

# GE Fanuc Intelligent Platforms

## Proficy Production Management Get your business to new heights!



# GE Fanuc – Part of Something Big...



**GE Enterprise Solutions** ... productivity-enhancing technology and automation solutions

**GE企业解决方案**...提供提高生产力的技术和自动化解决方案



**GE Security** ... security & safety communication / information technology

**GE安防**...提供安全和防护通讯/信息技术



**GE Sensing & Inspection Technologies** ... sensor devices & precision instruments/non-destructive testing, inspection solutions

**GE传感和检测技术**...提供传感设备和仪器/非破坏性的测试和检测解决方案

**Proficy™**

**GE Fanuc Intelligent Platforms** ... automation, CNC, embedded and SW platforms

**GE Fanuc 智能设备**...提供自动化, CNC, 嵌入式和软件平台



**Digital Energy** ... protection, metering, control, power sensing, communications and power quality solutions

**数字能源**...提供保护, 测定, 控制, 动力传感, 通讯和电力质量解决方案

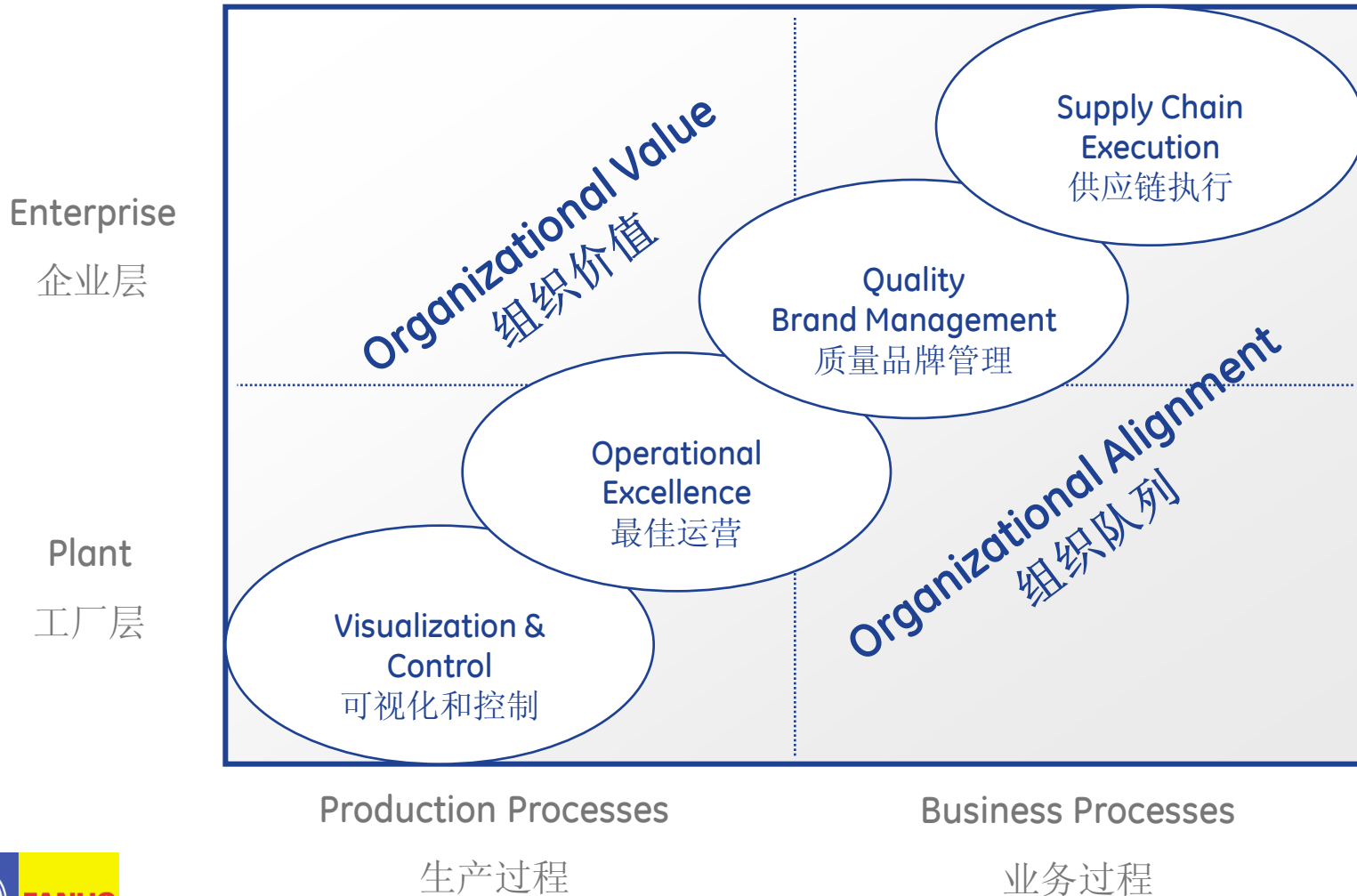
**Our Goal: Your Sustaining Advantage**

**我们的目标: 保持您的持续领先**

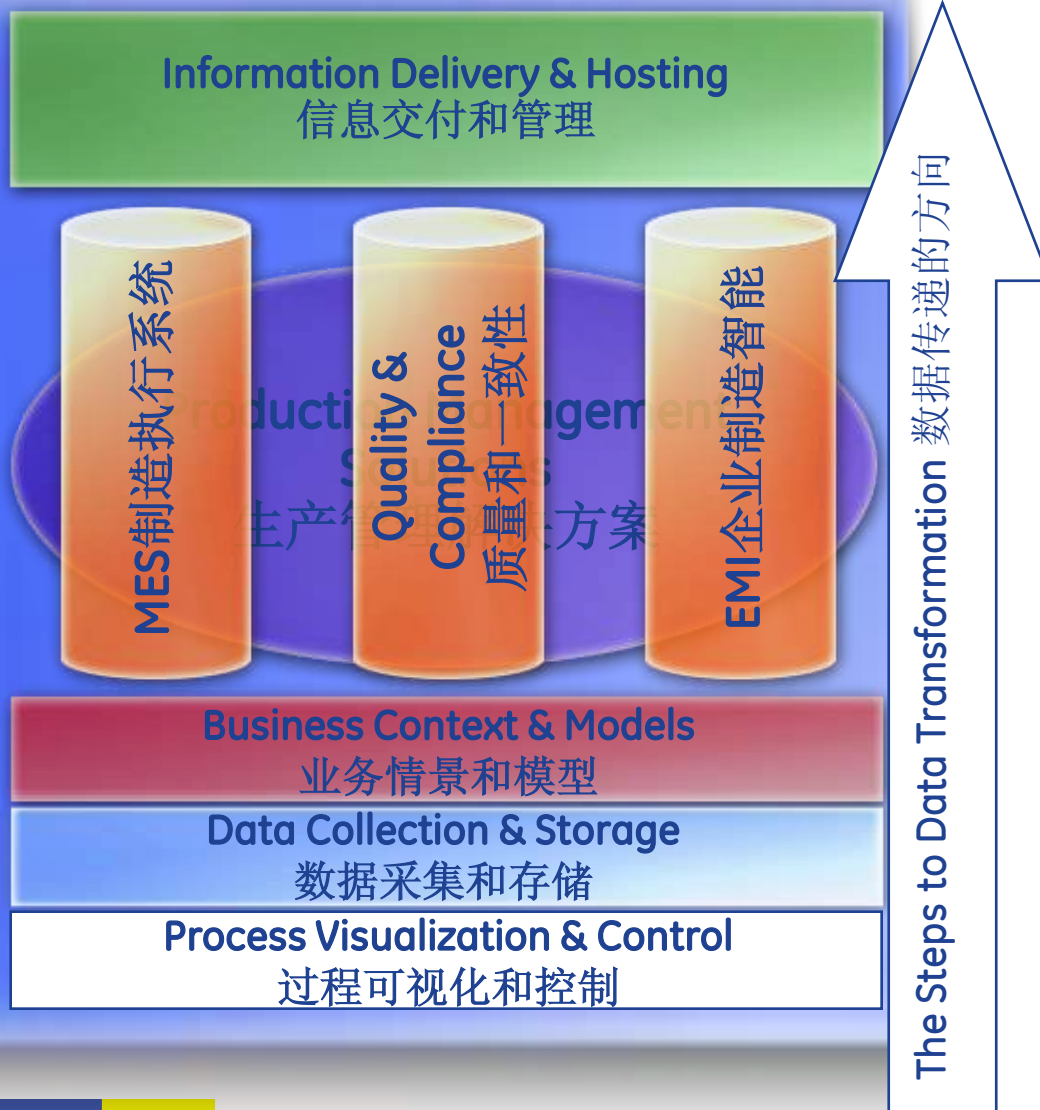


# GE Fanuc Proficy Software

## Plant2Enterprise Transformation P2E的转换



# GE Fanuc Software Functional Architecture



## Proficiency Software 软件

- Enterprise Connector
- Portal
- Maintenance Gateway (08)
- Plant Applications
- Data Mart (08)
- Tracker
- Assembly (08)
- Workflow (08)
- Shop Floor SPC
- Rx
- SOA Platform (08)
- Historian
- HMI/SCADA
- + GlobalCare





# Business Process Management

## 业务流程管理

### Significant Results from BPM in the Enterprise

来源于与企业BPM的重要成效

Examples: / 举例:

- Processing time from 6 weeks to 48 hours, associated labor down 70%
- 处理时间从6周降至48小时，同时人工成本下降70%
- Transaction capacity up 50%, staff and processing time down 30%
- 交易能力提高50%，人员和处理时间减少30%

### BPM at the Industrial Layer / 工业BPM

Operates in real time / 实时操作

Embraces manual and automated processes with people and equipment / 增加了手工和自动处理过程



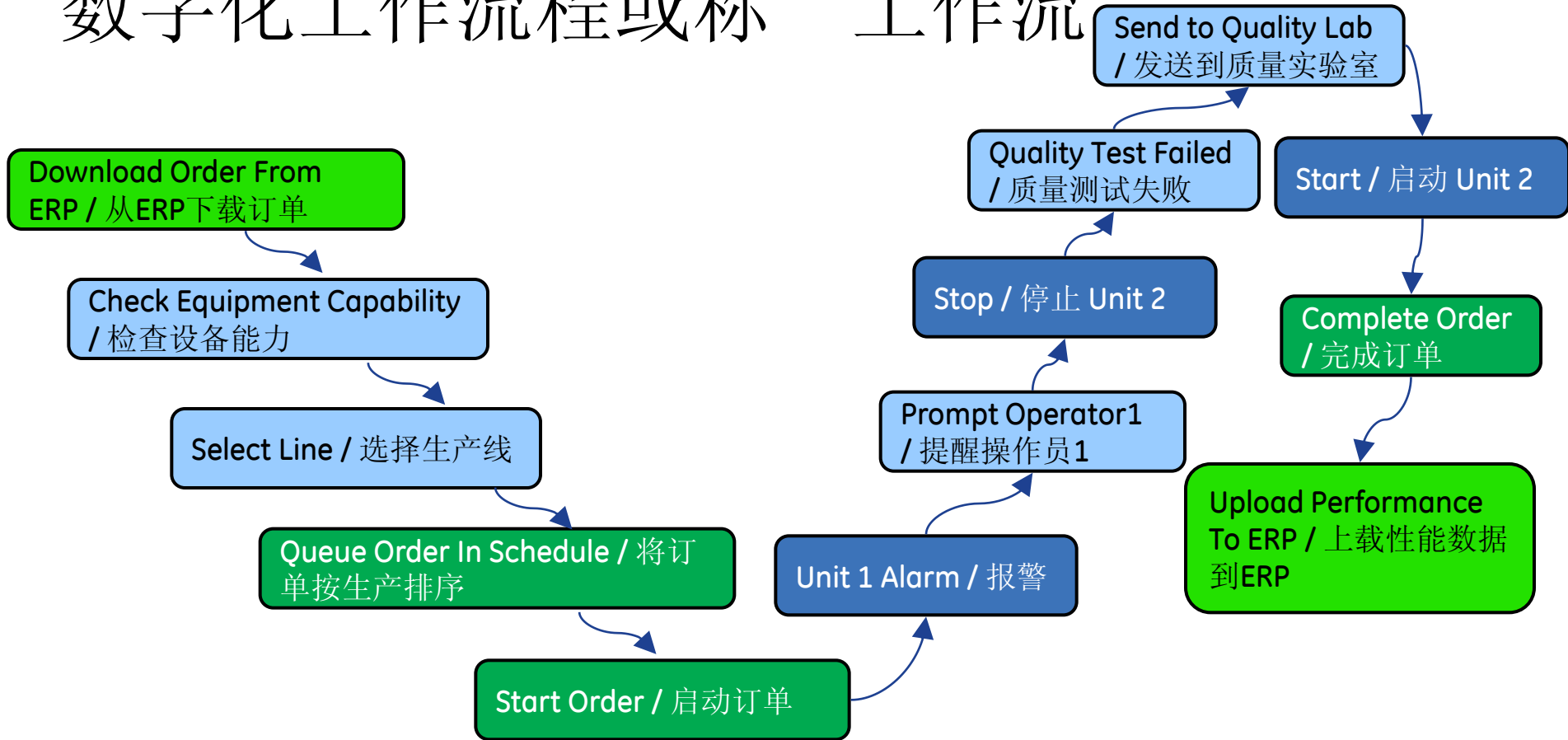
# Industrial BPM System & Solutions

## 工业BPM系统和解决方案



# A Digitized Work Process or "Workflow"

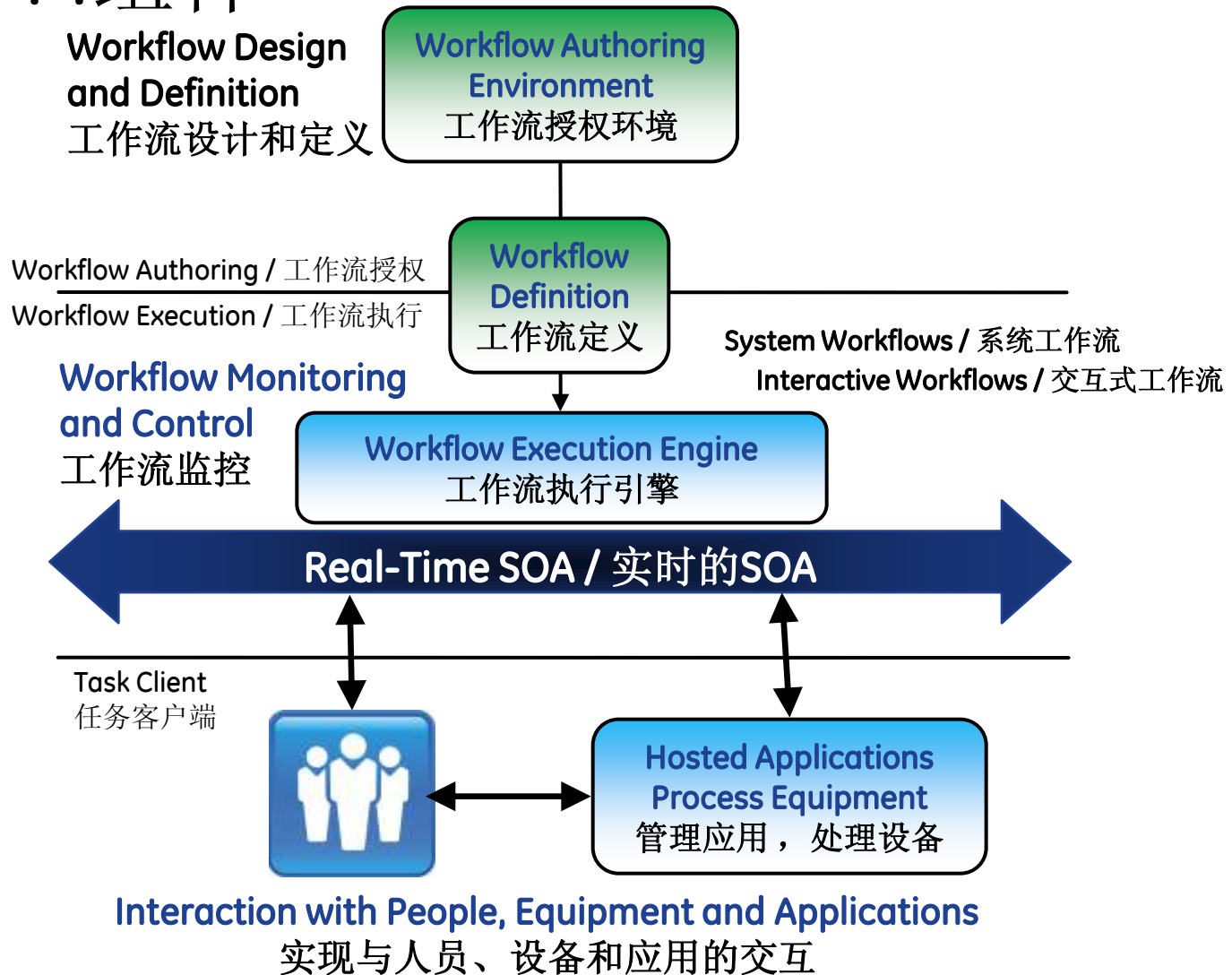
## 数字化工作流程或称“工作流”





# Industrial BPM Components

## 工业BPM组件



# Proficiency Workflow

## GE's Industrial Workflow Execution System

### GE的面向工业场合的工作流执行系统

Digitize manual and automated processes with one tool – without custom code

通过该工具，实现数字化的手工和自动处理 – 无需编码

Record execution data to close the loop on performance and improvement

记录执行数据，以实现性能数据的采集和改进

Manage by Exception - Act quickly based on real-time events

例外管理 – 基于实时事件的快速响应

Replicate across your business using libraries and templates

使用标准库和模板可以在您的工厂中重复部署

Leverage proven GE and Microsoft technology and support

基于GE和微软的技术和支持





# SOA – Service Oriented Architecture

## SOA – 面向服务架构

A computer systems architectural style for creating and using business processes, packaged as services

一种计算机系统架构用以创建和使用业务过程，并以服务的方式进行捆绑

Distributed over a network  
网络分布式架构

Can be combined and reused to create business applications  
能够被组合和重复使用以建立业务应用程序

Often seen as built upon, and evolving from, older concepts of distributed computing and modular programming  
通常构建于或来源于老的分布式计算和模块化应用



\*Wikipedia

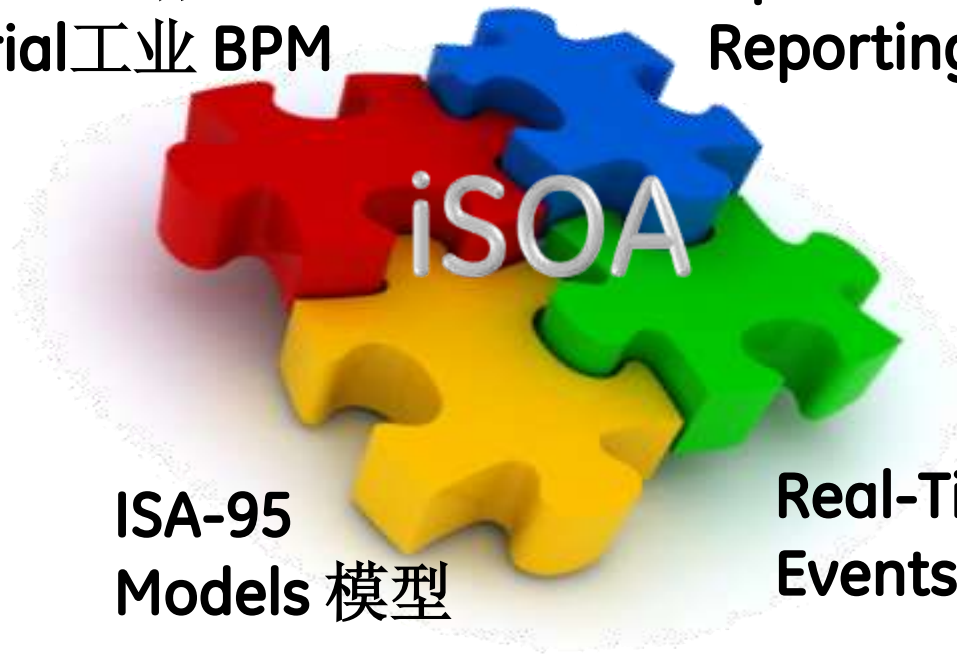


# Industrial SOA – iSOA

## 工业SOA - iSOA

Workflow workflow  
Industrial 工业 工业 BPM

Operational  
Reporting 运营报告



ISA-95  
Models 模型

Real-Time  
Events 实时事件



# iSOA – The Basics

## iSOA – 基础

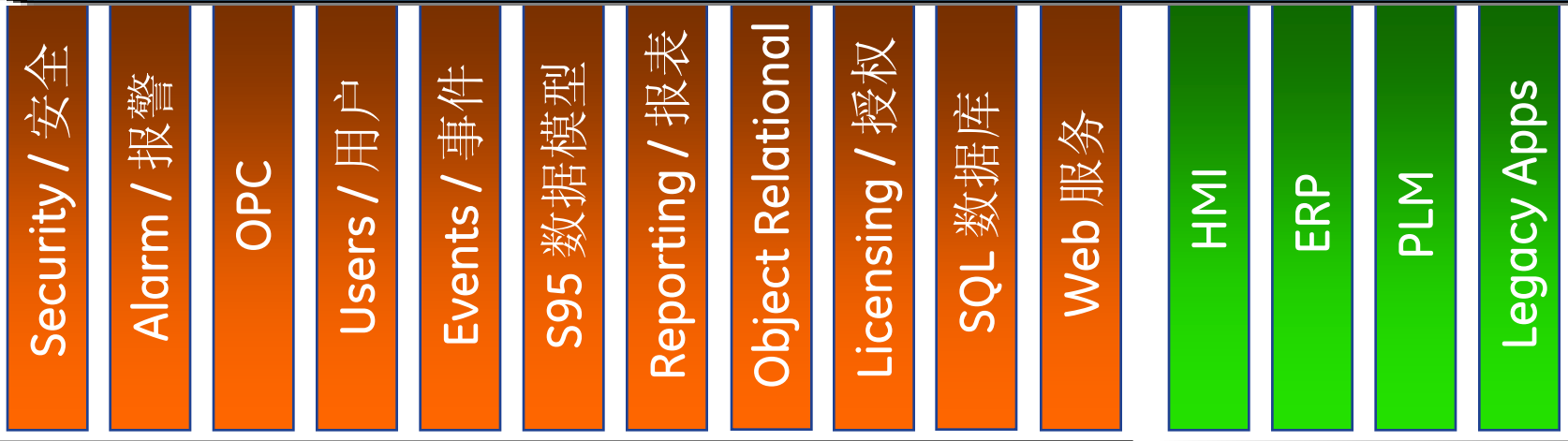


### Production Process / 生产步骤



### Composite Application 复合化多重应用

### Real-Time Services Bus / 实时服务总线



### Core Services / 核心服务

### Service Providers / 扩展服务

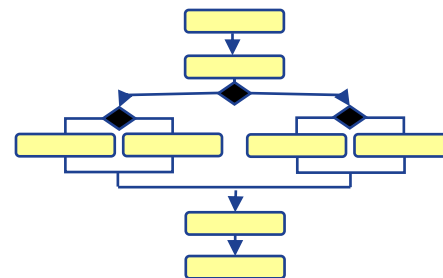


# iSOA – Core Components

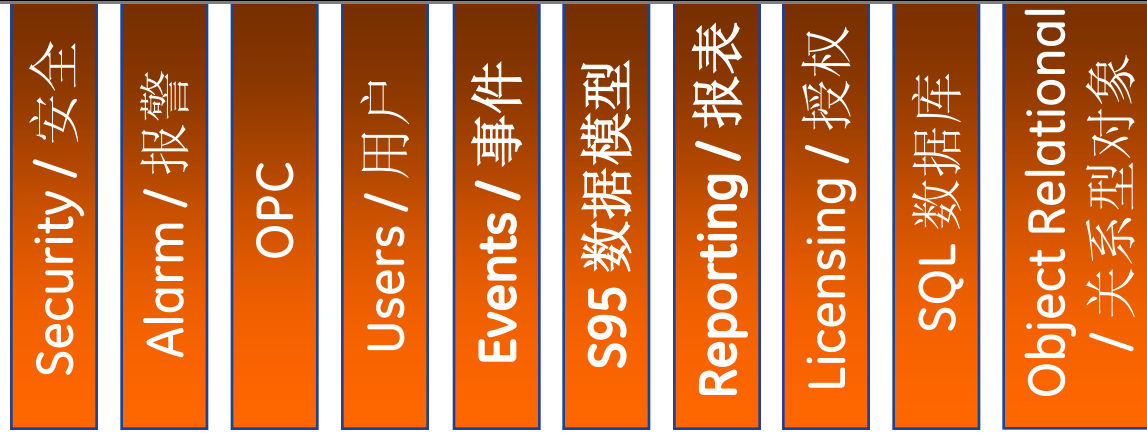
## iSOA – 核心组件



### Workflow / workflow



### Real-Time Services Bus / 实时服务总线

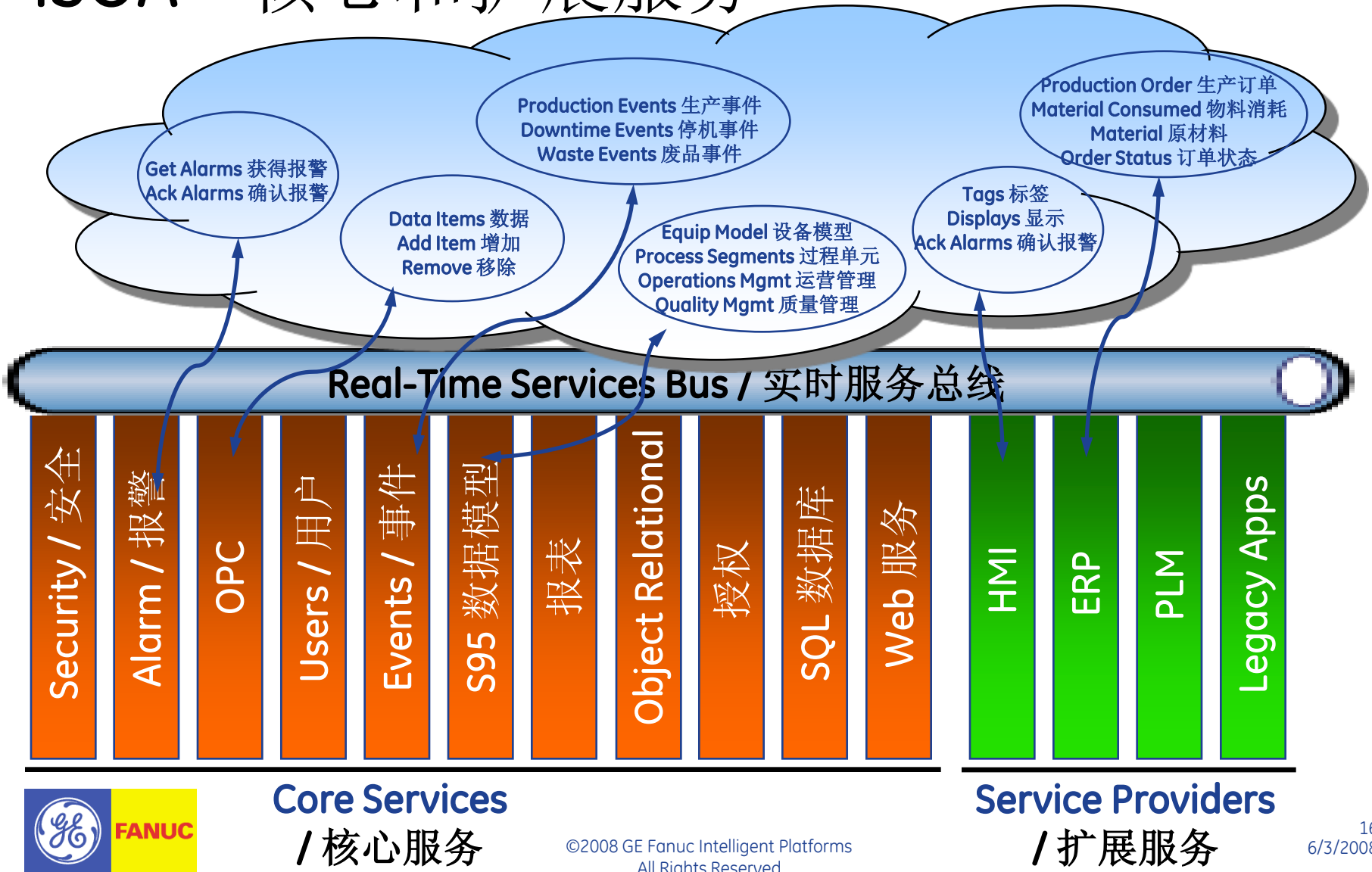


### Core Services / 核心服务



# iSOA – Core and Service Providers

## iSOA – 核心和扩展服务



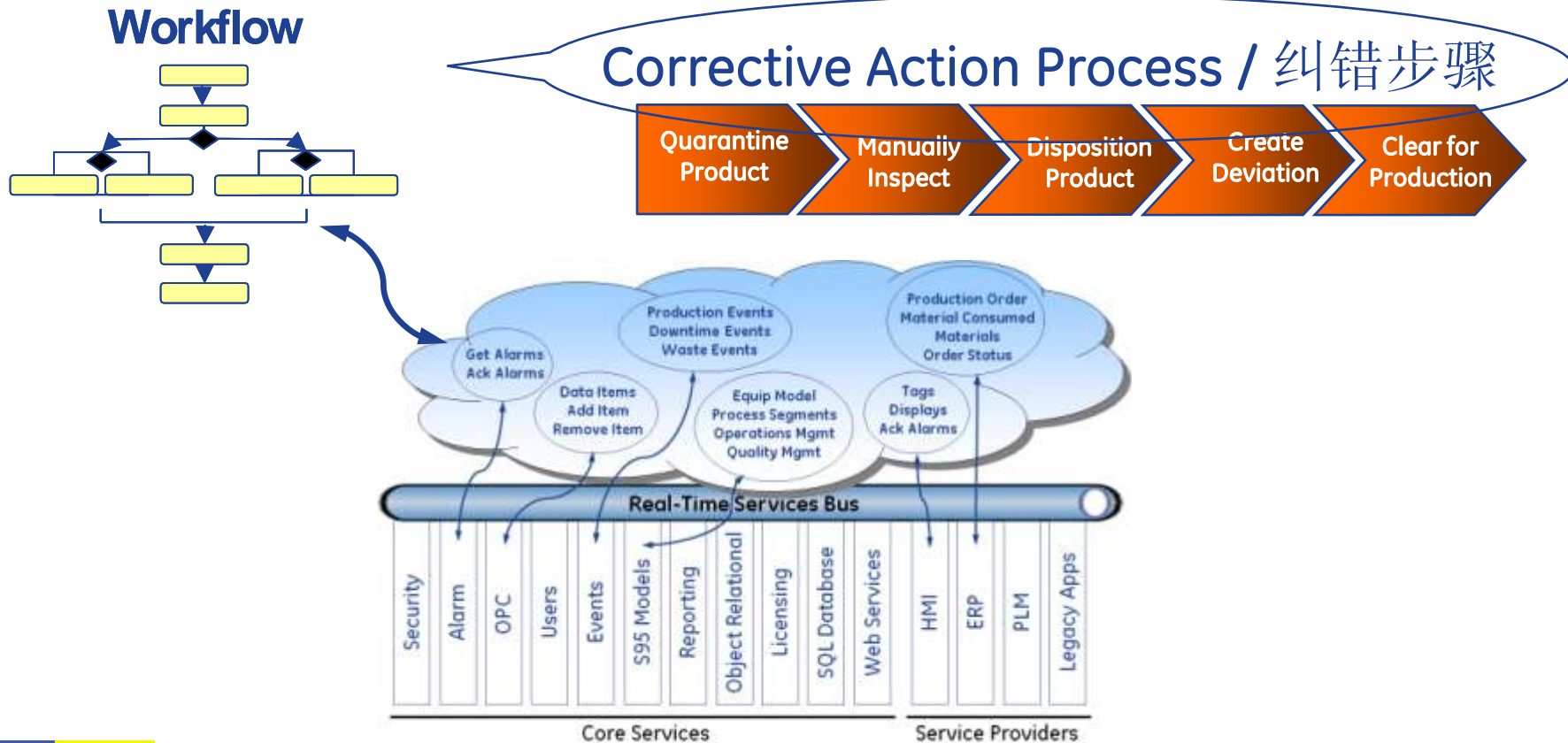


# Processes Enabled by iSOA

## 基于iSOA的流程管理

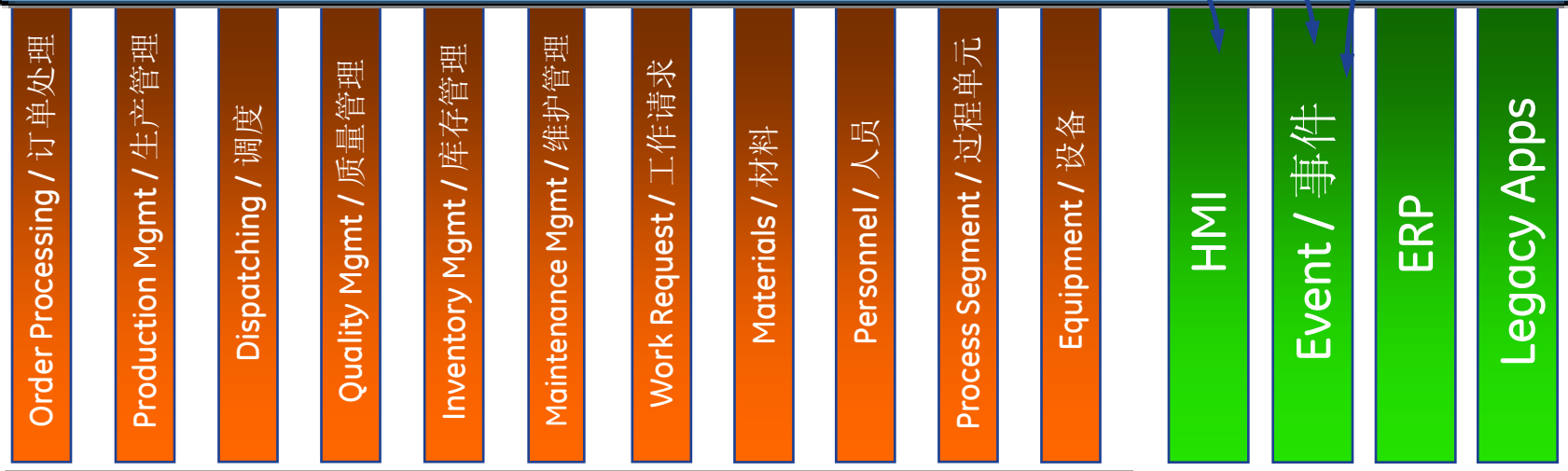
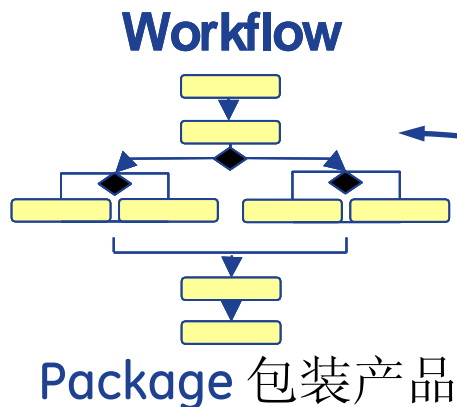
### Alarm Corrective Action Example

#### 报警纠错举例



# SOA and S95 – Organizing Data

## SOA和S95 – 组织数据



**S95 Activity/Data Services**

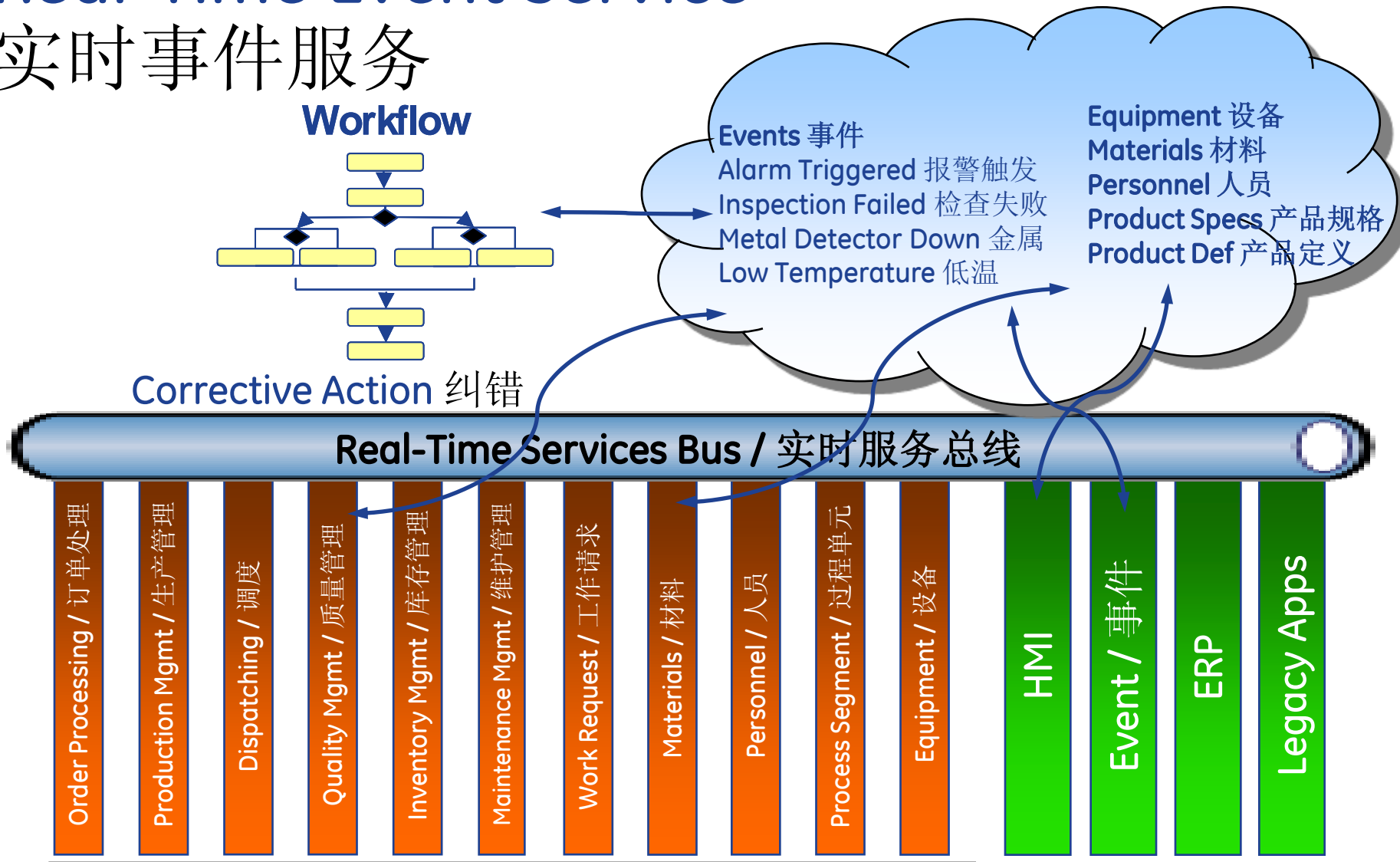
**S95行为/数据服务**

**Other Services**

**/ 其它服务**

# Real-Time Event Service

## 实时事件服务



S95 Activity/Data Services

S95行为/数据服务

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Other Services

/ 其它服务

# Industrial BPM / 工业BPM

*Adding value to HMI systems*

提升HMI系统价值

**Alarm Corrective Action – Fix production faster and gain greater visibility**

报警纠错 – 快速修复生产以及获得更多的可视化

Workflows automatically send tasks to people or other systems to correct for alarms

workflows自动将任务发送给人员或其它系统以消除报表

**Rapid development of Digitized Work Instructions with Validated Entry**

快速开发数字化可验证输入的工作指令

Ensure production complies with defined processes

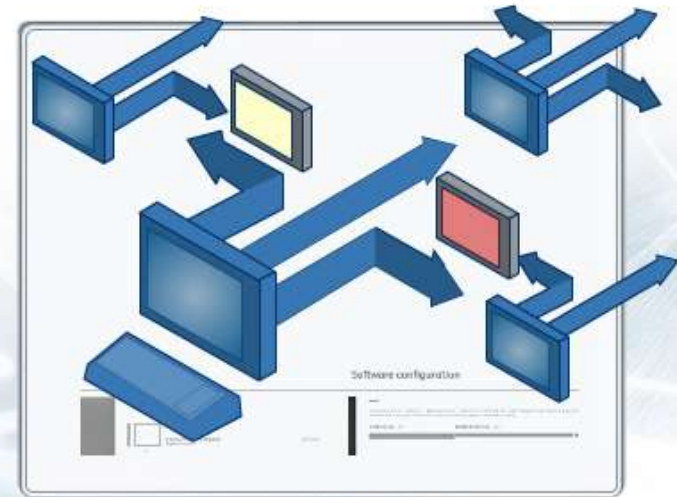
保证生产遵循预定义的步骤

**Eliminate Scripting for Defining Processes, Using Proficy Workflow instead**

使用Proficy workflow可以避免定义步骤时使用脚本

Approximately 30-50% faster than HMI scripting, and easier to maintain

相比较使用HMI脚本开发节省30~50%时间，且更容易维护



# Industrial BPM / 工业BPM

*Adding value to MES systems*

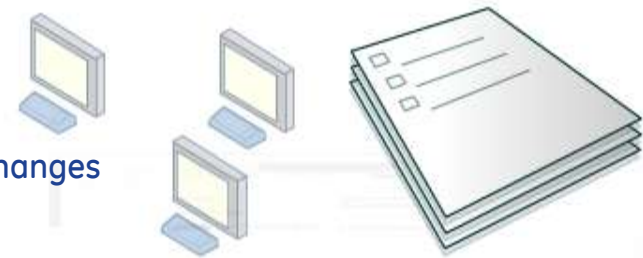
*提升MES系统价值*

## Automate the process of Engineering Spec Changes

自动实现工程规范变更

Changes are routed for approval and ensures everyone knows about critical changes

变更将按流程被批准以保证重要变更的追踪



## Exception Management / Event Triggered Corrective Action Workflow

例外管理 / 由事件触发纠错 workflow

Take action only as needed, improve response time & record corrective actions

仅在需要时采取行动，改善响应时间和记录纠错的动作



## Event Triggered QA Sampling Request

事件触发质量检查的采样请求

Digitize your QA plan, distribute sampling tasks across the plant and ensure compliance

数字化您的QA计划，在工厂内分布采样任务并保证一致性

## Eliminate scripting languages; achieve faster, broader development with workflows

避免脚本编程，归档更快速，使用 workflow 开发



# Industrial BPM / 工业BPM

*Adding value to ERP systems*

*提升ERP系统价值*

Deliver information and functionality based on business processes and workforce roles

基于业务步骤和人员角色传递信息和功能数据

Unify your disparate plant and business systems

统一您不同的工厂和商业系统

Synchronize sequences and business processes

同步生产顺序和业务过程

Collect data based on process response and takt time

基于过程响应和节拍时间采集数据

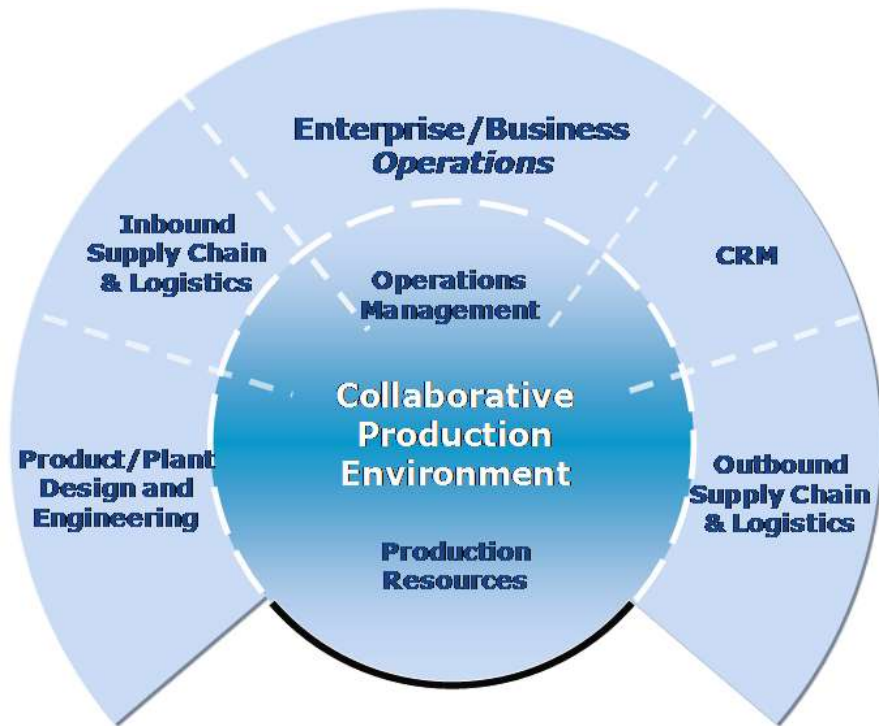
Drive process visibility – know where orders are at in the plant – right now

驱动过程的可视化 – 立即了解订单位于工厂的位置



# Collapsing the Boundaries between Production and Enterprise Systems

## 打破生产和商业系统之间的鸿沟



ARC's Collaborative Production Systems (CPS) Model

ARC的协同生产系统（CPS）模型

“GE Fanuc’s Proficy software technologies empower users with visibility, analytics, and connectivity throughout their enterprise. The HMI/SCADA and Historian technologies, coupled with Batch and a complete Production Management suite, allow customers to finally close the gap between automation and information.”

“GE Fanuc的Proficy软件技术能够帮助用户实现可视化，分析和ERP的连接。包括HMI/SCADA和Historian软件，以及Batch和一整套生产管理软件，能够最终实现自动化和信息化的紧密集成。”

- ARC Advisory Group,  
ARC White Paper, February 2008





[www.gefanuc.com/productionmanagement](http://www.gefanuc.com/productionmanagement)



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