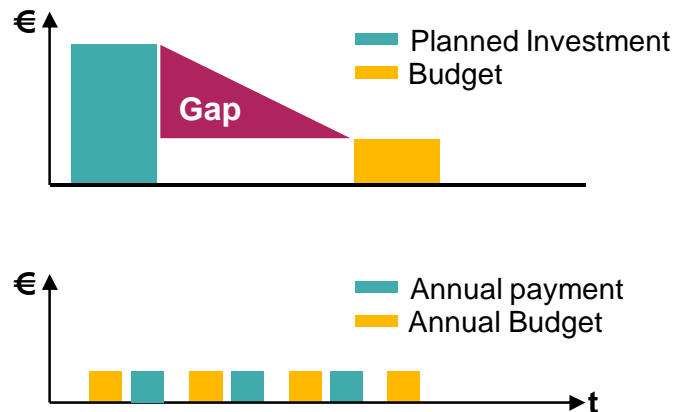
- Digitalized production facility to support serial production
- Production and post processing under one roof

# Siemens Financial Services: Supporting 3D-printing companies and AM OEMs with smart financing models



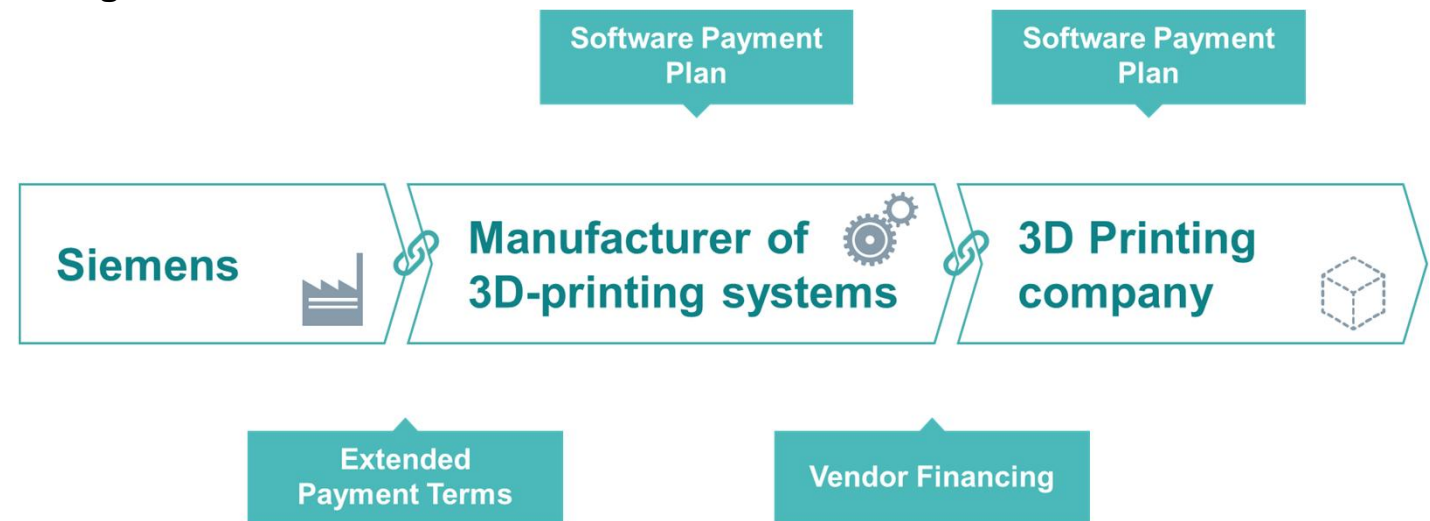
## Challenge: Investments in Additive Manufacturing

Reduce entry barrier into Additive Manufacturing with **Financing Solutions**



## Solution: Smart financing for Additive Manufacturing

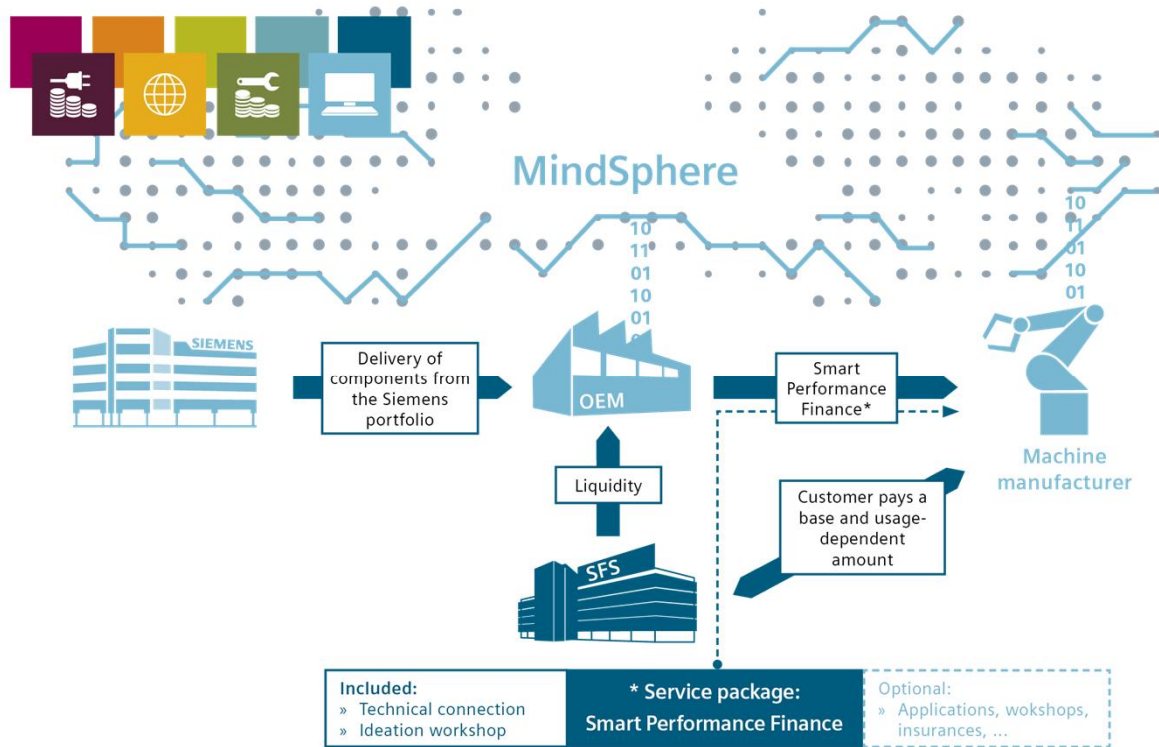
Siemens Financial Services offers **smart financing solutions** and **cooperates** with **leading OEMs**.



► Higher manufacturing productivity and flexibility through integrated technology, service and finance



# Strengthening OEMs' competitive position by innovative financing opportunities and Smart Performance Finance



- Smart Performance Finance – first financing product linked to MindSphere (an innovation on the market)
- Calculation of leasing rates based on the data made available through MindSphere
- Two leasing contracts (Finance lease and Operate Lease) are available depending on customer requirements
- Competitive differentiation/USP
- Technical cooperation with Atos
- Flexible, usage-based payments for Industrie 4.0 solutions offered by Siemens and its partners/OEMs

## Design and produce useful parts at scale



Seamlessly integrated software and automation by Digital Enterprise Portfolio



End customer value by digitalized factory – Materials Solutions



Productivity and flexibility by integrated technology and smart financial services