Knowledge Management

at the Heart of CMMI ML3

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Knowledge Manager
Presentation Overview

• About RAFAEL
• The Organization at Maturity Level 3
• Principles of Knowledge Management
• KM Systems at RAFAEL
• Nympha – An Example of a KM System
• Q&A
On Land

Total Area Control System

Training and Simulation Systems

RTCS Tactical C4I

Helispot Detection System

ADMS

Overhead Weapon Systems

Add-on Armor

Carpet Minefield Clearing

Spike Family

Trophy

Stalker

SpotLite

SkyLite

Firefly

Matador-MP

Matador-WB

Simon Door Breaching

Trophy

Add-on Armor

Carpet Minefield Clearing

Spike Family

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SpotLite

SkyLite
Financial Data

BACKLOG ($M/year)

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SALES ($M/year)

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R.O.W

ISRAEL
Core Capabilities

- Seekers and electro-optical payloads
- Guidance and navigation
- Image processing - trackers
- Rocket motors
- Explosives
- Warheads and fuses
- Acoustics
- Thermal batteries
- High power microwave
- Materials and processes composites, optical elements and coating metallurgy
- MMIC
- Antennas and radomes
- Electronic warfare
- Communication, secure data links
- Terminal ballistics
- Simulators, trainers, training systems
- Armor and protection
Excellence through Standards

Software Engineering Institute
Capability Maturity Model Integration™
CMMI® SE/SW v1.1
Achievement through
SCAMPI™ A Appraisal Method
Of
CMMI® Maturity Level 3
RAFAEL
Armament Development Authority Ltd.
Systems Division, Ordnance Division,
Missile Division, Munition Division
Awarded this 15th day of December 2005
Tim Kasac
CEO and Principal Consultant
Kasac Initiatives LLC
Team Leader
SEI Transition Partner
SCAMPI™ Lead Appraiser
H00137-B1

ISO 14001:2004
CMMI-3
AS 9100
ISO 90003
ISO 9001:2000
OHSAS 18001
ISO 17025
ISO 14001
CMM-3
ISO GUIDE 25
ISO 9000-3
ISO 9001
Mil-Q-9858A
The Essence of Maturity Level 3

- **CL3 Project Management**
  - Quantitative Project Management
  - Integrated Supplier Management
  - Integrated Teaming
  - Risk Management
  - Integrated Project Management

- **CL3 Engineering**
  - Validation
  - Verification
  - Product Integration
  - Technical Solution
  - Requirements Development

- **Organizational Process Management**
  - Organizational Innovation and Deployment
  - Organizational Process Performance
  - Organizational Training
  - Organizational Process Definition
  - Organizational Process Focus

- **Support**
  - Measurement & Analysis
  - Process & Product Quality Assurance
  - Configuration Management

**Categories (continuous Approach)**

- **Project Management**
- **Engineering**
- **Process Management**
- **Support**
The Essence of Capability Level 3

● **Generic Goal 3**
  – The process is institutionalized as a defined process
    ● Generic Practice 3.1
      – Establish and maintain the *description of a defined process*
    ● Generic Practice 3.2
      – Collect work products, measures, measurement results, and *improvement information* derived from planning and performing the process to support the future use and improvement of the organization’s processes and process assets
The Organization at Maturity Level 3

- **OPF / SG 1**
  - Process Improvement Opportunities
  - Defined Processes
  - Organizational Training

- **OPF / SG 2**
  - Process Improvement Activities

- **OPD / SG 1**
  - Organizational Process Assets

- **GP 3.1+ Eng. PA**
  - Defined Process
  - Engineering
  - Sys. X
  - Sys. Y
  - Sys. Z
  - Tailoring

- **GP 3.1+IPM**
  - Defined Process
  - Project Management
  - Proj. A
  - Proj. B
  - Proj. C
  - Tailoring

- **GP 3.2**
  - Information for Process Improvement

RAFAEL's Proprietary
NDIA-CMMI Denver, CO, Nov. 06
KM for CMMI-3 at RAFAEL

Unclassified
Same Information – Different Use Contexts!

- **OPF / SG 1**: Process Improvement Opportunities
- **OPF / SG 2**: Process Improvement Activities

Organizational Process Assets

- **GP 3.1+ Eng. PA**: Defined Process
- **GP 3.1+IPM**: Defined Process

Tailoring

- **OPD / SG 1**: Information for Process Improvement

Engineering
- Sys. X
- Sys. Y
- Sys. Z

Project Management
- Proj. A
- Proj. B
- Proj. C
Organizational Process Assets

- The organization's process asset library is a collection of items maintained by the organization for use by the people and projects of the organization.

- This collection of items includes:
  - descriptions of processes and process elements
  - descriptions of life-cycle models
  - process tailoring guidelines
  - process-related documentation
  - process-related data

- The organization’s process asset library supports organizational learning and process improvement by allowing the sharing of best practices and lessons learned across the organization.
Knowledge Management – The Motivation

• At the Individual Level
  – Capability to perform tasks and to make decisions in a higher level of quality
    • Process knowledge
    • Professional knowledge
    • Business knowledge
    • Expert identification
    • …

• At the Organization Level
  – Knowledge is the most important resource of the organization
  – Appropriate management of the knowledge improves organizational performance
    • Knowledge sharing and knowledge assets
    • Visible and invisible knowledge
    • Technology
    • Organizational processes and culture
    • …
RAFAEL’s KM Objectives

• Support the Organizational Core Processes
  – Improve the effectiveness and efficiency of sales
  – Improve project process efficiency
    • Reduce errors
    • Decrease “wheel inventions”
  – Improve proficiency and effectiveness in development
    • Generate relevant connections among people
    • Improve the availability of relevant information and knowledge
  – Improve field-test success ration
  – Improve business intelligence in marketing and sales phases
  – Support of innovation in all areas

• Implement Effective and Efficient Solutions
  – Construct appropriate KM infrastructure over all aspects
    • Technology
    • Process
    • Culture
Types of Needs

- Knowledge Sharing by People with Common Subjects
- Accessibility to Information within Specific Context
- Handling “Know-How”
- Accessibility to Professionals
- Decision Support
Types of Solutions

- “Know-How” Management
- After-Action Reviews and Lessons Learned
- Knowledge Communities
- Contents Management
- Organizational Infrastructure
Knowledge Communities

Definition

– A group of people with a common subject
  • Not part of the organizational structure
  • Conduct dynamics of sharing
    – Meetings
    – Web site / Forum

• Knowledge Community Objectives
  – Knowledge sharing within the group
  – Common learning from outer sources
  – Generating new knowledge
  – Organizational lobbying for the subject
Contents Management

• Definition
  – Organization of contents in a form which enables convenient retrieval when needed

• Contents Management Principles
  – Every contents item
    • Exists in exactly one location
    • Accessible from a large variety of locations
    • Access is according to relevant context

• Contents Management Solutions
  – A large variety of solutions exist
  – A specific solution should be chosen after careful analysis of the needs
  – All solutions should be supported by the organizational infrastructure
  – “Network Based Contents Management” is the advanced type of solutions
Examples of KM Systems in RAFAEL

• “Nympha”
  – The knowledge source for PM and SE Processes
    • Will be discussed next

• After Action Review (AAR) System
  – Methodology-based system to support AAR and lessons learned from failures and successes
  – Lessons and recommendations are structured in retrievable formats
  – Root cause statistics caters for process improvements

• Shemesh – Business Information Source
  – An integrative system for storing and retrieving relevant business knowledge
    • Competitive Products
    • Visitors
    • Exhibitions
    • Meetings
    • Customers
    • Business trips
    • Contracts

• Conference Participation Optimization
  – Classified conference catalog with priorities
  – Coordination between conference participants
  – Registration and report process
“Nympha” – The PM and SE Knowledge System

• The Material is Organized in “Knowledge Drawers” (Process Areas)
  – E.g. Requirements Management, V&V, ILS

• Each drawer has a “Drawer Manager”
  – A domain expert
  – Responsible for reviewing new materials
  – Responsible for updating the contents

• Each drawer contains two types of items
  – Internal items – specific contents that do not exist elsewhere
  – Links to external items which exist in other sources on the network
    • Procedures and Methods Libraries
    • After Action Review System
    • Document Management System
### Nympha Drawer: Requirements

#### Distribution of Interest

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#### List of Drawers

- Nympha
- Nympha Drawer
- Requirements Analysis
- See next slide
RAFAEL's Proprietary

Requirements Drawer Process: Requirements Analysis

Establish Req. Table
See next slide
Requirements Analysis Activity: Establish Req. Table

See next slide
Thank you for listening

Any Questions?