

Nexteer Lean Manufacturing System Practice in China

精益生产系统在耐世特中国的实践

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Nexteer Asia Pacific Overview

耐世特亚太区总览



- **2017 A.P. Revenue:** \$854M
- **2017 亚太区销售额:** \$854M
- **Regional Headquarters:** Suzhou
- **地区总部:** 苏州
- **8 Manufacturing Facilities:**
- **8个制造工厂**
 - Suzhou, China (3)
 - Liuzhou, China
 - Bengaluru, India
 - Gurgaon, India
 - Pune, India
 - Bekasi, Indonesia
- **Technical Center:**
- **技术中心**
 - Suzhou, China
- **7 Customer Service Centers:**
- **7个客户服务中心**
 - Shanghai, China
 - Zhuzhou/Beijing, China
 - Seoul, Korea
 - Atsugi, Japan
 - Tokyo, Japan
 - Keysborough, Australia
 - Bengaluru, India
- **4 Joint Ventures:**
- **4个合资工厂**
 - Zhuzhou, China
 - Wuhu, China
 - Chongqing, China (non-consolidated)
 - Wuhan, China (non-consolidated)

Product Overview

产品总览

Steering Columns & I-Shafts 转向管柱和中间轴

Steering Columns



Intermediate Shafts



Hydraulic Power Steering (HPS) 液压助力转向

Steering Pumps



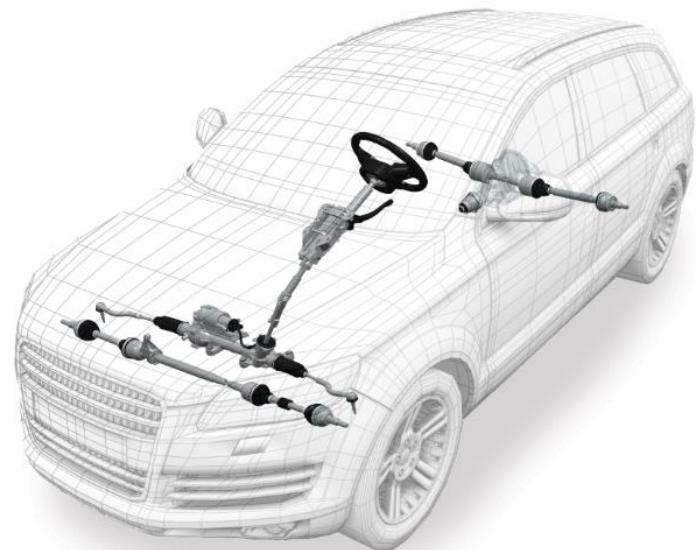
MAGNASTEER™ Torque Overlay

Cartridge Valve



ADAS & Automated Driving Technologies 自动驾驶和辅助驾驶技术

Steering on Demand™ Systems



Electric Power Steering 电动助力转向

Column Assist



Pinion Assist



Rack Assist



Driveline 驱动轴

Halfshafts



Propeller Shaft CV Joints



Intermediate Driveshafts



Hundred year history 耐世特百年历史



1906
Company established
公司创建，公司名称为
Jackson, Church &
Wilcox Co.

1917
Became BU of GM
成为通用汽车第一个零件制
造事业部



1998

Delphi established
通用汽车成立德尔福公司



1999

Delphi separate from
GM
德尔福公司从通用汽车
剥离，成为独立的上市
公司

2013

Public in Hongkong
Market
在香港首次公开募股
(HK:01316)



2016

New corporate HQ
opening

2016 年

公司独立的全球总部
在美国密歇根州
奥本山市启用。



2009

GM bought Nexteer
from Delphi
通用汽车收购德尔福转向
系统，并将其更名为耐世
特汽车系统公司

2010

Pacific Century bought
Nexteer
太平洋世纪汽车公司收购
耐世特

2011

AVIC bought Nexteer
中航工业汽车收购耐世特

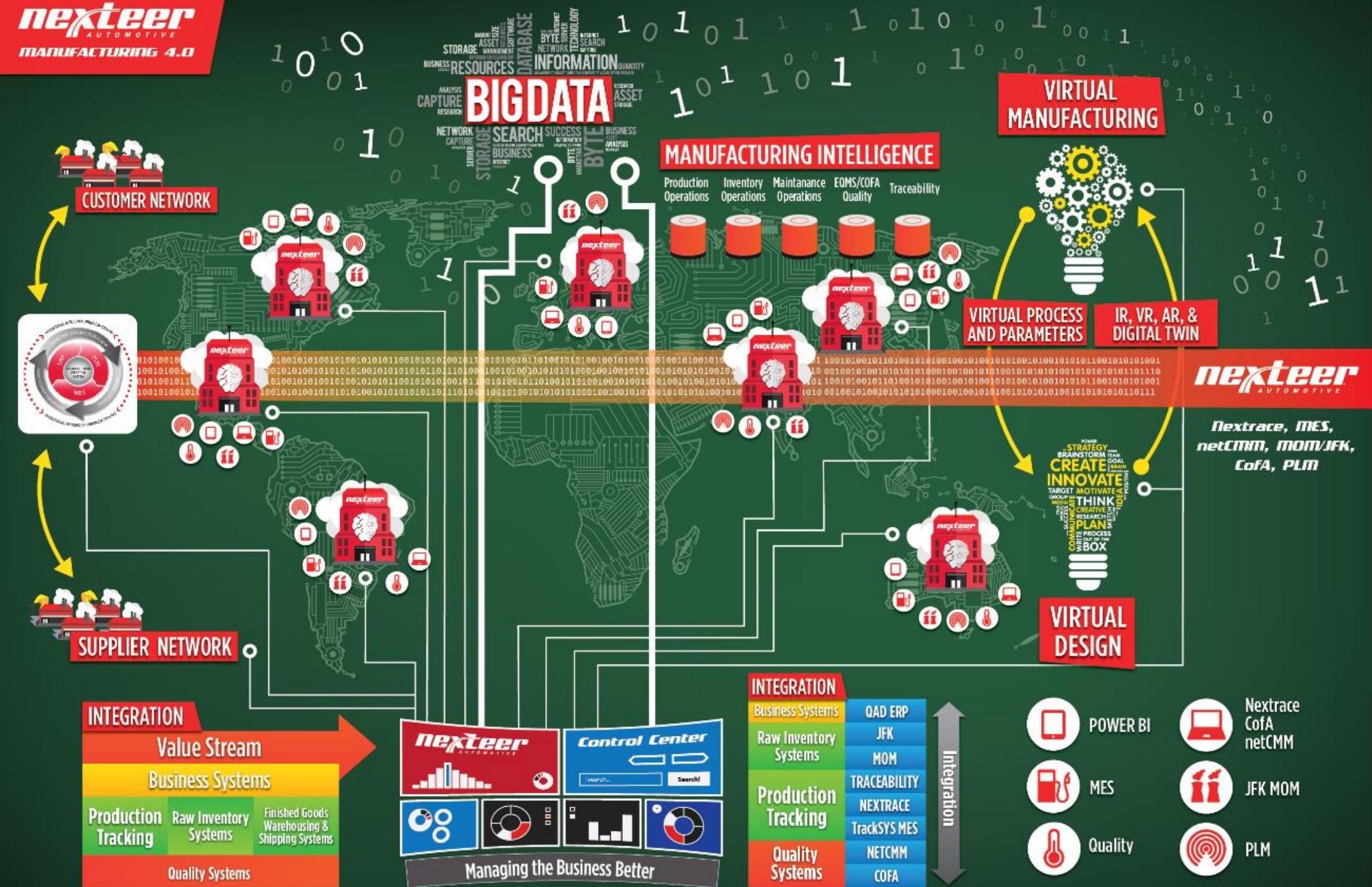
nexteer
AUTOMOTIVE

a leader in intuitive motion control



Digital Roadmap

数字化蓝图

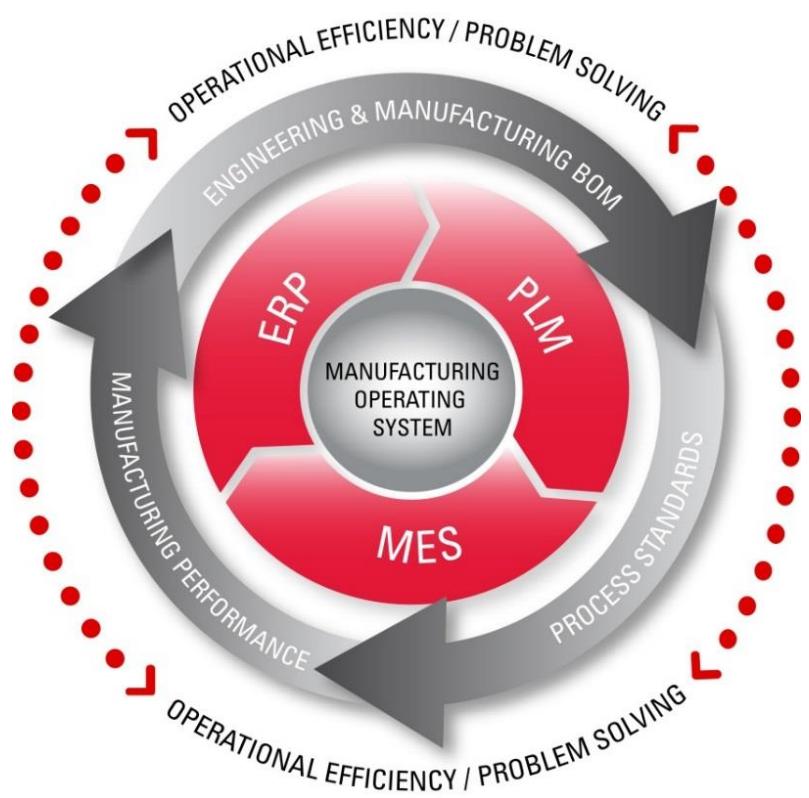


Build system base on external experience

借鉴外部经验,打造自身平台

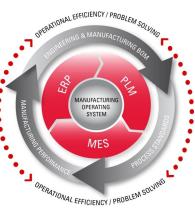


CHINA MANUFACTURING MATURITY MODEL
智能制造能力成熟度模型
白皮书

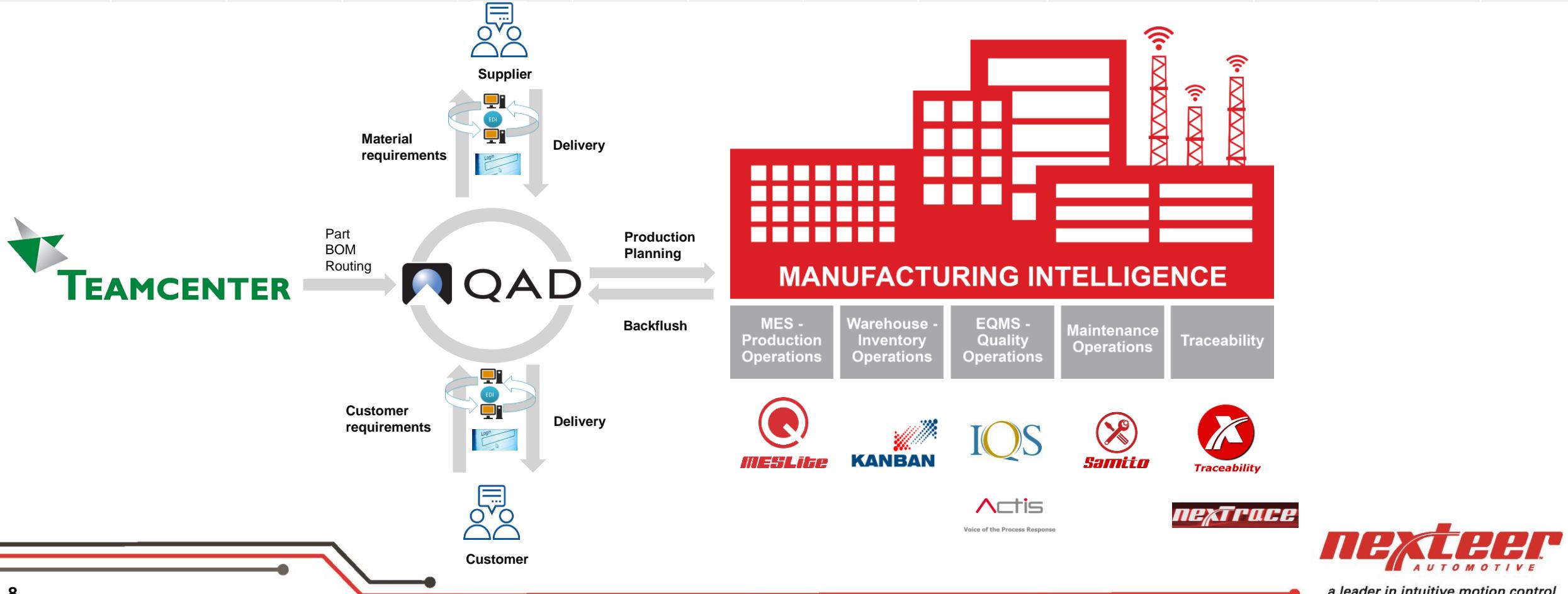


Nexteer Manufacturing System Overview

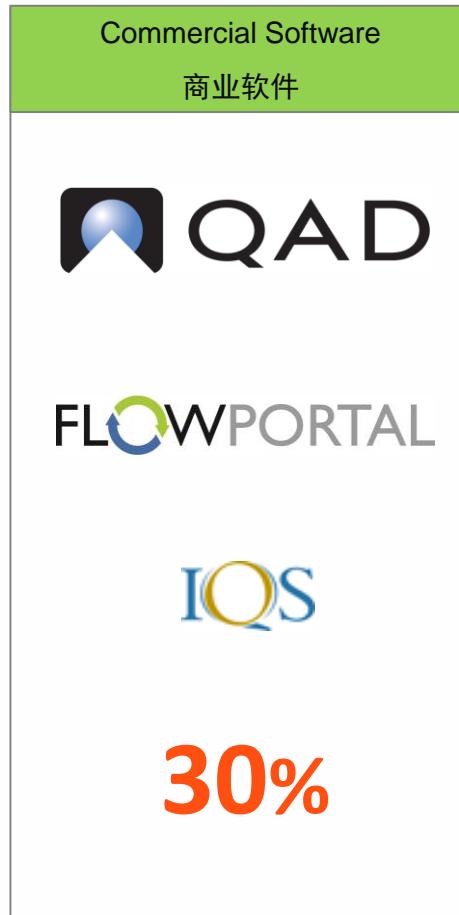
耐世特制造系统总览



Design 设计			Production 生产						Logistic 物流		Sale 销售		Service 售后	
Product design 产品设计	Engineering design 工程设计	Engineering optimization 设计优化	Purchase 采购	Planning 计划	Production 生产	Quality 质量	Warehouse 仓储	EHS 环境安全	Logistic management 物流管理	Sale management 销售管理	Customer service 客户服务	Product service 产品服务		



Proactive connection: mainly "Take-in", assistant with self-development, make good use of the market resources 主动连接：拿来主义为主 · 自我研发为辅 · 充分利用市场资源





Practice

实践

System practice

系统实践

制造执行

MES



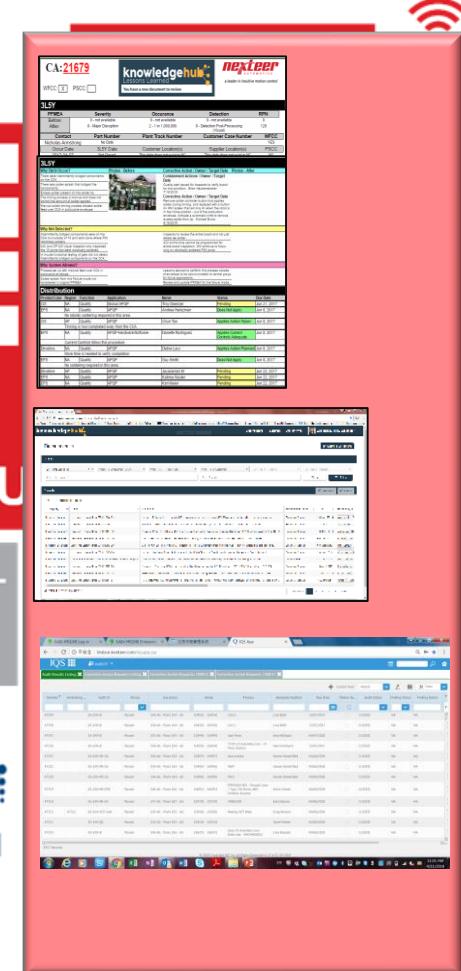
物料管理

Inventory Management



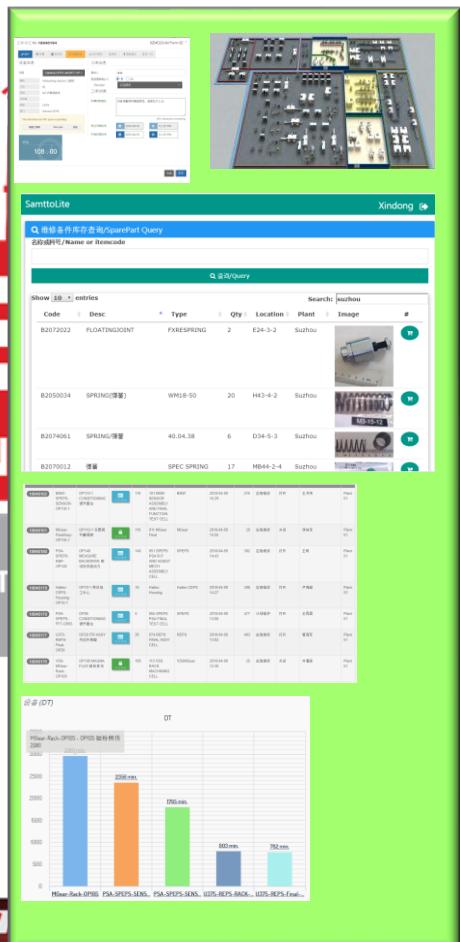
质量管理

QMS



设备管理

Machine Management

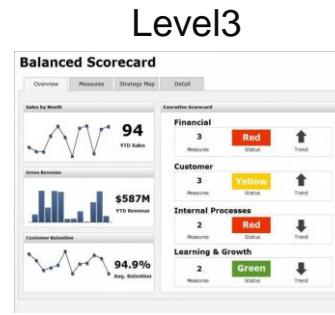
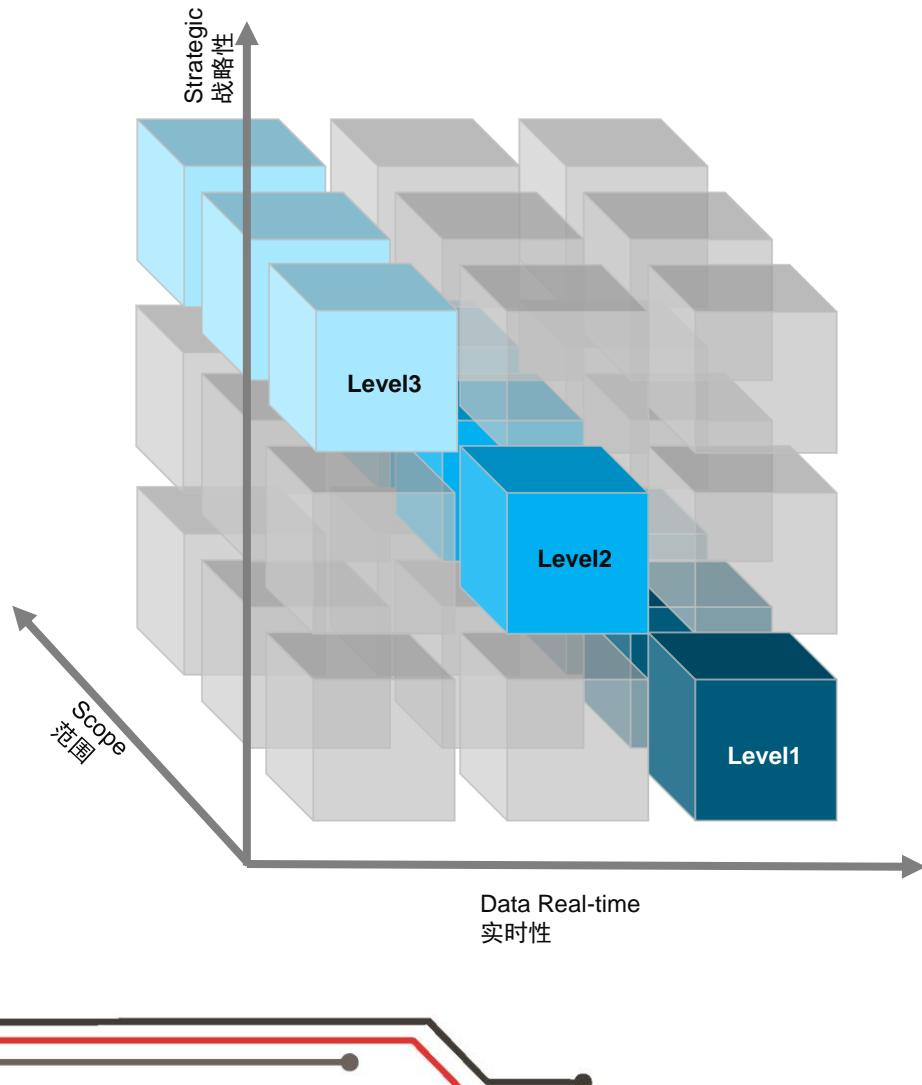


产品追溯

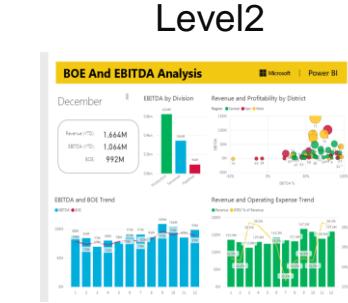
Traceability



Create Value from data 让数据创造价值



战略记分卡-直观展现业务健康度，对比实际表现与战略目标
Strategic scorecards shows high level of business health status comparing with preset goals



战术报告-对比展现关键业务KPI的趋势，支持钻取
Analytical Reports shows trends of key KPI, used by business analysts, support drill-in

VSS_FINAL

03/19 08:30 10:53:01 AM 03/19 17:30

班次目标

0	OP190	OP200	OP210	110 sec
0	OP220	OP230-1	OP240-1	最近64个CT(s)

实际产出

0	OP240-2	OP250	OP260	?? sec
0	OP270-1	OP280-1	OP290	最近计划停机

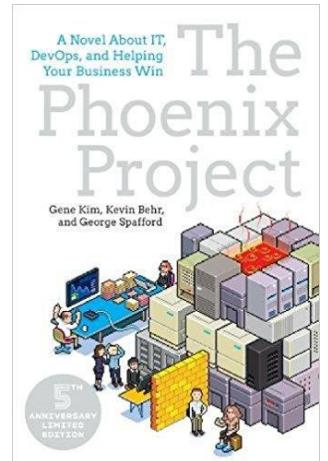
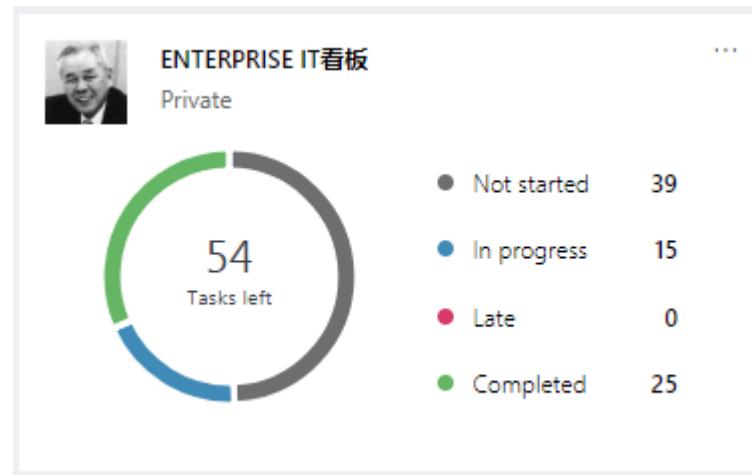
班次可变率 (%) :

0.00	0 min
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运营看板-展现实时运行状态,实时触发警报
Operational dashboard shows real-time operation status, trigger alarms on time

Most efficiency: Shortest time for delivery, the most efficiency, and the most intelligent way to achieve

最高效率：最短时间交付，不断采取效率最高，最智慧的方法实现



ENTERPRISE IT看板 ★ Board Charts Schedule ...
Private

待办事项 - 需求 (BR or QR)	待办事项 - 问题 (BI or QI)	计划 (WIP限制 : 6)	开发 (WIP限制 : 6)	测试 (WIP限制 : 4)	部署 (WIP限制 : 3)	完成
<p>BR:长期合同更新 长期合同变更流程：在指定条件下增加工厂厂长审批。(只适用于苏州、柳州) 1. 在明细项增加"12 months"</p>	<p>QI:FA need to be imported with sub-account <input type="checkbox"/> Kindee technical IT will support o <input checked="" type="checkbox"/> 0/1</p>	<p>BI: PO账户组合问题提前预警，导入QAD失败 先确认project mask相关表结构与逻辑</p>	<p>BR:AR-AR tracker 1. AR tracker WEB页面与EXCEL输出不一致 2. 汇总数据在生成PO以后，以PO金额为准</p>	<p>AR-Startup cost tracker <input checked="" type="checkbox"/> Kelin Ai</p>	<p>BR:重庆报废接口流程 库存调整单重庆增加QAD报废代码需要同步到QAD字段Remarks中去 <input checked="" type="checkbox"/> 07/31</p>	<p>BPM离职流程改善 关于BPM的离职流程，想做一下几点的改善： 1. 合同解除申请表在BP批完之后就同步kick off物流移交清单： <input checked="" type="checkbox"/></p>
<p>QAD&BPM变更流程 <input checked="" type="checkbox"/></p>	<p>QR: enable user to upload file to QAD <input checked="" type="checkbox"/></p>	<p>Korea Training Form As we had a conversation, KTC's Training related Approval Matrix will be same as other BPM forms. Total Cost < USD 5 000: Requester <input checked="" type="checkbox"/> 07/31</p>	<p>BI:资金平台 7.20有一笔金额是13178.00的单据显示QAD已传送成功，但是资金平台看不到该单据 <input checked="" type="checkbox"/> 0/1</p>	<p>BR:Indirect Confirmation Form update 韩国要求DT模具订单收货批准，buyer先到AP然后再到direct supervisor。麻烦按此要求调整 <input checked="" type="checkbox"/> Kelin Ai</p>	<p>BR: Kingdee Administrator Handover <input type="checkbox"/> changed Admin Password, deploy <input type="checkbox"/> will review Admin log at the begin <input checked="" type="checkbox"/> 07/31 <input checked="" type="checkbox"/> 0/2</p>	<p>BI:奖励表明细没有详细gift 奖励表选择工匠精神奖时，奖励类型为现金，但奖品那里没有显示Cash字段，跟其他奖励设置规则不一致，请更新 <input checked="" type="checkbox"/></p>
<p>Zhiyong Li</p>	<p>Sherly Cai</p>	<p>Meng Cai</p>	<p>Charles Liu</p>			
<p>BR:Payment Request Clearance in Old BPM BPM4.7系统的Payment Request 苏</p>	<p>BR:长期合同导入QAD失败，需添加合同生效期校验 SOM18071600006-DB30052导入 <input checked="" type="checkbox"/></p>				<p>BR: Supplier Bank Management - IA Finding refine <input checked="" type="checkbox"/> 07/31</p>	<p>BR: 非生产物料申请单新增字段 非生产物料由请单明细中添加一列 <input checked="" type="checkbox"/></p>

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Face Recognition
人脸识别



Remote assist
远程协助

A photograph of a man in a dark blue shirt working on a complex industrial machine. He is focused on his task, looking down at the equipment. The machine has various metal components, including a prominent cylindrical part and several mechanical arms. The background is blurred, showing more of the factory environment.

Automation
自働化

**Mechanization
Production.**
as of 1780



**Assembly Line &
Mass Production**
as of 1890



**Automation &
Lean Production**
as of 1990



**Furthering Lear
through
Digitalization**
as of 2010



Increasing added value by the individual.



Man as Operator.



Man as Specialist.



Man as Problem Solver.



**Man as Designer &
Coach ”.**

Creative design by human beings.

Low cost automation 低成本自动化



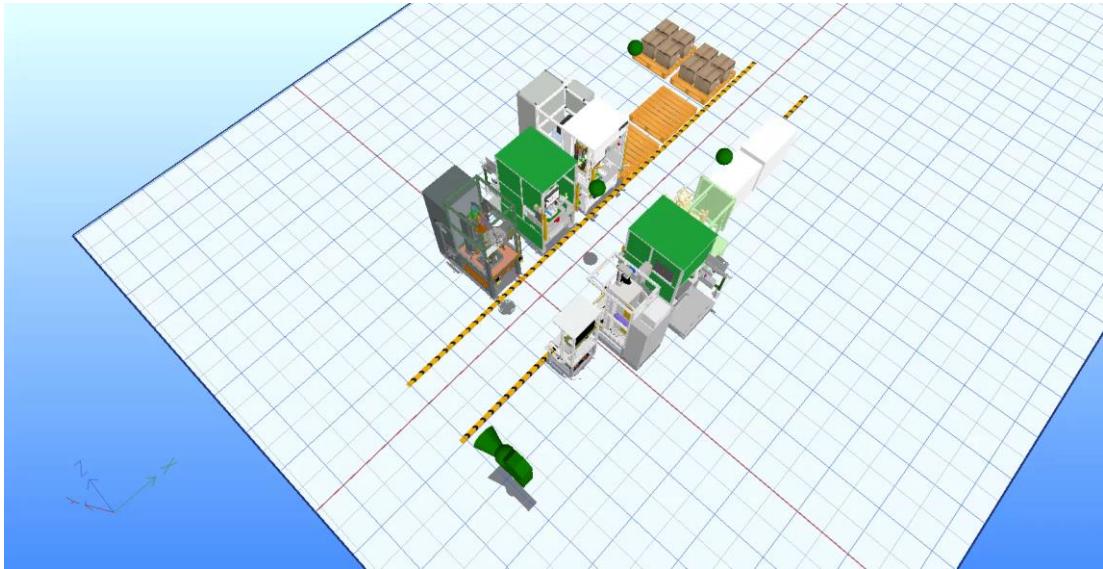
Lean AGV
低成本搬运



Co-robots
协作机器人

Design in VR 虚拟化设计

Simulation of material flow/rough layout
Evaluation of line balance and buffer setting
模拟原材料流/布局，评估产能是否均衡



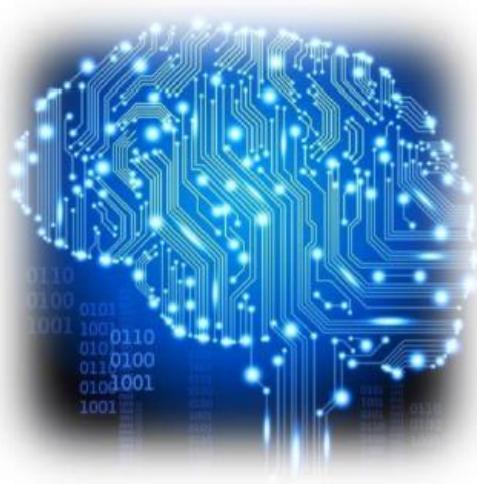
Simulation of operator flow/detail layout
Evaluation of machine concept/ergonomics
模拟员工操作，评估设备是否人性化



Transformation
变革

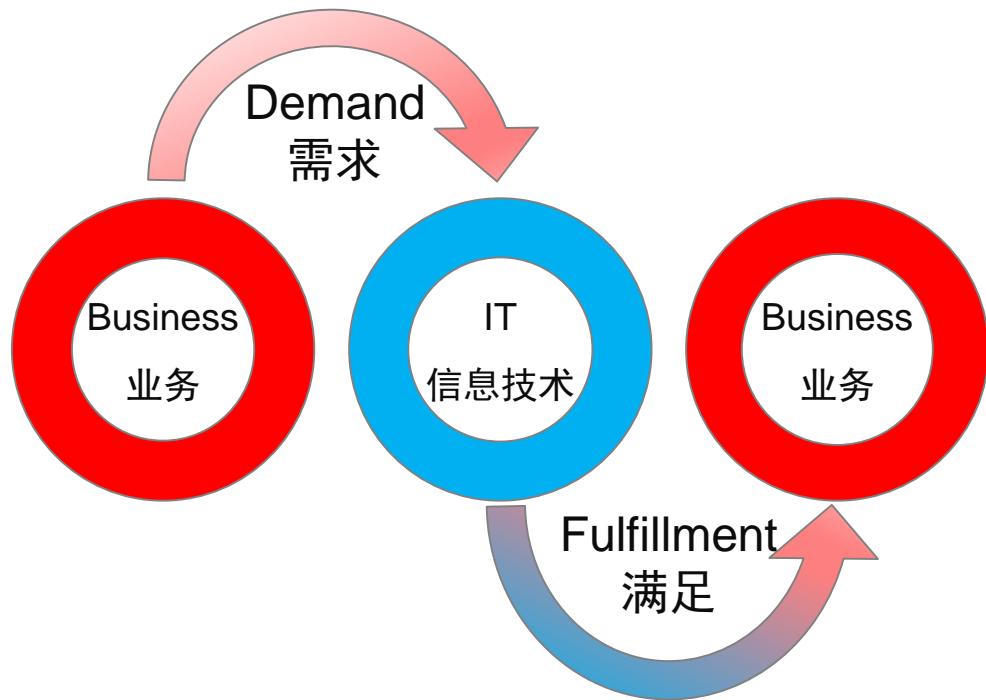
IT Keywords in next decade

- Cloud computing
 - Big Data
 - Internet of Things
 - Artificial Intelligence

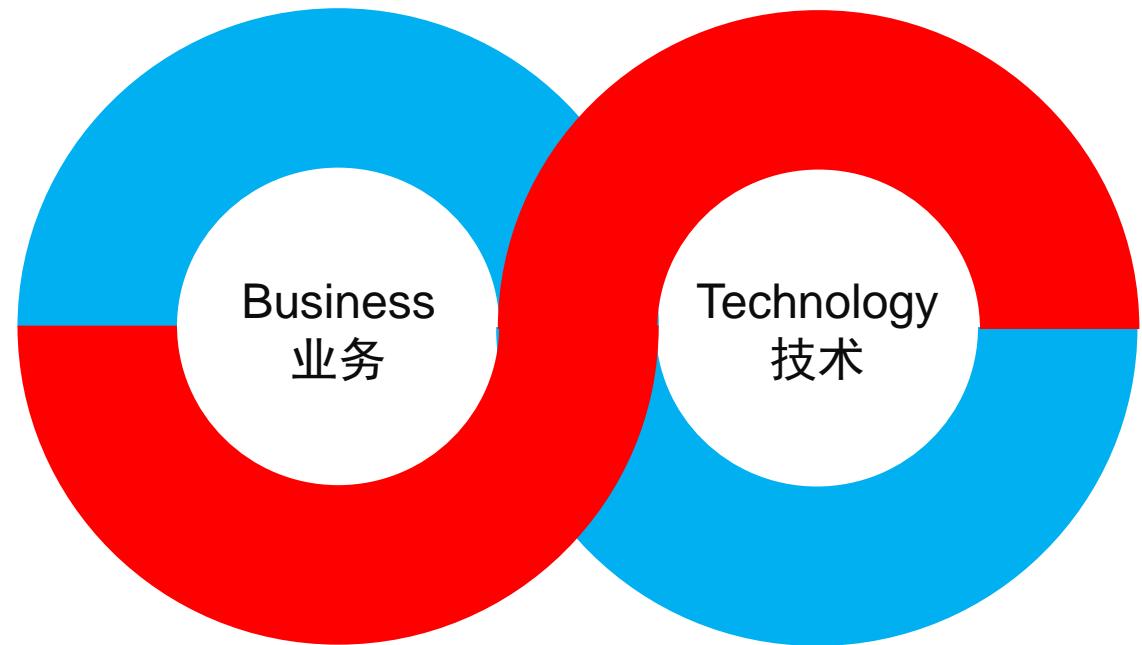


DIGITAL ERA, IT EVOLUTION

在数字化时代，IT正在被重新定义



IT = Information Technology 信息技术



IT = Innovation & Transformation 创新 & 转型

People 以人为本



IT Team Culture

Fail fast, learn fast, fix fast
One Nexteer IT team

IT团队文化

快速失败，快速学习，快速修复
一个耐世特IT团队

Operational Excellence 卓越运营



The Way to Achieve IT Value

Breakthrough from the cloud
Eliminate the waste through Internet and Automation
Let data create value

IT价值实现路径

从云中实现突破
用互联和自动化消除浪费
让数据创造价值

Sustainable Growth 持续发展



IT Driver

Value Orientation: Guide the construction with the core of business value

Proactive connection: "Take-in" is main, self-development is assistant, make full use of the market resources

Rapid iteration: small steps, fast go live; fast optimization and iterative value orientation: guide the construction with the core of business value

IT驱动力

价值导向：以实现业务价值为核心来指导建设

主动连接：拿来主义为主，自我研发为辅，充分利用市场资源

快速迭代：小步快跑，快速上线，快速优化和迭代
价值导向：以实现业务价值为核心来指导建设



Q&A

提问环节