Risk Management

Consolidated Training

January 2003

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V1.0M

Course Description

Course Description: This course will address risk management at ESC and the ESC EN Risk Management process used in identifying, assessing, analyzing, controlling and managing program risks (e.g., cost, schedule, technical etc.), discuss the use of tools in risk management, and provide an overview of risk management implementation.

What Is Risk Management To You

Risk-Q (Question #1)

A Risk is ?

1. Something happening right now.
2. Something caused only by the contractor.
3. A concept having nothing to do with program success.
4. A measure of the inability to achieve program objectives.
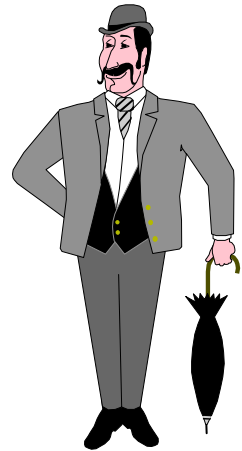5. Only found in the ORD.

Risk-Q (Question #2)

Risk Management is ?

1. Is only necessary if you don't know what you are doing.
2. Just another initiative that will go away if you ignore it.
3. A common sense approach to decision making.
4. Only required before contract award.
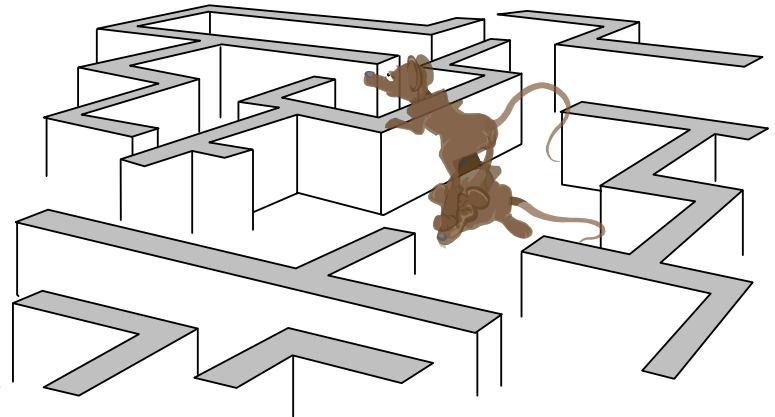5. An additional duty assigned to a member of the program team.

? ? ? ? ? ? ? ? ? ? ?

Where do you find risk ?

1. In the contract.
2. In program direction.
3. In the minds of the program team.
4. Air Force Headquarters.
5. All of the above.

All you need to do Risk Management is ?

1. A really good risk management tool.
2. A really energetic risk manager.
3. The process that fits the program and stakeholders who follow it.
4. A contractor that has risk management experience.
5. None of the above.

Why Do Risk Management

We are not only finding out that it is a good thing to do but it does pay of for the entire team. Some of the benefits we have found are as follows:

- Early identification and communication of risk is viewed as a factor in program success.
- Consistent management approach
- Program-wide understanding of where problems lie
- Identification and justification of where to put competing resources
- It works! - risks identified in time to manage them
- Staff, contractors, regardless of level, are a mechanism to identify risks
- Forum for discussion - program, functional, contractor, warfighter etc...
    - no longer water-cooler and program review slide identification
    - senior managers discuss their project risks
        - · how they might impact other programs
        - · discuss combined resources to address risk
- Systematic approach to risk management
- Forces you to break things down into easy to understand concepts
- Leveraging past experience (lessons learned, implementation, and reach-back to experience)
- Recognition of the utility of risk management
- Identified as priority by upper management
- Peer pressure; regular risk management meetings
- Utilize a tool to enforce structure
- Comprehensive picture on project risks, effectiveness of management actions, and emerging trends
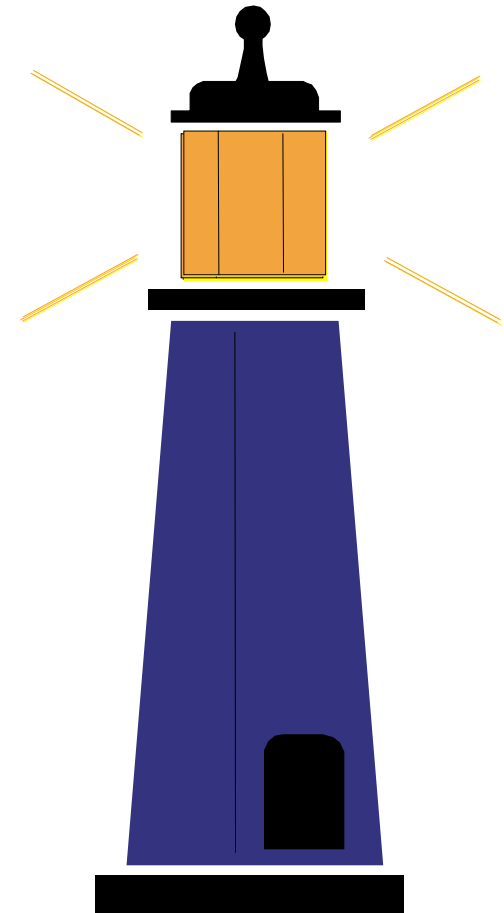
What Program Teams are saying about Risk Management

Risk Management at ESC

Four Categories of ORM Used at ESC

Product Assurance: Ensure safety of ESC acquisition and non-acquisition products in initial impl— —duction, operations and sustainment.

Acquisition Man— —schedule, and technical risk as part —

Workplace Risk— —nt working environmen—

Event And Off-Du— —y of people, resources, property and fac— —d personnel off-duty periods. This wou— —shows, Summer Bash, youth center field trips, 3-day —ds, etc.

Acquisition Risk Management

Product Assurance

Event Risk Management

Operations Risk Management

Many types of risk supported by many styles of risk management

Total Risk

Program Risk — Organizational Risk

Technical Performance | Cost and Schedue | Vision | Advocacy

ORM | System Safety | Legacy | War Fighter

OSS&E | C4ISP | COTS | Hq & Congress

Internal Risk Management

External Risk Management
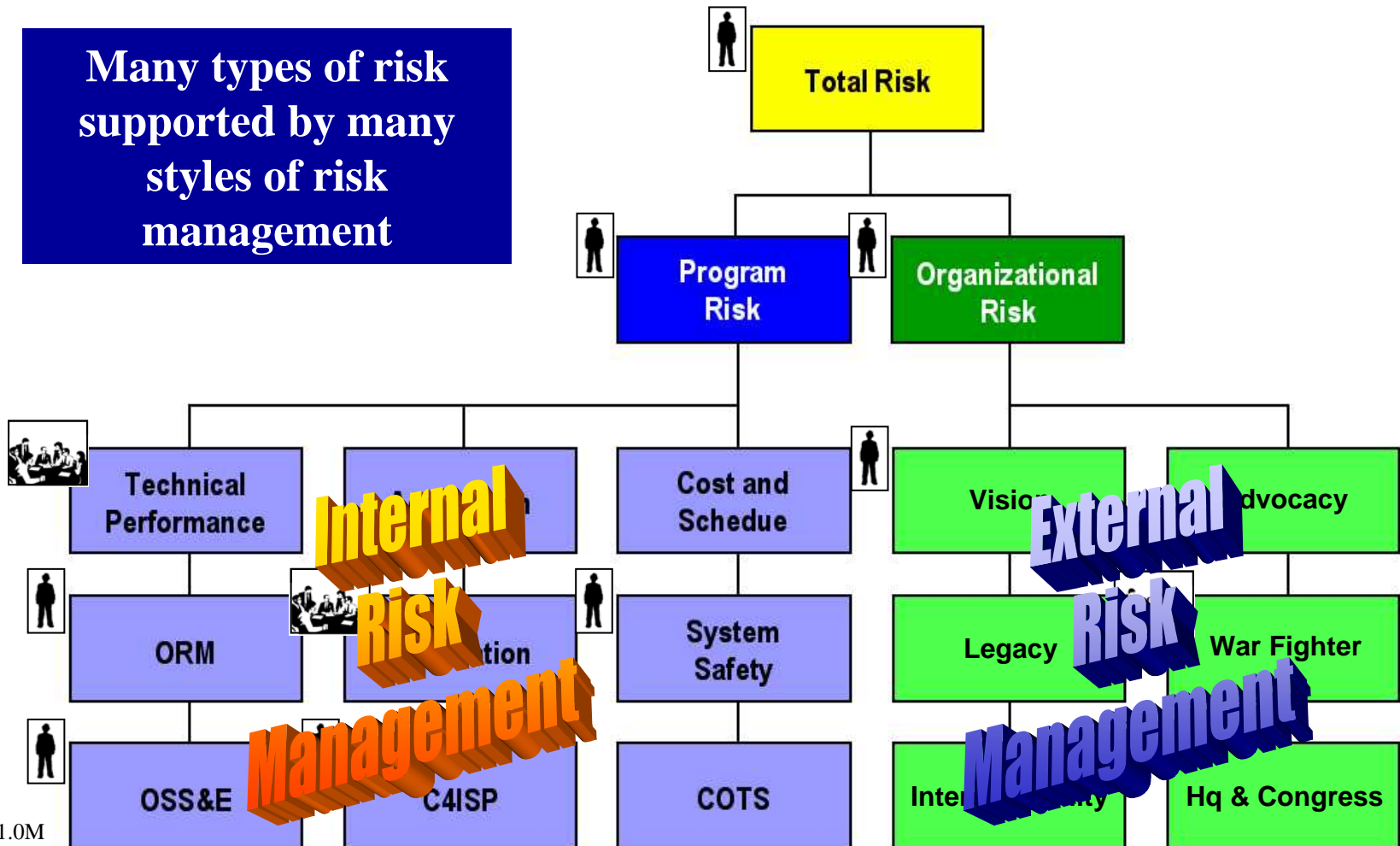
Risk Management in Acquisition

- **We do risk management today in many areas**
  - As part of OSS&E and C4ISP
  - During a system safety assessment (hazard analysis)
  - In preparation for acquisition
  - As part of engineering assessments

- **But, our current approach is often fragmented, inconsistently applied, and not well documented**
  - Some risk goes unidentified
  - Identified risks not fully mitigated and tracked

> **While Specific Objectives May Differ,
> a Common Risk Process can
> Address all our Risk Management Needs**

Conclusions

- **EN has a risk process that can be used for a broad range of risk management activities**
  - Once learned, it can be applied to any risk management activity (ORM, acquisition, OSS&E, system safety, EA...)
  - But we still must learn it and use it

- **Toolkit provides the process description, training, tools and implementation guidance**
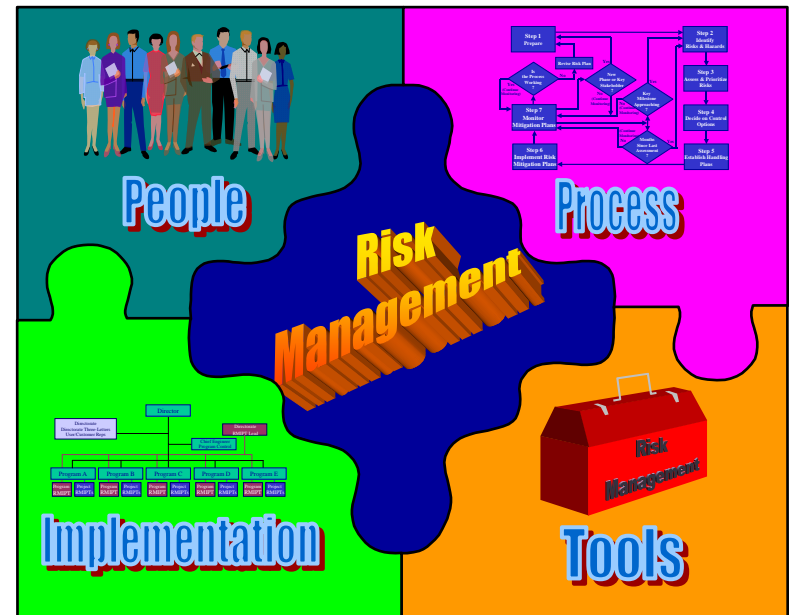 - Templates and taxonomies tailored to specific objectives of risk effort (OSS&E, C4ISP, ORM,etc.)

Single Risk Process for Multiple Uses

Risk Management Program

Agenda

- **People & Process**

- Tools

- Implementation

Coming together is a beginning, staying together is progress, and working together is success.

-- Henry Ford

What Is Risk?

- Risk is a measure of the inability to achieve single manager objectives …" (i.e. your "Picture of Success" as well as operational concerns like safety and mission success)

- "Risk has two components:

  – **The probability (or likelihood) of failing** to achieve particular performance, schedule, or cost objectives

  – **The consequences of failing** to achieve those objectives" *

- We will also consider the time at which the risk will occur
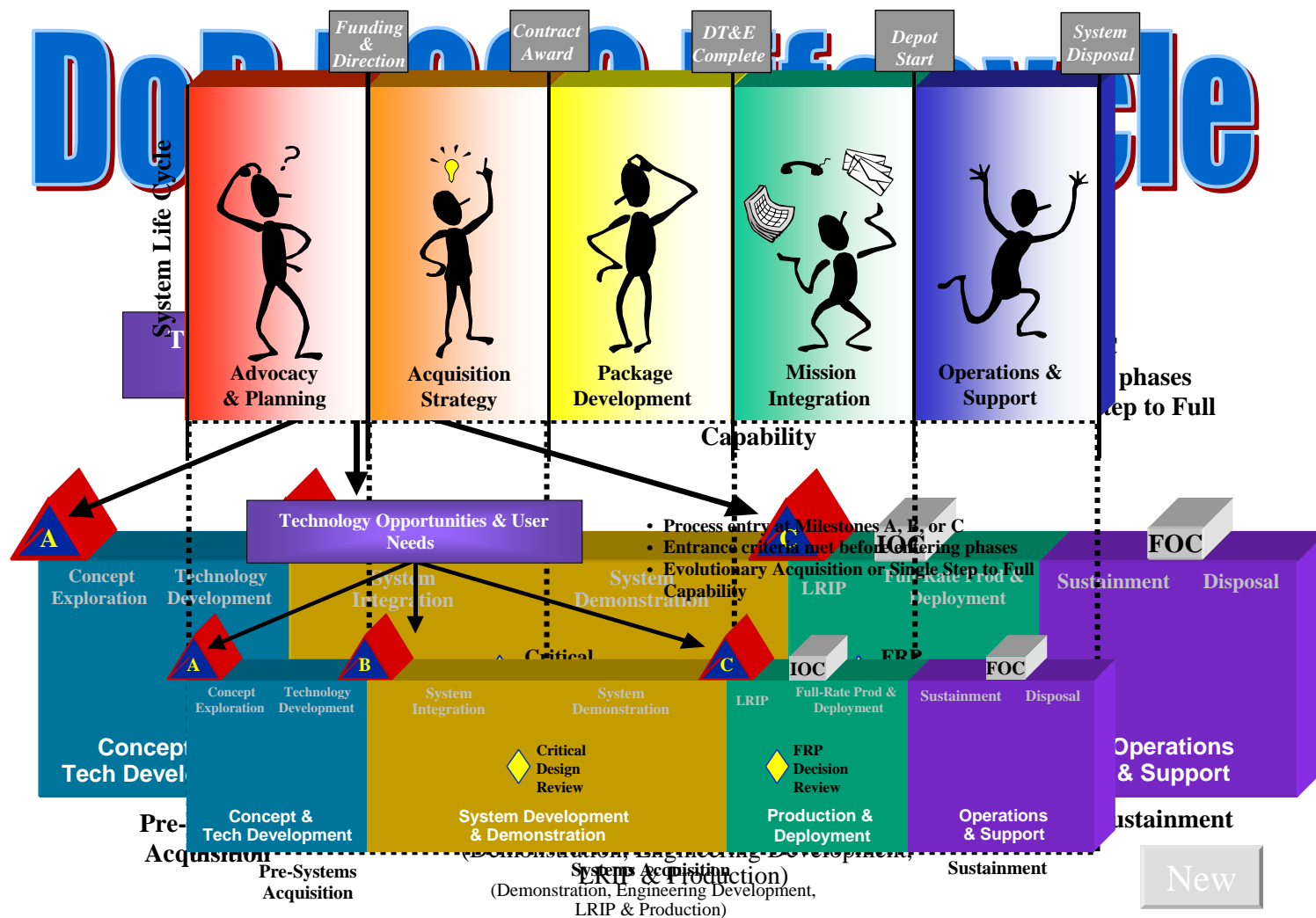
* **AFMCP 63-101, 9 July**

Risk Management Process Objectives

- **Supports the *decision makers***
- **Addresses acquisition and operational *risks over life-cycle***
- ***Ensures compliance* with current AF and DOD policy**
- **Addressed risk from a *program office perspective***
  - *Tailored* **to program office needs, organization, and business model**
  - **Incorporates the use of a *common risk management tool***
- **Establishes an *enduring* risk management process supported by tools, training, and guidance**
- **Aggressively *involves major stakeholders* over the life cycle of the system(s)**

Establish a Standard Risk Management Process That Helps Achieve Overall Program Objectives
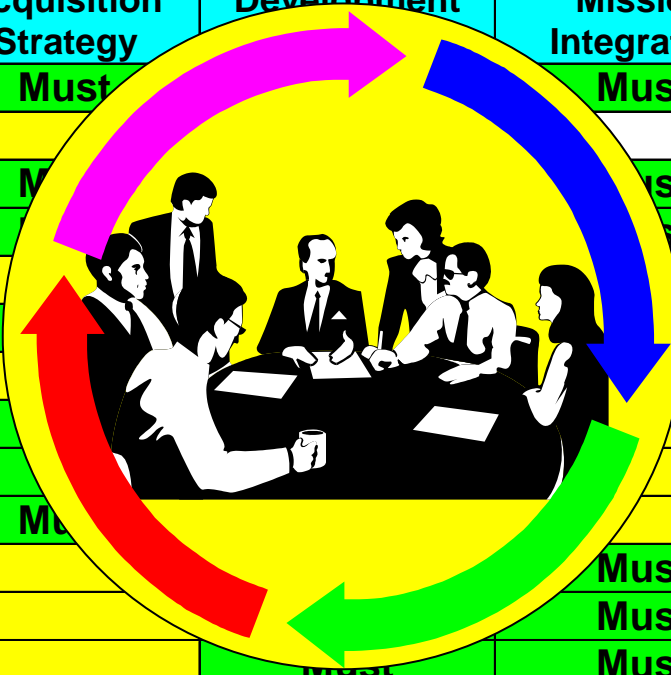
Program Life Cycle

System Life Cycle

| Funding & Direction | Contract Award | DT&E Complete | Depot Start | System Disposal |

Advocacy & Planning — **Acquisition Strategy** — **Package Development** — **Mission Integration** — **Operations & Support**

Capability

Technology Opportunities & User Needs

- Process entry at Milestones A, B, or C
- Entrance criteria met before entering phases
- Evolutionary Acquisition or Single Step to Full Capability

Critical

A   B   Critical   C   IOC   FRP   FOC

Concept Exploration — Technology Development — System Integration — System Demonstration — LRIP — Full-Rate Prod & Deployment — Sustainment — Disposal

Critical Design Review

FRP Decision Review

Concept & Tech Development — **System Development & Demonstration** — **Production & Deployment** — **Operations & Support**

Pre-Systems Acquisition

Systems Acquisition
(Demonstration, Engineering Development, LRIP & Production)

Sustainment

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New

18

Life Cycle Stakeholders

Stakeholder	Concept Definition	Acquisition Strategy	Development	Mission Integration	Operations & Support
Certification		Must		Must	
Congress					
Contractor		Must		Must	Must
Customer (User)	Must			Must	Must
MILCON					
ESC	Must				Must
Experimentation					
Industry					
Other Services					
SAF & HQ USAF	Must	Must			
Sustainment				Must	Must
Test Community				Must	
Training			Must	Must	Must

Key: **Must be involved**   **May be involved**

Expansions

Risk Management Space

Concept Definition

Acquisition Strategy

Package Development

Mission Integration

Operations & Support

Technology Opportunities & User Needs

- Process entry at Milestones A, B, or C
- Entrance criteria met before entering phases
- Evolutionary Acquisition or Single Step to Full Capability

A   **B**   **C**   **IOC**   **FOC**

Concept Exploration   Technology Development   System Integration   inment   Disposal

Operational Risk Management

Critical Design Review

FRP Decision Review

Acquisition Risk Management

Tech Development   & Demonstration   Production & Deployment   Operations & Support

Pre-Systems Acquisition

Systems Acquisition
(Demonstration, Engineering Development, LRIP & Production)

Sustainment

Risk Management Process (RMP)

Step 1
Prepare

Step 2
Identify Risks & Hazards

Step 3
Assess & Prioritize Risks

Step 4
Decide on Control Options

Step 5
Establish Handling Plans

Step 6
Implement Risk Mitigation Plans

Step 7
Monitor Mitigation Plans

Is the Process Working ?

Yes (Continue Monitoring)

No

Months Since Last Assessment ?

Yes

No

Revise

1. Identify the Hazards

2. Assess the Risks

3. Analyze Risk Control Measures

4. Make Control Decisions

5. Risk Control Implement

6. Supervise and Review

1. Identify the Hazards

2. Assess the Risks

3. Analyze Risk Control Measures

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6. Supervise and Review

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21

Note: this process is consistent with ORM, OSS&E, system safety, etc.

RMP Step 1
Prepare

Action 1: Obtain Commitment and Resources from Program Manager on Risk Mgmt.	Action 2: Identify Key Program/ Mission Stakeholders and Request Their Participation	Action 3: Identify and Distribute to Stakeholders the Key Program Mission Objectives & Requirements	Action 4: Identify, Review, and Distribute Applicable Risk /Hazard Taxonomies to Stakeholders
Commit	**Form the Team**	**Know the Mission**	**Think Risks**

Risk Management Becomes a Management Priority
- *Manager Becomes Advocate of Risk Management*
- *Manager Commits Energy and Resource to Effort*

Risk Management Becomes a Program Priority
- *Stakeholders Become Co-Sponsors*
- *Stakeholders Commit to Sufficient Resource*

Risk Management Becomes a Mission Priority
- *Process is Focused on Successful Mission*
- *Stakeholders Become Familiar with Program and Mission*

Stakeholders Identify Mission Uncertainties
- *Various Risk Data and Information Available to All Stakeholders*
- *Each Stakeholder Formulates Individual Concerns/Uncertainties*

PM Buy-In *Stakeholder Buy-IN* *Mission Priority* *ID Risks*
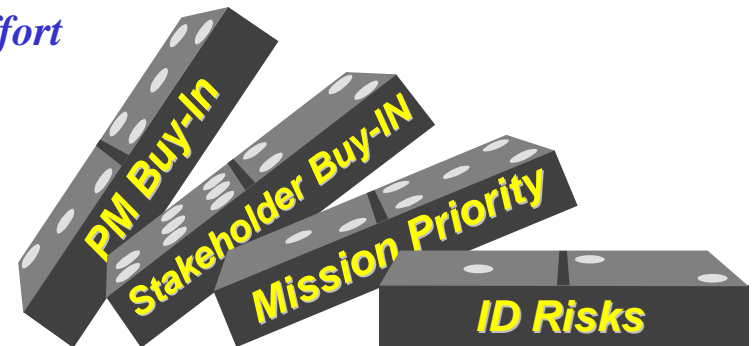
Program "Picture of Success"

- **Describes the program Objectives that must be met for the program to be a success**

- **Examples:**
  - Production Decision Granted at Milestone 3 Decision Briefing (~Oct 03)
    - Successful Completion of Contractor Testing (CT) and Signing of DD250
    - Successful Completion of Combined Testing (DT/OT)
    - Operational Expectations Met with respect to System Capabilities
  - Provides needed combat capability on time & within budget to support testbed
  - New System maintains legacy mission capability
  - System is fully supportable at turnover
  - Current operational capability remains sustainable until new system deployed

- **Meet all operational mission requirements with the minimum acceptable risk**

*Typical Acquisition Risk Areas**

- **<u>Threat</u>** -- sensitivity to uncertainty in the threat description, impact of changing threat on design

- **<u>Requirements</u>** -- sensitivity to uncertainty in the system description and requirements

- **<u>Design</u>** -- ability of system to achieve engineering objectives based on availability of technology, design tools, design maturity

- **<u>Test and evaluation</u>** -- adequacy and capability of T&E program to assess attainment of performance specifications, suitability and effectiveness

- **<u>Modeling and Simulation</u>** -- adequacy and capability of M&S to support all phases of program using verified, valid and accredited M&S

* Risk Management for DOD Acquisition, March 1998

Typical Acquisition Risk Areas
(Continued)

- **Technology** -- degree to which technology proposed has been demonstrated as capable of meeting program objectives

- **Logistics** -- ability of system configuration to achieve program logistics objectives

- **Production/Facilities** -- ability of system configuration to achieve program production objectives

- **Concurrency** -- sensitivity to uncertainty resulting from combining or overlapping of life cycle phases or activities

- **Capability of Developer** -- contractor experience, resources, and knowledge needed to produce the system

- **Cost/Funding** -- ability of system to achieve program life cycle support objectives (effects budget and affordability decisions and errors inherent in cost estimating techniques)

Typical Acquisition Risk Areas
(Concluded)

- **<u>Management</u>** -- degree in which program plans and strategies exist and are realistic and consistent (Government's acquisition team should be qualified and sufficiently staffed to manage the program)

- **<u>Schedule</u>** -- adequacy of the time allocated for performing the defined developmental tasks (includes effects of programmatic schedule decisions, inherent errors in schedule estimating and external physical constraints)

Typical "5M" Operational Risk Areas*

- **Man -** category encompasses our personnel. It includes training, selection, proficiency, habit patterns, performance, and personal factors. In risk assessment, the operator is always an essential element, i.e., and the human who operates the machine within a media under management criteria. Some of these human elements are:

  - **Selection:** right person emotionally/physically trained in event proficiency, procedural guidance, habit pattern.

  - **Performance***: awareness, perceptions, saturation, distraction, channelized attention, stress, peer pressure, confidence, insight, adaptive skills, pressure/workload, fatigue (physical, motivational, sleep deprivation, circadian rhythm, klutz).

  - **Personal Factors**: Expectancies, job satisfaction, values, families/friends, command/control, discipline (internal and external), modeling, pressure (overtasking) and communication skills.

*Adapted from *Pocket Guide to USAF Operational Risk Management*

Typical "5M"
Operational Risk Areas *(Continued)*

❑ **Media** - is the environment in which our personnel operate. This includes climate, terrain, and noise/distraction and runway environment. These external, largely environmental, forces vary and must be considered when assessing risk:

- **Climactic:** Temperature, seasons, precipitation, aridity, wind.

- **Operational:** Routes, surfaces, terrain, vegetation, obstructions, and constrictions.

- **Hygienic:** Vent, noise, toxicity, corrosives, dust, and contaminants.

- **Vehicular/Pedestrian:** paved, gravel, dirt, ice, mud, dust, snow, sand, hilly, curvy.

❑ **Machine** - The MACHINE category encompasses the equipment and software our personnel use. The machine category includes its design, its maintenance history and performance, its maintenance documentation and its user perception. This can be anything from a desktop computer to a multi-million dollar airplane, and consist of:

- **Design:** engineering and user friendly (ergonomics).
- **Maintenance:** Training, time, tools, parts.
- **Logistics:** supply, upkeep, and repair.
- **Tech Data:** clear, adequate, useable, and available.

- **<u>Management</u> -** is the final overall coordinating category. Management provides the enforcement and establishment of standards, procedures and controls.   It drives the interaction between MAN, MEDIA, MACHINE, and MISSION. Management dictates the process by defining Standards, Procedures, and Controls.

  Any breakdown within the man, machine, mission or media must be viewed as an effect of management performance. When outcome fails to meet anticipated goals, these 5 M's must be thoroughly reassessed. *<u>Management is the controlling factor in defining the process of either production success or failure</u>*.

- **<u>Mission</u> –** The desired outcome. Successful missions, or mishaps, do not just happen, they are indicators of how well a system is functioning. The basic cause factors for mishaps fall into the same categories as the contributors to successful missions—Man, Media, Machine, and Management.

Action 1: Assemble Stakeholders for Risk Assessment	Action 2: Review Program/Mission Objectives, Taxonomies and Risk Assessment Process	Action 3: Conduct Risk Identification Through Stakeholder Discussion	Action 4: Group Related Risks	Action 5: Consolidate Related Risks & Write "If - Then" Risk Statements
Establish Team	**Develop Understanding**	**Identify**	**Classify**	**Write**

Conduct Risk Management Meetings
- *Initial Meeting Sets Tone and _____ of Communication*
- *Subsequent Meetings Need to _____ as Program Progresses*

Understand Mission, How Risk Will be Managed, and T_____
- *Compare Current Mission with Past _____*
- *Make Sure Everyone _____ _____ ment Will be Done*

Identify Pro_____ R_____
- *_____ Objectives*
- *_____*

Classi_____
- *Can Use a Predefin_____ CPT etc.)*
- *Can Use a Self-Org_____*

Consolidate Like Risk and _____ Risk Statements
- *Capture Concise D_____ to be Acted Upon*
- *Risk Statement = Condition + Consequence*

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31
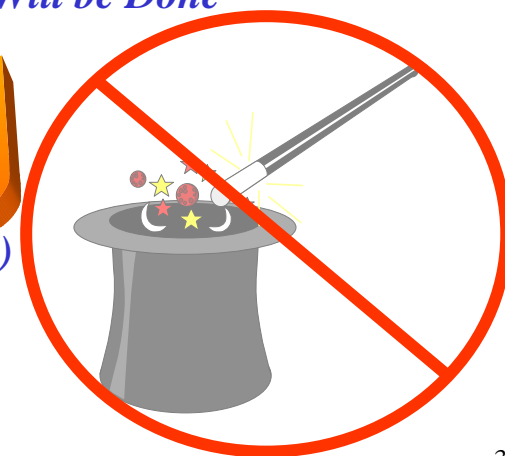
Use Structured Brainstorming to Identify Risks and Hazards

- **How to do structured brainstorming***

  - Can be organized by "picture of success" objective or taxonomy

  - The goal is to generate ideas, therefore it is important to postpone judgement (NO CRITICISM and NO MITIGATION DISCUSSIONS)

  - Write each idea in silence on sticky notes (with your initials)

  - For initial assessment you can insert existing risks at this point

  - One idea per person in sequence, or "pass"

    - The idea is read aloud

    - Questions may be asked to clarify understanding not for analysis

  - A complete round of "passes" ends the session

- **To save time later write risk statements in "if - then" form**

  - "If" condition, "then" consequence

  - Note "consequence" is a failure to meet one or more objectives in the program's "picture of success"

* Adapted from The ESC Process Improvement Guide, pp. 6-8
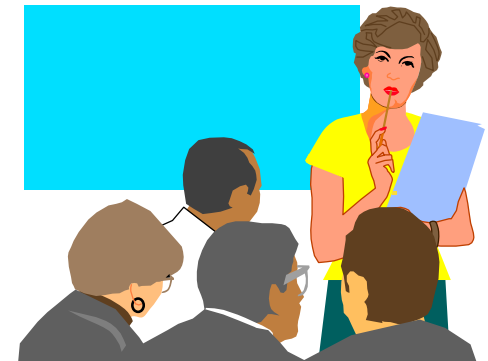
Use Affinity Diagrams to Group, Classify, and Identify Dependent Risks

- **How to create the Affinity Diagram***
  - As a team, silently organize risks captured on the stickies into related groups or subgroups (may use taxonomies or picture of success objectives)
    - "Which risks are similar?"
    - "Is this risk connected to any other risk?"
  - As a risk is moved back and forth try to see the logical connection the other person is making
  - It is OK for some notes to stand alone
  - Use the process to identify and combine duplicates
  - For each grouping
    - Create summary or header cards -- short word or statement describing the group
    - Achieve consensus on the description before moving on
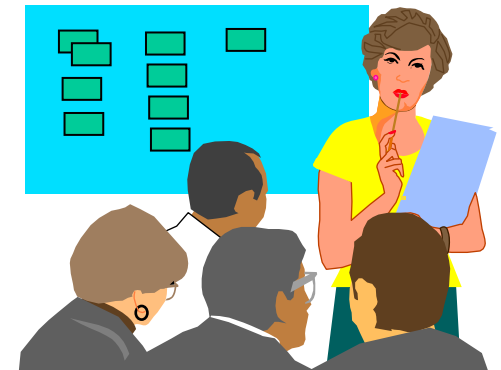
* Adapted from The ESC Process Improvement Guide, pp. 31-32

Write
Clear Consensus Risk Statements

- For each risk or consolidated set of risks on the Affinity Diagram, write clear and quantifiable risk statements
  - "if" condition, then "consequences" for each risk
- For example:

IF *SLEP changes are not installed this year*, THEN surveillance *mission cannot be accomplished prior to new system installation in FY05*

- Enter the risk statements into the tool and reach consensus
  - If consensus cannot be reached in less than 5 minutes, table the risk for discussion later

RMP Step 3
Assess & Prioritize Risk

Action 1: Identify & Reach Consensus on Impact / Severity for Each Risk	Action 2: Identify & Reach Consensus on Probability of Occurrence for Each Risk	Action 3: Identify Time Window when Risk Could Occur	Action 4: Reassess Any Existing Risks in Database	Action 5: Prioritize Risks by Impact, Probability & Time	Action 6: Identify Mitigation Bands
Impact ?	**Probability ?**	**When ?**	**Old Risks ?**	**Prioritize**	**Coarse Sort**

Identify Consequences or Level of Impact to the Program If the Risk Occurs
 • *Establish or use Predetermined Impact Categories (Critical, Serious, Moderate, Minor, Negligible)*
Determine the Probability of Occurr...
 • *Establish or Use Predetermined P...(Very Unlikely, Unlikely, Probably, Likely, Very Likely)*
For Each Risk Identify the Time Pe... Risk Is Likely to Occur
 • *Establish or Use Predetermined T... eriods (e.g. Near, ..., Far)*
Incorporate Existing Identified Risks With Newly Id...
 • *Reassess Existing Risks Following Action...*
 • *Fold Existing Risks and N... ...*
Prioritize Risks
 • *Involves Grouping Risk... ...obability and Timing*
 • *Objective Is to Identify ... Program Risks*
Identify Risk Mitigation B...
 • *Place Risks in to Appropriate Mitigation Band*
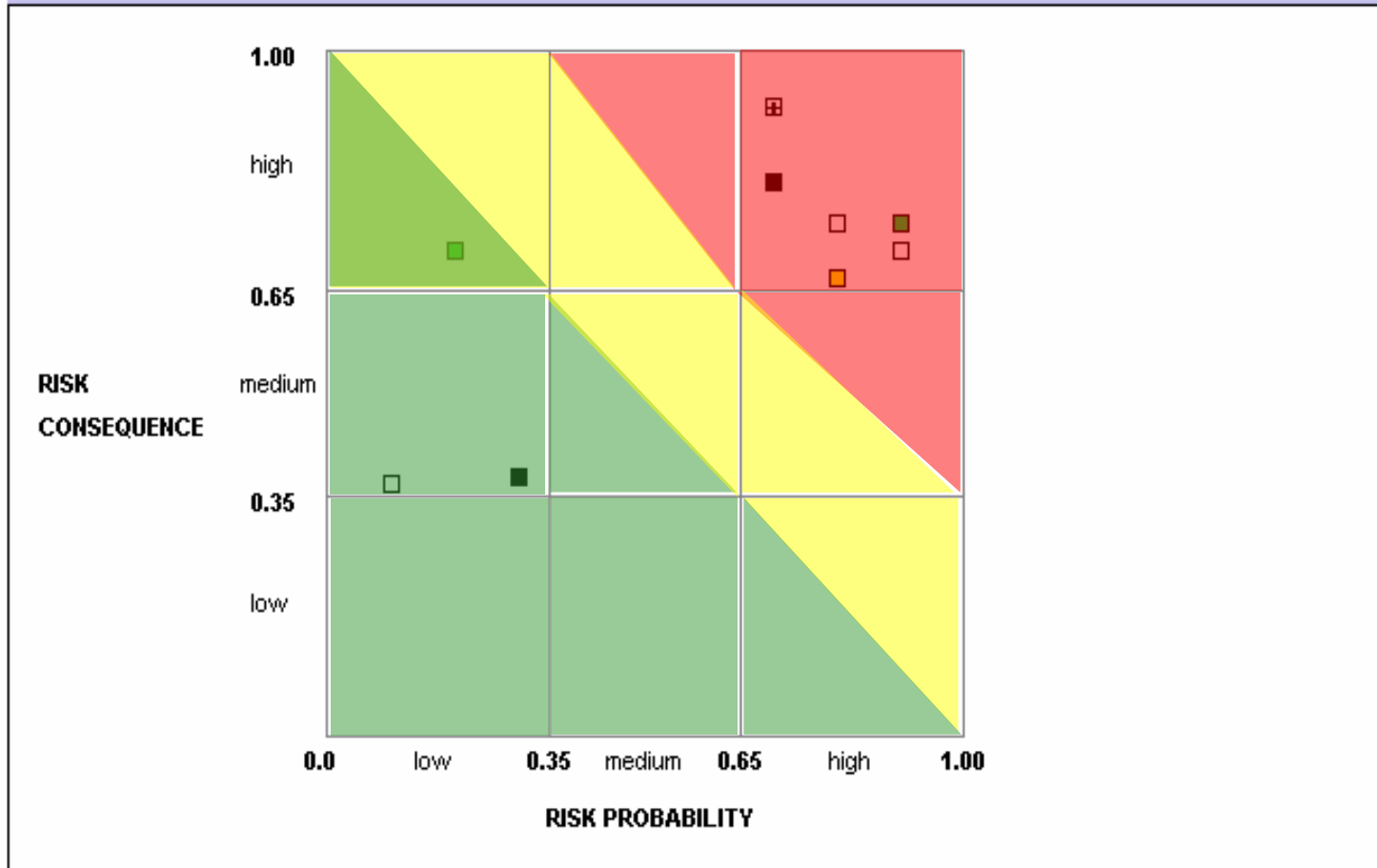 • *Objective Is to Establish Preliminary Resource Constraints*

Establish Handling Bands

Establish Handling Bands

Comparison of Acquisition Probability and Impact

	Negligible	Minor	Moderate	Serious	Critical
0-10%	MED	HIGH	HIGH	HIGH	HIGH
11-40%	MED	MED	MED	MED	HIGH
41-60%	LOW	MED	MED	MED	HIGH
61-90%	LOW	LOW	MED	MED	HIGH
91-99%	LOW	LOW	LOW	MED	MED

Comparison of Operational Probability and Impact

	Negligible	Minor	Moderate	Serious	Critical
0-10%		MED	HIGH	EXT HIGH	EXT HIGH
11-40%		LOW	MED	HIGH	EXT HIGH
41-60%		LOW	MED	HIGH	HIGH
61-90%		LOW	LOW	MED	HIGH
91-99%		LOW	LOW	LOW	MED

P R O B

IMPACT
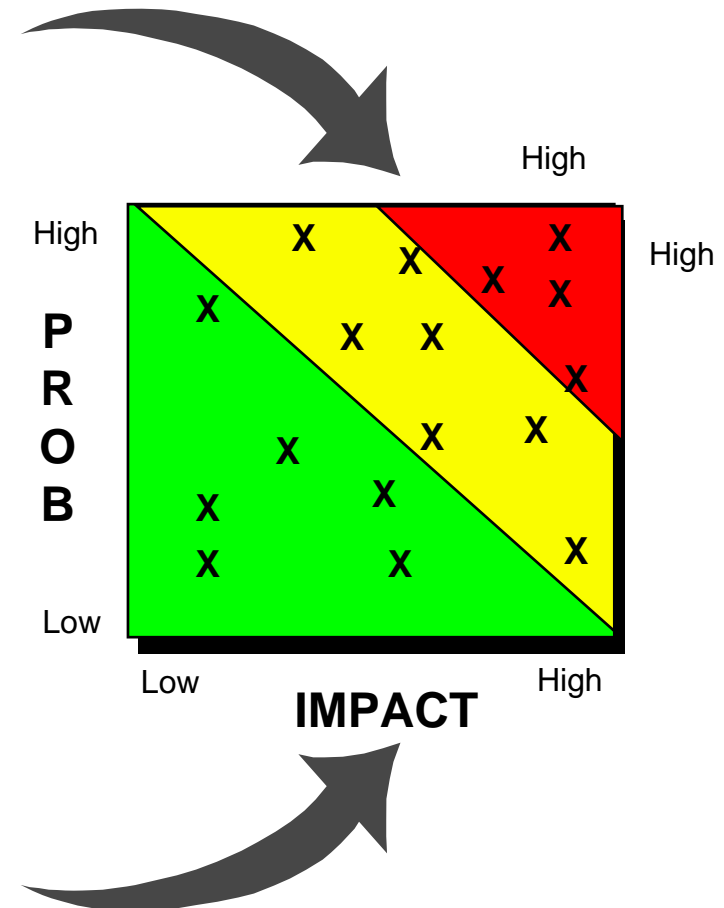
How Much Can You Afford to Mitigate
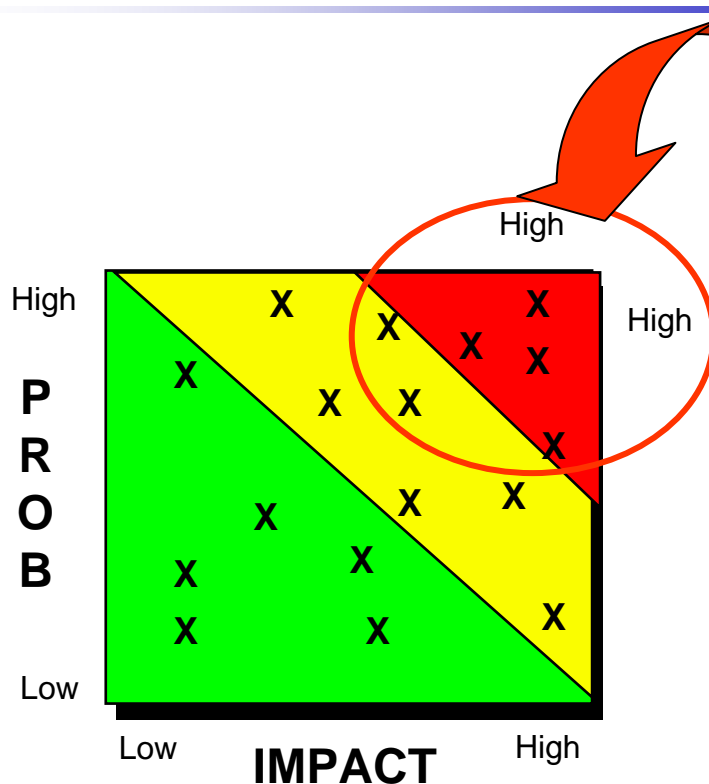
The Killer Risks

- Management Reserve? Probably Not!

- Manage Risk Within Current Budget

- Better Make Sure You Pick the Right Set of Risk to Mitigate

Spending the Grocery Money to Buy Insurance

RMP Step 4
Decide on Mitigation Options

Action 1: Identify Mitigation Options Within Each Risk Band	Action 2: Identify Which Risks will be Assumed	Action 3: Identify Which Risks will be Avoided, Transferred or Mitigated	Action 4: Assign Plan OPRs for Avoided, Transferred, or Mitigated Risks	Action 5: Establish or Update Risk Database
Options	*Easy Risks*	*Hard Risks*	*Responsibility*	*Capture*

Choose Risk Mitigation Options

Decide Which Risk Will:
- *Be Assumed*
- *Be Watched (set "Triggers" or "Cues")*
- *Avoided*
- *Transferred*
- *Mitigated*

Assign Responsibility for Risk Planning
- *Avoid Risk - Research, Design, Fund etc.*
- *Transfer Risk - To Whom, Acceptance*
- *Mitigate Risk - Strategy, Resources etc.*

Establish and Update a Risk Database

Ranked Risks

High — Medium — Low

Avoid / Transfer / Mitigate / Monitor — Avoid / Transfer / Mitigate / Monitor — Assume

Action Plans — Cont Plans — "Triggers" — "Cues"
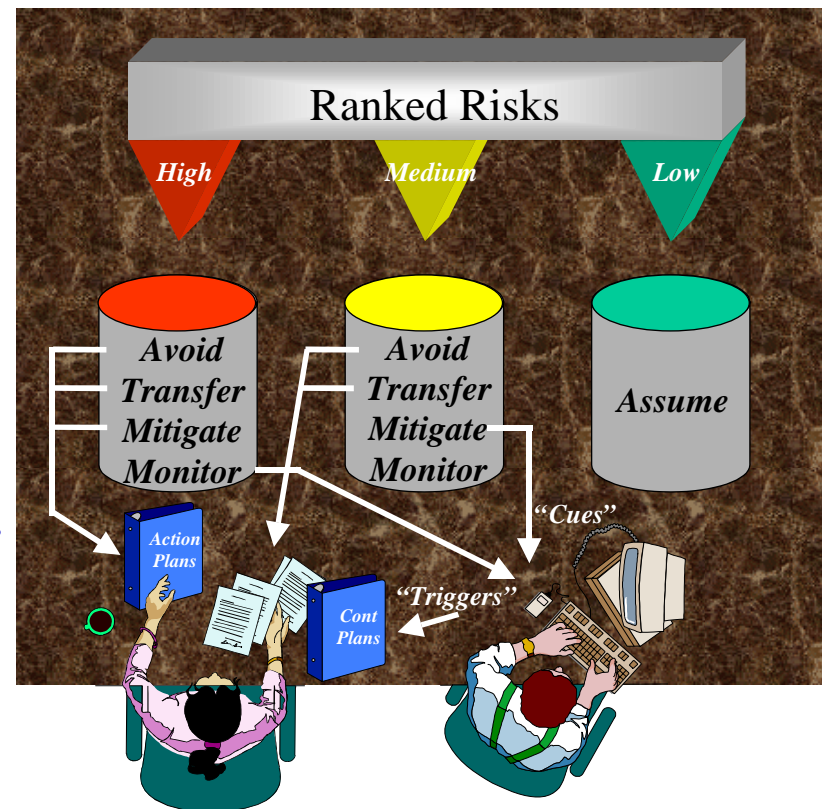
RMP Step 5
Establish Mitigation Plans

Action 1: Develop Draft Mitigation Plans and Associated Resource Requirements	Action 2: Obtain Program Manager Review and Approval of Mitigation Plans and Exit Criteria	Action 3: Mitigation Plan are Funded, Directed, and Integrated with Program Management
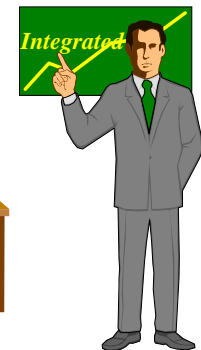
Develop Plans & Estimates   **Review and Approve**   **Fund, Direct, Integrate**

Draft the Mitigation Plans
- *Avoided, Transferred and Mitigated Risks*
- *Contingency and Risk Status Change Plans*
- *1-3 Pages, Standard Format, Matches Database*

Program Manager Review and Approval
- *Program Manager Buy-in of the Mitigation Plan*
- *Formal Process to Insure That Resources Required Are Allocated*
- *Opportunity to Improve the Mitigation Plan and Provide Team Perspective*
- *Process Is Iterative and May Require a Number of Changes to Proposed Plans*
- *Can Provide an Opportunity to Expose and Adjudicate Different Points of View*

Funded, Directed and Integrated with Program Management
- *Usually Requires Expenditure of Resources (E.G. Cost Estimates And/or Budget Actions)*
- *For a Mitigation Plan to Have Impact It Must Be Enforceable*
- *Appropriate Changes to Program Directives and Execution Documents and Monitored*

RMP Step 6
Implement Mitigation Plans

Action 1: Finalize Risk Management Plan & Management Infrastructure	Action 2: Provide Mechanism to Monitor Triggers, Cues and Mitigation Plans	Action 3: Implement Mitigation Plans as Authorized, Funded, & Scheduled Work with Exit Criteria	Action 4: Provide Reporting on Mitigation Plan Results & Progress in Meeting Exit Criteria
Finalize RMP	*Monitoring Approach*	*Implement*	*Monitor Progress*

Complete Risk Management Plan (RMP)
- *RMP Can Be Completed - the Program Now Has a Good Understanding of Program Risk*
- *Risk Management ≡ Program Management*

Provide for a Mechanism to Monitor
- *Mitigation Plans*
- *Triggers and Cues*

Implement the Mitigation Plans
- *Implement = Knowledge + Resources + Authority to Act*
- *Communicate, Communicate, Communicate*

Mitigation Status Review …. TAKE ACTION!
Risk Management Database …. UPDATE!

STEP 7 - MONITOR MITIGATION PLANS

| Action 1: Periodically Review Action Plan Results | Action 2: Stop or Modify Action Plans and Resources, if required | Action 3: Retire Risks When Action Plans are Successfully Completed | Action 4: Update Risk Database for Action Plan Progress & Risk Retirement |

Commu...
Major P...
Risk to...
Decisi...

Rebuild RMP &
Re-Establish Buy-In
of Present Set of
Stakeholders

PROACTIVE LOOK AHEAD
•To Review & Identify Risks
...New Mitigation Plans
...ep 2 to Insure
...Hazards Have
...d

Retu... Step 1
Revi... isk Plan

FOC

| Concept Exploration | Technology Development | System Integration | System Demonstration | LRIP | Full Rate Prod & Deployment | Sustainment | Disposal |

Return to Step 1 and Revise the
Risk Management Plan

Concept & Tech Develop...

Operations Support

Pre-Systems Acquisition

Systems Acquisition
(Demonstration, Engineering Development, LRIP & Production)

Sustainment

Risk Management Process Guide

ESC CMMI Based Process Improvement

ESC
Risk Management Process Guide

Version 1.0
November 2002

Department of the Air Force
HQ Electronic Systems Center (ESC)
Hanscom Air Force Base, MA 01731

Executive Summary

Section 1 - Introduction

Section 2 - Risk Management Defined

Section 3 - The Risk Management Space

Section 4 - Risk Management Process

Appendix
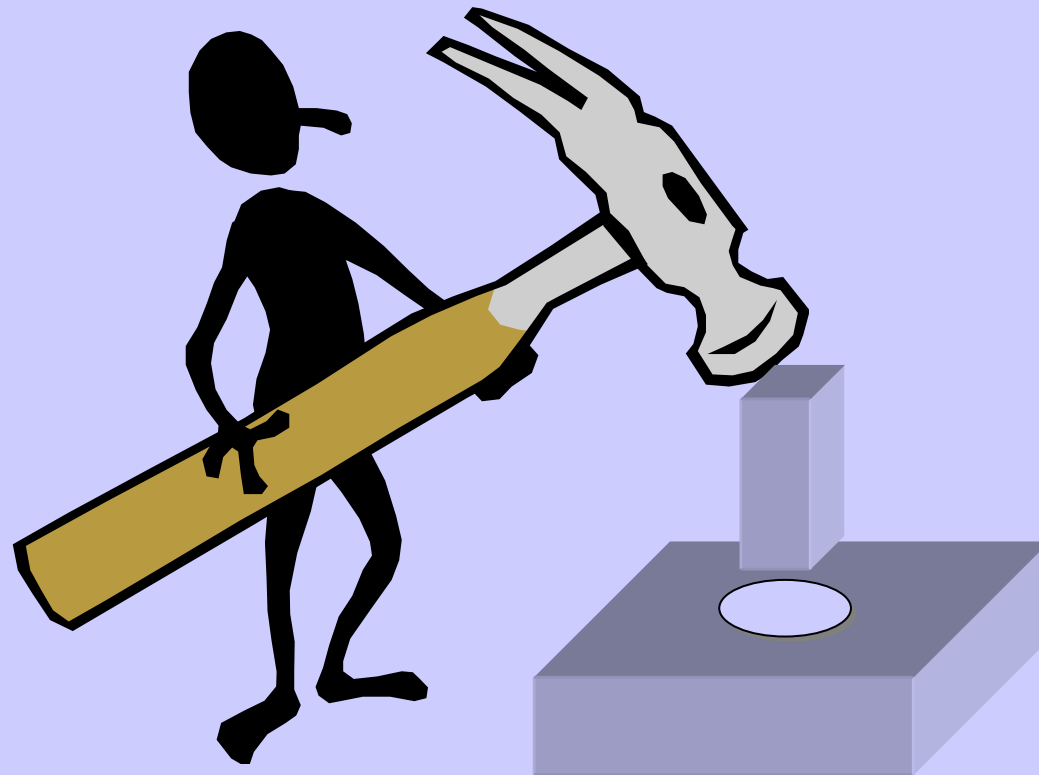
Agenda

- Process & People

- Tools

- Implementation

Problems cannot be solved at the same level of awareness that created them
-- Albert Einstein

V1.0M

- S
- S
- E
- M

pro

- A   nd

too

- A
- S
- F
- T ool can change with the changing business

environment

It's The Right Fit !!!

Risk Management Toolkit

Toolbox will continue to grow as the ESC Risk Management Process is Implemented

Risk Matrix

- **A Standalone Microsoft Excel Based Risk Management Tool**

- **Developed By Mitre**

- **Implemented by ESC/BP (ESC/AE) in Support of the ASP Briefing**

- **Used to Capture Identified Risks, Estimate their Probability of Occurrence and Impact, and Rank the Risks Based on This Information**
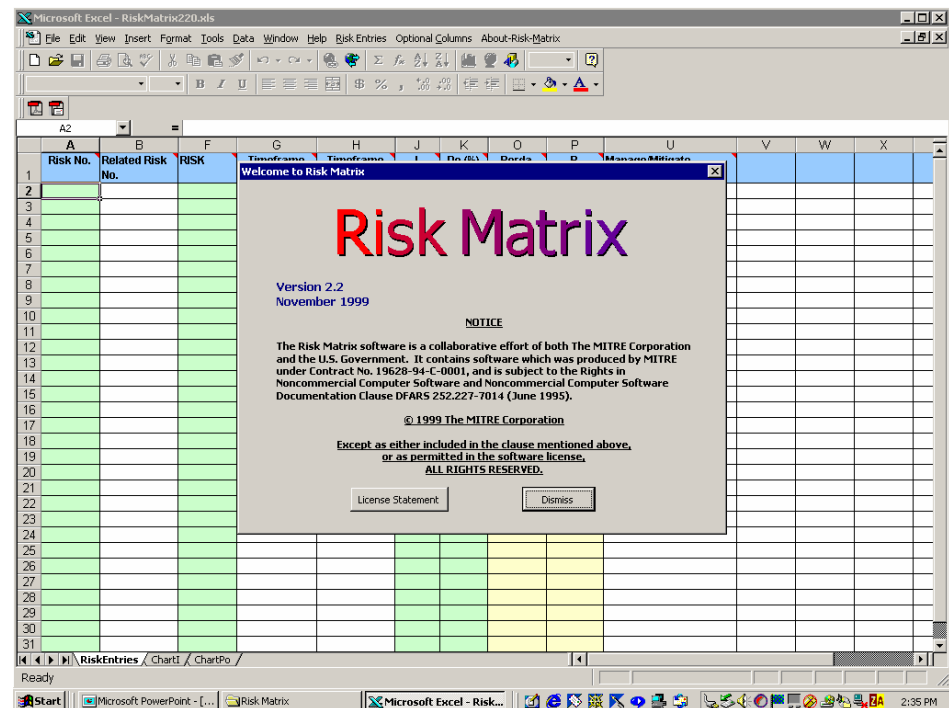
RiskNav®

- **A Collaborative Web Based Risk Management Tool**
- **Developed By MITRE**
- **Implemented by All MITRE Sponsors**
- **Facilitates Structured Risk Collection**
- *Structured* **Analysis**
  - **Common Definition of Terms (Cost, Schedule, & Technical Performance Impact Ratings)**
  - **Timeframe (Time to React to the Risk) Consideration in Prioritization**
  - **Monitoring of Mitigation Status**
  - **Visualization of Risks/Risk Space**
    - **Priority, Probability, and Mgmt Status on a Single Graph**
    - **Aid Allocation of Resources**
    - **Project by Project, Roll up to the Program Level**
    - **Ability to Filter the Information**
  - Fosters Communication Between Program Elements
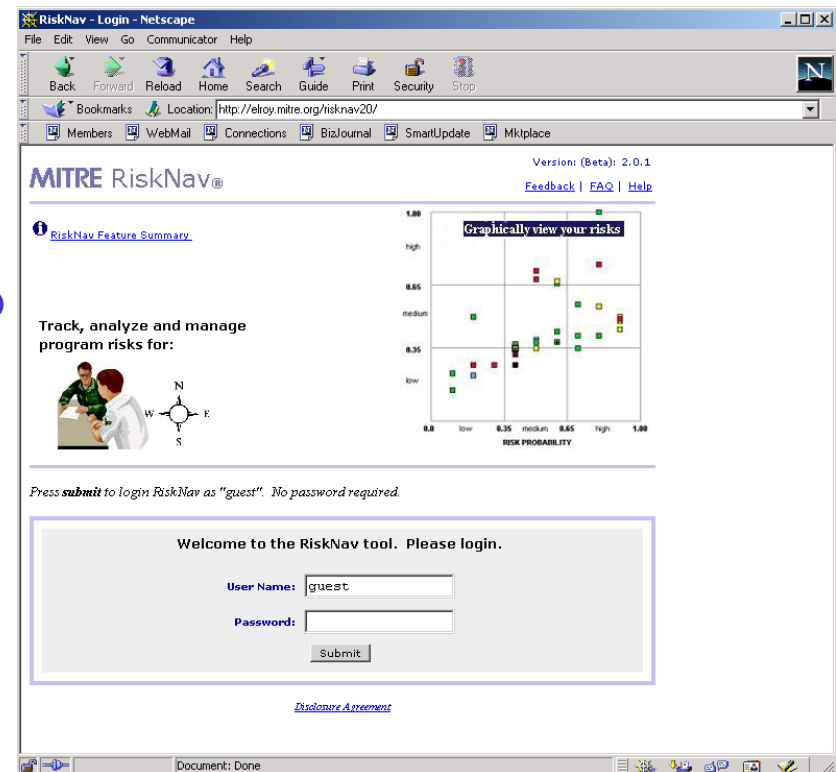
RMP Tools
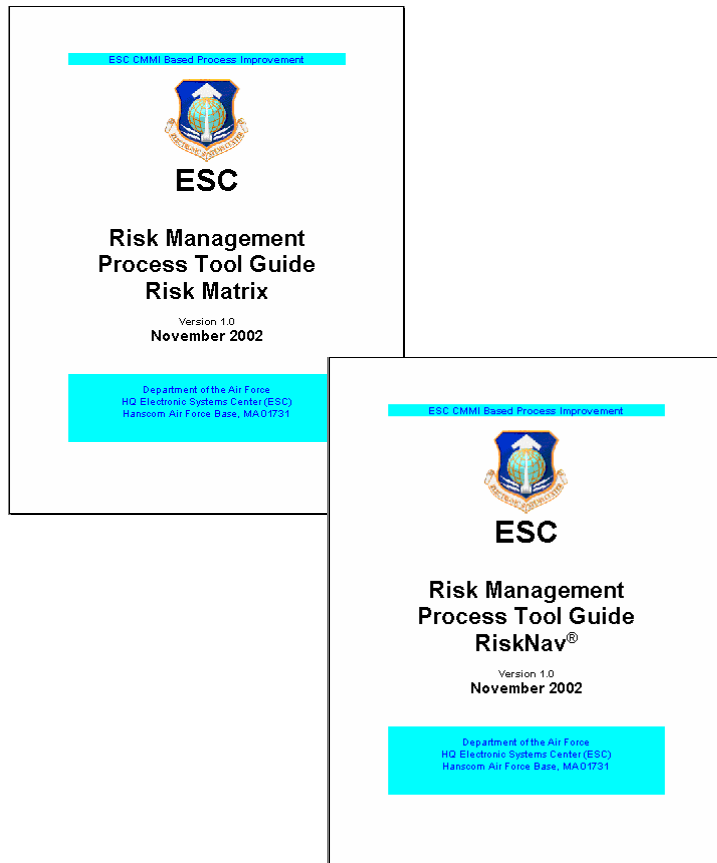
Section 1 - Introduction

Section 2 - Tool

Section 3 - Database

Section 4 - Risk Management

Toolbox

Section 5 - Where Risk Management

Tools are Used in the RMP

Section 6 - Other Risk Management

Tools

Appendix

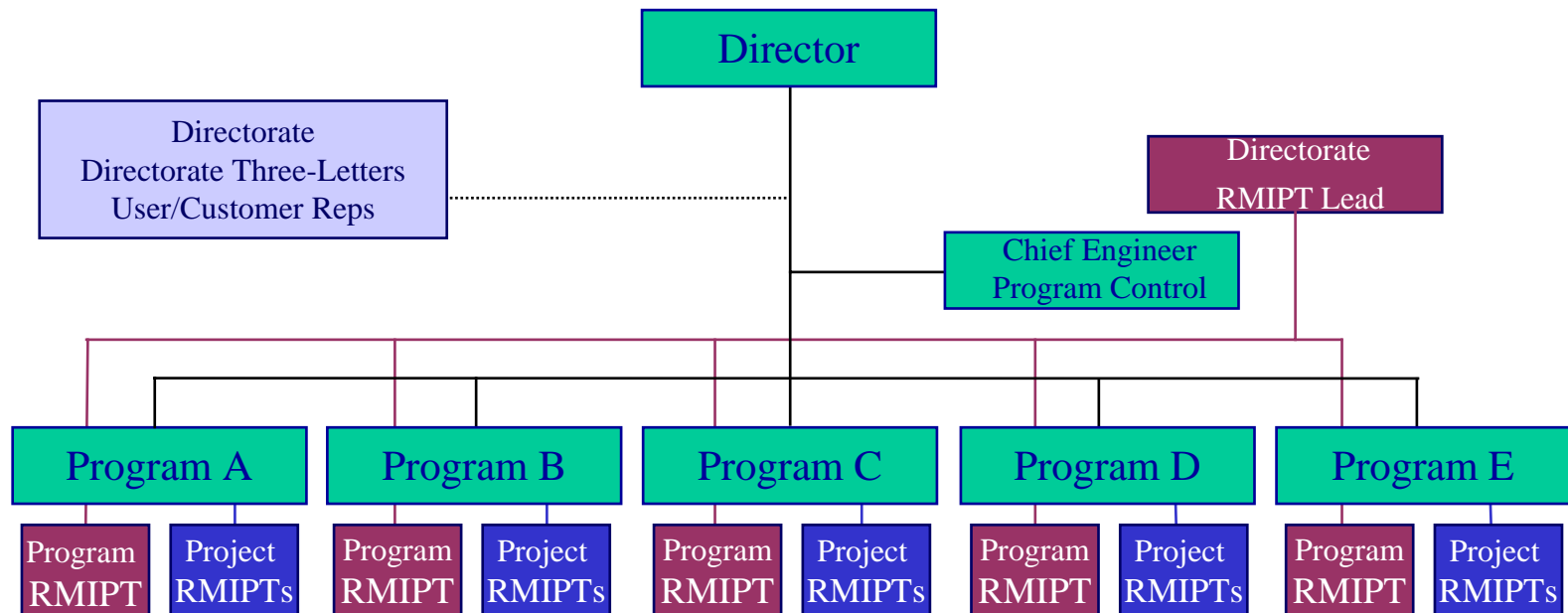- **Process & People**

- **Tools**

- **Implementation**

Obstacles are those frightful things you see when you take your eyes off your goal.
-- Henry Ford

Directorate RMP Rollout Approach

✓ • Identify Programs for Rollout of the RMP

   • Establish Risk Management Infrastructure

✓   - Appoint Directorate Risk Management IPT (RMIPT)

✓   - Establish Risk Management Advisory Group

✓   - Establish Program/Project RMIPTs

Director

Directorate Directorate Three-Letters User/Customer Reps

Directorate RMIPT Lead

Chief Engineer Program Control

Program A	Program B	Program C	Program D	Program E
Program RMIPT / Project RMIPTs	Program RMIPT / Project RMIPTs	Program RMIPT / Project RMIPTs	Program RMIPT / Project RMIPTs	Program RMIPT / Project RMIPTs

Implementation Phases

- **Preparation phase**
  - Develop integrated risk management (RM) implementation plan
  - Establish risk management IPT for each program
    - And a SPO-level IPT to advocate RM, conduct risk training, manage improvements to process and tools, and integrate risks across SPO

- **Tailoring phase**
  - Modify "generic" risk management process to SPO business and coordinate with stakeholders
  - Adopt common tools - and tailored when needed
  - Employ templates, checklist, metrics, and formats

Implementation Phases
(Concluded)

- ## Implementation phase
  - Implement training, including instructions on how to set-up and use the process and tool
  - Conduct risk management self-assessments (baselines)
  - Implement risk management process

- ## Sustainment phase
  - Continuous use of SPO-wide risk process supporting on-going management activities

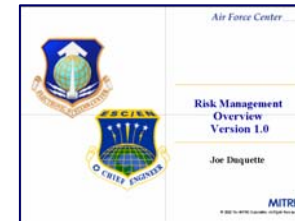# *Risk Management Training*

Orientation

Process   *Tool*

Overview   *Facilitator*

Risk Management

*"Life is tough,
but it's tougher
if you're stupid"*

John Wayne
as
Sergeant John M. Stryker, USMC,
in
"The Sands of Iwo Jima"

References

- **DoD Interim Defense Acquisition Guidebook, October 30, 2002**
- **DoD Memo 5000.1 (Defense Acquisition System, 29 August 2002) Interim Guidance**
- **DoD Memo 5000.2 (Operation of the Defense Acquisition System, 29 August 2002) Interim Guidance**
- **DAU Risk Management Guidebook**

- **AFI 90-901 Operational Risk Management**
- **AFI 90-902 Operational Risk Management (ORM)Guidelines & Tools**

- **AFMCP 63-101 Risk Management**

- **ESC/EN Web Site (Fast Jump: chief engineer)**

POCs

To find out more about the Risk Management Toolkit, contact

Joe Duquette at 271- 6373 (joe@mitre.org)
Mike Bloom at 271- 3387 (mjbloom@mitre.org)

Let's Get Everyone into the Act!
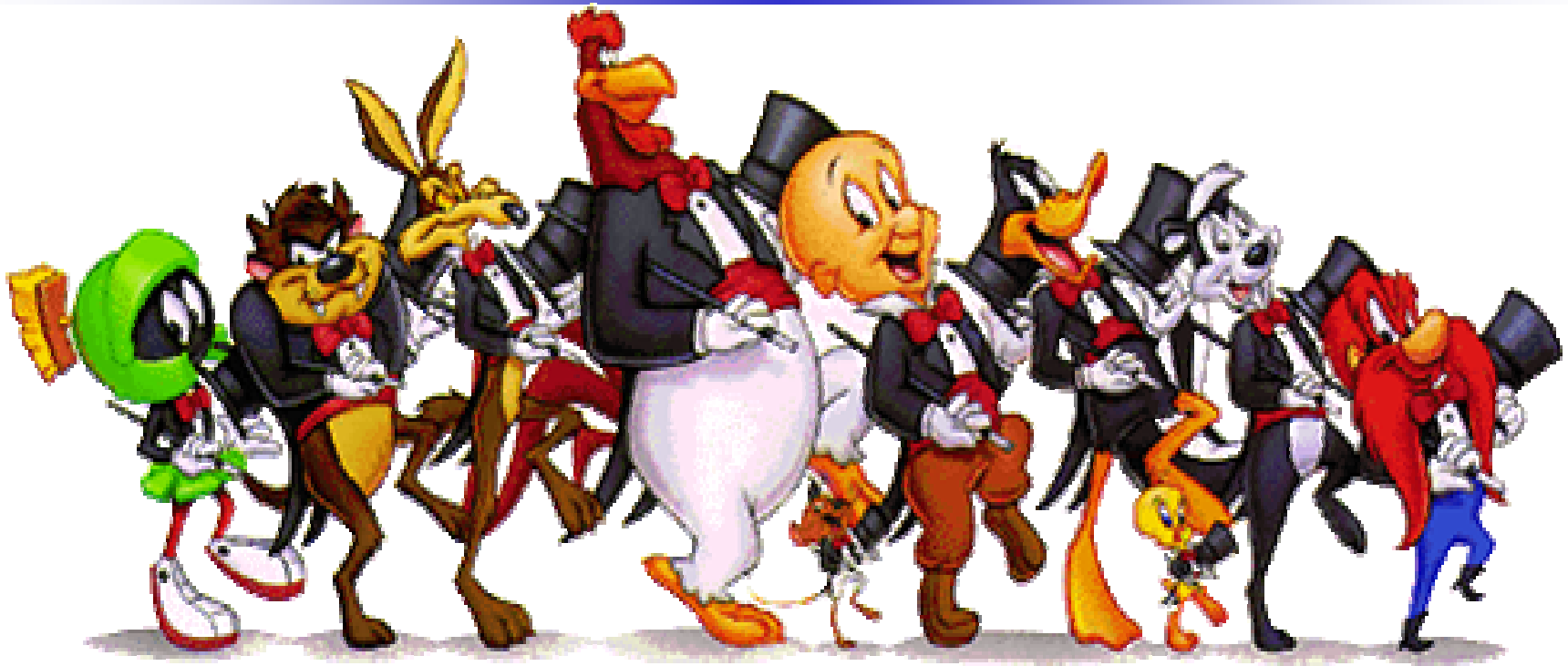
Risks Happen!
Identifying Them and Dealing With Them Will Make Life Easier in the Long Run.
It's a Team Effort; No Matter What Your Role, You Need to Be Part of the Team.
ALL Stakeholders; Government/Industry/Warfighters.

Expansions

Life Cycle Phase Expansions

Program Life Cycle (Continued)

Concept Definition

Concept Definition

JV 2020

EFX, ATD, ACTD

STAR

EAF

ORD

- Process Funding
- Vision & Goals
- Experimentation
- Spiral Feedback
- Threat Change
- Mission Shift
- Existing Direction

Program Planning IPT

Mission Area Planning

Capstone Architecture

Operational & Technical Architecture(s)

Shortfalls & Opportunities

PPBS

Budgeting & Tradeoffs

Requirement Feasibility

User Requirements Definition

Program Direction

Risk Zone

Acquisition Strategy

Acquisition Strategy

Funding

User Requirements

APB PMD

Ops & Tech Architectures

Capstone Architecture

Form Program Office

SRD/TRD Development *(1)* — **Risk Zone**

Requirements Feasibility — **Risk Zone**

Acquisition Strategy Development — **Risk Zone**

RFP Preparation *(2)* — **Risk Zone**

ASP — **Risk Zone**

Source Selection

Risk Zone — **Contract Award**

Package Development

Package Development

Contract Award

Post Award Conference

Define Post Award Work Packages

Risk Zone

System Architecture Development

Risk Zone

Package Design & Development

Risk

Product Integration

Risk Zone

Package Design & Development

Product Integration

Requirements Refinement	Package Tradeoff and Decision	Package Consensus and Contract Action	Spiral "n" Design	Spiral "n" Development

Mission Integration

Mission Integration

Test Articles

Form Test & Integration Working Group → Certification and Accreditation → Establish Test Environments → OT&E

Risk Zone

Risk Zone

Risk Zone

Production Decision → No → Back to Development

Yes

OT&E System Fixes → Finalize Production Readiness → Infrastructure Readiness → Depot Start

Risk Zone

Risk Zone

Risk Zone

Risk Zone

Conduct Overview, Connectivity, Installation, Deployment

O&M

Operations & Maintenance

IOC → Form User Group → O&M Planning → **Risk Zone** → Begin Operations / Begin Sustainment → Operate and Maintain → **Risk Zone**

Spiral N+1 (e.g. TCTOs, Reprocurement, Modifications, SLEP Engineering, Mission Shift)

Phase Out & Disposal
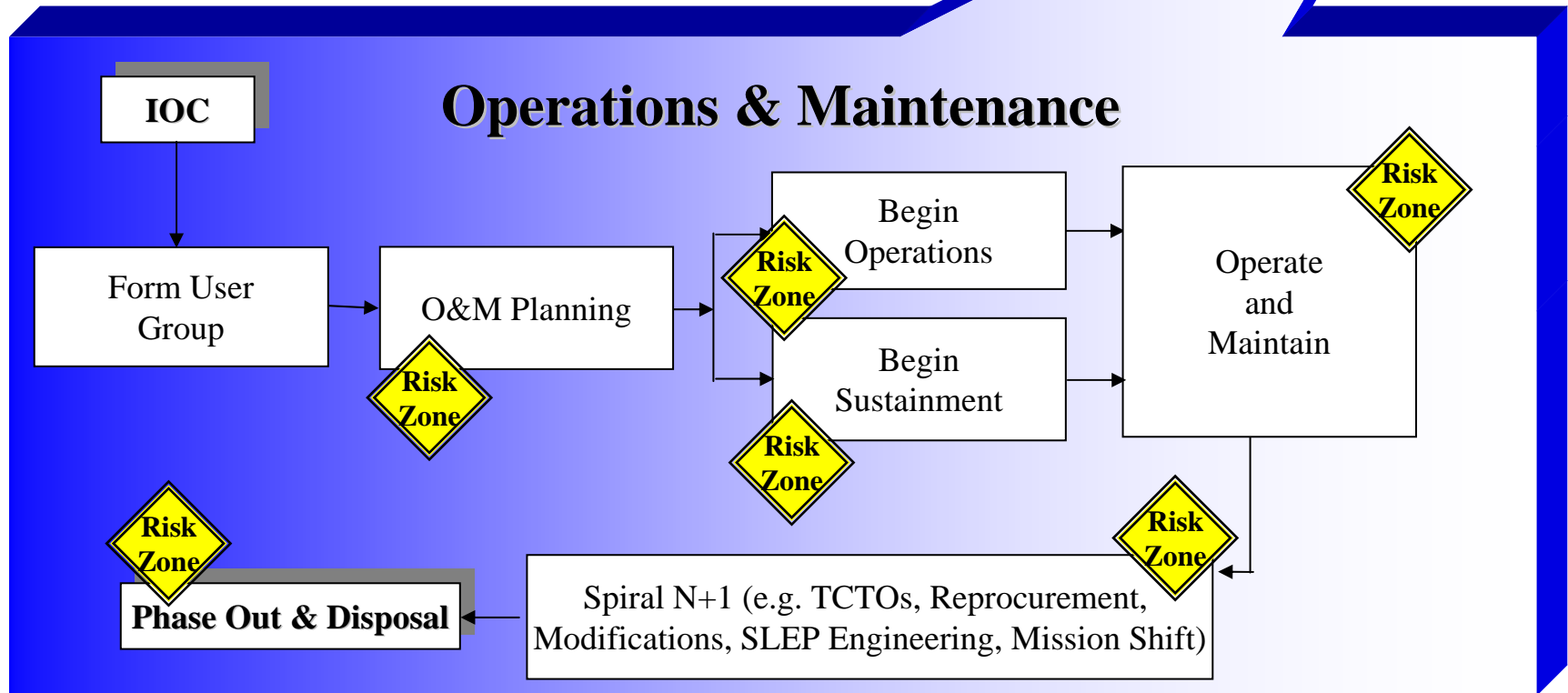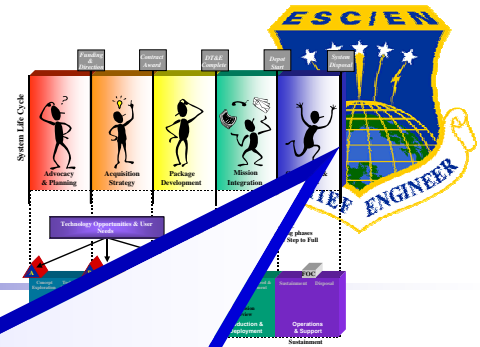
Stakeholder Expansions

Life Cycle Stakeholders

The following is a list with amplifications of the possible stakeholders involved in the RMP. This list and table are provided as an aid to the terminal program teams in determining the appropriate set of stakeholders to involve in the RMP.

- Certification Community (NSA, JITC, DISA, AFCA.)
- Congress (Congressperson, Committees, Commissions)
- Contractor (On Contract Provider of Product)*
- Customer (MAJCOM HQ, Lead Operational Command) *
- Air Force Base CE - (Site Activation/Construction/Installation)*
- (Single Manager, SPO, BP, CX, JA, PK, SE, MITRE, ITSP Contractors etc.)*
- Experimentation Community (EFX, Labs, S&T, DARPA, etc.)
- Industry (Prospective Contractors Providing Technology / Business Opportunity)
- Other Services (Providing product or using your product)*
- SAF & HQ USAF (AQ, FM, XO, PR, PEOs, DACs)
- Sustainment Community (Depot, Field Maintainers)
- Test Community (/TE, AFOTEC, JTF)*
- Overview Community (AETC or Contractor)

* Potential active participants of the RMP tools.

Guidance Backups

DoD Risk Management Guidance

The establishment of a risk management process (including planning, assessment (identification and analysis), handling, and monitoring) to be integrated and continuously applied throughout the program, including, but not limited to, the design process. The risk management effort shall address risk planning, the identification and analysis of potential sources of risks including but not limited to cost, performance, and schedule risks based on the technology being used and its related design, manufacturing capabilities, potential industry sources, and test and support processes; risk handling strategies, and risk monitoring approaches. The overall risk management effort shall interface with technology transition planning, including the establishment of transition criteria for such technologies.

INTERIM DEFENSE ACQUISITION GUIDEBOOK, October 30, 2002

Risk Management. Knowledge about key aspects of a system shall be demonstrated by the time decisions are to be made. Technology risk shall be reduced and technologies shall have been demonstrated in a relevant environment, with alternatives identified, prior to program initiation. Integration risk shall be reduced and product design demonstrated prior to critical design review. Manufacturing risk shall be reduced and producibility demonstrated prior to full-rate production.

Cost Realism. The DoD Component shall strive for cost realism and to identify cost risks before contract award. They shall require cost realism and continue to monitor risks after contract award.

Spiral Development. In this process, a desired capability is identified, but the end-state requirements are not known at program initiation. Those requirements are refined through experimentation and risk management, there is continuous user feedback, and the user is provided the best possible capability within each increment. The requirements for future increments are dependent on the feedback from users and technology maturation.
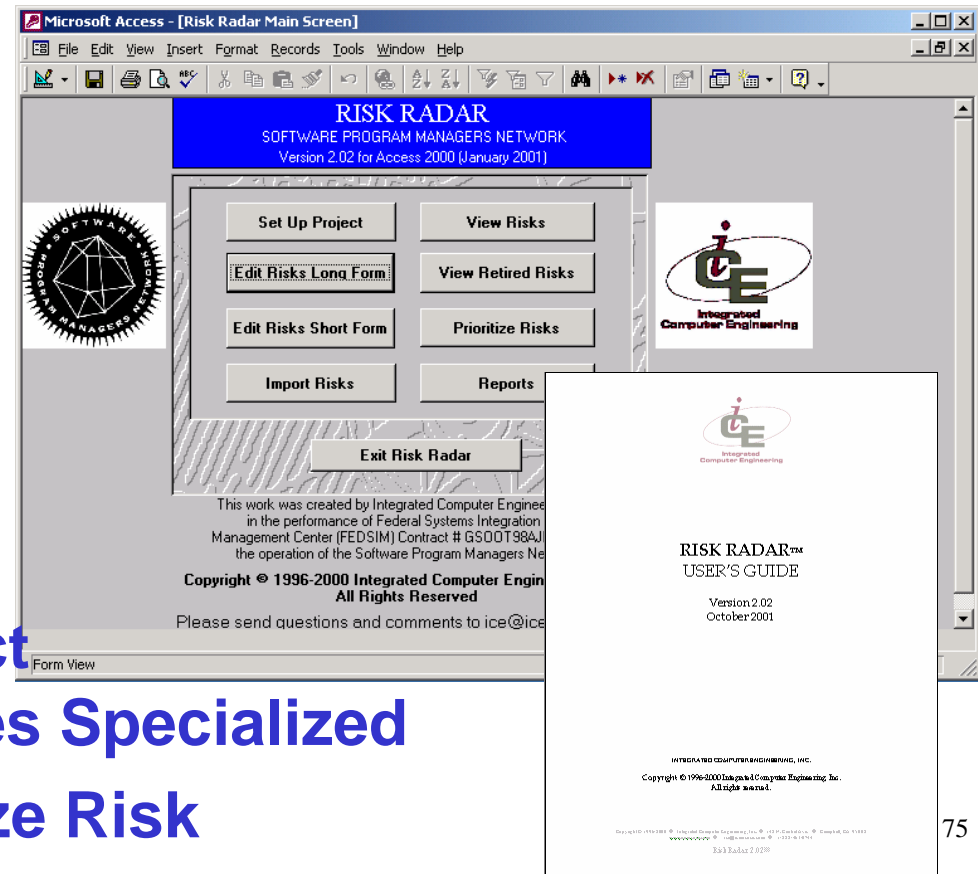
Backups

Risk Radar™

- **A Standalone Microsoft Access Based Risk Management Database**

- **Developed By ICE**

- **Implemented by some DoD and ESC Programs**

- **Designed to Capture Identified Risks, Prioritize Risks, and Communicate Project Risk. Risk Radar uses Specialized Functions to Prioritize Risk**

New 5000 Model

Technology Opportunities & User Needs

- Process entry at Milestones A, B, or C
- Entrance criteria met before entering phases
- Evolutionary Acquisition or Single Step to Full Capability

A **B** **C** IOC FOC

| Concept Exploration | Technology Development | System Integration | System Demonstration | LRIP | Full-Rate Prod & Deployment | Sustainment | Disposal |

Critical Design Review

FRP Decision Review

Concept & Tech Development

System Development & Demonstration

Production & Deployment

Operations & Support

Pre-Systems Acquisition

Systems Acquisition
(Demonstration, Engineering Development, LRIP & Production)

Sustainment

IOC: Initial Operational Capability
FOC: Full Operational Capability

Initial Capability Document (ICD)

Capability Development Document (CDD)

Capability Production Document (CPD)

Validated & approved by operational validation authority

Relationship to Requirements Process