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CMMI ACQUISITION MODEL (CMMI-ACQ): DRIVING PROCESS IMPROVEMENT

November 14, 2007

Dr. Richard Frost
*Global Director, Systems Process and
Program Management*
General Motors Corporation



Overview

- “ **General Motors now acquires 100% of its IT solutions**
- “ **There was no maturity model for organizations that acquired technology**
- “ **General Motors supported the Software Engineering Institute (SEI) to develop the CMMI-ACQ**
- “ **General Motors was the first commercial enterprise to be appraised utilizing the CMMI-ACQ**
- “ **The best practices encompassed in the CMMI-ACQ drive quality throughout the IT acquisition process**

General Motors Products

6 cars in the world is from the GM



GMC



Chevrolet



Cadillac



Saturn



Vauxhall



Saab



Holden



Opel



Hummer



Pontiac



Daewoo



Buick



GM's Profile

- “ 280,000 employees worldwide
- “ \$207 billion revenue in 2006
- “ Products sold in more than 200 countries
- “ Sold more than 9 million cars and trucks in 2006
- “ 176 Manufacturing facilities in 35 countries
- “ 14,000+ dealers in North America alone
- “ \$89 billion of direct materials purchased annually
- “ 14 million pounds of material received daily
- “ Approximately 5,000 parts in each vehicle
- “ 375 million square feet of Manufacturing space including Joint Ventures
- “ 3,200 sources provide delivery "just in time"

GM's Global Design & Engineering Centers



Manufacturing Plants

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Globalization and Standardized Processes



GM's Global Journey



Today's World

Business

Quality Products / Services
at Lowest Prices
Globalization
Growth
Regulations

Individual

Ubiquitous
Wireless
Continuous
Multi-use Appliance
Privacy

Information Technology

Industry Consolidation
Wireless / Ubiquitous
Globalization
Loose Integration
Standard Process
Services / Solutions
Reliability
Security

Evolving To:

Business

- Quality Products / Services
at Lowest Price
- Globalization
 - Growth
- Regulation

Individual

- Ubiquitous
- Wireless
- Continuous
- Home Appliance
- Privacy



Global Real Time Corporation

- Standard Process
- Services / Solutions
 - Reliability
 - Security



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ly Integrated Global Company

The Global Environment

- “ Truly 24x7 . we are always working somewhere
- “ Region, country and brand stand-alone structures no longer exist
- “ Suppliers and joint ventures are integral to the model

Drives

- “ Global collaboration
- “ Real-time access to critical business information
- “ Supply chain visibility
- “ Global regulatory requirements
- “ Always-on infrastructure (no downtime)





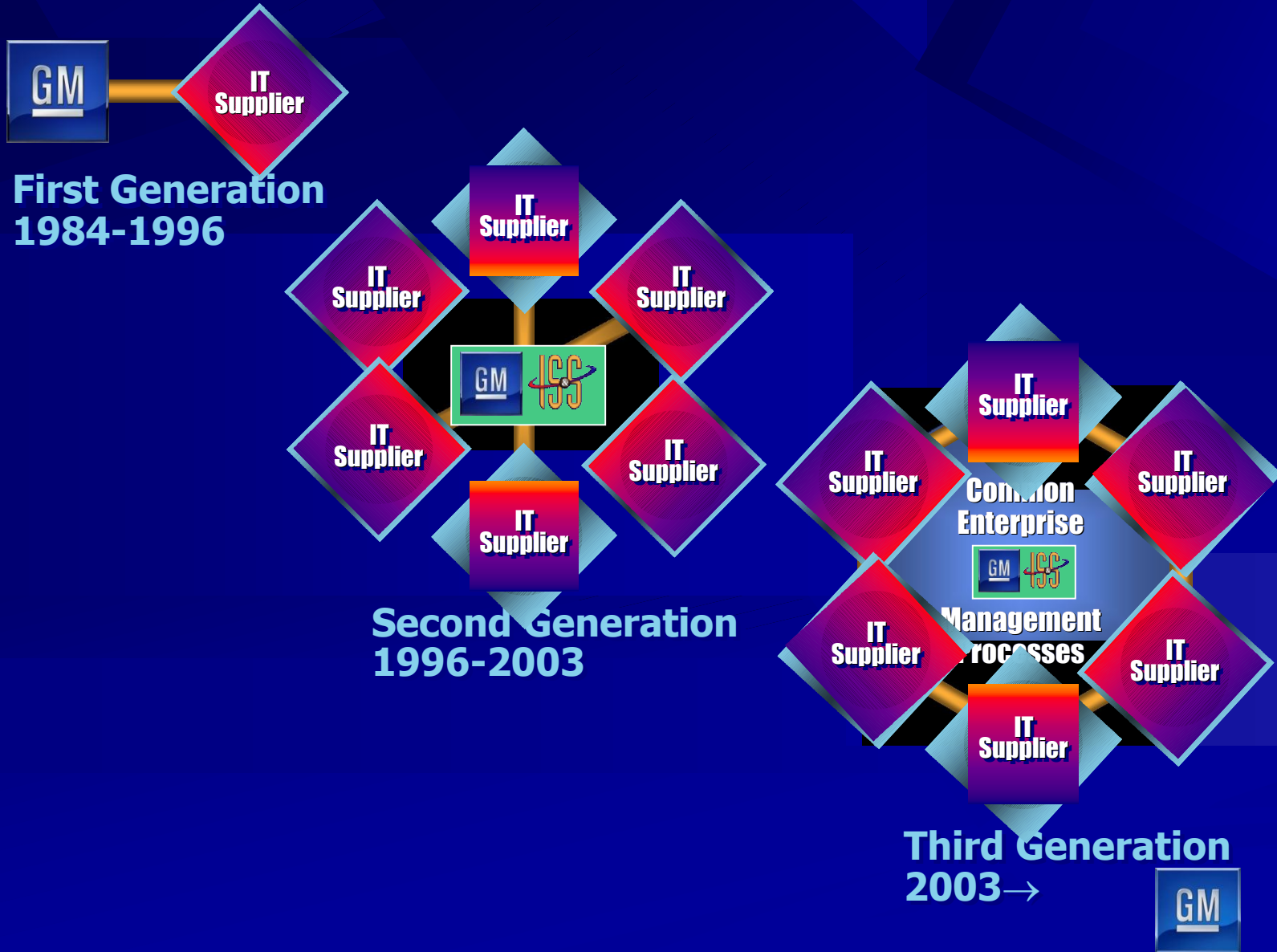
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IT at GM Acquires Systems Rather Than Developing Systems



Evolution of GM IT

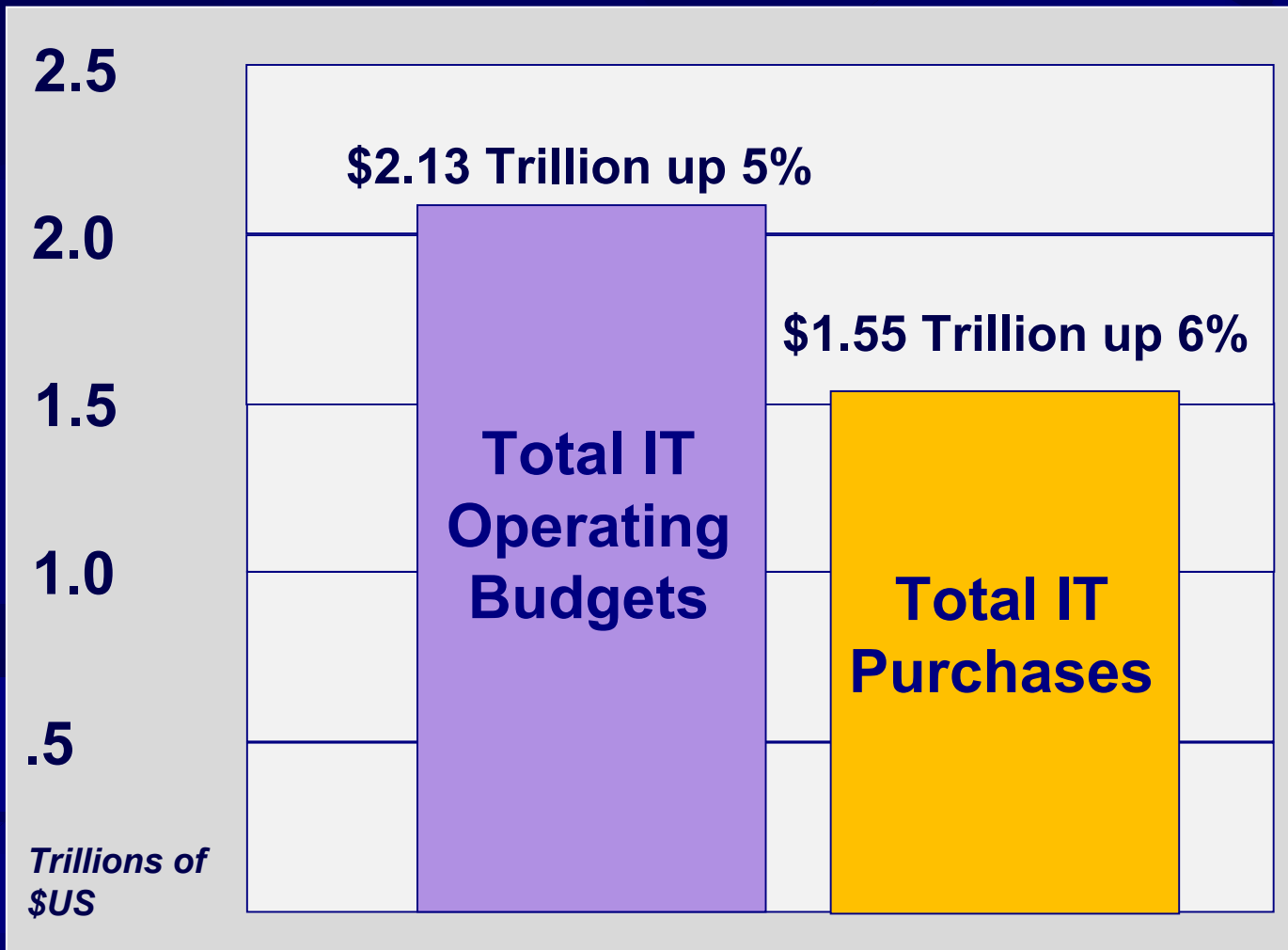


The Challenge

How does GM structure the vendor relationship the 3rd generation out-sourced environment?

- ✓ **Leverage best-in-class suppliers**
- ✓ **Become more nimble**
- ✓ **Focus on our core competencies**
- ✓ **Be better positioned to take advantage of new technologies**
- ✓ **Assure quality of all systems**

2007 Global IT Industry



*75% of every dollar in IT spent is on **Acquisition***

* Source: Forrester

Search of IT Models

- ✓ CMM, CMMI
- ✓ SPICE
- ✓ IEEE
- ✓ COBIT
- ✓ ITIL

Findings:

- “ Enterprises were acquiring many systems
- “ Models focused on development and operation
- “ No models adequately support the acquirer
- “ Industry was looking for an acquisition model

Software Engineering Institute and GM



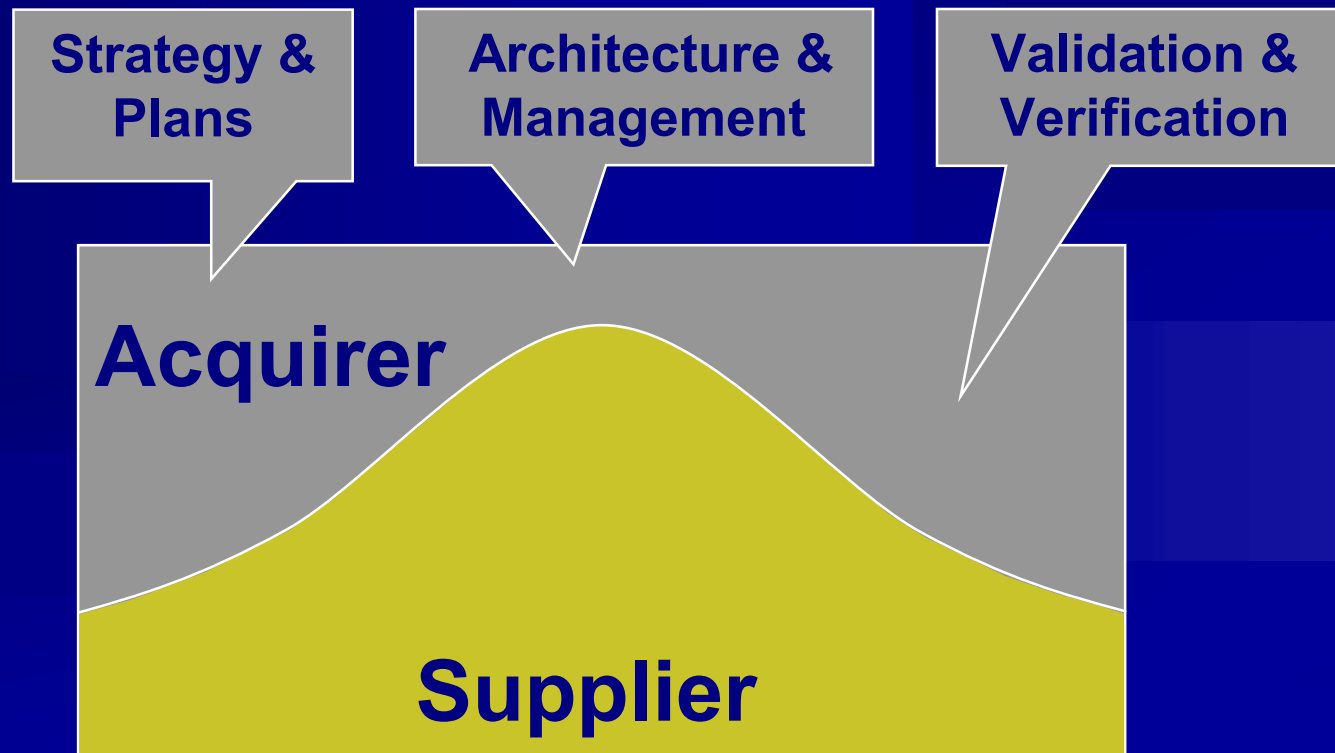
- “ Strategic decision to acquire - not build
- “ Previously utilized CMMI development
- “ Recognition that Acquisition is different
- “ Requires standard model for global deployment



- “ Thought Leadership in developing maturity models (CMM, CMMI)
- “ Integrator of best practices in software engineering
- “ Recognition of value in offering model for acquirers

Acquisition (CMMI-ACQ)

- “ Maturity Model for organizations that acquire systems
- “ Leverages best practices of industry and CMMI
- “ Publication: November 2007



ACQ® Process Areas

Category	Process Area
Acquisition	<ul style="list-style-type: none"> Acquisition Management Acquisition Requirements Development Acquisition Technical Solution Acquisition Validation Acquisition Verification Solicitation and Supplier Agreement Development
Process Management	<ul style="list-style-type: none"> Organization Innovation & Deployment Organization Process Definition Organization Process Focus Organization Process Performance Organizational Training
Project Management	<ul style="list-style-type: none"> Integrated Project Management Project Monitoring and Control Project Planning Quantitative Project Management Requirements Management Risk Management
Support	<ul style="list-style-type: none"> Causal Analysis and Resolution Configuration Management Decision Analysis and Resolution Measurement and Analysis Process and Product Quality Assurance



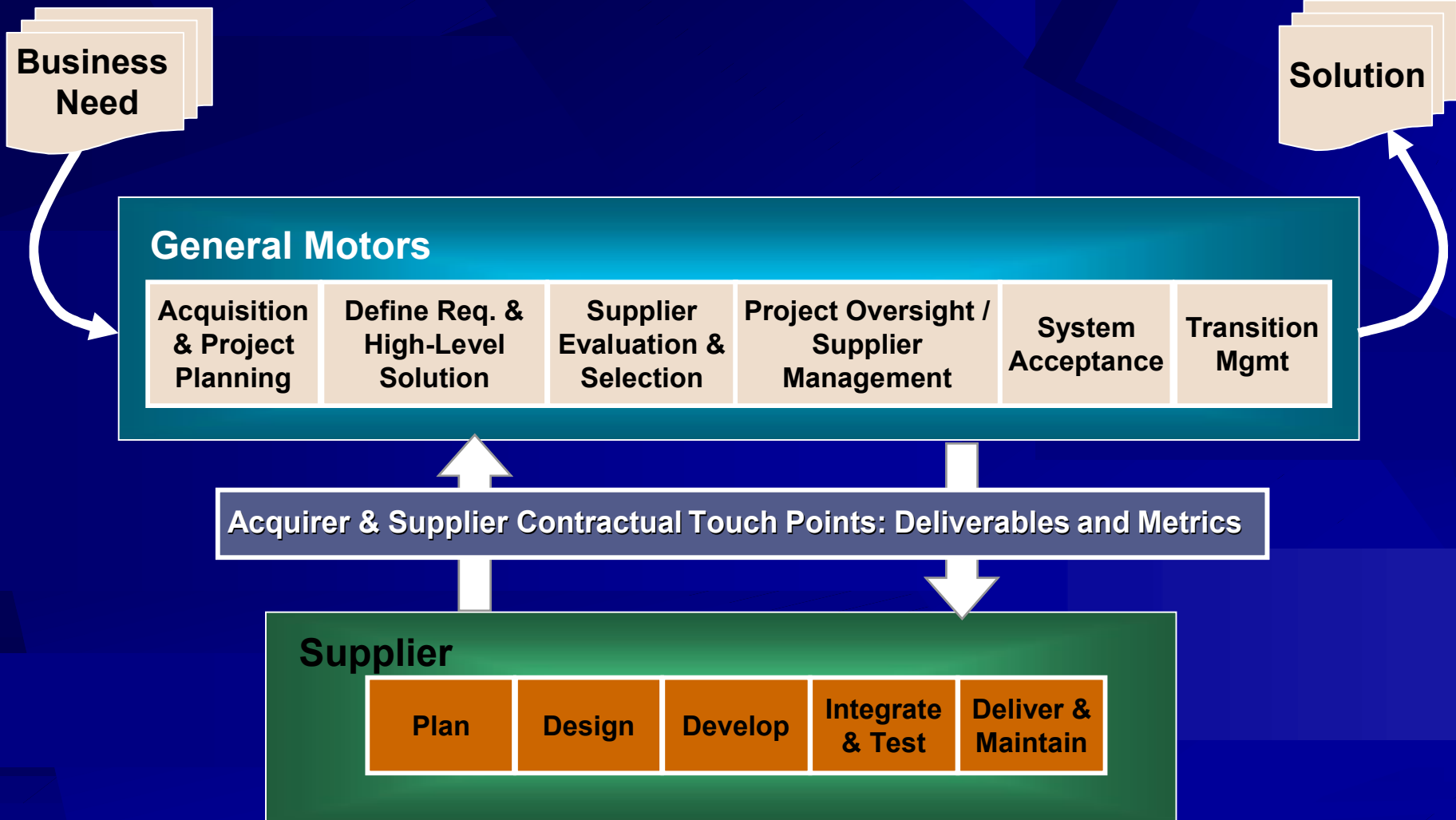
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General Motors Implementation



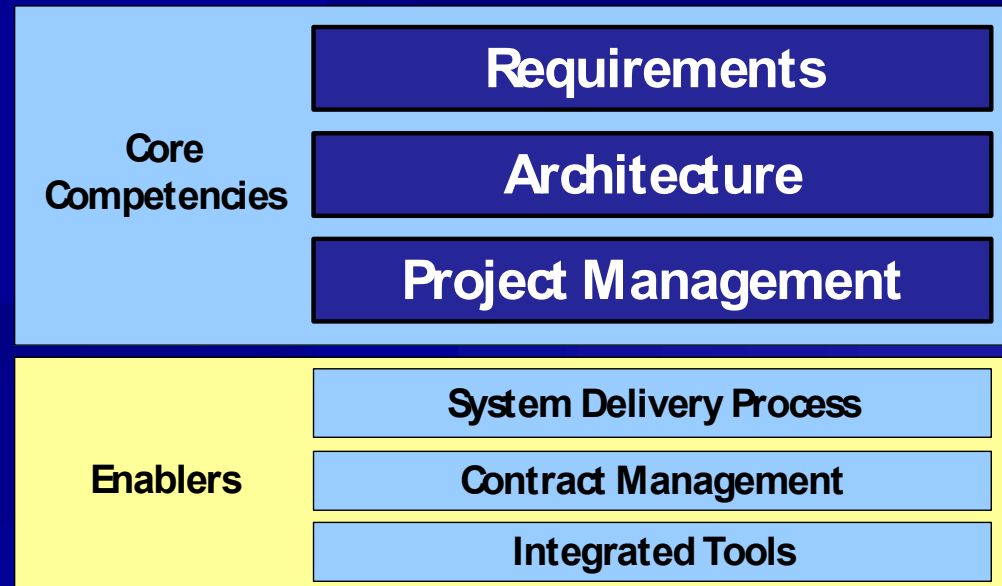
and Supplier Roles



Acquisition Learnings

“ Key insights into successful implementation strategy

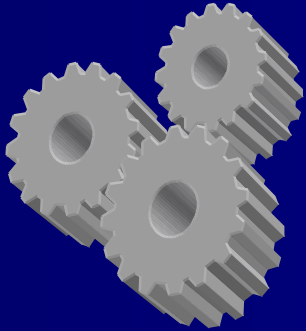
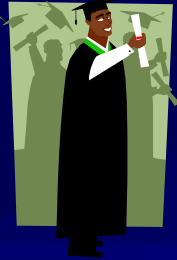
- . Acquirer must understand model and decide what to retain and what to acquire
- . Build core competencies in retained processes
- . Keep process lean:
 - “ Build enabling systems
 - “ Standardize on Acceptance
 - “ Standardize on Interfaces
 - “ Standardize on Tools
- . Maturity of supplier is critical
- . Assure training aligns supplier and acquirer



Supplier Alignment

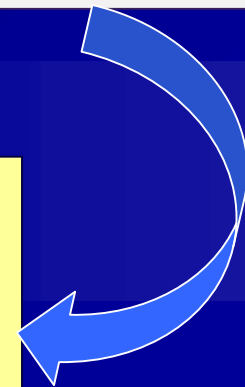
Key Learnings

- 10 Define the process for the organization and interface to suppliers
- 10 Focus delivery process on acquirer core competencies
- 10 Don't prescribe the supplier's methodology
- 10 Supplier teams integrate at different speeds and require a variety of support mechanisms



Actions

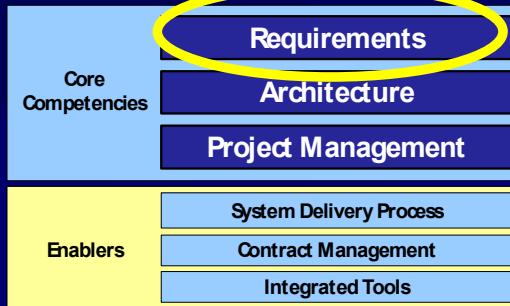
- " Global System Process Days
- " Global face to face training
- " Global Coach's program
- " Interactive distance learning



Requirements

Key Learnings

- **Acquirer ownership of requirements is essential**
 - Intellectual property, business knowledge
 - Relationship with customer/user
 - Continuity between projects
- **Requirements are tightly linked to contracts**
 - Tension within teams if reqts. are poor quality
 - Suppliers can take advantage of loose reqts.
- **Acquirer must be skilled in requirements management and requirements engineering**



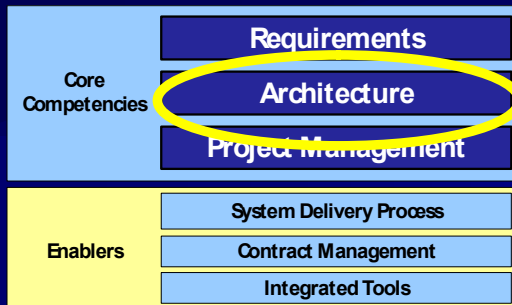
Actions

- “Established requirements team
- “Requirements prototyping
- “Requirements lead oversees projects
- “Standard requirements

Architecture

Key Learnings

- **Acquirer must retain ownership of architecture**
 - Determines technical strategy
 - Assure consistency
 - Assure ~~Best Interest~~ of Acquirer
- **Architectural philosophy varies within supplier base**
 - Variation at company and personal level
- **Technical and architectural standards eliminate noise**
 - Hurdle should be very high for deviations



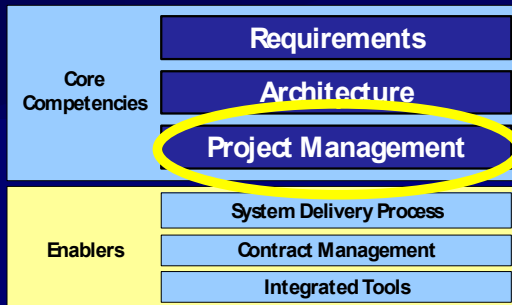
Actions

- “Enterprise level system engineering team
- “Cross area architecture planning meetings
- “Lead architect oversees all projects
- “Implementation of technical standards

Project Management

Key Learnings

- **Acquisition PM is a different mindset than development**
 - PMs shift from %doing+ to %managing+, retain accountability
 - Acquisition PM must integrate with supplier PM
 - Clear acceptance and quality measures are critical
- **Relationship with customer is critical**
 - PM is the key customer advocate in the project
- **Contract support of PM is critical**
 - Contracts routinely referenced for responsibilities



Actions

- “Standard contracts across areas
- “Standard RASIC for all projects
- “Integrated GM & supplier project plan
- “Standard peer & acceptance reviews

Summary

- “ **CMMI-ACQ focuses on Acquisition Maturity**
- “ **Acquirer Must Retain Key Competencies**
 - “ Requirements
 - “ Architecture
 - “ Project Management
- “ **Acquirer Must Drive Quality Processes**
 - “ Require suppliers to conform
 - “ Leverage learnings from suppliers
- “ **Process and Contract Management are essential**
- “ **The Acquisition model is new, training and organization change management are critical**



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