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
1 in every 6 cars in the world is from the GM

General Motors Products

GMC
Chevrolet
Cadillac
Saturn
Vauxhall
Saab
Holden
Opel
Hummer
Pontiac
Daewoo
Buick

GM
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"
Globalization and Standardized Processes
GM’s Global Journey

Historical
Divisional / National Focus

Late 1980s - 1990s - Early 2000s
Regional Integration

2000s – Current
Global Processes

Canada / US / Mexico
Chevrolet / Pontiac / Buick

North America

Germany / UK / France
Opel / Vauxhall / Bedford

Europe

Argentina / Brazil / Chile

LAAM

Australia / N.Z. / etc.

Asia Pacific

Global
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 Prices
- Globalization
- Growth
- Regulations

**Individual**
- Ubiquitous
- Wireless
- Continuous Multi-use Appliance
- Privacy

**Global Real Time Corporation**
- Standard Process
- Services / Solutions
  - Reliability
  - Security

Click Here to upgrade to Unlimited Pages and Expanded Features
GM is a Tightly 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)
IT at GM Acquires Systems Rather Than Developing Systems
Evolution of GM IT

First Generation
1984-1996

Second Generation
1996-2003

Third Generation
2003

IT Supplier

Common
Enterprise
Management
Processes
The Challenge

How does GM structure the vendor relationship the 3rd generation outsourced 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

- Total IT Operating Budgets: $2.13 Trillion up 5%
- Total IT Purchases: $1.55 Trillion up 6%

75% of every dollar in IT spent is on Acquisition

* Source: Forrester
Research 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
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
<table>
<thead>
<tr>
<th>Category</th>
<th>Process Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>Acquisition Management, Acquisition Requirements Development, Acquisition Technical Solution, Acquisition Validation, Acquisition Verification, Solicitation and Supplier Agreement Development</td>
</tr>
<tr>
<td>Project Management</td>
<td>Integrated Project Management, Project Monitoring and Control, Project Planning, Quantitative Project Management, Requirements Management, Risk Management</td>
</tr>
<tr>
<td>Support</td>
<td>Causal Analysis and Resolution, Configuration Management, Decision Analysis and Resolution, Measurement and Analysis, Process and Product Quality Assurance</td>
</tr>
</tbody>
</table>

Adopted from a chart by the Software Engineering Institute, Carnegie Mellon University
General Motors Implementation
## General Motors

<table>
<thead>
<tr>
<th>Acquisition &amp; Project Planning</th>
<th>Define Req. &amp; High-Level Solution</th>
<th>Supplier Evaluation &amp; Selection</th>
<th>Project Oversight / Supplier Management</th>
<th>System Acceptance</th>
<th>Transition Mgmt</th>
</tr>
</thead>
</table>

### Acquirer & Supplier Contractual Touch Points: Deliverables and Metrics

### Supplier

- Plan
- Design
- Develop
- Integrate & Test
- Deliver & Maintain

---

Business Need

Solution
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

- Define the process for the organization and interface to suppliers
- Focus delivery process on acquirer core competencies
- Don’t prescribe the supplier’s methodology
- 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
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
Key Learnings

- Acquisition PM is a different mindset than development
  - PM’s 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
Thank You!

Rich.Frost@GM.com