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Ingenuity for life

Plan the Aerospace Factory of the Future
规划未来的军工工厂

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西门子工业软件，制造工程软件解决方案

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中国区用户大会，武汉，二零一七年三月

Agenda 日程

Siemens A&D Product Realization Solution
西门子面向军工行业的产品实现解决方案

Siemens Enabling Industry 4.0
西门子使工业4.0成为可能

Case Studies / Examples
实例展示

Digitalize the Product Realization Process

An opportunity for aerospace & defense companies

将产品流程数字化 —— 军工企业的机会

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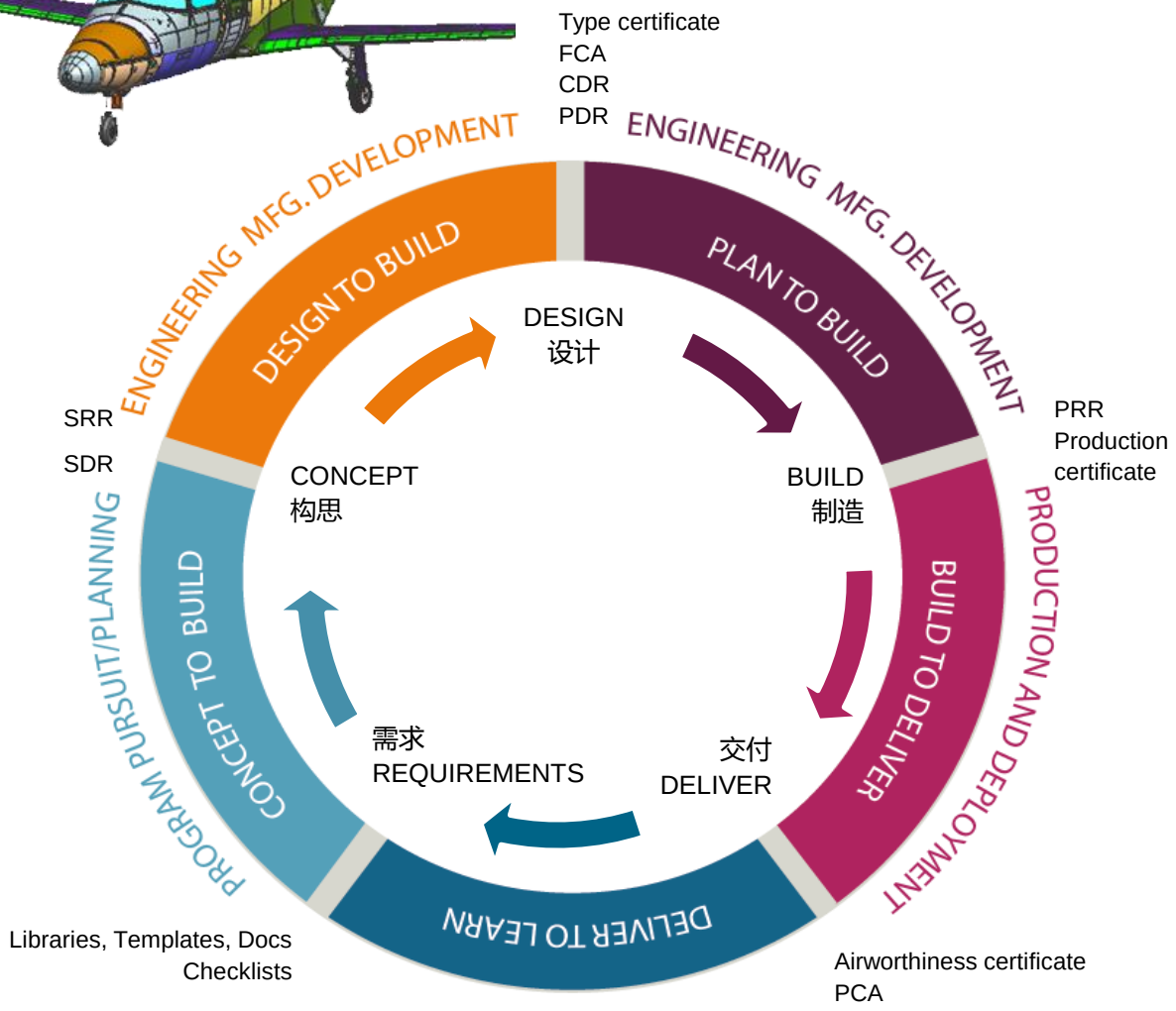
Digitalize your manufacturing

by leveraging a **digital thread** of data from product design to manufacturing, to create a **digital twin** of your production facilities and processes.

通过利用从产品设计到生产的数据所形成的**数字化主线**，来创造出您生产资源以及工艺的**数字化双胞胎**，从而**数字化您的制造业**



Let’s Make it Together with the ‘Digital Twin’
让我们一起用数字化双胞胎实现梦想

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The Digital Twin Digitalizes Manufacturing

Synchronize the virtual and real worlds of production

数字化双胞胎使制造业数字化 —— 虚拟与真实世界生产的同步

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Shortens time-to-market, by virtually **simulating** a production line towards a **fully synchronized** virtual-real world…

通过虚拟地**仿真**产线，并进一步升级到**完全同步的**虚实结合世界，达到缩短上市时间...

A physical, commissioned production line, and the virtual 'digital twin' simulated with Siemens PLM SW tools

一个真实调试的生产线，以及由西门子PLM软件工具仿真的虚拟数字化双胞胎

Industry 4.0 / ‘Factory of the Future’

Enabled by Siemens Aerospace & Defense Digital Manufacturing Solution

工业4.0/未来的工厂 —— 由西门子面向军工的数字化制造解决方案带来可能

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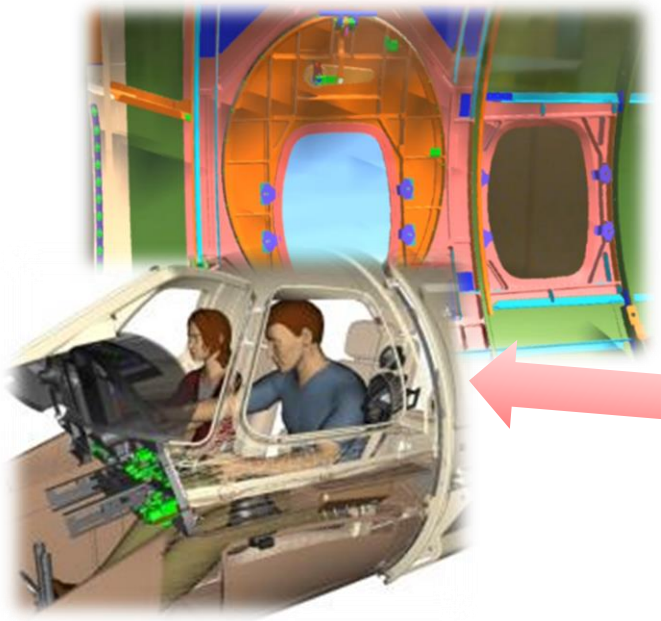

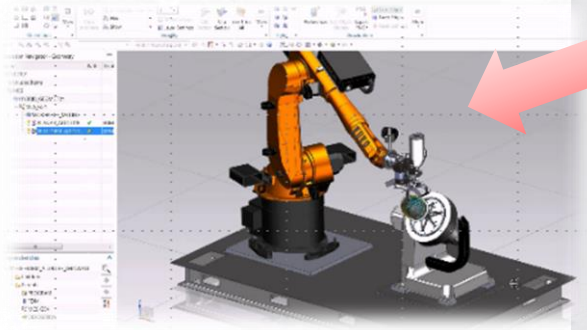

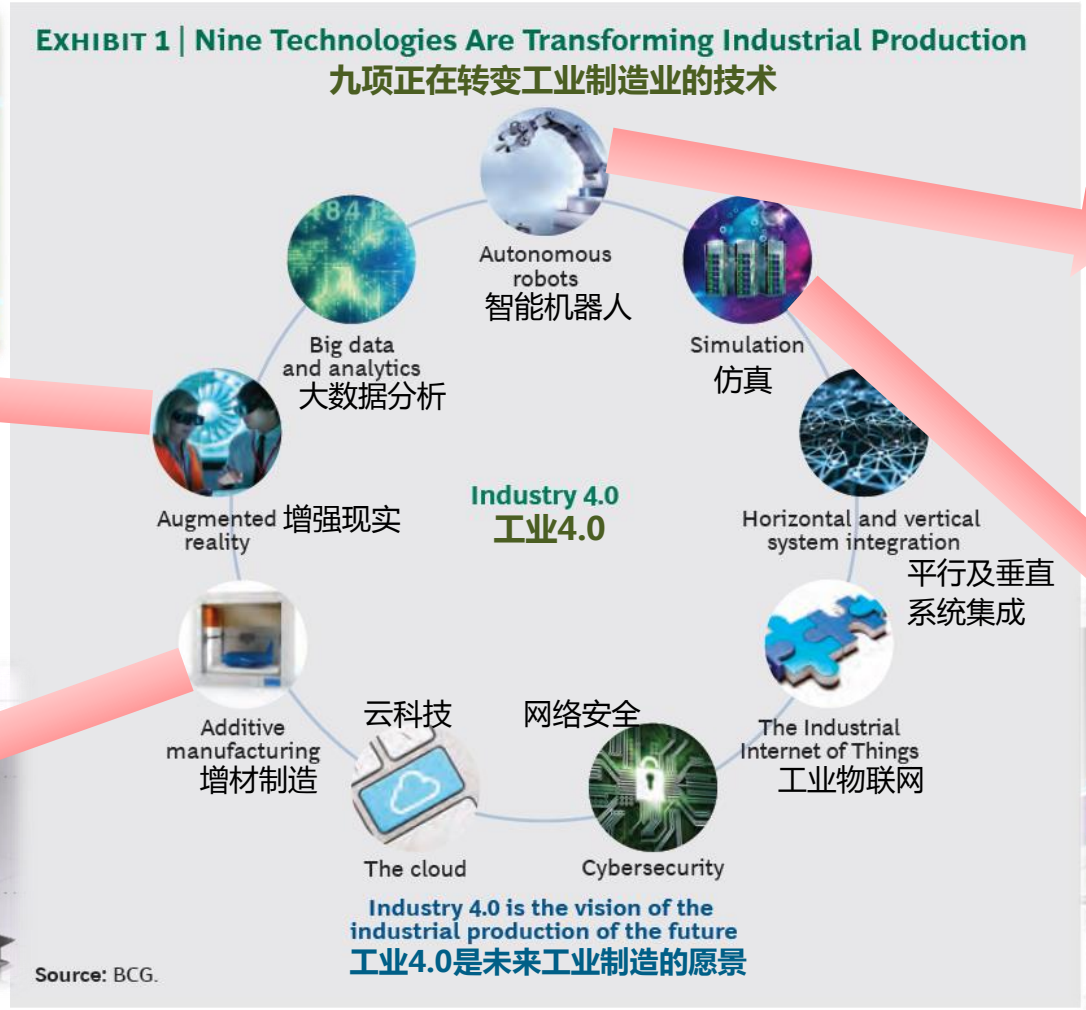

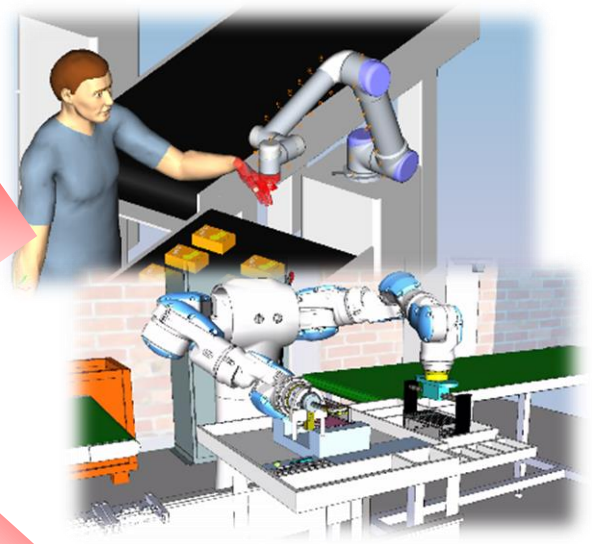

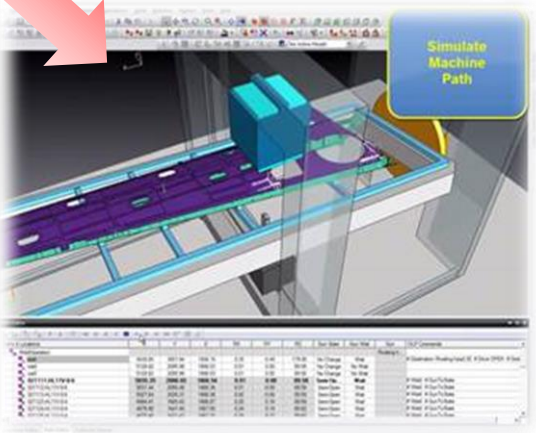

Simulate Production Processes to Introduce Automation
仿真生产工艺从而将其自动化

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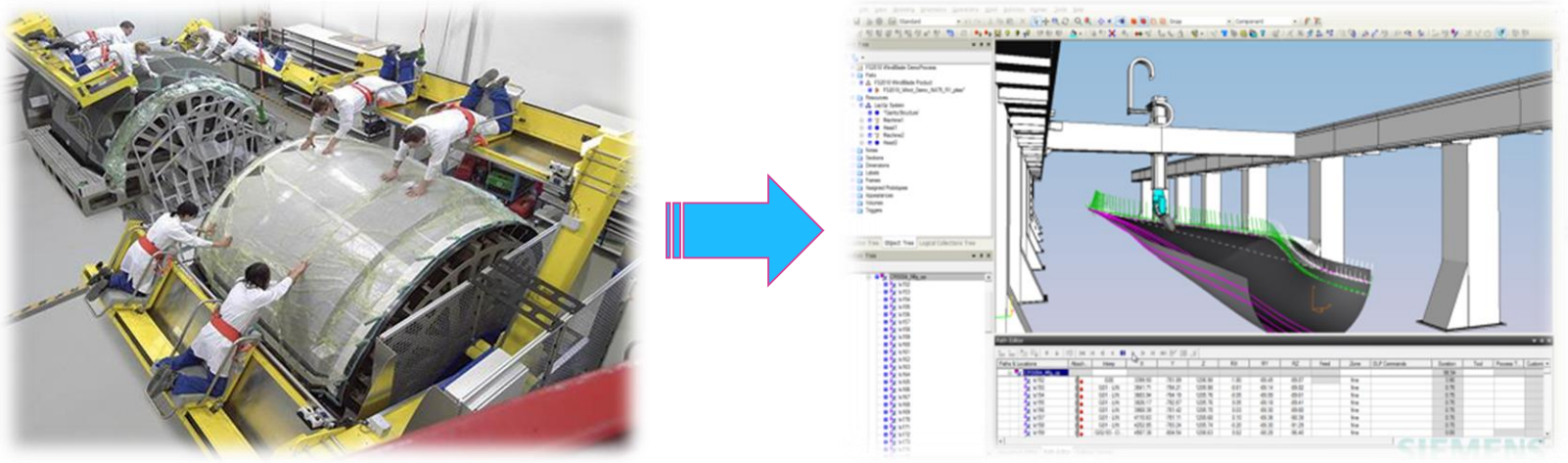
- Simulate with the Siemens 3D & time event simulation tools, advanced production processes
  用西门子3D时间事件仿真工具来仿真高级生产工艺

- Automate tasks that, traditionally, were done manually, to increase production quality & capacity
  由于质量产量逐渐提升的需求，将传统方式中手工的任务自动化



Increase Manufacturing ‘First Time’ Quality
Leverage Augmented / Virtual Reality
提高制造业“第一次”质量 —— 增强/虚拟现实实例

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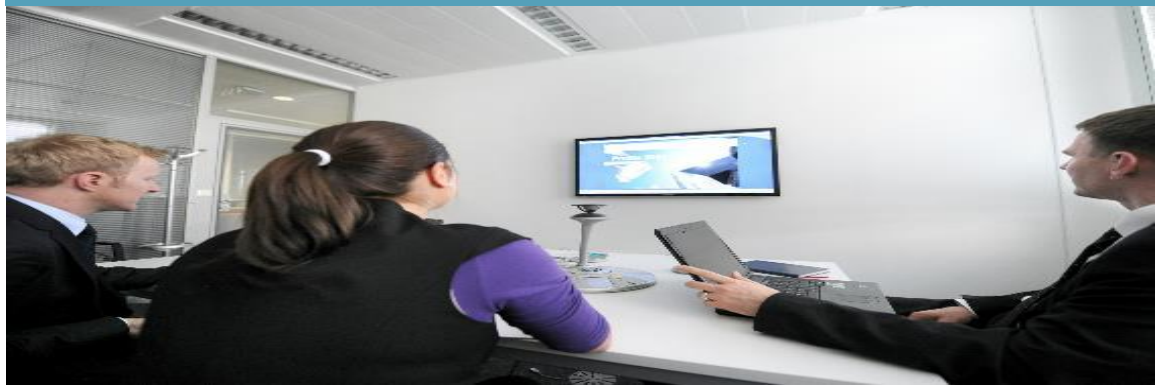
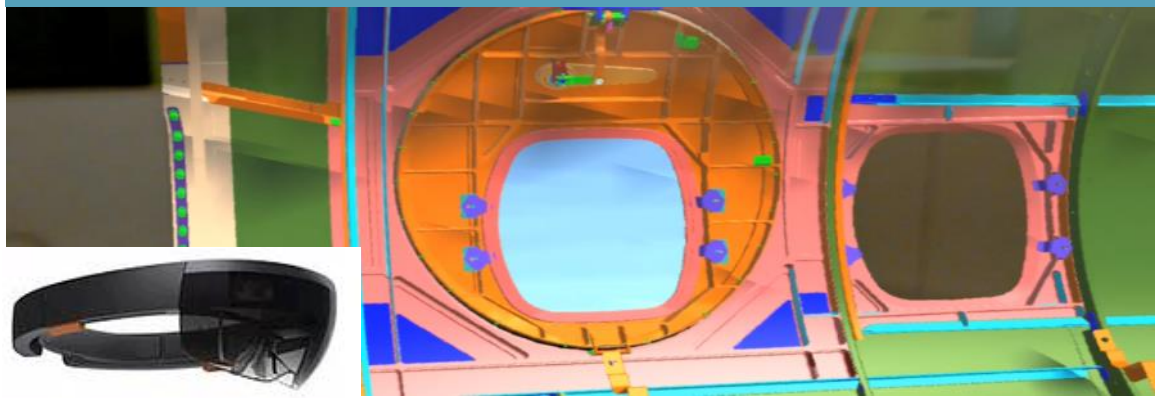
Planning and Collaboration
规划与协作



Service / Assembly Work Instructions
服务/装配作业指导

Virtual Commissioning
虚拟调试



Training
培训

Additive Manufacturing… New Paradigm for Composite Parts Production

Siemens partners with Stratasys

增材制造… 新的复合零件生产范例 —— 西门子与Stratasys合作

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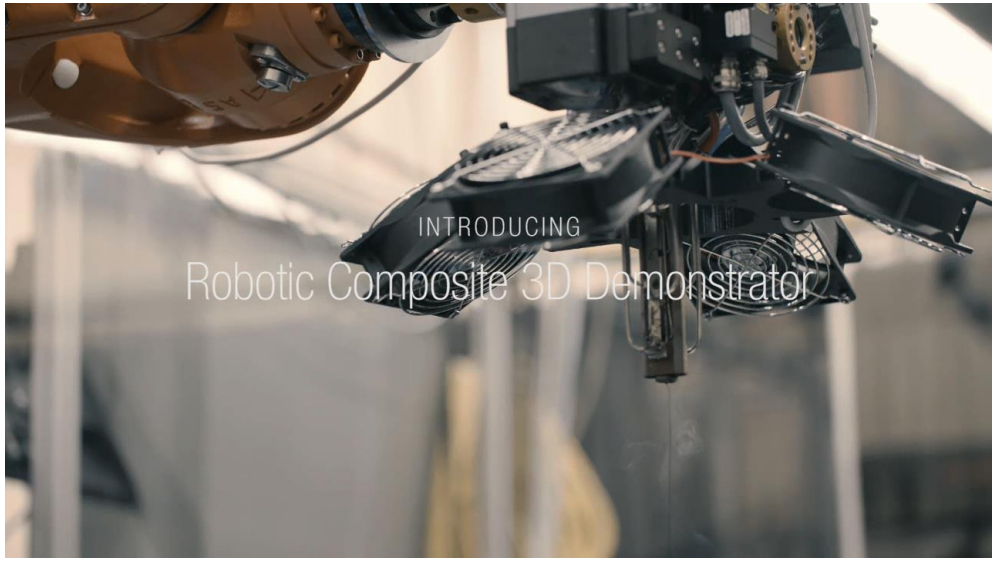

Speed
Faster build time

快速
更快的制造速度

Flexibility
Better reachability
Print large parts

灵活
更好的可达性
大型零件打印

Efficiency
No support structures

高效
无需支撑结构

Quality
Better surface

优质
更优质的表面质量

ITP (Industria de Turbo Propulsores) is Making Better Performing Jet Engines by Creating a Digital Thread (PLM to MOM)
ITP通过创建数字主数据(PLM to MOM)来制造更优质的喷气引擎

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How PLM could help to achieve the objectives
P L M 如 何 帮 助 企 业 达 到 目 标

ITP the power of talent

- Engineering, manufacturing and assembly processes integration 工程，制造和装配工艺的集成
- Single source for product data through the lifecycle 覆盖生命周期的单一产品数据源
- Systems integration 系统间集成
- Globalization 全球化

9

PROPIETARY INFORMATION – STRICTLY CONFIDENTIAL

A Missile Systems Manufacturer Relies on a Production Digital Twin
某导弹系统制造商创建生产数字化双胞胎

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Challenges 挑战

- Some of the assembly processes defined by Manufacturing Engineering, could not be executed in the shop floor.
  一些由制造工程所定义的装配流程无法在车间执行。
- Tooling not taking into account assembly Product Manufacturing Information (PMIs), thus not meeting requirements.
  工具未考虑进PMI，所以未达到需求。

Solution Deployed 实施的解决方案

- 3D assembly simulation (Process Simulate)
  3D 装配仿真(Process Simulate)
- 3D tolerance stack-up analysis (VisVSA)
  3D 公差层叠式分析 (VisVSA)

Achievements 成果

- 'First time right' - assembly processes can be executed in the shop floor, as planned.
  "第一次正确" – 装配工艺能在车间执行，且与规划一致。
- Shop floor tooling validated and optimized, prior to production.
  车间工具在进行生产之前进行了验证并优化。

An Airframe Supplier is Creating a Manufacturing Digital Twin to Fulfil its Customer Requirements
某机身供应商通过创建制造数字化双胞胎以满足其客户需求

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Challenges 挑战

- Lay the foundation for a Digital Enterprise.
  为建立数字化企业打基础
- Integrate engineering processes within one PLM backbone.
  将工程工艺与单一的PLM主线做集成
- Ease communication loops with the OEM
  简化与OEM的沟通机制

Solution Deployed 实施的解决方案

- Manufacturing process planning & data management (Teamcenter Manufacturing Process Planner)

  制造工艺规划与数据管理
  (Teamcenter Manufacturing Process Planner)

Achievements 成果

- Collaborative design & manufacturing engineering → shorten time to market. 协同设计与制造工程 → 缩短上市时间
- Fully aligned engineering BOM, manufacturing BOM & Bill-of-Process, support multi-customer requirements.
  完全一致的工程BOM，生产BOM及工艺清单，支持各用户需求
- Minimized PLM customizations.
  最大减小了PLM客制化

Digitalize Your Product Realization (Manufacturing) Process
将产品流程数字化

SIEMENS

Digitalize your manufacturing by leveraging a **digital thread** of data from product design to manufacturing, to create a **digital twin** of your production facilities and processes.

通过利用从产品设计到生产的数据所形成的**数字化主线**，来创造出您生产资源以及工艺的**数字化双胞胎**，从而**数字化您的制造业**