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The future of manufacturing: Additive Manufacturing

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Notes and forward-looking statements

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This document contains statements related to our future business and financial performance and future events or developments involving Siemens that may constitute forward-looking statements. These statements may be identified by words such as “expect,” “look forward to,” “anticipate” “intend,” “plan,” “believe,” “seek,” “estimate,” “will,” “project” or words of similar meaning. We may also make forward-looking statements in other reports, in presentations, in material delivered to shareholders and in press releases. In addition, our representatives may from time to time make oral forward-looking statements. Such statements are based on the current expectations and certain assumptions of Siemens’ management, of which many are beyond Siemens’ control. These are subject to a number of risks, uncertainties and factors, including, but not limited to those described in disclosures, in particular in the chapter Risks in the Annual Report. Should one or more of these risks or uncertainties materialize, or should underlying expectations not occur or assumptions prove incorrect, actual results, performance or achievements of Siemens may (negatively or positively) vary materially from those described explicitly or implicitly in the relevant forward-looking statement. Siemens neither intends, nor assumes any obligation, to update or revise these forward-looking statements in light of developments which differ from those anticipated.

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Due to rounding, numbers presented throughout this and other documents may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures.

Many applications in very different industries

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Energy, aerospace, automotive

Medical and healthcare

Daily life

Benefits of Additive Manufacturing

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Burner tip repair

600 **pieces** delivered

90% **faster**

20,000 **operating** hours

Complete burner manufacturing

Simplification:

12 to 1 parts

Reduced emissions:

H_2 capability

Faster product innovation

Time to market

2 years

with conventional technologies down to

2 months

with AM technologies

First 3-D printed blade

in “hot” part of gas turbine

- Travels at over 1,000 mph
- Carrying 11 tons
- Surrounded by gas at 1,250°C

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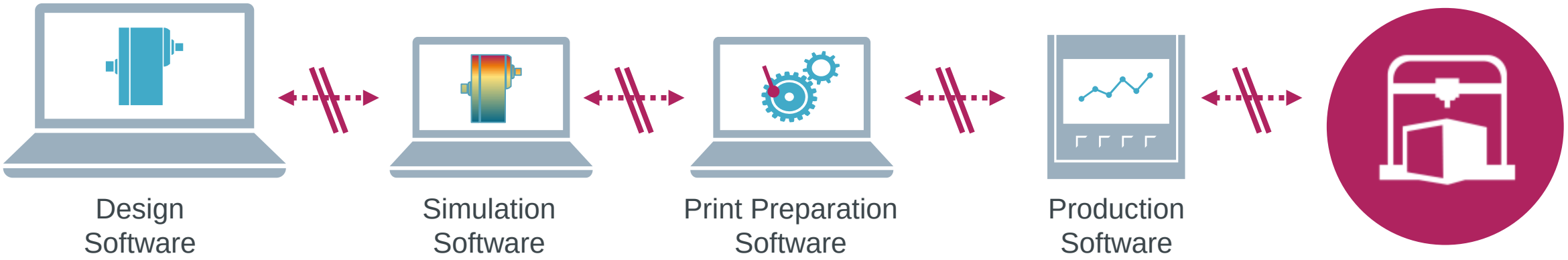
What are the limitations?

Quick facts: 50% of initial designs are unprintable, 30% need complete rework



Disconnected software	Multiple file conversions	Out of control workflow	Conventional thinking

New parts can be designed faster than ever

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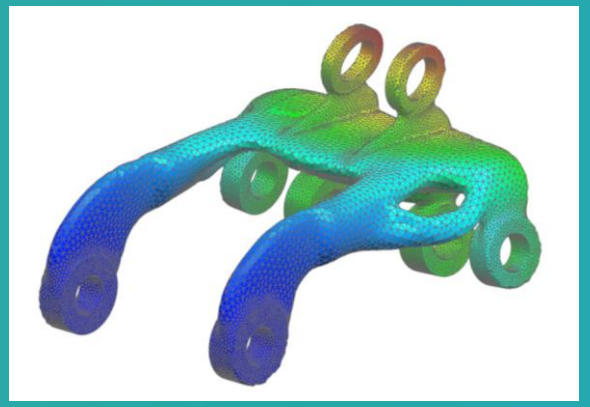
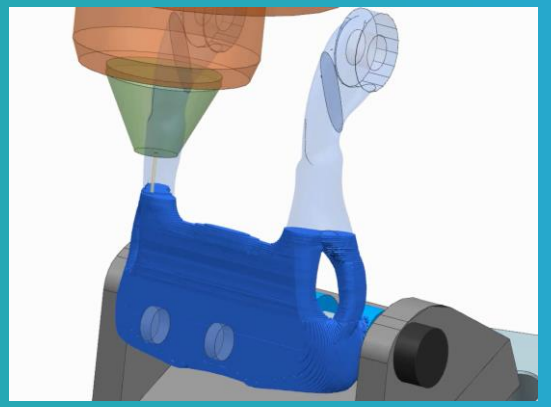
One Integrated System – NX

Design



Simulate



3D Print

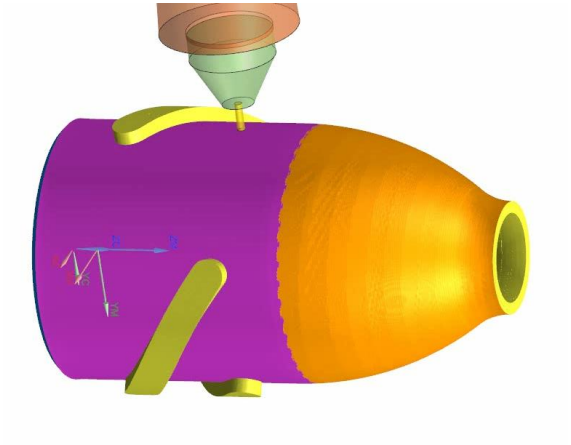
Data Management and Shop Floor Connectivity

Siemens Production Software and MES Systems

Partner Ecosystem (software and hardware)

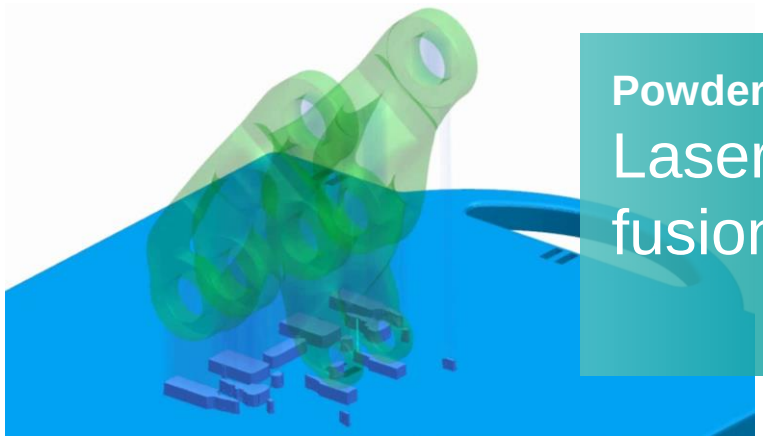
Secure end-to-end communication

Software defines the applications

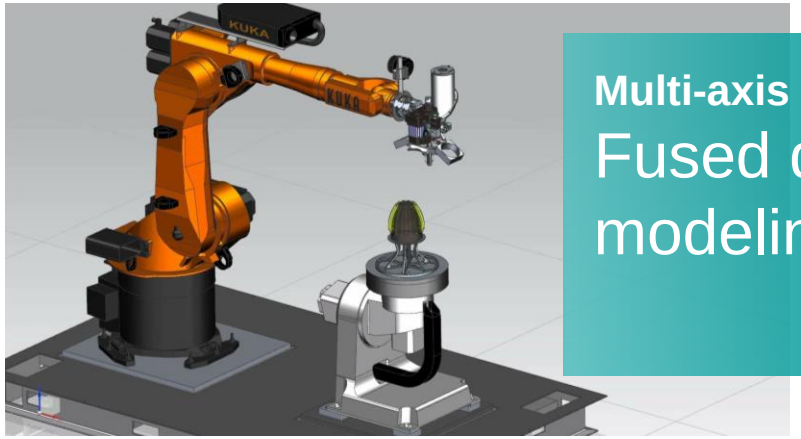


Hybrid additive
Directed energy deposition

Multi jet fusion
Agent jetting/ inkjet technology



Powder bed fusion
Laser material fusion



Multi-axis
Fused deposition modeling

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- Siemens is mastering the entire software and hardware value chain in production
- Additive Manufacturing links the virtual and the real world – bringing Digitalization into production
- Siemens industrializes Additive Manufacturing by working on all the answers and has strong partnerships