

# 企业IT总体架构的现状及在中国的展望

## Enterprise Architecture – International & China Exploration

首席总体架构师：赵捷

Chief Enterprise Architect: Jie Zhao (Jay)

# 总体架构－广义定义

- ◆ 桥梁

- ◆ 蓝图

- ◆ 建筑结构

- ◆ 国际IT总体架构现状

- ◆ Enterprise Architecture Intentions

- ◆ Enterprise Architecture Tool and Business Alignment

- ◆ Enterprise Architecture Business Acquisition Support

- ◆ Enterprise Operation Risk Management

# 总体结构？ Enterprise Architect ？

## ◆ 总体结构的定义 Enterprise Architecture Definition

- ▶ 总体架构是在流程，技术及公司接口（业务、IT）标准化上的投资，改善企业的综合竞争能力，最有效是在IT发展和运行上的投资。
- ▶ 目标是要选择和实施最具最佳投资回报比的在标准化，过程，技术和企业接口方面的投资以支持企业的商业目标。
- ▶ 总体架构是计划未来的架构。

# CIO 的挑战s (全世界的共同课题)

## ◆ 企业及股东的问询

- ▶ IT的投资回报？
- ▶ 主体项目的建设？
- ▶ IT是企业资本陷阱还是企业动力，杠杆？

## ◆ IT 自身的挑战

- ▶ 向哪一个方向前进？任何实施IT战略规划？
- ▶ 什么技术？为什么是这个技术（产品）而不是其它的？
- ▶ 谁决定和为什么决定？
- ▶ 商业需要如何被满足？
- ▶ 与事业部门的协调与接口？如何改进企业运作流程？
- ▶ 是否取得了最佳的方案？
- ▶ 需要什么样的管理团队？骨干，业务培训，对外交流？
- ▶ 如何对股东与企业主管展示IT成就并持续得到最高的支持和合理的资金？
- ▶ 如何规避或者消除由IT引入的企业风险？

## ◆ 市场与环境的挑战

- ▶ 我们的IT在本行业，在地区与国际上的水平？
- ▶ IT的市场竞争？外包及协作？
- ▶ 如何合作与竞争并存？

# 架构范围 Architecture Scope

## 总体架构

# ARCHITECTURE

商业架构 Business Architecture  
信息架构 Information Architecture  
应用架构 Application Portfolio  
技术架构 Technology Architecture

上游 Upstream 下游 Downstream

### 商业战略规划

Business Strategy Planning

商业环境 Environmental Forces

经营目标 Business Goals

商业政策 Business Policy

资源分配 Resource Allocation

### 商业战略实施

Implementation

商业流程 Business Processes

应用系统 Application Systems

技术架构 Tech Infrastructure

组织架构 Organizational Structure

# IT总体架构－内涵和范畴

## ◆ 总体管理架构

- ▶ IT战略规划
- ▶ IT政策，原则，指导纲要，与管理流程
- ▶ IT资产，技术管理，供应商管理
- ▶ IT技术元素和工程模型

## ◆ 总体技术架构

- ▶ 总体IT技术战略架构
- ▶ 信息及数据结构
- ▶ 安全架构
- ▶ 网络架构
- ▶ 应用构件架构

## ◆ 总体实施架构

- ▶ 实施架构的通道和治理
- ▶ 计划，更改，外协（包）
- ▶ 评估，审核，报告，总结

# IT总体架构 – 影响与价值

## ◆ 总体管理架构的企业级的价值

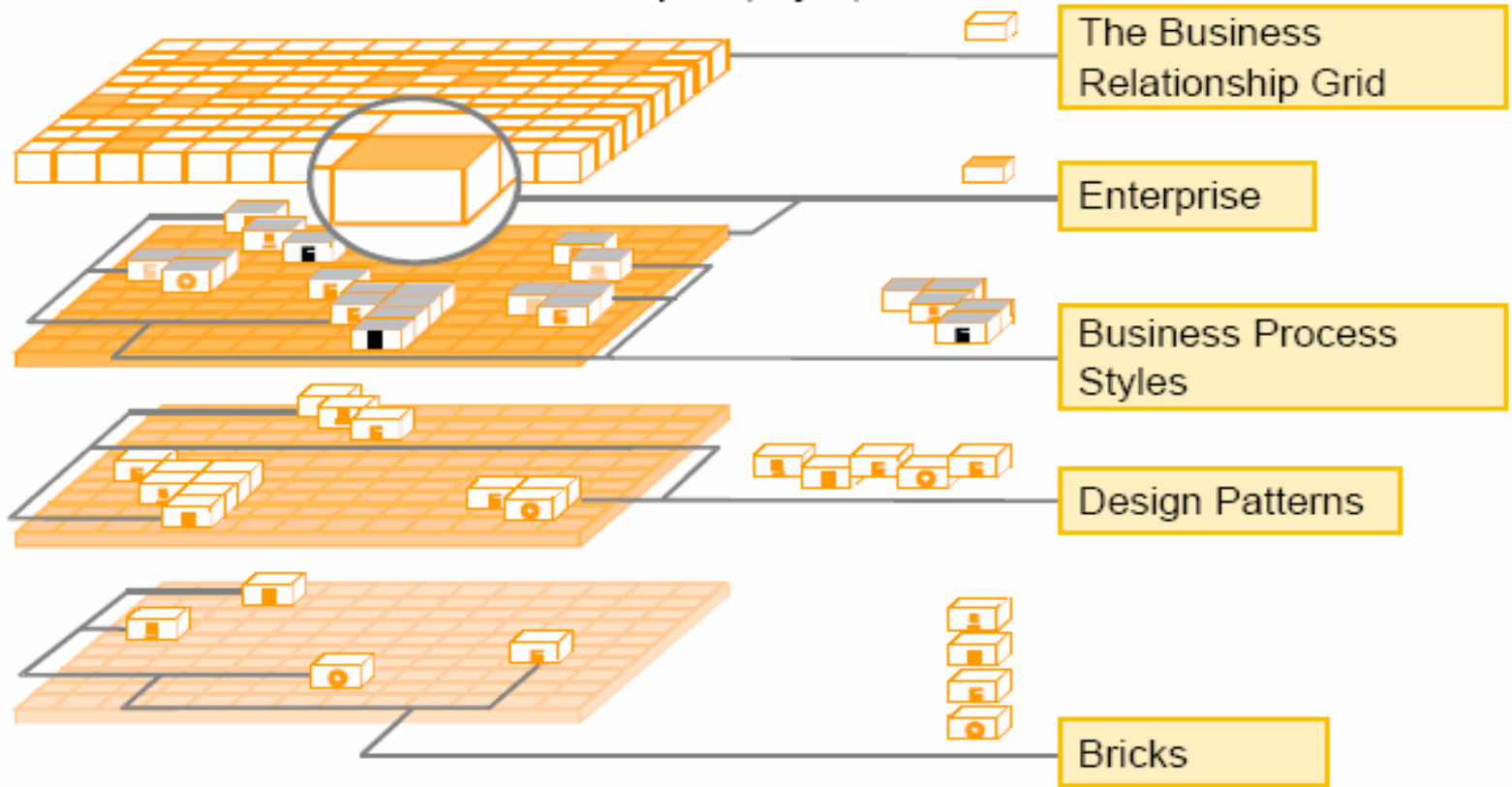
- ▶ 提高与实现最佳的IT投资回报比
- ▶ 规避与有效的减少与消除由IT引入的企业风险
- ▶ 最佳的改进企业的运营效率与功效
- ▶ 易于企业高层领导与董事会，股东清晰的理解IT总体工程，发展与挑战
- ▶ 有效的支持企业和市场的战略变化和挑战

## ◆ 总体技术架构 IT，科技部级的价值

- ▶ 有一个清晰的总体IT技术战略架构图，并保持与企业的商业战略一致
- ▶ 获取与IT战略保持一致的IT的每一个领域的最佳的架构组成，规划和设计
- ▶ 有效的改进IT的管理方式
- ▶ 有效的管理IT的资产
- ▶ 增强供应商，协作商的管理与技术选型
- ▶ 有效的减少IT 的资源浪费与底效
- ▶ 获取一条与事业部门最佳的相互沟通方式
- ▶ 规避与消除IT的项目风险

# 总体架构 - 广义定义模型 Framework I-1

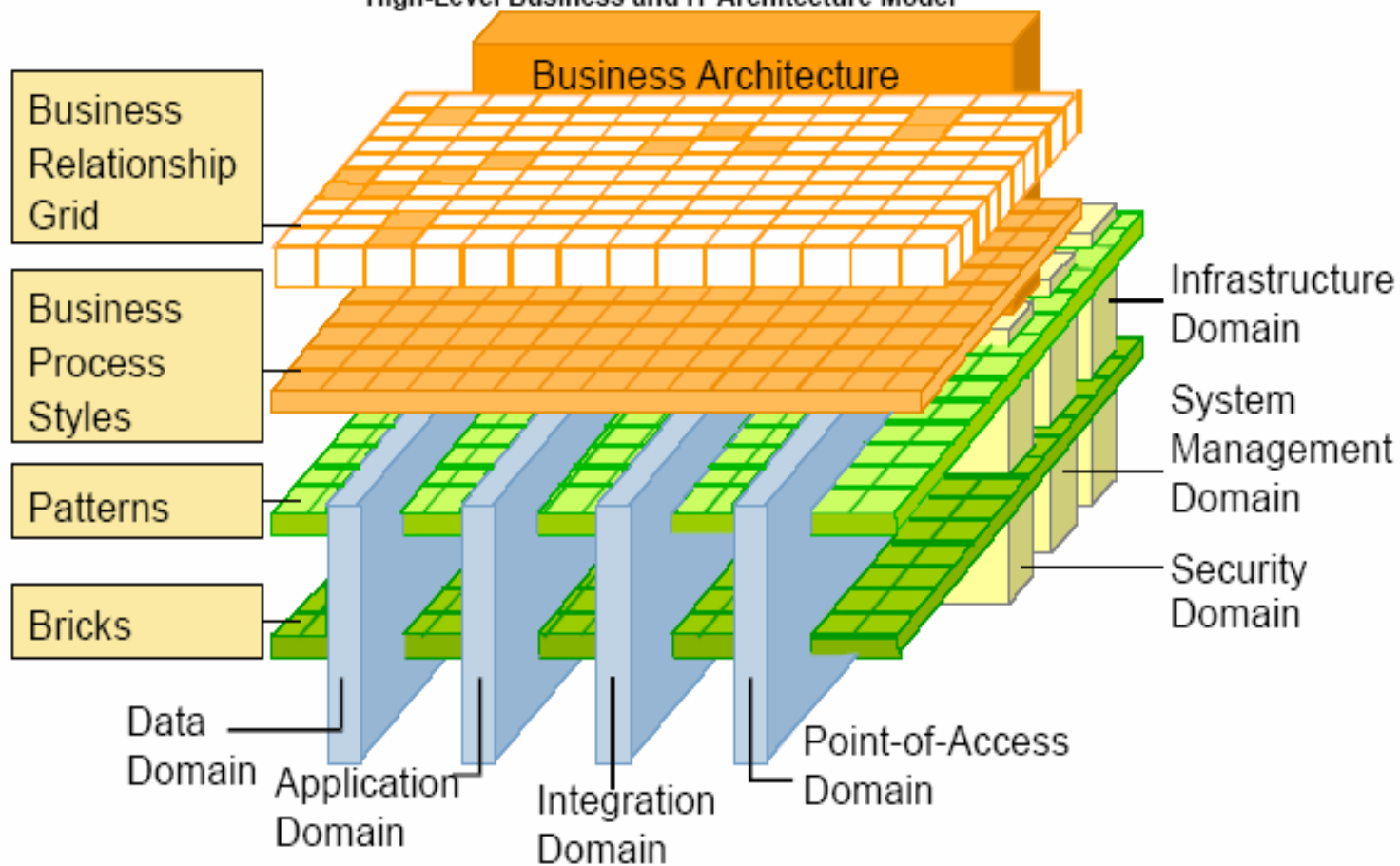
Figure 1  
Business Relationship Grid, Styles, Patterns and Bricks



Source: Gartner Research (July 2003)

# 总体架构 - 广义定义模型 Framework I-2

Figure 2  
High-Level Business and IT Architecture Model



# 总体架构标准模型 Framework

## The Need for a Framework

- ◆ **Zachman 模型是一个公认的总体架构模型** de facto standard architecture framework

- ▶ **着重模型的有效划分和组织** effective categorization and organization of models

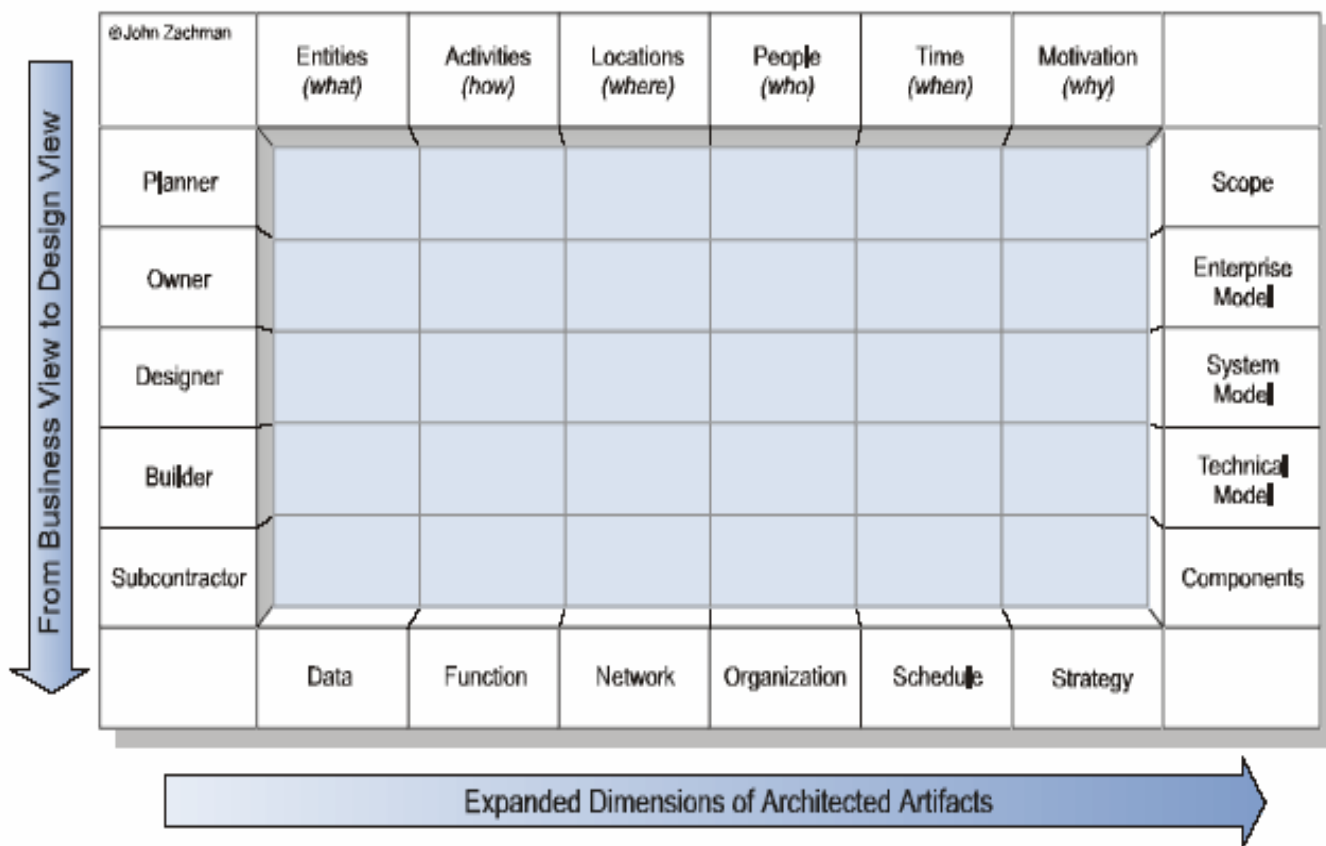
- ◆ **Zachman 模型是一个非常全面的 EA 逻辑结构,可以用于任何的复杂情况和工程**

### ENTERPRISE ARCHITECTURE - A FRAMEWORK™







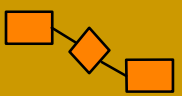
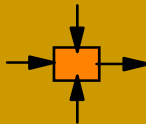
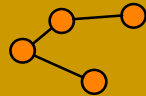
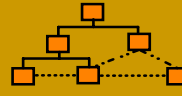
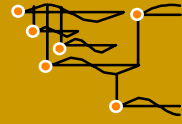
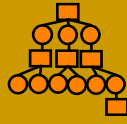
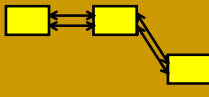
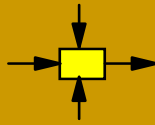
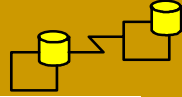
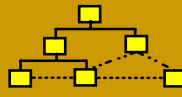
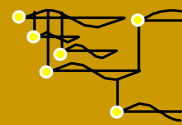
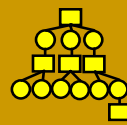
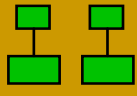
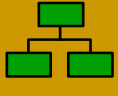
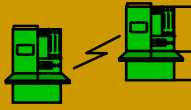
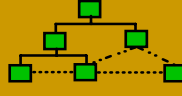
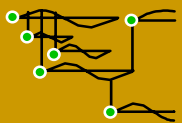
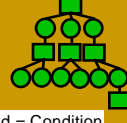






	DATA <i>What</i>	FUNCTION <i>How</i>	NETWORK <i>Where</i>	PEOPLE <i>Who</i>	TIME <i>When</i>	MOTIVATION <i>Why</i>	SCOPE (CONTEXTUAL)
<b>Planner</b> ENTERPRISE MODEL (CONCEPTUAL)	 Entity = Class of Business Thing Local	 Function = Class of Business Process Local	 Node = Major Business Location Local	 People = Major Organization Local	 Time = Major Business Event Local	 Ends/Mean = Major Bus. Goal Critical Success Factor Local	Planner
<b>Owner</b> SYSTEM MODEL (LOGICAL)	 Ent = Business Entity Rel = Business Relationship e.g. Logical Data Model	 Proc = Business Process IO = Business Resources e.g. Application Architecture	 Node = Business Location Link = Business Linkage e.g. Distributed System Architecture	 People = Organization Unit Work = Work Product e.g. Human Interface Architecture	 Time = Business Event Cycle = Business Cycle e.g. Processing Structure	 End = Business Objective Means = Business Strategy e.g. Business Rule Model	Owner
<b>Designer</b> TECHNOLOGY MODEL (PHYSICAL)	 Ent = Data Entity Rel = Data Relationship e.g. Physical Data Model	 Proc = Application Function e.g. System Design	 Node = Processor/Storage/Link Link = Line Characteristics e.g. System Architecture	 People = Role Work = Deliverable e.g. Presentation Architecture	 Time = System Event Cycle e.g. Control Structure	 End = Situational Assertion Means = Action Assertion e.g. Business Rule Model	Designer
<b>Builder</b> DETAILED REPRESENTATIONS (OUT-OF-CONTEXT)	 Ent = Segment/Field/etc. Rel = Position/Key/etc. e.g. Program	 Proc = Computer Function e.g. Program	 Node = Hardware/Software Link = Line Specifications e.g. Network Architecture	 People = User Work = Screen/Element e.g. Security Architecture	 Time = Execution Cycle e.g. Timing Definition	 End = Situation Means = Action e.g. Business Rule Model	Builder
<b>Sub-Contractor</b> FUNCTIONING ENTERPRISE	 Ent = File Rel = Address e.g. DATA	 Proc = Language Spec e.g. FUNCTION	 Node = Address Link = Protocols e.g. NETWORK	 People = Specialty Work = Job e.g. ORGANIZATION	 Time = Instance e.g. Cycle e.g. SCHEDULE	 End = Sub-Contract Means = Step e.g. STRATEGY	Sub-Contractor

# 总体架构标准模型 Framework

Exhibit 5, The Zachman Framework



## ENTERPRISE ARCHITECTURE - A FRAMEWORK <sup>TM</sup>

	DATA 数据 <i>What</i>	FUNCTION 功能 <i>How</i>	NETWORK 网络 <i>Where</i>	PEOPLE 人 <i>Who</i>	TIME 时间 <i>When</i>	MOTIVATION 激励 <i>Why</i>	
TYPE (CONTEXTUAL) 范畴 范畴 er	List of Things Important to the Business  ENTITY = Class of Business Thing	List of Processes the Business Performs  Function = Class of Business Process	List of Locations in which the Business Operates  Node = Major Business Location	List of Organizations Important to the Business  People = Major Organizations	List of Events Significant to the Business  Time = Major Business Event	List of Business Goals/Strat  Ends/Mean=Major Bus. Goal/ Critical Success Factor	SCO (CONTEXTUA Plan
ENTERPRISE DEL (CONCEPTUAL) 企业模型 er	e.g. Semantic Model  Ent = Business Entity Reln = Business Relationship	e.g. Business Process Model  Proc. = Business Process I/O = Business Resources	e.g. Logistics Network  Node = Business Location Link = Business Linkage	e.g. Work Flow Model  People = Organization Unit Work = Work Product	e.g. Master Schedule  Time = Business Event Cycle = Business Cycle	e.g. Business Plan  End = Business Objective Means = Business Strategy	ENTERPRI MOD (CONCEPTUA O
TEM DEL (LOGICAL) 系统模型 igner	e.g. Logical Data Model  Ent = Data Entity Reln = Data Relationship	e.g. "Application Architecture"  Proc. = Application Function I/O = User Views	e.g. "Distributed System Architecture"  Node = I/S Function (Processor, Storage, etc) Link = Line Characteristics	e.g. Human Interface Architecture  People = Role Work = Deliverable	e.g. Processing Structure  Time = System Event Cycle = Processing Cycle	e.g., Business Rule Model  End = Structural Assertion Means = Action Assertion	SYSTM MOD (LOGICA Design
TECHNOLOGY DEL (PHYSICAL) 技术模型 der	e.g. Physical Data Model  Ent = Segment/Table/etc. Reln = Pointer/Key/etc.	e.g. "System Design"  Proc.= Computer Function I/O = Screen/Device Formats	e.g. "System Architecture"  Node = Hardware/System Software Link = Line Specifications	e.g. Presentation Architecture  People = User Work = Screen Format	e.g. Control Structure  Time = Execute Cycle = Component Cycle	e.g. Rule Design  End = Condition Means = Action	TECHNOLO CONSTRAIN MOD (PHYSICA Bu
AILED REPRESENTATIONS (OUT-OF-CONTEXT) 可视化展示 icator	e.g. Data Definition  Ent = Field Reln = Address	e.g. "Program"  Proc.= Language Stmt I/O = Control Block	e.g. "Network Architecture"  Node = Addresses Link = Protocols	e.g. Security Architecture  People = Identity Work = Job	e.g. Timing Definition  Time = Interrupt Cycle = machine Cycle	e.g. Rule Specification  End = Sub-condition Means = Step	DETAILED REPRESENTATION (OUT-OF-CONTEXT) Contract
CTIONING ENTERPRISE	e.g. DATA	e.g. FUNCTION	e.g. NETWORK	e.g. ORGANIZATION	e.g. SCHEDULE	e.g. STRATEGY	FUNCTION ENTERPR

# 总体结构工具 Enterprise Architect tools

## ◆ Leaders

- ▶ Popkin Software/Telelogic [www.popkin.com/](http://www.popkin.com/)
- ▶ Allen Systems Group [www.asg.com/](http://www.asg.com/)
- ▶ IDS Scheer [www.ids-scheer.de/](http://www.ids-scheer.de/)
- ▶ Proforma [www.proformacorp.com/](http://www.proformacorp.com/)

## ◆ Visionaries

- ▶ Casewise
- ▶ Computas

## ◆ Challenges

- ▶ Mega

## ◆ Niche Players

- ▶ Adaptive
- ▶ Inspired/Agilense
- ▶ GoAgile
- ▶ Troux Technologies

# 总体架构国际组织

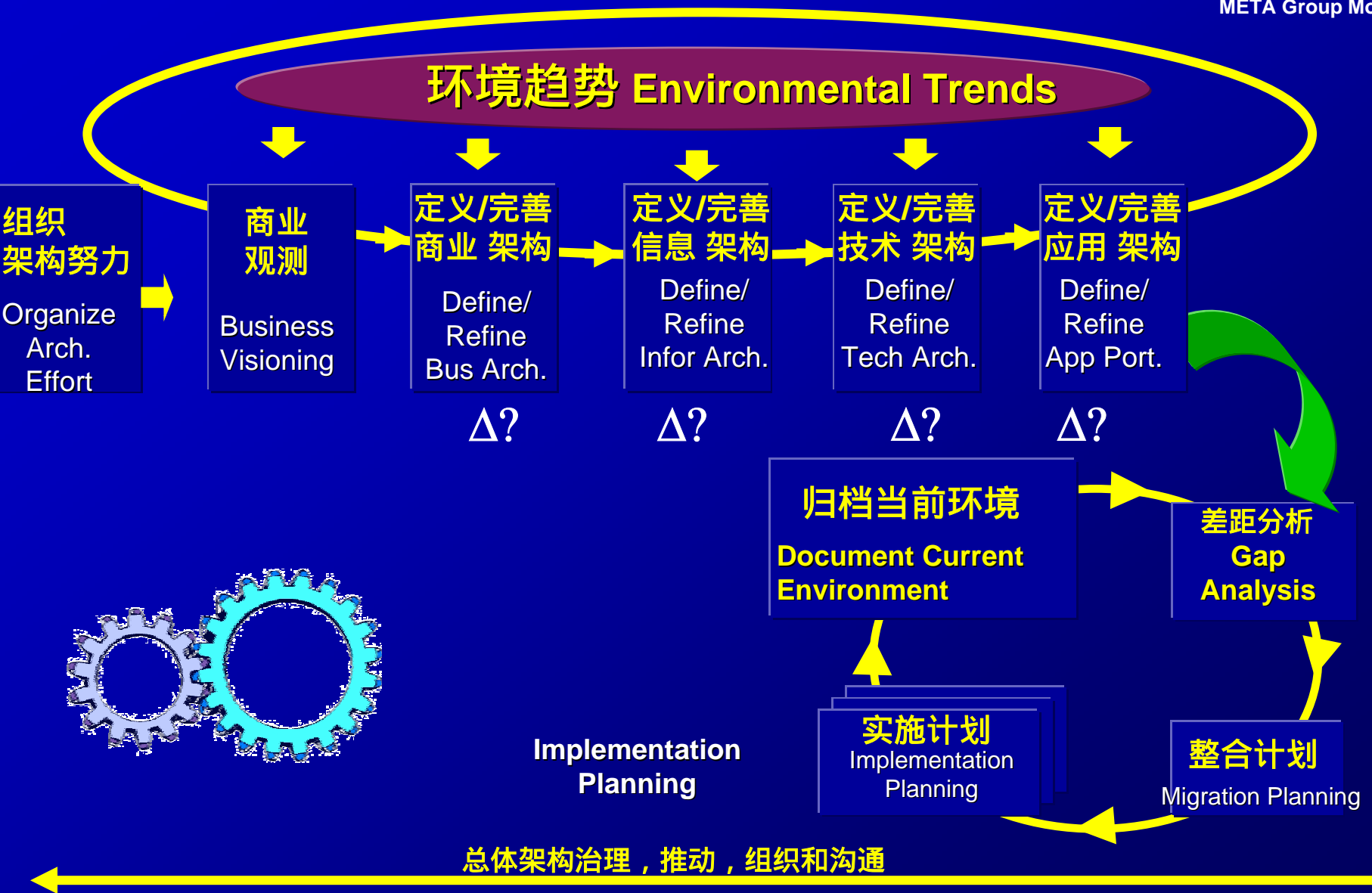
## Enterprise Architect International & Gov. Organizations

- ◆ **Global Enterprise Architecture Organization (GEAO)**
- ◆ **Department of Commerce Enterprise IT Architecture Advisory Group**  
(Capability Maturity Model, Federal EA Framework by CIO Council)
- ◆ **META and Gartner Group**
- ◆ **Institute For Enterprise Architecture Development – IFEAD**
- ◆ **ISO9001:2000 – ISO IS 15704**
- ◆ **Enterprise Architecture Certificate (专业资格认证)**
  - ▶ Institute For Enterprise Architecture Development (as resources)  
\_FEAC
  - ▶ Global Enterprise Architecture Organization (non profit org)
  - ▶ DCI
  - ▶ Carnegie Mellon University Graduate School
  - ▶ MIT Solon School
  - ▶ Johns Hopkins University
  - ▶ George Mason University

# 总体架构的运作模型

## Enterprise Architecture Process Model

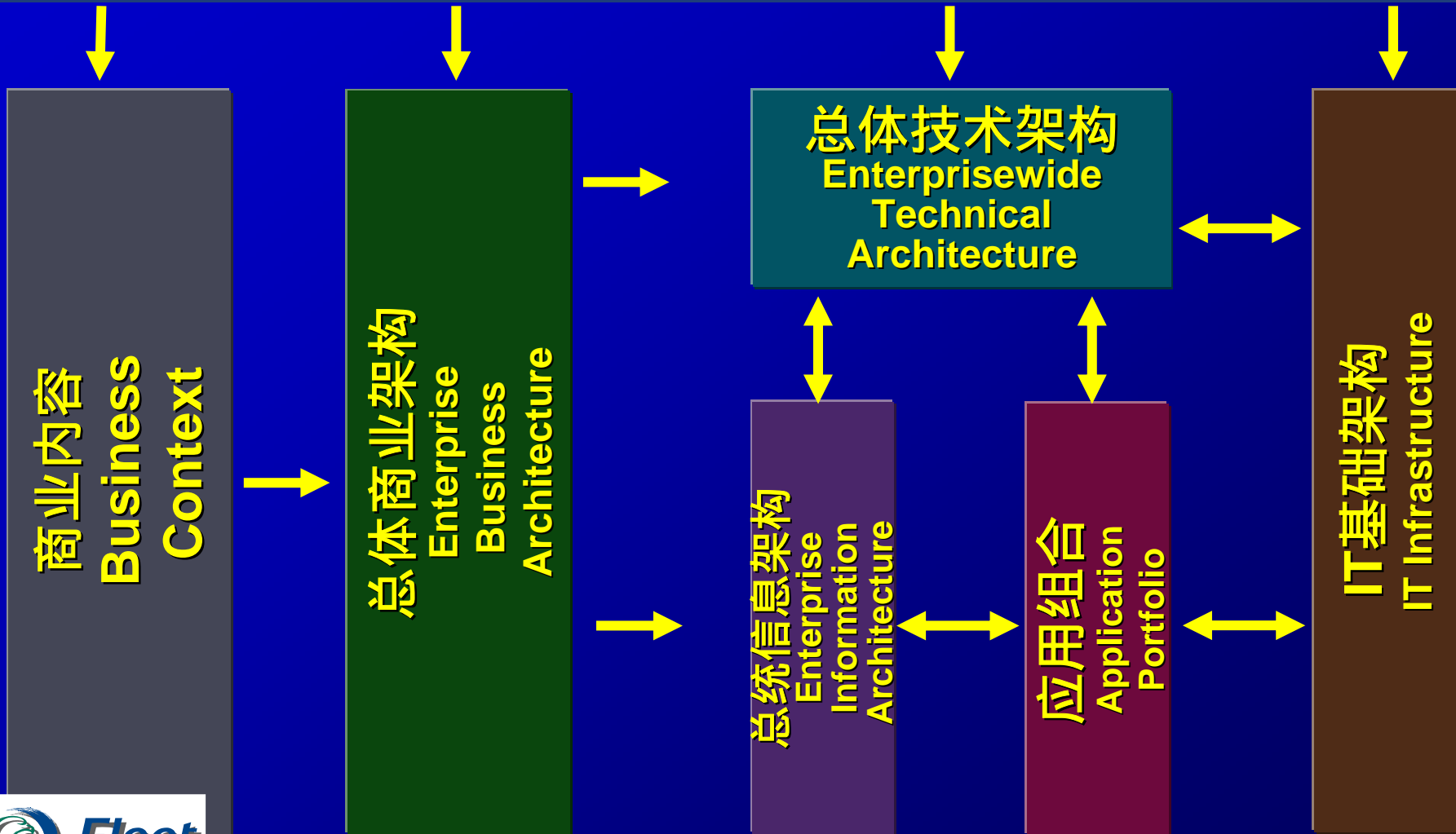
META Group Mo



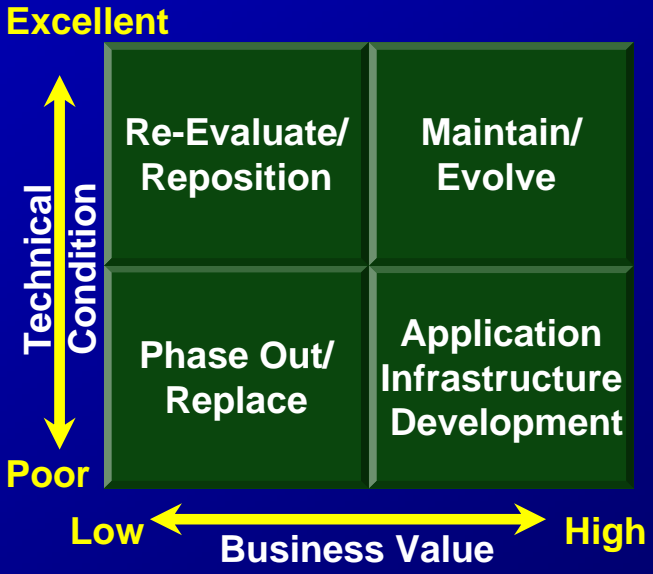
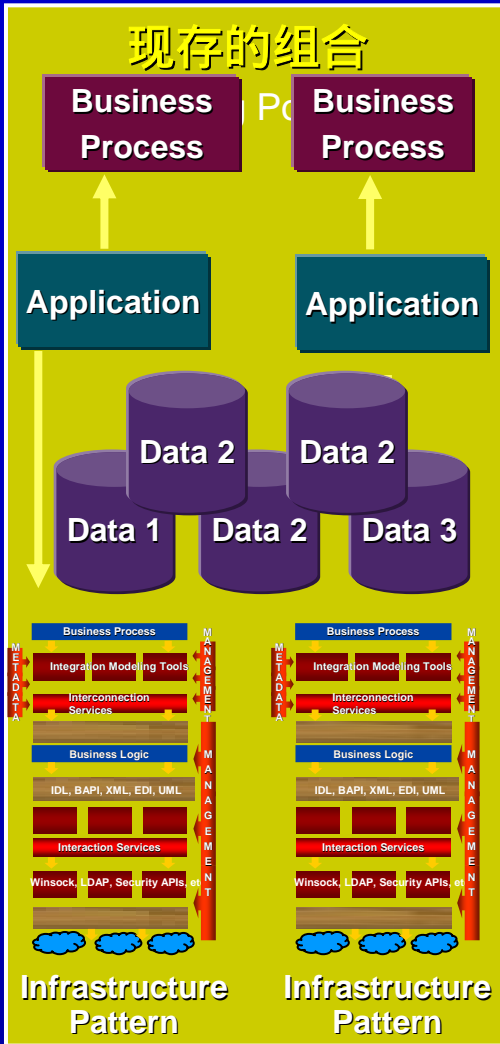
# 总体架构优先的关系

## EA Primary Relationships

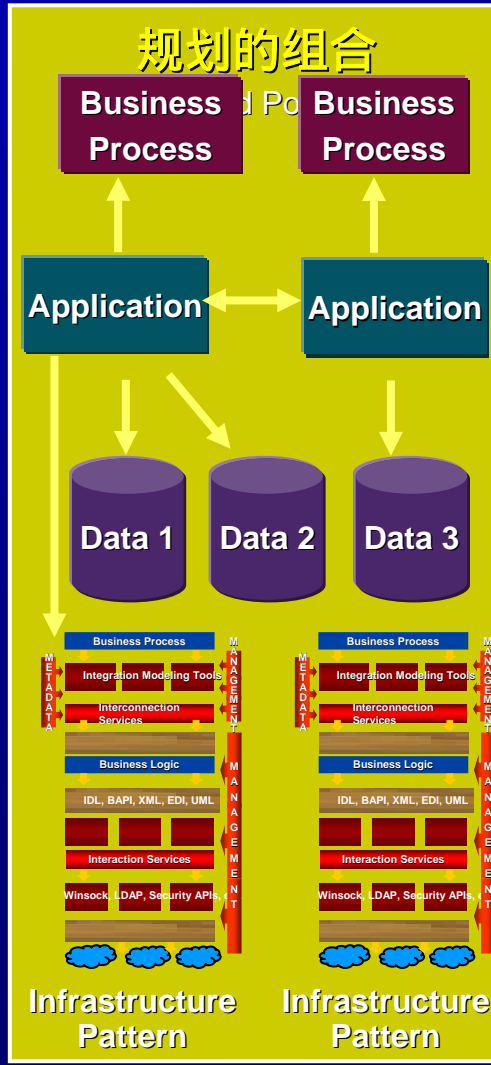
商业和技术的市场趋势 Business and Technology Market Trends



# 总体架构内涵 EAP Context



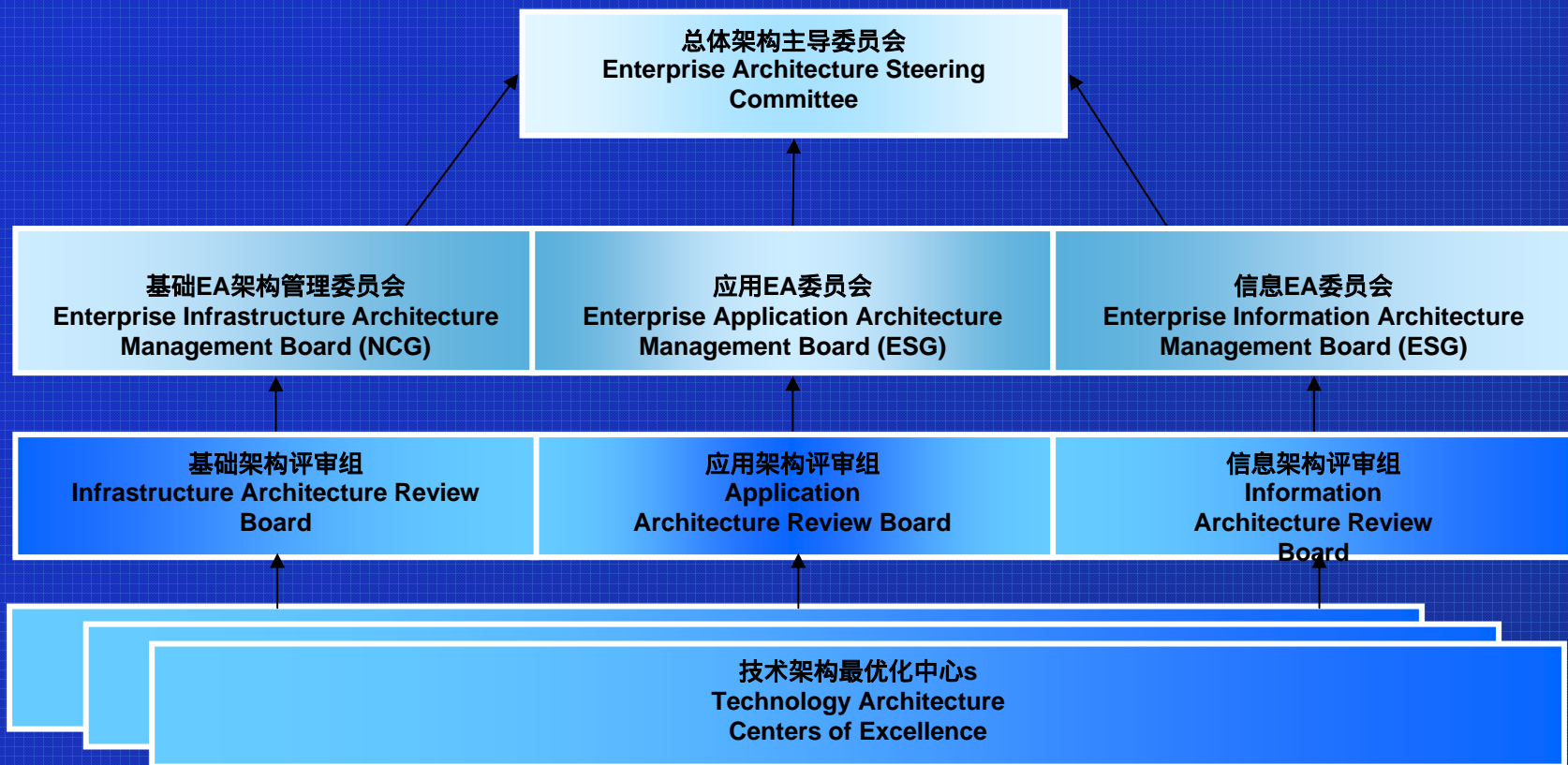
Application Portfolio Assessment



# 总体架构治理组织结构实例

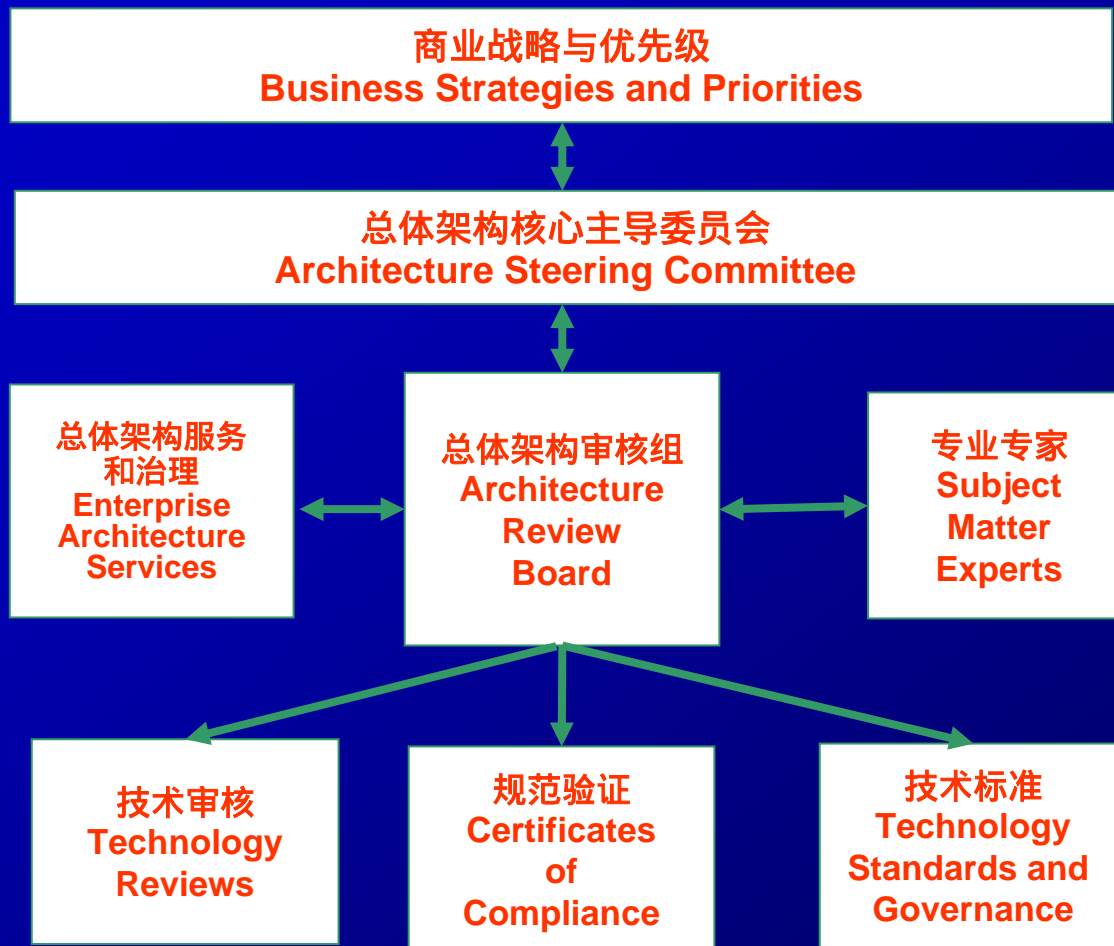
## EA organization structure example

### 总体架构治理结构

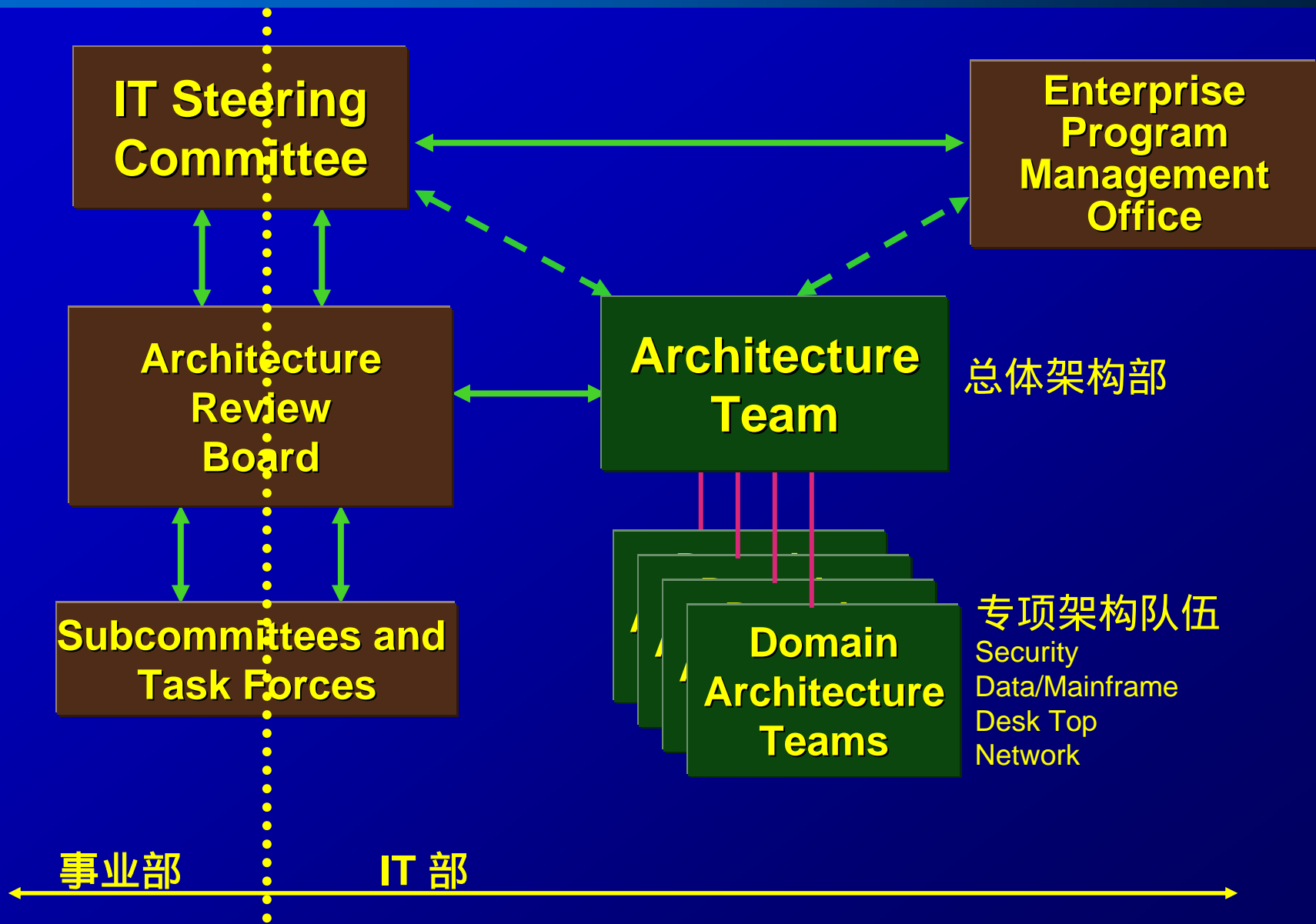


# 总体架构管理结构

## Enterprise Architecture Governance Structure



# IT EA 组织图 Organizational Relationships



# IT架构定位移动

架构成熟评测 一个成熟的架构构式包含一个架构策划与项目策划根本的移动

## Architecture maturity

A maturing architecture program involves a fundamental shift in the relationships between architecture and project planning.

### 基于项目的规划 Project Based Planning



商业需求

商业计划

项目计划

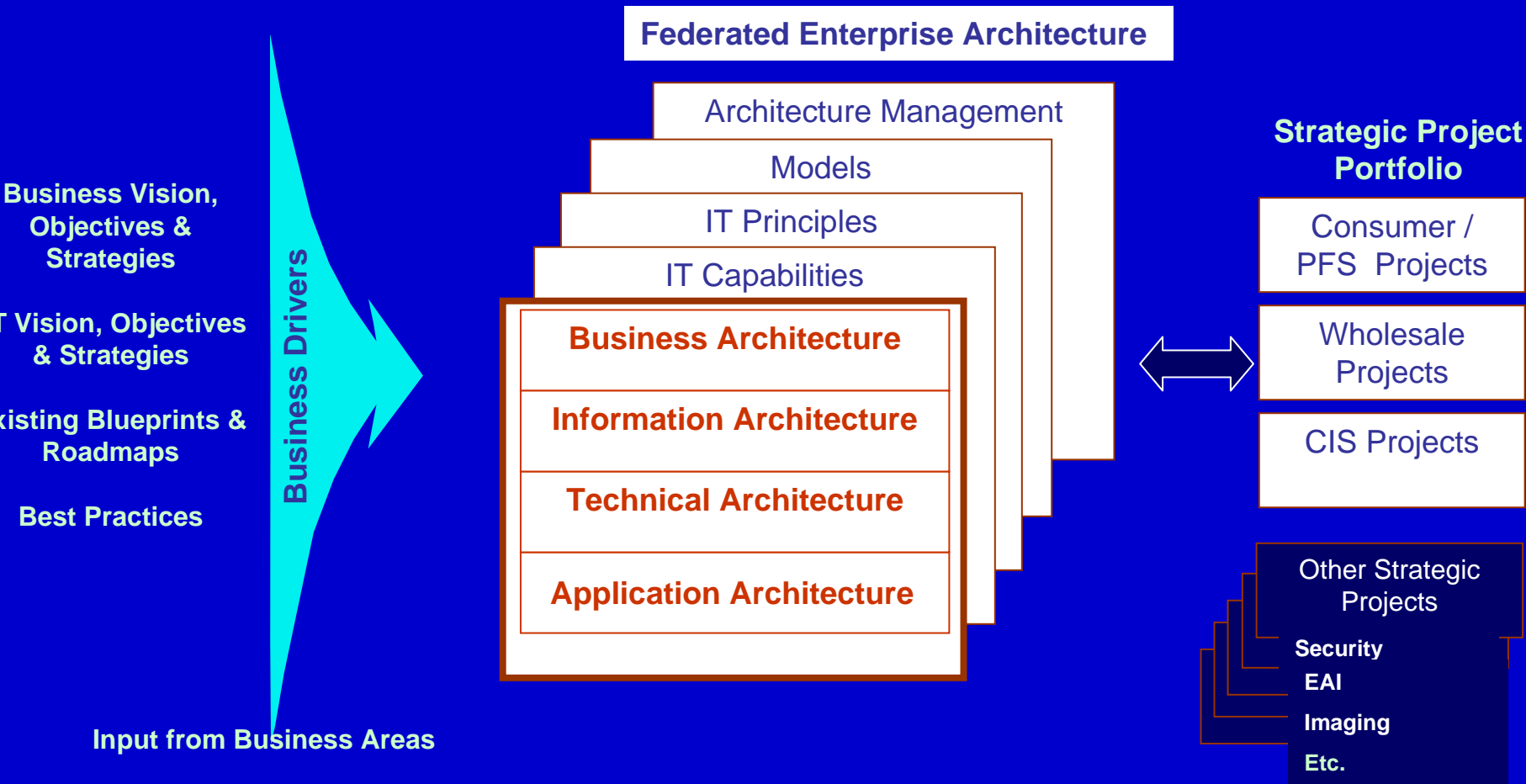


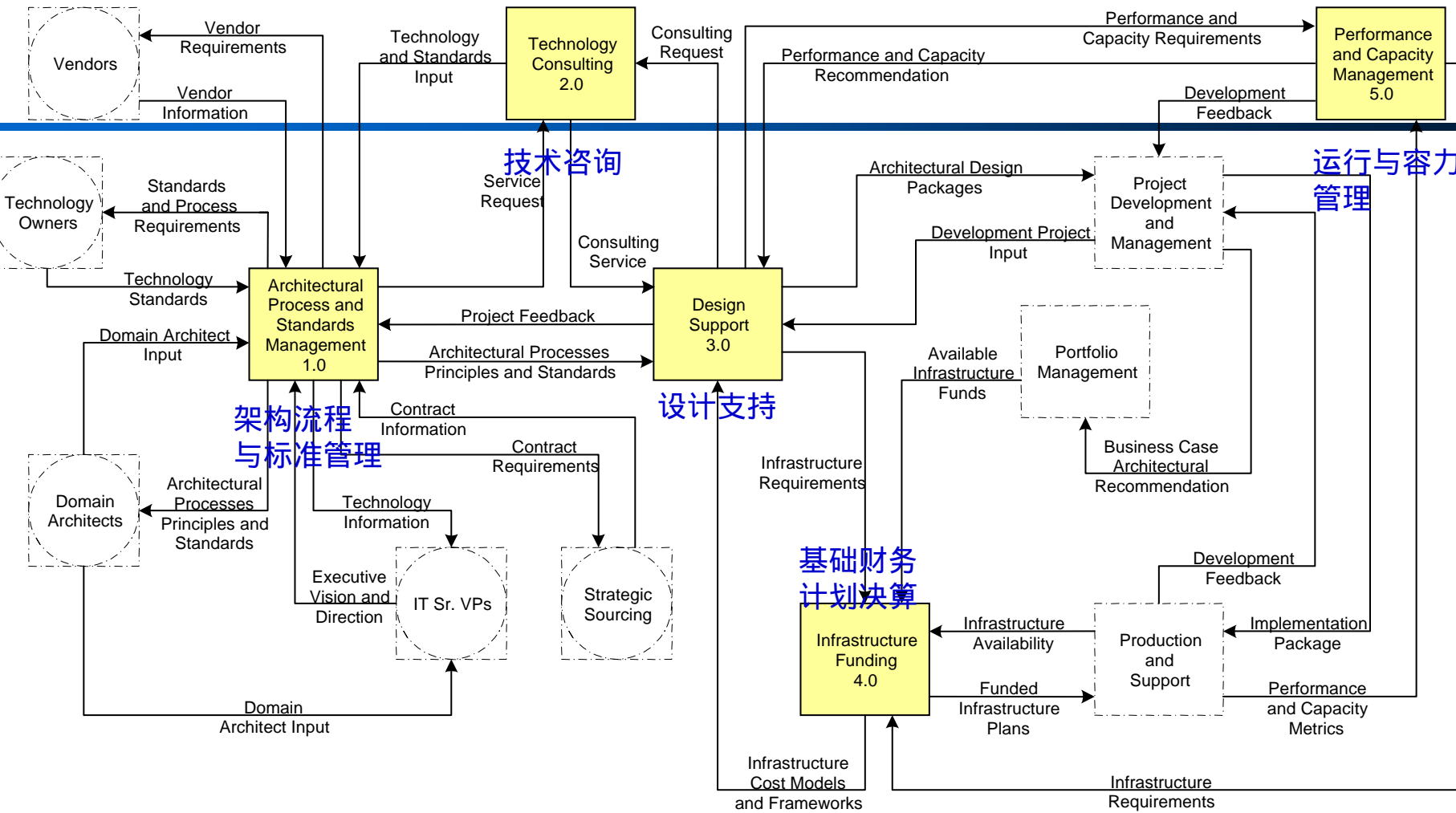
### 架构基础的规划

### Architecture Based Planning

# 联邦式总体架构能使富利银行具有一个有效支持商业需求的IT基础

Federated Enterprise Architecture (EA) will enable Fleet to develop an IT infrastructure that can efficiently support the needs of the business.

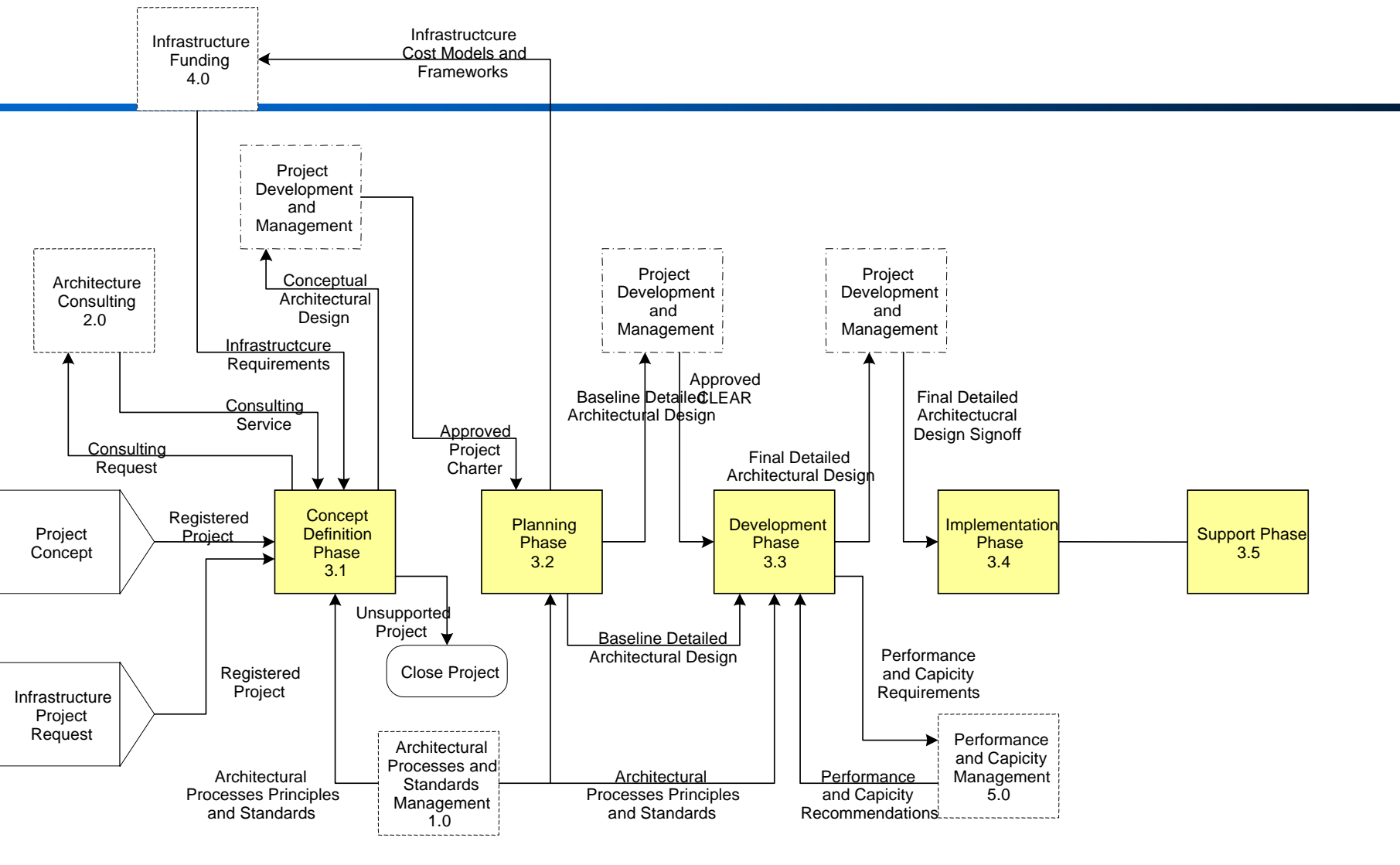




## 总体架构部组织及功能流程内涵图实例

### Process Context Diagram

----- Off Page	○ People	Version: 1- Context Level Date: Sheet 1 of #
----- Out of Scope	□ Trigger	
○ Terminator	□ Process	
◇ Decision Gate		



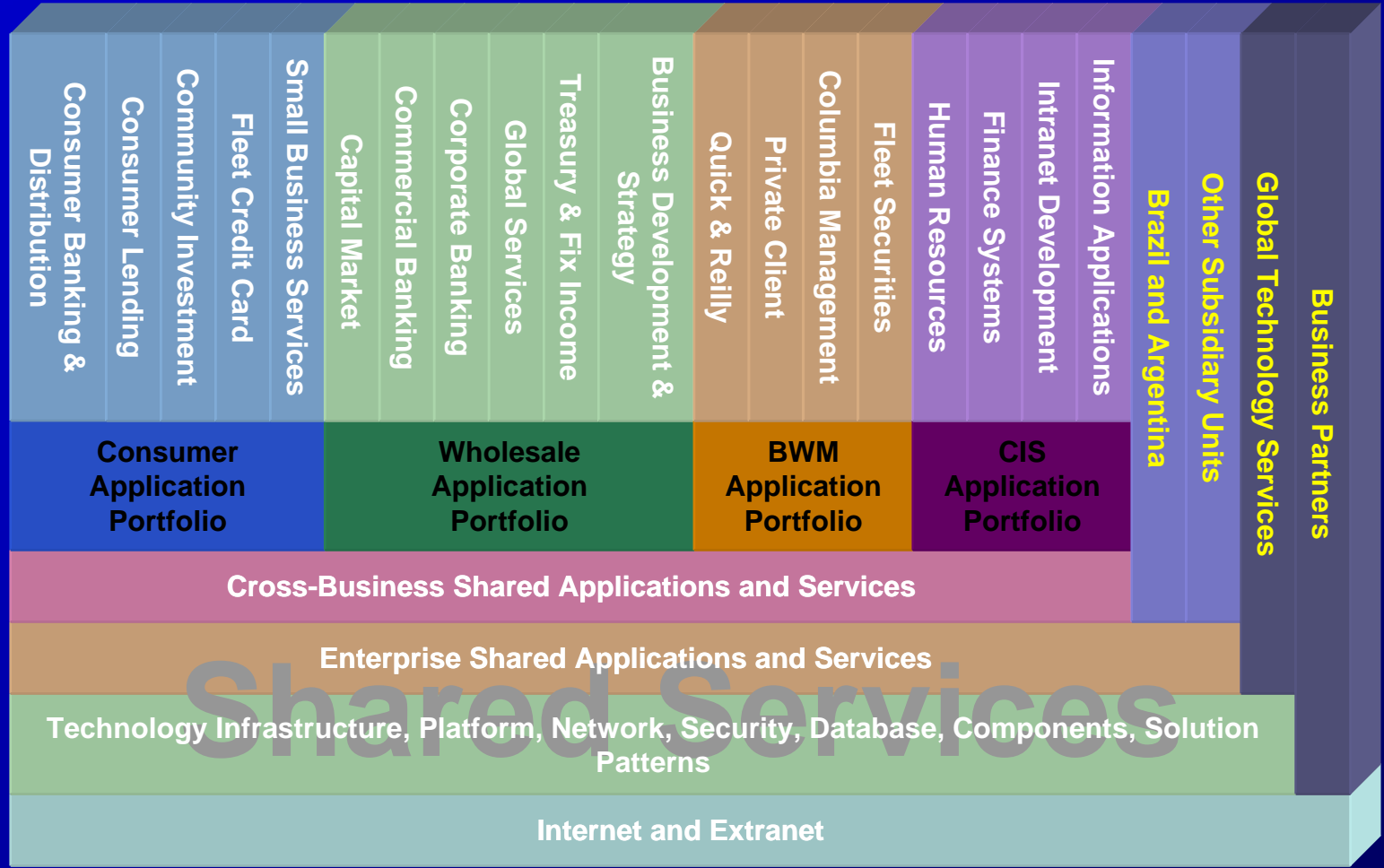
# 总体架构设计支持实例

<p>----- Off Page</p> <p>----- Out of Scope</p> <p>○ Terminator</p>	<p>□ People</p> <p>□ Trigger</p> <p>□ Process</p> <p>◇ Decision Gate</p>	<p>Version: 1-alpha</p> <p>Process 3-0</p> <p>Date:</p> <p>Sheet 2 of ##</p>
<b>Legend</b>		<b>Drawing</b>

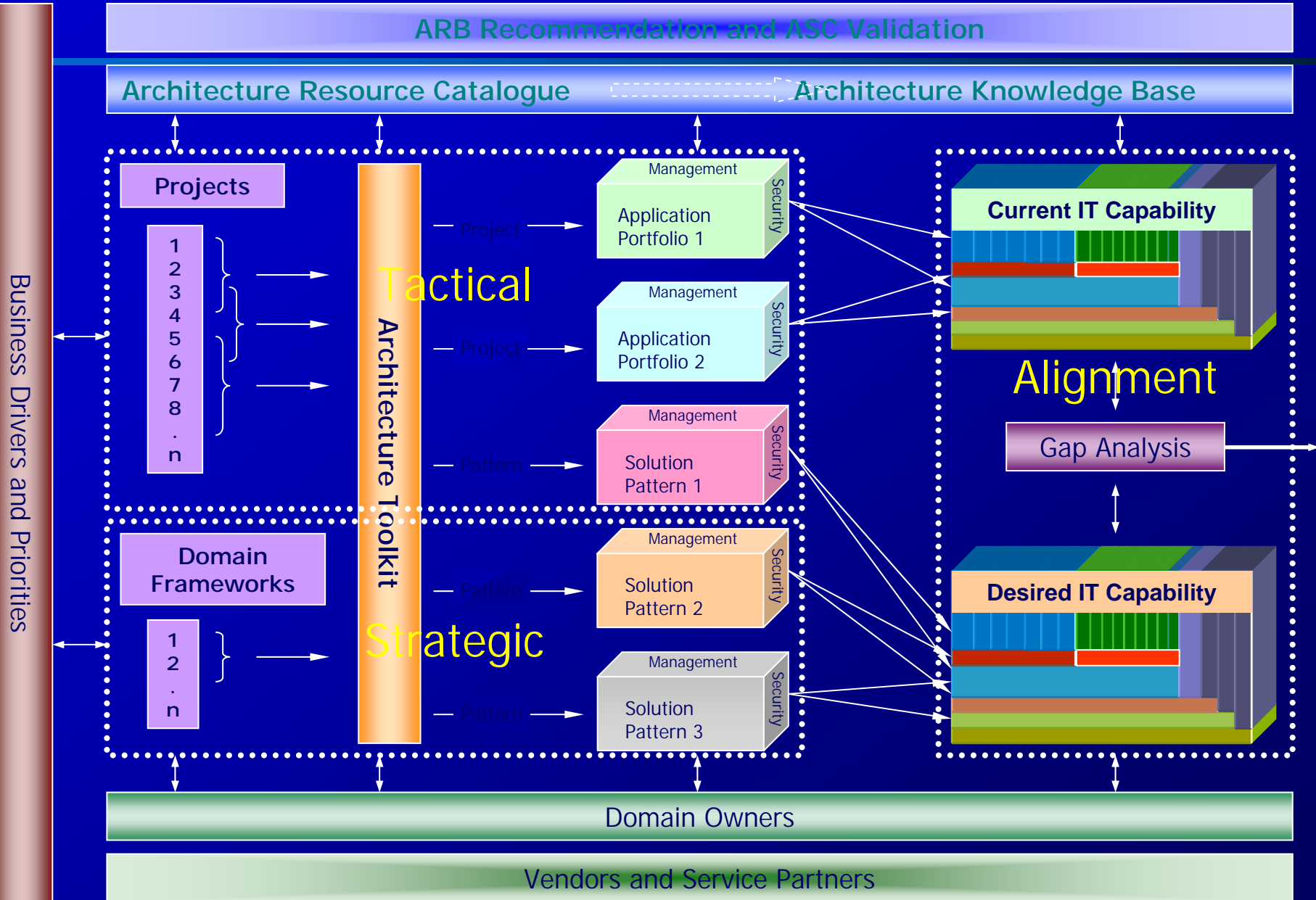
Filename:

# 一个联邦式架构模型

## A Federated Architecture Model



# Federated Enterprise Architecture



# E-Solution Services Layer

## Portal Services

Content Mgmt. / Member's Mgmt. / Content Delivery / Presentation Service / Personalization

## B2C Services

Shopping Cart / Product Catalog / Order Fulfillment / Payment Processing / Credit Authorization / Billing / Customer Mgmt. / Auction

## Supply Chain Model



Customer Mgmt. / Order Tracking Mgmt. / Vendor Mgmt. / Catalog Mgmt. / Product Catalog / Payment Processing / Billing / Clearing House / Settlement / Market Maker / Trading / Exchange Adapters / Partner Adapters

## B2B Services

# Technical Services Layer

## Application Frameworks

Component / Service Implemt. / Work Mgmt. / Rules Inferencing / Persistence / GUI MVC

## Integration Adapters

Technology Interfaces / Application Interface / Data Translators (EDI, XML...)

## System Bus

## Service Delivery Framework

Sync and Async Messaging	Publish & Subscribe	Message Queuing
JMS	COM+	CORBA
		MQ Series
		EAI

Application or EJB Server / Web Server / Database Server / Directory Server / Workflow Server / Thread Pool Mgmt. / Load Balancing / Logging Service / Security Service / Reporting Mgmt. / Application Mgmt. / Naming Service / Transaction Service / Event Service

## Distributed Computing Engines

## Infrastructure Services

# Development Tools

Testing

Microsoft .NET

Java Development Environment

Insight Architecture Visualizer

Requirement Management Tool

Visual Modeling

Configuration Management

# Technology Standards

XML

J2EE

UML

LDAP

CORBA

SNMP

SQL

HTML

HTTP

SSL

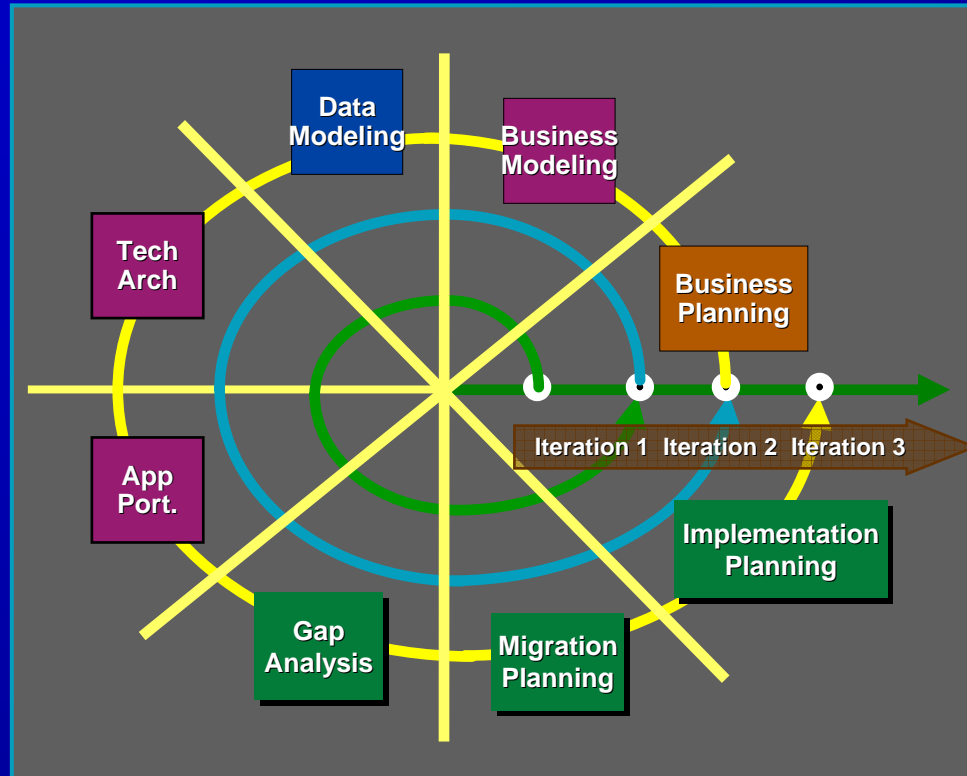
WAP

# System Delivery Process



# Fleet's Approach is Iterative

## Iterative Evolution



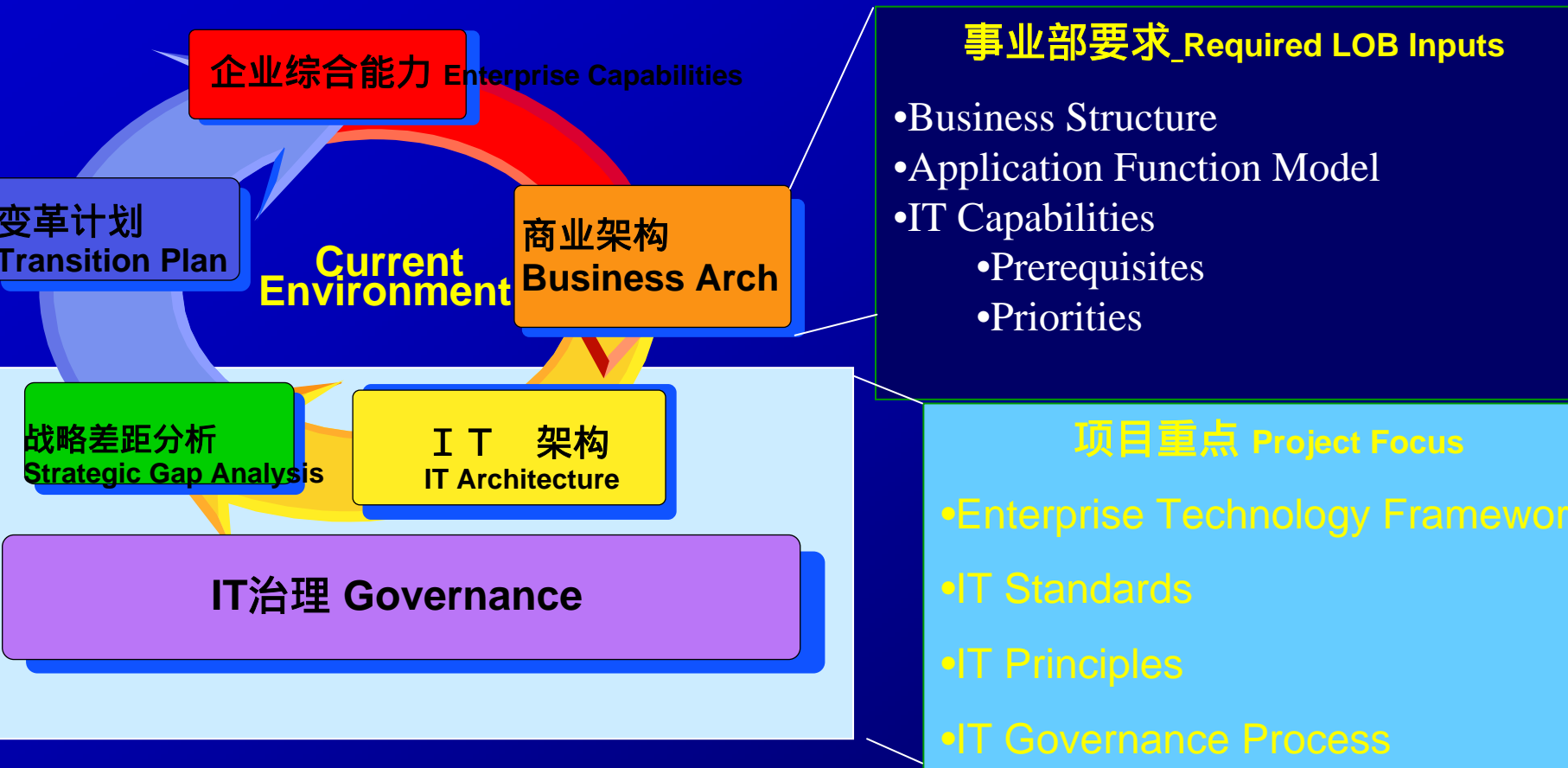
***Architecture is not a “one-time event” — enterprise architecture is a process, not a project***

# ***Solution Patterns: Key Components***

- ◆ **Patterns Type**
  - ▶ **Distributed Computing**
  - ▶ **Platform**
  - ▶ **Security**
  - ▶ **Management Services**
  
- ◆ **Pattern's LOB Applicability (Range in Bank )**
  - ▶ **Wholesale**
  - ▶ **Consumer**
  - ▶ **Enterprise**
  
- ◆ **Domains Affected (Reach)**
  - ▶ **Database**
  - ▶ **Internet**
  - ▶ **Systems Management**
  - ▶ **Security**

# 银行总体架构机理

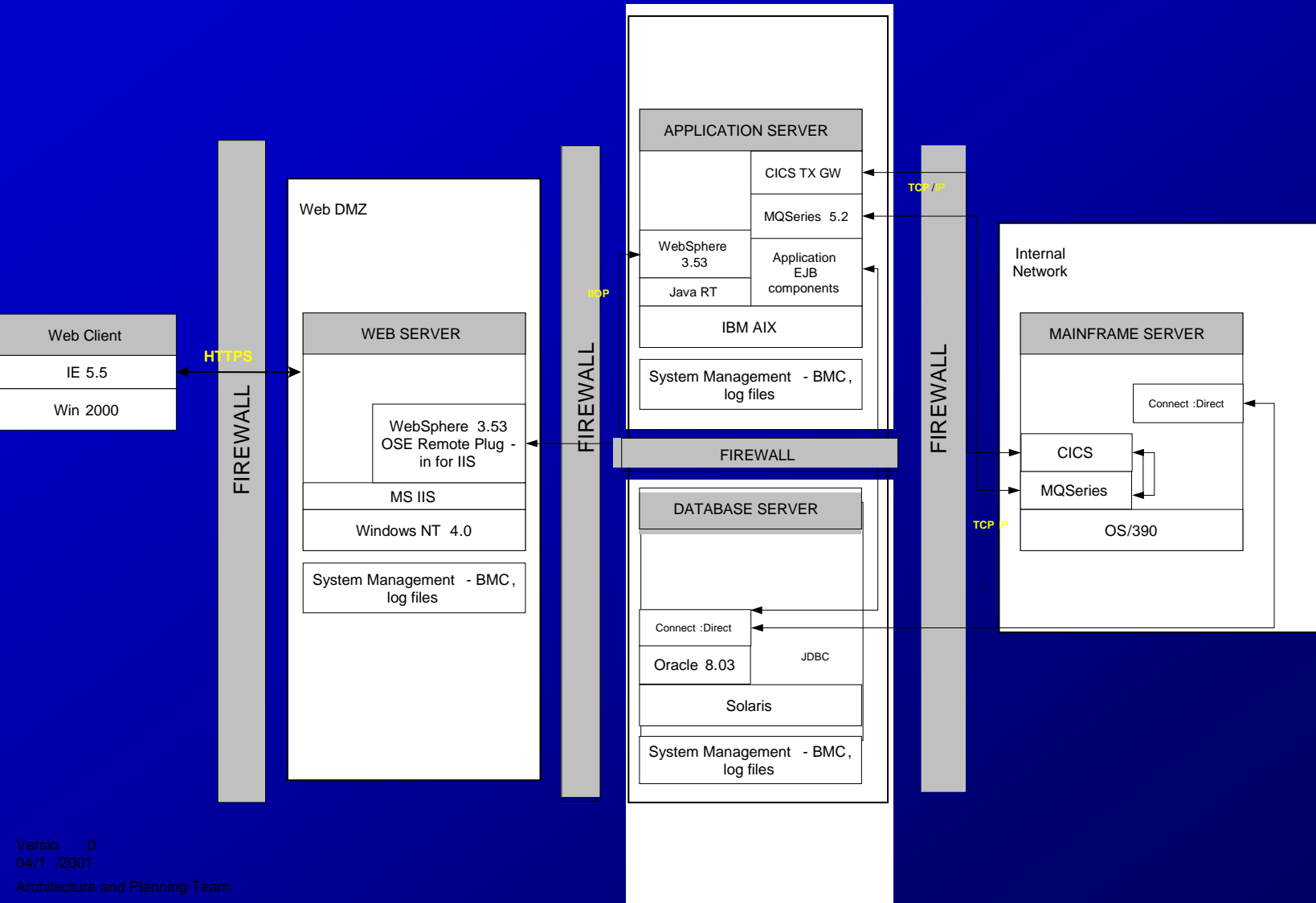
Using Enterprise Architecture methodology to define and document the IT Architecture, a Strategic Gap Analysis and a refined Governance mechanism.



# 框架软件架构设计结构

## High Level Software Architecture Design

### For Project Phase/Scope



App Server  
Siebel App, SWE

Project	Project Name - CMG CRM		
View	<b>Production</b> High Level Hardware/Software Arch.		
Date Original	date	2/19/03	Shawn Henry, Internet Architecture