Migrating to a Service Oriented Architecture with BEA

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Agenda

- Background
- An **Enterprise** Service Oriented Architecture Perspective
- Service Oriented Development of Applications
- Migration
- Economics - Finding the Money
- Where should you go from here?
- Conclusion

Background

Gartner defines a Service Oriented Architecture as…

…a software architecture that starts with an interface definition and builds the entire application as a topology of interfaces, interface implementations and interface calls… SOA is a relationship of services and service consumers

Service Consumers

Service

Consuming Application or Service
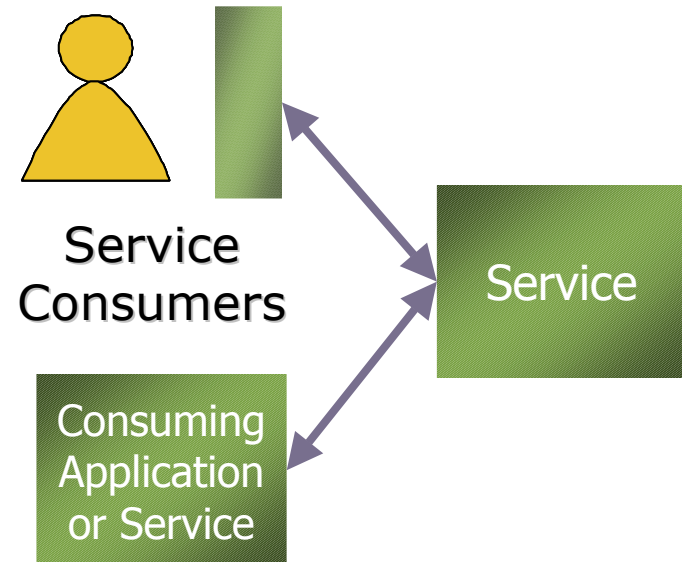
Background

Service Oriented Architecture is not just about…

- *Interoperability*
- *Integration and Connectivity*
- *"Next Generation" EAI*
- *Web Services*
- *Location Transparency*

It requires a company to rethink how application functionality is architected, designed, acquired, built and delivered
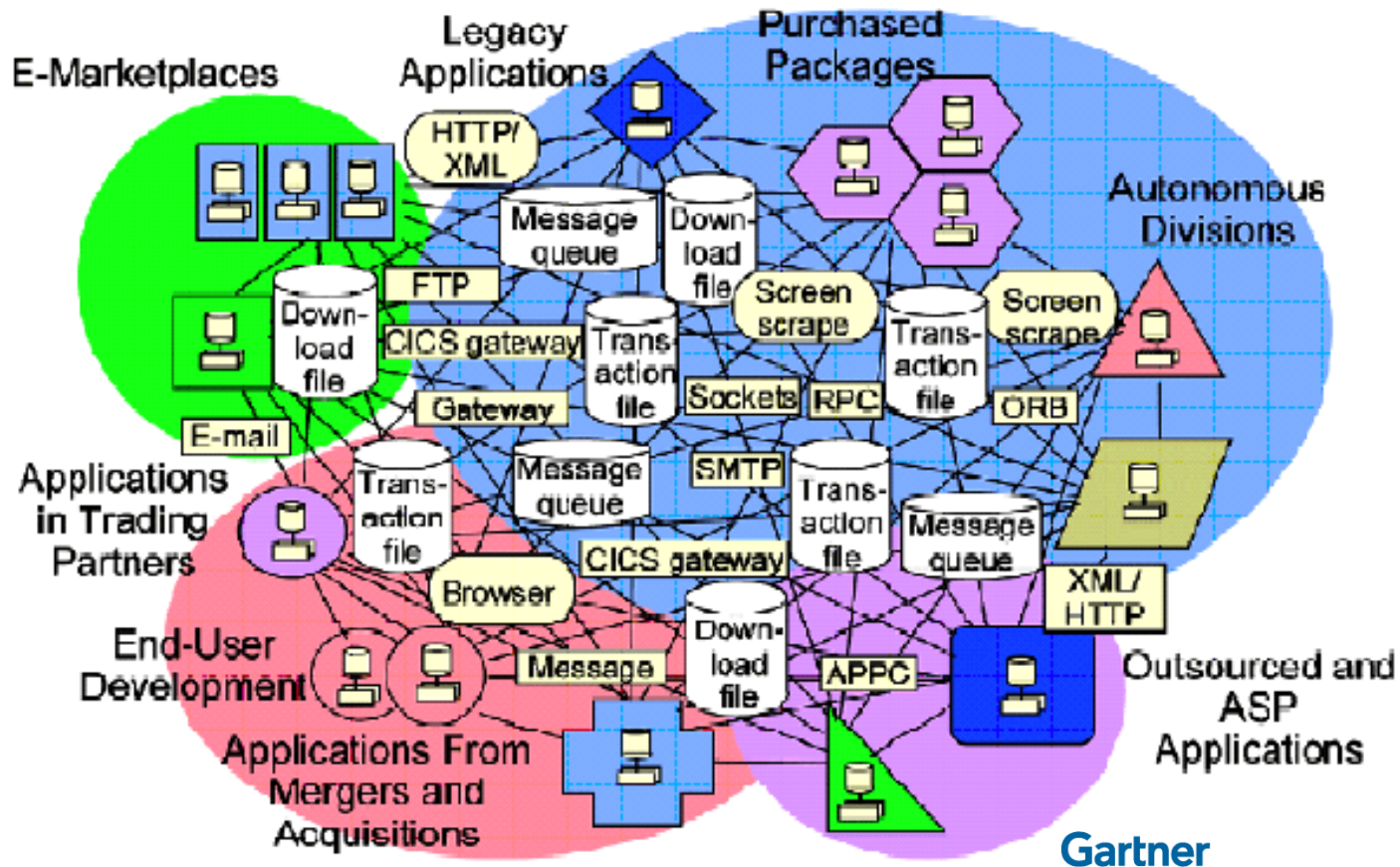
Background

In a perfect world, a company's Service Oriented Architecture might look something like this:
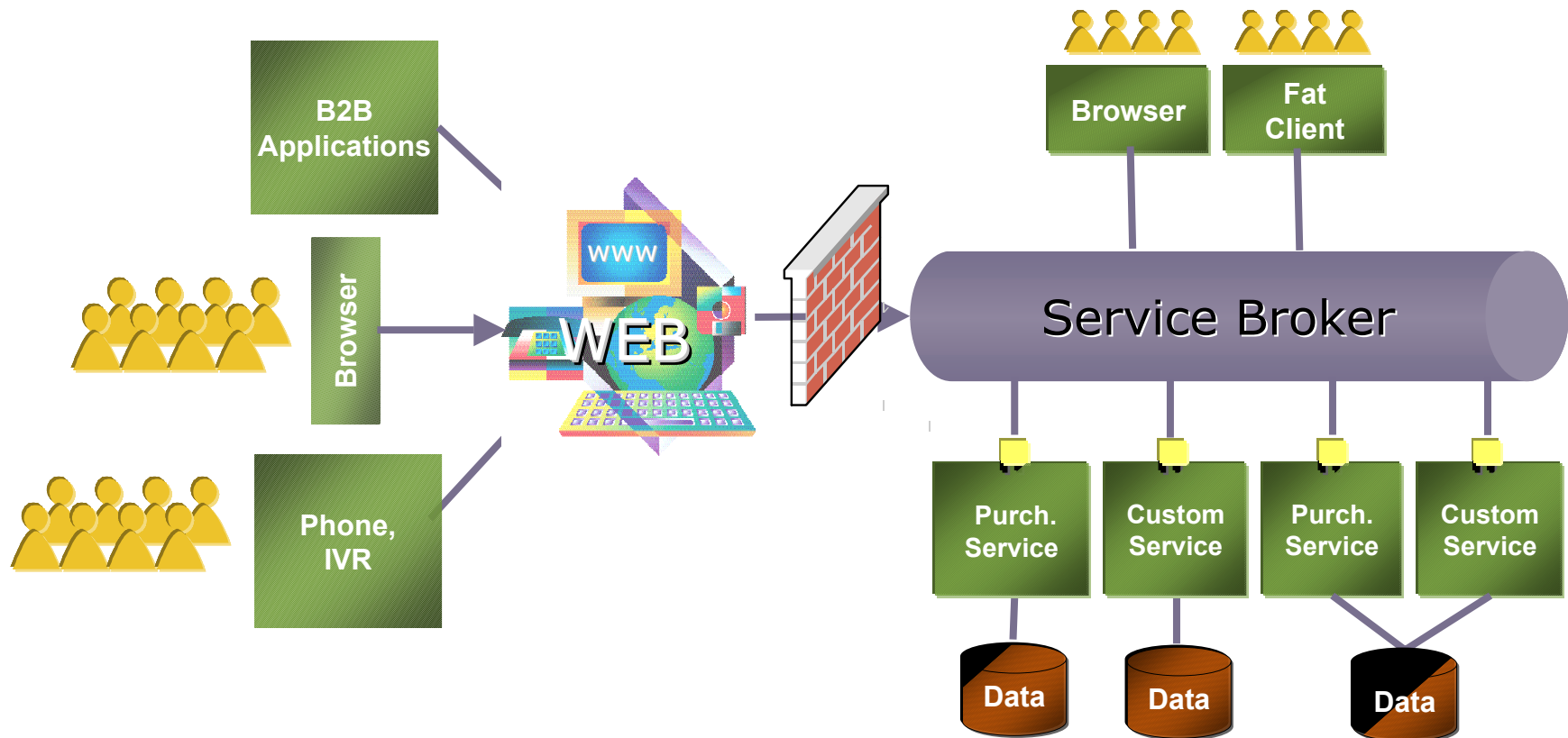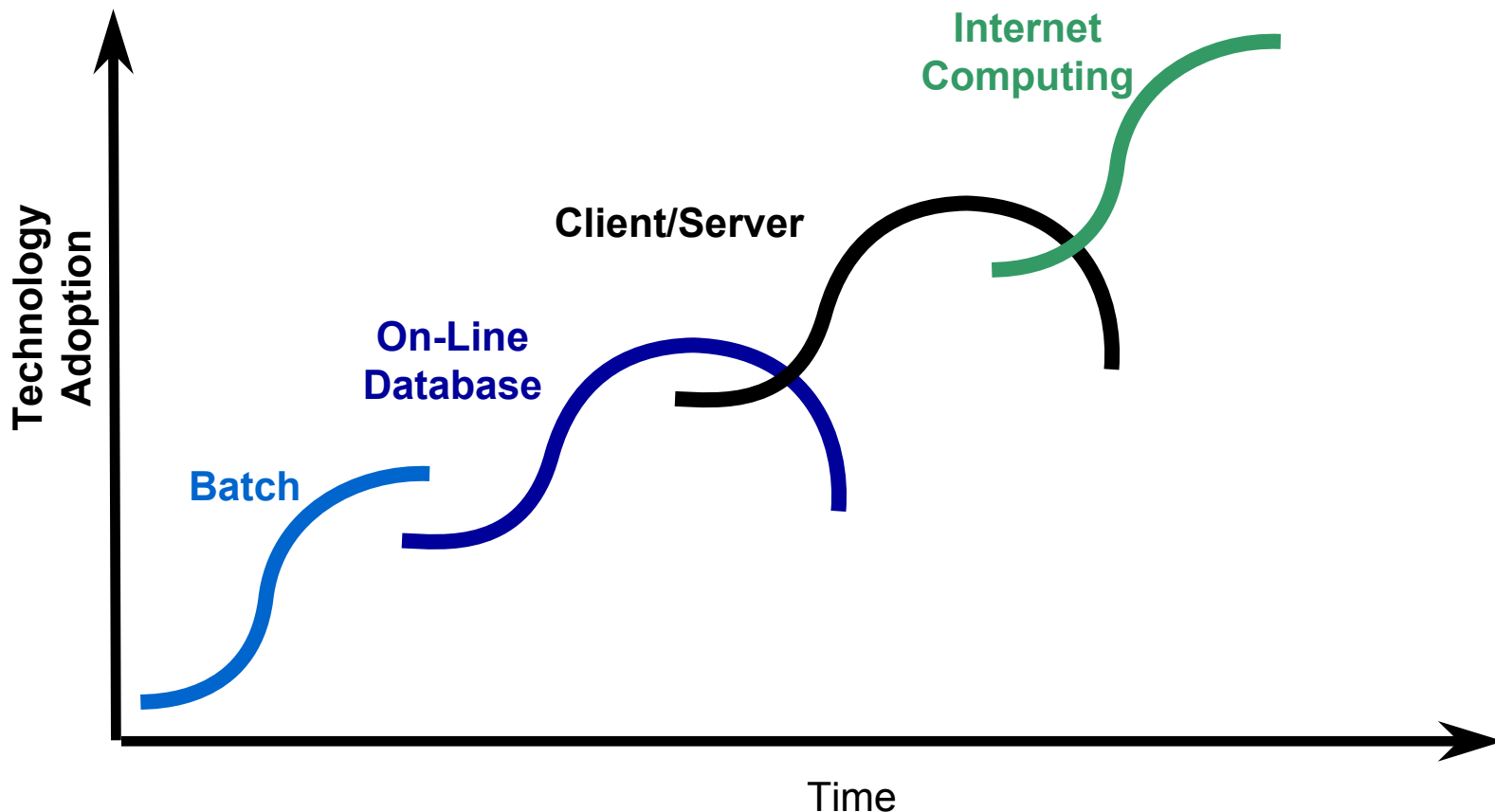
Background

Unfortunately, just about every company has a legacy system environment that looks something like this….

Background

…that includes critical business applications that were developed in each of the prior Solution Eras….

Background

During each of the prior eras there were **"breakthroughs"** *that were going to revolutionalize the way that systems were constructed, including:*

- *Integrated Data Dictionaries*
- *Computer Aided Software Engineering (CASE)*
- *Information Engineering*
- *Object Oriented Development*
- *CORBA*
- *Component Based Development*

However, none of these earlier breakthroughs were as successful and pervasive as their promoters predicted

Background

Many technologists would agree that Service Oriented Architectures will be the "Next Big Thing"….

Service Oriented Architectures

Internet Computing

Client/Server

On-Line Database

Batch

Technology Adoption

Time
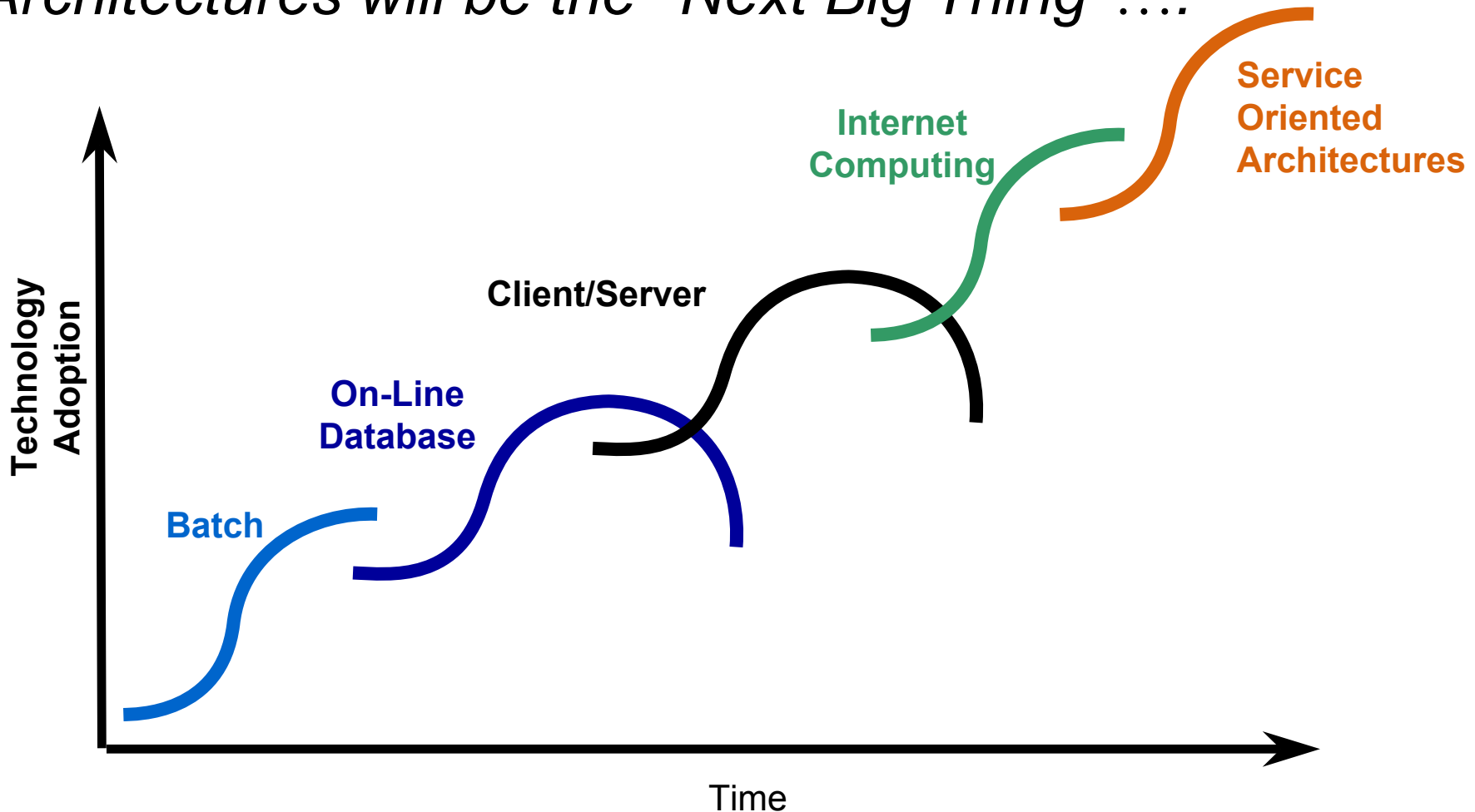
Background

Why will Service Oriented Architectures be more successful than the previous technology "Silver Bullets"?

- Standards based / Technology Independent
- Supported by the entire industry
  - i.e. Microsoft is playing
- Software vendors and other providers are investing heavily to make implementations simpler
- SOA enables new business models that drive dramatic business benefits
  - Extended Enterprise Computing
- Scalable
- Leverages the huge investment in Internet Infrastructure and Technology
- Investment Protection

An Architecture Perspective

Any discussion about Service Oriented Architecture needs to start with a definition of "Architecture"

Solution Architecture

Information (Data)

| Development & Maintenance | Custom Application | Custom Application | Packaged Applications | Analytical Applications | Productivity Applications | System Integrity |
| Application Services | | | | | |

Interoperability

Infrastructure Architecture

| Enterprise Systems Management | Environmental Software | | | | System Integrity |
| | User Devices | Servers | Storage | Network | |

An Architecture Perspective

An Enterprise Service Oriented Architecture needs to explicitly address the following areas:

Solution Architecture

Information (Data)

Development & Maintenance	Custom Application	Custom Application		Packaged Applications	Analytical Applications	Productivity Applications	System Integrity
	Application Services						
	Interoperability						

Infrastructure Architecture

Enterprise Systems Management	Environmental Software				System Integrity
	User Devices	Servers	Storage	Network	

An Architecture Perspective

The heart of a Service Oriented Architecture is a robust Interoperability Architecture

Process Services
- State Machine
- Compensation
- Control Correlation
- State Logging
- Recovery
- Routing
- Workflow

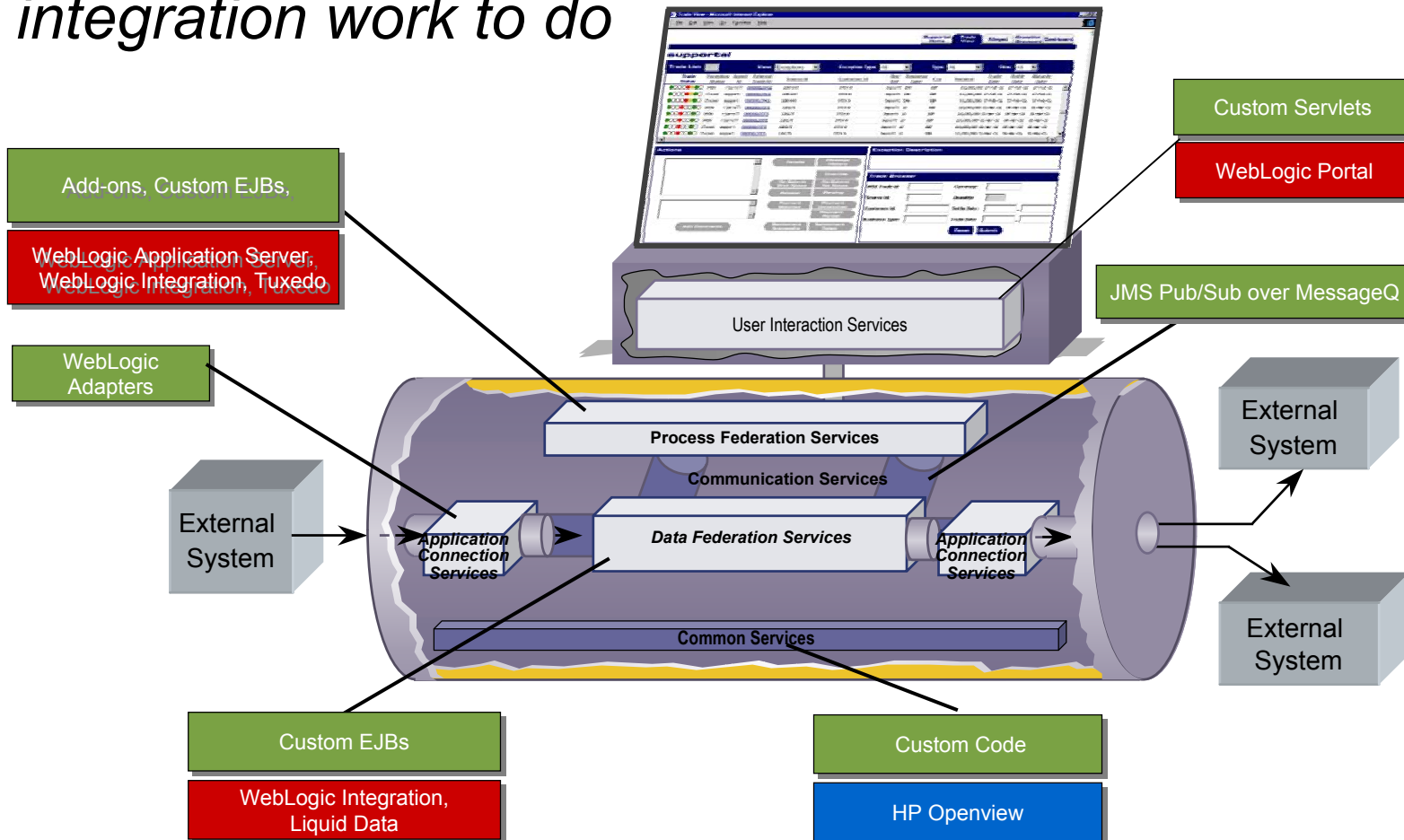**Application Connection Services**
- External Transport
- Structural Validation
- Structural Normalization
- Business Context

Data Services
- Reference
- Chain Correlation
- Business Transform.
- Exception Channel
- Business Validation
- Business Enrichment

User Interaction Services
- Data Access
- Security
- Visualization
- Portal
- User Interaction

Communication Services
- Data Authentication
- Unique Proc.
- Guaranteed Delivery
- Internal Transport
- Data Privacy

Common Services
- Configuration
- Delivery Audit Services
- System Monitoring
- Logging
- Result Caching
- System Management

User Interaction Services

Process Federation Services

Communication Services

Data Federation Services

Application Connection Services

Application Connection Services

Common Services

App A

App B

App C

## Deloitte Consulting's Real-Time Interoperability Architecture Framework

An Architecture Perspective

Although vendors provide a vast majority of what is required, there is still a fair amount of development and integration work to do

Custom Servlets

WebLogic Portal

Add-ons, Custom EJBs,

WebLogic Application Server, WebLogic Integration, Tuxedo

JMS Pub/Sub over MessageQ

WebLogic Adapters

User Interaction Services

Process Federation Services

Communication Services

External System

Application Connection Services

Data Federation Services

Application Connection Services

External System

Common Services

External System

Custom EJBs

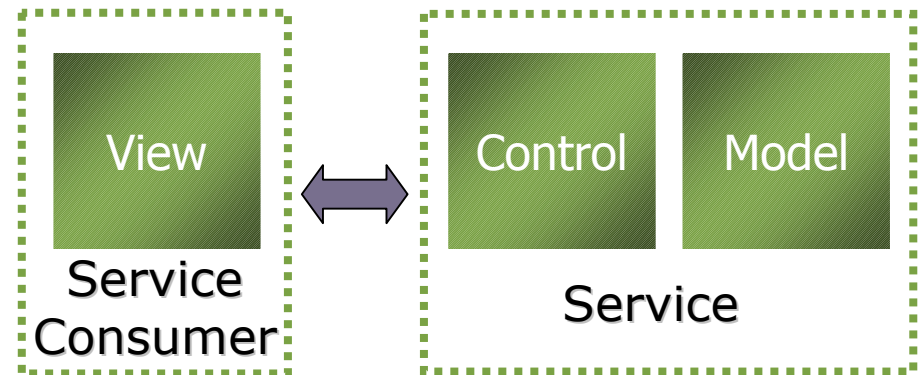WebLogic Integration, Liquid Data

Custom Code

HP Openview

Service Oriented Development of Applications (SODA)

Developers need to leverage proven Software Engineering practices to Architect and Build Service Oriented Applications
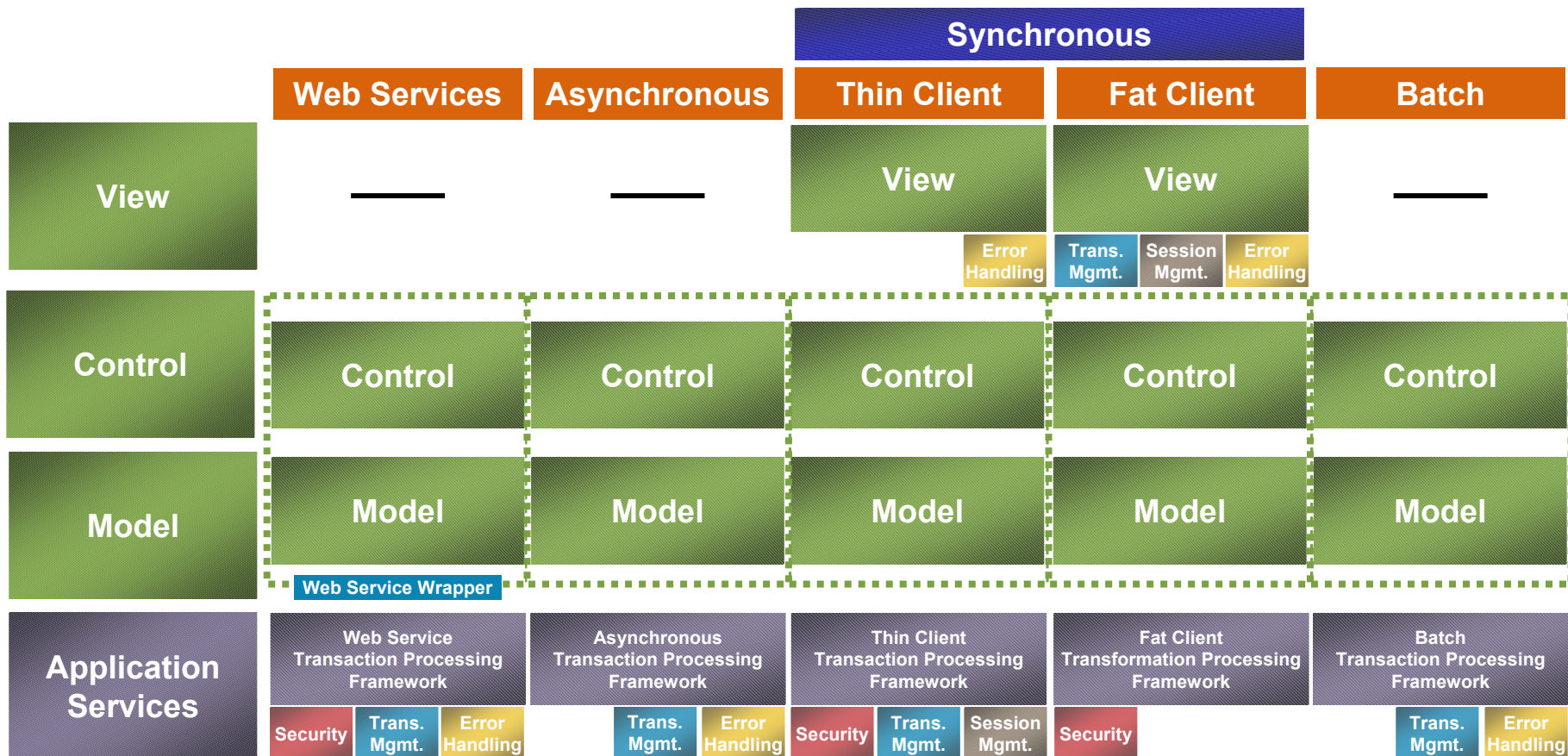
Service Consumers

Consuming Application of Service
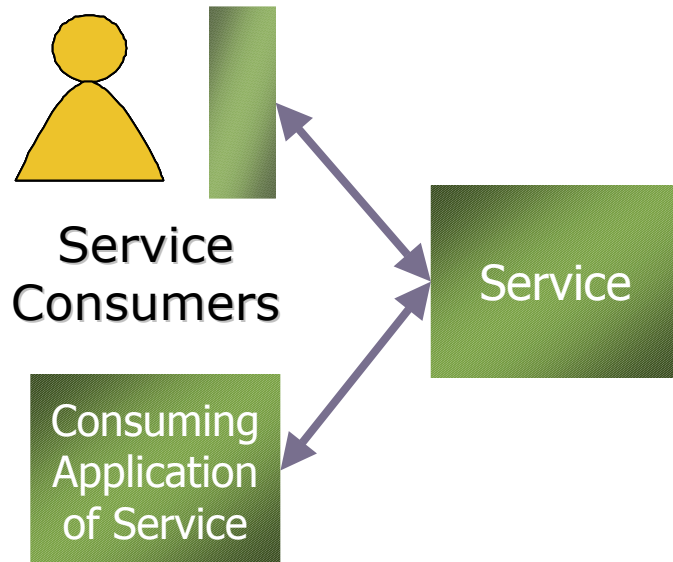
Service

Model View Control Design Pattern

View

Service Consumer

Control

Model

Service

Reusable Application Frameworks and Services

SODA Engineering

To be cost effective, Services need to be architected and developed to operate in multiple processing architectures
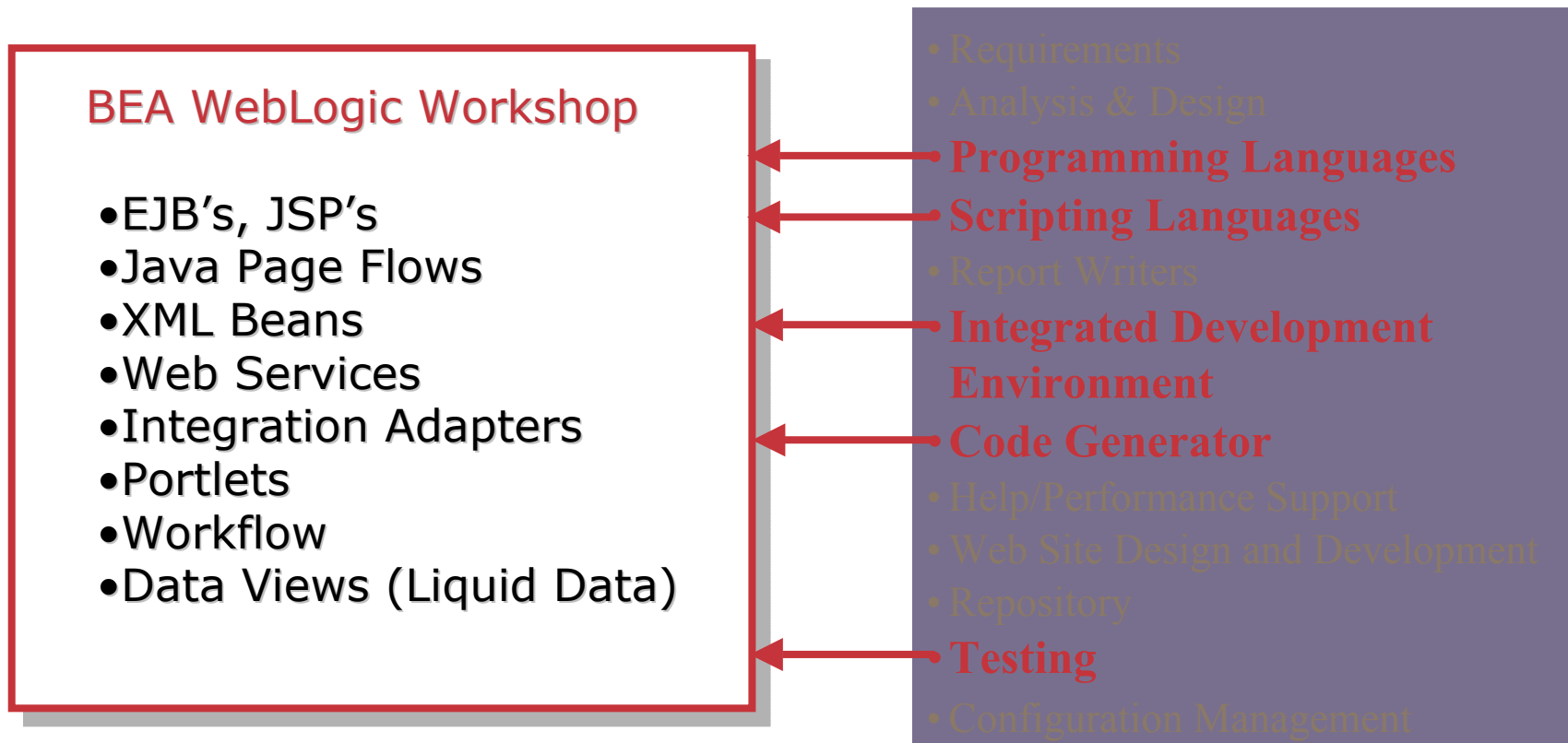
	Web Services	Asynchronous	Synchronous		Batch
			Thin Client	Fat Client	
View	——	——	View	View	——
			Error Handling	Trans. Mgmt. / Session Mgmt. / Error Handling	
Control	Control	Control	Control	Control	Control
Model	Model	Model	Model	Model	Model
	Web Service Wrapper				
Application Services	Web Service Transaction Processing Framework	Asynchronous Transaction Processing Framework	Thin Client Transaction Processing Framework	Fat Client Transformation Processing Framework	Batch Transaction Processing Framework
	Security / Trans. Mgmt. / Error Handling	Trans. Mgmt. / Error Handling	Security / Trans. Mgmt. / Session Mgmt.	Security	Trans. Mgmt. / Error Handling

Development and Maintenance

SODA requires an integrated Development and Maintenance Architecture, most of which should look pretty familiar

- Requirements
- Analysis & Design
- Programming Languages
- Scripting Languages
- Report Writers
- Integrated Development Environment
- Code Generator
- Help/Performance Support
- Web Site Design and Development
- Repository
- Testing
- Configuration Management

Development and Maintenance

BEA Weblogic Workshop provides a unified, simple, and extensible IDE that allows All Developers to build and unit test:

BEA WebLogic Workshop

- EJB's, JSP's
- Java Page Flows
- XML Beans
- Web Services
- Integration Adapters
- Portlets
- Workflow
- Data Views (Liquid Data)

- Requirements
- Analysis & Design
- **Programming Languages**
- **Scripting Languages**
- Report Writers
- **Integrated Development Environment**
- **Code Generator**
- Help/Performance Support
- Web Site Design and Development
- Repository
- **Testing**
- Configuration Management

Migration

Companies have historically made several critical mistakes when migrating to a new technology:

- Believing in a Technology "Silver Bullet"

- Management by Magazine

- Technology for technology's sake

- Coupling the introduction of a new technology with the development of a mission critical business application

- "Build it and they will come"

- Underestimating:
  - the investments required
  - the amount of training required
  - the learning curve

- Over committing to "make the sale"

Migration

Making the transition to a new technology is risky….
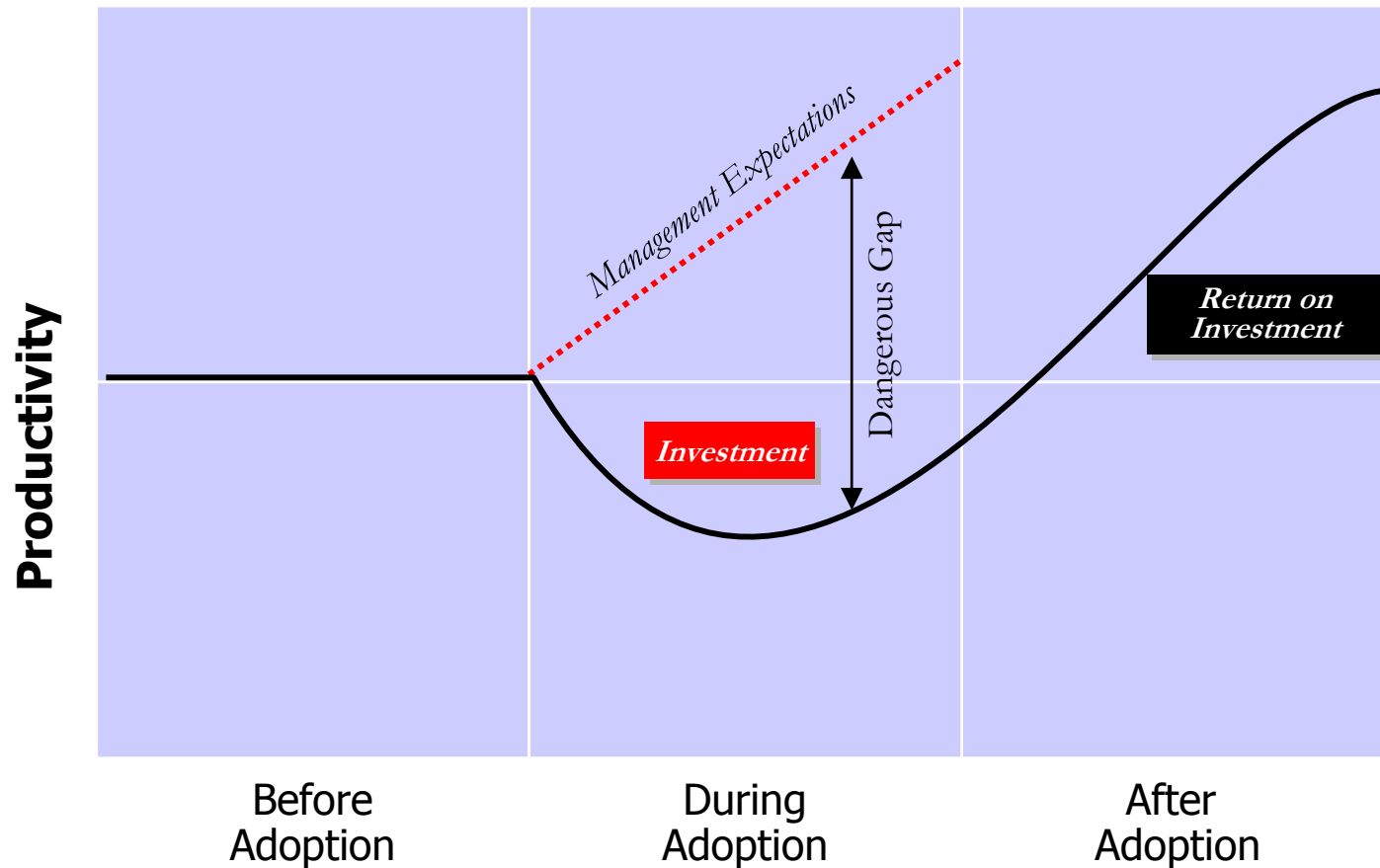
Source: John A. Stone
*Developing Software
Applications in a
Changing IT Environment*

Migration Alternatives

Companies have several options for migrating existing application functionality, outlined in this decision tree
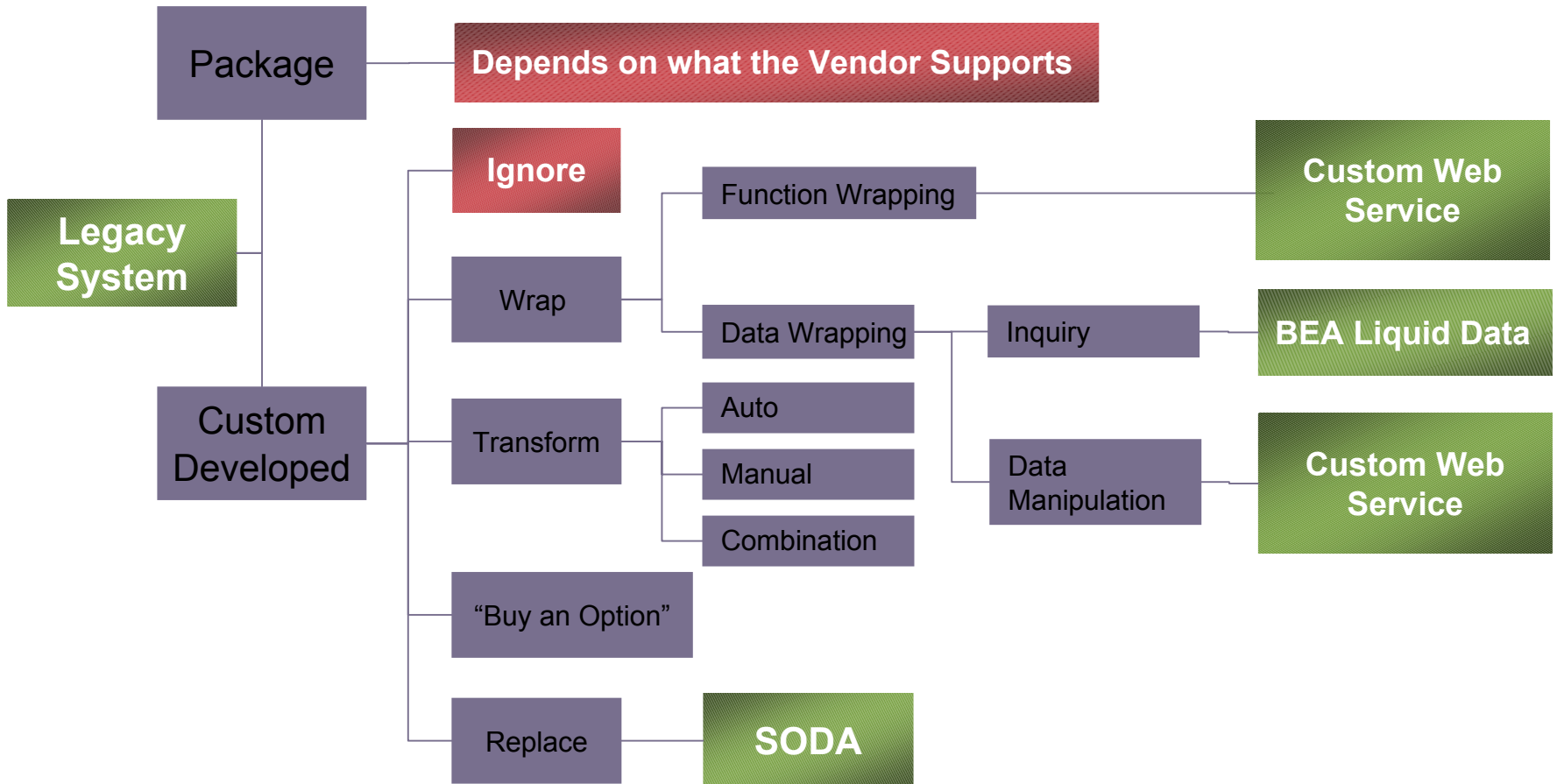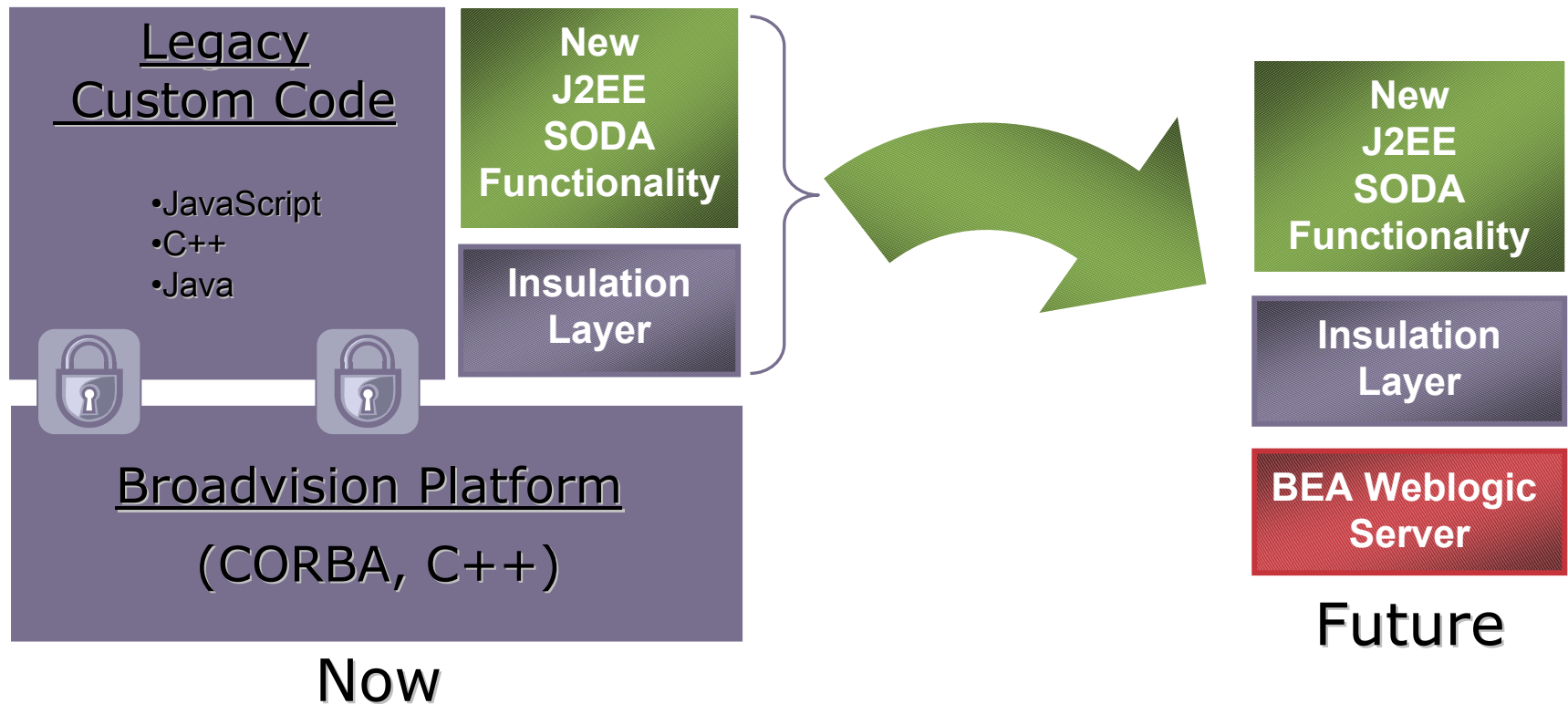
An Innovative Migration Example

Many companies have Legacy 2nd Generation Portal Applications built on proprietary architectures

New Business Requirements

Application Custom Code

- JavaScript
- C++
- Java

Broadvision Platform

(CORBA, C++)
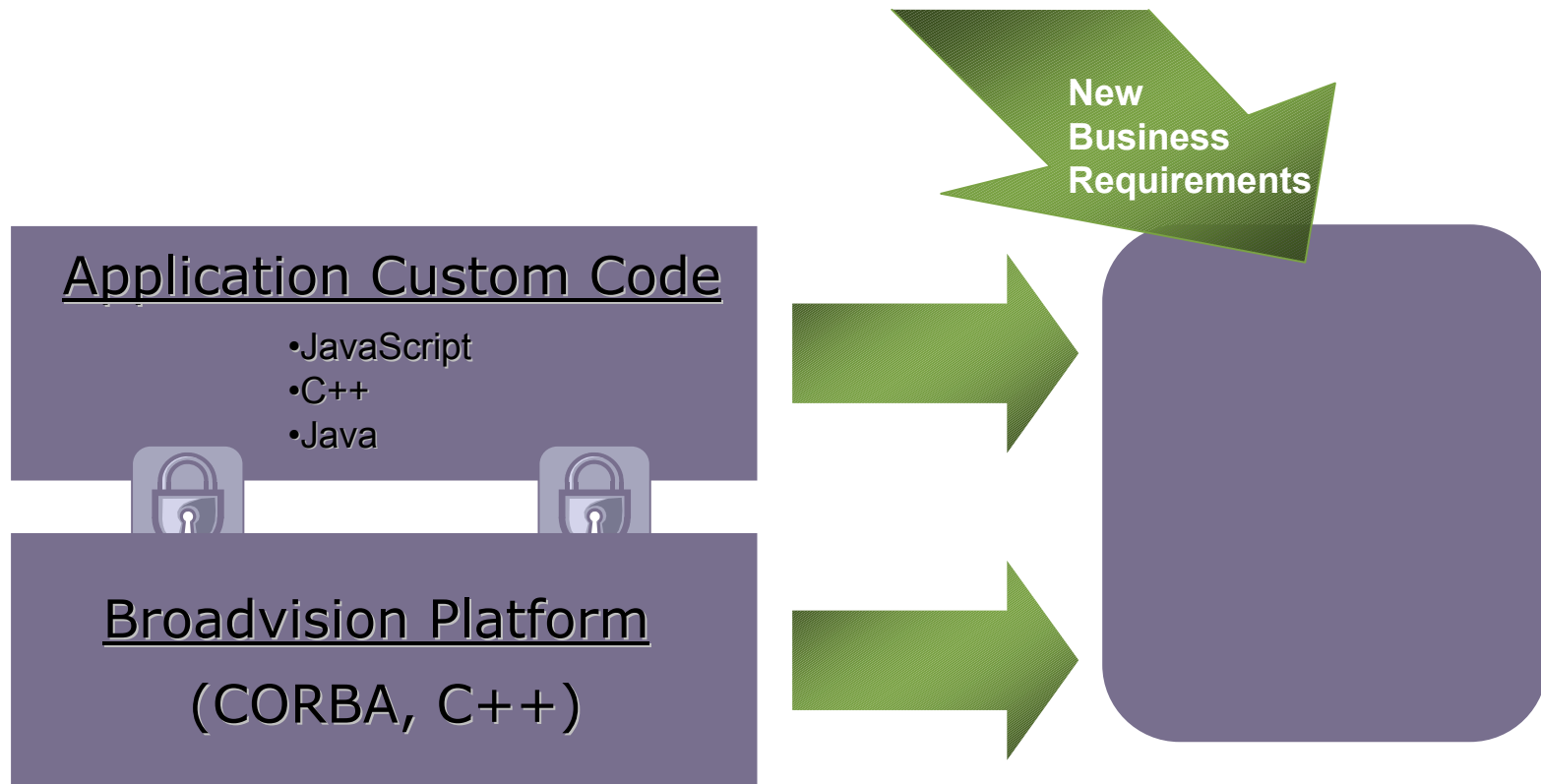
An Innovative Migration Example

Rather than continue to invest in an obsolete platform...

Legacy Custom Code
- JavaScript
- C++
- Java

New J2EE SODA Functionality

Insulation Layer

Broadvision Platform (CORBA, C++)

Now

New J2EE SODA Functionality

Insulation Layer

BEA Weblogic Server

Future

You can "Buy an Option" to migrate in the future

Migration

Success with any new technology requires investments (time and $) in **Capability Creation**

- This includes the things you need to buy:
  - Technology and Tools

- Creation of an SOA Center of Excellence with responsibility for:
  - Methodology
  - Standards
  - Reusable Frameworks and Services

- And sufficient time for:
  - Training
  - Proof of Concept and low risk Pilot Projects
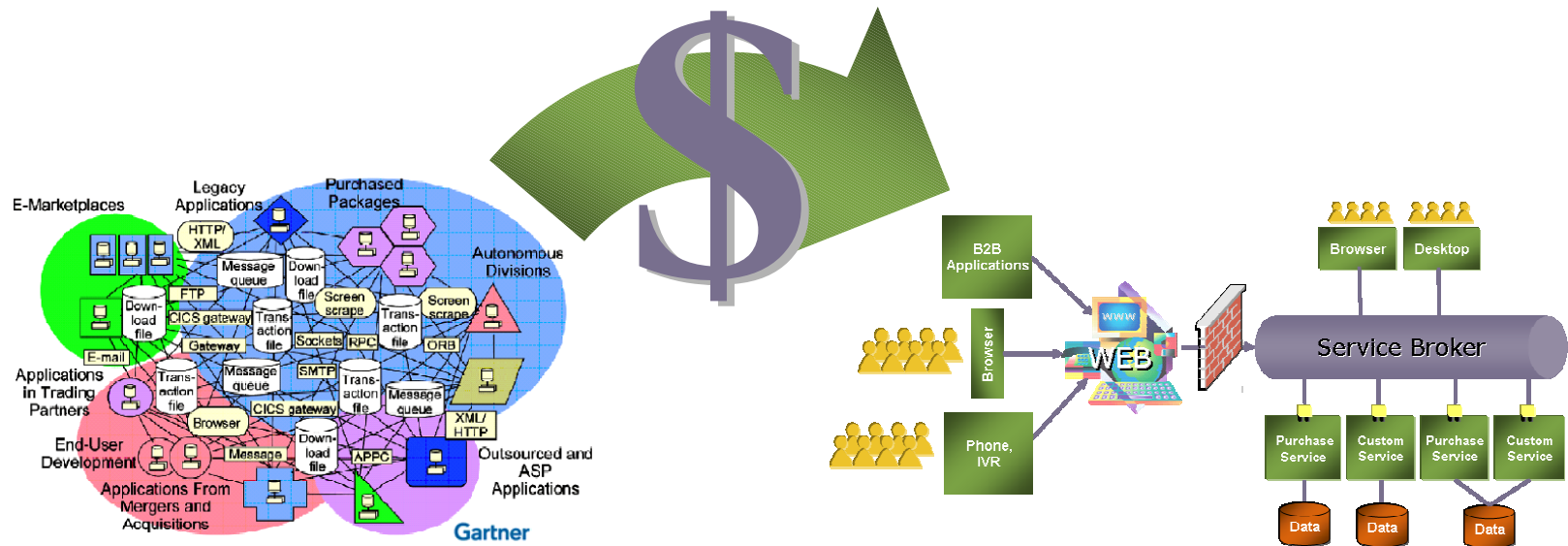 - Learning Curve

Migration Conclusion

What is the most significant requirement for migrating to a Service Oriented Approach?
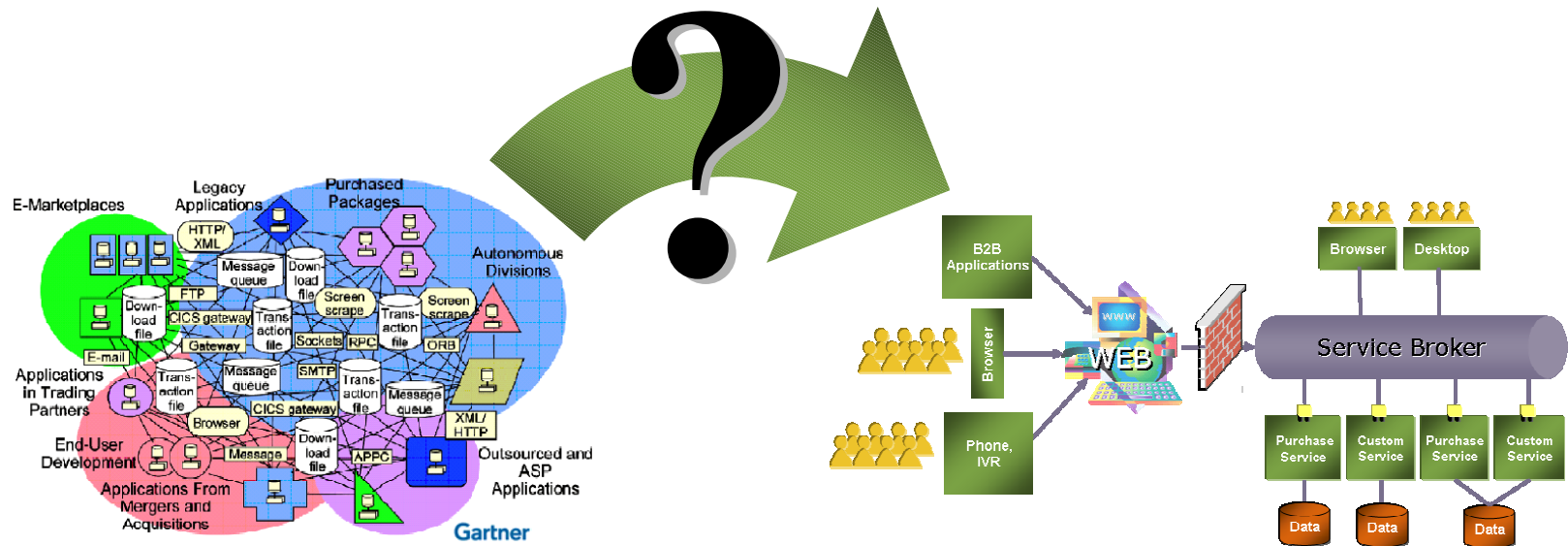
Migration Conclusion

What is the most significant requirement for migrating to a Service Oriented Approach?

FUNDING! How are you going to pay for it?

Economics

The costs to migrate to a Service Oriented Approach will be significant
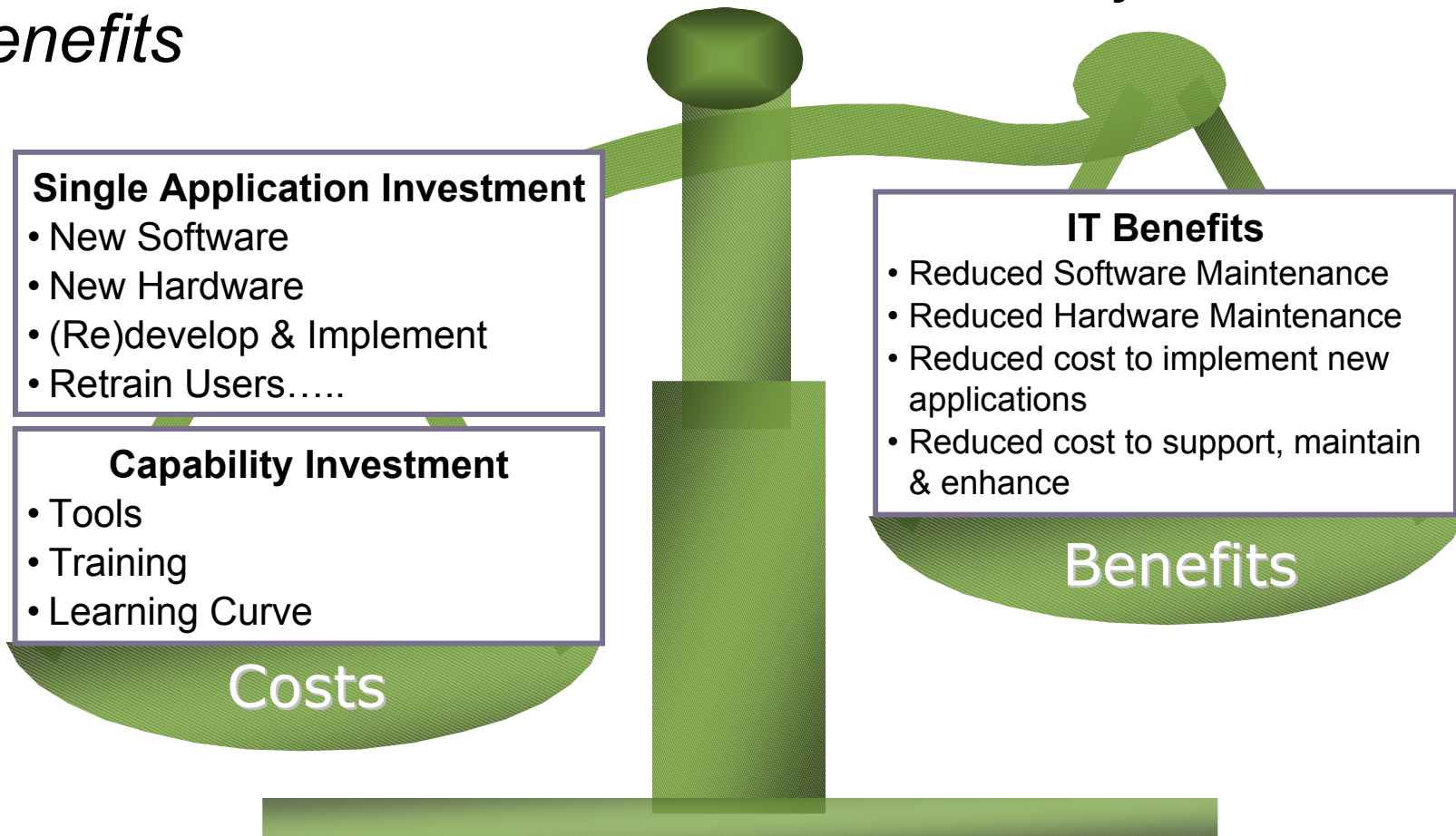
Single Application Investment
- New Software
- New Hardware
- (Re)develop & Implement
- Retrain Users….

Capability Investment
- Tools
- Training
- Learning Curve

Economics

Rarely will an organization be able to justify migrating to a Service Oriented Architecture solely on the IT Benefits
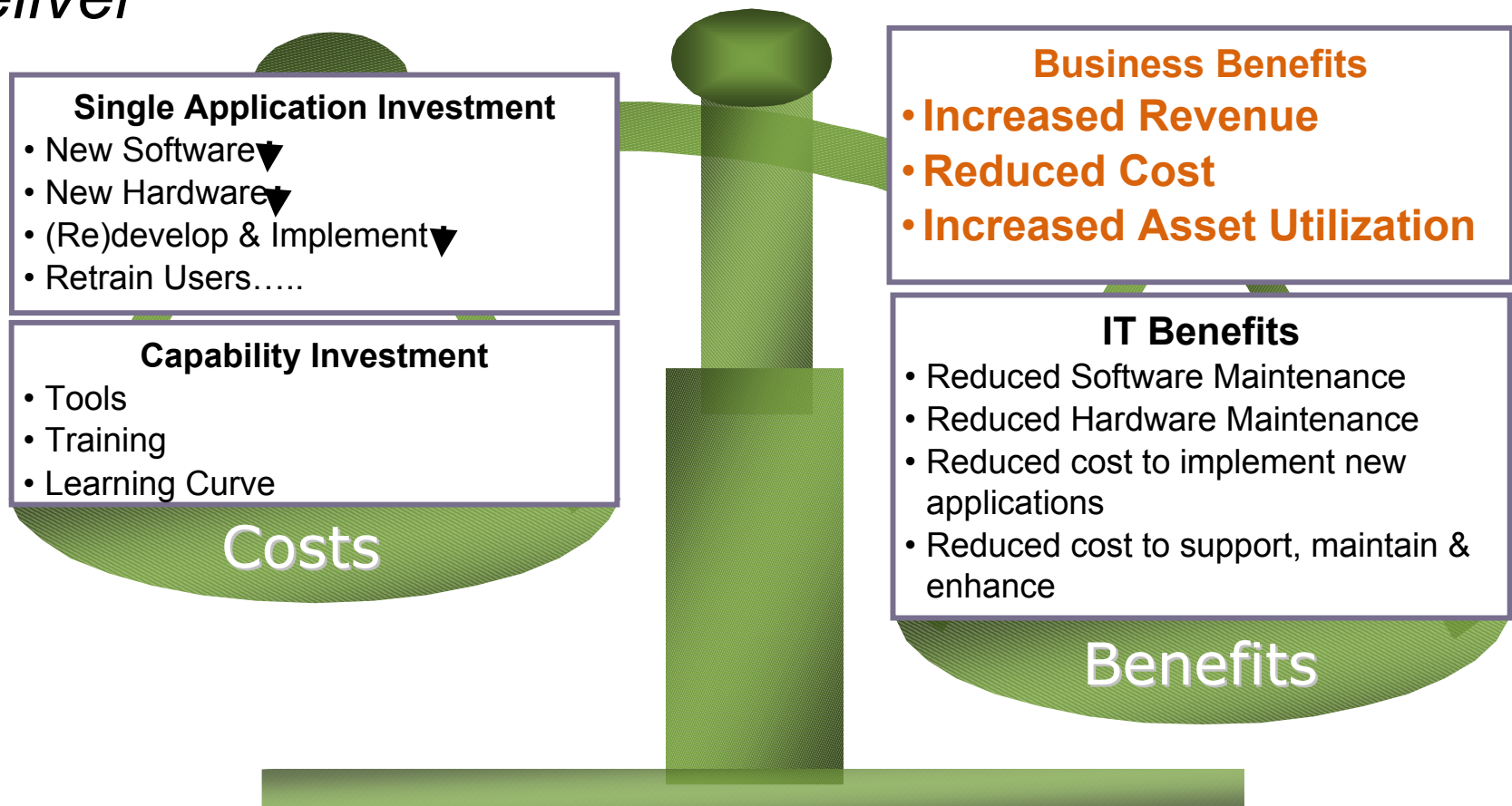
Single Application Investment
• New Software
• New Hardware
• (Re)develop & Implement
• Retrain Users…..

Capability Investment
• Tools
• Training
• Learning Curve

IT Benefits
• Reduced Software Maintenance
• Reduced Hardware Maintenance
• Reduced cost to implement new applications
• Reduced cost to support, maintain & enhance

Costs

Benefits

Economics

One thing that an IT Organization can do is lower the cost/increase the IT Benefits of Migration

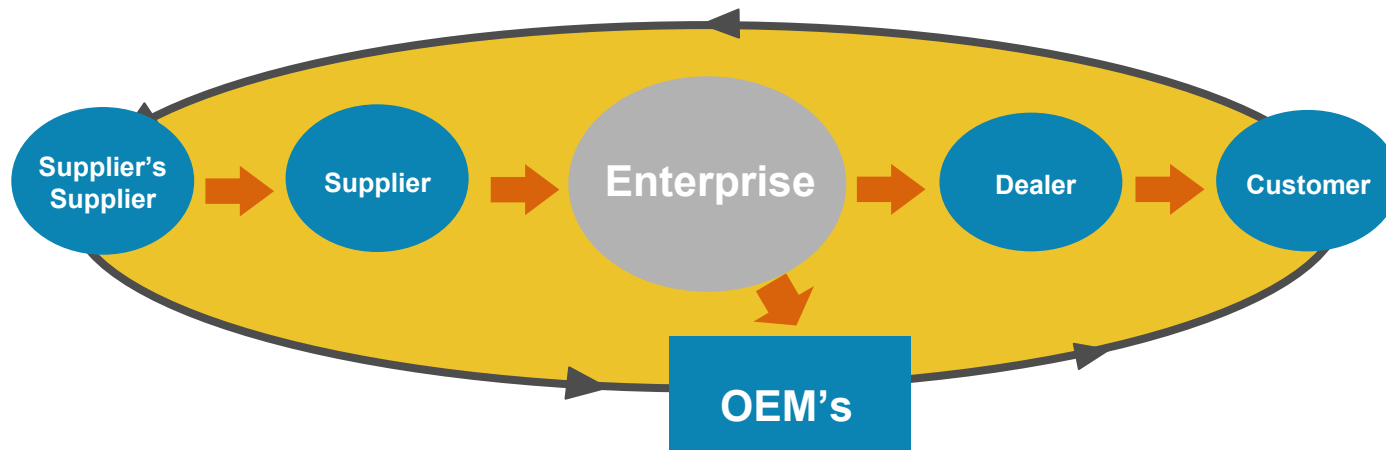| Category	Strategy
• **Hardware & Software acquisition cost**	• **Get a little help from your friends** – BEA Life Raft Program – HP/BEA Hardware Discounts – BEA/HP Financing
• **Cost to (Re)develop / transformation**	• **Reduce the cost of the Transformation** – Effective tool enabled methodology – Automate Transformation – Testing "Factory" – Off Shore
• **IT Benefits**	• **Find Additional (Related) Benefits** – Server consolidation – Storage Consolidation – Network Cost Reduction
• **Tools, Training and Learning Curve**	• **Capability Investment** – Get this funded as an Enterprise level Strategic IT Investment

Economics

The only way to fund the migration is with the business benefits that a new Service Oriented approach can deliver

Single Application Investment
- New Software▼
- New Hardware▼
- (Re)develop & Implement▼
- Retrain Users…..

Capability Investment
- Tools
- Training
- Learning Curve

Costs

Business Benefits
- **Increased Revenue**
- **Reduced Cost**
- **Increased Asset Utilization**

IT Benefits
- Reduced Software Maintenance
- Reduced Hardware Maintenance
- Reduced cost to implement new applications
- Reduced cost to support, maintain & enhance

Benefits

Economics

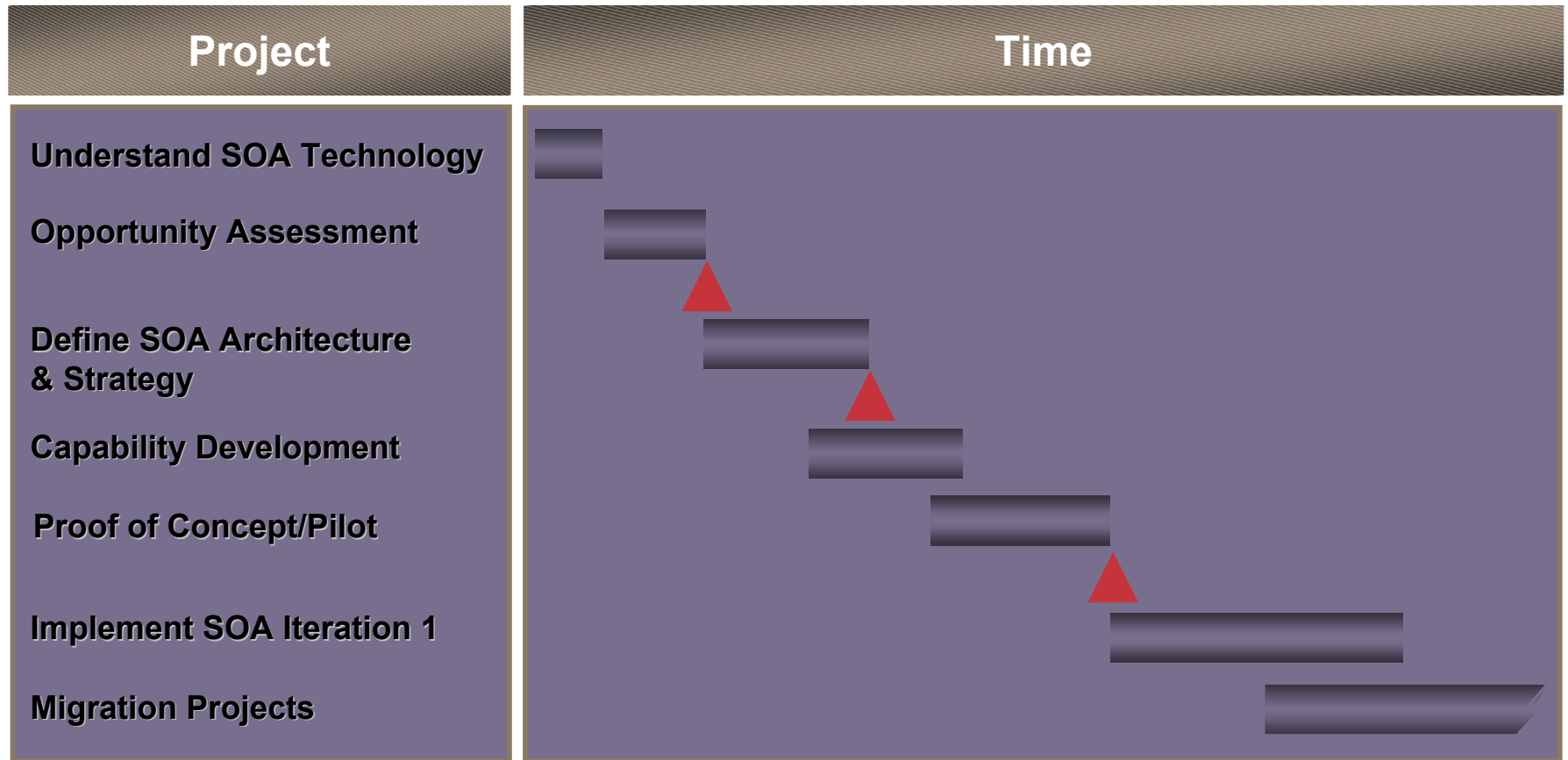*Service Oriented Architecture is a key enabler of Extended Enterprise Computing….*

…which can drive the significant Business Benefits:
- Increased Revenue
  - Increased Customer Loyalty – Easier to do Business With
- Reduced Administrative Costs
- Increased Asset Utilization
  - Increased Supply Chain Velocity – Increased Inventory Turns
  - Reduced Float

Where should you go from here?

A Strawman SOA Migration Road Map

Project	Time
Understand SOA Technology	
Opportunity Assessment	
Define SOA Architecture & Strategy	
Capability Development	
Proof of Concept/Pilot	
Implement SOA Iteration 1	
Migration Projects	

In Closing…..

- The **Business Benefits** of SOA are **real**

- The supporting technology and products are (almost) **Ready for Prime Time**

- SOA is primarily about **Architecture**

- **Partner** with a few technology suppliers who are compatible with your vision of SOA

- **Walk before you run**. Invest in:
  - Creation of an SOA Center of Excellence
  - Proof of Concept and Pilot Projects

- Get **a little help from you friends** to reduce your up front costs

- Find a Business Initiative with a favorable **Business Case** and **Funding**

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