

Rulestream Engineer to Order 产品介绍

西门子工业软件 陆海燕



Agenda



Rulestream ETO简介

Rulestream 解决方案

Rulestream 客户案例介绍

Q&A

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Rulestream 解决方案

Rulestream 客户案例介绍

Q&A

复杂性是机械设计的新常态



更加智能的机器

从 1970 年到 2010 年，机器中软件内容的数量增加了 45%。（资料来源：VDMA）



监管压力

每年通过的主要法规平均数量。
（资料来源：NERA 经济咨询）



定制化将推动制造业的发展。全球化/多样化的市场、分布式制造和不断增多的全球中产阶层为制造业带来了挑战。

不断增加的定制化

全球化将催生出数百万需要多样化功能和定价的新客户。

（资料来源：《联合研究委员会前瞻研究》，欧洲委员会）

不断增加的定制化需求

互联网正在造就商业变革，并向制造业提出了新的挑战



- 互联网+创新客户订单新模式
- 客户要求体验式需求采集、招标书具有足够的工程细节
- 提高交付质量，缩短交付时间
- 制造商需要及时转化客户要求为设计、制造以及采购需求

连续的产品变化



- 产品“配置”满足客户需求
- 所有“设计”变量被预先工程定义150% BOM，变量结构
- 市场容量大

- “设计”产品满足客户需求（按订单设计）
- 销售或订单执行过程中需要投入产品工程
- 市场容量小

连续的产品变化



- 销售配置器
- ERP 配置器 (SAP变量配置器) Teamcenter

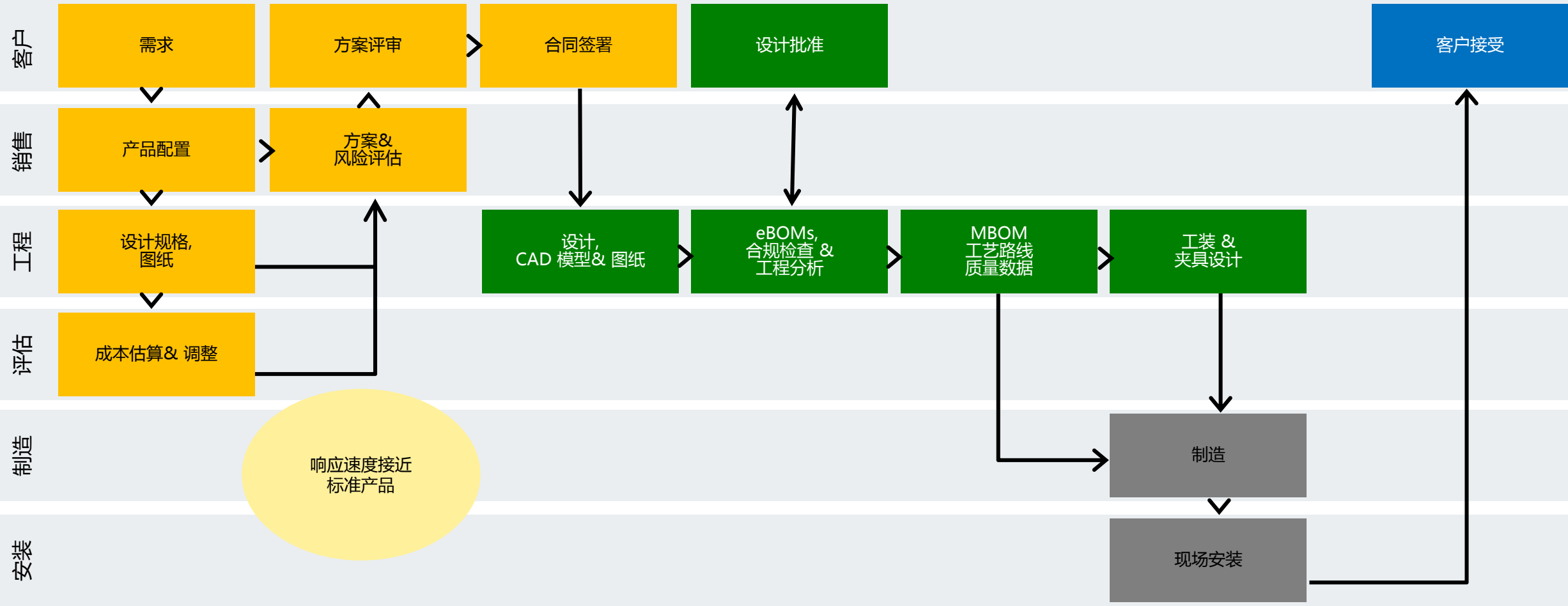
ETO概念

- **ETO**(Engineering To Order 面向订单设计)：面向订单设计是指最终产品在收到客户订单后才能确定。接到订单后，才开始进行设计，并组织采购和生产。也被称为专项生产。
- **CTO**(Configure To Order 安装订单配置)：指在生产的最最后阶段，用**库存的通用**零部件装配满足客户订单需求的产品。
- **MTS**(Make To Stock 面向库存生产)：对市场需求量进行预测的基础上，有计划地进行生产，产品有库存。

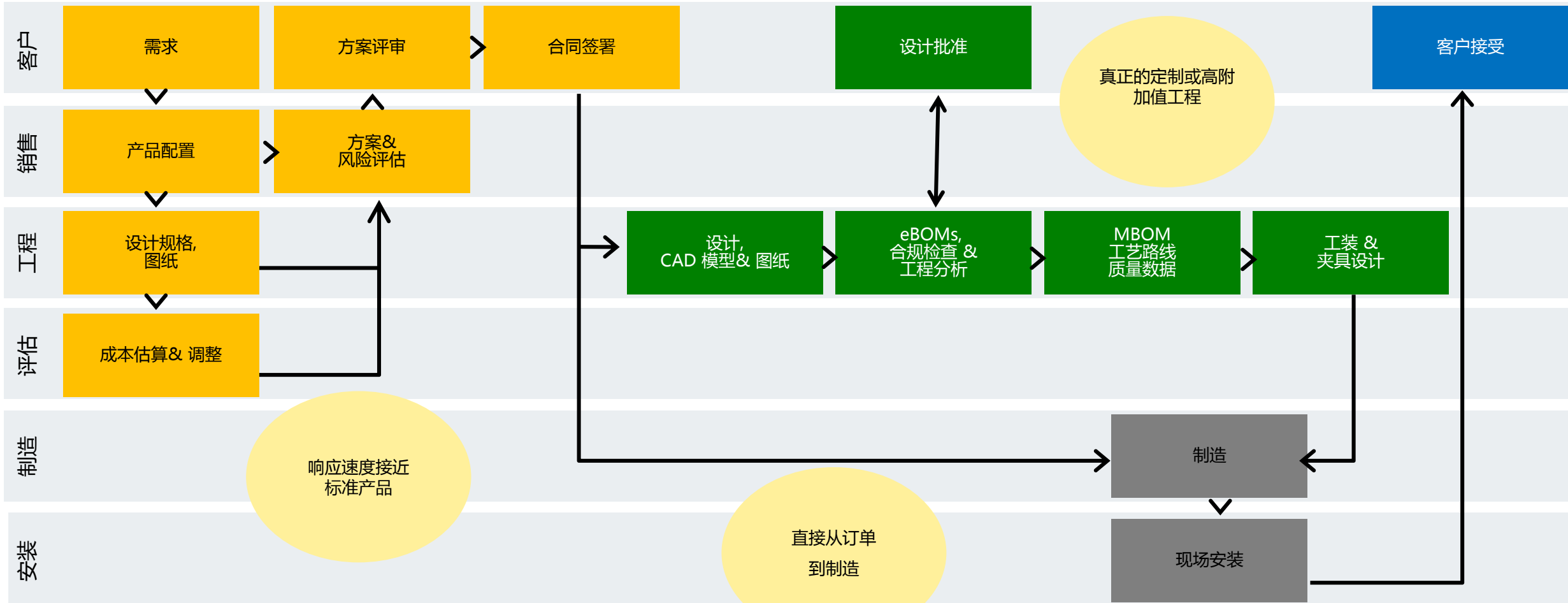
传统ETO解决方案面临的挑战

- 自有开发的程序
 - 开发、集成及维护成本高
 - 在技术、资源、新产品引入及用户群体等方面很难扩展
 - 很难与业务变更速度保持同步
- 销售配置/报价软件
 - 基于特征及选项约束的
 - 并非基于工程规则
 - 未能与工程设计软件实现真正的集成
 - 针对ETO行业的特点，需要大量的二次开发

理想的 ETO 流程



理想的 ETO 流程



Agenda



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Rulestream – ETO 产品配置

捕获工程/业务知识

- **工程:** 设计，可制造性设计，质量，合归等等。
- **商务:** 价格，成本，条款，顾客偏好，供应链等

配置详细的产品及产品相关内容

生成方案书内容

- 方案书及技术文档
- 3D可视化
- 销售图纸

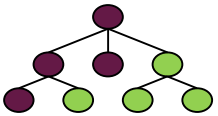
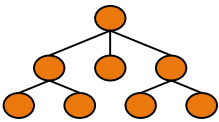
生成工程设计或制造内容

- CAD模型
- 制造图纸
- 制造BOMs
- 作业指导书

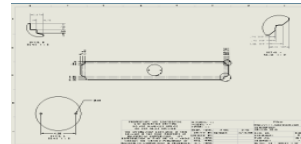
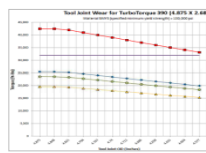
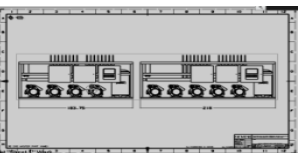
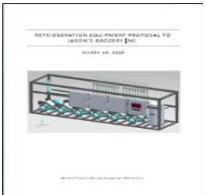
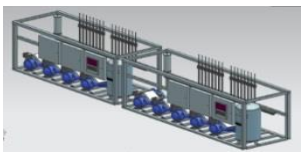
ETO配置规则库
规则执行引擎

产品配置

内容配置



Product Configuration Data Table									
Item	Part Number	Part Name	Quantity	Unit	Material	Dimensions	Weight	Notes	Comments
1	00-0000	Power Transformer	1	EA	0000	1000x1000x1000	1000kg	Standard Transformer	
2	00-0000	Control Panel	1	EA	0000	500x500x100	50kg	Standard Control Panel	
3	00-0000	Power Cable	1	EA	0000	100m	10kg	Standard Power Cable	
4	00-0000	Control Cable	1	EA	0000	100m	10kg	Standard Control Cable	
5	00-0000	Power Switch	1	EA	0000	100x100x50	5kg	Standard Power Switch	
6	00-0000	Control Switch	1	EA	0000	100x100x50	5kg	Standard Control Switch	
7	00-0000	Power Relay	1	EA	0000	100x100x50	5kg	Standard Power Relay	
8	00-0000	Control Relay	1	EA	0000	100x100x50	5kg	Standard Control Relay	
9	00-0000	Power Fuse	1	EA	0000	100x100x50	5kg	Standard Power Fuse	
10	00-0000	Control Fuse	1	EA	0000	100x100x50	5kg	Standard Control Fuse	
11	00-0000	Power Breaker	1	EA	0000	100x100x50	5kg	Standard Power Breaker	
12	00-0000	Control Breaker	1	EA	0000	100x100x50	5kg	Standard Control Breaker	
13	00-0000	Power Indicator	1	EA	0000	100x100x50	5kg	Standard Power Indicator	
14	00-0000	Control Indicator	1	EA	0000	100x100x50	5kg	Standard Control Indicator	
15	00-0000	Power Alarm	1	EA	0000	100x100x50	5kg	Standard Power Alarm	
16	00-0000	Control Alarm	1	EA	0000	100x100x50	5kg	Standard Control Alarm	
17	00-0000	Power Reset	1	EA	0000	100x100x50	5kg	Standard Power Reset	
18	00-0000	Control Reset	1	EA	0000	100x100x50	5kg	Standard Control Reset	
19	00-0000	Power Lock	1	EA	0000	100x100x50	5kg	Standard Power Lock	
20	00-0000	Control Lock	1	EA	0000	100x100x50	5kg	Standard Control Lock	



Item	Part Number	Part Name	Quantity	Unit	Material	Dimensions	Weight	Notes	Comments
1	00-0000	Power Transformer	1	EA	0000	1000x1000x1000	1000kg	Standard Transformer	
2	00-0000	Control Panel	1	EA	0000	500x500x100	50kg	Standard Control Panel	
3	00-0000	Power Cable	1	EA	0000	100m	10kg	Standard Power Cable	
4	00-0000	Control Cable	1	EA	0000	100m	10kg	Standard Control Cable	
5	00-0000	Power Switch	1	EA	0000	100x100x50	5kg	Standard Power Switch	
6	00-0000	Control Switch	1	EA	0000	100x100x50	5kg	Standard Control Switch	
7	00-0000	Power Relay	1	EA	0000	100x100x50	5kg	Standard Power Relay	
8	00-0000	Control Relay	1	EA	0000	100x100x50	5kg	Standard Control Relay	
9	00-0000	Power Fuse	1	EA	0000	100x100x50	5kg	Standard Power Fuse	
10	00-0000	Control Fuse	1	EA	0000	100x100x50	5kg	Standard Control Fuse	
11	00-0000	Power Breaker	1	EA	0000	100x100x50	5kg	Standard Power Breaker	
12	00-0000	Control Breaker	1	EA	0000	100x100x50	5kg	Standard Control Breaker	
13	00-0000	Power Indicator	1	EA	0000	100x100x50	5kg	Standard Power Indicator	
14	00-0000	Control Indicator	1	EA	0000	100x100x50	5kg	Standard Control Indicator	
15	00-0000	Power Alarm	1	EA	0000	100x100x50	5kg	Standard Power Alarm	
16	00-0000	Control Alarm	1	EA	0000	100x100x50	5kg	Standard Control Alarm	
17	00-0000	Power Reset	1	EA	0000	100x100x50	5kg	Standard Power Reset	
18	00-0000	Control Reset	1	EA	0000	100x100x50	5kg	Standard Control Reset	
19	00-0000	Power Lock	1	EA	0000	100x100x50	5kg	Standard Power Lock	
20	00-0000	Control Lock	1	EA	0000	100x100x50	5kg	Standard Control Lock	

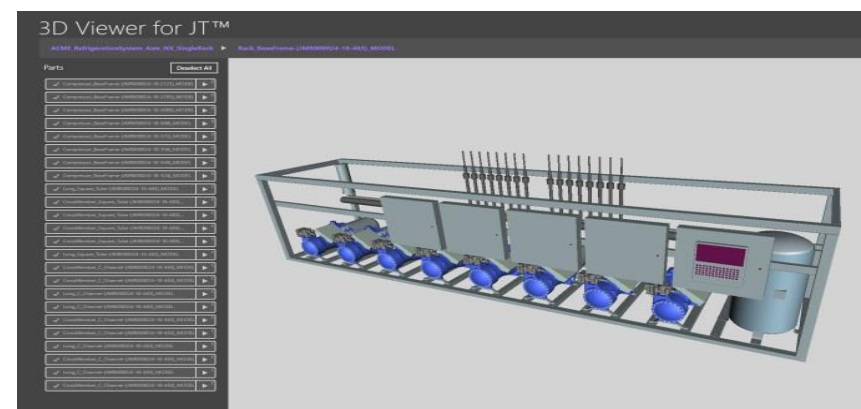
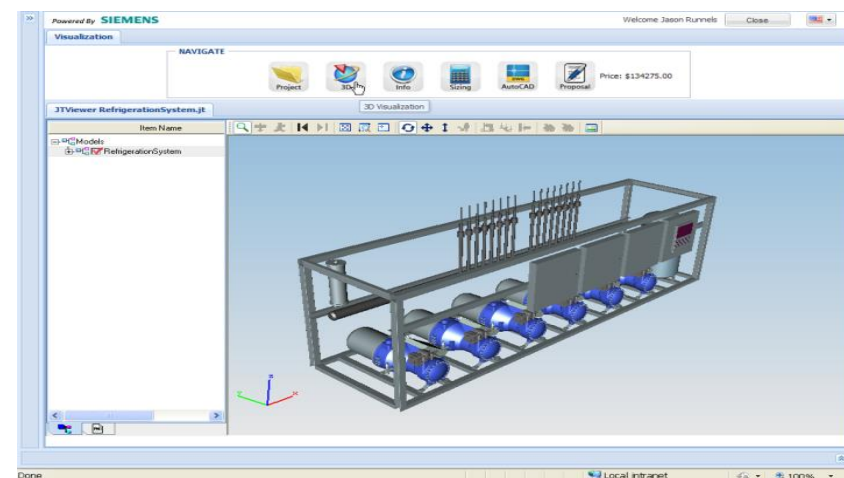
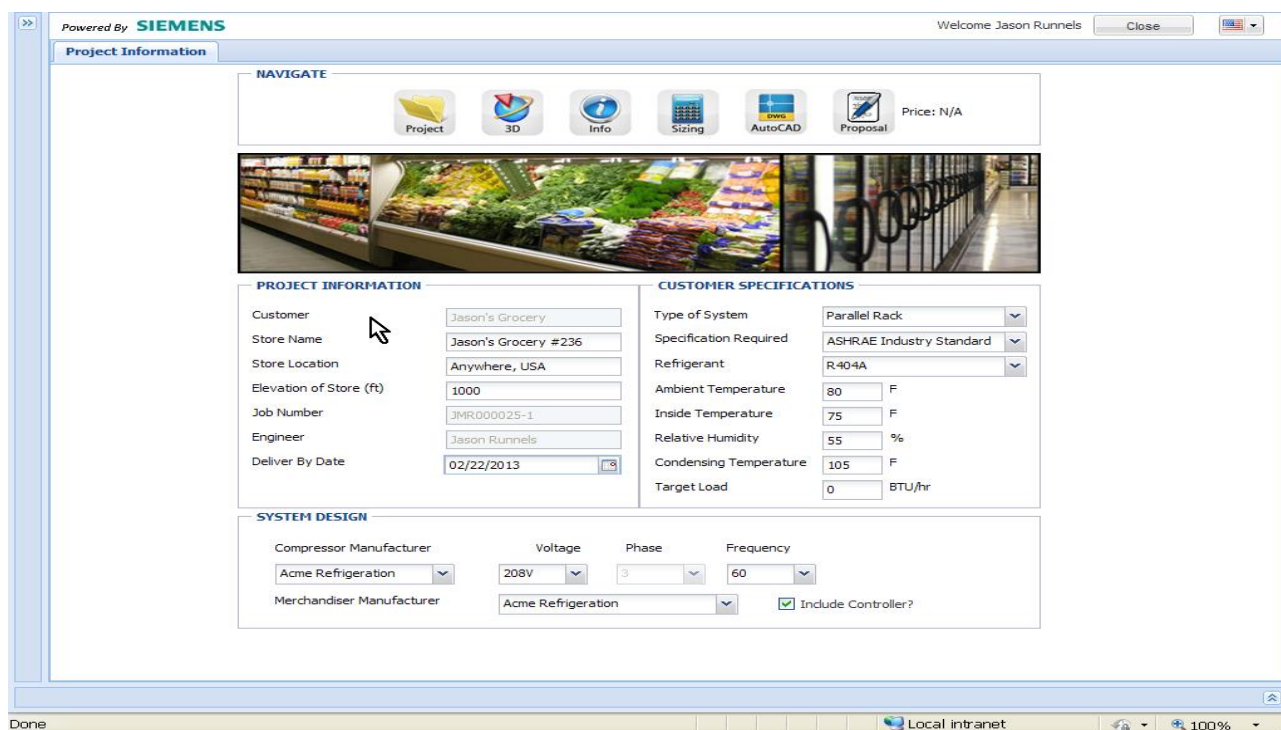
产品示例

SIEMENS

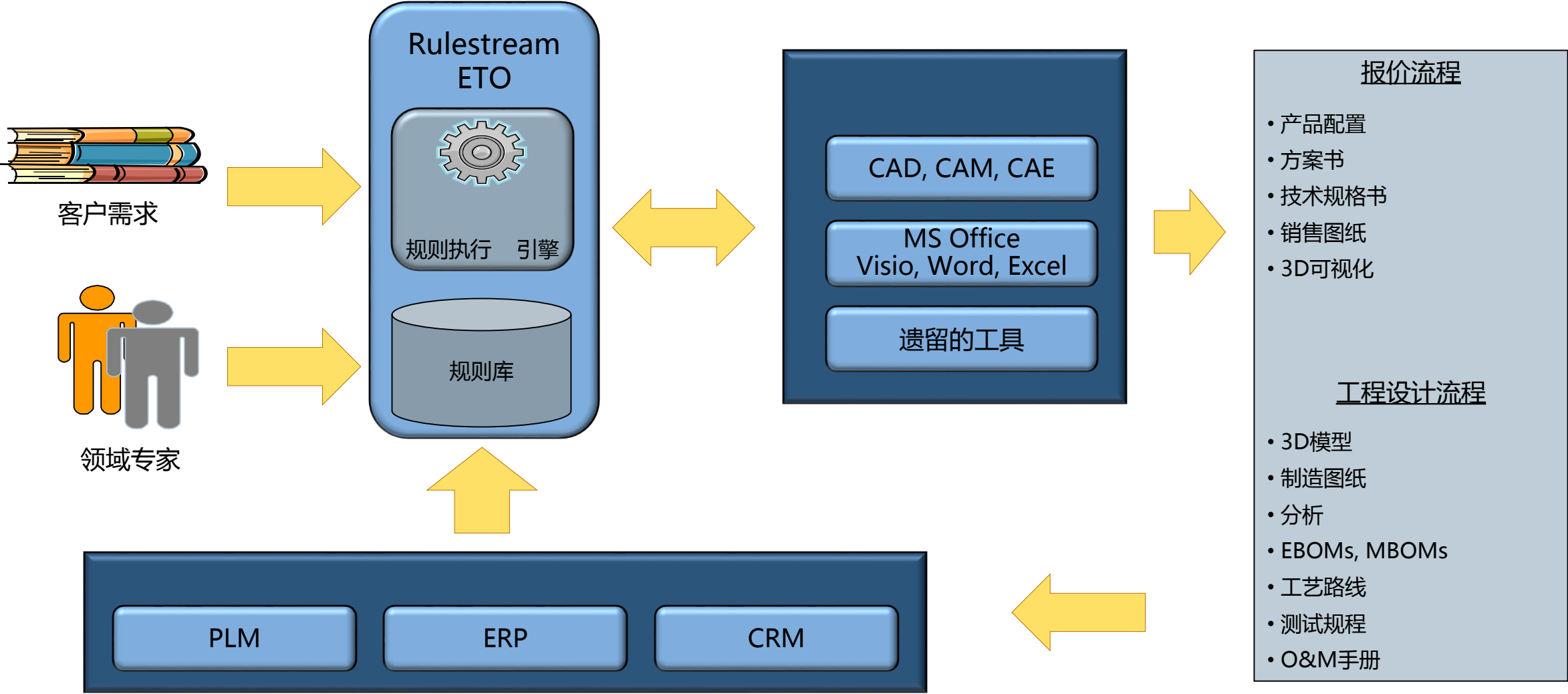


线上移动部署

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Rulestream解决方案



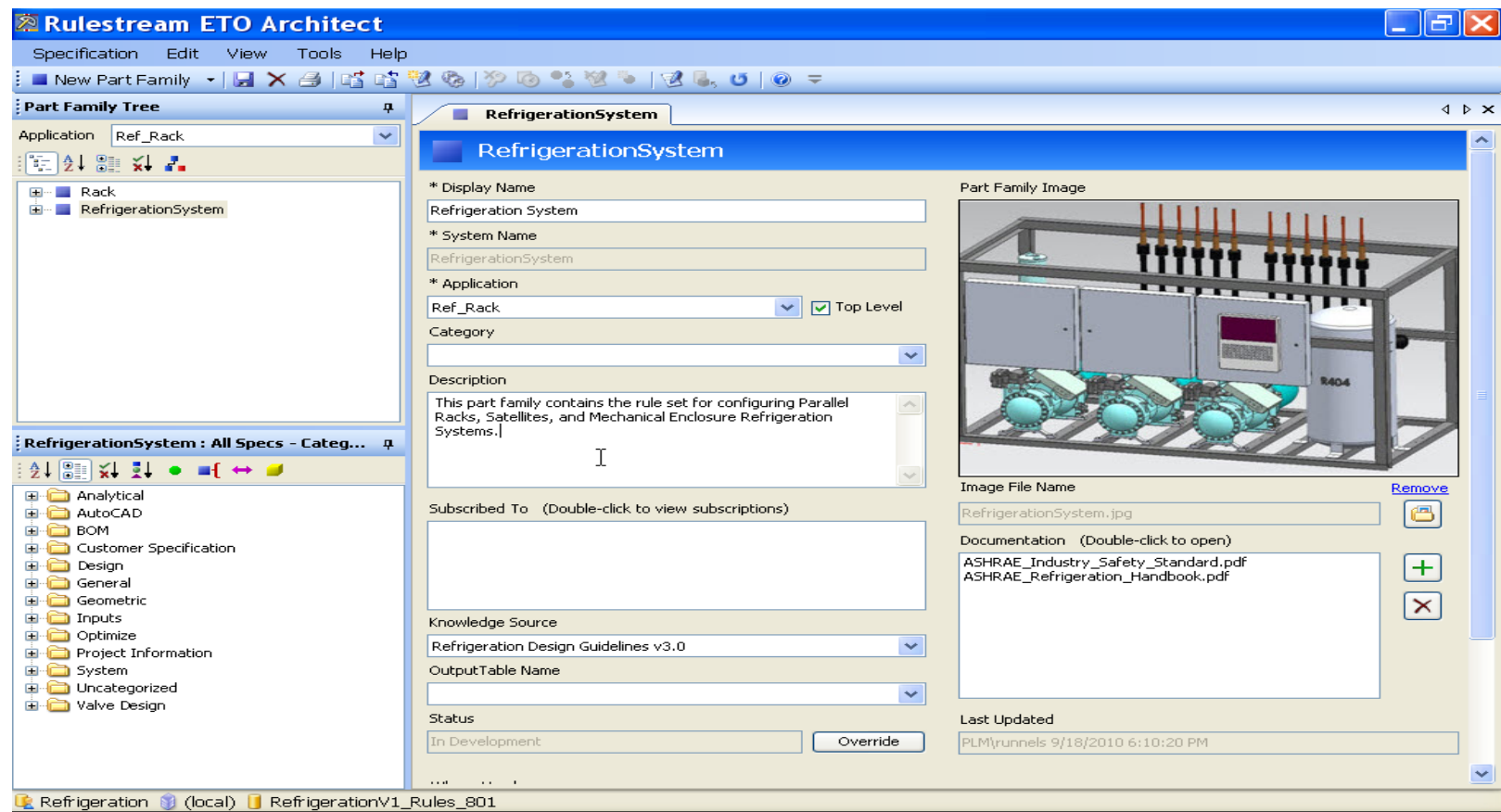
Rulestream如何工作？



Rulestream如何工作？

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规则编写



Rulestream Architect 规则创建用户界面

The screenshot displays the RuleStream Architect application window. The interface is divided into several panes:

- Left Pane (Rule Structure):** A tree view showing the hierarchy of the part family. It includes categories like LineUp, Breakers, and various components like Device, SealedCase, Fasteners, Insulation, SheetMetal, Stacks, and Cabinet.
- Bottom Left Pane (Rules):** A list of rules categorized by BOM, Design, Financial, General, Geometric, Manufacturing, and Uncategorized. Specific rules listed include Clearance, Depth, Height, Location, Mounting, Sealed, TripAmps, TripType, and Width.
- Right Pane (Forms-Based Rule Modeling):** A detailed form for the 'Breaker' rule. It includes fields for Display Name, System Name, Application (set to PwrDist), Category, Compartments, and Description. It also features a 'Part Family Image' section with a photo of a circuit breaker, an 'Image File Name' field, and a 'Documentation' section with links to design standards and sizing calculations. A 'Subscribed To' section lists 'PwrDist.ElectricalComponent' and 'PwrDist.ServiceablePart'. The 'Knowledge Source' is set to 'Switchgear Design Guidelines V3.7'. The 'OutputTable Name' is 'Breakers'. The 'Status' is 'In Development'. The 'Where Used' section lists 'LineUp.Breakers', 'LineUp.Stacks/AuxiliaryCompartment.Breakers', and 'LineUp.Stacks/LineUp.Compartments'.
- Bottom Right (Rule Traceability):** A section showing the 'Last Updated' date and time: 'PLM/Progen 2/21/2010 1:36:08 PM'.

Annotations with arrows point to specific features:

- Rule Structure:** Points to the left pane showing the part family tree.
- Rules:** Points to the bottom left pane showing the list of rules.
- Forms-Based Rule Modeling:** Points to the top right pane showing the 'Breaker' rule form.
- Rule Traceability:** Points to the bottom right section showing the 'Last Updated' information.
- Rule Subscription:** Points to the 'Subscribed To' section in the rule form.

Rulestream如何捕捉和管理产品知识

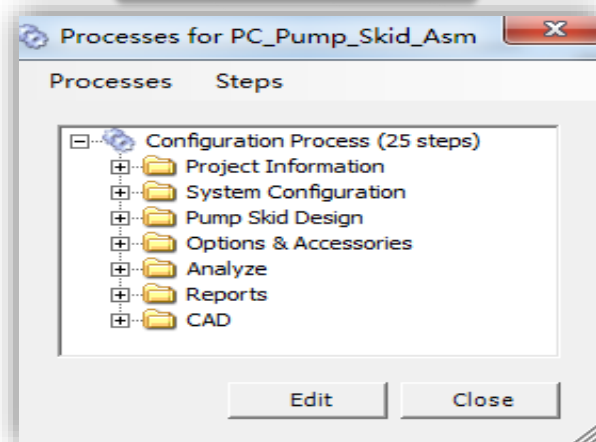
- 表单式环境
- 无需复杂的编程
- 基于数据库的知识管理

The screenshot displays the Rulestream ETO Architect software interface, which is used for capturing and managing product knowledge. The interface is divided into several panes and sections, with specific areas highlighted by orange callouts:

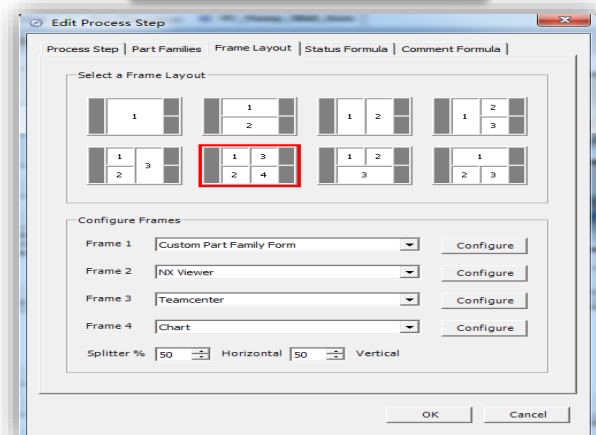
- 对象列表 (Object List):** Located on the left side, it shows a hierarchical tree structure of the product family, including 'PC_Pump_Skid_Asm', 'CADAutomation', 'Design', 'Accessories', 'MotorAssemblies', 'MountingSkids', 'PumpAssemblies', 'Outputs', and 'UI'.
- 属性列表 (Attribute List):** Located below the object list, it shows a list of attributes for the selected object, such as 'Freight', 'Subtotal', 'TotalPrice', 'Customer Specifications', 'PressureDischarge', 'VibrationDampening', 'Design', 'DischargeFlangeConnection', 'Dr_Rotor_Minor_Diameter', 'DriveType', 'Ds_Stator_Major_Diameter', 'E_Eccentricity', 'EngineeringOverride', 'ExplosionProof', 'FlowTheoretical', 'MaximumPressure', and 'MaximumTemperature'.
- 公式编辑 (Formula Editor):** Located in the center, it shows the 'DESIGN: FlowTheoretical' section with a formula editor. The formula being edited is: $Result = 4 * Dr_Rotor_Minor_Diameter * E_Eccentricity * Ps_Stator_Pitch_Length * TargetRPM$.
- 变量类型定义 (Variable Type Definition):** Located in the center, it shows the 'DESIGN: FlowTheoretical' section with a variable type definition. The variable is 'FlowTheoretical', and its data type is 'Double'.
- 内置函数 (Built-in Functions):** Located on the right side, it shows a list of built-in functions, including 'ACos()', 'ACoSec()', 'ACoTan()', 'AddToCol()', 'Array()', 'ArraysEqual()', 'ASec()', 'ASin()', 'BaseValue()', 'BoolToYN()', 'CalculateDrawingViewScaleC', and 'Ceiling()'.
- 版本历史 (Version History):** Located on the right side, it shows a list of version history entries, including 'runnels on 2014/2/11 at 14:57', 'runnels on 2014/2/11 at 14:51', 'runnels on 2014/2/11 at 14:18', 'runnels on 2014/2/11 at 14:17', and 'runnels on 2014/2/11 at 14:09'.

用户界面设计

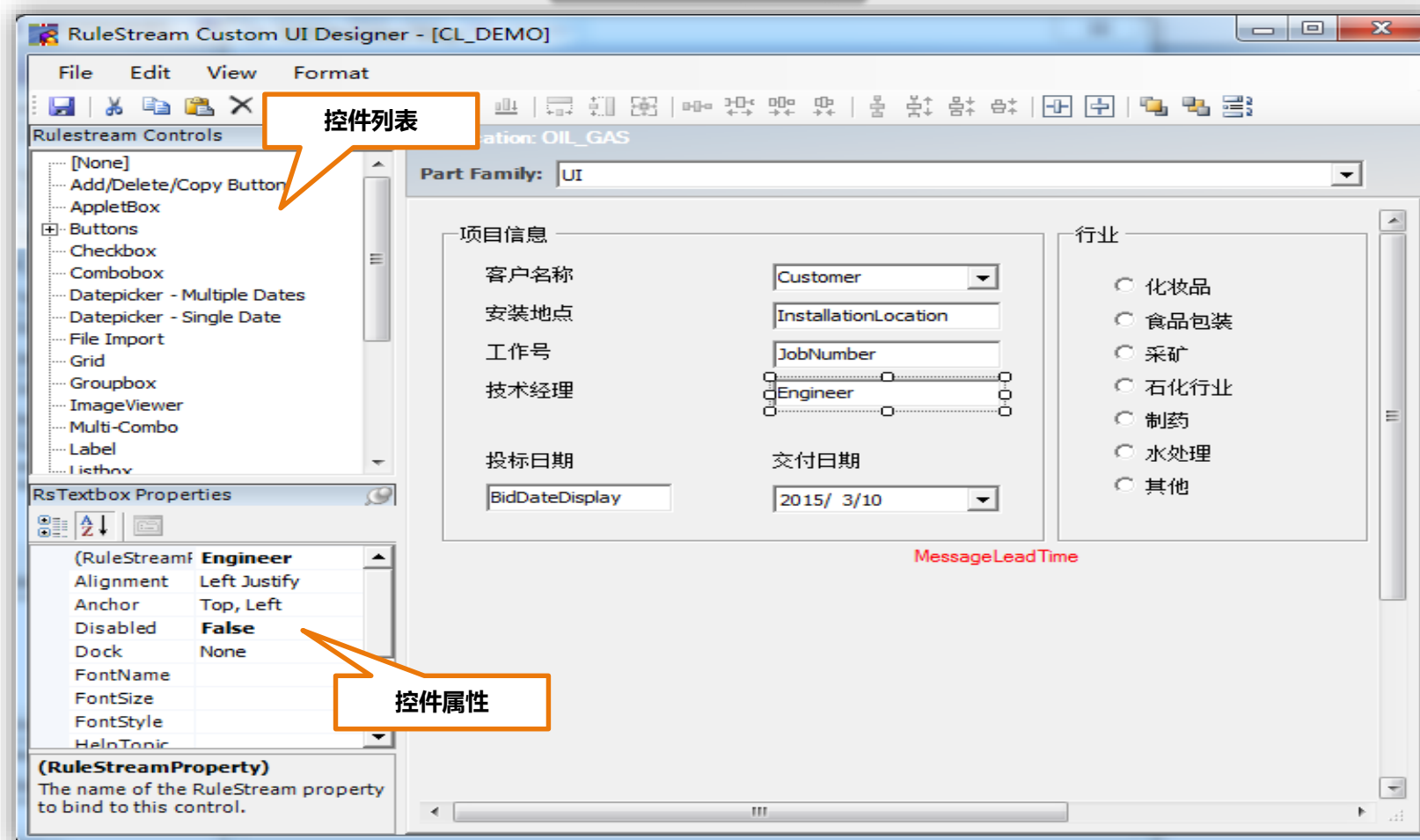
定义产品设计步骤



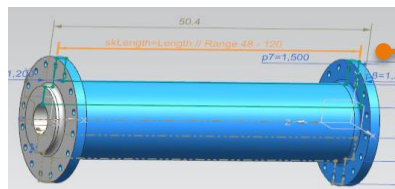
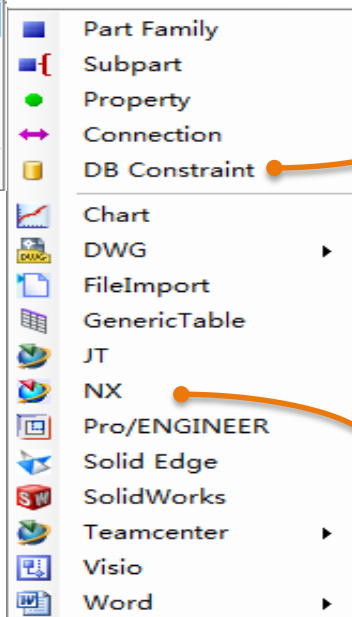
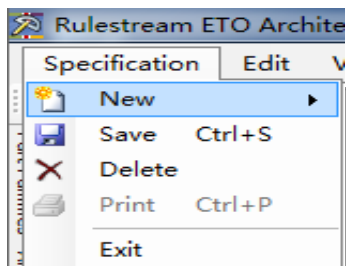
UI布局设计



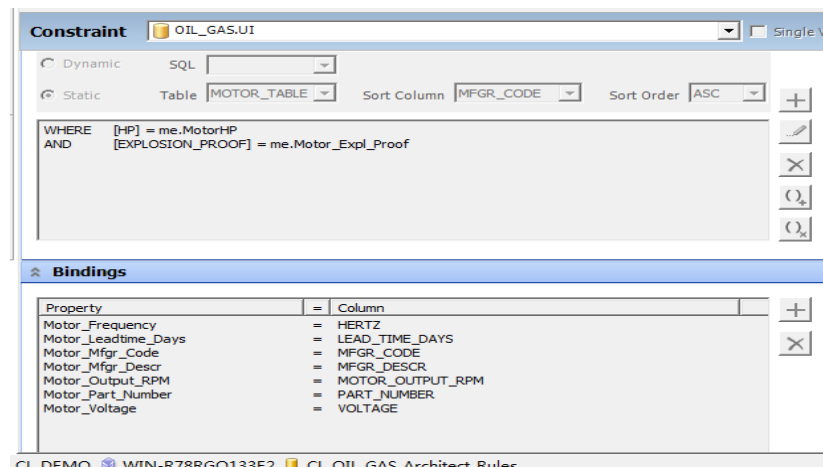
页面设计



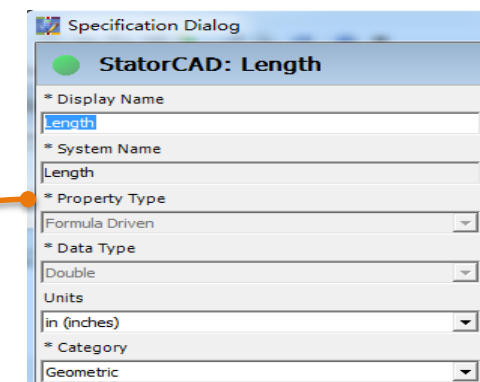
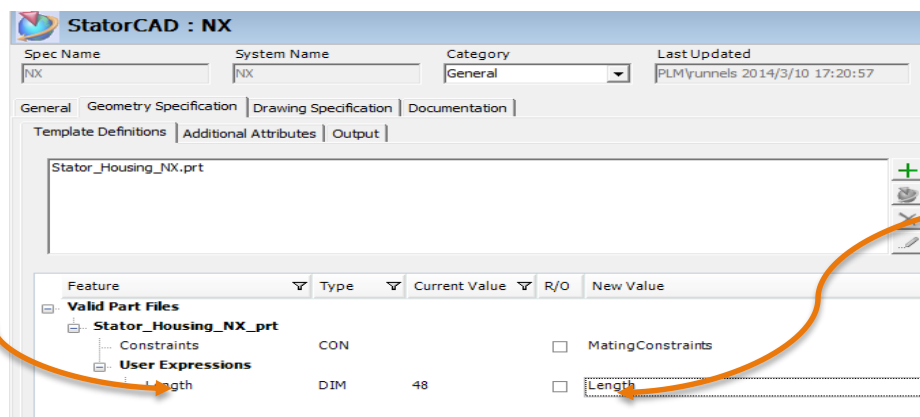
Rulestream与外部程序接口



数据库查询

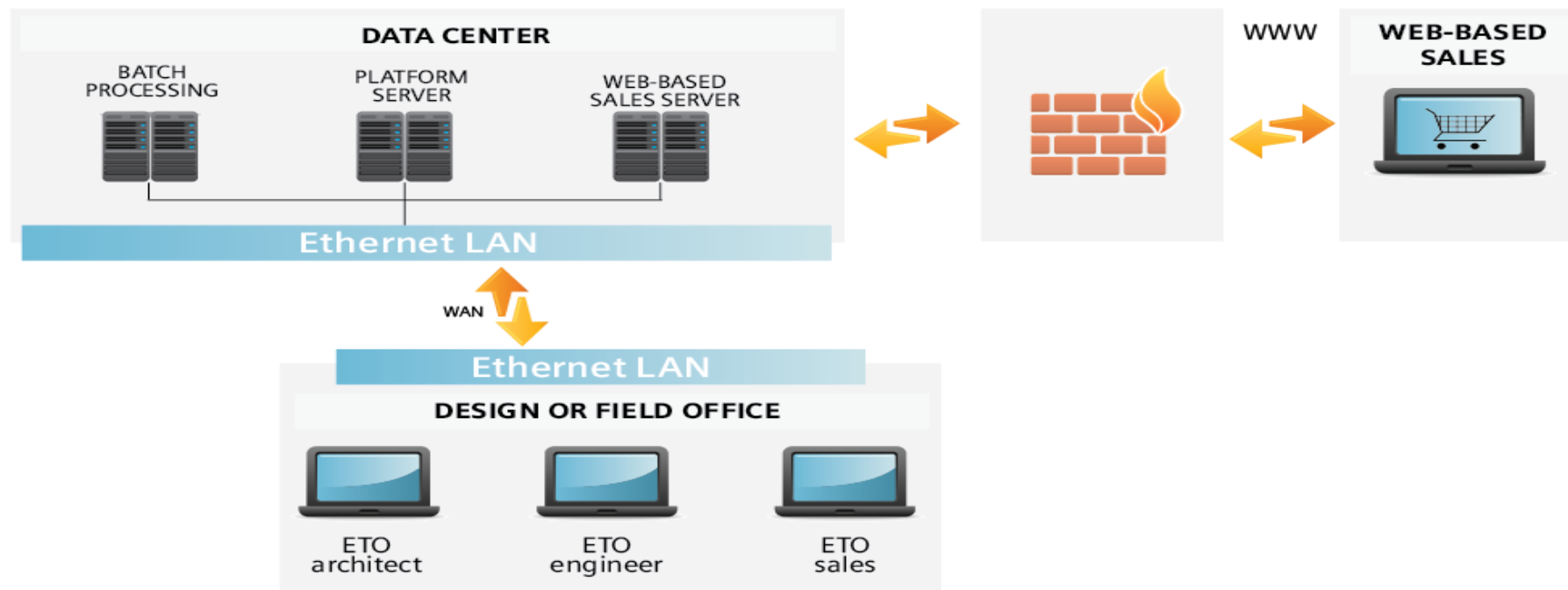


NX模型映射



Rulestream如何工作？

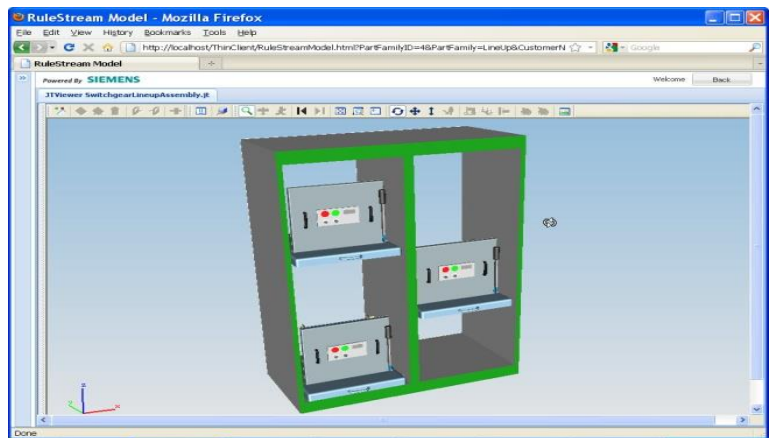
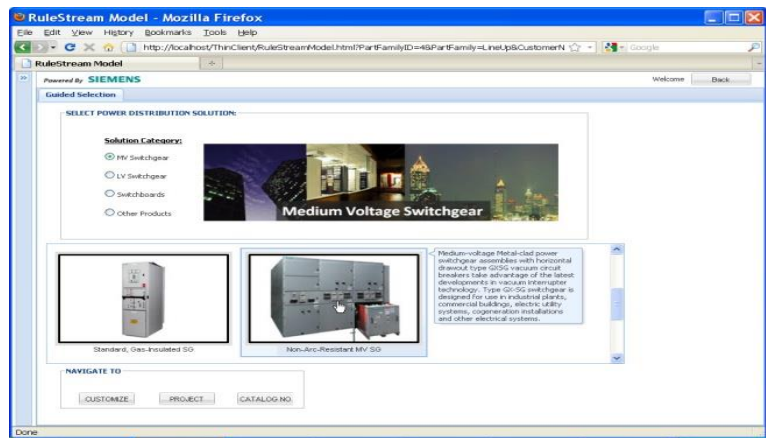
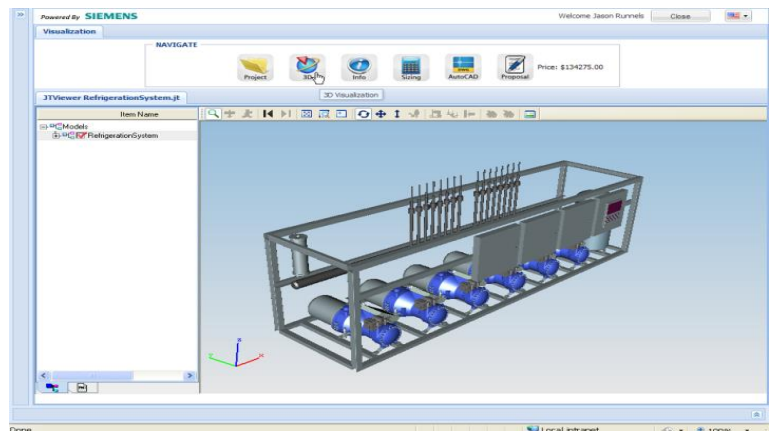
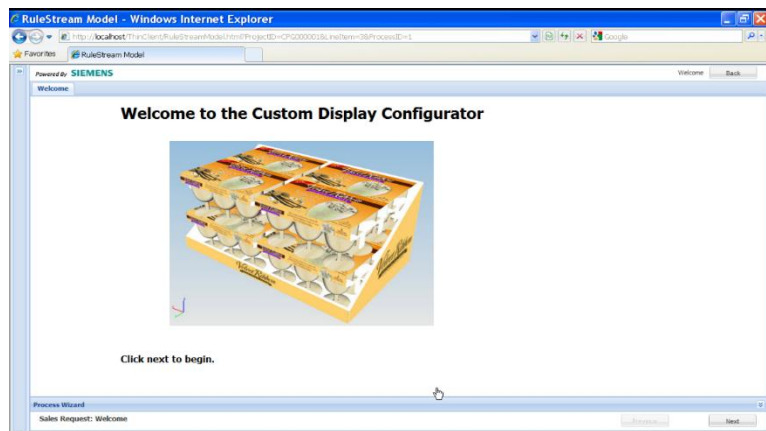
规则部署



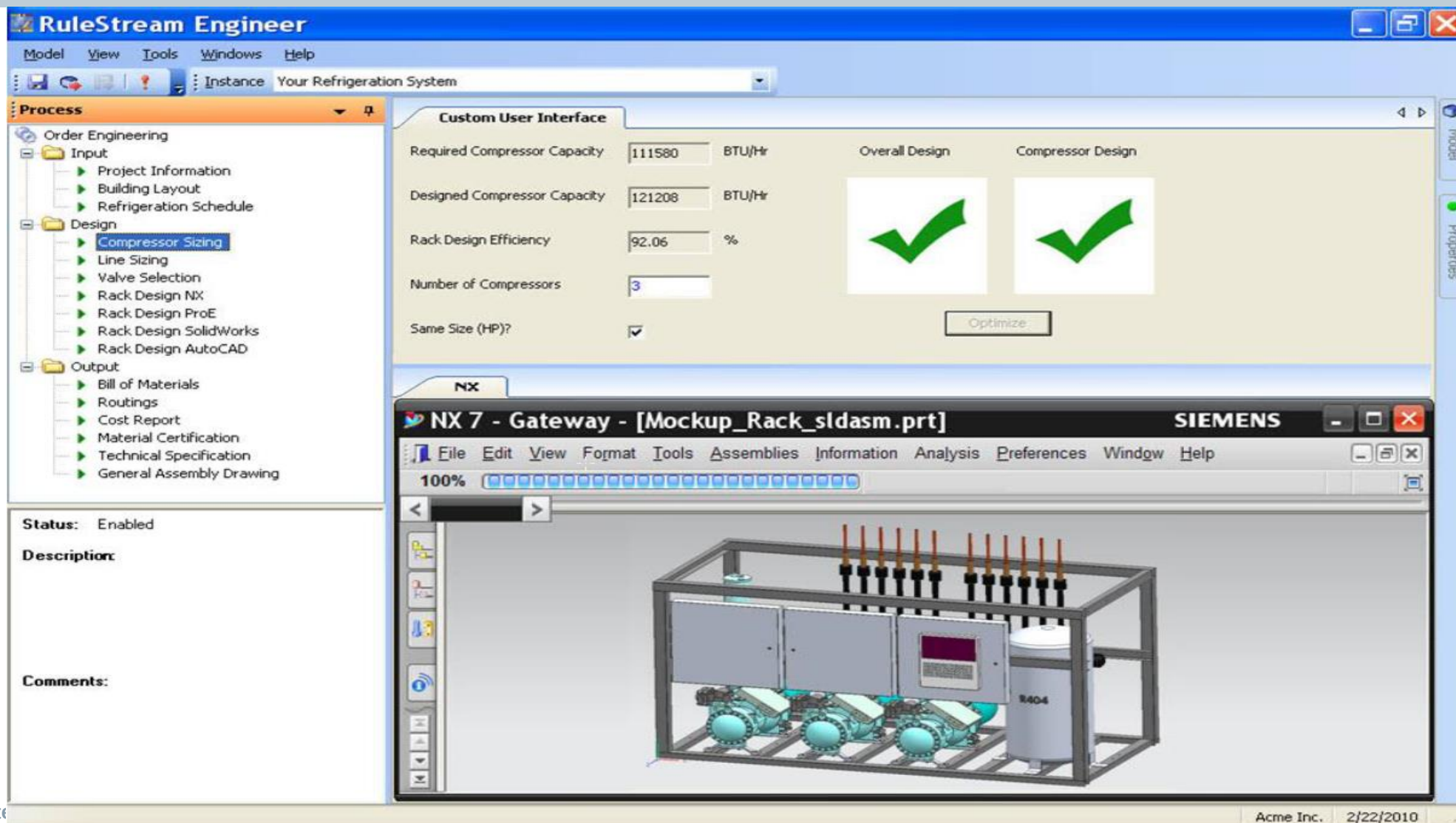
Rulestream如何工作？

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规则执行



Rulestream Engineer 用户界面



Rulestream Engineer 用户界面

The screenshot displays the RuleStream Engineer software interface. The top menu bar includes Model, View, Tools, Windows, and Help. Below the menu bar is a toolbar with various icons. The main window is divided into several sections:

- Process:** A tree view on the left showing the project structure:
 - Order Engineering
 - Input
 - Project Information
 - Building Layout
 - Refrigeration Schedule (selected)
 - Design
 - Compressor Sizing
 - Line Sizing
 - Valve Selection
 - Rack Design NX
 - Rack Design ProE
 - Rack Design SolidWorks
 - Rack Design AutoCAD
 - Output
 - Bill of Materials
 - Routings
 - Cost Report
 - Material Certification
 - Technical Specification
 - General Assembly Drawing
- Visio:** A central workspace showing a refrigeration system layout. It includes a grid, a ruler, and various components like Ice Cream, Frozen Food, Dairy, and SPECIAL Dairy Case. The layout shows a network of pipes and valves connecting these components.
- Refrigeration Schedule:** A table at the bottom right listing the system's components and their specifications.

Status: Enabled

Description:

Comments:

	Circuit	Model Number	Evap Temp (F)	Discharge Temp (F)	Suction Temp (F)	Defrost	Fan	Lights	Width (in)	BTU/Hr/Foot	Cost
Tasty Dairy	# 1	DAI-TY-72	24	32	22	Electric	YES	YES	72	1500	
Tasty Frozen Food	# 2	FFO-TY-60	-12	-5	-16	Gas	YES	YES	60	1370	
Tasty Frozen Food	# 3	FFO-TY-60	-12	-5	-16	Gas	YES	YES	60	1370	
Tasty Frozen Food	# 4	FFO-TY-60	-12	-5	-16	Gas	YES	YES	60	1370	
Tasty Frozen Food	# 5	FFO-TY-60	-12	-5	-16	Gas	YES	YES	60	1370	
Tasty Ice Cream	# 6	ICR-TY-60	-20	-12	-24	Electric	YES	YES	60	1410	
Tasty Ice Cream	# 7	ICR-TY-60	-20	-12	-24	Electric	YES	YES	60	1410	
Tasty Ice Cream	# 8	ICR-TY-60	-20	-12	-24	Electric	YES	YES	60	1410	

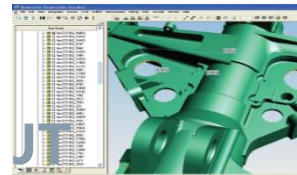
Acme Inc. 2/22/2010

- Solid Edge
- NX
- Teamcenter
- PLM Vis (JT)
- Pro/ENGINEER (CREO)
- SolidWorks
- AutoCAD
- Microsoft Office (Visio, Word)
- ...

NX

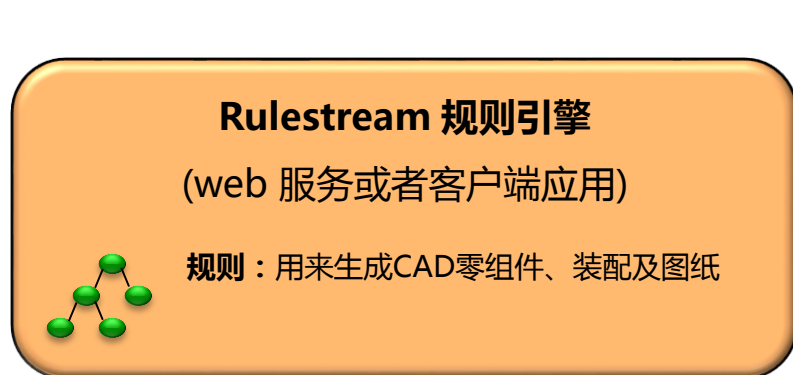
SOLID EDGE

TEAMCENTER



Rulestream – 本地 CAD 软件集成

通过基于规则的方式生成所需的CAD零组件、装配及图纸



双向集成

Rulestream 支持多种主流CAD软件集成:

NX

Solid Edge,

Pro/E,

SolidWorks

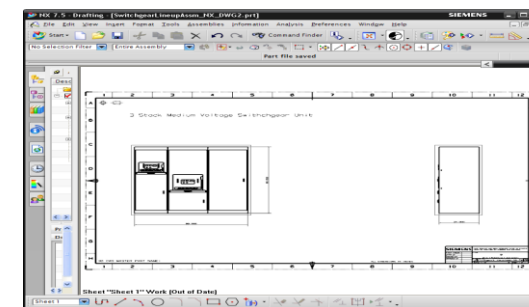
AutoCAD



三维模型自动化

规则能够:

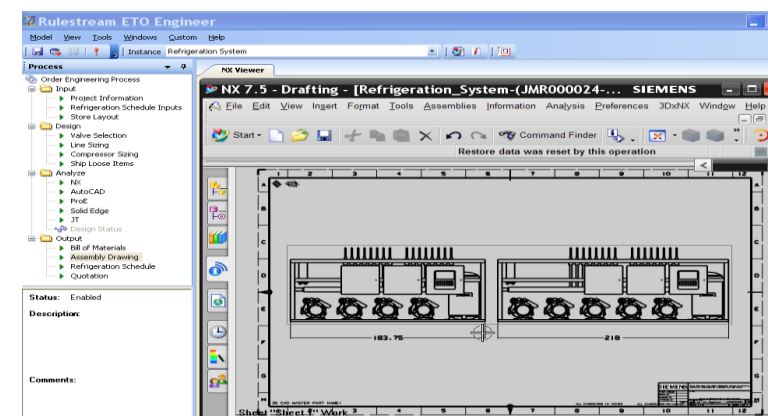
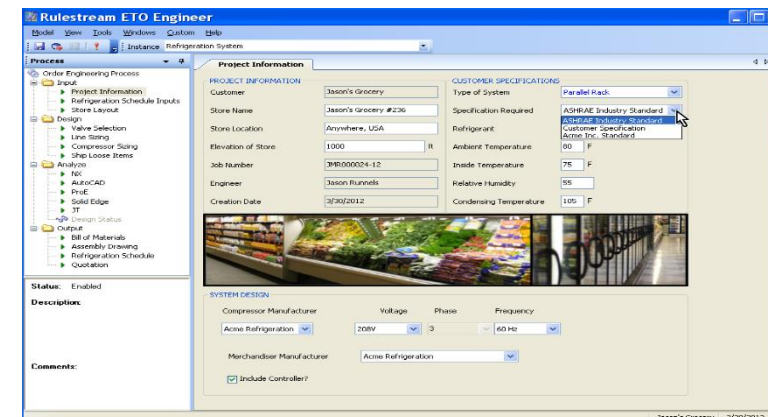
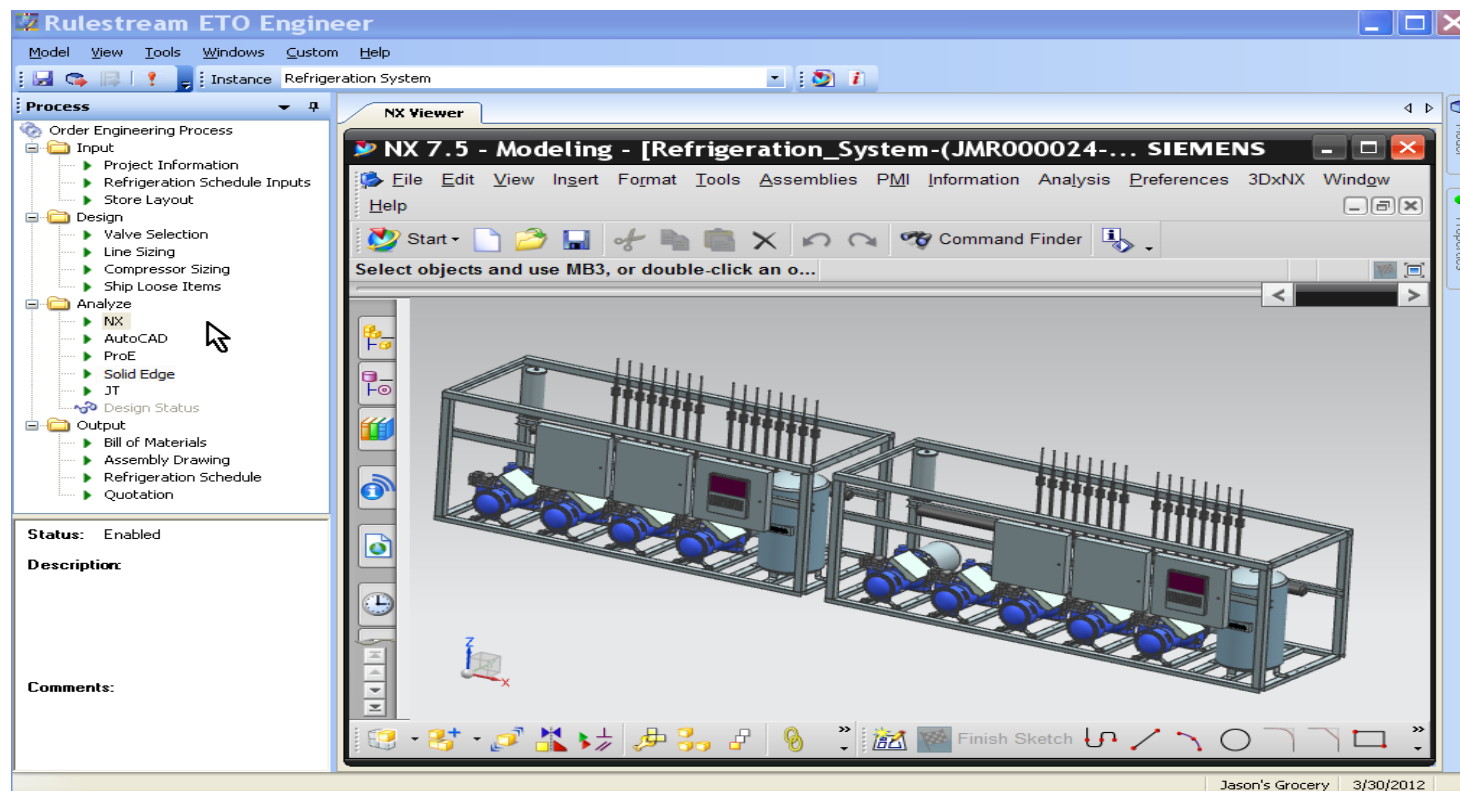
- 选择正确的模板
- 驱动参数化的值
- 动态地构建装配
(可以带有装配约束)
- 动态地构建零组件
(可选择及放置UDF)
- 检查质量属性及尺寸
- 检查干涉
- 控制PMI



制图自动化

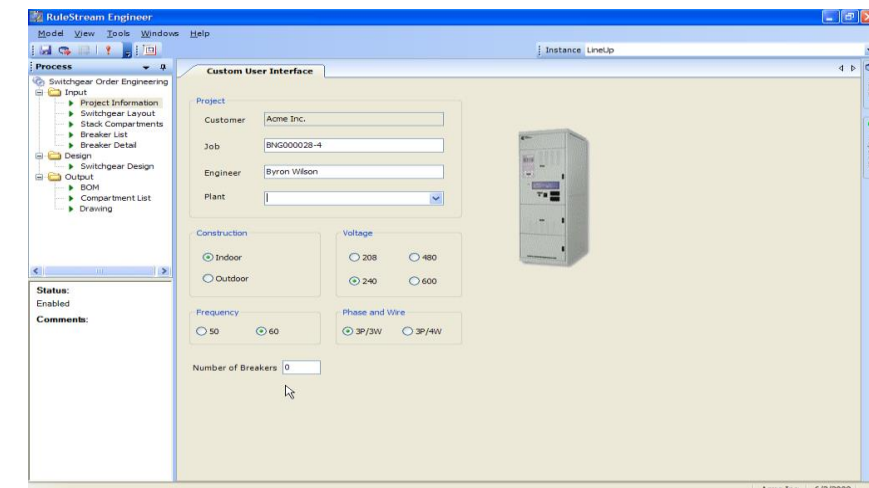
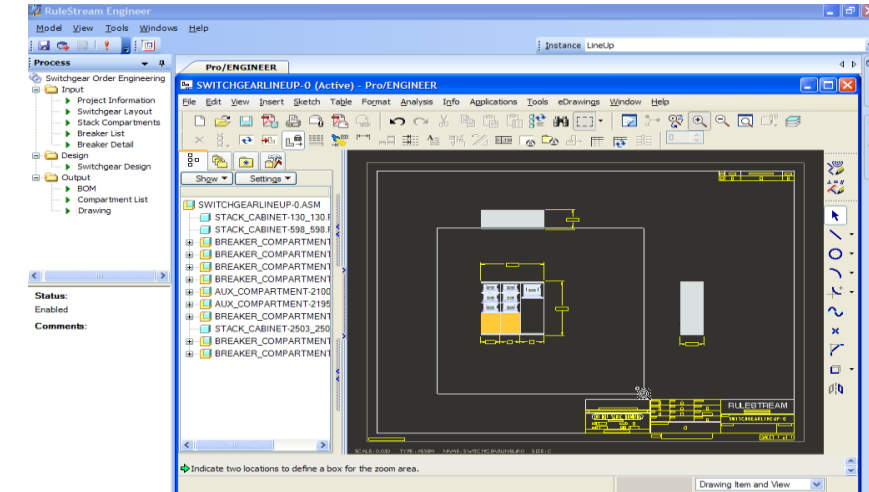
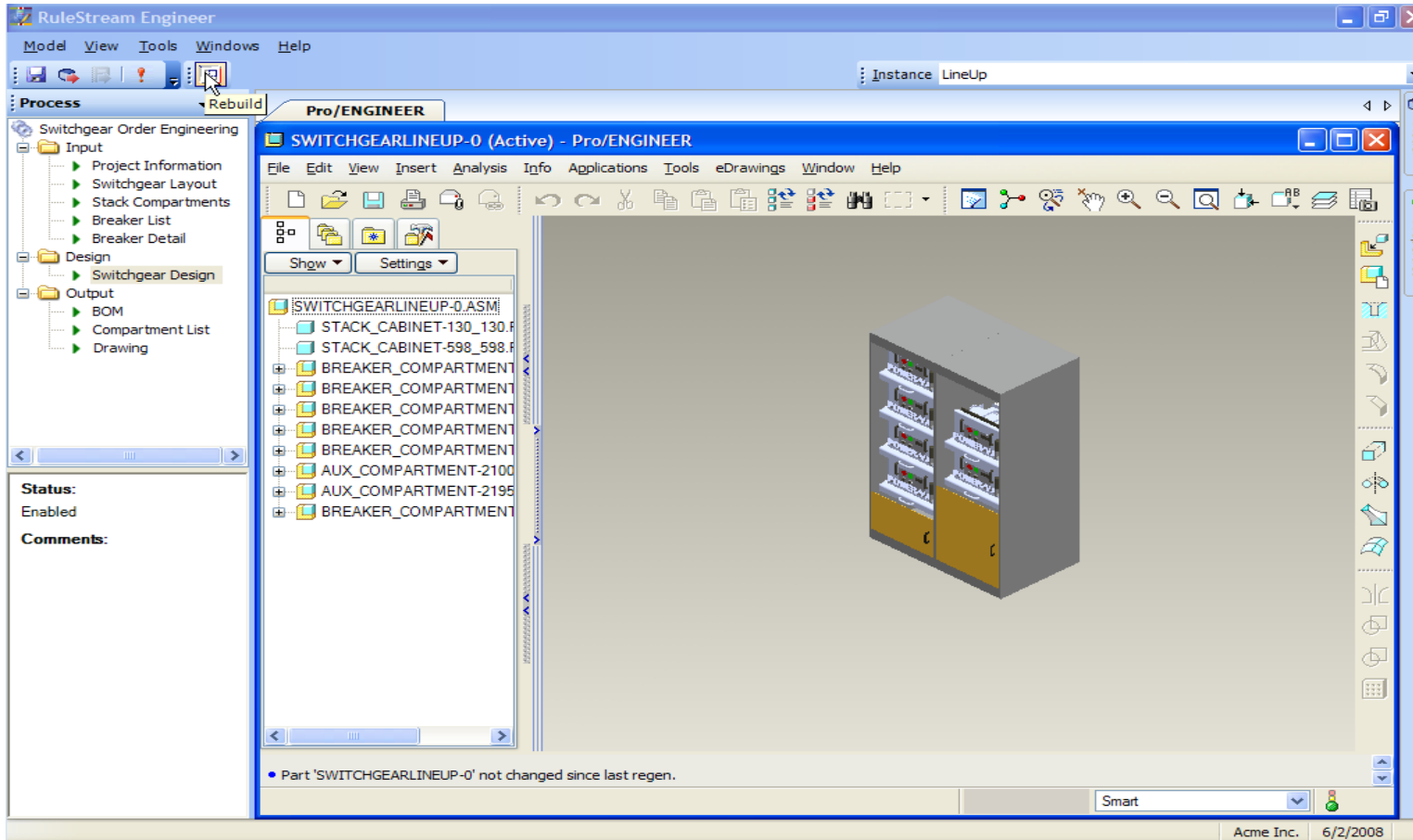
规则能够控制

- 制图模板的选择
- 图纸视图尺寸、位置及比例 标注的生成及位置
- 注释及文本
- 表格



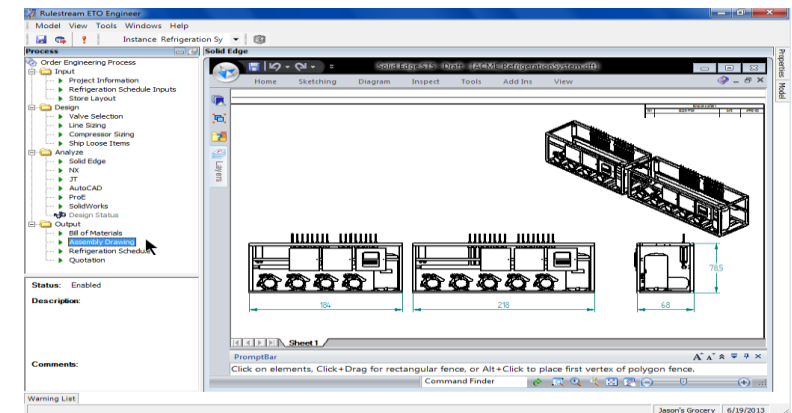
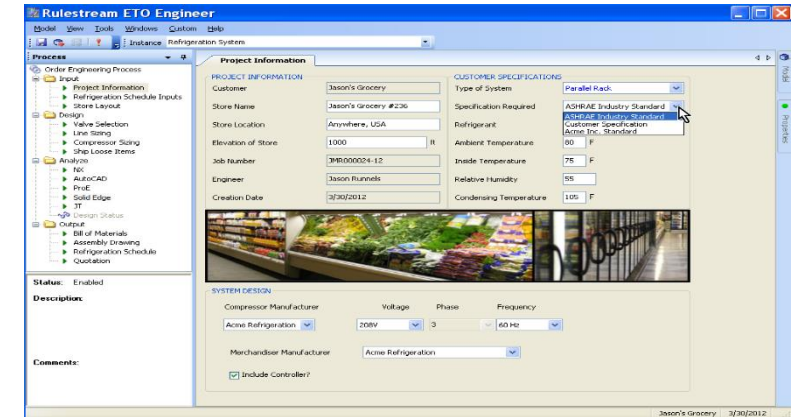
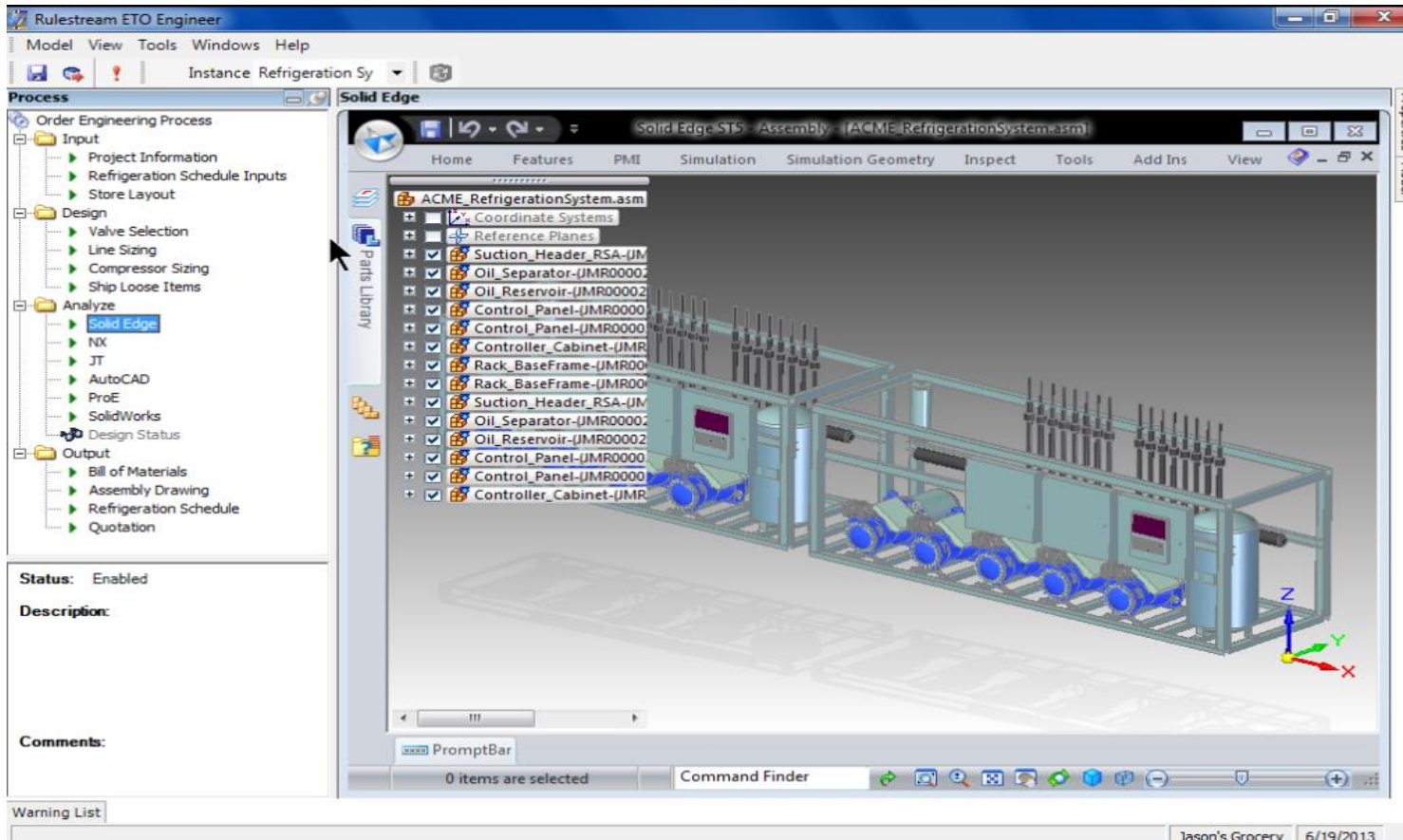
Creo/ProE集成

SIEMENS



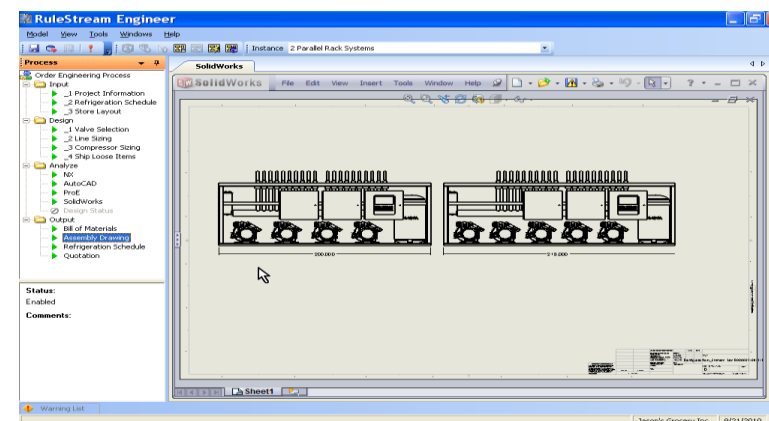
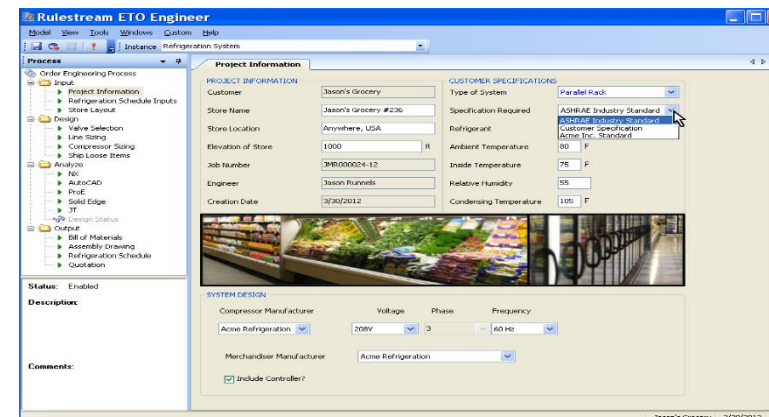
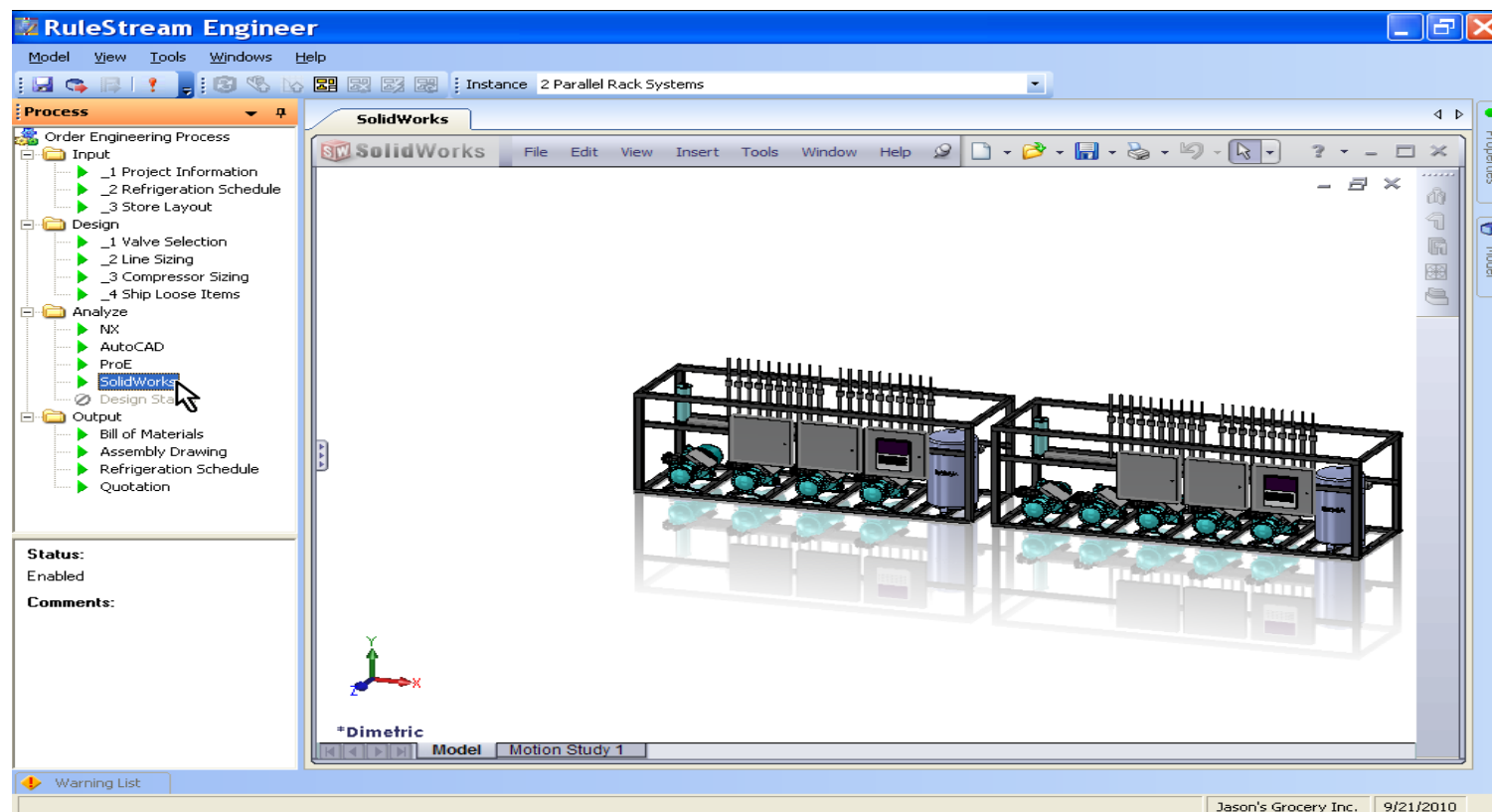
Solid Edge集成

SIEMENS



SolidWorks集成

SIEMENS



Rulestream - Microsoft Office

Word 2007



- 自动生成word文档
- 基于规则的文本，表格，数据
- 服务器和客户端自动化

Visio 2007



- 双向集成
- 二维示意图输入Rulestream 的应用
- Viso 自动化的原理图纸

Excel 2007 (2012)



- 双向集成
- 自动生成电子表格内容
- 集成Excel 的应用

Teamcenter集成

通过双向集成的方式生成基于规则的项目、产品结构、数据集及 workflow 交互

Teamcenter 是集成的数据网络枢纽



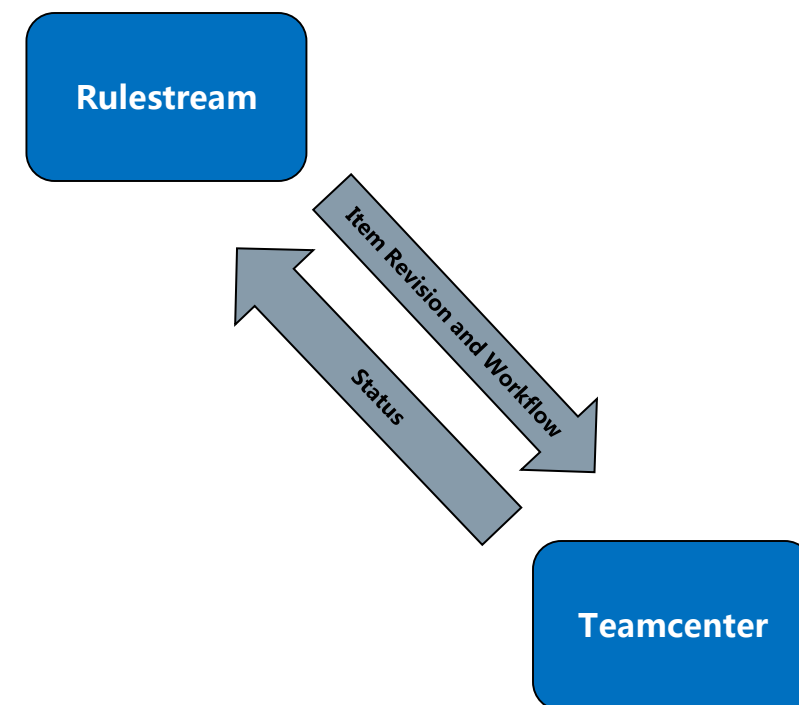
Rulestream-Teamcenter 集成功能

通过后台将Teamcenter Server集成到Rulestream客户端，包括以下功能：

1. 零组件搜索、创建、编辑及修订
2. 各种对象的创建及编辑
3. 数据集检索、创建及编辑
4. 产品结构创建与编辑
5. 关系生成与编辑
6. 工作流的启动

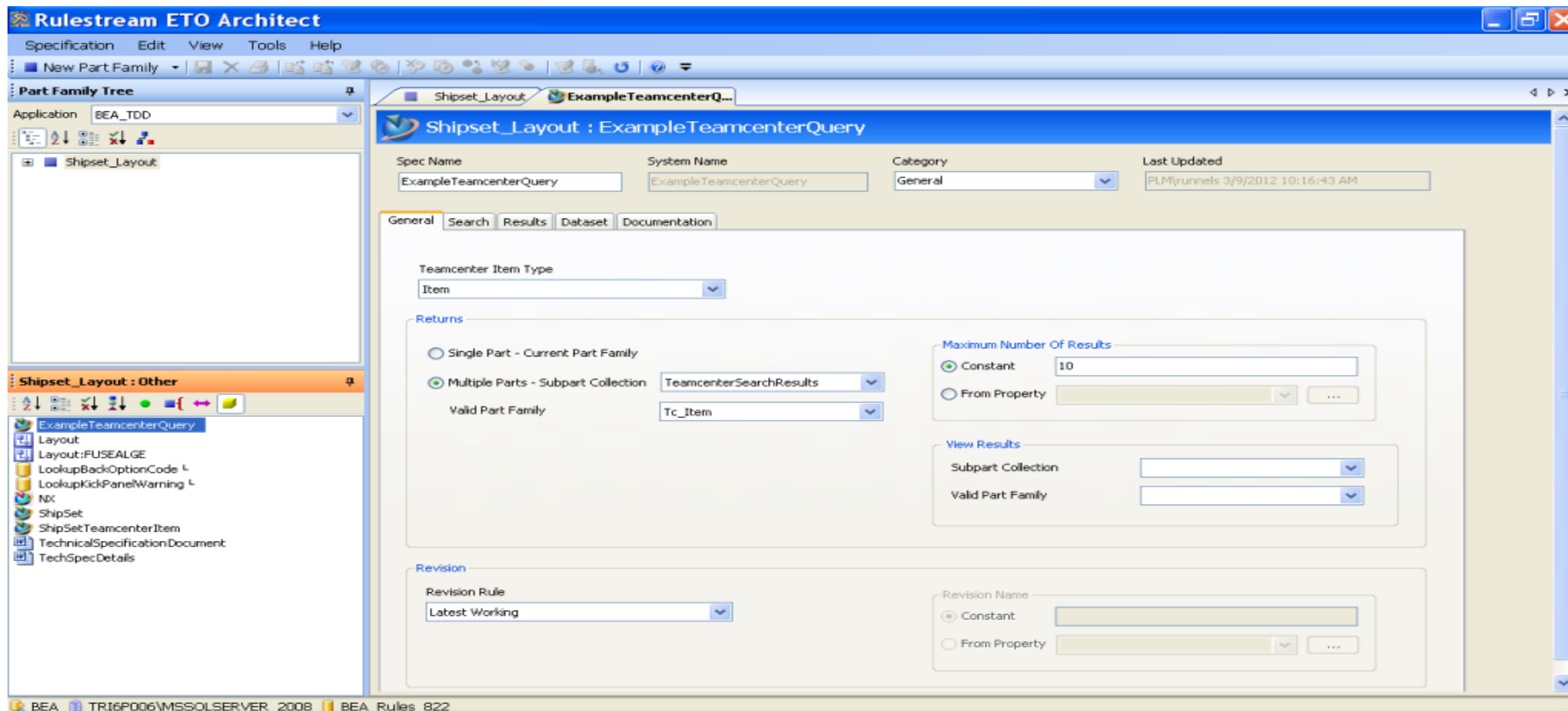
启动 workflow

1. Architect选择要启动的工作流，通过规则决定何时启动及启动的条件
2. 在Rulestream进行发布操作时执行
3. 在Rulestream进行发布前的一步启动指定的Teamcenter工作流
4. 标准的，公开的Teamcenter SOA调用



规则编写: Teamcenter 零组件查询

SIEMENS



规则编写: Teamcenter 零组件查询

SIEMENS

The screenshot displays the Rulestream ETO Architect application window. The interface includes a menu bar (Specification, Edit, View, Tools, Help), a toolbar, and a left-hand pane with a 'Part Family Tree' and a 'Shipset_Layout : Other' section. The main workspace is titled 'Shipset_Layout : ExampleTeamcenterQuery' and contains a configuration area with the following fields:

- Spec Name: ExampleTeamcenterQuery
- System Name: ExampleTeamcenterQuery
- Category: General
- Last Updated: PLM\runnels 3/9/2012 10:16:43 AM

Below these fields are tabs for General, Search, Results, Dataset, and Documentation. The 'Results' tab is active, showing a table with the following data:

Teamcenter Property	Type	Result Value
ID	Teamcenter Property	Tc_ItemId
Revision	Teamcenter Revision Property	Tc_ItemRevision
Name	Teamcenter Property	Tc_ItemName
Description	Teamcenter Property	Tc_ItemDescription
Revision	Teamcenter Revision Property	Tc_ItemRevision

At the bottom of the main workspace, there is an 'Item' section with three dropdown menus:

- Teamcenter Property Type: Teamcenter Revision Property
- Teamcenter Property: Revision
- Rulestream Property: Tc_ItemRevision

The status bar at the bottom shows the following information: BEA, TRI6P006\MSQLSERVER_2008, BEA_Rules_822.

规则编写: Teamcenter 零组件创建/修订

SIEMENS

The screenshot displays the Rulestream ETO Architect application window. The main workspace is titled "Shipset_Layout : ShipSetTeamcenterItem". The interface includes a menu bar (Specification, Edit, View, Tools, Help) and a toolbar. On the left, there is a "Part Family Tree" pane showing the application "BEA_TDD" and a folder "Shipset_Layout". Below it, a "Shipset_Layout : Other" pane lists various items, including "ShipSetTeamcenterItem". The main configuration area has tabs for "General", "Dataset", "Structure", "Workflow", and "Documentation". The "General" tab is active, showing fields for "Spec Name" (ShipSetTeamcenterItem), "System Name" (ShipSetTeamcenterItem), "Category" (General), and "Last Updated" (PLM\runnels 2/27/2012 9:30:06 AM). Below these are sections for "Teamcenter Item Type" (set to "Item"), "Teamcenter Folder" (set to "From Rulestream"), and "Existing Item" (set to "From Property" with "ItemMasterBehavior"). An "Item Mapping" table is also present, mapping Teamcenter properties to Rulestream properties. At the bottom, there are fields for "Item Property" (Name), "Revision Property", and "Rulestream Property" (DisplayName).

	Teamcenter Property	Teamcenter Revision	Rulestream Property
▶	Name		DisplayName
*		Description	ItemDescription

Item
Item Property: Name
Revision Property:
Rulestream Property: DisplayName

规则编写: Teamcenter 数据集创建/修订

SIEMENS

The screenshot displays the Rulestream ETO Architect application window. The interface includes a menu bar (Specification, Edit, View, Tools, Help), a toolbar, and a left-hand pane with a 'Part Family Tree' and a 'Shipset_Layout : Other' section. The main workspace is titled 'Shipset_Layout : ShipSetTeamcenterItem' and contains a 'General' tab with fields for 'Spec Name', 'System Name', 'Category', and 'Last Updated'. Below these is a 'Dataset' tab with a table listing dataset entries.

Type	Name	Description	Enabled	Named Reference
Image	ShipSetThumbnail	Dynamic Thumbnail of Ship ...	GenerateJTImage	ShipSetThumbnailName
MSWordX	Specification Document	Specification Document Gen...	SendSpecificationDocument	Specification.docx

Below the table, the 'Dataset' configuration section is visible, showing settings for 'Dataset Type' (Image), 'Dataset Name' (ShipSetThumbnail), 'Dataset Description' (Dynamic Thumbnail of Ship Set), 'Enabled' (From Property: GenerateJTImage), and 'Named Reference' (From Property: ShipSetThumbnailName).

规则编写:
Teamcenter 零组件结构创建/修订



StructureTest :

Spec Name

System Name

Category

Last Updated

StructureTestItem

StructureTestItem

General

General

Alternate ID

Dataset

Structure

Workflow

Documentation

	BOM Name	Enabled	Reference Part	Item Count	Item ID
▶	BOM1	Structure1Enabled	Structure1	BOMCount	BOMID
*					

Structure

BOM Name

BOM1

Enabled

Never

Always

From Property

Structure1Enabled

...

Referenced Item

Reference

Structure1

...

Item Count

BOMCount

...

Item ID

BOMID

...

规则编写: Teamcenter workflow 设定



WorkflowTest :

Spec Name

System Name

Category

Last Updated

WorkflowTestItem

WorkflowTestItem

General

General

Alternate ID

Dataset

Structure

Workflow

Documentation

	Teamcenter Workflow	Enabled	Process Name	Process Description
▶	TCM Release Process	True		Workflow Test
*				

Workflow

Workflow Template

TCM Release Process

Enabled

☐ Never

☒ Always

☐ From Property

Description

☒ Constant

☐ From Property

Workflow Test

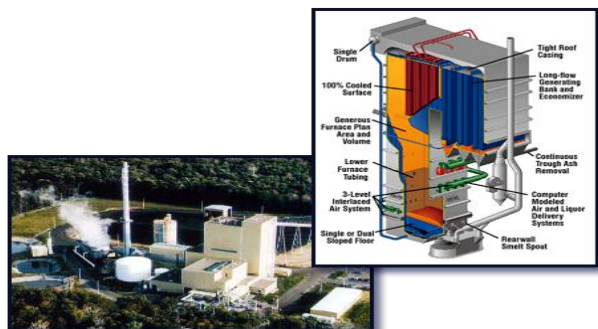
Process Name

☒ Constant

☐ From Property

Rulestream价值

Rulestream可助力ETO企业快速将客户要求规范转换为可盈利的解决方案



Rulestream功能及特点:

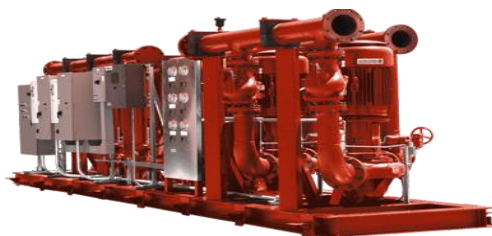
- 捕获和管理ETO产品配置规则
- 自动化生成方案建议书、技术数据、CAD图纸、CAD三维模型、BOMs及作业指导书等
- 开放、可扩展的系统；可与多种主流CAD、PLM及MS Office等软件进行OOTB(开箱即用)集成

Rulestream 可实现:

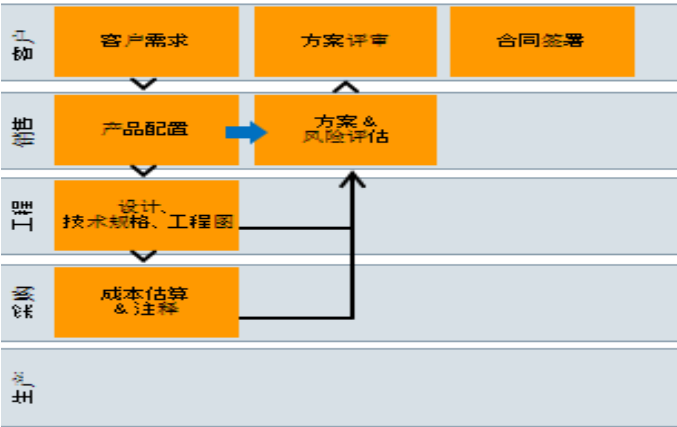
- 更短的订货至交货的时间
- 完整并引人注目的方案建议书
- 快速并精准的工程数据

结果是:

- 更高的赢率及收入
- 保证较多的利润
- 更高的客户满意度



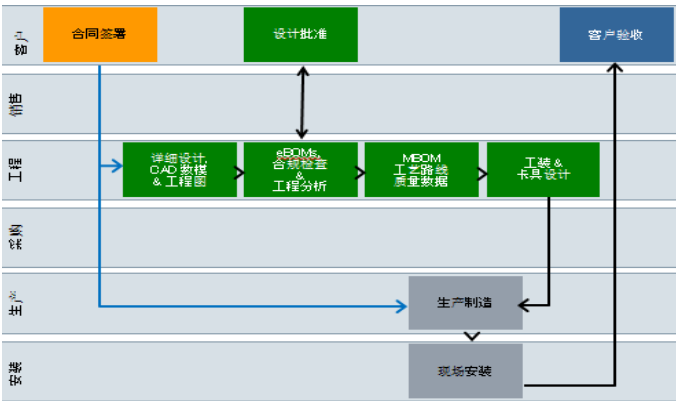
Rulestream价值



订单销售的收益:

- 方案书快速响应
- 更精确的成本估算（包括供应链）
- 更加可控及更高的利润空间
- 更易沟通和一致性的解决方案
- 更高的胜率

Rulestream可对企业顶层及底层产生积极的影响，并能通过运营的改善来产生引人注目的业务。



订单工程设计收益:

- 更短的交货期
- 快速执行工程变更指令(ECOs)
- 更少的错误，减少废料及返工
- 可加灵活的可扩展性
- 更好的知识保留及积累

Agenda



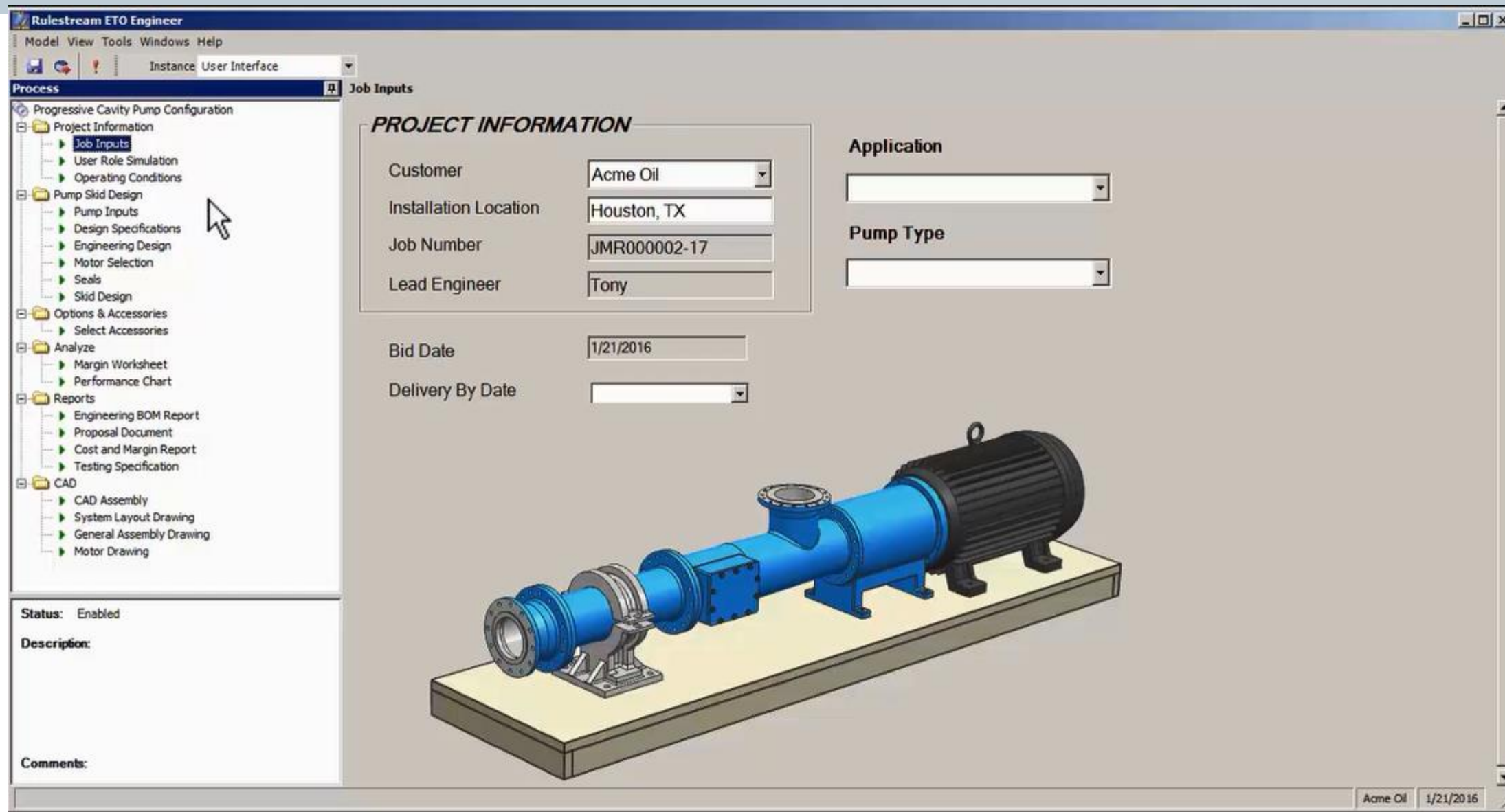
Rulestream ETO简介

Rulestream 解决方案

Rulestream 客户案例介绍

Q&A

Rulestream-Teamcenter 集成演示



部分客户及客户产品

客户示例



SIEMENS

BAKER
HUGHES

NOV
NATIONAL
OILWELL
VARCO



McQuay
International
a member of DAIKIN group

GENERAL MILLS

SPACE SYSTEMS
LORAL



ROBBINS
MYERS

RIELLO

GOODRICH

TLT-BABCOCK
A New York Blower Company

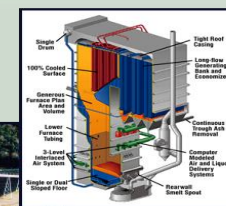
产品示例



HVAC装备



发电设备



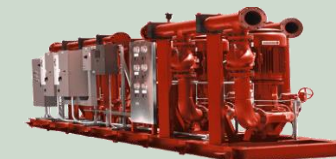
电气开关设备



专用包装



特殊车辆



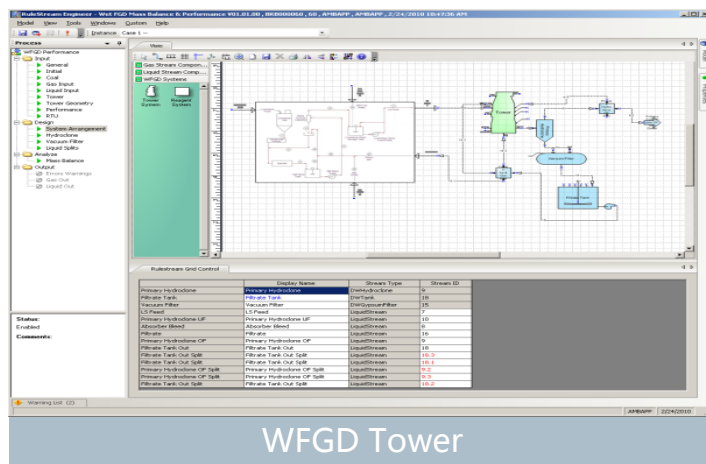
流体流量技术

客户案例: Babcock & Wilcox

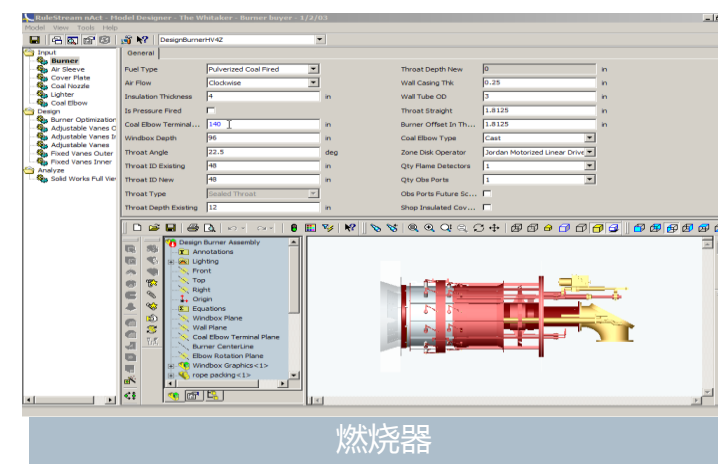
- 目前已部署在12条产品线及工艺线
- **方案上的价值:**
 - 大大减少了设计时间（对于某些产品最高可减少80%的设计时间）
 - 在方案阶段提高设计的精准性
 - 通过减少不确定性，更好的估算成本、进度及评估风险
- **合同上的价值:**
 - 可预见的利润
 - 更少的错误
 - 更多的时间确定分包商（以更少的花费）
- 可扩展性极高的基于规则的平台



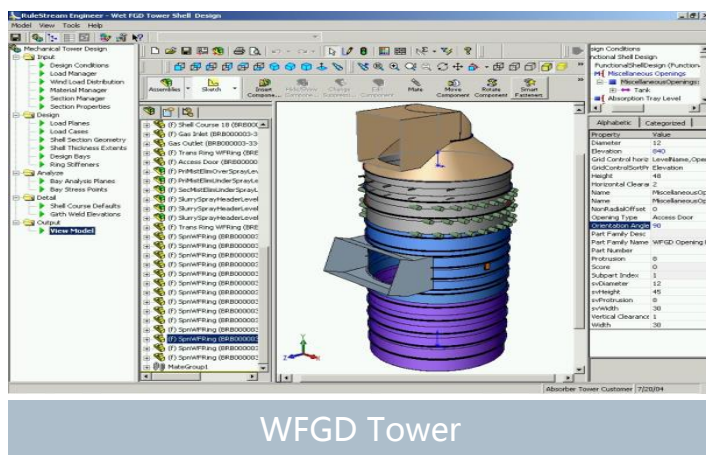
Babcock & Wilcox: 部分产品示例



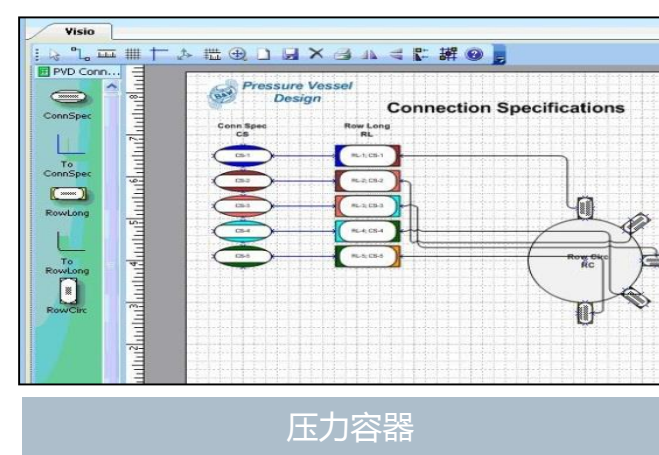
WFGD Tower



燃烧器



WFGD Tower



压力容器

Babcock & Wilcox: 集尘室袋式除尘器

挑战:

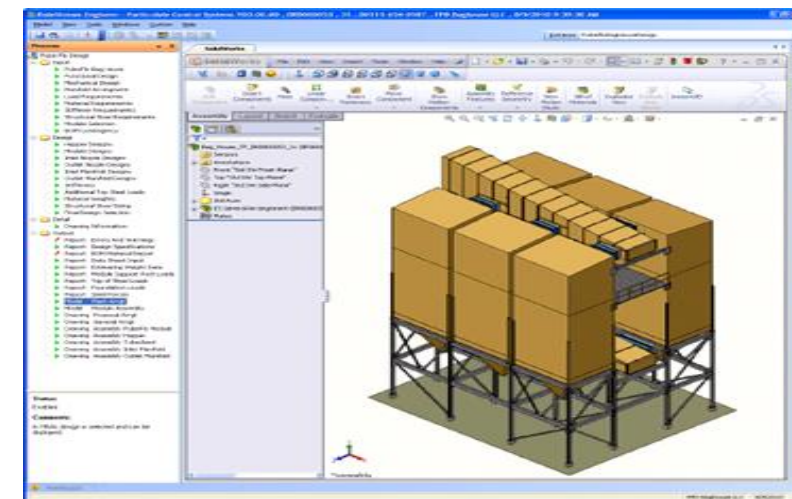
- 高变化程度的工艺及产品 (根据燃料、消除级别及尺寸的不同, 其规格可以有无穷多的变化)
- 由于在方案建议书设计阶段缺乏详细的设计导致成本的不确定性
- 较低利润的产品需要快速的周转时间及短的投标周期

解决方案:

- 将所有的设计规程集成到一个程序中
- 优化模块化程度, 在成本与材料间选择最优的平衡
- 对于关键的供应范围, 提供自动化的物料清单, 从而提高竞价的精确性及快速执行合同

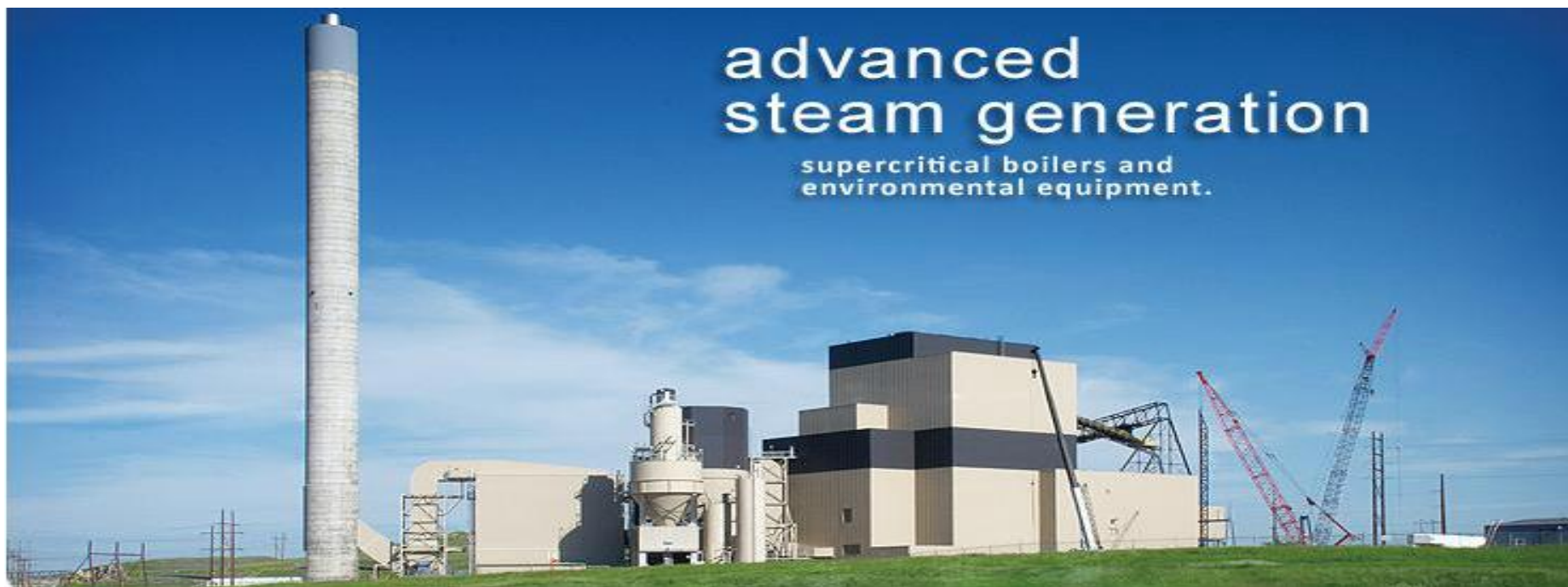
收益:

- 将建议/方案花费时间由原来的一个月降低为一周。
- 极大改善了工作的精确度



Success Story: Babcock & Wilcox Film

客户案例视频: http://www.plm.automation.siemens.com/en_us/about_us/success/customer-videos/energy-utilities-industry.shtml



B&W the babcock & wilcox company

客户案例：Daikin-McQuay

交付可定制化的高效HAVC解决方案是McQuay的竞争优势，这帮助McQuay成为了市场第一的位置。

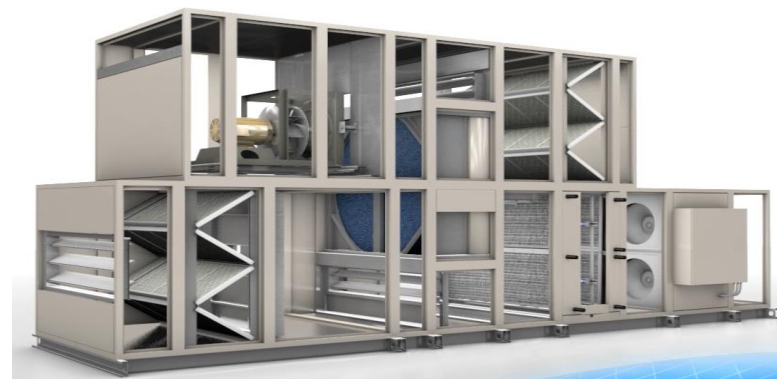
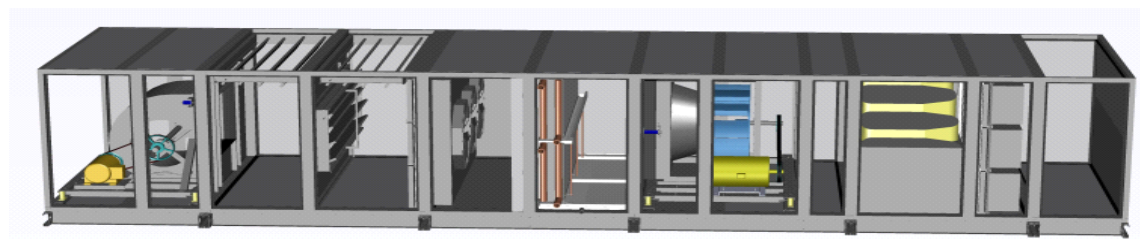


- 原有的自有开发的订单工程设计自动化软件不具备在其ETO所有产品线扩展的能力
- 从业务战略角度看，McQuay需要一个可以扩展至更多订单产品线的ETO平台
- Rulestream使McQuay：
 - 在产品系列中增加定制化层级
 - 执行新的功能，使工程设计变更速度提高5倍
 - 减少50%支持费用
 - 减少88%的工程设计工作量
 - 促使产品更快上市



Daikin-McQuay: 空气处理器自动化

- 变化极高的设计
 - 高和度以2英寸的增量进行变化
 - 长度是不限制的
 - 组件以各种顺序进行配置
- 自动化输出
 - 三维模型
 - 通用装配图
 - 组件图
 - 平面文件
 - BOM
 - 作业指导书
- 多层级自动化
 - 全自动化: 订单设计批处理
 - 半自动化: 批处理+手工设计
 - 基于规则的交互设计工具



Daikin-McQuay: 盘管设计自动化

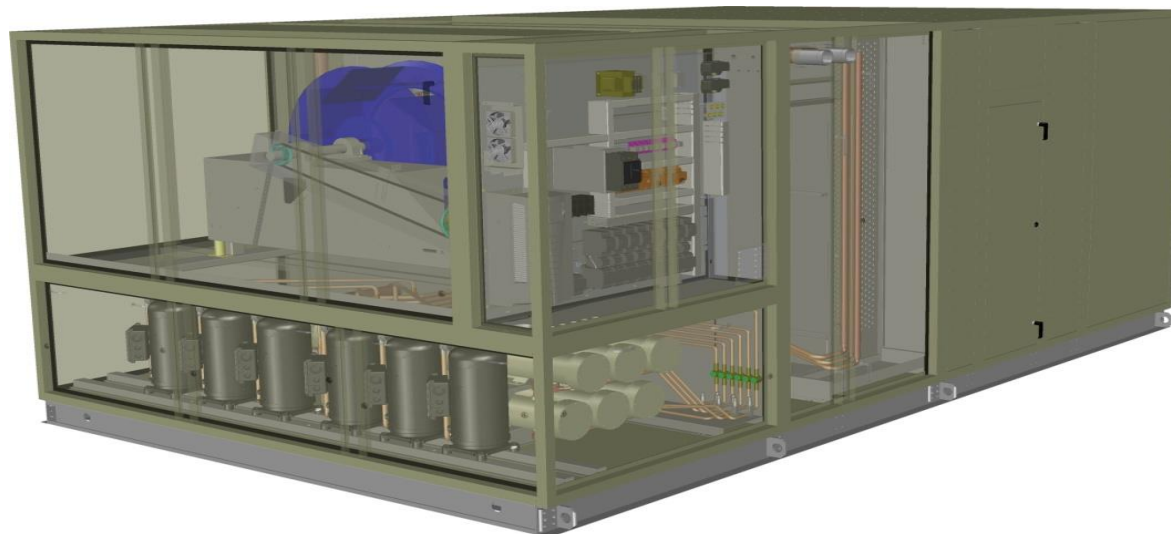
- 支持盘管设计过程
- 捕获并执行盘管设计最佳实践
- 自动化输出：
 - SolidWorks 三维模型及二维图
 - BOM
 - Sheet Metal Flat Files
 - Mfg Routings
- 收益
 - 对于新的空气处理产品，可节约7500人/小时
 - 一致的、可重复的设计过程



Daikin-McQuay: 世贸大厦- McQuay Got the Job!

SIEMENS

- 拥有高度的灵活性使McQuay获得了美国历史上最大的HVAC商业订单
- Rulestream使McQuay在6周内完成了该“新产品”设计，并提供了一致的二维图、BOM、平面文件及三维模型



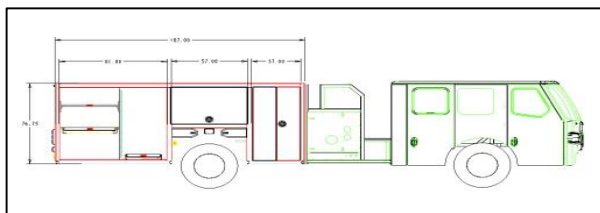
客户案例：E-One

收益：

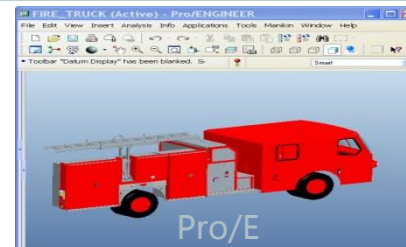
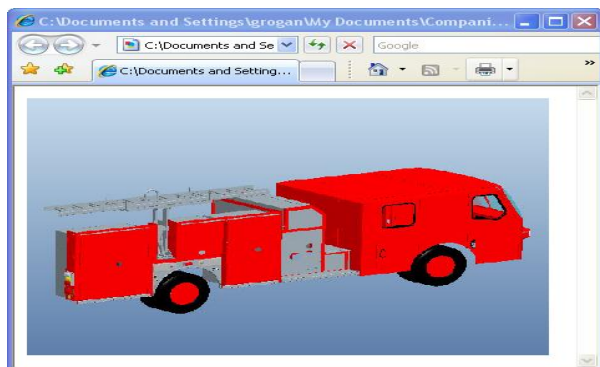
- 增加客户产品定制化
- 降低成本及订单交付期
- 将更多的时间用在产品创新上



投标支持过程



EZ-ONE



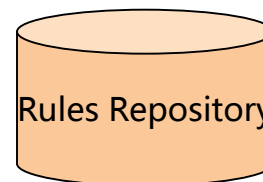
- Sales codes
 - Attributes
-
- ←
- Sales drawings
 - 3D visualizations
 - Weights & Eng. Calcs.
 - Compartment Layouts



Rulestream
Rule Services



Teamcenter

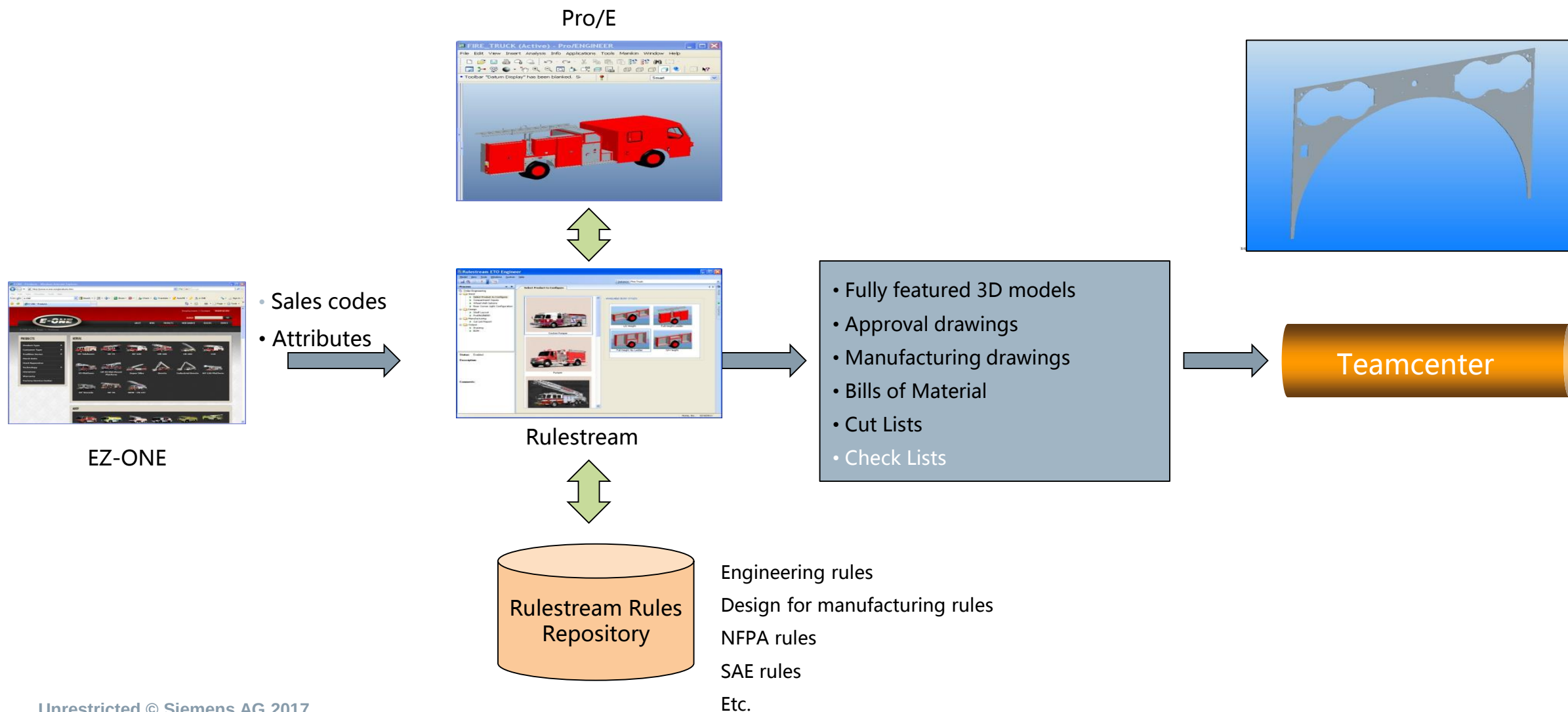


Rules Repository

Engineering rules
Design for manufacturing rules
NFPA rules
SAE rules
Etc.

订单工程设计过程自动化

SIEMENS





XX

Job title

Group / Region / Department XY

Street 123

12345 City

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E-mail:

john.doe@siemens.com

siemens.com