Architecture for Enterprise Process Improvement

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Integrated Systems & Global Solutions

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Agenda

• Context : Problem to be Solved
• Software Architecture Applicability to Process Improvement Architecture
• Project Phases
• Lockheed Martin Operating Excellence
• Summary
Context: Problem Definition

- A process-rich culture bred many process improvement “entities” over a decade+
  - Some vintage from legacy organizations
  - Some spawned to respond to multiple models/standards in an integrated way
  - All great mechanisms – but stovepipeded!
Project Sponsored

• Sponsorship and initiation of a process improvement project:
  – Objective: Improve the Enterprise Process Improvement (PI) Architecture
Defining an Enterprise PI Architecture

• What comprises an enterprise process improvement architecture?
  – Approach taken: leverage concepts from software architecture
Software Architecture Definition*

• The structure or structures of the system, which comprise the software elements,
• The externally visible properties of those elements and
• The relationships among them*

This definition can be applied to an Enterprise Process Improvement Architecture

Enterprise Process Improvement Architecture Definition

- The structure or structures of the enterprise, which comprise the process improvement entities*,
- The externally visible properties of those entities and
- The relationships among them

* Includes people, processes, policies and tools
Software Architecture Principles*

• Architecture abstraction includes all of the “elements”

• Roles, responsibilities, behaviors and properties of the elements are described

• Relationships depicted include those
  – Among elements
  – Between elements and other enterprise activities

• Artifacts provided to and required from elements

• Different views and perspectives available

* Also apply to an Enterprise Process Improvement Architecture
The Process Improvement Architecture includes everything needed to “operate” process improvement!
Process Improvement Architecture Provides the Foundation

- Process Improvement (PI) Architecture
- Process Improvement Governance
- Process Assets
- Process Improvement Governance
- Measurement
- PI Portfolio Management
- Process Improvement (PI) Architecture
Project Phases

1. INVENTORY IMPROVEMENT ACTIVITIES
2. INVESTIGATE WHAT OTHERS ARE DOING
3. CREATE FLOWS OF STATUS QUO
4. RELATE TO OPERATING EXCELLENCE
5. ENGAGE ENTERPRISE STAKEHOLDERS
6. COMPILE FINDINGS & RECOMMENDATIONS
7. IMPLEMENT RECOMMENDATIONS

LEAN & SIX SIGMA
Results of Process Improvement

Inventory

• Stovepiped activities
• Unintegrated
• Not all are institutionalized
• Nevertheless . . .
  – Significant process improvement underway!
An Enterprise Process Improvement Architecture has no

STOVEPIPES

So there is considerable work to be done!
Tenets from Other Enterprise Process Improvement Activities

- Focus on practices resulting in measurable business improvements
- Establish a process improvement framework
  - GRIP (Growth, Reputation, Innovation, People)
  - Protect/Transition/Grow
- Engage Subject Matter Experts from each business unit
- Follow a business rhythm to establish initiatives and track progress
- Encourage, but don’t edict, best practice adoption

Key Practice: Use a feedback loop to guide actions and calibrate whether practices are working
Process Innovation & Deployment (PI&D)
Process Flow - Example

Employee Submits 6-block

PI&D POC Review

REJECT ContINUE

Decline/Modify Employee 6-block award

PI&D Lead Checks with PI&D POCs for Duplication

PI&D Lead

Duplication

YES - REJECT

NO

Funding Available

YES - ACCEPT

Award Project

PI&D Lead: Enterprise level leader who maintains the PI&D Database, PI&D Process, and PI&D Templates

PI&D POC: One Point of Contact from each Product Line and Central Function

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The Path to Excellence Uses...

LEAN & SIX SIGMA

WEASTE

DEFECTS
Five Principles of Operating Excellence

• Specify **Value** of the product from your Customer’s perspective

• Identify the **Value Stream** for each product

• Enable product to **Flow** without interruptions

• Allow the customer to **Pull** value from the producer

• Continuously improve...pursue **Perfection**
Principle Based Approach

Value from Customer’s Perspective

Value Stream

Flow

Pull

Perfection
Eliminate Non Value Elements

- Reduce Waste
- Mistake Proofing
- Reduce Variation

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Source: SIX SIGMA RESEARCH INSTITUTE

Motorola University Motorola, Inc.

Lean

Head North East!

Six Sigma
LM21 Operating Excellence

Logic Map

Leadership
- Leader Engagement
- Customer Engagement

Strategic
- Knowledge
- Discipline
- Communication

Tactical
- Infrastructure
- Activity and Results

Leadership Council
LRP → Op Plan → Productivity Targets & Strategy

Program Value Streams & Product Development Kaizens (PDKs)
Program Excellence Plans

Functional Alignment

Train & Deploy Experts
Improvement Events (PDKs, Kaizens, Projects JDIs)

Quarterly Review
Review – Capture – Update Return on Invested Capital (ROIC)

Closed-Loop Continuous Improvement

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Project Phases

- Inventory Improvement Activities
- Investigate What Others Are Doing
- Create Flows of Status Quo
- Relate to Operating Excellence
- Engage Enterprise Stakeholders
- Compile Findings & Recommendations
- Implement Recommendations

Here we are!

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Significant Project Findings

• Focusing on Operating Excellence at the enterprise level
  – Ensures practices result in measurable business improvements
  – Provides a business rhythm to establish initiatives and track progress
  – Works by encouraging, not mandating, best practice adoption

• Directives and procedures are useful to flesh out the Operating Excellence process (e.g., in Product Lines)
  – Directives and procedures mapped to the corporate process and ensure integration and completeness
  – The same Operating Excellence process applies at every level of the corporation
Operating Excellence Deployment at Every Function and Organizational Level in the Corporation
Summary

• Software architecture concepts apply to the Enterprise Process Improvement Architecture
  – Provide discipline
  – Ensure completeness

• Lockheed Martin’s Operating Excellence is a fundamental cornerstone of our business model
  – Applies to process improvement activities at every level
  – Provides a robust tool kit
  – Yields business results!
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