



Enterprise IT Architectures

Enterprise IT Architectures Enterprise Architecture (EA) Part 1

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Agenda

- I. Positioning Enterprise Architecture (EA)
- II. Enterprise Architecture Methods
- III. Enterprise Capabilities & Principles
- IV. EA Architecture Framework
- V. Case 3

I. Positioning Enterprise Architecture (EA)

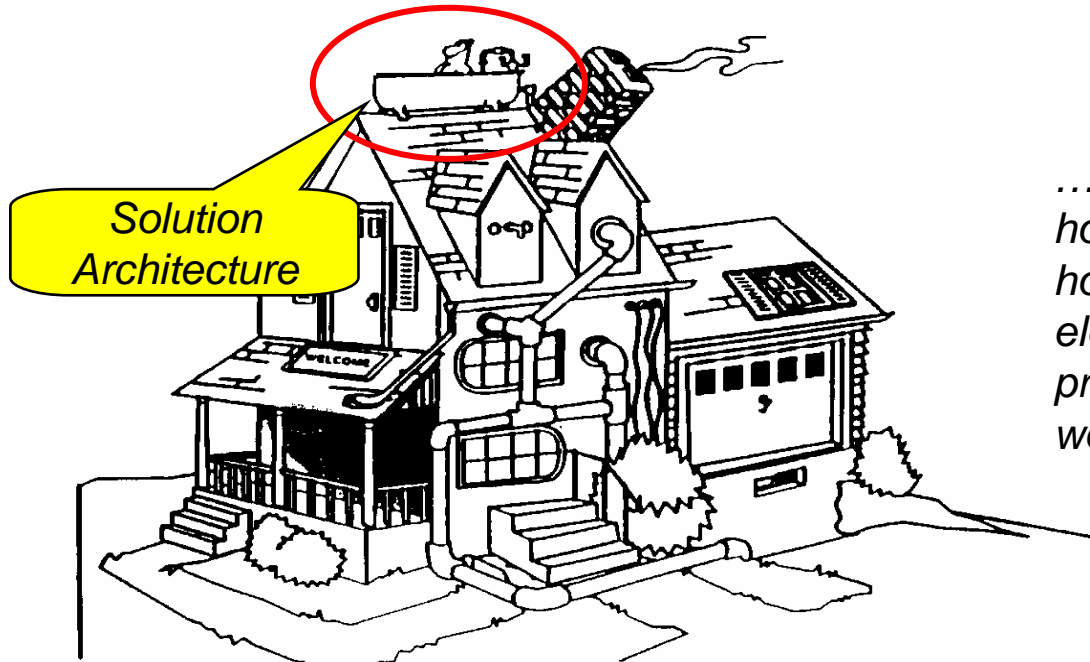
Why “Enterprise Architecture”

- ***EA is helping enterprises do the right things right***

- EA is a **holistic** approach to the control and co-ordination of IT based business projects

- Two viewpoints:
 - **Solution Architects** are focused on creating an IT based solution to a business problem
 - **Enterprise Architects** with a sense of what the enterprise needs to be and do, and how IT should be used in a wider sense

... with the intent of avoiding chaos...

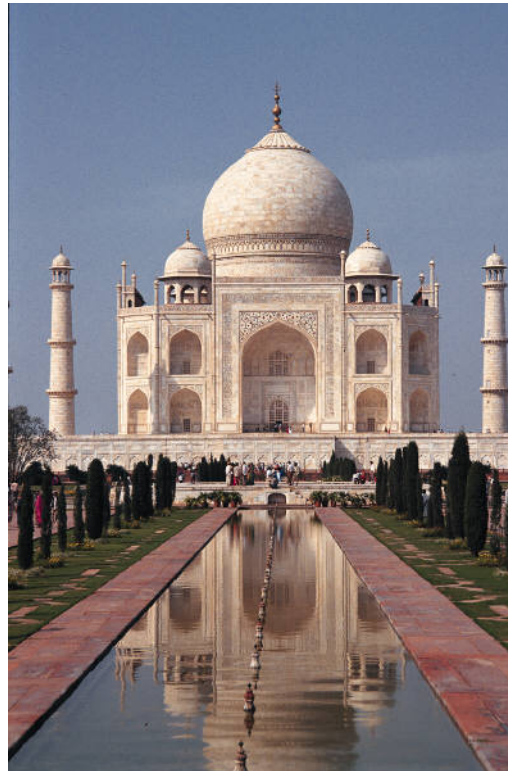


... and even if an individual house is well architected, if each house is different (e.g. different electricity voltage, water pressure) then the city will not work...

... plus, if the purpose of the building is not clear...



Architecture Management – Analogy of the Building Industry – Dependence on Size and Scope



EA is not an island ... there are many variations of engagement

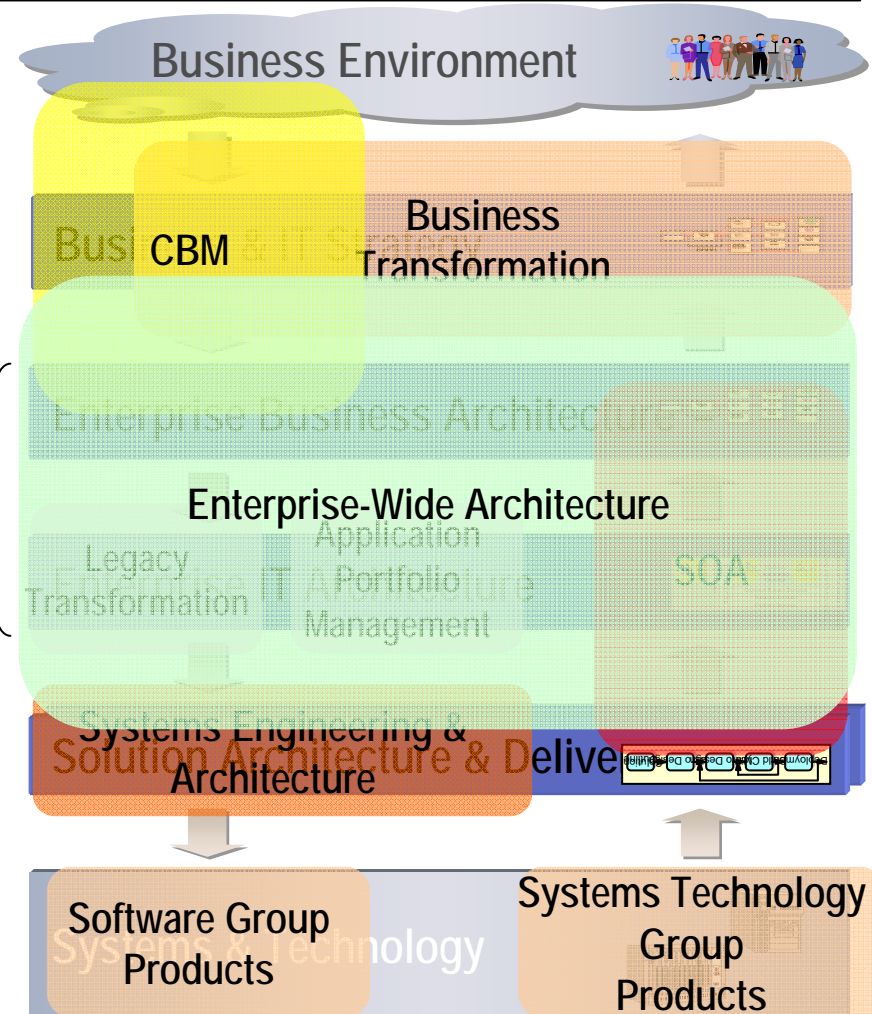
Business Context “the external influences & interactions”

Strategy “the city’s purpose & goals”

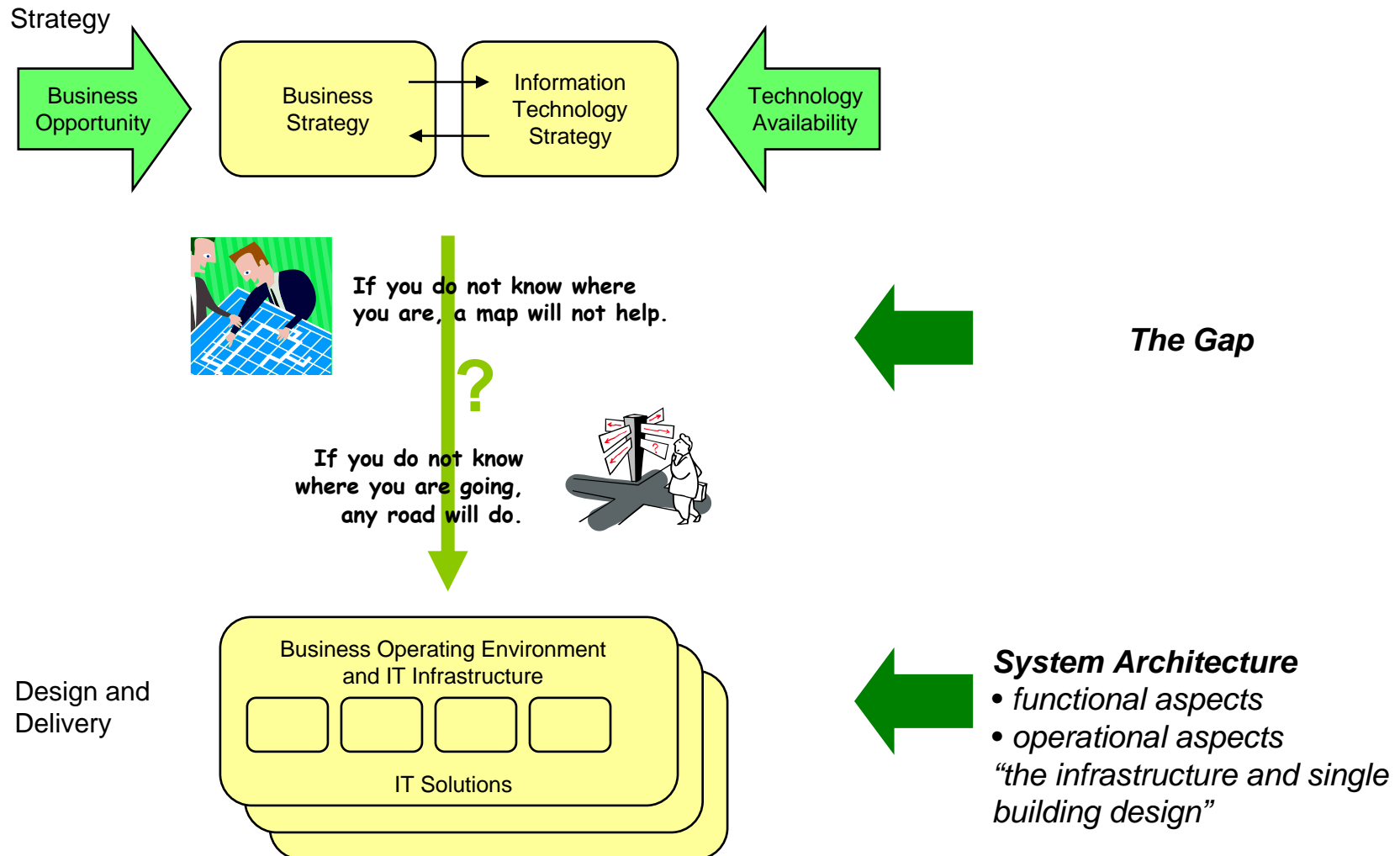
Enterprise Architecture “the city plan”

Solution Architecture “the building design”

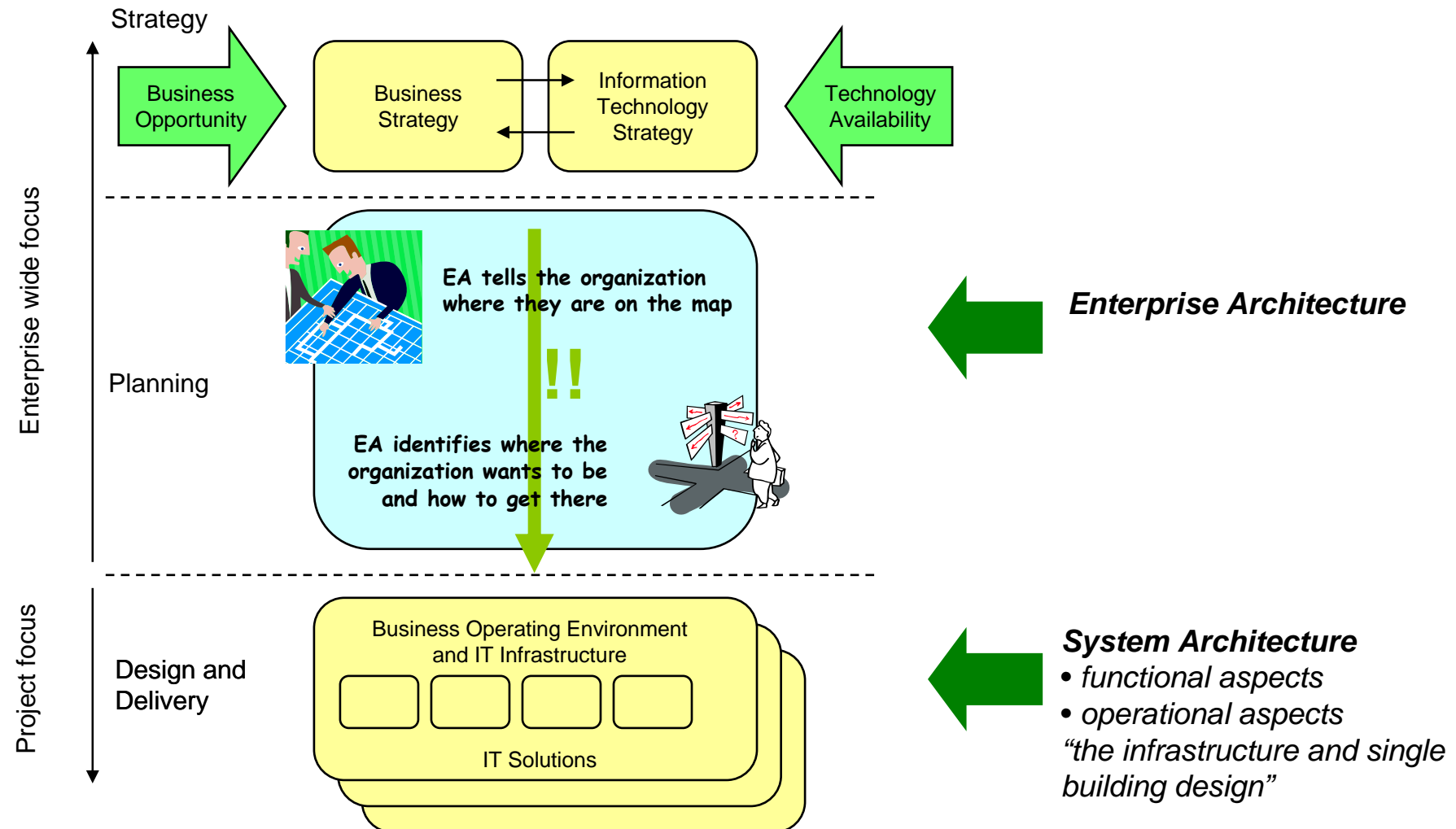
Systems Technology “the actual buildings”



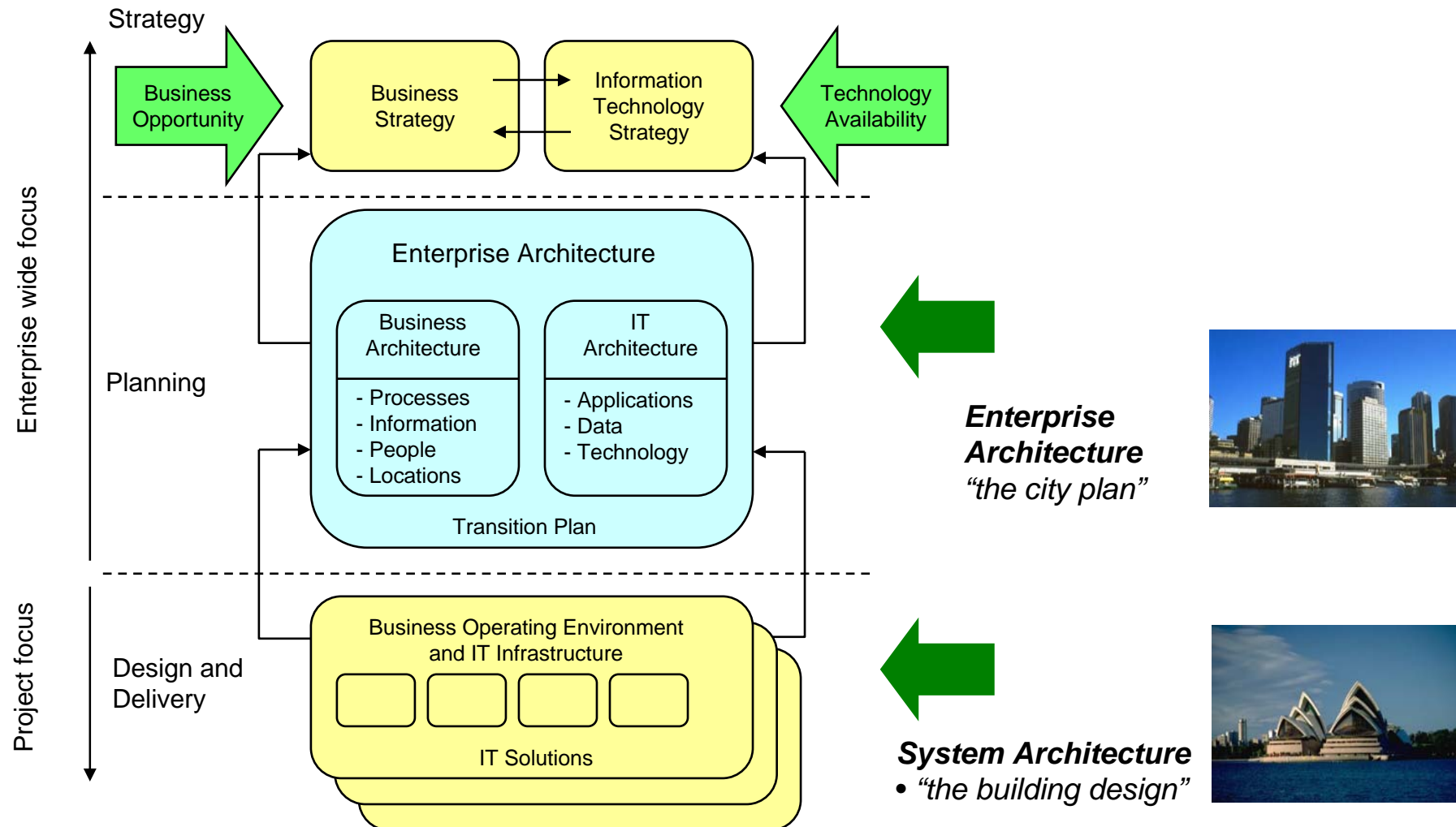
It can be a challenge to ensure IT based business solutions implement the business strategy...



IBM believes that an Enterprise Architecture provides the vital linkages between “strategy” and “implementation”



Enterprise Architecture embraces both Business and IT Architectures, providing the “city plan” for “building projects”



Enterprise Architecture (EA) Definition – Architecture Models and Governance

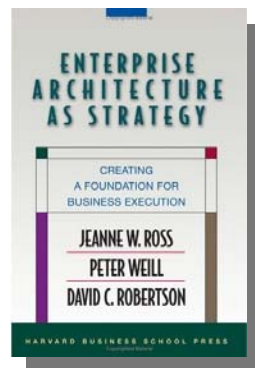
*“The EA **discipline** defines and maintains the **architecture models**, **governance** and **transition initiatives** needed to effectively co-ordinate semi-autonomous groups towards **common business and/or IT goals**.“*

EA Academy Study Team, Orlando Workshop, 12th-13th March 2004

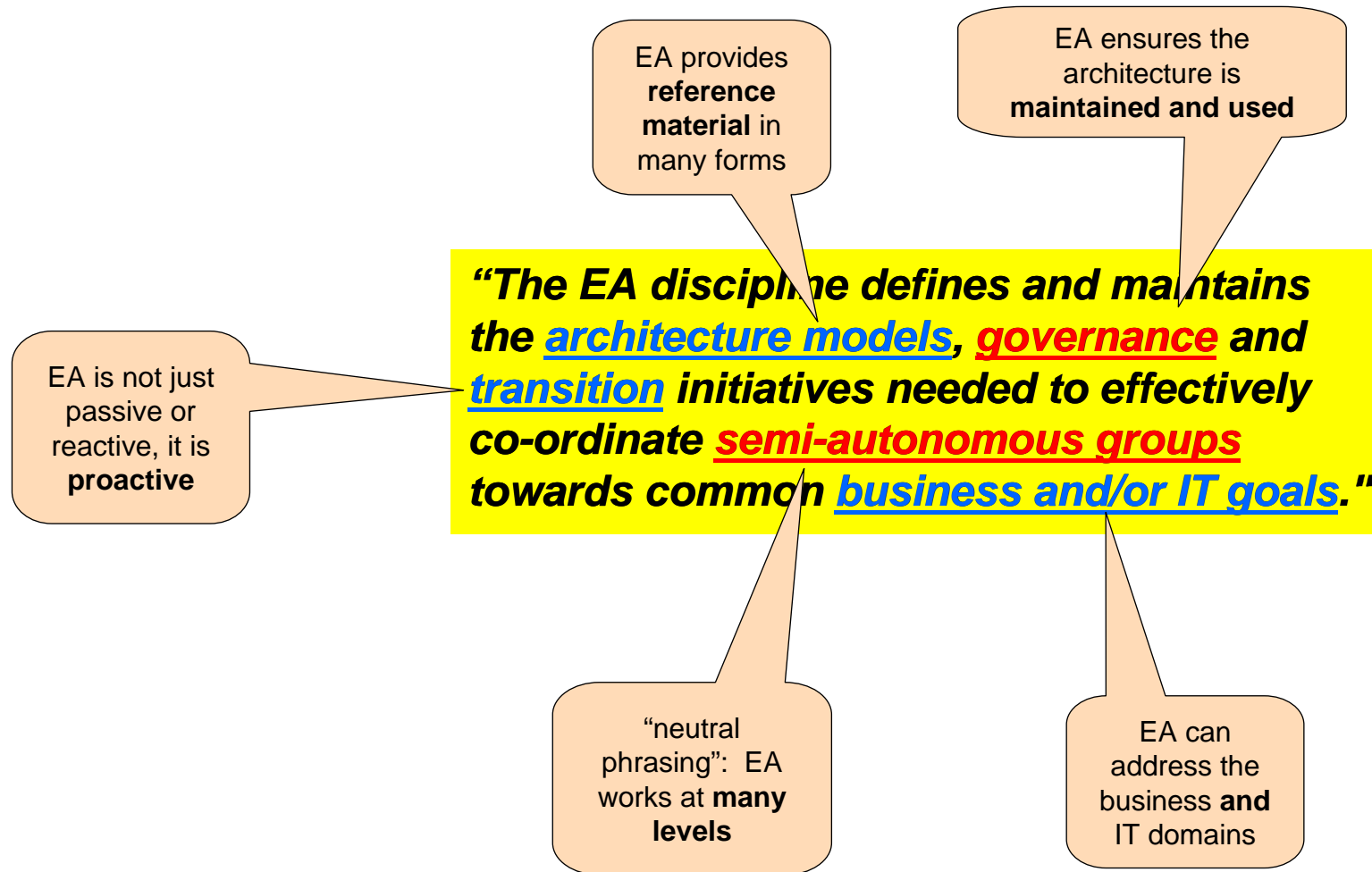
- Intended to capture the need for an EA to **link** an enterprise's business **strategy** to its **change programs**, through the definition of:
 - **Architecture models** to capture the business's intended structure (through a Business Architecture) and to provide a clear specification of how multiple projects and programs must exploit information technology (through common (explicit) IS and IT Architectures),
 - Mechanisms such as **Architecture Governance and Transition Planning** to help *plan, co-ordinate and control* all parts of the business – ensuring they all “pull in the same direction”.

A definition:

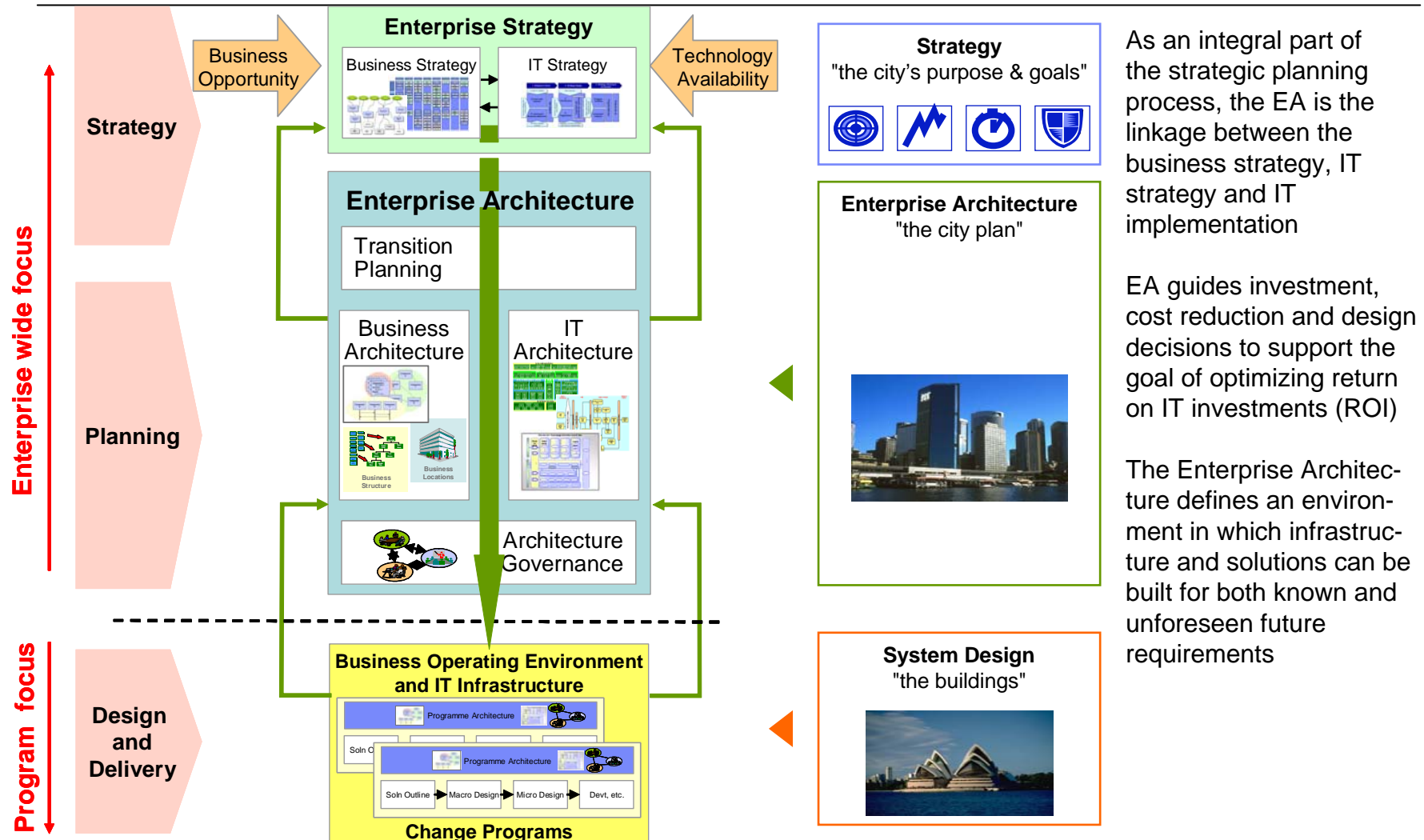
- “The **Enterprise Architecture** is the organising logic for business processes and IT infrastructure, reflecting the integration and standardisation requirements of the company’s operating model
- The **Enterprise Architecture** provides a long term view of a company’s processes, systems and technologies so that individual projects can build capabilities – not just fulfil immediate needs”
 - Ross et al, “Enterprise Architecture as Strategy”, 2006 (Harvard business press)



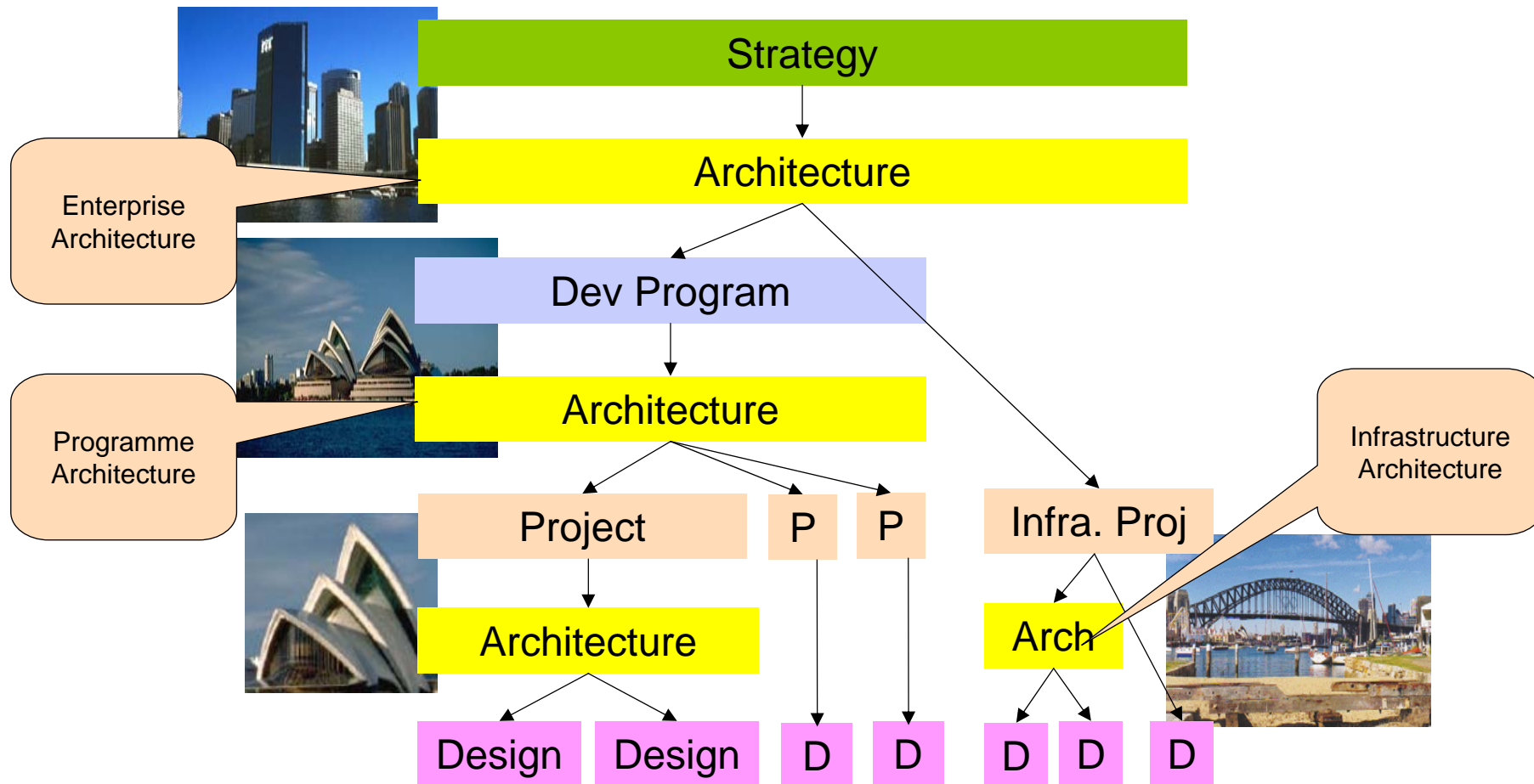
A second Definition: IBM's



Enterprise Architecture provides the “city plan” for business and IT “building blocks”



EA provides a context and guidance, keeping everyone “on the same road”

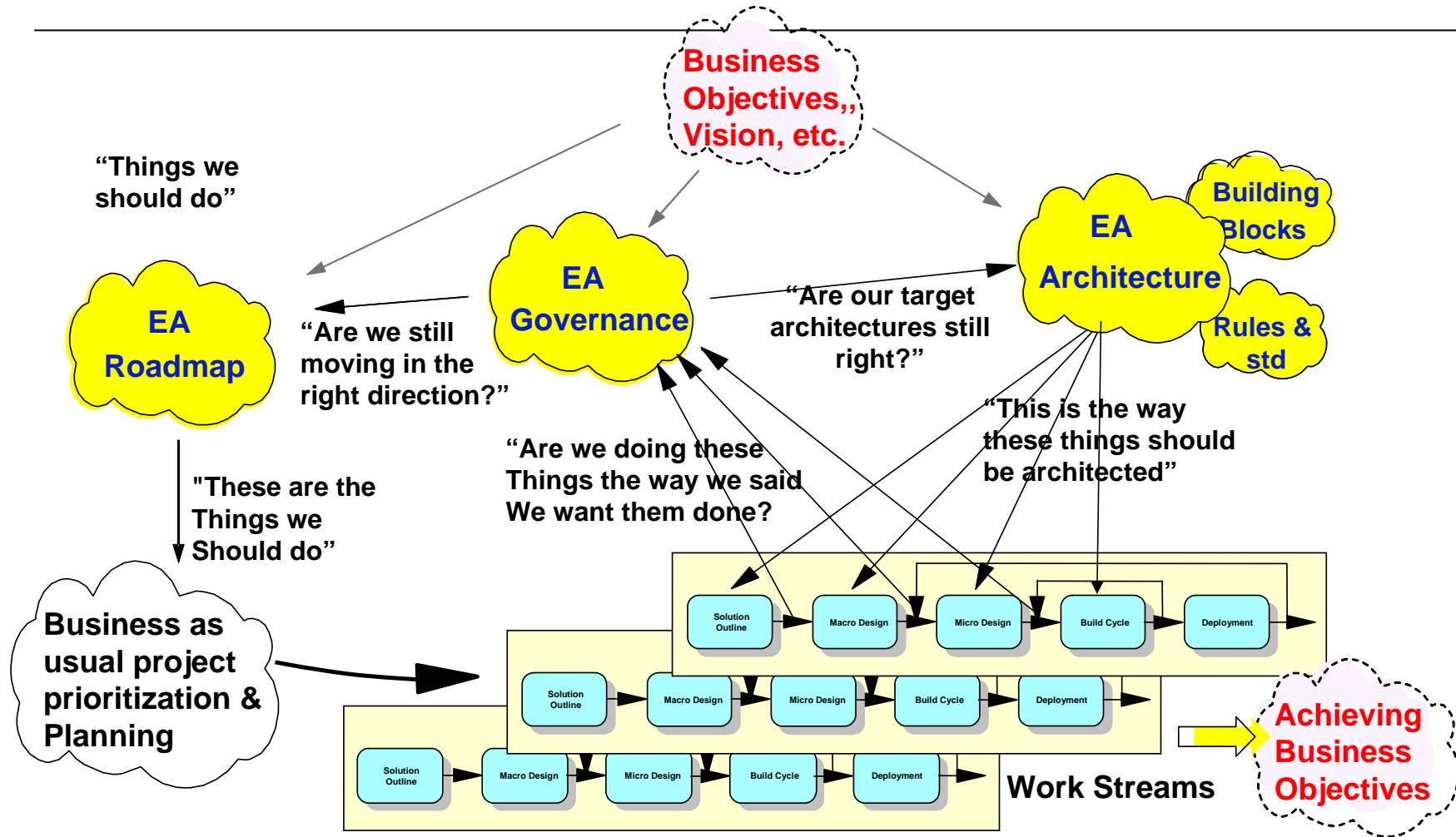


II. Enterprise Architecture Methods

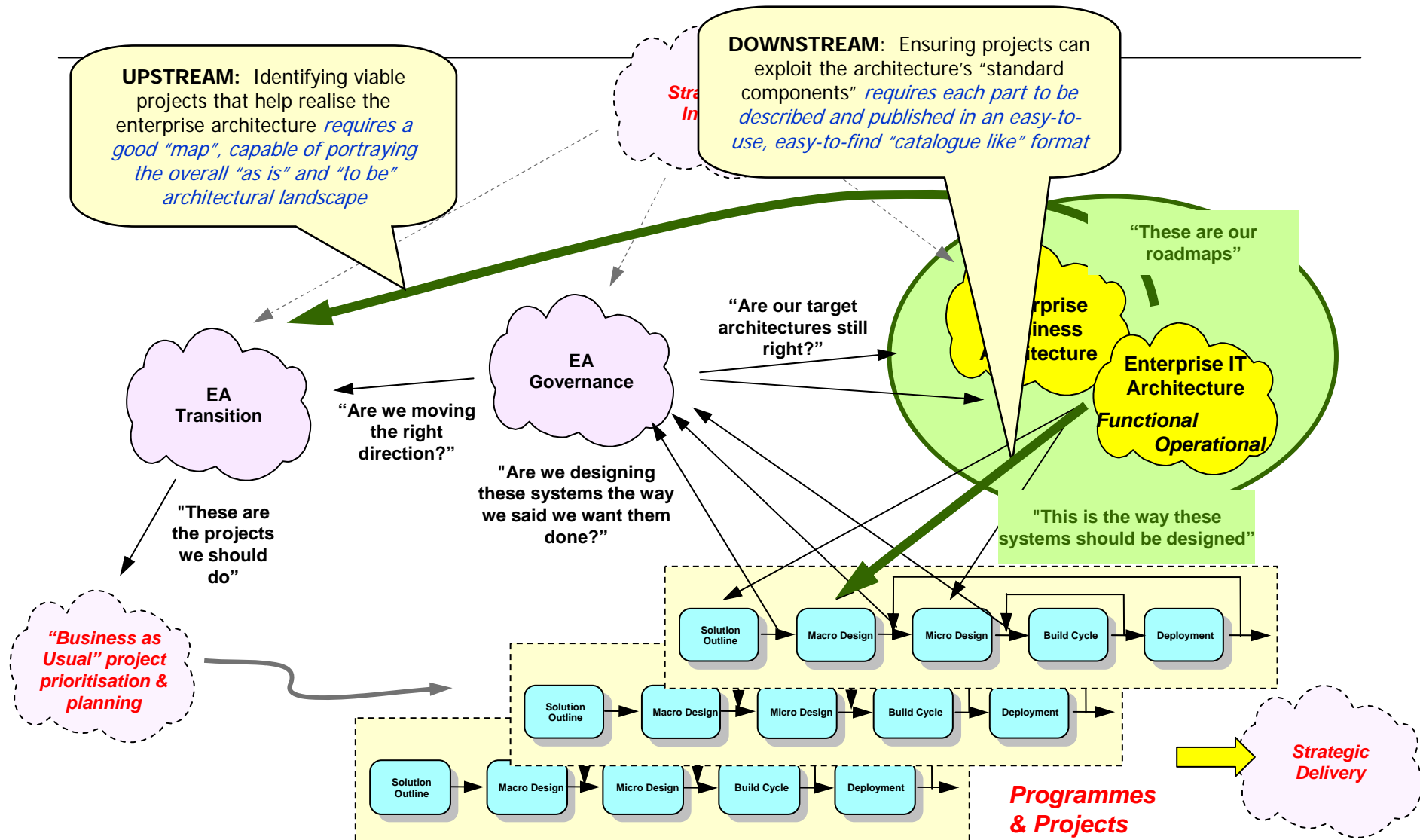
Main aspects of an Enterprise Architecture

- **Enterprise Architecture** is between the Business and IT Strategy and the programs and projects to be carried out
- Enterprise Architecture includes **Business Architecture** as well as **IT Architecture** (which is **IS Architecture** – Information System – and **Technology Architecture**)
- Enterprise Architecture **guides** the programs and projects

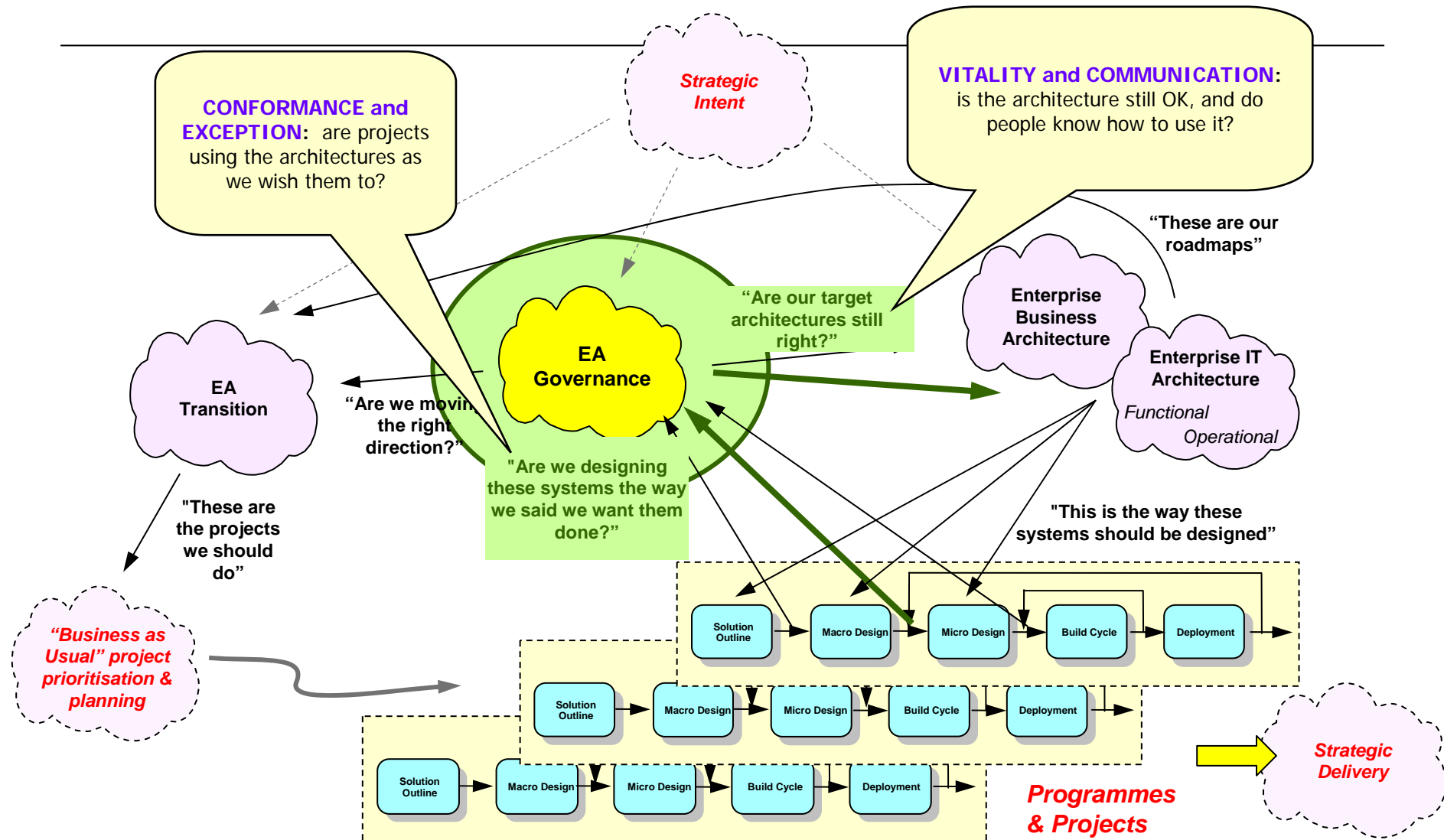
EA is More than Architecture



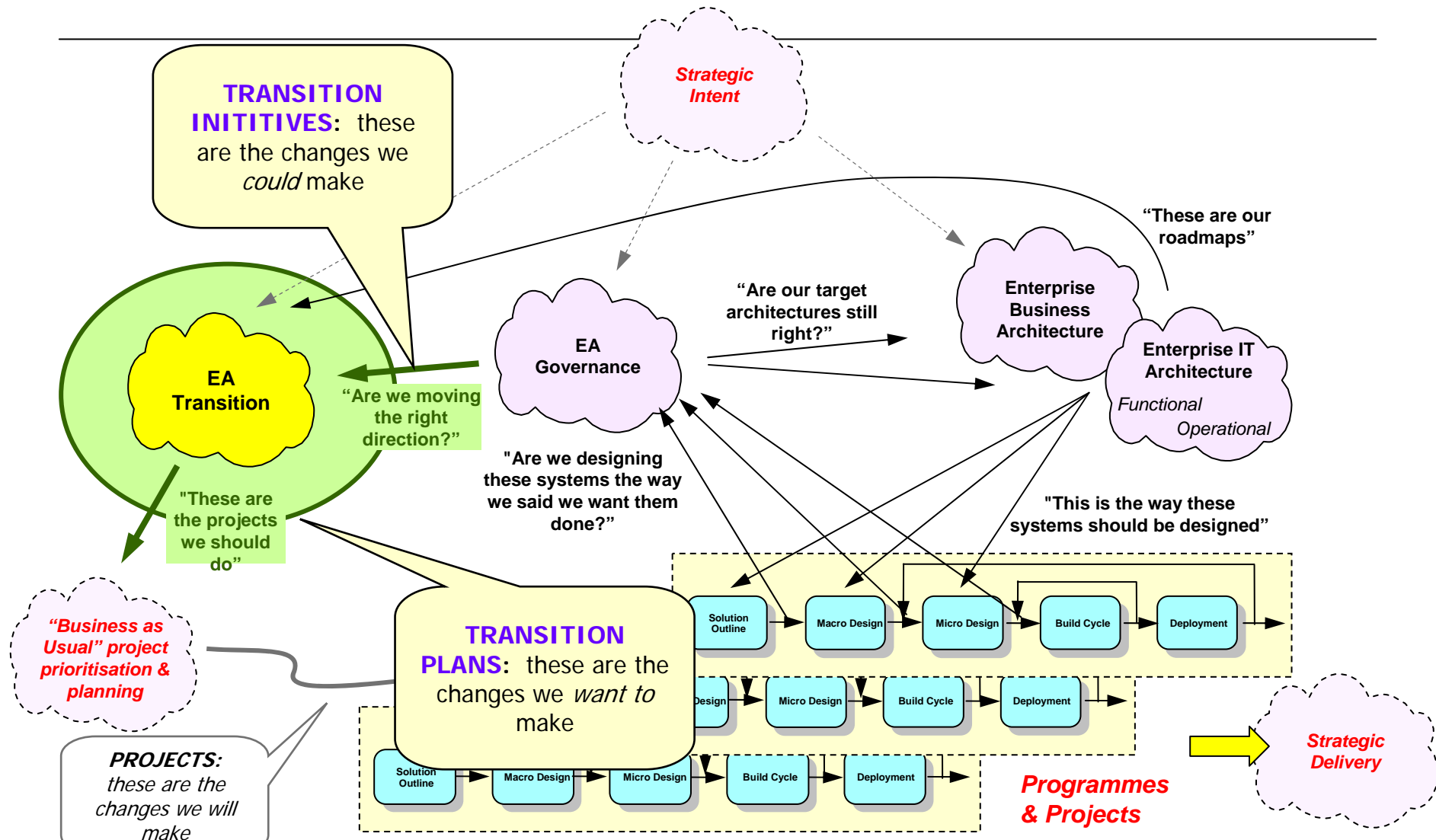
There are three parts to EA – part 1: Architecture



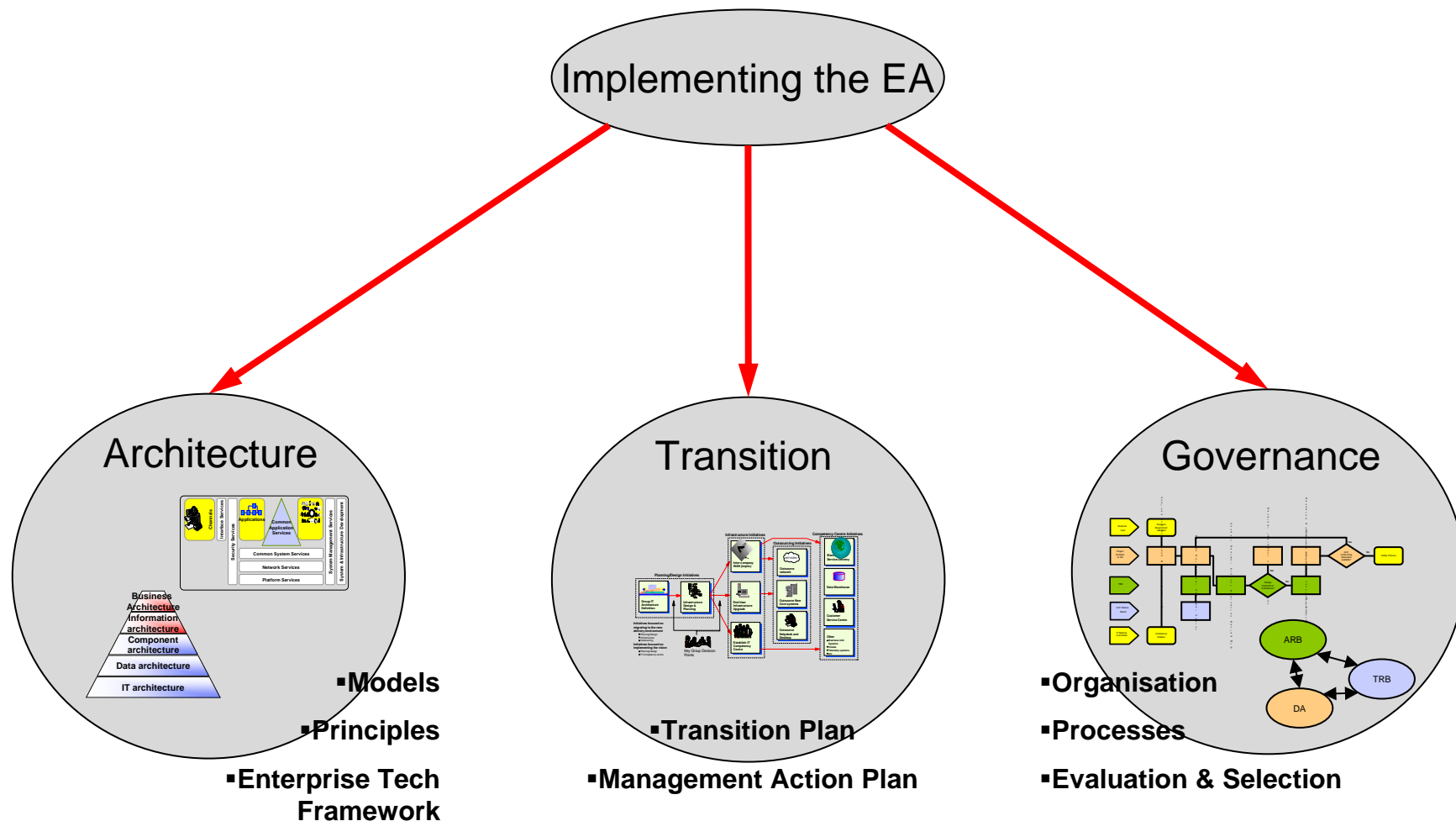
There are three parts to EA – part 2: Governance



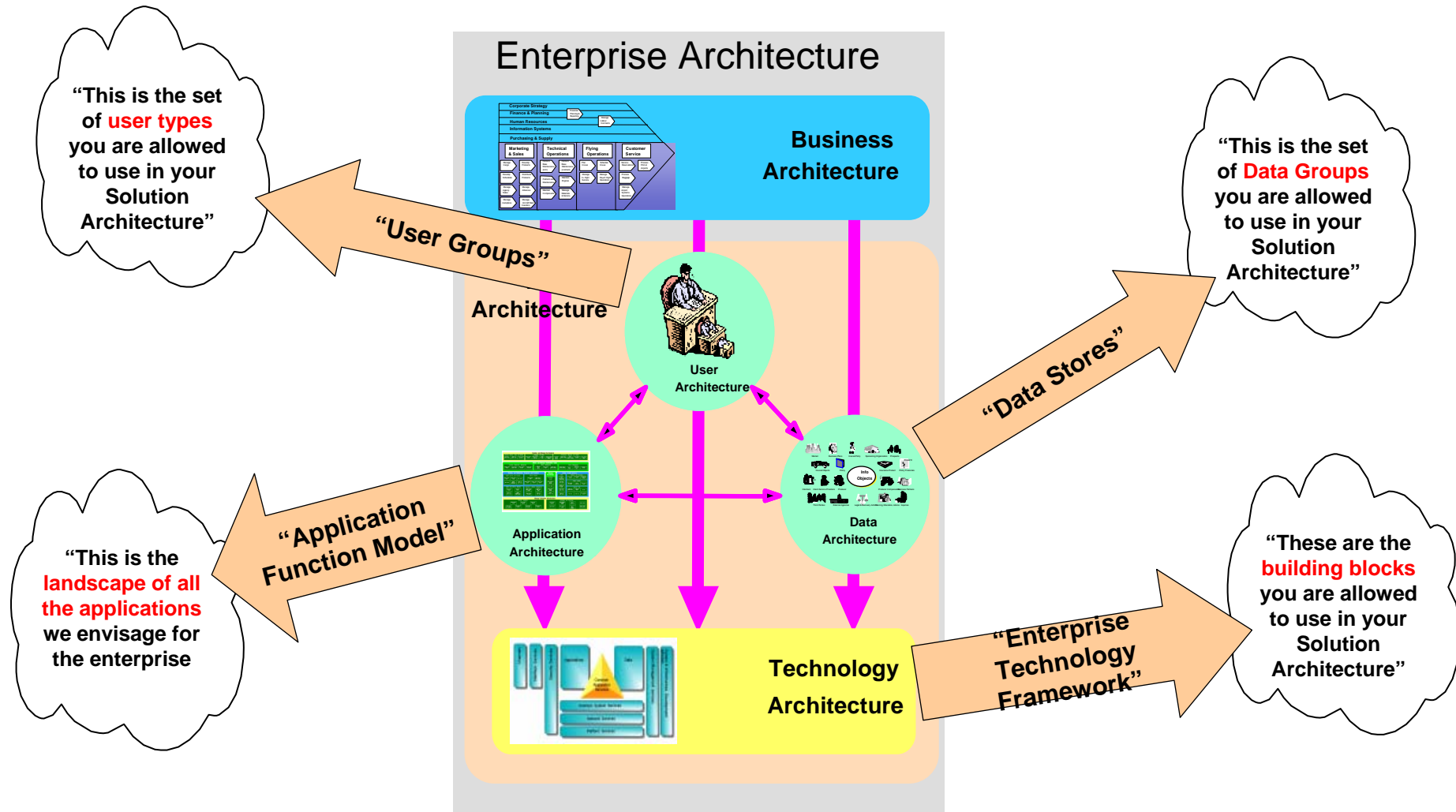
There are three parts to EA – part 3: Transition



Therefore there are three aspects to implementing an Enterprise Architecture



There is a relatively simple mapping from EA to solution ...



II. Enterprise Architecture Methods

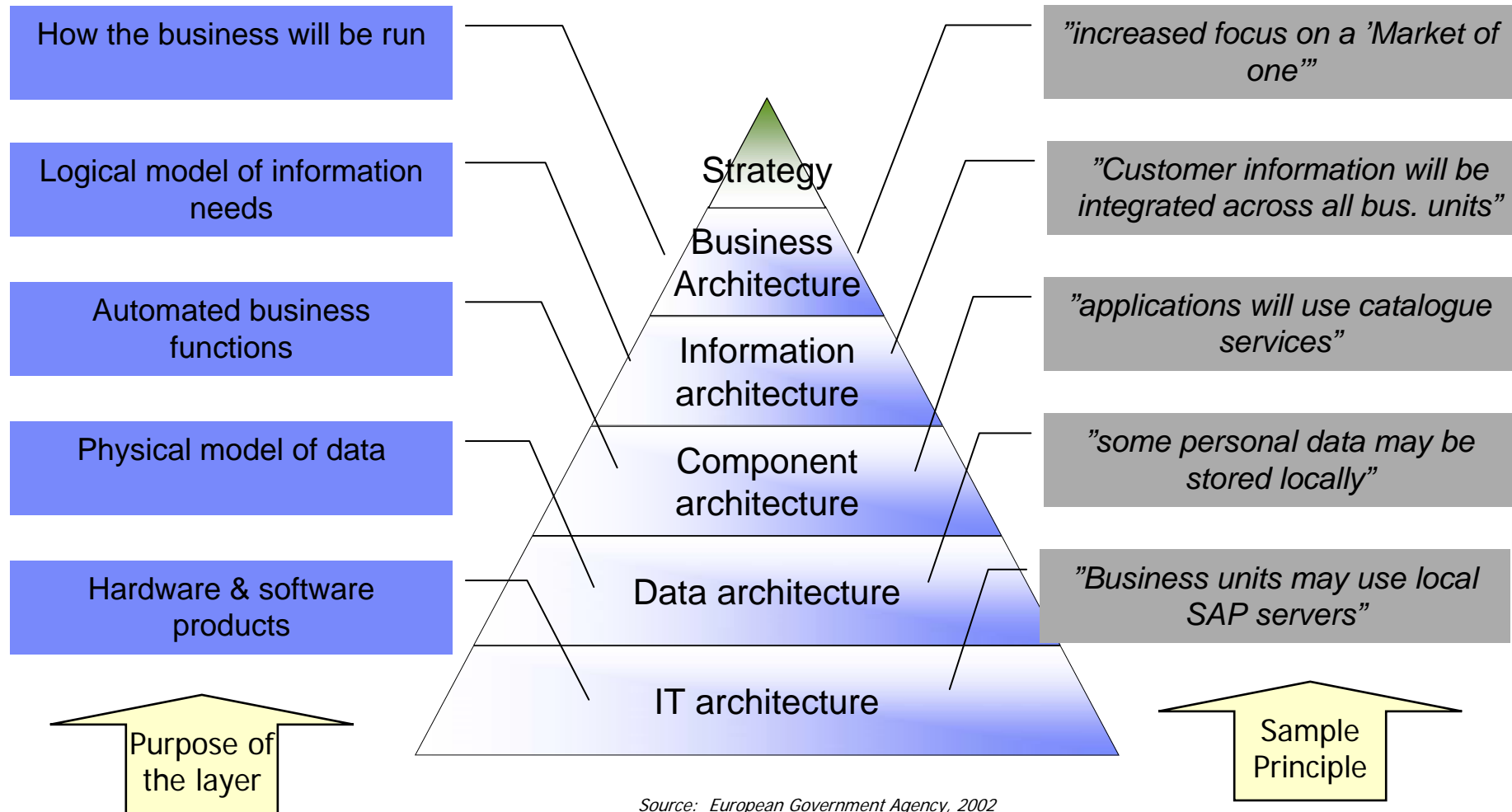
Enterprise Architecture Methods

- Enterprise Architecture methods provide **guidelines** and **templates** for the definition of an Enterprise Architecture
- Templates are available for **Work Products / Artifacts** – most of them as described in Architecture Methods
- Most popular Enterprise Architecture Methods
 - IBM
 - Zachman (www.zifa.com)
 - TOGAF (www.opengroup.org)

Key terms and phrases used in EA Methods

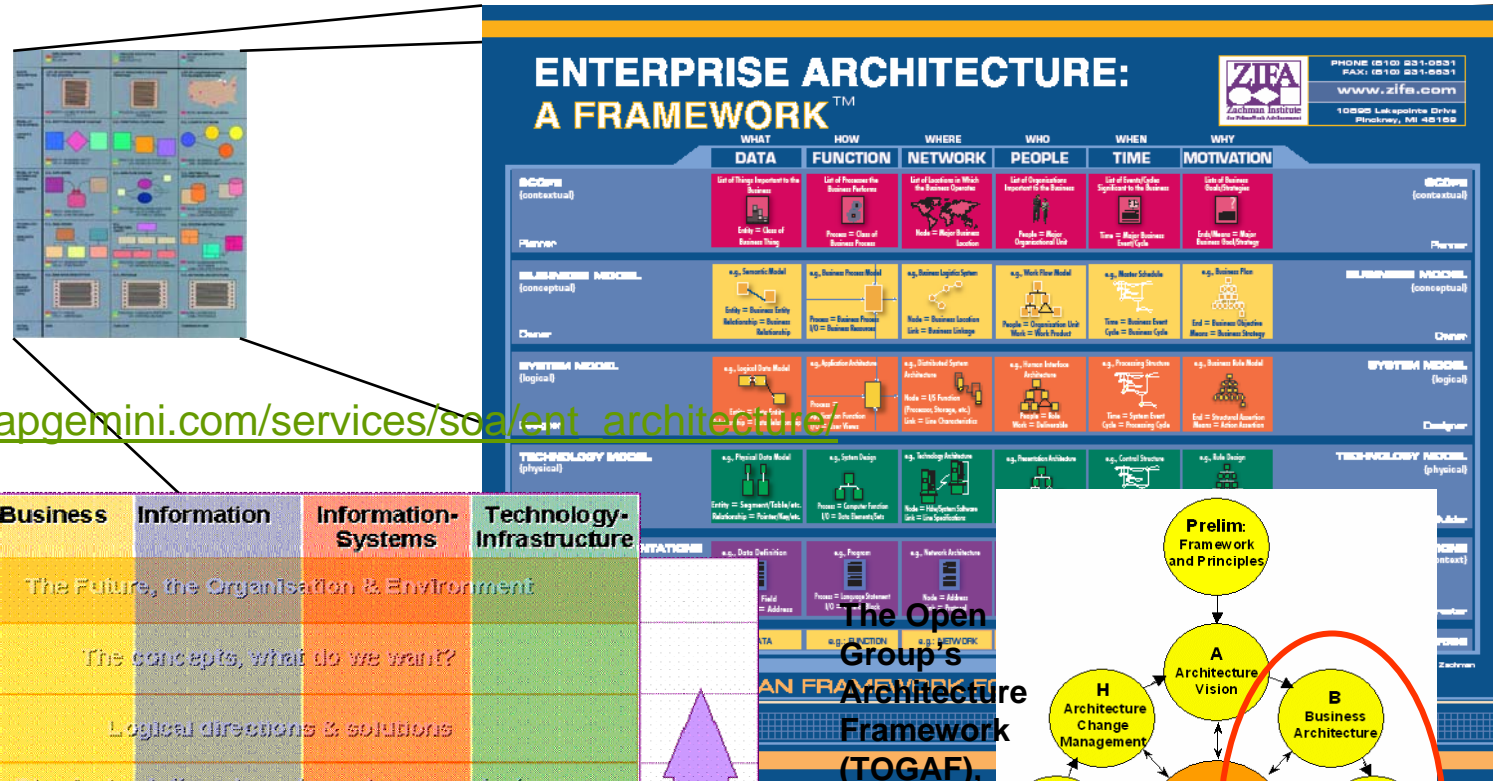
Architecture framework	A structured approach to the management and use of an enterprise architecture's various architectural assets, commonly called architecture building blocks (ABBs)
Architecture layer	A slice of the EA architecture framework, generally drawn horizontally, that separates out the business, IS and technology assets.
Architecture aspect	A slice of the EA architecture framework, generally drawn vertically, that separates out common themes or topics across the layers.
Architecture Building Block	An elemental part of an EA's architecture. ABBs are used as standard parts across an enterprise in the design and construction of its many and varied business and IT systems, as well as being a useful categorisation of stuff in transition planning. An ABB category may be associated with a specific aspect of a specific layer of an Architecture framework
Framework cell (or "cell")	The intersection between a layer and an aspect. Typically occupied by one or more of the EA Method's architecture related work products
Solution Architecture	The IS and IT architectures created for a specific business solution. Sometimes called IT Architecture (particularly by IT Architects), or Solution Design (often by our clients)

A popular way of structuring an EA's architecture framework: is to adopt a simple layered approach



Source: European Government Agency, 2002

All EAs have a “framework” – a means of organizing, managing and communicating the architecture (1)



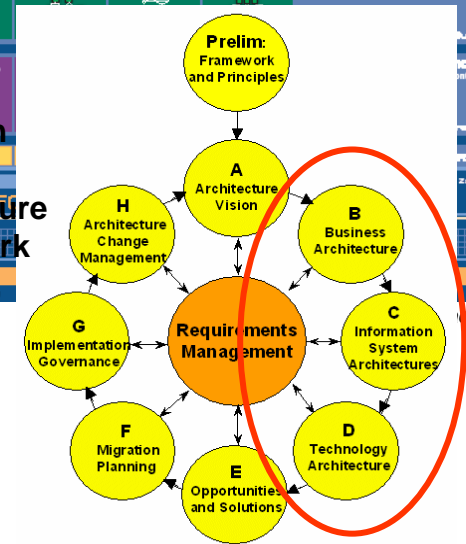
http://www.capgemini.com/services/soa/ent_architecture/

	Business	Information	Information-Systems	Technology-Infrastructure
Why? Contextual	The Future, the Organisation & Environment			
What? Conceptual	The concepts, what do we want?			
How? Logical	Logical directions & solutions			
With What Physical	Physical solutions based on change, redesign, products or techniques			
When Transformational	Change from the existing to a future situation			
	Security & Governance		Viewpoints	

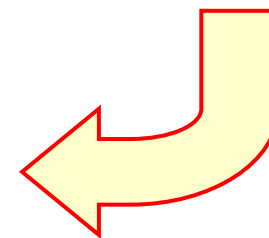
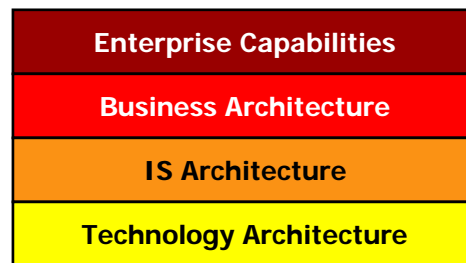
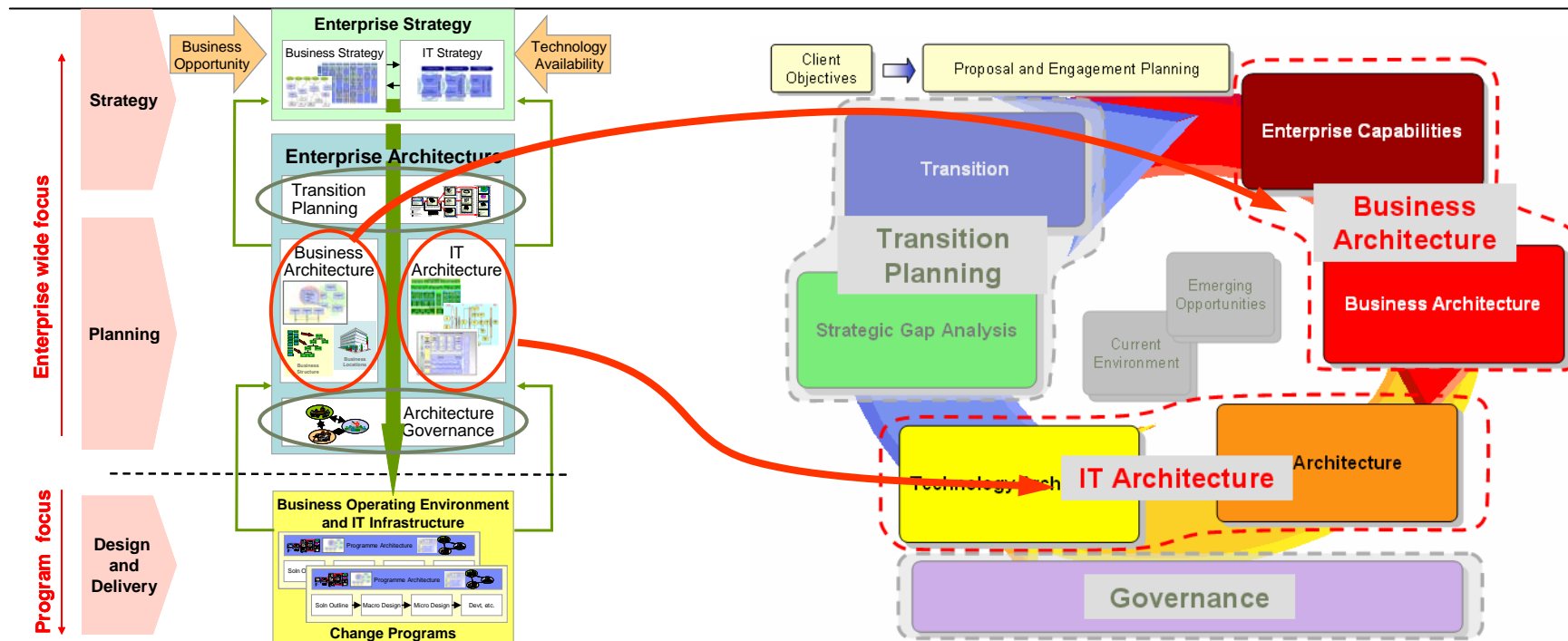
Optional 5th layer

© CapGemini, 2005

The Open Group's Architecture Framework (TOGAF), UK

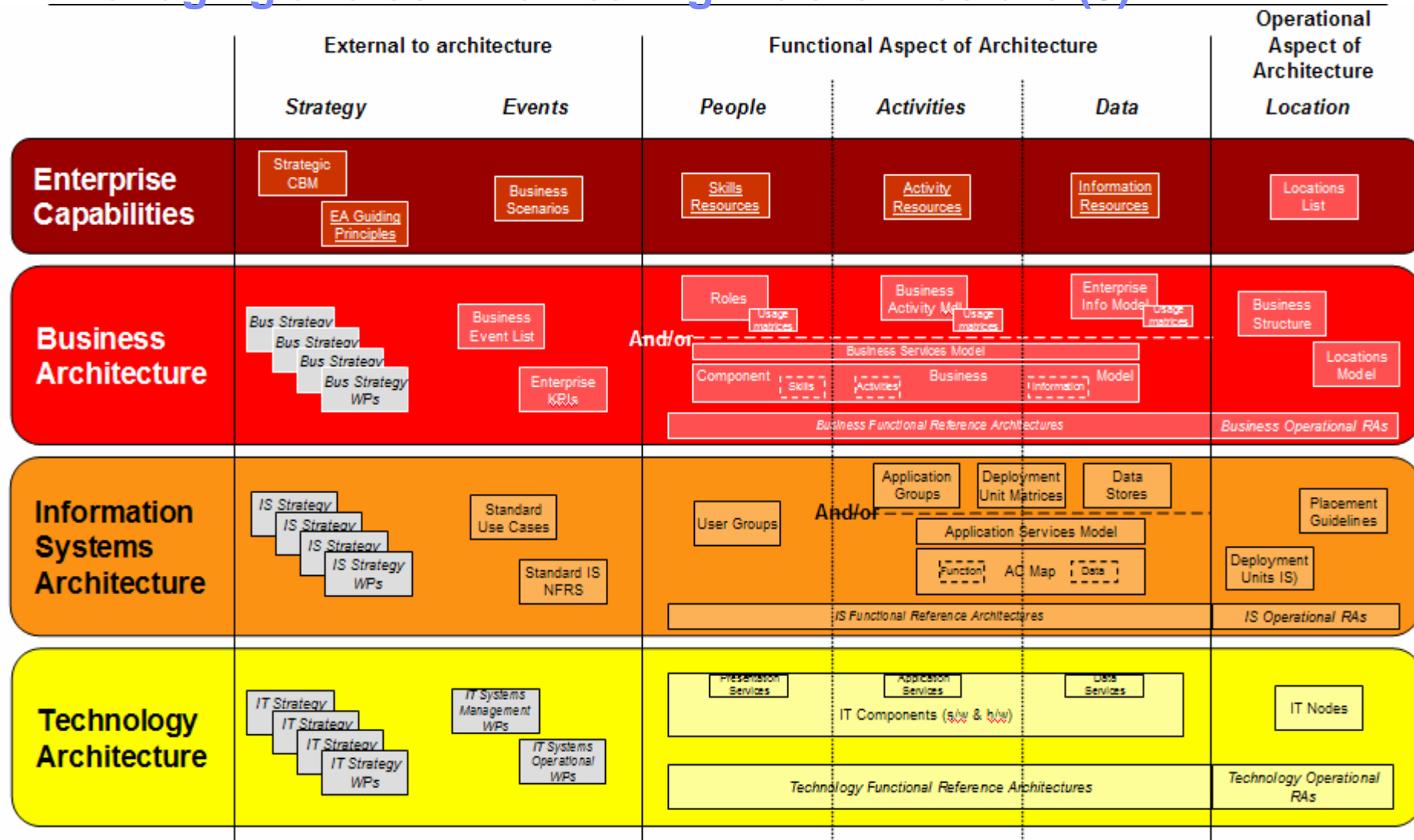


All EAs have a “framework” – a means of organizing, managing and communicating the architecture (2)

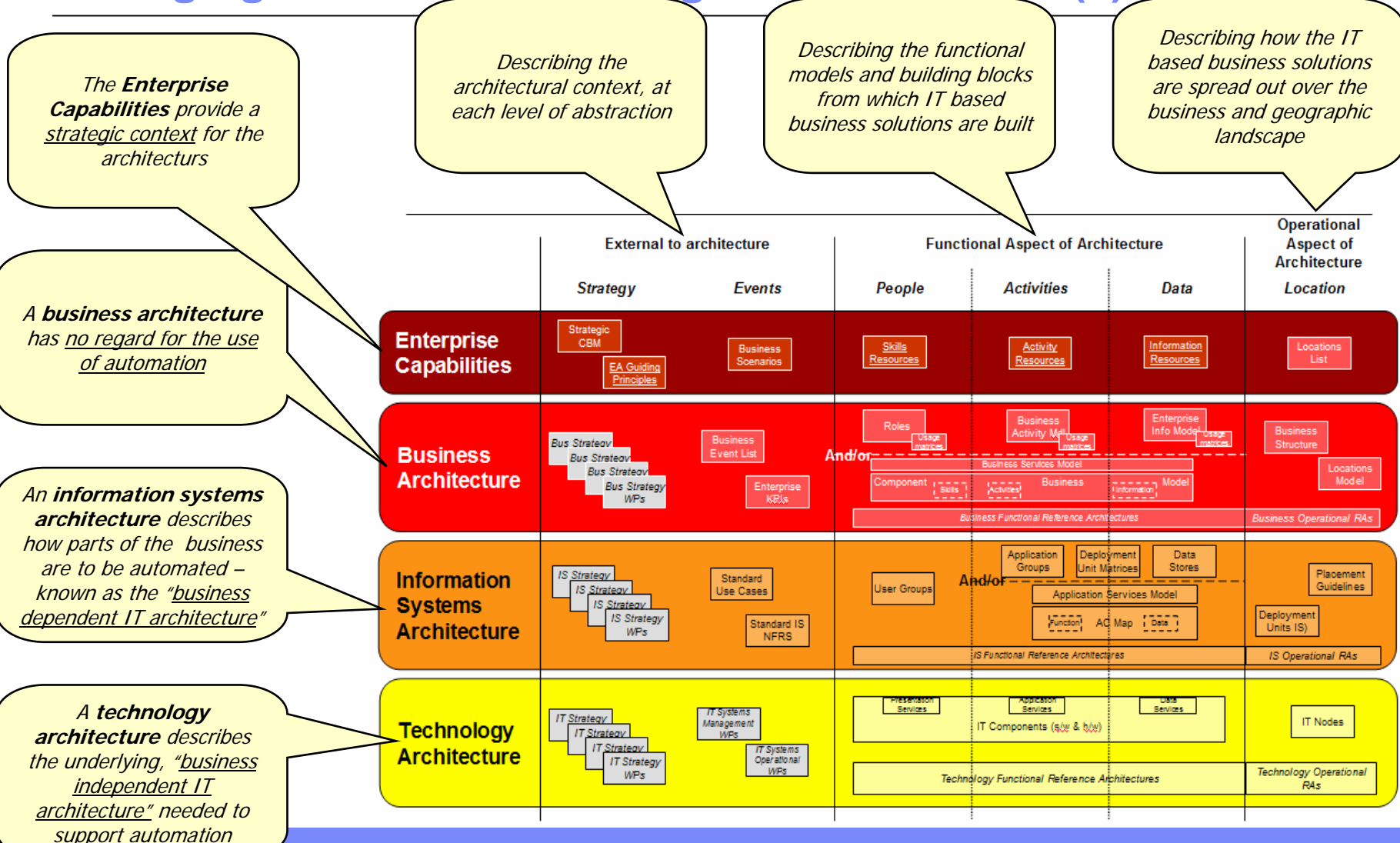


The EA Consulting Method's architectural layers

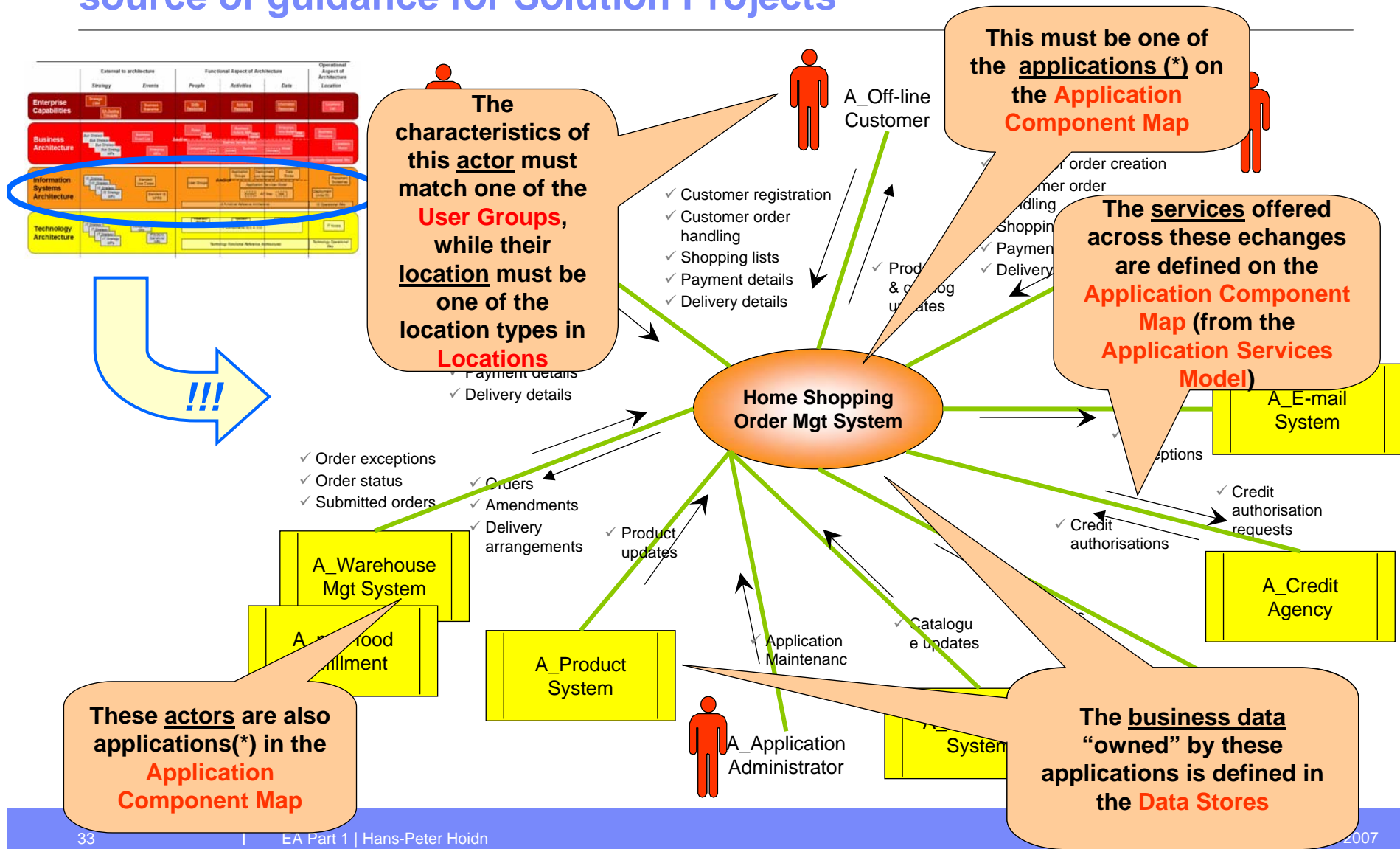
All EAs have a “framework” – a means of organizing, managing and communicating the architecture (3)



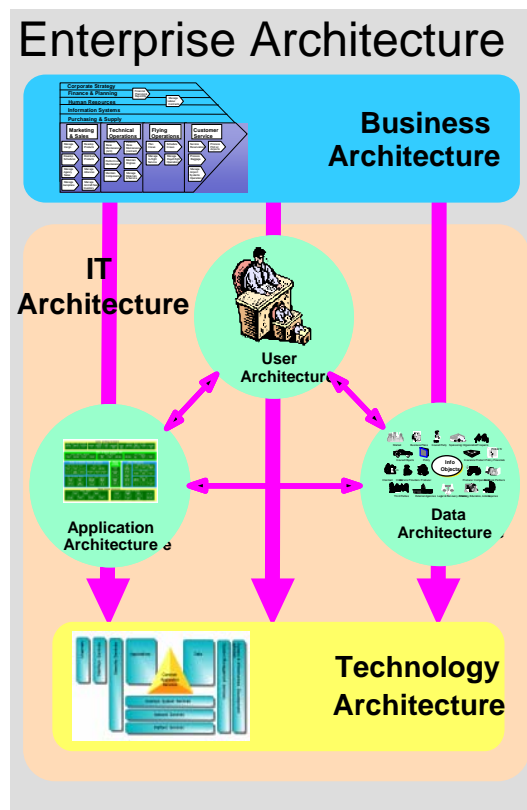
All EAs have a “framework” – a means of organizing, managing and communicating the architecture (4)



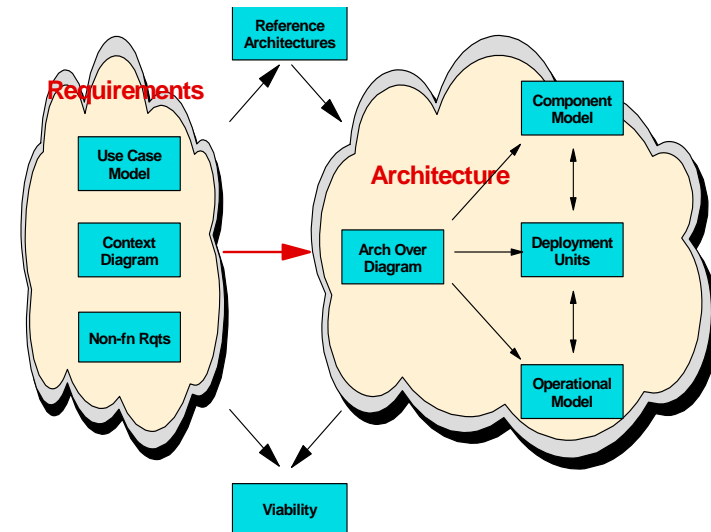
This framework provides a readily navigated and understood source of guidance for Solution Projects



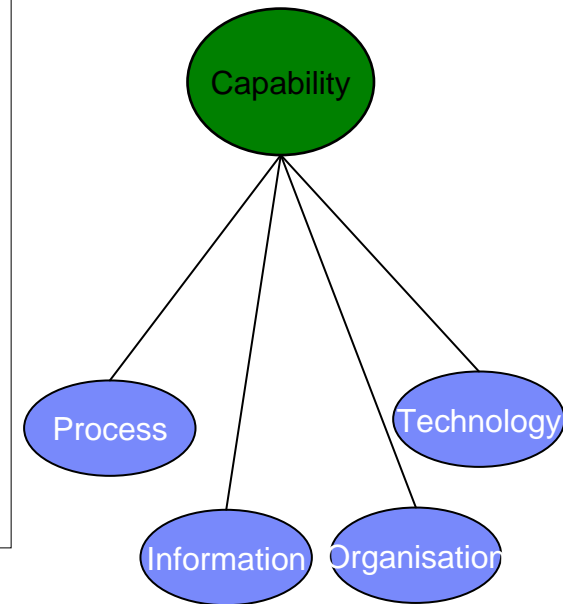
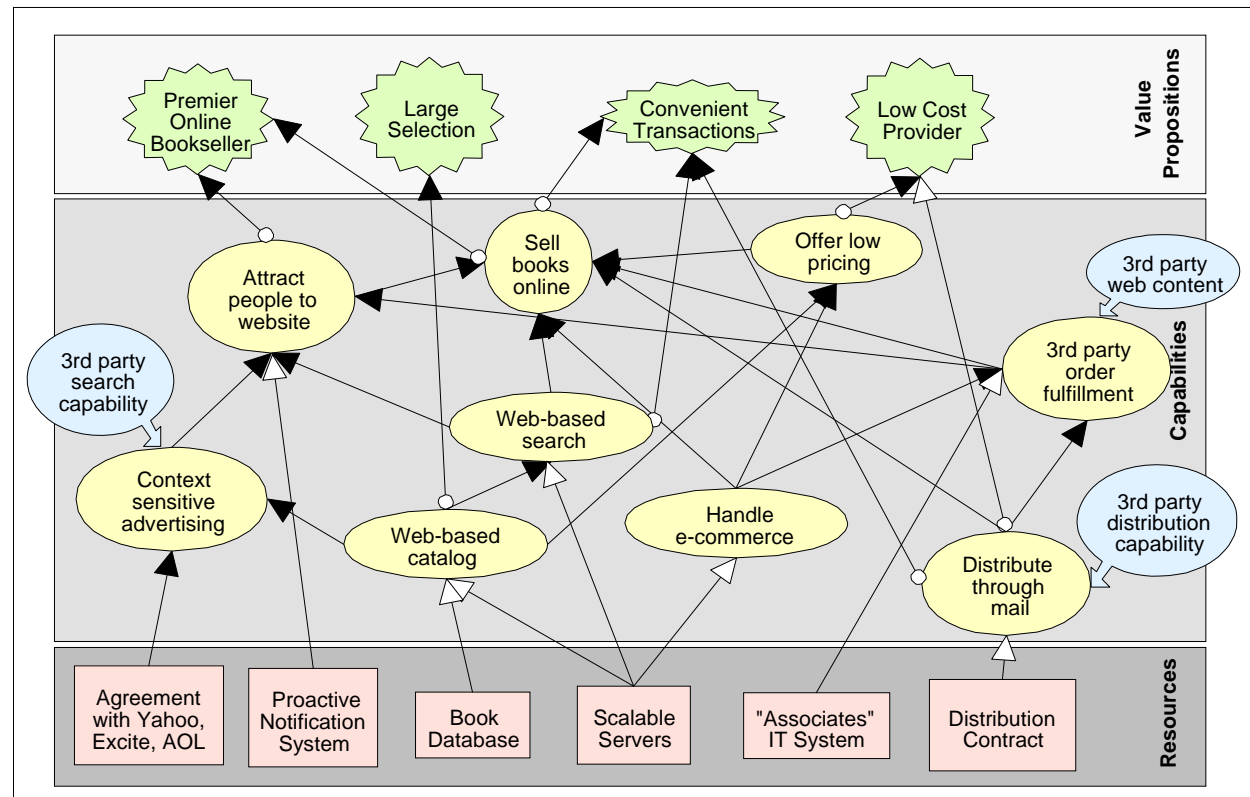
EA Work Products guide and govern how solution Work Products are constructed



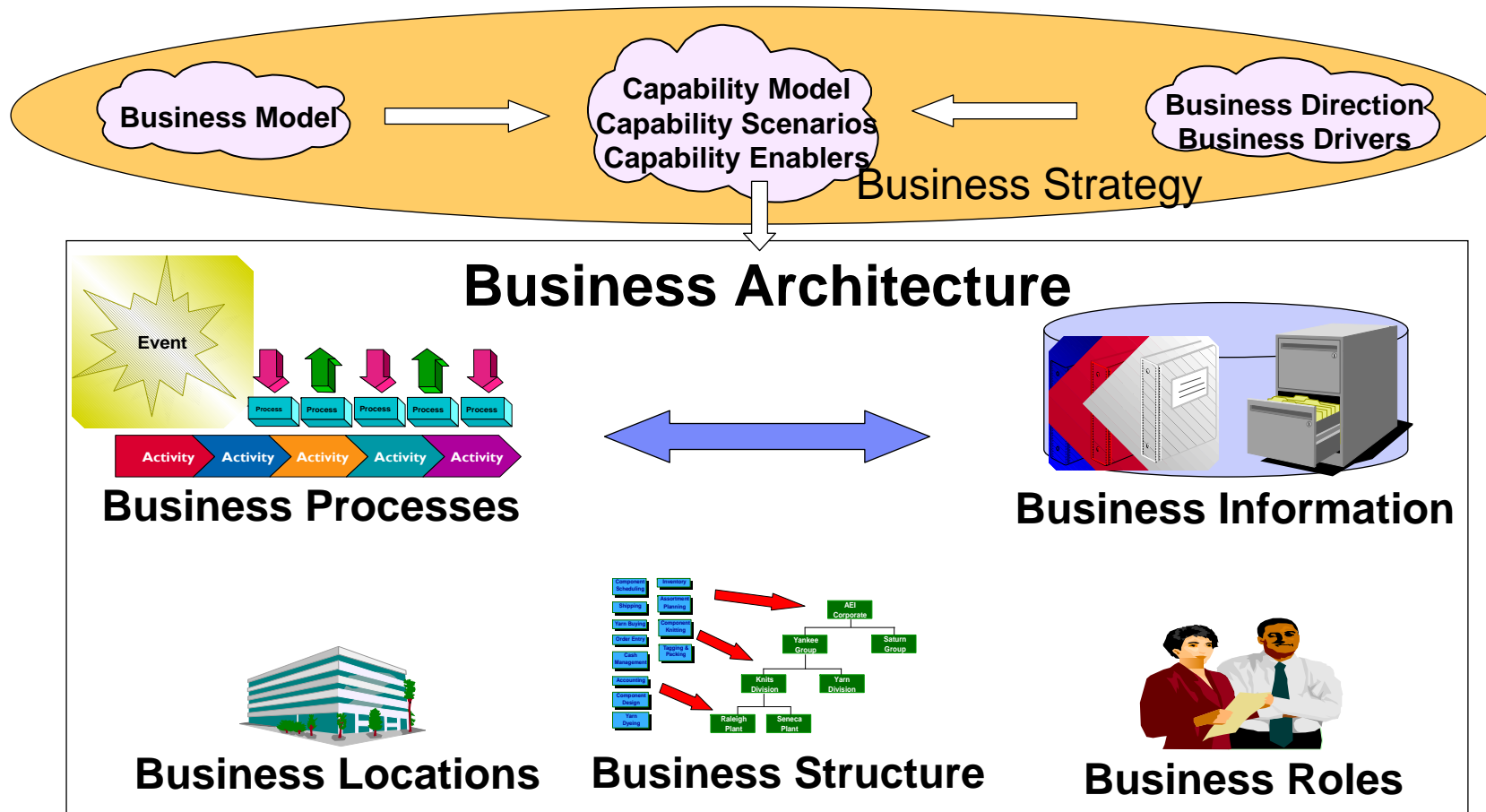
“EA
constrains
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of IT based
business
systems”



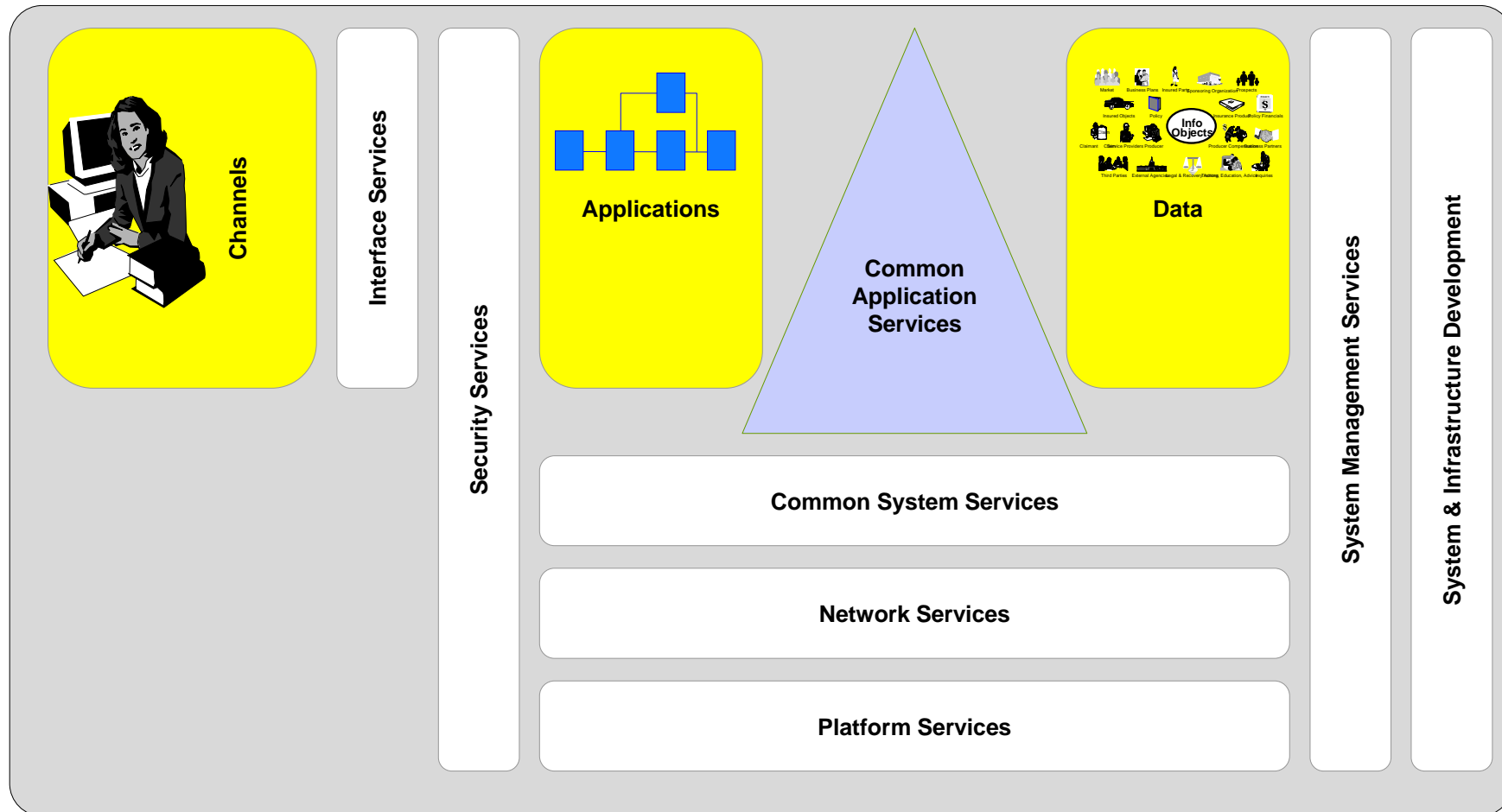
Enterprise Capabilities: Linking Strategy to Architecture (Example Amazon)



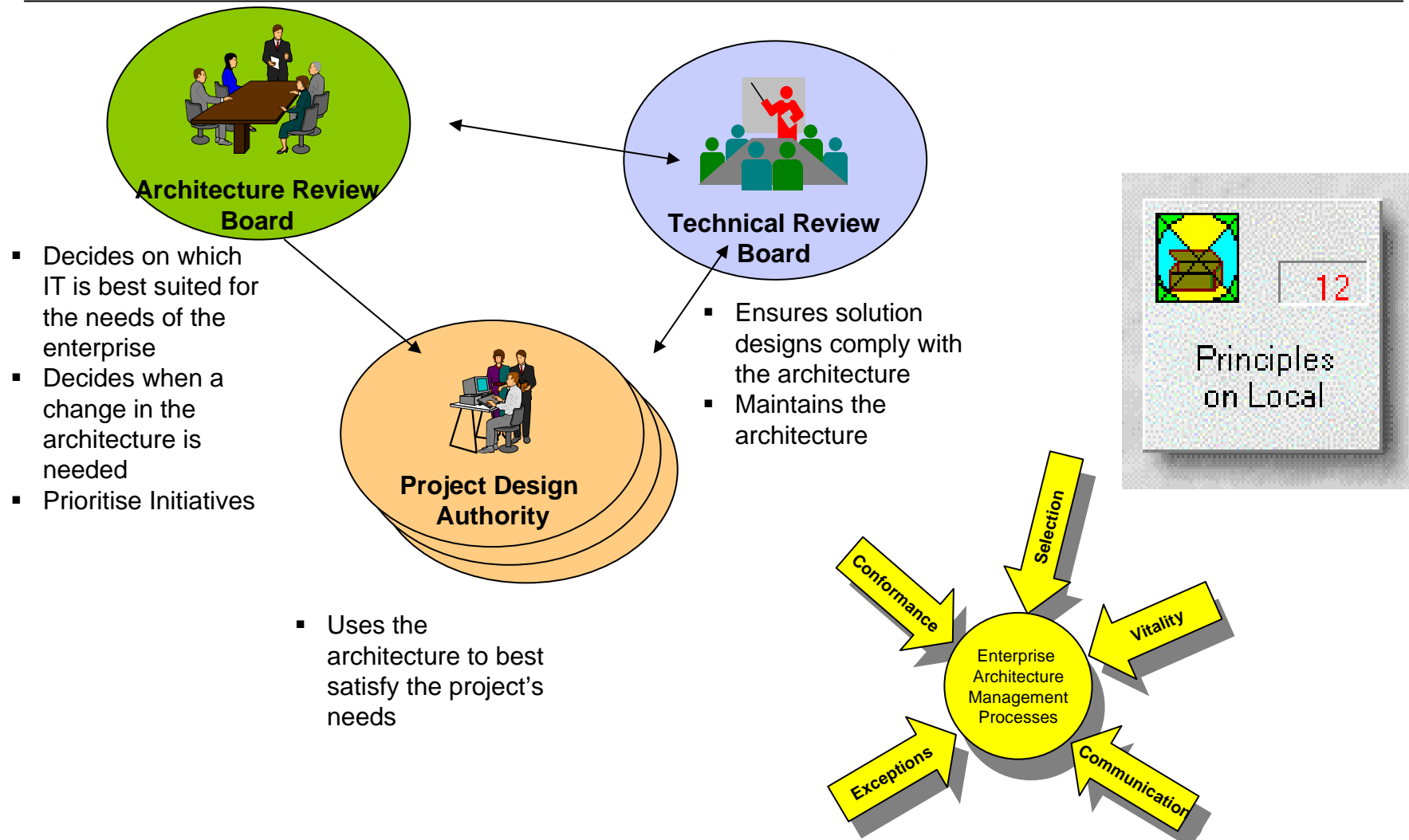
Business Architecture: Organization and co-operation



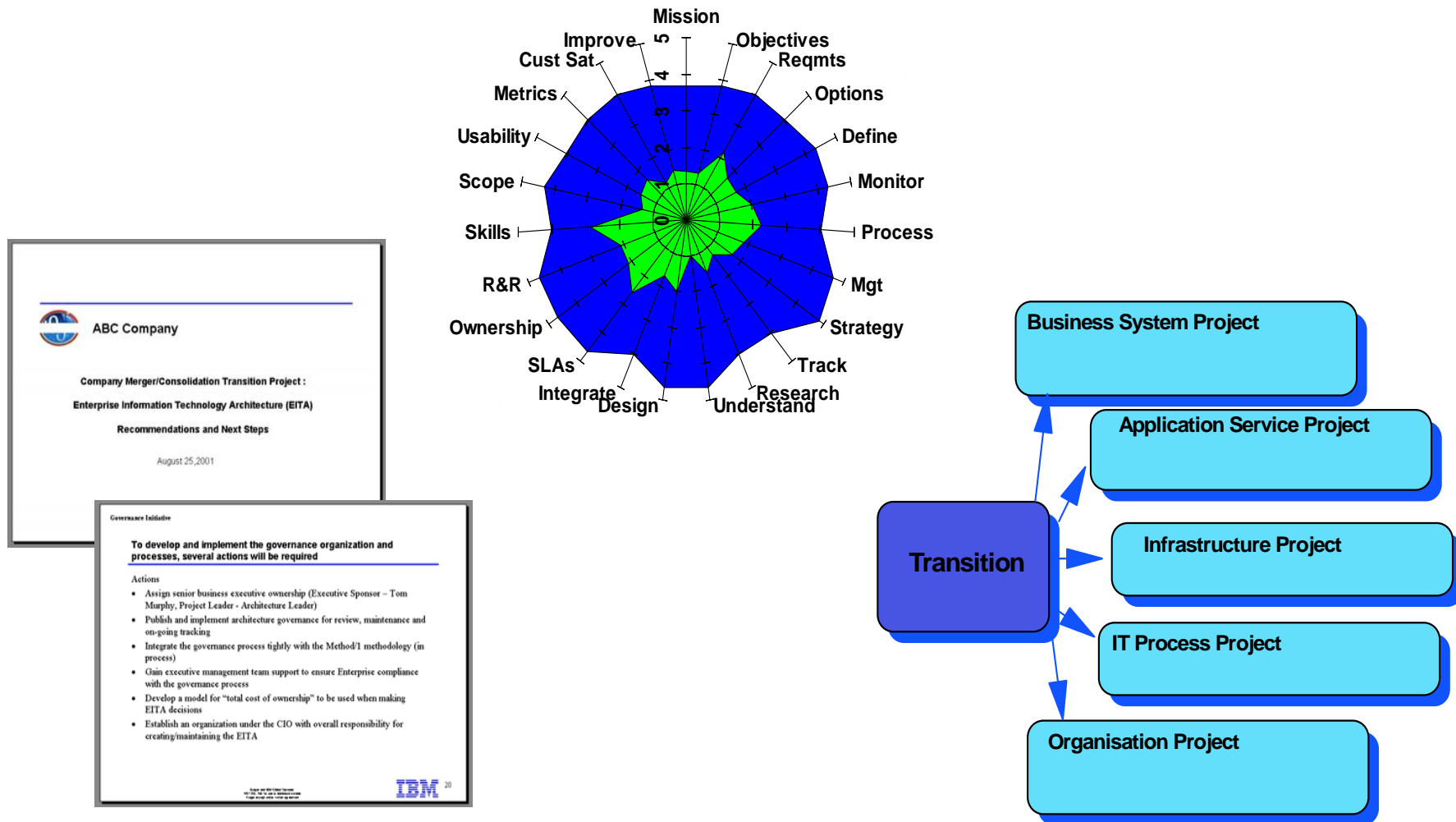
IS Architecture: Shape and Structure for ALL IT projects



Governance: Keeping it all together – day in, day out



Gap Analysis and Transition: From A to B



III. Enterprise Capabilities & Principles

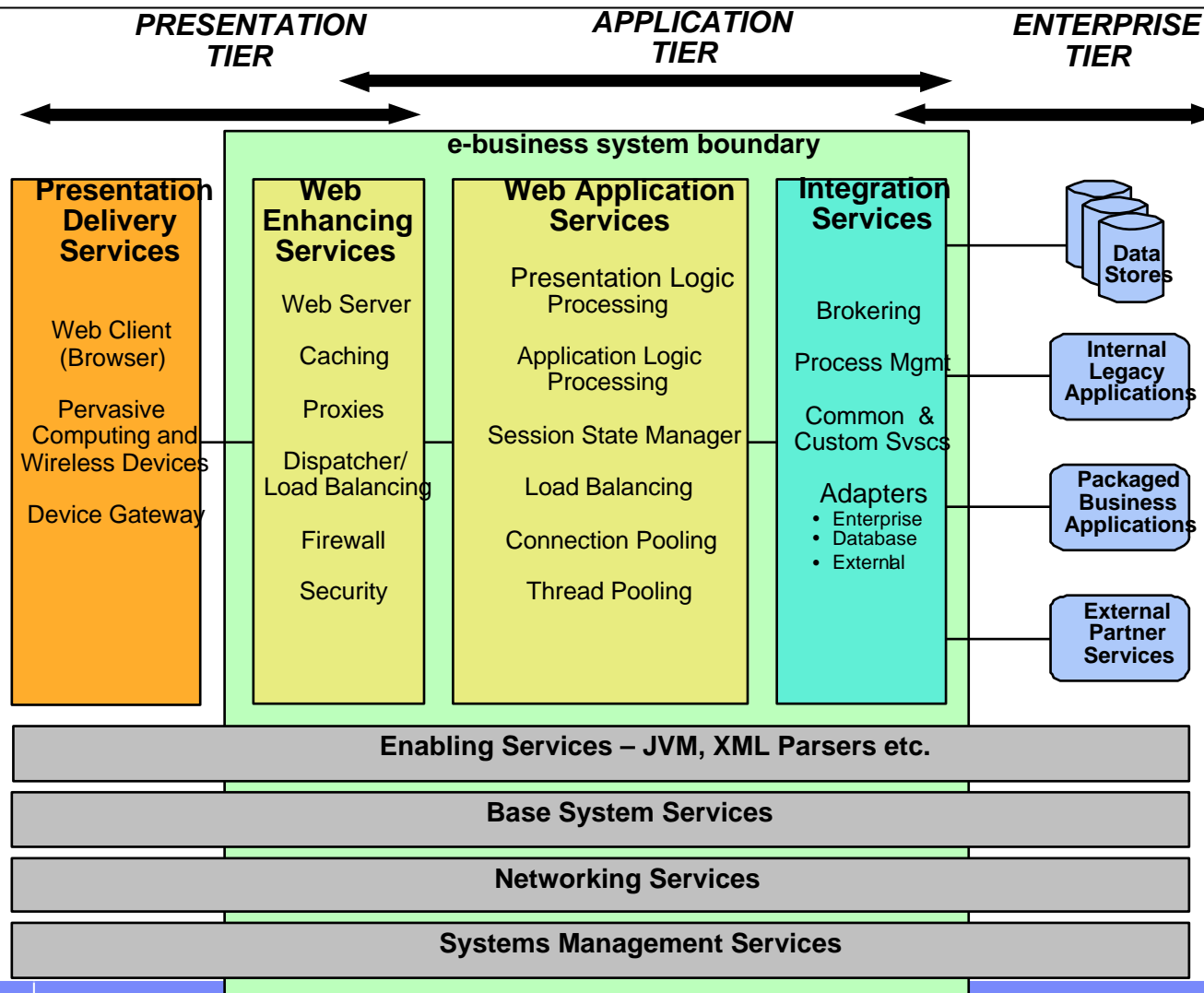
Enterprise Capabilities & Principles

- Enterprise Architecture **Overview** Diagram

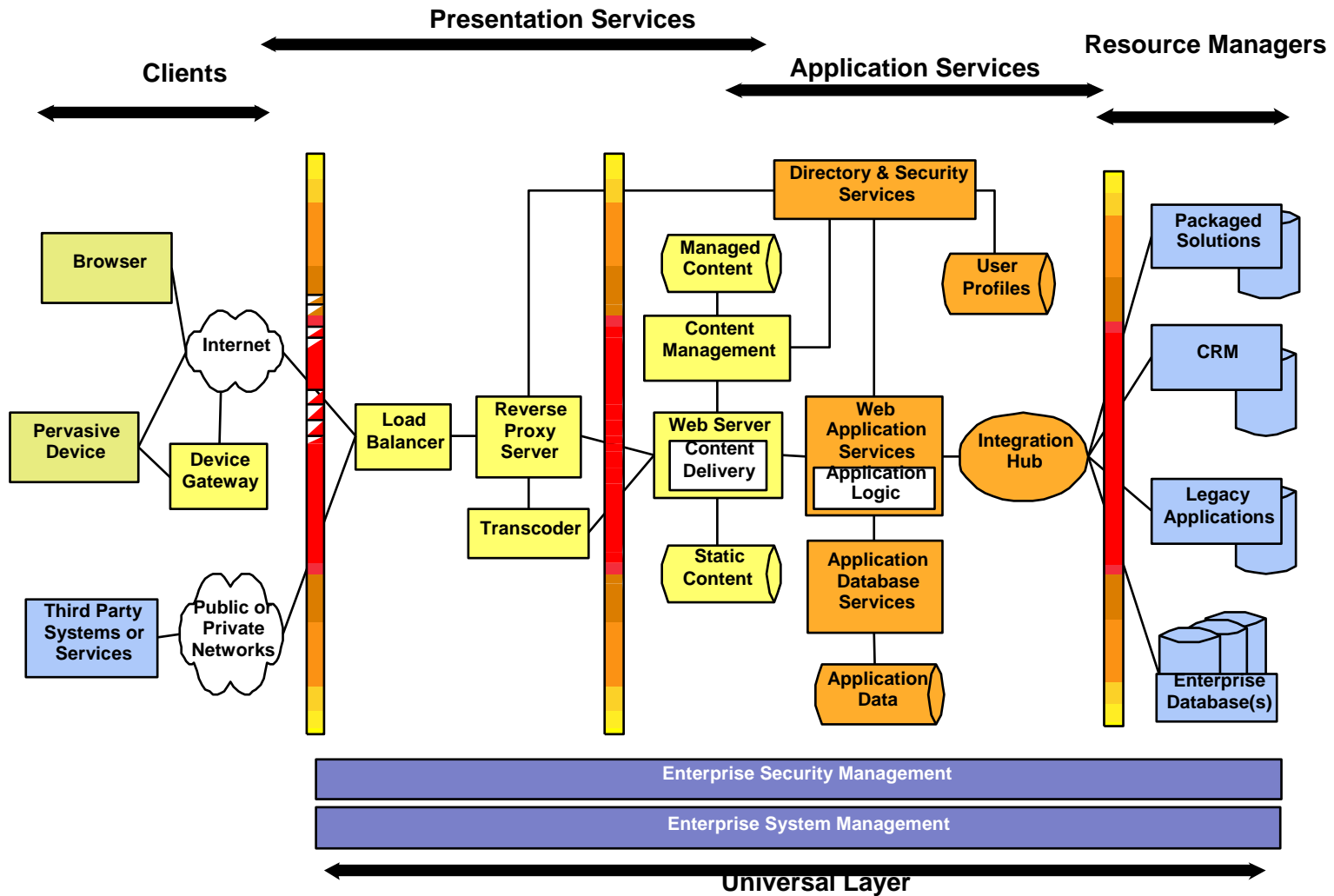
- Enterprise Capability Model
 - This linkage between strategy and architecture can be represented using three key concepts. The network of these 3 concepts is referred to as the **Strategic Capability Network (SCN)**.

- Enterprise Architecture **Principles, Policies & Guidelines**

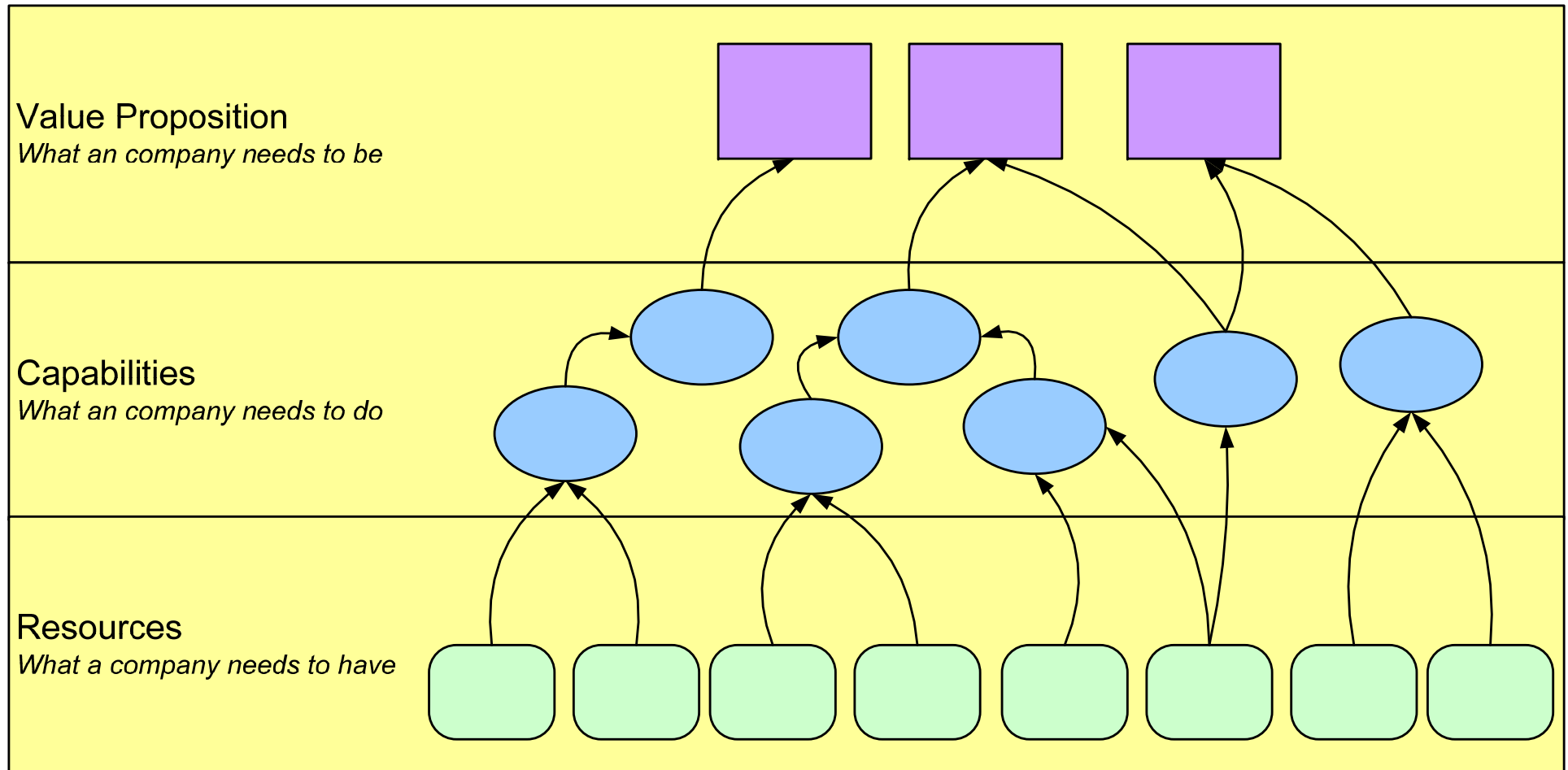
Architecture Overview Diagram Example 1



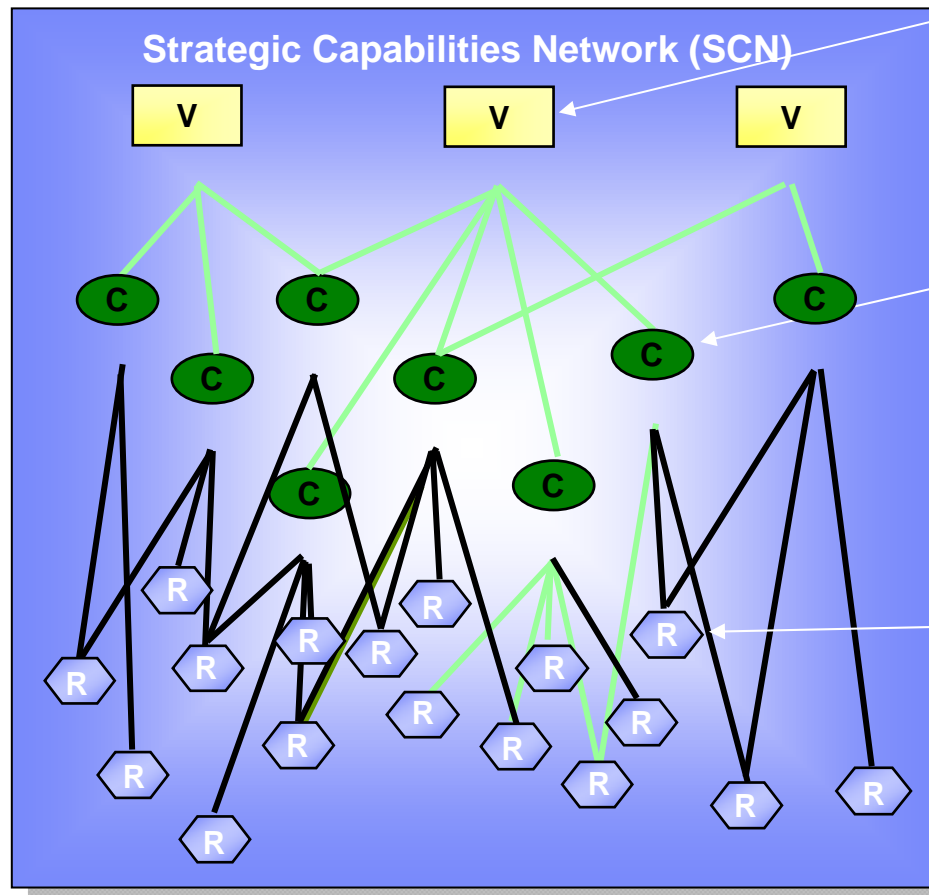
Architecture Overview Diagram Example 2



Strategic Capability Network (SCN) – Overview



Strategic Capability Network (SCN) – Detailed



Value Proposition: What a company needs to be in order to offer a differentiated value to the market.

Example: Ikea's low cost, customer convenience, modular design

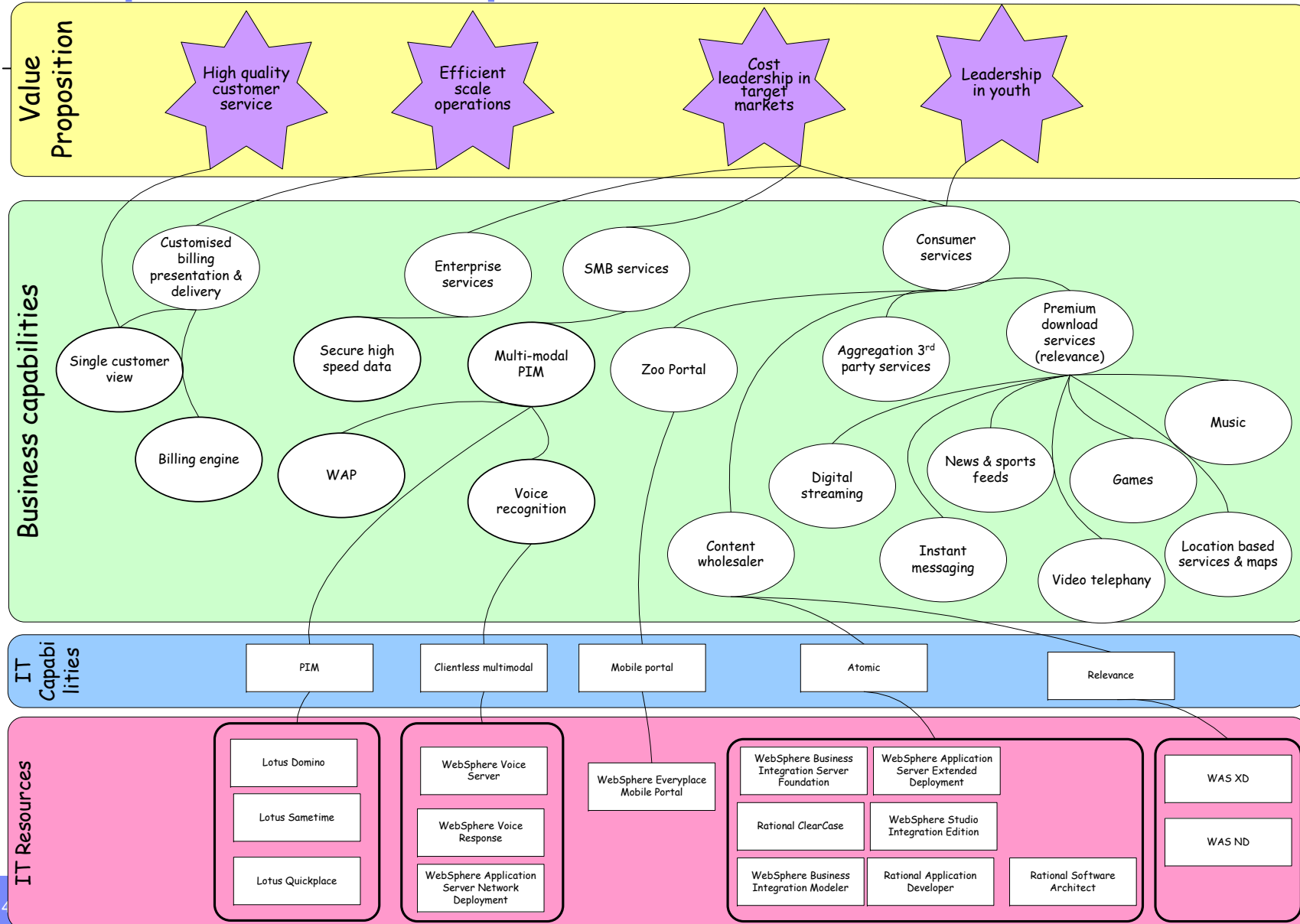
Capability: What a company needs to do in order to achieve its strategic positions. Capabilities perform, improve, and create the activities of the firm.

Example: Ability to design for customer assembly, Ability to merchandise in-store and online.

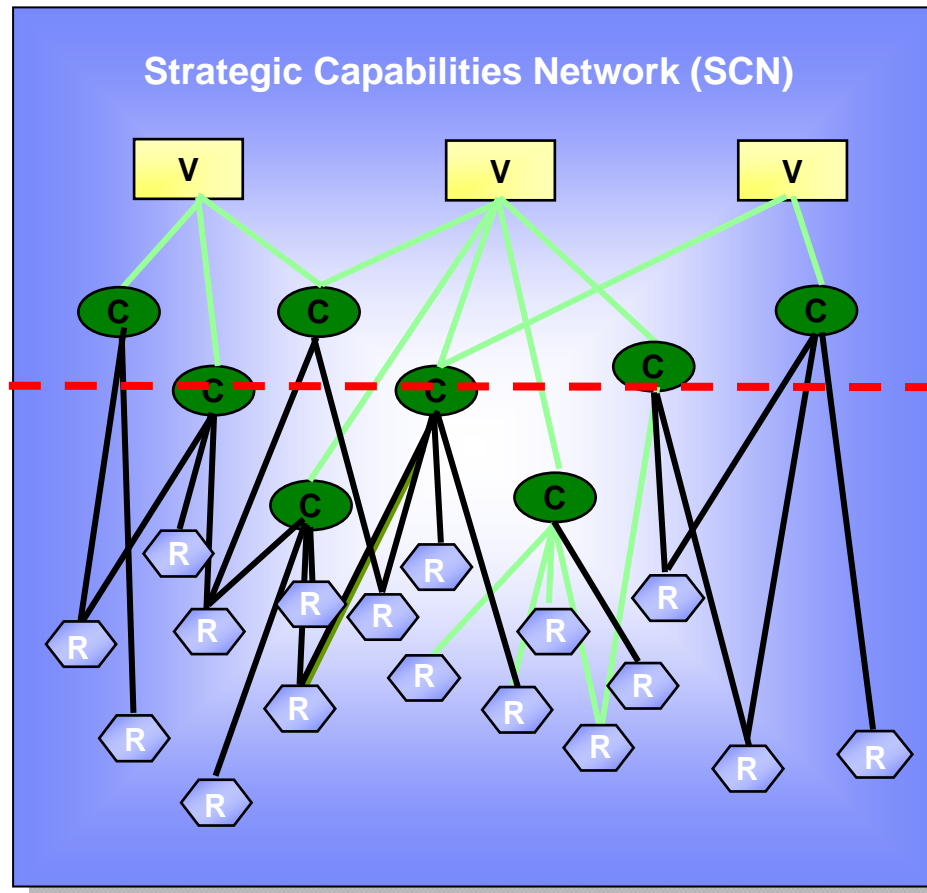
Capability Enabler(Resource): What a company needs to have in order to perform its capabilities. Resources represent the process, knowledge, organization and technology assets of the firm.

Example: In-house engineers and designers, store locations, store layout expertise, web developer/programmer, server...

Example: Business Capabilities for Telco 3G



The SCN is created and developed in Strategy engagements and Enterprise Architecture engagements

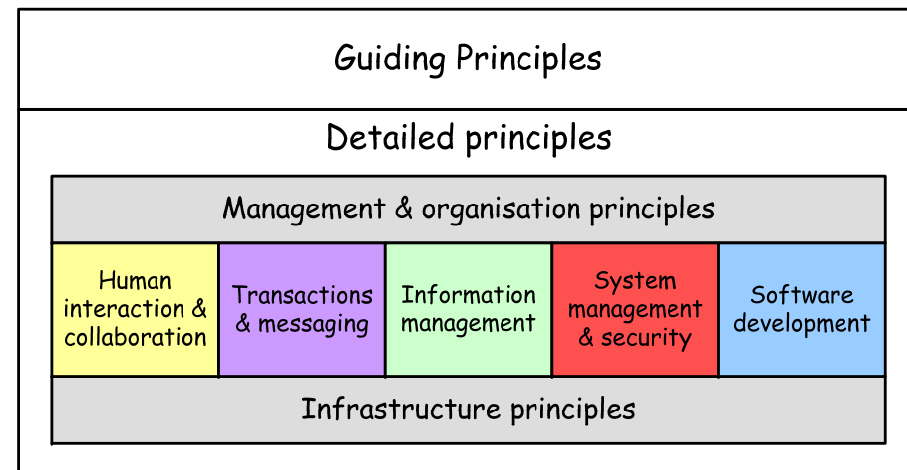


Strategy Engagement: During strategy activities the focus is on understanding the client's existing capabilities, evaluating their strengths and weaknesses and identifying new capabilities required.

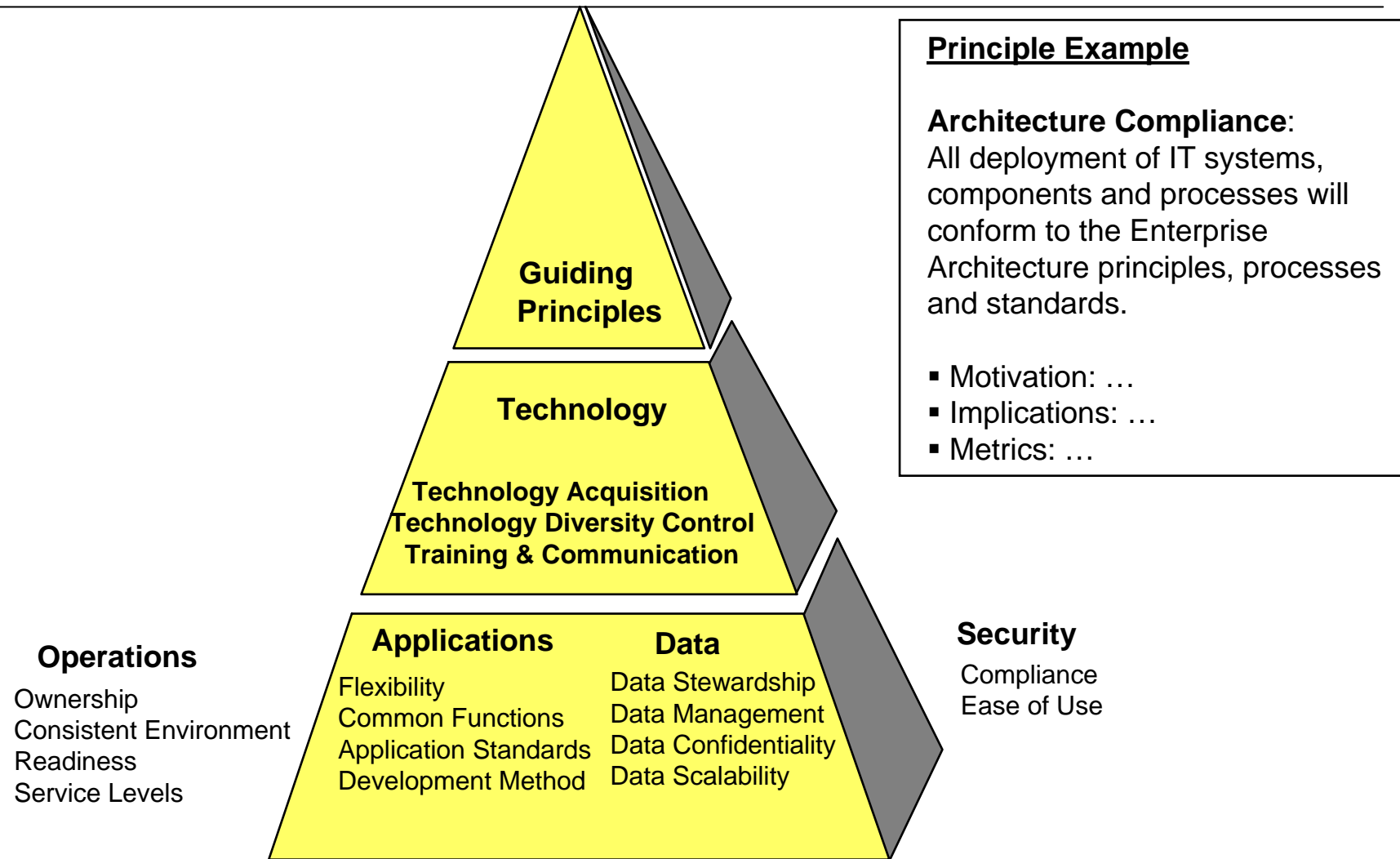
EA Engagement: During enterprise architecture activities, we focus on refining the needed capabilities and identifying the resources (capability enablers) the client needs to meet its strategic objectives.

Enterprise Architecture Principles

Principle <i>Description</i>
Motivation <i>Why the company needs to do this?</i> <i>Business benefits</i> <i>Link back to business capabilities</i>
Implication <i>What will be the impact of this?</i> <i>Business & IT resource, cost, activities</i>



Architecture Principles, Policies & Guidelines are key governance mechanisms



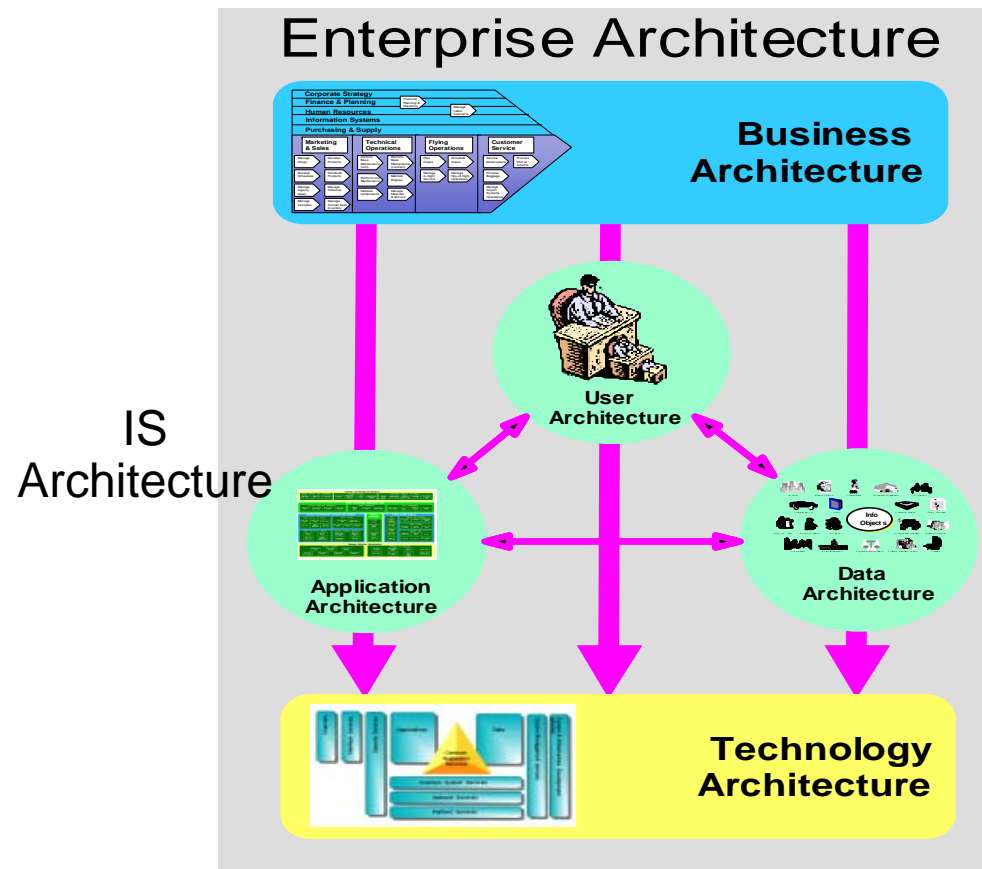
Example: Guiding principles



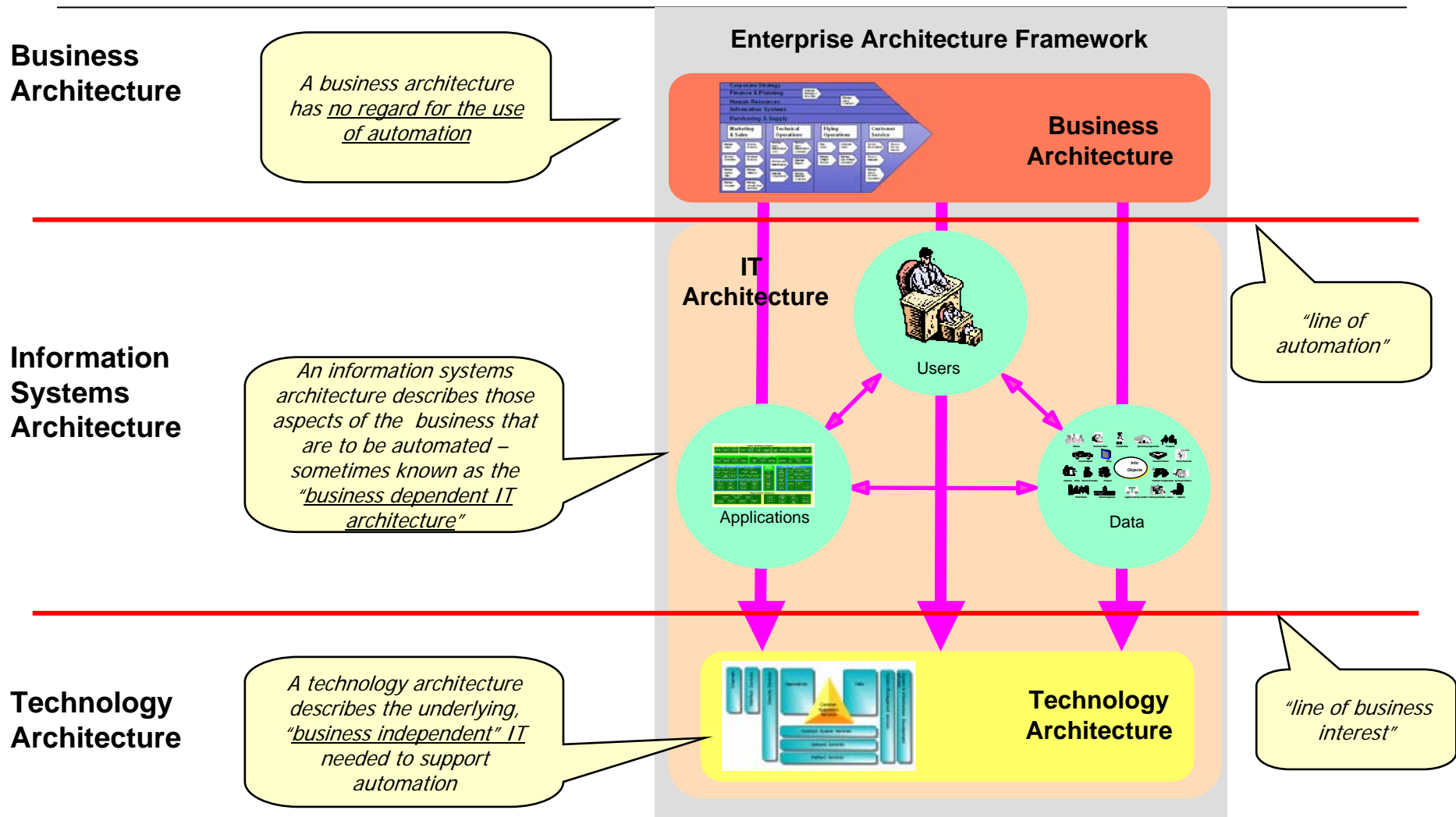
- **IT Systems will be designed to allow rapid implementation of changes to business rules - to reflect changes in business requirements.**
 - **Motivation:**
 - Increased flexibility to rapidly implement changed business requirements
 - Reduced costs associated with making and implementing system changes
 - Allows the parameterization of business rules to minimize IT development
 - **Implication:**
 - Systems need to be designed such that business rules are held externally from processing logic
 - Increased cost of initial application development to make use of parameterised business rules
 - Need to define the business rules which will be parameterised and how they will be accessed
 - Imposes an additional non-functional requirement on the selection of ready-built solutions
 - **Need to review and revise testing standards to ensure changes to external parameters do not impact system characteristics, e.g. performance**
- **ANYbank will be proactive and innovative in its use of technology while minimizing the risk from being at the leading edge.**
 - **Motivation:**
 - Increases competitive advantage by implementing systems that provide better customer service and enable new products to be brought to market more effectively
 - Reduces costs by exploiting effective, proven technologies
 - Contains risk by not being at the leading edge of technological advance
 - **Implication:**
 - Some competitive advantage may be lost through not exploiting new technology when it first becomes available
 - Resources are required to monitor, evaluate, trial and assess business opportunities arising from new technologies

IV. EA Architecture Framework

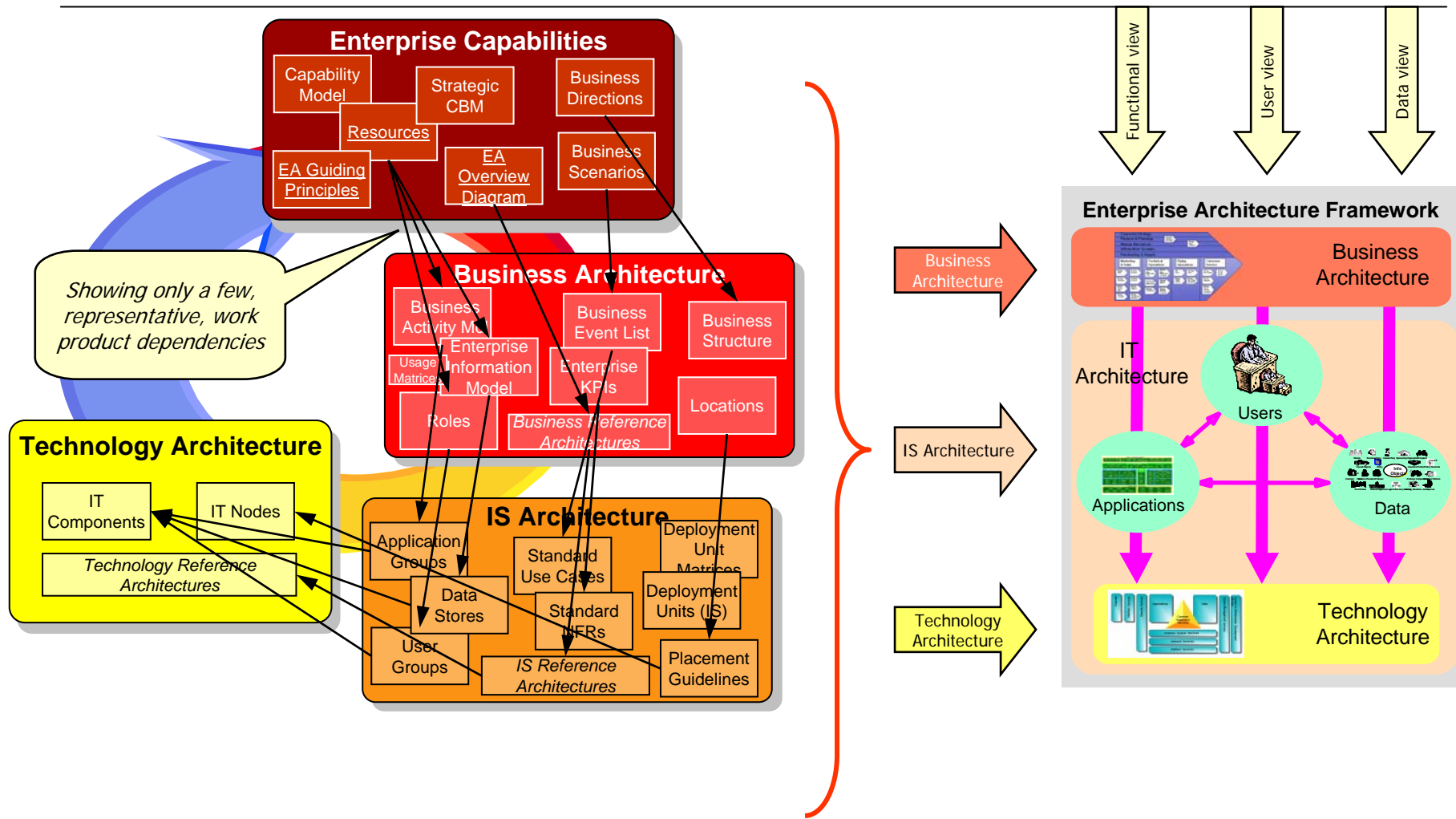
Enterprise Architecture Decomposition



EA architecture framework – Layers



EA's architecture framework – Use of work products and the notion of work product dependencies



Business Architecture – Purpose

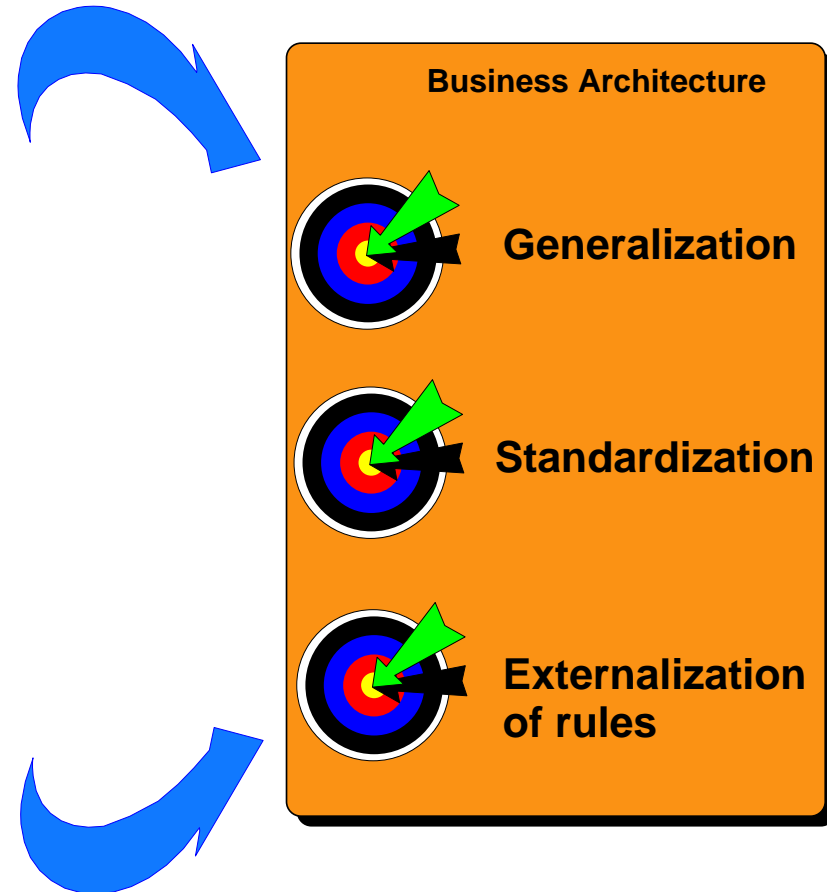
- A **Business Architecture** (BA) provides a framework which reflects both current and future business environments and guides future IT investment and implementation decisions.
- It ensures that any **tactical decision** making is aligned with the overall business goals and objectives.
- It provides a **transformation vehicle** that allows a business strategy to be effectively translated into an implementation plan which uses process, information/knowledge, organization and technology resources.

Business Architecture – Definitions

Business Activity	An activity may be a manual or automated operation that completes a unit of work. A "leaf level" activity is the lowest level of activity that cannot be decomposed further without considering how to implement them.
Business Process	Activities are combined to create a business process — a structured, measured set of activities, that takes input and creates output of value to a customer. A "leaf level" activity can occur in many different business processes.
Business Event	A stimulus or trigger which initiates one or more processes. A set of conditions which cause a process to be performed.
Information Entity	A person, place, thing, concept, or event that the business needs to manage and about which it may need to keep data.
Business Role	Business roles are logical, categories of job that perform the business activities of the enterprise — e.g. Underwriter, Claims Assessor, Regulator, Loan Recipient, Sales Person. As such, they combine business activities into a recognisable relationship.
Business Location	Business locations identify both the physical and logical places, or sites, where the activities of the business are carried out. The physical locations are simply the geographical places where the business has a presence; the logical locations are classifications, or categories, of these physical sites, based on the types of business activities that are performed at them.

Business Architecture – Reducing Variation

- Client orientation and role recognition
- Available, consistent, accurate client information
- Reduced duplication
- Flexible, reusable components
- Lower maintenance costs
- Accurate marketing information
- Cross-marketing, target-marketing
- Faster time-to-market
- Ability to add or assimilate channels



A good Business Architecture incorporates a model of how the company wants to do business in future

A Business Model is a **structured abstraction** of important features of "the real world" for solving business problems. It is built within the Business Architecture to represent what the business cares about.

Business models are built for the purpose of:

- Common understanding
- Communication
- Requirements definition
- Optimal process definition
- Problem resolution
- Reduced variation and greater reuse
- Alignment of projects to business strategy and priorities



A Business Model does **not** include implementation considerations.

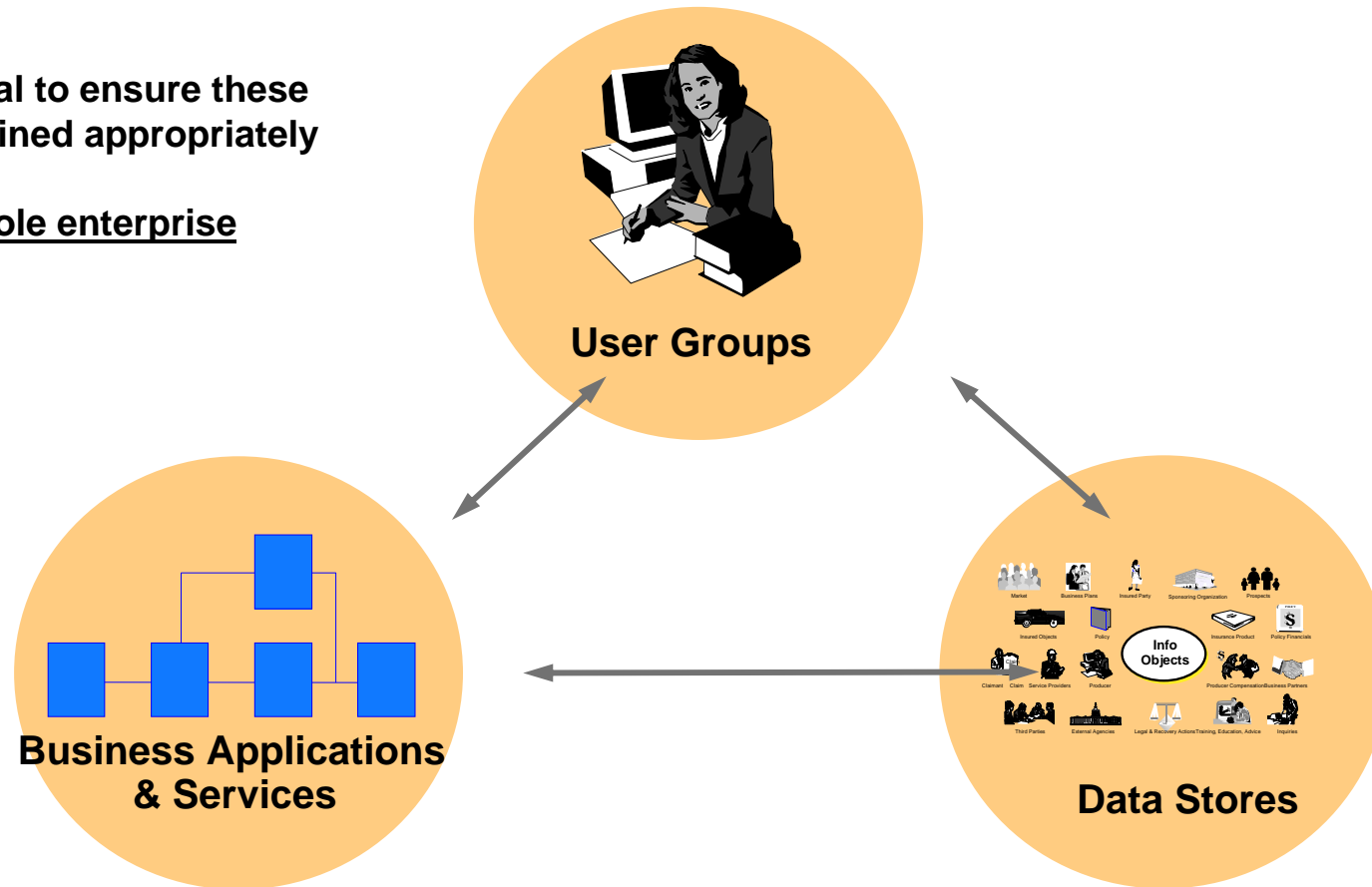
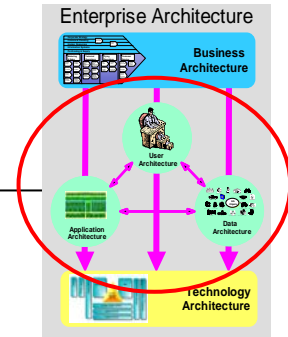
A Business Model provides a common, stable, flexible, understandable, rigorous definition of a client's business

- **Business activities:** define what is done.
 - How are business activities defined?
 - How easily can they be changed?
 - Are they reusable?
- **Business Information** is an organization's most important asset.
 - Is it defined in a common, useable form?
 - Is it being used effectively?
 - Is access to information limited by the current organizational structure?
- **Business conditions** determine how **business dynamics** are handled.
 - How are the business procedures defined?
 - Can you easily change why, when and by whom a business activity is performed?

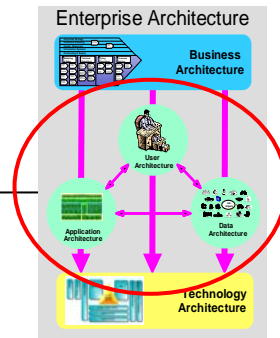


The IS Architecture is centered on an enterprise wide specification of the business drivers

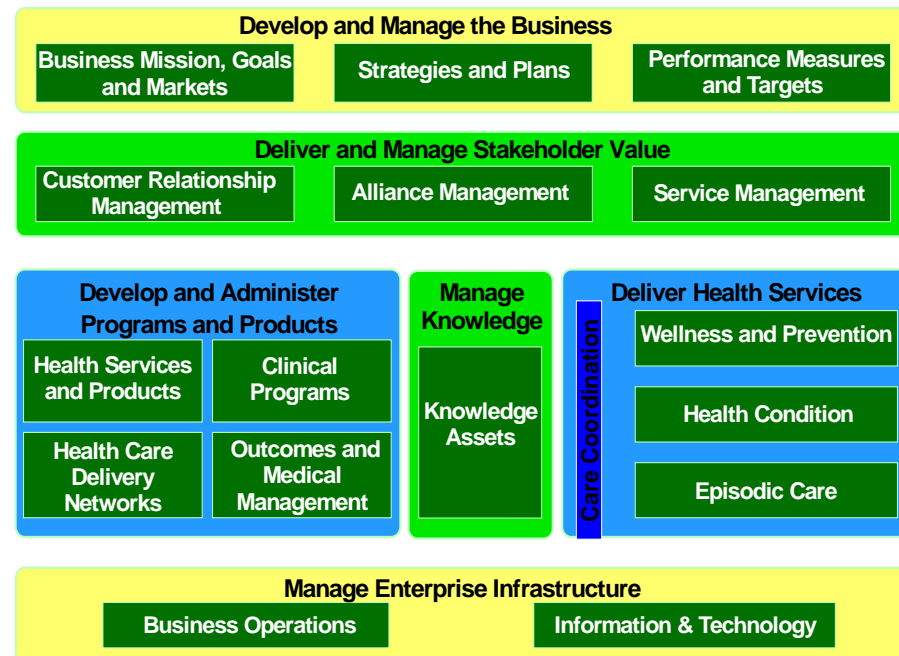
- It is vital to ensure these are defined appropriately for the whole enterprise



Application Function Model



- The **Application Function Model** represents the optimal set of applications (or application groups) required to support the enterprise:
 - The business functions contained within an application are closely related
 - The scope and boundaries of each of the applications is clearly defined and do not overlap



V. Case 3 – Crea

Welcome to our World

Welcome to Crea — a company that is *worldwise*, global in reach, and rich in creativity and innovation.

At Crea, we design, develop and manufacture consumer products for our strategic partners. We also conceive and implement exciting and effective marketing programs.

We've been doing it for 30 years worldwide.

Welcome.

Premium Supply
Promotions
Point of Sale Displays
In-store Merchandising
Packaging
Cross Promotions
Event Marketing
Games
Sweepstakes
Retail Products
Branding Initiatives
Marketing Strategy
Creative Strategy
Creative Development
Product Development
Product Design
Manufacturing
Distribution
Corporate Catalogs

Who we are

What we do

How we do it

Who we work with

How to reach us

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Case 3 – Crea: a retail company

- In the business since a long time
 - Has grown by acquisition
 - Has ambitious goals
 - But not yet the appropriate infrastructure

- Case Study
 - Work out early drafts of Enterprise Architecture Work Products
 - Mainly
 - Define Enterprise Architecture Principles
 - Develop an Enterprise Architecture Overview Diagram
 - Work out Enterprise Capability Network (Review web-sites in the Appendix)

Hints

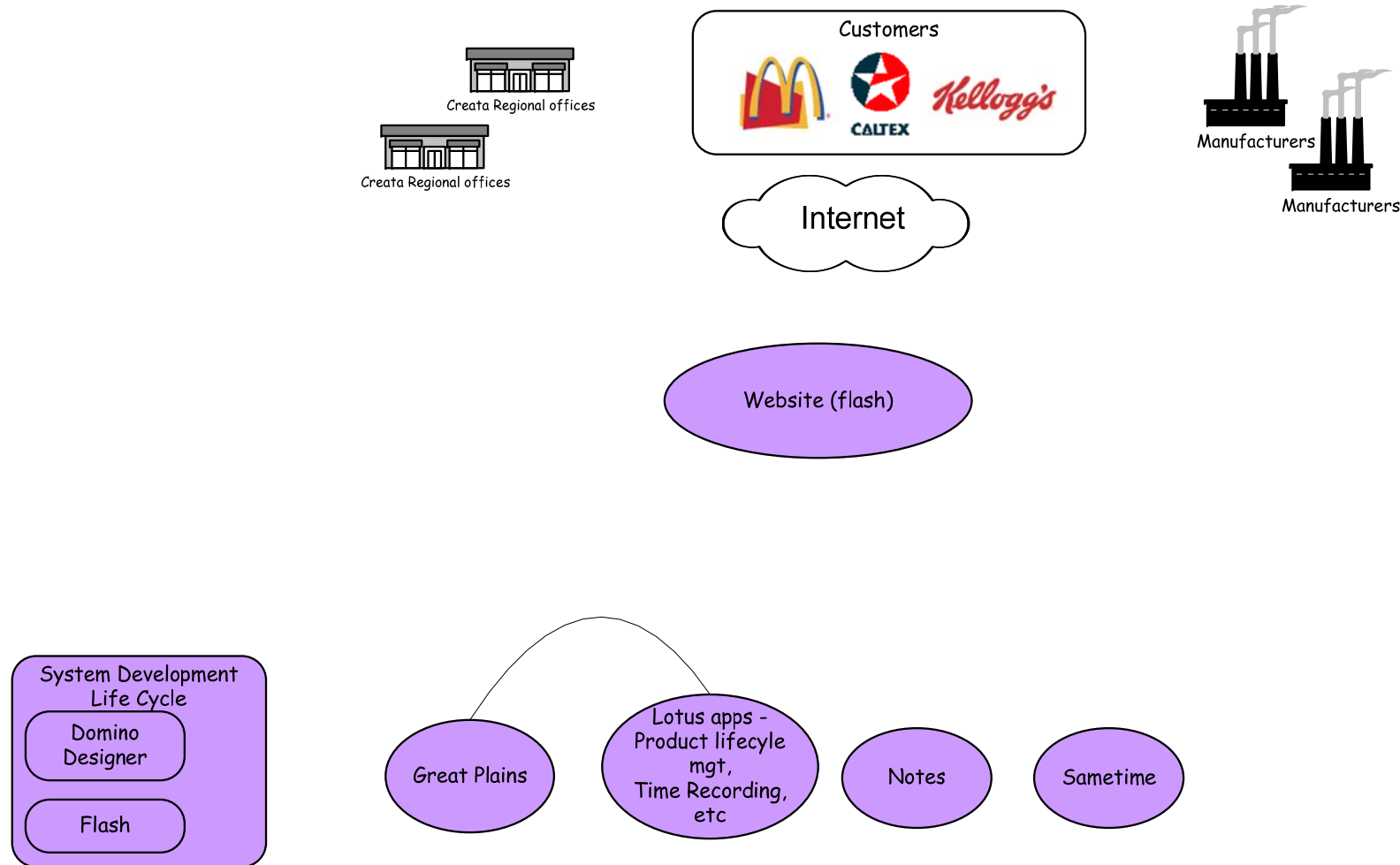
- **EA Principles**
 - Cost-sensitive
 - Desire to custom develop software solutions to provide strategic differentiation
 - They want to focus on the application services rather than infrastructure services
 - Its an SMB customer
- **Architecture Overview**
 - Existing apps:
 - Microsoft Great Plains for finance/PO's etc
 - Many Lotus apps incl email
 - Product lifecycle management
 - Look at strategic capabilities work product
- **Strategic Capability Network**
 - Review web-site for clues (provided in Appendix)
 - What IT resources can IBM provide to support key capabilities
 - It's an SMB customer!
- It's an SMB (Small & Medium Business) customer!

1) Define enterprise architecture principles

- Points to consider:
 - SMB
 - Cost-sensitive
 - Desire to custom develop software solutions to provide strategic differentiation
 - They want to focus on the application services rather than infrastructure services

- Template
 - Principle:
 - Motivation:
 - Implication:

2) Develop an enterprise architecture overview – based on as-is Architecture



Creata Appendix
**This section contains screen prints of
the case study website**

Welcome to our world

Creata is a global marketing and manufacturing firm with 14 offices in 11 countries. Our world class marketing professionals have extensive experience in the promotional, entertainment and manufacturing industries. Creata applies this expertise to our partners' businesses in an innovative, entrepreneurial way in order to meet and exceed their needs. We employ approximately 400 people worldwide with an indirect labor force of 50,000.



CREATA

Who we are

What we do

How we do it

Who we work with

How to reach us



Meet the executives

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We activate millions of ideas globally

We work with top global brands and bring them creativity, innovation and manufacturing solutions. Every year Creaata designs and develops over 1,500 new consumer products and manufactures nearly 1 billion products that are shipped to more than 140 countries.

We are best known for our innovative work in toys and games. For example, we have been designing and producing Happy Meal™ toys for McDonald's for 20 years. As a leading marketing promotions company, we also work with other top global brands including Kellogg's, Nestlé, Disney and M&M Mars.



CREATA

Who we are

What we do

How we do it

Who we work with

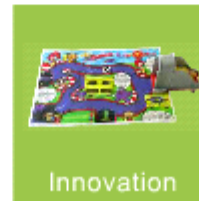
How to reach us



Strategy



Concept



Innovation



Manufacturing



Marketing

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Transforming ideas into action

At Creaata we thrive on action. To us, strategy and ideation are meant to be activated, not just pontificated. Our executive teams evaluate all options such as analysing your competition, assessing your marketing plan, and finding ways to bring greater consumer involvement to your brand.

Just as important, we help keep your brand relevant by researching consumer trends and evaluating new technologies.



CREATA

Who we are

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Creaata capabilities:

- >> market research
- >> consumer trend analysis
- >> marketing strategy
- >> business modeling
- >> branding initiatives

Strategy

Concept

Innovation

Manufacturing

Marketing

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New perspectives are priceless

Every day we turn ideas into products for our strategic partners. First we learn what the consumer wants, then we create solutions that meet and exceed those desires. Sometimes that means developing more attractive product designs. Sometimes it requires developing more friendly packaging. And many times it means applying new technology to add function and appeal to consumer products.



CREATA

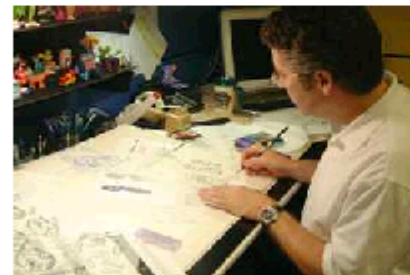
Who we are

What we do

How we do it

Who we work with

How to reach us



CREATA capabilities:

- >> creative concepting
- >> innovative design
- >> product design
- >> prototype development
- >> character development

Strategy

Concept

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Manufacturing

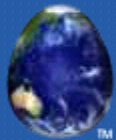
Marketing

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Innovation is at the heart of our culture

Application of leading-edge technologies can give consumer products that extra factor which excites consumers. It is a priority for us to evaluate new inventors and technology partners every day. Through our search and development of breakthrough innovations we're able to apply them to our partners' product portfolios. We then improve our clients' marketability by turning these innovative ideas into commercially viable products.



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Creata capabilities:

- >> emerging technologies
- >> technology assessments
- >> technical application
- >> industrial design
- >> product development

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Integrity is always number one ... regardless of quantity

Creata produces approximately 1 billion products a year — more than 1 million a day. In our history, we have produced over 10 billion products without a single product recall. We are serious about product integrity, consumer safety, and social compliance.

At Creata, we have a proud, 30 year track record of manufacturing high quality products.



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Creata capabilities:

- >> manufacturing
- >> product integrity
- >> quality assurance
- >> social compliance
- >> supply chain management
- >> distribution

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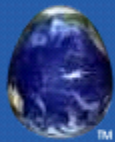
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Creating a buying experience they won't forget

Consumers face a dizzying array of products and promotional schemes every day. We strive to bring our clients' initiatives to a new level by making products that catch the eye and fascinate the mind.

But we don't stop there. Great products cannot stand alone without the complementary force of innovative marketing. So think of us as your full-service promotional partner from ideation to implementation. The result: promotions that are boldly unique, emotional, and actionable.



CREATA

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CREATA capabilities:

- >> packaging / premiums
- >> in-store merchandising
- >> trade presenters
- >> trade / dealer loaders
- >> corporate catalogs
- >> games & sweepstakes
- >> events & sponsorships

Strategy

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Manufacturing

Marketing

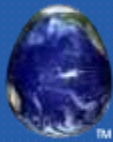
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Creative. Global. Actionable.

Creata is extremely partner-focused. We have aligned our four business units — Creata Brand, Creata Catalog, Creata Promotion and Creata Retail — in order to best serve our partners. Our teams are staffed with experts in their respective fields that are highly creative, entrepreneurial and responsive. Each business unit has industry-specific expertise in Creata's top capabilities of strategy, marketing, innovation and manufacturing.

To find out more about the role of each of our global business units, please click on an icon below.



CREATA

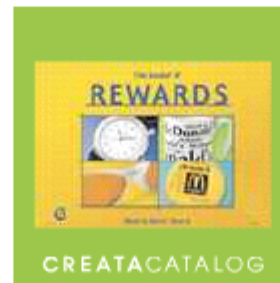
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