IBM Enterprise Integration Solution

面向服务架构（SOA）及其实践

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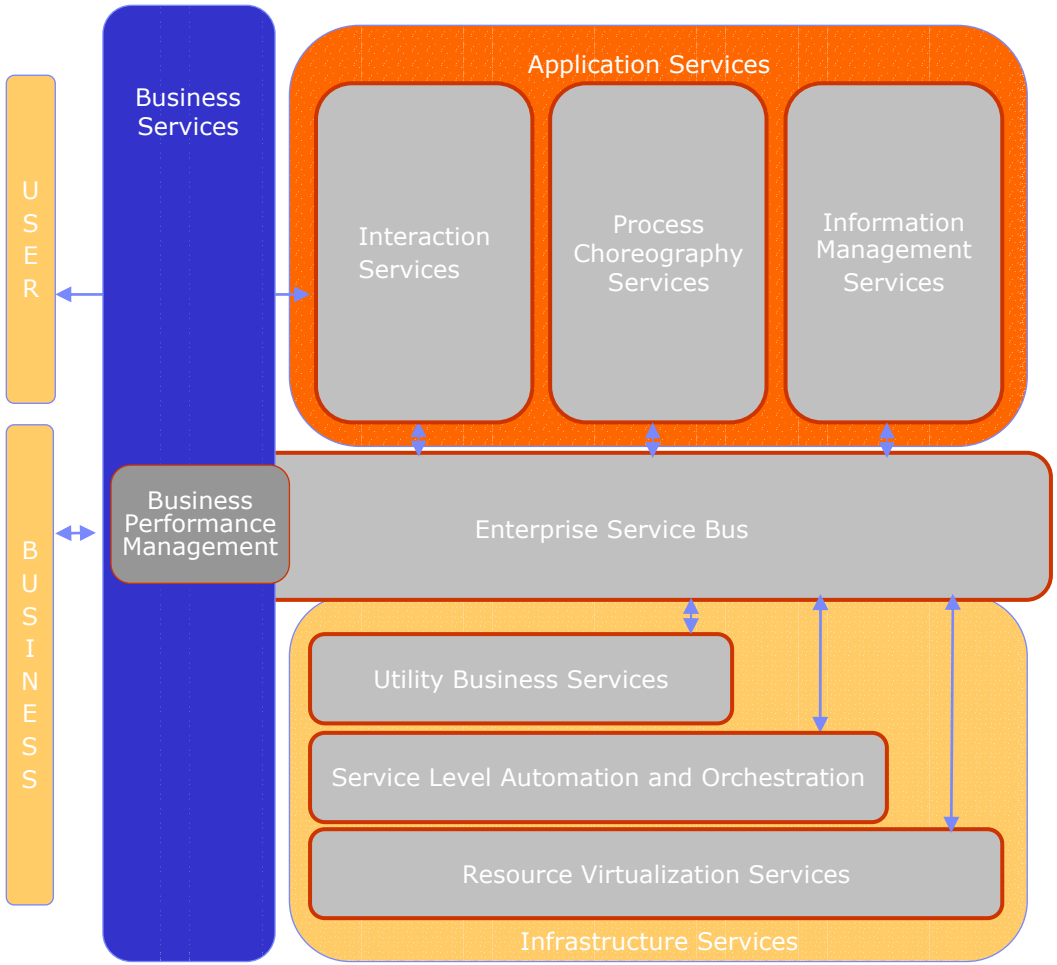
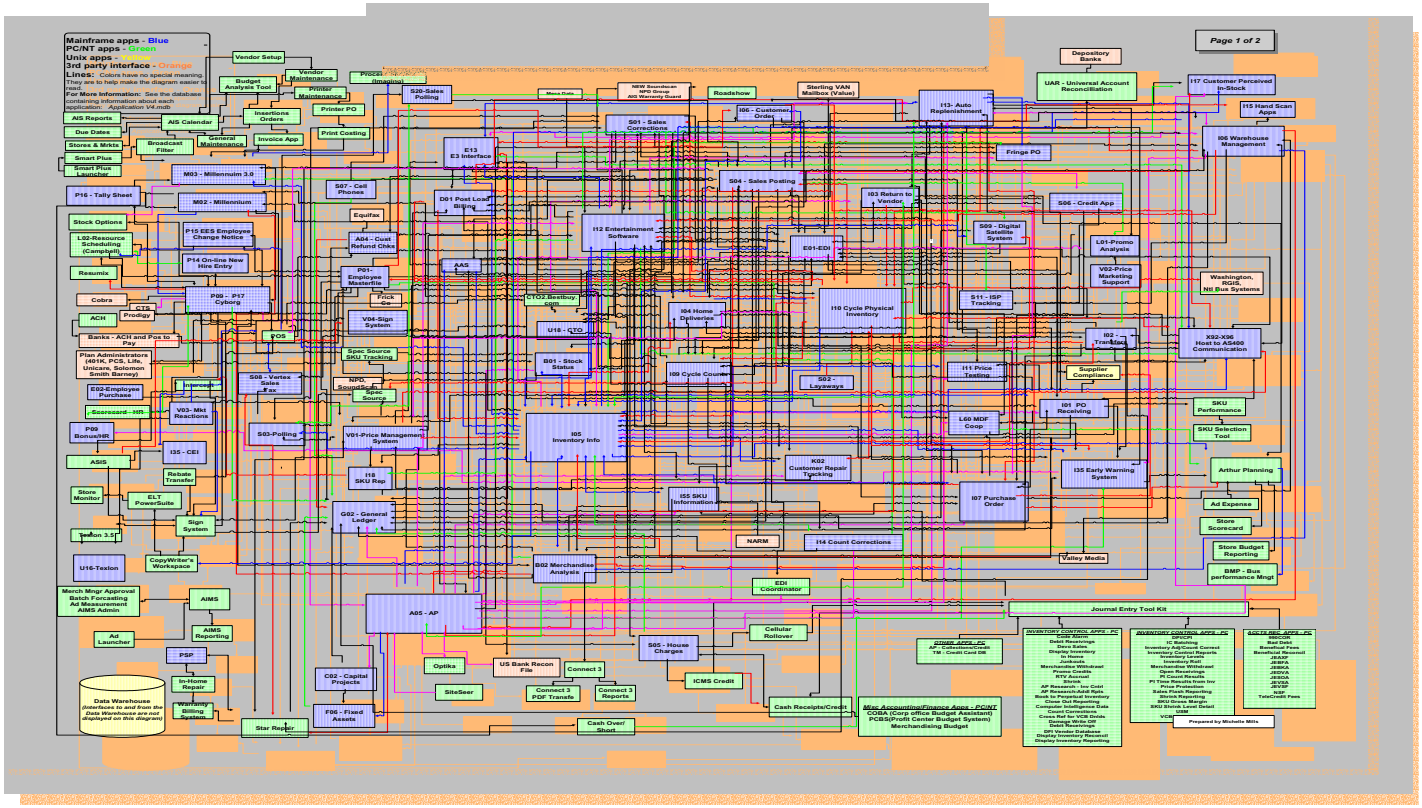
随需应变

一个随需应变的企业，在整个企业内部，在与重要的合作伙伴，供应商和客户之间，它的业务流程是端到端集成的，从而能够对任何客户需求，市场机会，或者外部的威胁快速响应



复杂性迫使我们寻求变化

一家消费电子公司的实际应用体系架构



今天企业所面临的 IT 问题

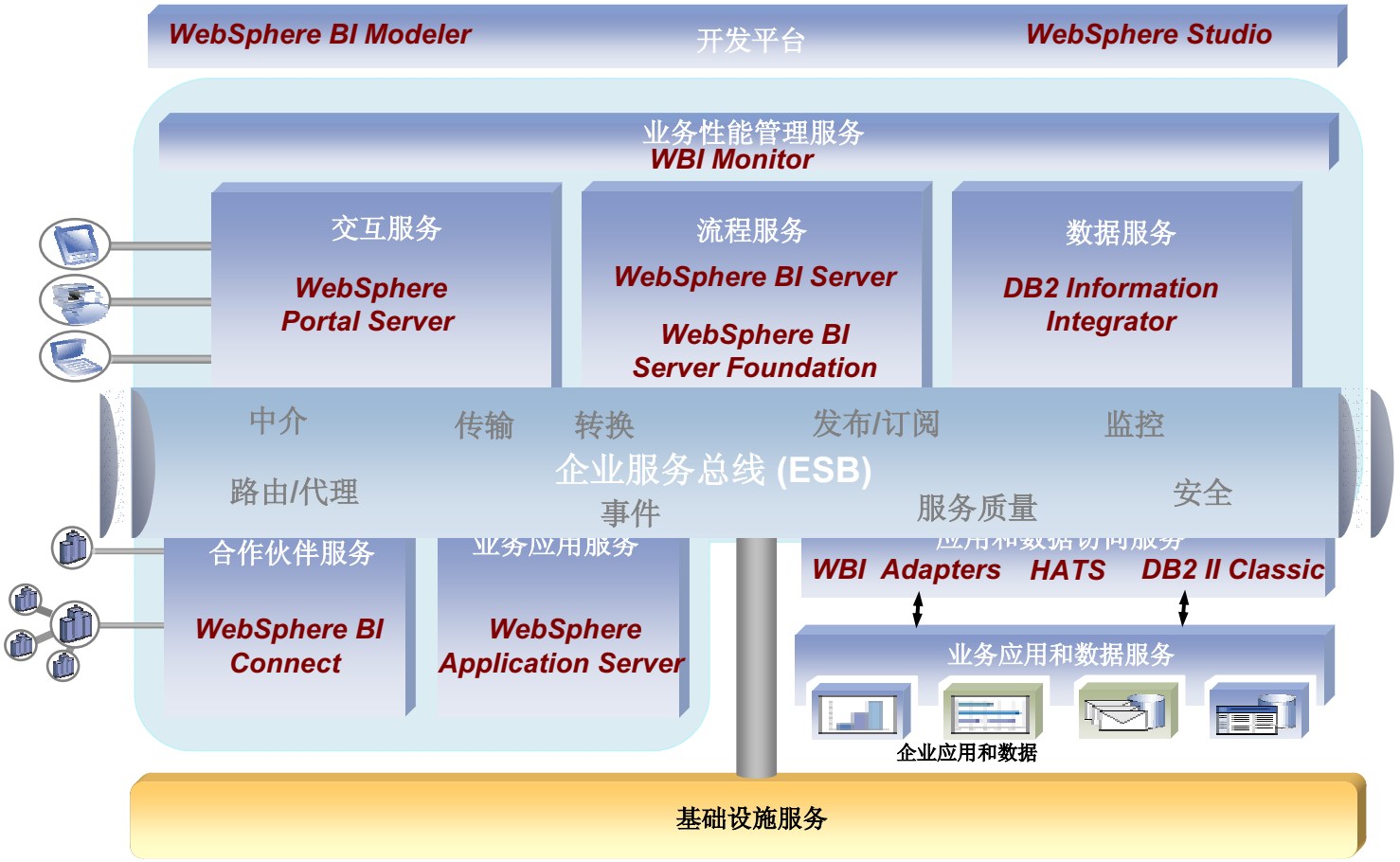
- 降低成本
  - 去除冗余的应用或者系统
  - 重用，而不是重建
  - 简化对技能的要求
- 缩短外部业务流程的周期和降低其成本
  - 自动化与供应商的人工交易
  - 以最少的流程和对 IT 的影响，来支持与业务伙伴之间灵活的合作
- 支持灵活应变的商务模型
  - 市场在持续变化，业务也要跟着变
  - 许多已有的 IT 系统难于变化：复杂，不灵活
  - 已有的集成也难于变化：技术繁杂，点到点的集成， 不灵活的模型
- 在整个企业范围内全面集成 – 端到端
  - 集成历史上分散、孤立的系统
  - 完成合并和收购
  - 跨越系统间物理和技术的边界

面向服务的体系架构（SOA）

是走向敏捷商务的必由之路

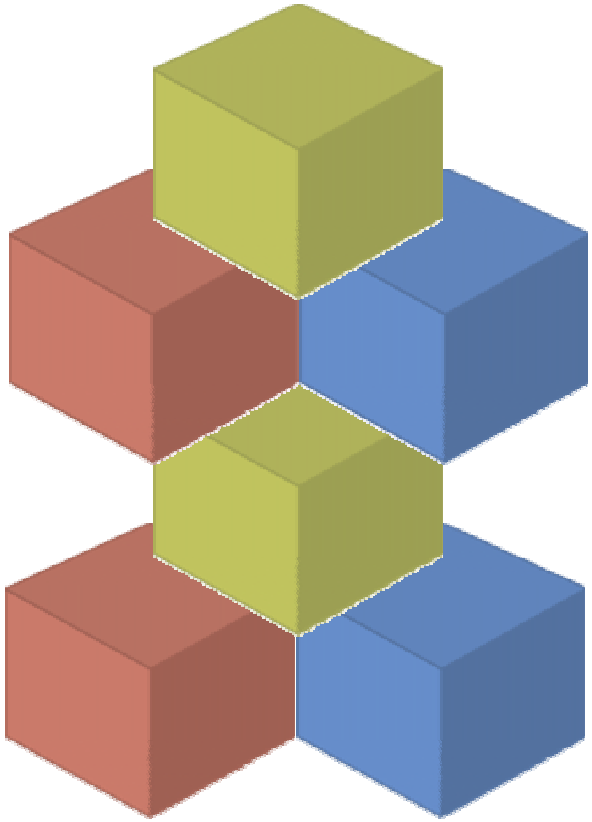
商务模型的灵活性需要 IT 体系架构的支持和协作

SOA conceptual architecture



什么是面向服务的体系架构?

- 一种构造分布式系统的方法，它将应用的功能以服务提供给最终用户应用或其他服务
- 它定义了:
  - 一个体系架构，利用开放标准将软件资产化为服务
  - 提供了标准的方法来表示软件资产及其交互
  - 单独的软件资产变成构造单元，被重复使用来开发其他应用
  - 将关注点从实现细节转移到应用组装
  - 在外部使用来整合企业外部的应用

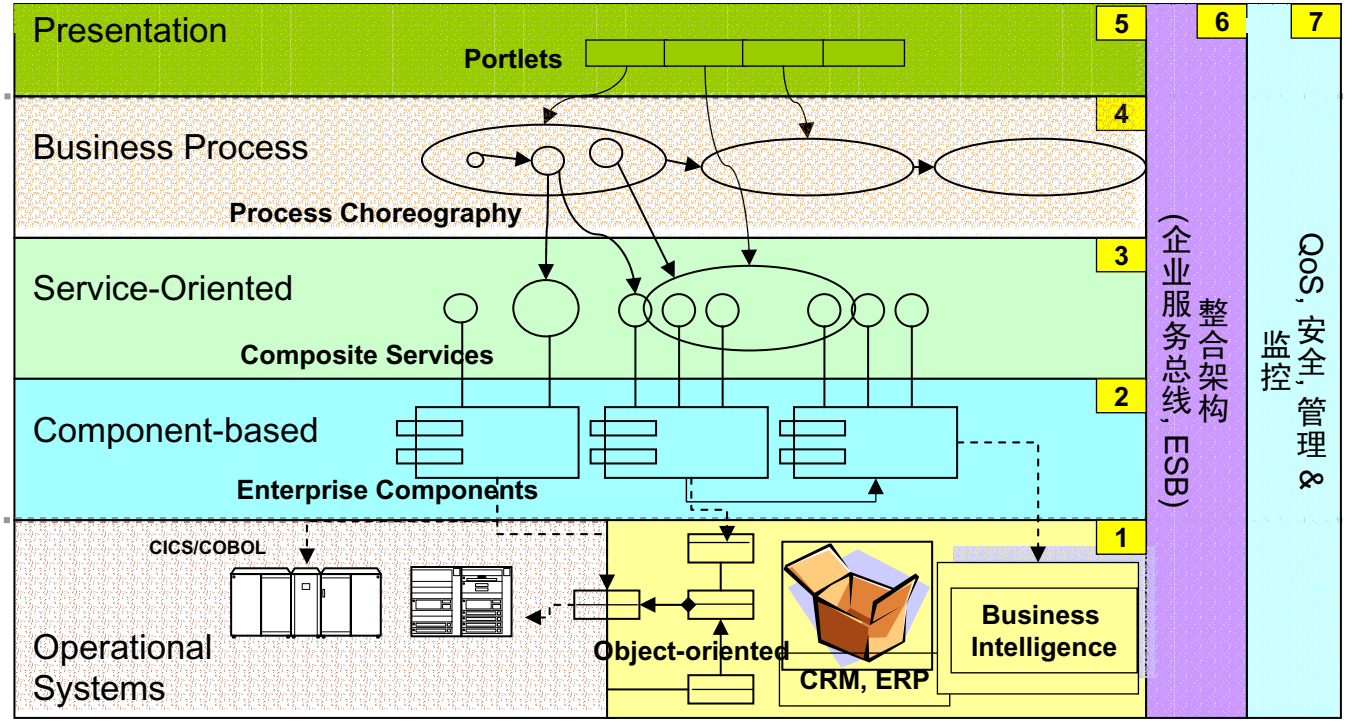


分层的体系架构

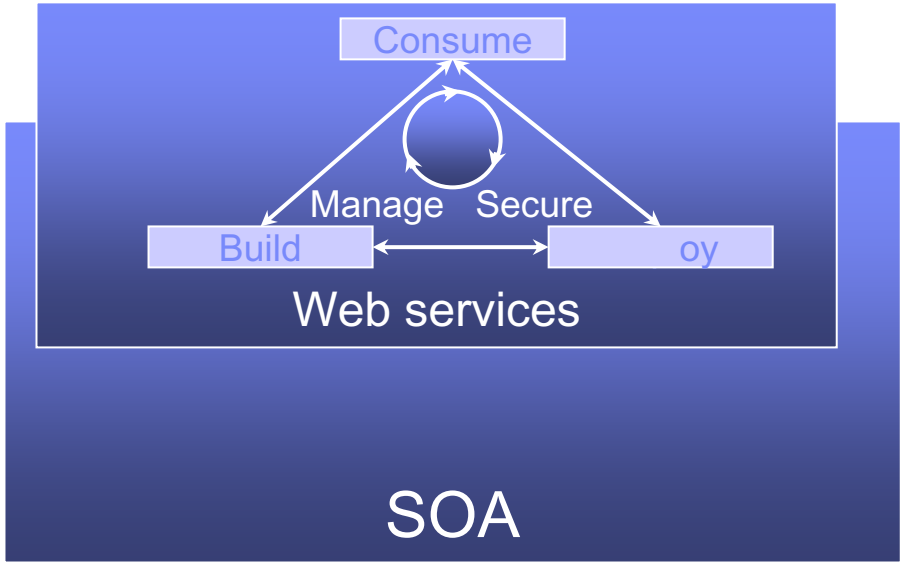
表示层

面向服务的应用

数据



SOA和Web服务



Web 服务是目前最好的实现 SOA的技术, 但是 WS ≠ SOA

面向服务体系架构的价值

- 建造一次，重复使用
  - 一个地方的改变只影响自己
  - 更低的开发、运行和维护成本
- 基于标准的契约（接口）
  - 松散耦合，所以服务请求者和服务提供者可以各自独立地演变
  - 在应用和企业级，整合被清晰地定义，因此更好理解
- 少量而共同认可的粗粒度交互
  - 将“封装”从“对象”的粒度提高到企业服务的粒度
  - 简化的、相互同意的、清晰定义的数据和流程和接口 – 在应用和企业级别
  - 系统的独立性
  - 变化和复杂性的管理压力减轻
  - 容易封装成为更大的流程模型

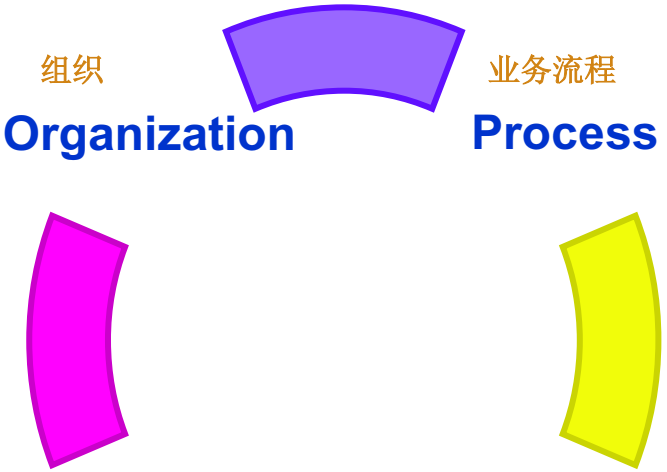
SOA 转型的目标

- 通过组装的方式开发
- 利用第三方的组件
- 重用组件
- 在企业范围内整理应用：去除冗余和重复，合并相似（近）应用，转型老旧系统
- 整理企业基础架构，如建立集成基础设施(ESB)，统一安全管理，统一数据模型等
- 快速响应新的机会和威胁
- 自动化跨业务单位的业务流程，自动化与业务合作伙伴的流程
- 让业务流程随需应变、实时响应
- 支持多通道访问
- 从客户/服务器方式转移到基于服务器的集中方式

达成一个成功的面向服务系统架构需要四方面工作相互配合

服务监管
Service Governance

- Who should monitor, define, and authorize changes to existing services within an enterprise?
- Approaches
  - Central Governance – Governing body has representation from each service domain and from subject matter experts who can speak to the key technological components of the solution. The central governing body reviews addition and deletion of services, as well as changes to existing services, before authorizing their implementations
  - Distributed Governance – Each business unit has control over how it provides the services within its own organization. Requires a functional service domain approach. A central committee can provide guidelines and standards.



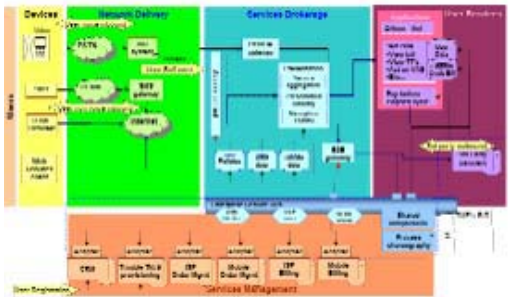
业务组件化建模
Telco Business Process Framework & Information Model

- NGOSS,
- eTOM & SID

See www.tmforum.org search document # GB921

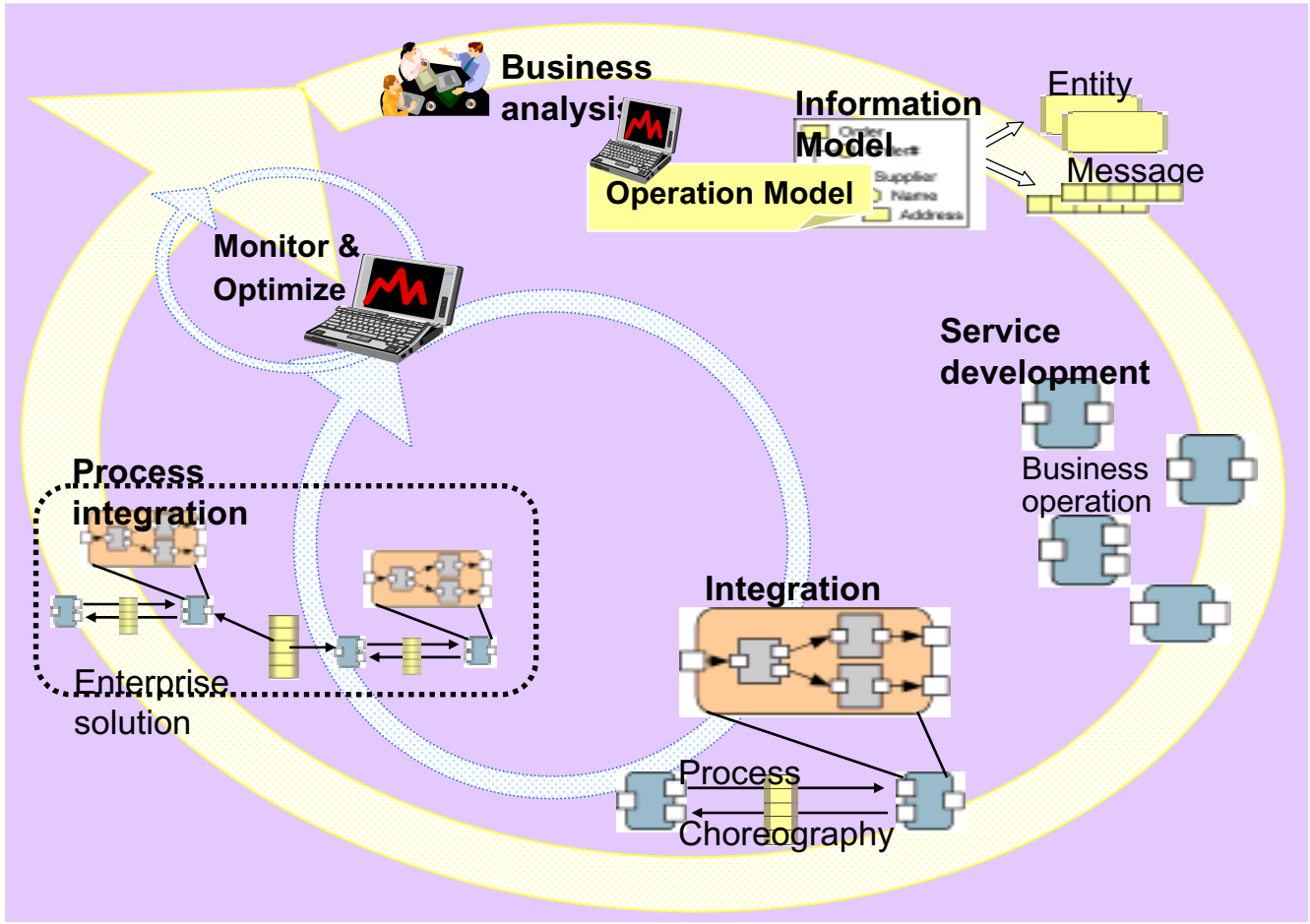
行业结构
Solution Framework:

- Best practices, technology components implementation (adapters, models, etc)



架构建模
Reference Integration middleware Architecture

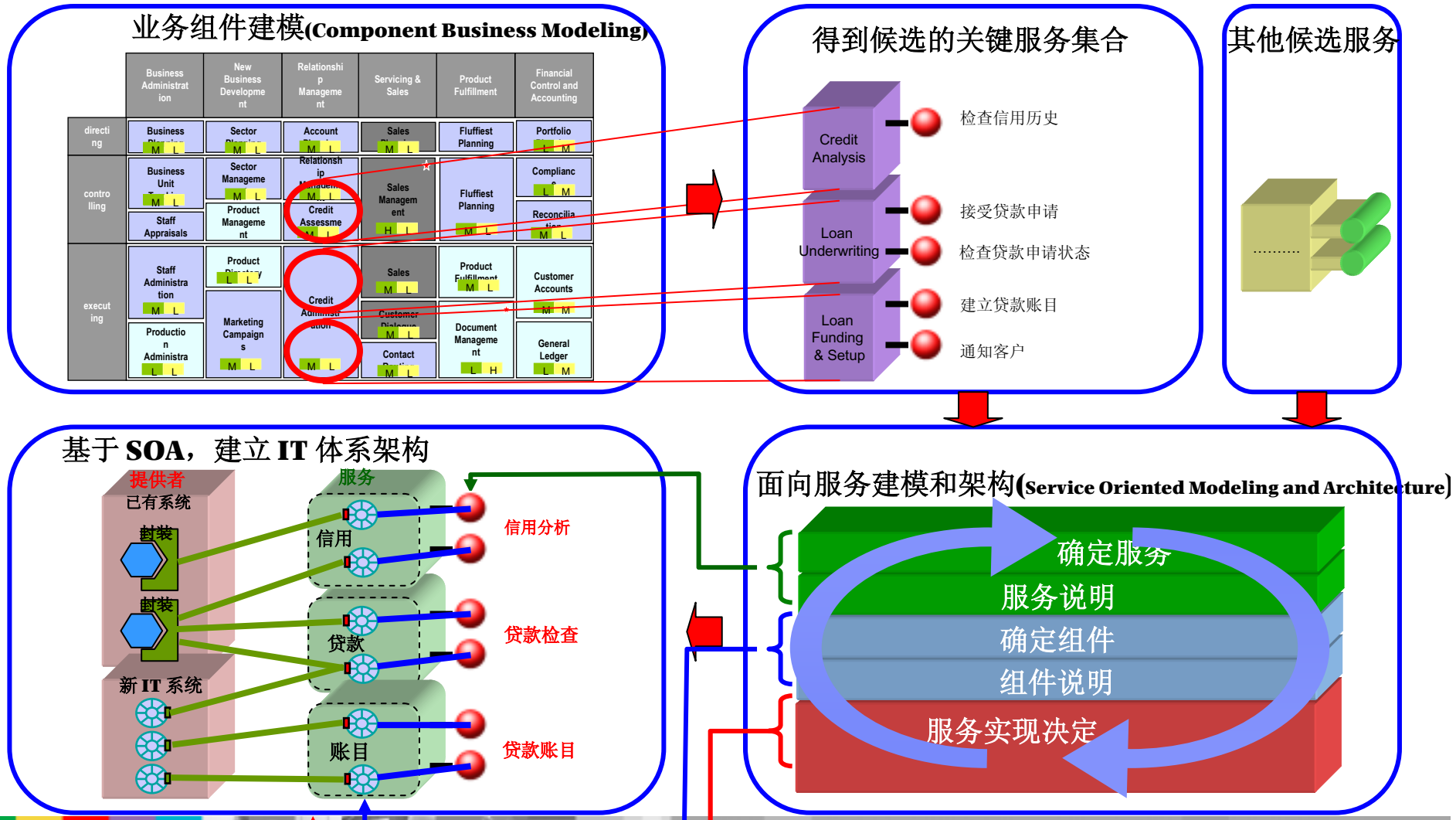
业务驱动开发



业务组件化建模 -- 一个组织的企业体系结构

<table>
<tr><th></th><th>业务管理</th><th>新业务开发</th><th>关系管理</th><th>服务和销售</th><th>产品提供</th><th>财会</th></tr>
<tr><td>战略</td><td>Business Planning</td><td>Sector Planning</td><td>Account Planning</td><td>Sales Planning</td><td>Fulfillment Planning</td><td>Portfolio Planning</td></tr>
<tr><td rowspan="2">管理</td><td>Business Unit Tracking</td><td>Sector Management</td><td>Relationship Management</td><td rowspan="2">Sales Management</td><td rowspan="2">Fulfillment Planning</td><td rowspan="2">Compliance Reconciliation</td></tr>
<tr><td>Staff Appraisals</td><td>Product Management</td><td>Credit Assessment</td></tr>
<tr><td rowspan="3">执行</td><td>Staff Administration</td><td>Product Directory</td><td rowspan="3">Credit Administration</td><td>Sales</td><td>Product Fulfillment</td><td>Customer Accounts</td></tr>
<tr><td rowspan="2">Product Administration</td><td rowspan="2">Marketing Campaigns</td><td>Customer Dialog</td><td rowspan="2">Document Management</td><td rowspan="2">总分类账目</td></tr>
<tr><td>Contact Routing</td></tr>
</table>

如何建立一个基于 SOA 的 IT 体系架构



开发模式

- 三种主要的开发模式
  - 自顶向下
  - 自底向上
  - 中间相遇
- 开发 SOA 时，三种可以同时使用
  - 自顶向下 – 开发新服务，需求很清楚
  - 自底向上 – 整合遗留系统和第三方应用，形成新的服务
  - 中间相遇 – 遗留系统, 第三方应用和新应用都有 – 但是需要整合它们的操作的服务

强大的本地支持

CMP
United Business Media

CMP's TechWeb
The Business Technology Network

search wst
Go
Advanced Search

news and analysis
The IT Wire
In Depth
Current Issue
Back Issues
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Wall Street & Technology's SUPPLEMENT

IBM Opens Four SOA Design Centers

Date: ? 21, 2004
Publication: WST

IBM this week announced the formation of four SOA Design Centers to help enterprises develop advanced IT infrastructures based upon a service-oriented architecture (SOA).

An SOA is a collection of business processes that rely on reusable standard interfaces to integrate applications. Formerly called a "distributed objects" architecture, the SOA term was coined at the turn of the century as Web services were evolving. CORBA and DCOM are examples of earlier SOAs, which are intended to make companies more agile and adept at handling rapid changes in business climates.

The new SOA design centers are located in Austin, Beijing, Delhi, and Hursley (England), and were developed as resources to help companies use IBM software as the foundation of enterprise-wide SOA

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中国 SOA 设计中心

使命

- 开发可重用的 SOA 资产 – 提供给 IBM 咨询部门或者软件部
  - 解决方案模板
  - 产品或解决方案中可重用的组件
- 提供富有经验的工程师，参与建设世界各地客户的 SOA 解决方案；为本地客户提供 SOA 相关的咨询和解决方案
- 将客户的需求反馈回产品

我们提供的服务

- **Project Definition Workshop (项目分析研讨会)**
  - 1 – 2 周
  - 确立转型点和策略
- **Architecture Workshop (体系架构研讨会)**
  - 1 – 3 月
  - 为高优先级的转型点开发高层架构
- **Proof of Concept Prototype (POC原型)**
  - 1 – 3 月
  - 实证架构的可行性
- **e-Business Development (电子商务的开发)**
  - 6 – 8 月
  - 和IGS/ISSW合作开发电子商务应用

SOA 设计中心工作简介

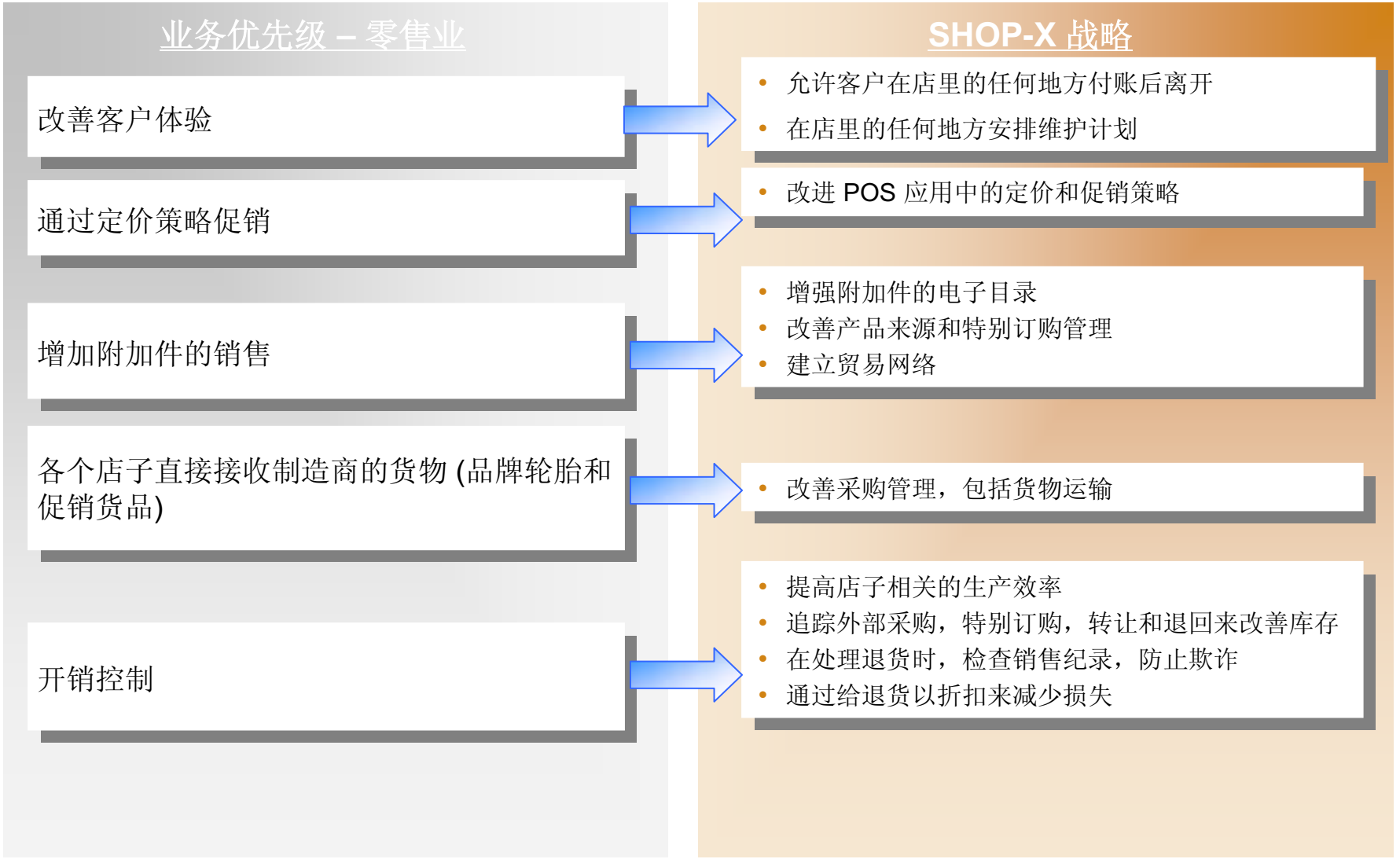
- 国际客户 SOA 解决方案的实证和实施
  - **Pep Boys**
  - **Office Depot**
  - **eBay**
  - **AOL**
  - **Vattenfall**
- 可重用资产开发
  - **Web Services Templates**
  - 已经可以在 **Rational Software Architect** 中使用
  - **SOA Workbench (2005)**
- 大中华客户
  - 某远洋运输公司
  - 某大型航空旅游业服务提供商
  - 某电力公司
  - 更多!

Pep Boys 两类主要的业务功能
- Point Of Sales (POS), Service Work Order (SWO)

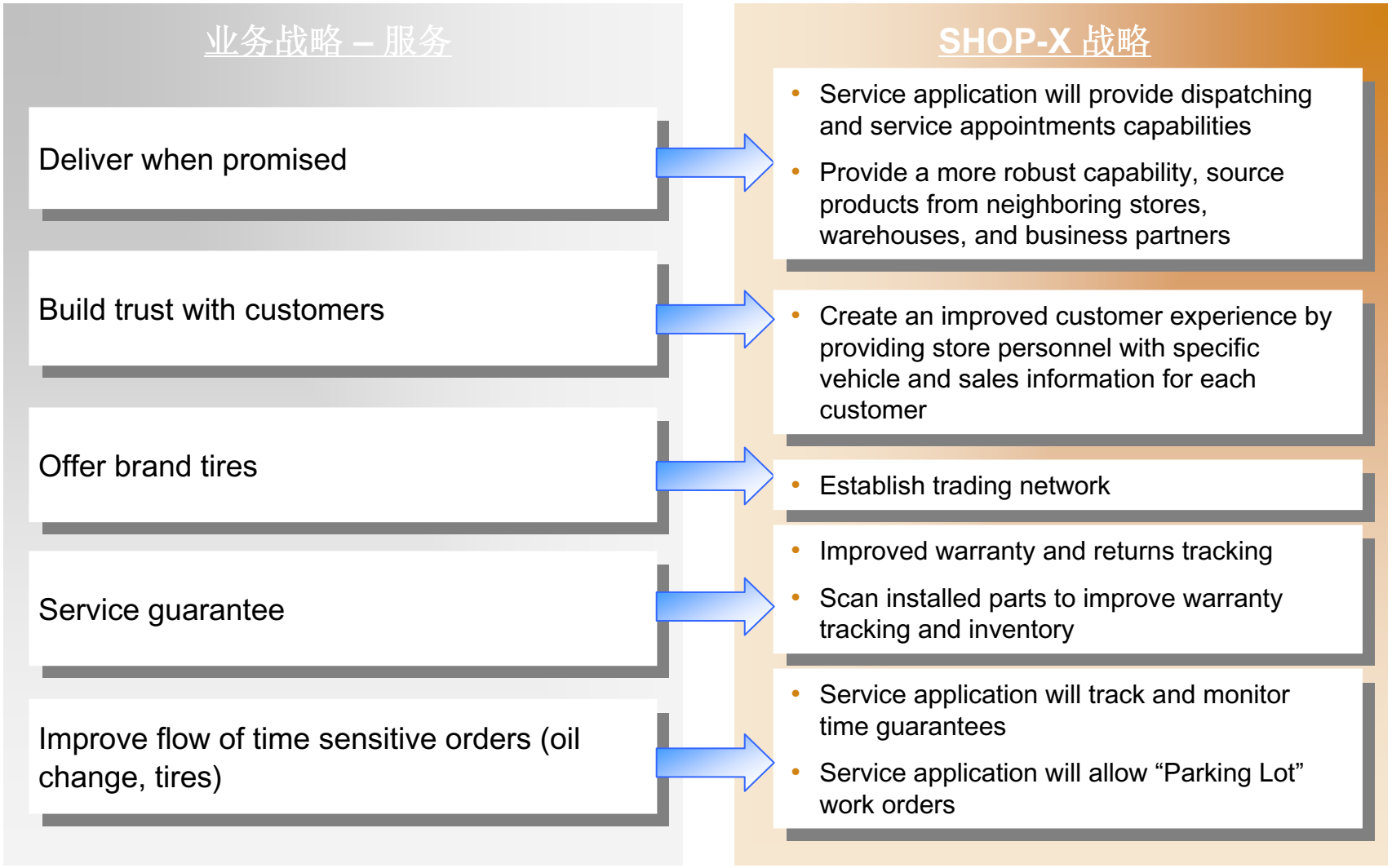
(POS)
Retail Stores
600 → 1000+

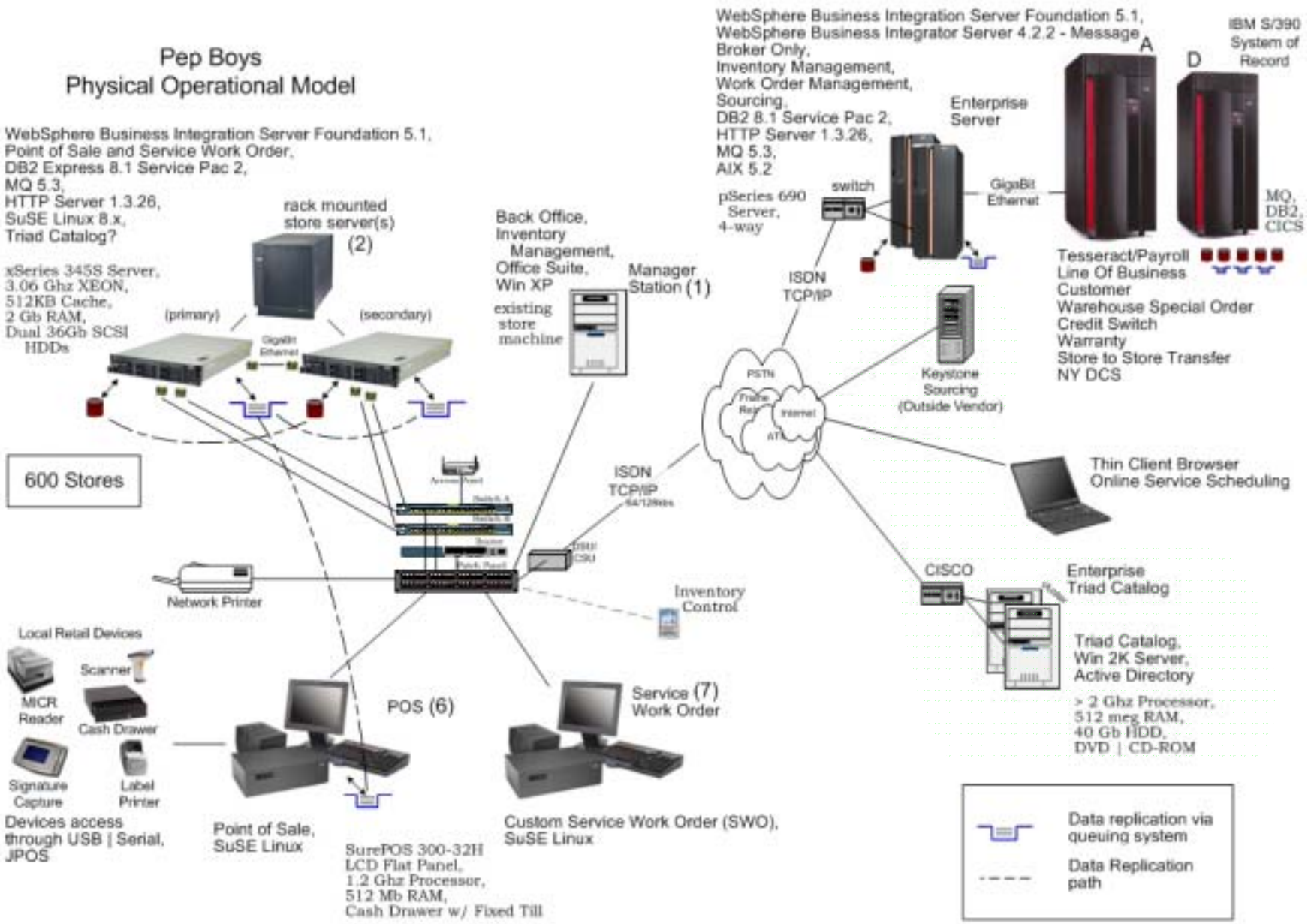
(SWO)
Service Bays
6000→ 22000

在零售行业背景下，根据业务优先级调整战略

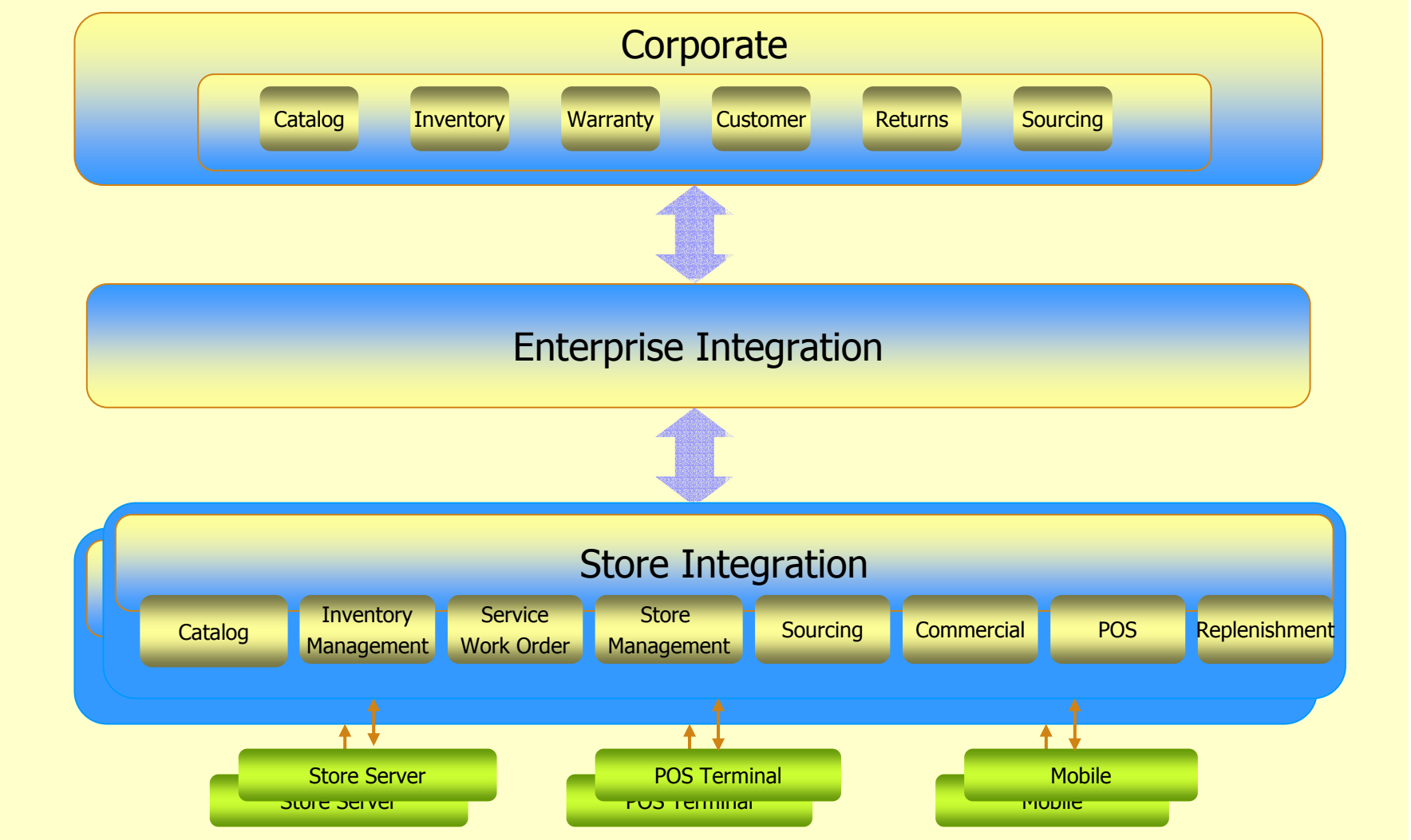


战略、业务优先级，和服务

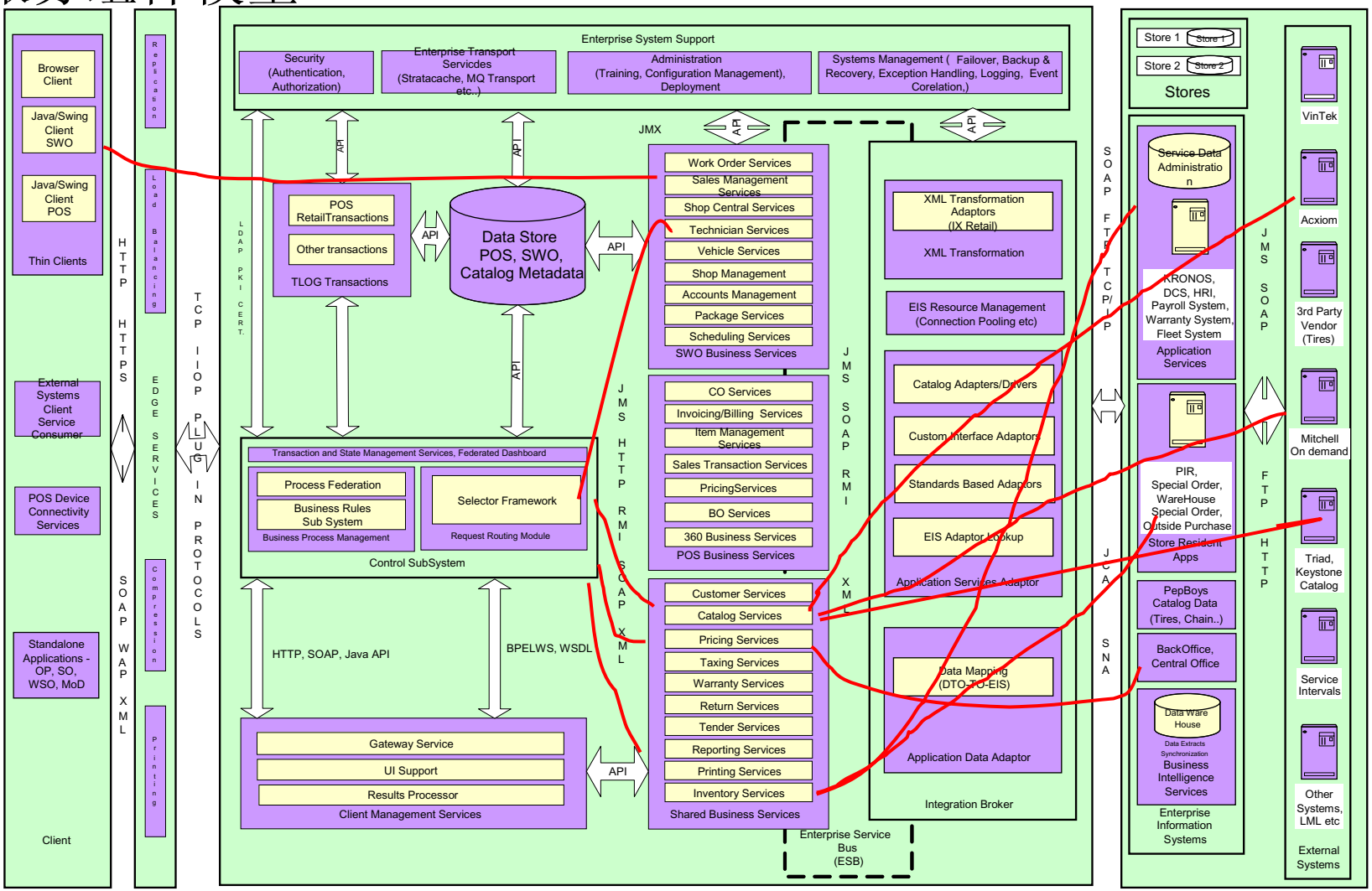




Pep Boys' 系统概念图



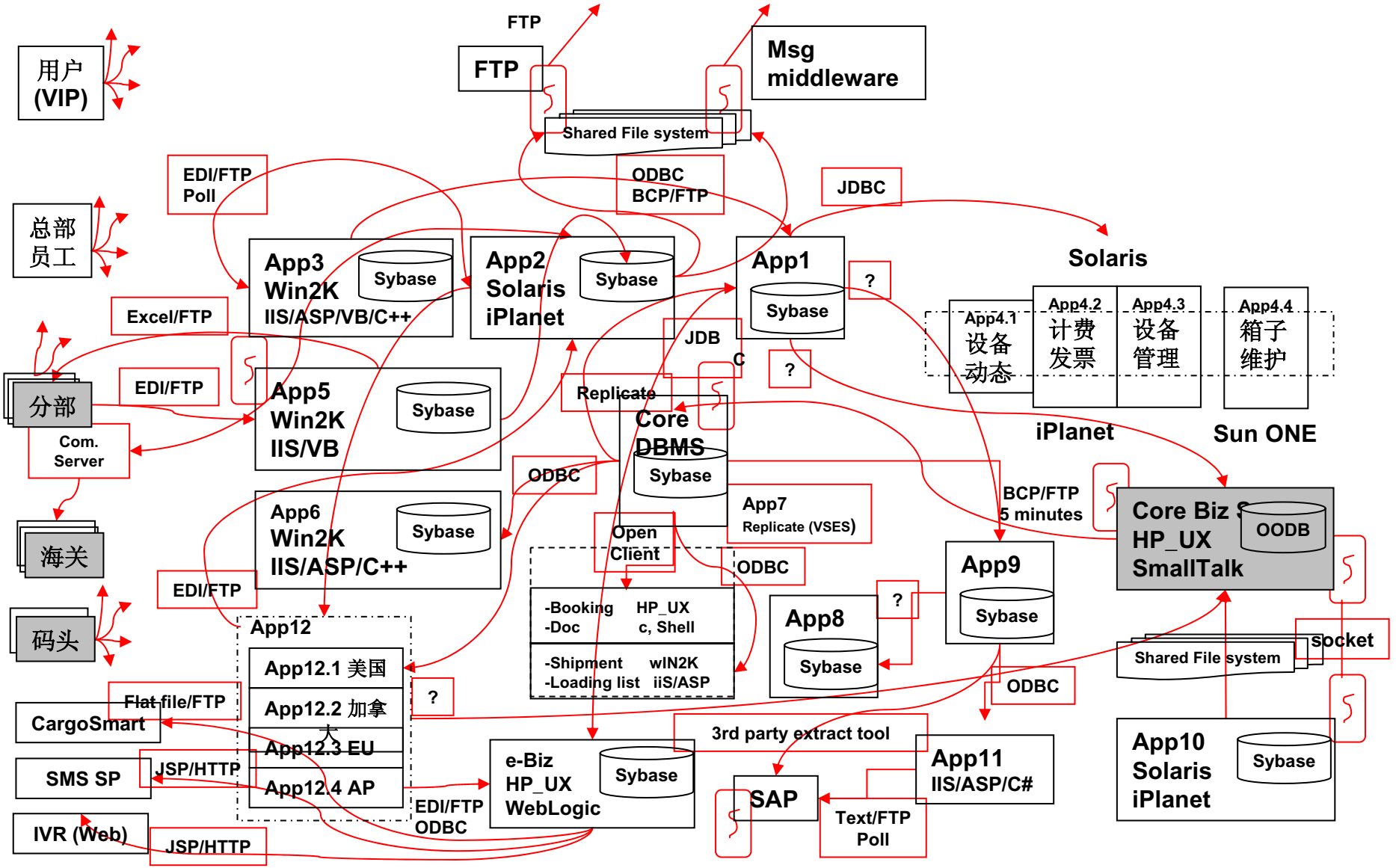
服务组件模型



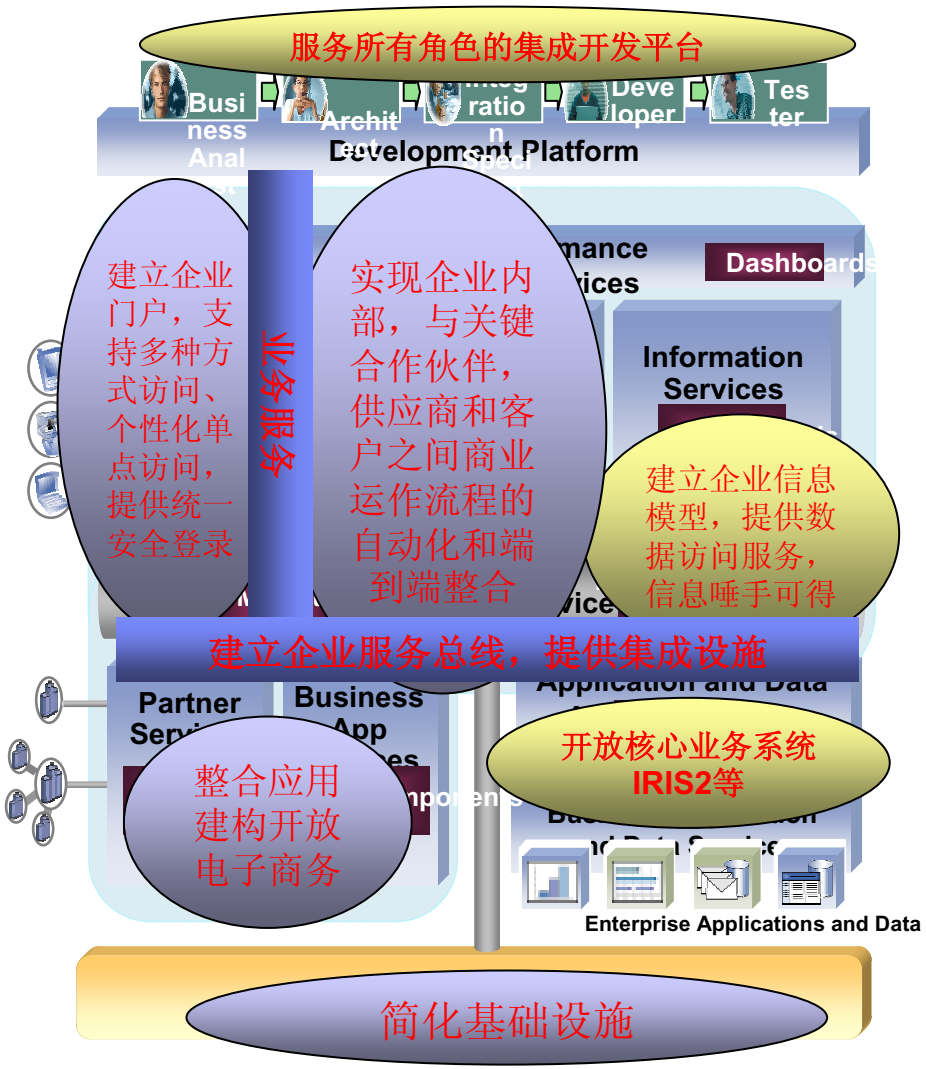
Client Tier　　Middle Tier　　Resource Tier

Store

某远洋运输企业的现状

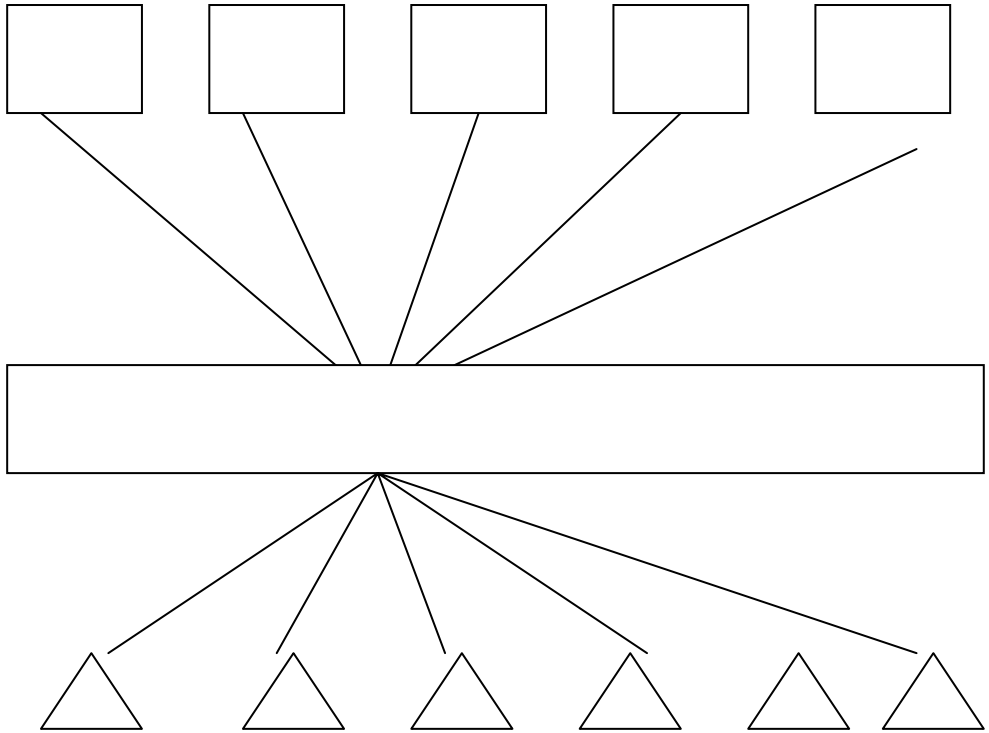


目标远景



将细粒度的功能组装成粗粒度的服务

业务流程分析
业务用例



映射和组装

功能分析
系统用例

将细粒度的功能组装成粗粒度的服务（续）

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Business Usecase / Usecases		Vessel Schedule BUC1	booking Request BUC2	Booking Confirmation BUC3	Container Status(C1) BUC4	Pre-Declare（C3） BUC5	B/L Upload(C4) BUC6	Bill Comfirmation BUC7	Loading and BUC8	General Bayplan BUC9	IB/OB Custom Manifest BUC10	IB/OB Terminal Manifest BUC11	Rail invoice BUC12
2	(A) Business Part - Use Case List													
3	(A1) Extract Data	(A1.1) Extract Manifest Data					*		*	*	*	*	*	
4		(A1.2) Extract Vessel Schedule Data	*											
5		(A1.3) Extract Booking Data			*		*							
6		(A1.4) Extract Invoice Data												
7		(A1.5) Extract Dynamic Data												
8		(A1.6) Extract Amendment Manifest												
9		(A1.7) Extract Terminal Release info										*	*	
10		(A1.8) Extract Loading&Discharging Instruction Data												
11	(A2)Business Data Query	(A2.1) Manifest Query					*			*		*	*	
12		(A2.2) Bay Plan Data Query												
13		(A2.3) Vessel Schedule Data Query	*											
14	(A3) Reply Query	(A3.1) Msg Reply Query										*		
15		(A3.2) B/L Reply Query										*		
16	(A4) Business Data Preview	Preview	*				*		*	*		*	*	
17	(A5) ReceiveData	(A5.1) Receive Manifest Data					*			*		*	*	
18		(A5.2) Receive Bay Plan Data												
19		(A5.3) Receive Vessel Schedule Data	*											
20	(A6) Generate Msg	(A6.1) Generate Msg	*		*		*	*	*	*	*	*	*	
21	(A7) Send Msg	(A7.1) EDI Message Send		*			*			*		*	*	
22		(A7.2) FTP Send	*	*	*	*	*	*	*	*	*	*	*	*
23		(A7.3) Http Download	*	*	*	*	*	*	*	*	*	*	*	*
24		(A7.4) Email Send												
25		(A7.5) Email Notification					*					*	*	

某港口出口船图流程执行示例