

Risk, Issues and Lessons Learned: Maximizing Risk Management in the DoD Ground Domain



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Why do Risk Management?



Why do Risk Management?

***“There is only one reason for risk management:
To assure the program decision-makers learn about and
deal with important risks before they turn into issues”.***

***- Carnegie Mellon University “Risk Management
Overview for TACOM”***

Benefits of Risk Management include:

- *Risk is a proactive approach - preventing problems before they occur. Issue management is a reactive approach – fixing issues that exist.*
- *Understanding your risks and putting measures in place to prevent issues – **doing it right the first time.***
- *Minimize or prevent cost overruns, schedule delays, and performance problems*
- *Product and design quality are improved.*
- *Maximizing usage of resources.*
- *Promoting teamwork and system engineering.*
- *Communication to stakeholders and decision makers.*



Risk vs. Issue

- A risk is something that has a likelihood of occurring in the future.
- An issue is something that has already happened or will certainly happen.
- A risk can be mitigated; an issue must be corrected.
- Risks, when mitigation is unsuccessful, become issues after an event has occurred, such as testing (risk – “if testing fails”, issue “testing has failed”), a date where mitigation was required by, etc.



DoD Risk Management

**Risk
Planning**

**Risk
Assessment**

**Risk
Handling /
Mitigation**

**Risk
Monitoring**

RISK DOCUMENTATION

What project/program requires Risk Management?

- Identify baseline for cost, schedule and performance for the project/program.
- Create Risk Management Plan for the project/program.
- Assign roles and responsibilities for the project/program.
- Complete risk training for the project/program's Risk IPT.

What can go wrong?

- Study WBS, SOW, IMP/IMS, EVM.
- Lessons learned.
- Review IPTs' areas of responsibility.
- Ask "why" multiple times.

How big is the risk?

- Consider likelihood of root cause occurrence.
- Identify consequences in (Cost, Schedule, and Performance).

What will you do about it?

- Eliminate the root cause.
- Control the root cause or consequence.
- Transfer the risk.
- Assume the level of risk.

How is the planned risk mitigation being implemented?

- Determine planning what budget & requirements needed.
- Provide a coordination vehicle with management, etc.
- Document changes.

How are things going?

- Communicate risks.
- Monitor risks plans.
- Review status through event driven technical reviews and a risk review board.
- Review watch risks.

This is a iterative process for new risks.

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Risk Identification Resources

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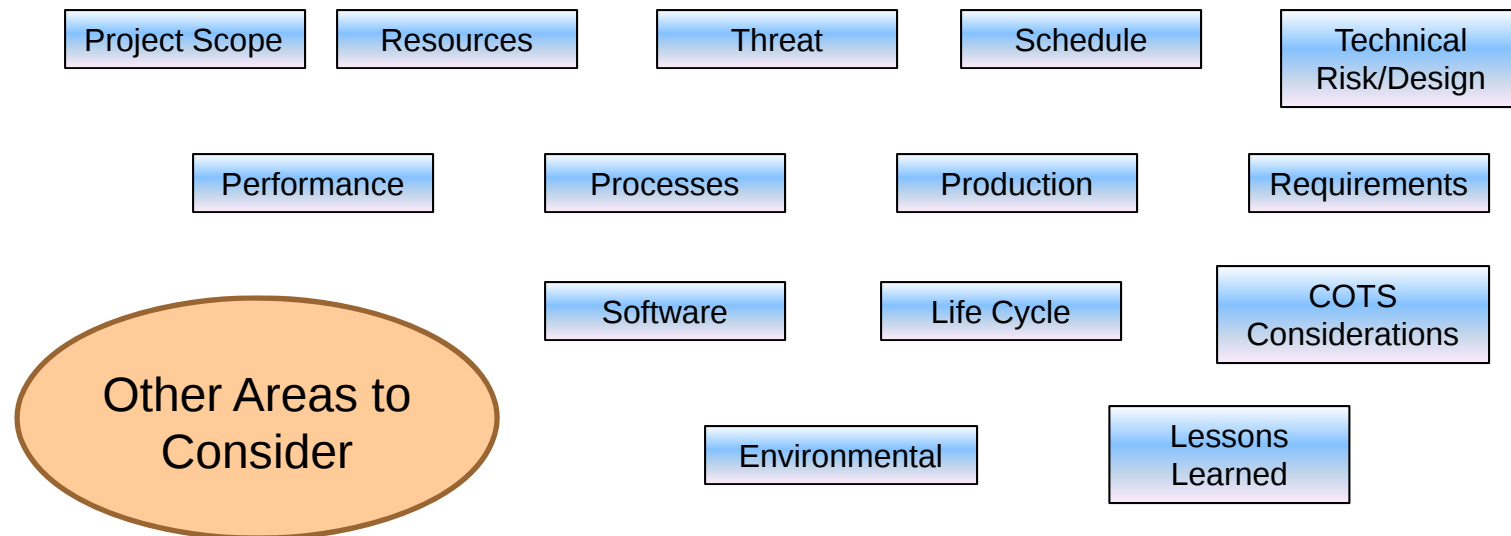
Areas to Consider for Risk Management



Early on in the program, a Work Breakdown Structure (WBS) should be established. This will breakdown the program into product and process elements. Examination of each item in the WBS for things that could go wrong is inherent to risk management. Ask "Why, Why, Why..." until the source of the risk is uncovered.

Have all the functional areas been consulted for potential risk items?

- Program Management
- Engineering
- Subject Matter Experts (SMEs)
- Systems Engineering
- Business Management
- Survivability
- Quality
- Survivability
- Sustainment
- Contractors/OEMS
- Modeling and Simulation
- Testing
- Logistics
- Government Furnished Equipment
- Capabilities Insertion
- Human System Int.
- Safety
- RAM Support
- Procurement
- Contracting
- Financial Management
- Joint Program Office





Risk Management Checklist

Risk Management Checklist

Early on in the program, a WBS should be established. This will breakdown the program into product and process elements. Examination of each item in the WBS for things that could go wrong is inherent to risk management. Ask "Why, Why, Why..." until the source of the risk is uncovered. Other items that should also be examined are:

Have all the functional areas been consulted for potential risk items?

- Quality?
- Engineering?
- Logistics?
- Test?
- Budget?
- Program Management?
- Environmental?
- Safety?
- Production?

This checklist is not meant as an all encompassing document, but rather a thought starter into some additional questions that may help uncover programmatic risks.

Resources:

Is the project sufficiently staffed (Engineers, OEM personnel, Logistics, PM, etc.)? What are the risks if it is not?
Are funds available to support risk management resources including staff and tools?
Does the government/contractor have an adequate amount of personnel to support the product/program?
Is the qualification of the personnel assigned to support the product/program adequate?
Have all subject matter experts been consulted?
Are there any industrial base issues that introduce risk?
Are there any resource constraints that introduce risk?
Are there any personnel issues that introduce risk?
Are there any training needs that have not been met that would help perform risk management?

Project Scope:

Is the project scope well understood by all parties?
Are the development processes well defined?
Is the supplier/OEM involved in risk identification and mitigation?
Were lessons learned from similar programs reviewed in order to identify potentially related risks?
Has a Work Breakdown Structure (WBS) been created for this program?
Is there a configuration management plan in place?



USAF TRL Level Calculator



<https://acc.dau.mil/CommunityBrowser.aspx?id=25811>

AFRL Transition Readiness Level Calculator, version 2.2**Summary**

Reset All

☒ Use Manufacturing
☐ No Manufacturing

☐ Hide Blank Rows

☒ Use Programmatics
☐ No Programmatics

% Complete is now set at:
100%

Green set point is: 100% Yellow set point is: 67% Change set points on Summary sheet.

Hardware and Software Calculator

☐ Only Hardware
☐ Only Software
☒ Hardware & Software

Technology Readiness Level Achieved					Technical:			
1	2	3	4	5	6	7	8	9

Program Name: Date TRL Computed: Program Manager:

TOP LEVEL VIEW -- Demonstration Environment (Start at top and pick the first correct answer)

☒ Has an identical unit been successful an on operational mission (space or launch) in an identical configuration?
☐ Has an identical unit been demonstrated on an operational mission, but in a different configuration/system architecture?
☐ Has an identical unit been mission (flight) qualified but not operationally demonstrated (space or launch)?
☐ Has a prototype unit been demonstrated in the operational environment (space or launch)?
☐ Has a prototype been demonstrated in a relevant environment, on the target or surrogate platform?
☐ Has a breadboard unit been demonstrated in a relevant (typical; not necessarily stressing) environment?
☐ Has a breadboard unit been demonstrated in a laboratory (controlled) environment?
☐ Has analytical and experimental proof-of-concept been demonstrated?
☐ Has a concept or application been formulated?
☐ Have basic principles been observed and reported?
☐ None of the above

Reset Top Level View

TRL 9

Source: James W. Bilbro, NASA, Marshall SFC, May 2001

Comments:

H/SW Ques
Both Catgry % Complete

☐ Do you want to assume completion of TRL 1?

TRL 1 (Check all that apply or use slider for % complete)

B	T	100	☒	"Back of envelope" environment
B	T	100	☒	Physical laws and assumptions used in new technologies defined
S	T	100	☒	Have some concept in mind that may be realizable in software
S	T	100	☒	Know what software needs to do in general terms
B	T	100	☒	Paper studies confirm basic principles

Reset Level 1

Summary TRL Calculator

Ready

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USAF Risk Identification, Integration and Illities

<http://www.afit.edu/cse/page.cfm?page=164&sub=95>

USAF Risk Identification: Integration & Illities (RI3) Calculator Ver. 1.8.4

[Go to Index](#) [Clear Program Information](#) [Clear All Data](#) [Instructions](#) [Save Data](#)

Date Saved:
Program:
Date: 9/1/11
UUE:
WBS #:
Evaluator:

Select Categories

Design Maturity & Stability
Scalability & Complexity
Integrability
Testability
Software Development

First Provide Rationale for Risk Assessment Then Select Appropriate Cell in 5X5 Chart Then ENTER

N/A If the question is not applicable click "N/A" To cycle through the questions click "Next"

Select Categories

Reliability
Maintainability
Human Factors
People, Organization & Skills

Links to Question Sets

Design Maturity & Stability
Scalability & Complexity
Integrability
Testability
Software Development
Reliability
Maintainability
Human Factors
People, Organization & Skills

Illities Roll-Up

Links to LC Charts

Design Maturity & Stability LC Chart
Scalability & Complexity LC Chart
Integrability LC Chart
Testability LC Chart
Software Development LC Chart
Reliability LC Chart
Maintainability LC Chart
Human Factors Illities LC Chart
People, Organization & Skills LC Chart

5X5 Risk Matrix

Clear All Data ENTER

Likelihood

5
4
3
2
1

Consequence

1 2 3 4 5

To change entry, enter Question # below and click Recall

Select Cell and click "Enter Correction"

Enter Correction

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UNCLASSIFIED Technical Risk Assessment Approach



- ❑ Step 1: Gather system information (WBS, system boundary, development plan, etc.).
- ❑ Step 2: Identify **critical technologies** (need to be delivered for the system to work) and other **technologies of interest**.
- ❑ Step 3: Gather/assess **TRL** for each technology from Step 2.
- ❑ Step 4: Assess manufacturing readiness (**MRL**) of each technology.
- ❑ Step 5: Assess Integration Readiness Level (**IRL**) for each technology.
- ❑ Step 6: Identify potential technical risk events for each technology.
- ❑ Step 7: Gather historical program data on development, integration and manufacturing.
- ❑ Step 8: Assess **probability distributions** for each technology: TRL 7 by MS C; MRL 8 by MS C; IRL 8 by MS C.
- ❑ Step 9: Assess the **consequence** to performance, schedule, or cost if technology is not delivered within the timeframe and cost targets.

Steps 8 & 9 accomplished during Risk Workshop

- ❑ Step 10: Use **Monte Carlo simulation** to determine expected **likelihood** that technologies will not be delivered within the timeframe and cost target.
- ❑ Step 11: Use DoD risk reporting matrix to determine **risk rating for each technology**.
- ❑ Step 12: Perform **sensitivity analysis** on probability distributions and consequence levels.

Assessment will include a risk rating for each technology, an explanation of risk drivers, possible risk mitigations, and a risk comparison across the alternatives.



Risk Mitigation Approaches



Risk Mitigation Approaches

Avoid: Develop a strategy to avert the likelihood and/or consequence by selecting a different approach or not pursuing the option at all. Consider this technique when multiple design or programmatic options are available (sometimes “eliminate”)

Transfer: Develop a strategy to place the risk with the party most able to do something about it.

Assume: Accept consequences of the risk, with frequent monitoring to determine if the risk actually occurs, and that the impact is as predicted (and is tolerable) if it does. Also known as accept.

Control: Develop a strategy to lower the risk by reducing its likelihood, consequence, or both components with tasks in the IMS. This approach is sometimes referred to as handle or mitigate.

Watch: Monitor and periodically re-evaluate the risk for change.



Maximizing Risk Management in the DoD



Current State of Risk Management

- *Risks are tracked in a database or spreadsheet.*
- *Issues are tracked in a database or spreadsheet.*
- *Failure Mode and Effects Analysis (FMEAs) may or may not be required by contract and access to them and use of them may be limited.*

There is no traceability or linkage from FMEAs, to risks and mitigation plans, to issue resolution.

FMEA
(Failure Mode and
Effect Analysis)

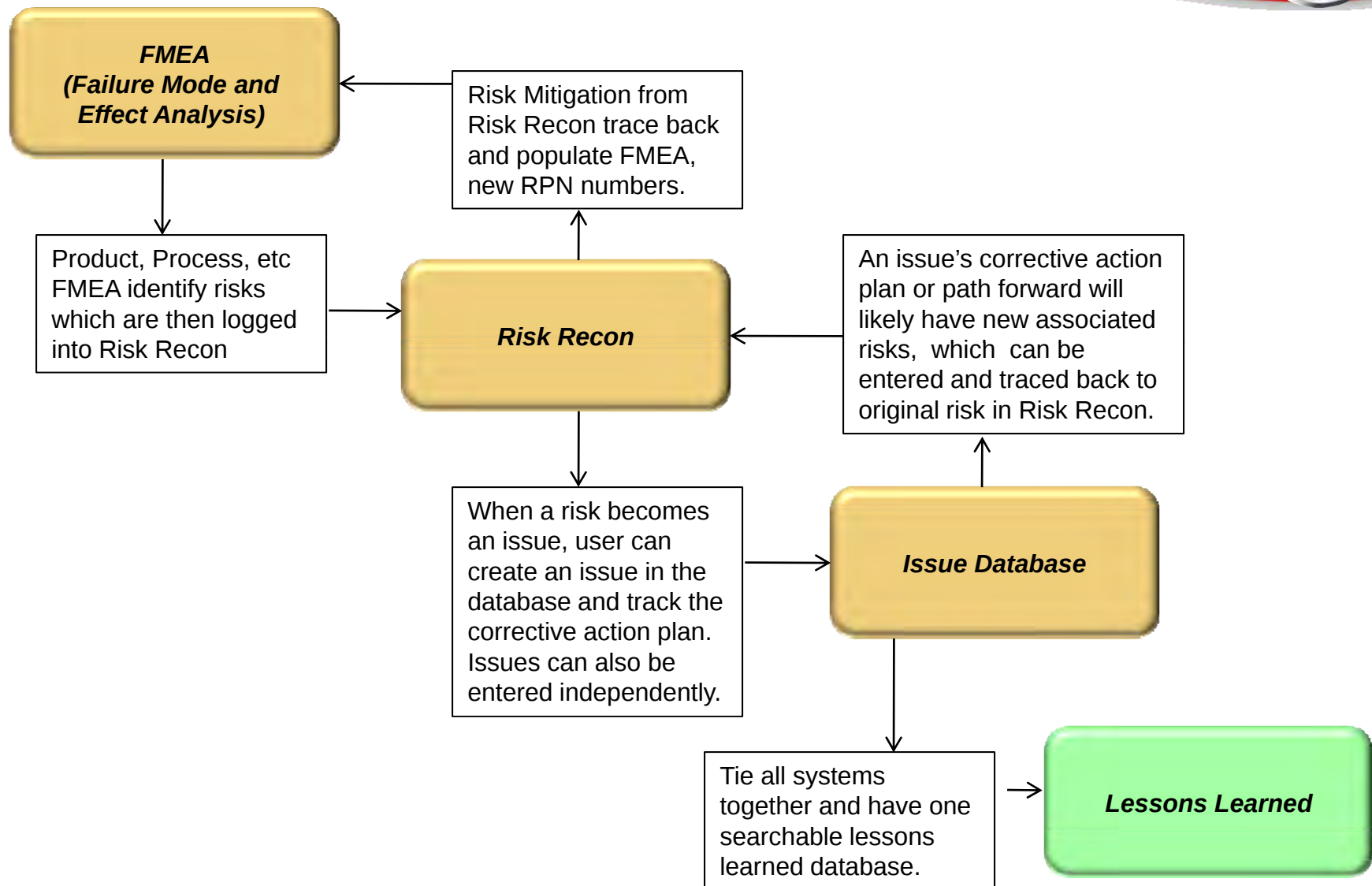
Risk Management

Issue Management

Acquisition Excellence



Maximizing Risk Management:





Why a program should begin with a FMEA...

FMEAs are an excellent way for a program to shorten design time, avoid program mistakes, and deliver a higher quality system to the warfighter in reduced time.

FMEAs should be required for systems or subsystems via the contract. They should be readily accessible and usable by the government.

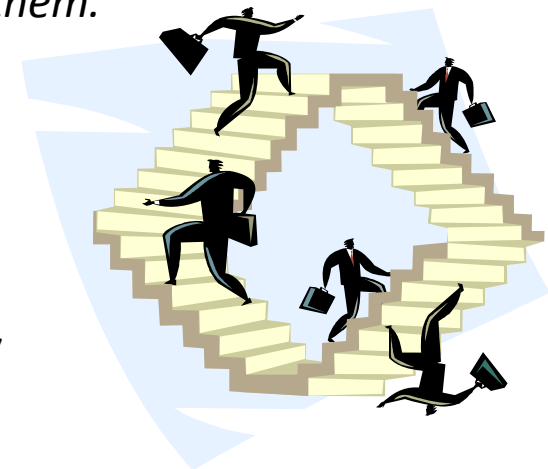
FMEA stands for Failure Mode and Effect Analysis. Simply translated, it means that through some method we will identify how something can fail and what will happen if it does. When done correctly it can be an expedient and thorough approach to risk identification.

Some definitions:

1. A definition of “failure”*Failure is the inability to produce the desired output. Failure may occur at any point within the function of a product or flow of a process.*
2. A definition of “effect”*Effects are the result of failures. The effect is the thing we are most interested in. The power of the effect will dictate our level of action. Not every failure will result in a severe effect and therefore not every failure needs to be addressed.*
3. A definition of “analysis”*Analysis means the investigation of the process being used such that it can be determined how failure occurs. The analysis provides identification of the potential failures and then serves to rate their effects based on how severe they are, how often they might occur, and how easily we can find them.*

Without a thorough ANALYSIS of the EFFECTS it is difficult to assign resources efficiently.

By using FMEA we can eliminate problems BEFORE they happen and save time and money on prioritized work.





What FMEA types exist?



Although FMEA is FMEA no matter its application, over the years many variations on the same theme were stood up under similar names. Here are some of the most popular categories:

Design FMEA – Helps to identify how something can fail to do what it was designed to do or why it does things it should not do

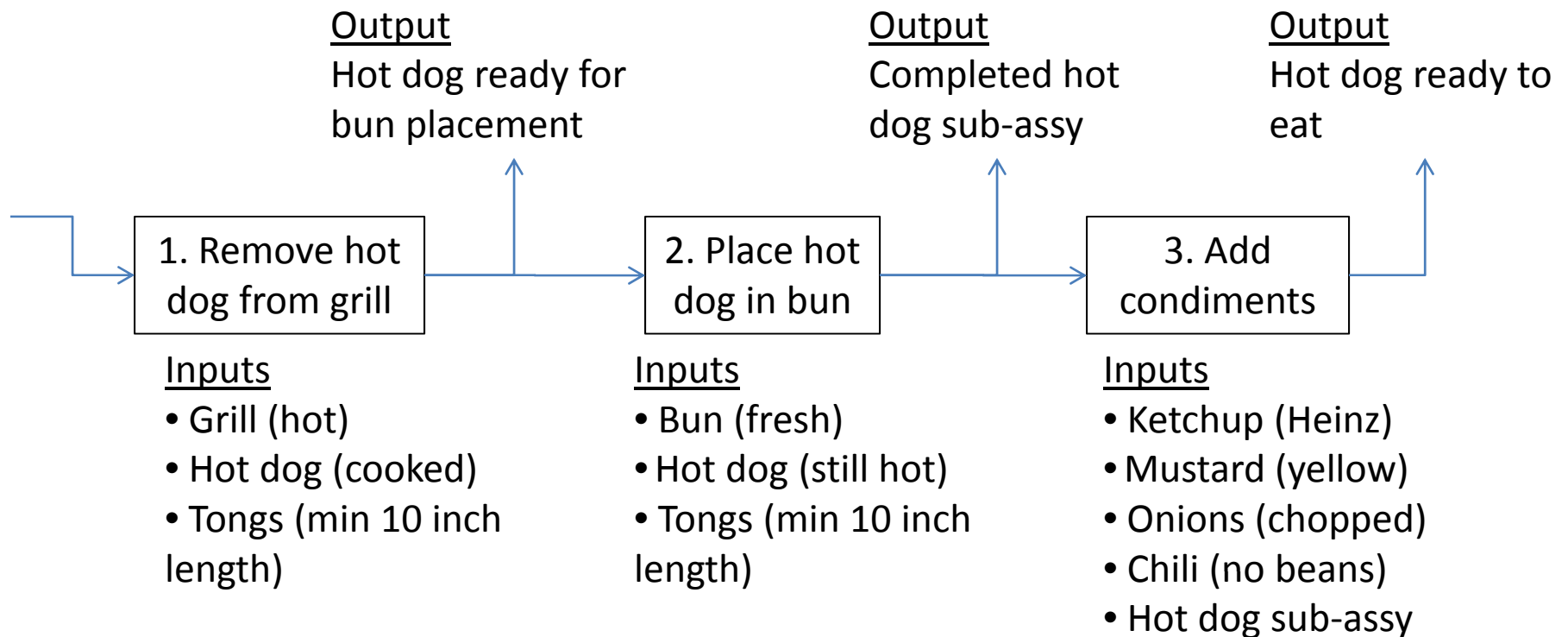
- Generates too much heat
- Takes too long to accelerate
- Cannot track target

Process FMEA – Helps to identify how something can be improperly or unsafely manufactured or assembled

- Parts missing after assembly
- Improper torque on fasteners
- Operator must put self at risk to achieve task

Step 1 - Understand how things work in order to find the ways it can fail.

Use proven, thorough approaches to describe all the elements of the process. Work Breakdown Structures and Process Maps are popular tools for this purpose.





How does FMEA work?



Step 2 - Execute the analysis and discover the potential failures and effects, their causes, and ultimately what to do about it!

Item or step # from WBS, Process Map, or other	Process step function / requirements	Potential Failure Mode	Potential Effects of Failure	Severity	Potential Causes / Mechanisms of Failure	Occurrence	Current Process Controls Prevention	Current Process Controls Detection	Detect	R.P.N.	Recommended Actions	Responsibility & Target Completion Date	Action Results				
													Actions Taken	Severity	Occur	Detection	R.P.N.
1	Remove hot dog from grill	Hot dog is not "ready"	Delay: customer hungry	7	Grill is not hot	1	None	Temperature gauge on grill	1	7							
				7	Hot dog is not hot enough (not cooked)	4	None	Use grill marks to indicate fully cooked status	2	56							
				7	Hot dog is overcooked (burned)	6	None	Use grill marks to indicate fully cooked status	2	84							
		Hot dog is not present	Major delay: Customer hungry, angry	9	Insufficient hot dog supplies, ran out	7	Educated guess on needs	None	10	630	Match hot dog count to guest list/update shopping list	G. Ratajczak One week prior to BBQ	Shopping list and RSVP list kept together, updated as guests call in	9	7	1	63
				9	failure of pre- process steps (grill prep)	1	None	None	2	18							
2	Place hot dog in bun	Hot dog not in bun	Delay: Rework or get new hot dog	7	Operator error, missed bun	1	Hand/eye coordination	None	2	14							
		Hot dog incorrectly positioned in bun	Dissatisfaction: Customer will have difficulty eating, or may have to adjust hot dog manually	5	Operator error, poor placement	2	Hand/eye coordination	None	2	20							
3	Add condiments	Hot dog does not meet end of line requirements (condiments missing)	Minor delay: more work needed	3	Favorite condiment not available (not present)	5	None	None	10	150	Use list while shopping to minimize mistakes/missing items	G. Ratajczak Two days prior to BBQ	Shopping list used at store	3	5	1	15
				3	Favorite condiment not available (condiment specifications not met, substitution used)	9	None	None	10	270	Request condiment information at RSVP	G. Ratajczak One week prior to BBQ	Guests asked about preferences when they call to RSVP	3	9	1	27
		Hot dog does not meet end of line requirements (unwanted condiments added)	Major delay: Scrap hot dog, start over	9	Wrong condiment added to hot dog	9	None	None	10	810	Do not apply condiments until customer is present	G. Ratajczak Day of BBQ	No hot dogs "built" without customer present	9	9	1	81

Unclassified



How does FMEA work?



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9 x 9 x 10 = 810 !!! The analysis says this failure, along with its severe effect, is not only likely to happen, but we currently have no way to deal with it!

Item or step # from WBS, Process Map, or other	Process step function reference	Failure mode	Impact	Frequency	Severity	Current Process Controls Prevention	Current Process Controls Detection	Defect	R.P.N.	
					9	None	None	10	810	
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1	Remove hot dog from grill	Hot dog is not "ready"	Delay: customer hungry	7	Grill is not hot	1	None	Temperature gauge on grill	1	7



I can't address every failure – only the most important ones. Where do I draw the line? How do I decide where to focus resources?

I can't address every failure – only the most important ones. Where do I draw the line? How do I decide where to focus resources?





When and why should we use FMEA?



**Manage RISK
NOW!**

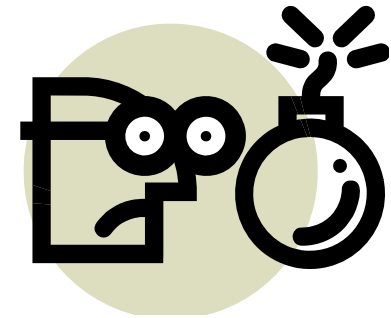


PREVENT failure from occurring or minimize its effect by acting PROACTIVELY. Focus your efforts on the critical few items worth pursuing. Ensure SUCCESS by minimizing cost and reducing risk.

or....



**Deal with
FAILURE later**



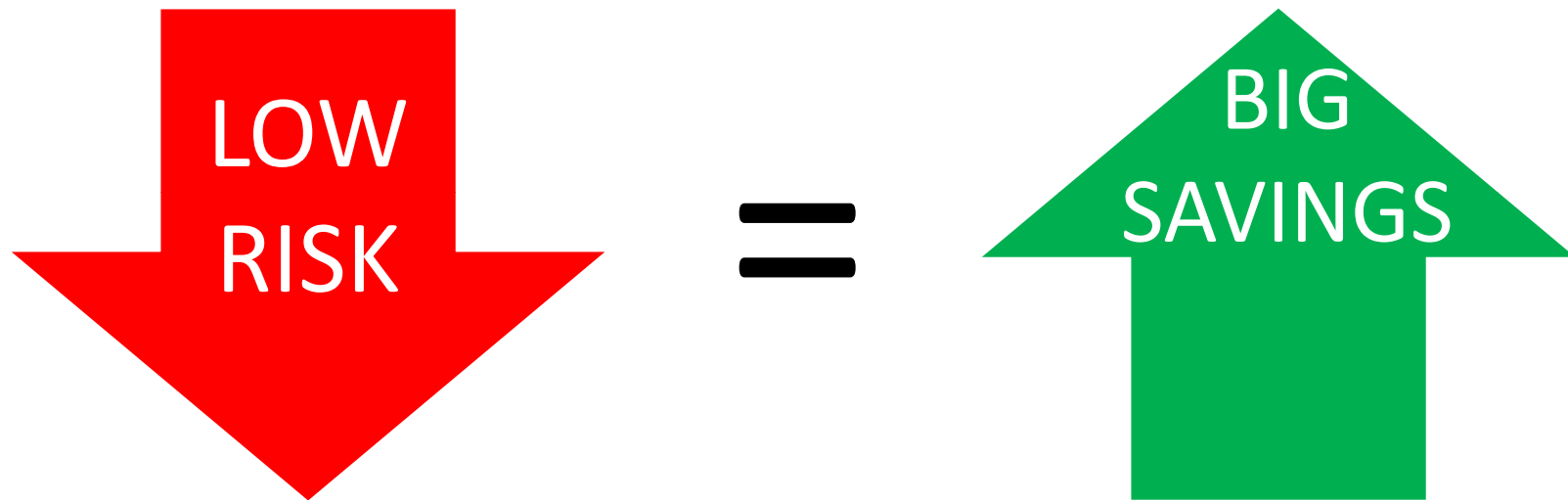
Lack of ANALYSIS leads to inefficient problem identification. Resources can be quickly expended addressing incorrect or insignificant concerns. The most severe failures may still happen and will always cost more to address reactively.



Less risk = less failure = less cost



Successful FMEA exercises result in very complete risk identifications. In turn, risk management is more successful in eventually reducing the failures which were identified as the most influential.



SUMMARY:

1. FMEA is not hard to do or understand
2. FMEA works on EVERYTHING
3. FMEA is the BEST way to identify risk
4. Managing risk early SAVES MONEY!

ARE YOU USING FMEA? CAN YOU AFFORD NOT TO?



How can we use FMEA to our benefit?



Use it proactively to prevent failures

Explore the design and the processes of manufacturing and assembly to find the potential failures

Use the knowledge to put controls in place

Eliminate or diminish failures

Save time and money

Use it reactively to solve problems

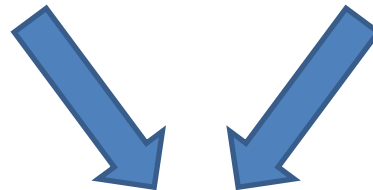
Interrogate the FMEA for similar or exact failures

Use the knowledge to put solutions in place

Eliminate or diminish failures

Save time and money

Use FMEA for root cause analysis



**Update existing FMEAs with lessons learned
and provide the basis for FAILURE FREE next
generation ideas**



What is Risk Recon?

Risk Recon is a risk management tool jointly developed by Program Executive Office (PEO) Ground Combat Systems (GCS) and the Tank Automotive Research, Development and Engineering Center (TARDEC) for risk management.

The tool provides an easily accessible database for PEO, PMs and organizations to store and share information in one centralized location. This provides greater opportunity for lessons learned.



Risk Recon – Risk Management Tool Capabilities

- ***Ease of Use*** – training takes approximately 1 hour.
- ***Lessons Learned***
- ***Imbedded Reporting***
- ***Integrated Process Flow.***
- ***Traceability***
- ***Accessibility***
- ***Customization***
- ***No Cost*** – Since Risk Recon is owned by the US Army, there is no program cost for using this database for DoD organizations.



Current Risk Recon Users

**PEO CS/CSS
MRAP
(Used by both
Army and USMC):**
MaxxPro
RG-31
Caiman
M-ATV
RG-33
Cougar
Buffalo

Capabilities Insertion
International Programs
Acquisition
Survivability
Logistics
T&E
BFM
GFE

Abrams

Bradley

**Paladin Integrated
Management**

Stryker

RS JPO

PEO GCS

**TARDEC
OCS**

**TARDEC
HPLwT**

**PEO AMMO
PM CAS**

**TARDEC
KE APS ATO**

**ARDEC
CMR**

**PEO LS (USMC)
PM LAV**

**TARDEC
RAMP**

**TARDEC RBG
GVPM**

**ARDEC
ALAS-MC**

**MARCORSYSCOM
PG-15
(USMC/Navy)**

**TARDEC
CGVDI**

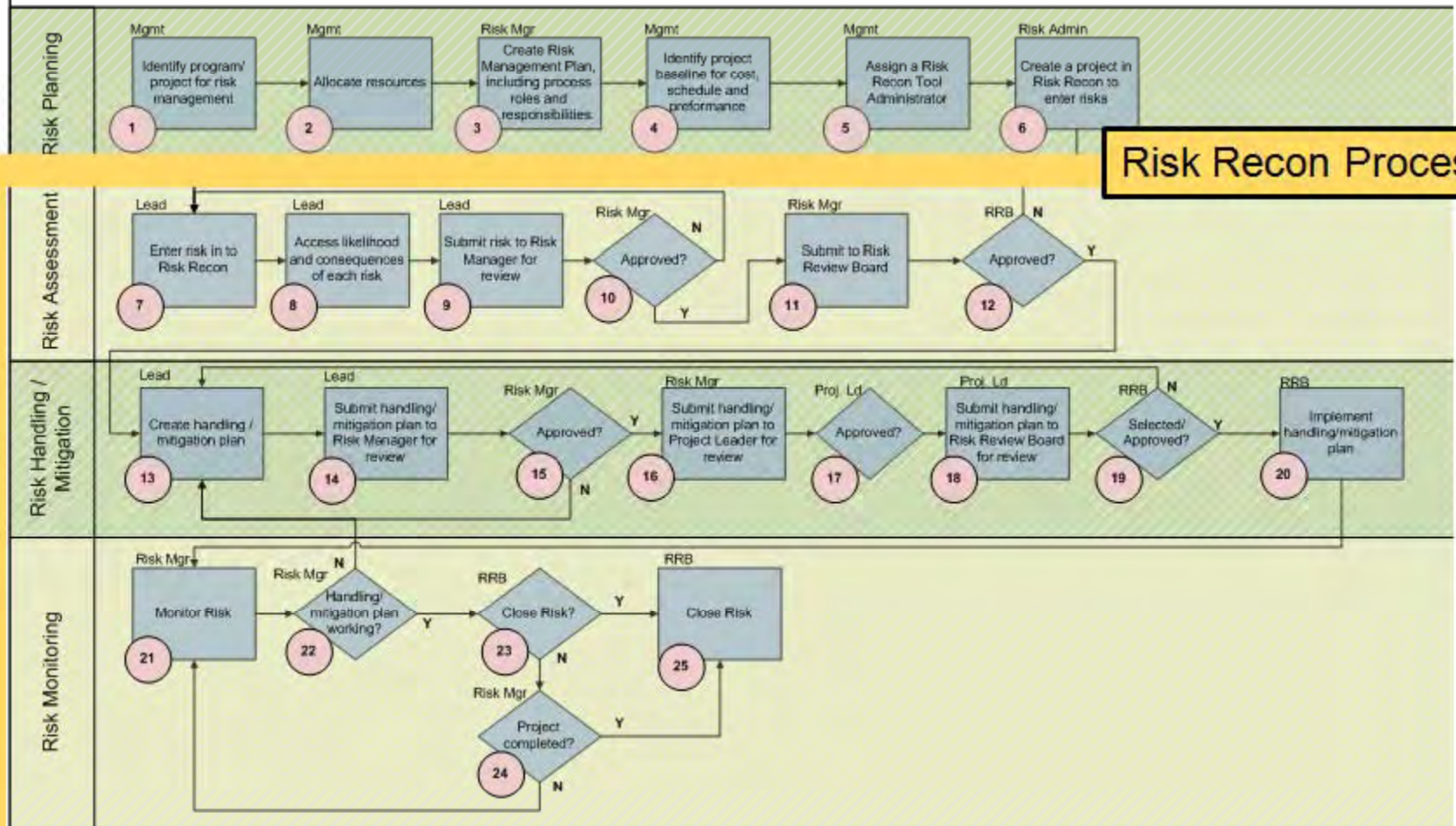
PEO IEWS

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Risk Management Process Workflow

Risk Management Process



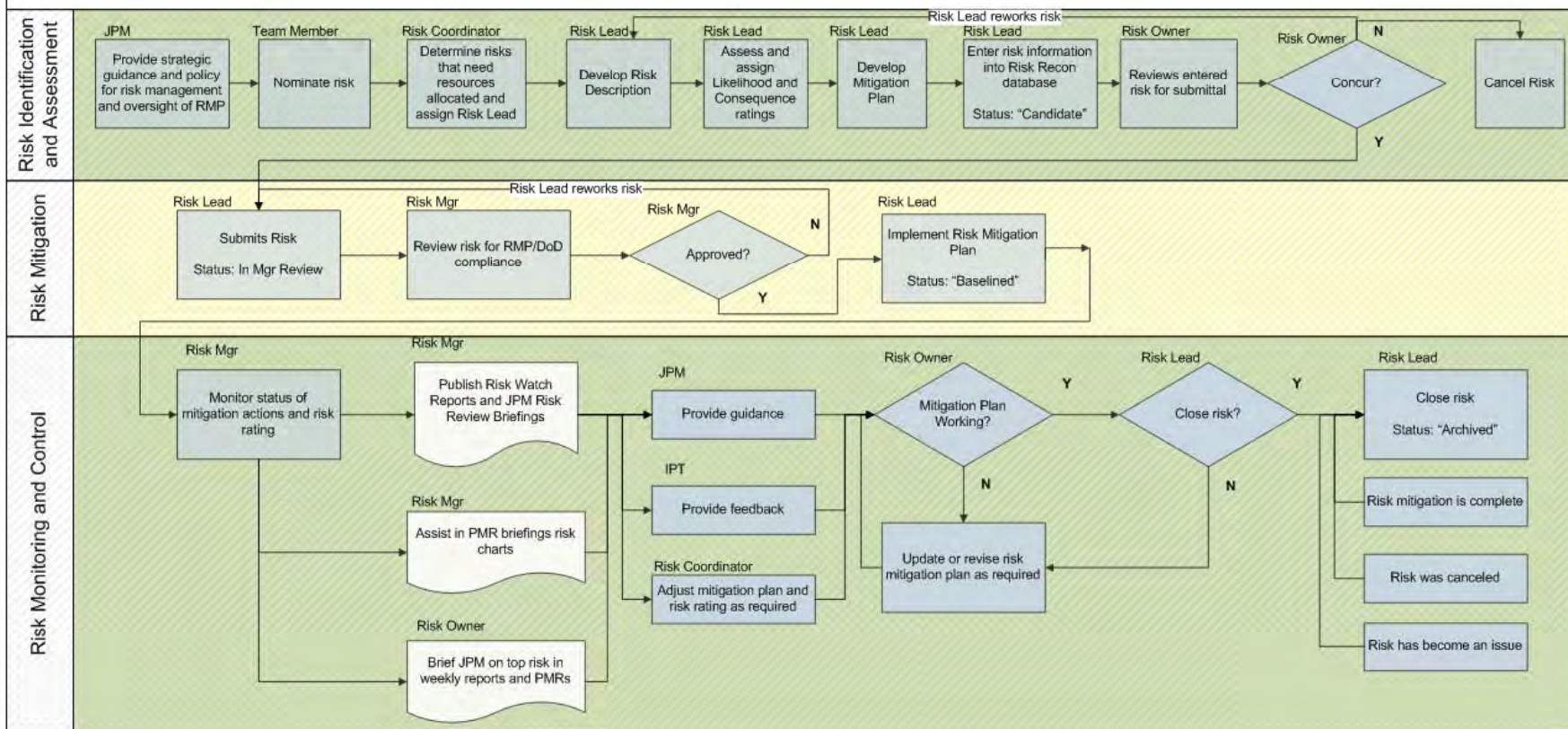
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MRAP Program under PEO CS/CSS Risk Management Process



Tailored MRAP JPO Risk Management Process



Version Date: 3/25/2011

Approval authority for High, Medium and Low Risks resides with Risk Owners (over 65 risk leads)

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Unclassified



Consequence Guidance

(Available in Risk Recon under "Help" and "Tip Sheet")

Risk Recon Risk Management Tip Sheet



Likelihood	Near Certainty 5					
	Highly Likely 4					
	Moderate 3					
	Low 2					
	Not Likely 1					
		Negligible 1	Marginal 2	Moderate 3	Critical 4	Catastrophic 5
		Consequence				

"Knowing our risks provides opportunities to manage and improve our chances of success."

—Roger Vanscoy

Consequence Table			
Rating/Description	Performance	Cost	Schedule
5 (Catastrophic) - Jeopardizes an exit criterion of current acquisition phase	Unacceptable; No viable alternatives exist	Program budget impacted by 10% or more; Program success jeopardized	Key events or milestones delayed by more than one month
4 (Critical) - Potentially fails Key Performance Parameter (KPP)	Unacceptable; Significant changes required	Program budget impacted by 5%-10%; Significant portion of program management reserves must be used to implement workarounds	Critical path activities 2 weeks late; Workarounds would not meet milestones, Program success in doubt
3 (Moderate) - Shorts a critical mission need but expect no breach of KPP threshold requirements	Below goal; Moderate changes required; Alternatives would provide acceptable system performance; Limited impact on program success	Budget impacted by 1%-5%; Limited impact on program success; Does not require significant use of program cost and or schedule reserves	Non-critical path activities one month late; Workarounds would avoid impact on critical path; Limited impact on program success
2 (Marginal) - Requires the commitment of a minor portion of the program cost, schedule or performance reserve	Below goal but within acceptable limits; No changes required; Acceptable alternatives exist; Minor impact on program success	Budget impacted by 1% or less; Minor impact on program success; Minor commitment of program management reserves (schedule, cost) used for workarounds	Non-critical path activities late; Workarounds would avoid impact on key and non-key milestones; Minor impact on program success; Development schedule goals exceeded by 1%-5%
1 (Negligible) - Remedy will require minor cost, schedule and/or performance trades	Requires minor performance trades within the threshold - objective range; No impact on program success	Budget not dependent on the issue; No impact on program success, Cost increase can be managed within program plan	Schedule not dependent on issue; No impact on program success; Schedule adjustments managed within program plan

Terms	Definitions
Risk	A measure of future uncertainties in achieving program performance goals and objectives within defined cost, schedule and performance constraints. Risk addresses the <i>potential</i> variation in the planned approach and suspected outcome.
Issue	An event that has already occurred or has 100% likelihood of occurring.
Likelihood	Probability that the risk will occur (based on ratings 1-5).
Consequence	Effect or impact on the program if risk becomes an issue (based on ratings 1-5).

UNCLASSIFIED: Dist A. Approved for public release. #20815

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Creating a Risk



**Risk Recon**

Home Administration Reports New Users Help

Version: 5.0 - May 2010
User: Lisa Graf
Project: HBCT Test Org > HBCT Test PMO > HBCT Training > HBCT Training > SKH Testing

Classified data must not be stored in this risk management tool

Edit Risk: Training Example - Loss of Power in Thunderstorms
Workflow Location: [Risk Lead Analysis](#)

Back to the Home Page View History

Save Cancel Submit To Close, select Risk Status Close Risk Watch Risk

Risk Info Sheet Documents Risk Info Team Mitigation Plan(s) Related Projects Risk Lifecycle

Changes must be Saved first before navigating off this web page

Risk Analysis (Click bar to expand/contract)

Risk ID:	1698
User Defined Risk ID:	
Risk Title:	Training Example - Loss of Power in Thunderstorms *
Status	Candidate
Urgent:	☐
Check to alert Risk Manager of time sensitive risk.	
Open Date:	2/8/2010 *
Last Saved On Date:	8/2/2010 3:17:29 PM
WBS #:	
IMP/IMS #:	
Functional Groups:	Configuration Management, Eng
Risk Lead:	Graf, Lisa *
* required field	

- Filling out the risk information is easy.
- Initial risk input takes < 5 minutes.
- Additional time required for mitigation steps.

- Create a Risk Title.
- Confirm Open Date.
- Enter WBS #, IMP # if applicable.
- Check Functional Groups that may be affected by the risk.



Creating a Risk



File Edit View Favorites Tools Help

Administration - Risk Info

Page Tools

Likelihood

5	Green	Yellow	Red	Red	Red
4	Green	Yellow	Yellow	Red	Red
3	Green	Green	Yellow	Yellow	Red
2	Green	Green	Green	Yellow	Yellow
1	Green	Green	Green	Green	Yellow
	1	2	3	4	5

Consequence

Original Consequence (O): (4) Critical *

Original Likelihood (O): (4) Highly Likely *

Current Consequence (C): (4) Critical *

Current Likelihood (C): (2) Low Likelihood *

Residual Consequence (R): (2) Marginal

Residual Likelihood (R): (1) Not Likely

Risk Impacts

Cost: ☒

Schedule: ☒

Performance: ☒

Other: ☐

Affects the Critical Path: ☐

Done

Local Intranet Protected Mode On

• The Risk Matrix has three Risk Ratings:

- Original
- Current
- Residual

• Select Risk Impacts:

- Cost
- Schedule
- Performance
- Other
- Critical Path



Creating a Risk



File Edit View Favorites Tools Help

Administration - Risk Info

Description of Risk Condition: Clear and concise - cite only one Risk condition.	If there is a thunderstorm with high winds and lightning strikes occur, then loss of power to homes may occur and people may be without power.	← Description of Risk – One sentence – an “IF/THEN/MAY” statement.
Context: What, how, why, where of the risk condition.	If a thunderstorm occurs and high winds in excess of 60 mph occur (WHAT), then power lines may come down due to high winds (HOW) and loss of power may occur (WHAT). If lightning strikes occur (WHAT), then transformers may be hit and damaged (HOW) and loss of power may occur (WHAT). This may occur because power lines are exposed to the environment (WHY) and subject wind damage and lightning strikes. This can affect home and people (WHO) subdivision wide or to any building in the area that the power system supplies power to (WHERE).	← Context of the Risk – The “Who, What, Where, When, Why, How and How Much?” of the risk.
Consequence if realized: In terms of cost, schedule, performance and other.	If power is lost in a storm then homes will not have power. This can lead to loss of food in the refrigerator (COST), alarm clocks that don't work and people may be late to their jobs (SCHEDULE) and worrying about failed systems such as sump pump systems (PERFORMANCE) may cause performance issues at work to those affected.	← Consequence – The “So What if it Happens?”
Rationale for choosing that Mitigation plan: Comparison to other options, best benefit in terms of cost, schedule, performance, or impact on other teams. Click the button below to create or edit Mitigation Steps and Target Dates.	Mitigation Plans include: NOTE - the person writing this risk bought a generator to temporarily reduce the risk of power loss. This reduces the current risk, but is only a temporary interim mitigation steps. Final Mitigation Plan: 1. Surveying the power outage database for areas that experience high power loss. 2. Conducting a root cause analysis for the highest risk area as to what the reason is for the power outages. (NOTE - root cause determined to be wind damage in a high wind corridor). 3. Determine what the new requirements are for system performance (how many outages a year, for how many hours and due to what root cause is acceptable) (NOTE - it was determined that	← Mitigation Plan – Mitigation steps can be entered here or on the mitigation plan table. Mitigation steps should include target dates and persons responsible.

Mitigation Steps

Done Administration - Risk Info - Windows Internet Explorer Local intranet | Protected Mode: Off 100%



Creating a Risk



Changes must be Saved first before navigating off this web page

Summary (Click bar to expand/contract)

Mitigation Plan ID:	107
Name:	Bury Power Lines *
Status	In Risk Review Board
Open Date:	
Last Saved On Date:	6/4/2010 11:30:43 AM
Risk Mitigation Method:	Control *
Risk Review Frequency:	Daily *
Mitigation Plan Lead:	Graf, Lisa *
	* required field
Mitigation Plan Summary (Plan overview and desired end state; residual risk.):	The goal of the mitigation strategy is to put in long term and short term plans to reduce the risk of losing power so that the end state is that power will only be lost for a maximum of three hours at a time (the new requirement).
Desired End State. In Risk Assessment, "Residual" Risk.	

Mitigation Plan Details (Click bar to expand/contract)

Mitigation Steps (Click bar to expand/contract)

	Step	Mitigation	Due Date	Completion Date	Status	New Consequence	New Likelihood	Step Owner
Edit	01	Purchase a home generator	3/1/2010		Complete	(4) Critical	(2) Low Likelihood	Barb Dmoch
Edit	02	Conduct power outage survey.	3/4/2010		Complete	(4) Critical	(3) Moderate	Lisa Graf
Edit	03	Conduct power outage root cause analysis	3/8/2010		Complete	(4) Critical	(3) Moderate	Shawn Haase
Edit	04	Determine new reqmt for max. downtime allowed.	3/10/2010		Complete	(4) Critical	(3) Moderate	Cheryl Rasette
Edit	05	Conduct land availability survey	3/12/2010		Complete	(4) Critical	(3) Moderate	Matt Sheehy
Edit	06	Determine requirements for burying power lines.	3/15/2010		In Progress	(4) Critical	(3) Moderate	Mike Olsem
Edit	07	Formulate and present plan to management for approval.	3/17/2010		In Progress	(4) Critical	(3) Moderate	Mike Baker
Edit	08	Bury the power lines, complete job.	3/31/2010		Not Started	(2) Marginal	(1) Not Likely	Mark Mazzara
Edit	09	Demonstrate that time to repair of main line is <3 hours.	4/1/2010		Not Started	(2) Marginal	(1) Not Likely	Brian Graham
Edit	10	Monitor area for 5 years to determine how effective the plan has gone.	4/29/2015		Not Started	(2) Marginal	(1) Not Likely	Donna Brady

Mitigation Plan Table:

- Includes steps for mitigation.
- Indicates who is responsible and due dates.
- Shows the risks level accomplished with each step.

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100%

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Unclassified



Risk Recon Reports Detailed Risk Report – Excel



Risk Recon - Detailed Risk Report (FOUO)

HBCT Test Org / HBCT Test PMO / HBCT Training / HBCT Training / test three

Status	Current Con/Lik	Impact	Risk Title	Description of Risk Condition	Context	Consequence if Realized	Mitigation - Rational for Choosing that Mitigation Plan
Baselined	4/4	C/S/P/O	Hitting a deer	IF a driver hits a deer THEN their new car MAY be damaged.	The is a potential of hitting a deer.	Damage to a car.	1. Add additional fog lamps to vehicle by Jan. 1, 2010 2. Add anti-deer sound emitting device to vehicle. 3. Avoid roads at night and counter daylight risk with anti-deer sound emitting device to vehicle.
Baselined	4/2	C/S/P	Training Example - Loss of Power in Thunderstorms	If there is a thunderstorm with high winds and lightning strikes occur, then loss of power to homes make occur and people may be without power.	If a thunderstorm occurs and high winds in excess of 60 mph occur (WHAT), then power lines may come down due to high winds (HOW) and loss of power may occur	If power is lost in a storm then homes will not have power. This can lead to loss of food in the refrigerator (COST), alarm clocks that don't work and people may be	Mitigation Plans include: NOTE - the person writing this risk bought a generator to temporarily reduce the risk of power loss. This reduces the current risk, but is only a

- Risks can also be exported into an Excel spreadsheet.
- This allows for easy sorting, searching and customization for reports.
- User can also customize and save their own excel formats for download for the next time a report is run.



Risk Ranking and Pie Chart Summaries and Historical Comparisons



Summarize Risk Status (Matrix) Report (FOUO)

Level 1: HBCT Test Org
 Level 2: All
 Level 3: All
 Level 4: All
 Project: All

Summarize of Risk Status

8/2/2010

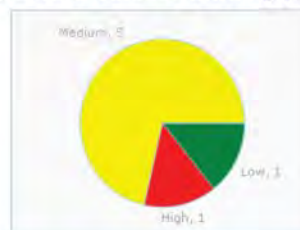
01/2019

Likelihood	Near Certainty 5	0	0	1	0
	Highly Likely 4	1	3	0	0
	Moderate 3	1	0	2	0
	Low 2	0	1	1	0
	Not Likely 1	0	0	0	0
		Negligible 1	Marginal 2	Moderate 3	Critical 4
	Consequence				

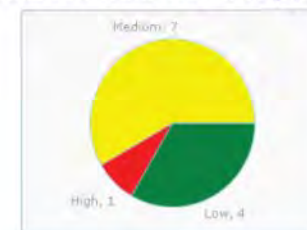
Risk Assessment Status (Pie Chart) Report (FOUO)

Level 1: HBCT Test Org
 Level 2: All
 Level 3: All
 Level 4: All
 Project: All

Risk Assessment Status (7/1/2010)



Risk Assessment Status (8/2/2010)



Report current as of 8/2/2010 4:27:35 PM

1

- Risks for a particular folder or a total program team can be depicted with risk matrix summaries or pie charts.
- Historical comparisons between dates can also be done.



Risk Recon Reports

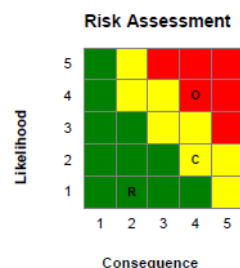
Risk Information Sheet



Risk Information Sheet (FOUO)

Risk Title: Loss of Power in Thunderstorms
User Defined ID:
Status: Baseline
Unique ID #: 659
Opened Date: 02/08/2010
Last Saved Date: 02/08/2010
Risk Lead: Graf, Lisa

Risk Information Team Members



Risk Impacts:

☒	Cost
☒	Schedule
☒	Performance
☐	Other:

Description of Risk Condition: If there is a thunderstorm with high winds and lightning strikes occur, then loss of power to homes make occur and people may be without power.

Context: If a thunderstorm occurs and high winds in excess of 60 mph occur (WHAT), then power lines may come down due to high winds (HOW) and loss of power may occur (WHAT). If lightning strikes occur (WHAT), then transformers may be hit and damaged (HOW) and loss of power may occur (WHAT). This may occur because power lines are exposed to the environment (WHY) and subject wind damage and lightning strikes. This can affect home and people (WHO) subdivision wide or to any building in the area that the power system supplies power to (WHERE).

Consequence if Realized: If power is lost in a storm then homes will not have power. This can lead to loss of food in the refrigerator (COST), alarm clocks that don't work and people may be late to their jobs (SCHEDULE) and worrying about failed systems such as sump pump systems (PERFORMANCE) may cause performance issues at work to those affected.

2/11/2010 9:01:12 AM

Page 1 of 2

rptRiskInfoSheet

Risk Information Sheet (FOUO)

Current Mitigation Plan(s) for this Risk:	Applied to Risk	Plan Name	Status
	X	Bury Power Lines	In Development

Rationale for choosing Mitigation Plan(s): Mitigation Plans include:
NOTE - the person writing this risk bought a generator to temporarily reduce the risk of power loss. This reduces the current risk, but is only a temporary interim mitigation steps.
Final Mitigation Plan:
1. Surveying the power outage database for areas that experience high power loss.
2. Conducting a root cause analysis for the highest risk area as to what the reason is for the power outages. (NOTE - root cause determined to be wind damage in a high wind corridor).
3. Determine what the new requirements are for system performance (how many outages a year, for how many hours and due to what root cause is acceptable) (NOTE - it was determined that only routine maintenance downtime was deemed acceptable for less than 3 hours).
4. Path forward was determined to be to bury the power lines.
5. Need to conduct grid survey to determine if easement land is available to bury the lines. (NOTE -)

- The "Risk Information Sheet" contains the majority of the information for the risk including the description of the risk, context, consequences and mitigation.
- It can be exported into an Acrobat .pdf file, Excel, CSV, etc.

Close-Out Rationale:

Mitigation Steps for the applied Plan

Step	Mitigation	Due Date	Status	New Con. Level	New Lik. Level	Step Owner
1	Purchase a home generator	03/01/2010	Complete	4 - Critical	2 - Low Likelihood	Barb Dmoch
10	Monitor area for 5 years to determine how effective the plan has gone.	04/29/2015	Not Started	2 - Marginal	1 - Not Likely	Donna Brady
2	Conduct power outage survey.	03/04/2010	Complete	4 - Critical	3 - Moderate	Lisa Graf
3	Conduct power outage root cause analysis	03/08/2010	Complete	4 - Critical	3 - Moderate	Shawn Haase
4	Determine new reqmt for max. downtime allowed.	03/10/2010	Complete	4 - Critical	3 - Moderate	Cheryl Rasette
5	Conduct land availability survey	03/12/2010	Complete	4 - Critical	3 - Moderate	Matt Sheehy
6	Determine requirements for burying power lines.	03/15/2010	In Progress	4 - Critical	3 - Moderate	Mike Olsem
7	Formulate and present plan to management for approval.	03/17/2010	In Progress	4 - Critical	3 - Moderate	Mike Baker
8	Bury the power lines, complete job.	03/31/2010	Not Started	2 - Marginal	1 - Not Likely	Mark Mazzara
9	Demonstrate that time to repair of main line is <3 hours.	04/01/2010	Not Started	2 - Marginal	1 - Not Likely	Brian Graham

2/11/2010 9:01:12 AM

Page 2 of 2

rptRiskInfoSheet



Risk Recon Reports Waterfall Chart/Burn Down Chart

Risk Waterfall Report (FOUO)

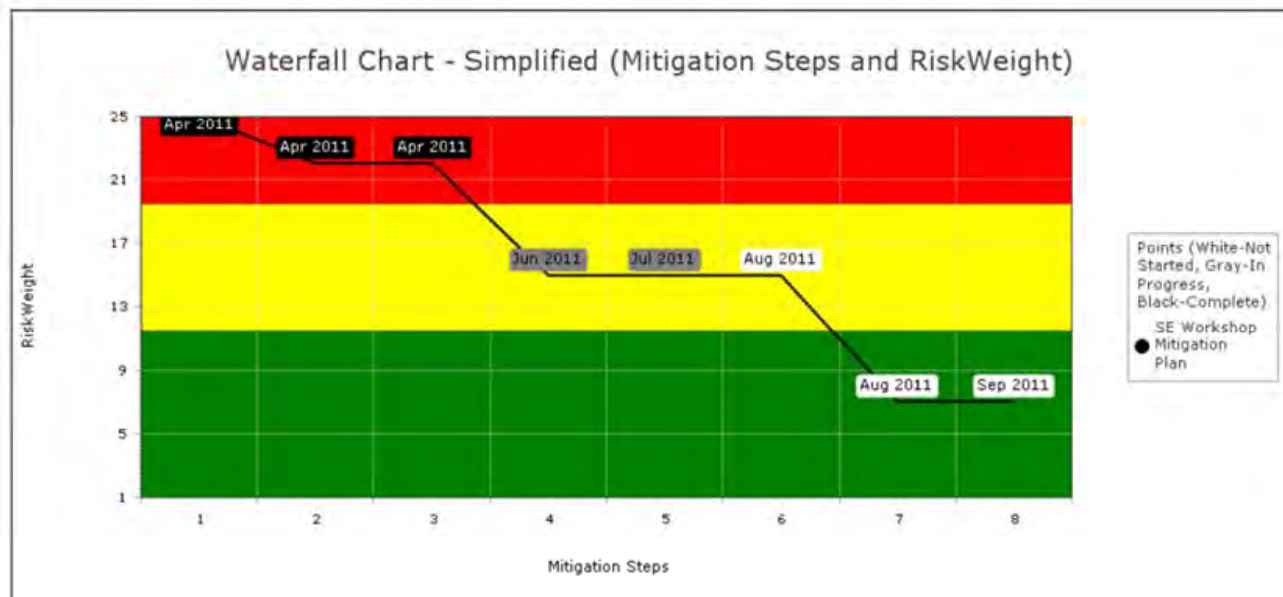
Risk ID: 1665

Risk: Systems Engineering (SE)
Workshop

Description of Risk Condition: If we do not properly plan for the SE Workshop, then we may not market our SE services effectively.

Consequence	Likelihood
4	4

Mitigation Steps						
Step	Mitigation	Due Date	Status	New L	New C	Step Owner
1	Establish objectives, budget and schedule.	4/1/2011	Complete	5	5	L. Graf
2	Finalize date and time.	4/29/2011	Complete	4	4	C. Crawford
3	Secure location.	4/29/2011	Complete	4	4	D. Whitehurst
4	Secure speakers and booth participants.	6/15/2011	In Progress	3	3	C. Crawford
5	Market event.	7/1/2011	In Progress	3	3	M. Russo
6	Set up for event.	8/1/2011	Not Started	3	3	M. Russo
7	Execute workshop.	8/2/2011	Not Started	2	2	SE Group
8	Begin providing SE services to new customers as applicable.	9/2/2011	Not Started	2	2	SE Group



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What happens when a risk becomes an issue?

Issue Management is a natural progression of risk management as risks that are not successfully mitigated become issues.

It is important to determine a way to formally manage program risks in order to focus efforts on top issues, communicate those issues to decision makers and stakeholders in a timely fashion, and create corrective action plan paths forward to resolve them.

The Issue Recon Database is tied to Risk Recon and allows for seamless traceability of risks, mitigation plans, issues and corrective action plans.

This allows the organizations using it to prioritize their work and resources for both risk and issues.



Risk Recon Based Issues Database

Create a new issue for project: test

Workflow Location: [Pre-Workflow state, save first.](#)

[Back to the Home Page](#)

[Save](#)

[Cancel](#)

[Issue Info Sheet](#)

[Documents](#)

[Corrective Action Team](#)

[Corrective Action\(s\)](#)

[Related Projects](#)

[Issue Lifecycle](#)

Changes must be Saved first before navigating off this web page

Issue Analysis (Click bar to expand/contract)

Issue ID:

User Defined Issue ID:

Issue Title:

Status

Baselined

Urgent:

Baselined

Check to alert APM/DPM of time sensitive issue

Candidate

Rework

In APM Review

In PM Review

Closed

Date Initiated:

Last Saved On Date:

Estimated Closure Date:

For the Issue Status, the IPT has proposed the following status options, listed in the shown dropdown.

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Issue Info Sheet (cont):

Create a new Issue for project
Workflow Location: **Pre-M**

[Back to the Home Page](#)

[Save](#)

[Cancel](#)

Issue Info Sheet

Documents

Changes must be Saved first before

Issue Analysis (Click bar to expand/collapse)

Issue ID:

User Defined Issue ID:

Issue Title:

Status

Urgent:

Check to alert APM/DPM of time sensitive issue

Date Initiated:

Last Saved On Date:

Due Date:

Estimated Closure Date:

Functional Groups:

- ☐ Logistics
- ☐ Engineering
- ☐ Contracting
- ☐ Test & Eval.
- ☐ Acquisition
- ☐ Safety
- ☐ Resource Mgmt / Finance
- ☐ Product Assurance
- ☐ Program Management
- ☐ Business Mgmt
- ☐ Configuration Mgmt
- ☐ Technical Mgmt
- ☐ International Programs
- ☐ Fabrication
- ☐ Training - ONLY FOR TRAINING USE
- ☐ Legal
- ☐ Security
- ☐ Requirements Management
- ☐ V6.3 Test Functional Group

Functional Groups...

Sub Group:

For the Functional Group pull down, a free form text field (that would appear only if at least one functional group box is checked) is requested to permit decomposition. For example, logistics could break down into spares, transportation, sustainment, convoys, etc. Others may include depots, FOBs, HHQ, AMC, ASA(ALT), ATOs, TTPs, etc.

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Issue Rating:

Create a new Issue for project: test
Workflow Location: [Pre-Workflow state, save first.](#)

[Back to the Home Page](#)

[Save](#)

[Cancel](#)

[Issue Info Sheet](#)

[Documents](#)

[Corrective Action Team](#)

[Corrective Action\(s\)](#)

[Related Projects](#)

[Issue Lifecycle](#)

Changes must be Saved first before navigating off this web page

Issue Analysis (Click bar to expand/contract)

Issue ID:	
User Defined Issue ID:	
Issue Title:	*
Status	Candidate
Urgent:	☐
Check to alert APM/DPM of time sensitive issue	
Date Initiated:	2/11/2011 *
Last Saved On Date:	
Estimated Closure Date:	
Date Closed:	
Functional Groups:	Functional Groups...
Issue Owner:	Torres, Dan *
Priority:	High Medium Low

Ideally, the Priority pull-down menu would shade red/yellow/green based on the rating. The IPT still needs to determine if more dimensions are required.

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Issue Impacts:

Issue Impacts	
Cost:	☒ Sustainment ☒ Contract Revision ☒ MIPR Required ☒ RFI Required ☒
	Operations ☒ Validation ☒ Spares ☒ TD/EMD ☒
	Labor/Overtime ☒ WD Required ☒ Training ☒ Capital ☒

Issue Impacts	
	Acceptance Testing ☒ Analysis ☒ Procurement ☒
Schedule:	☒ Development (TD/EMD) ☒ Deployment ☒ Redlined ☒
Affects the Critical Path:	☐ Characterization ☒ FRP Decision ☒ Contracting ☒

Issue Impacts	
	KPP/KSA ☒ Comms ☒ Maintainability ☒ Transportability ☒ Mobility ☒
	DOTLPF ☒ Consumption ☒ Force Protection ☒ Op Effectiveness ☒ Lethality ☒
Performance:	☒ Power ☒ Survivability ☒ Network/C4I ☒ Reliability ☒
Other:	☐

Nested check boxes to show further granularity to describe impacts. "Nested" means optional check boxes only appear when the main impact (Cost/Schedule/Performance) is checked.



Corrective Action Tab:

This is a tab with more fields to define complex corrective actions vs. a simple issue resolution. This tab does not have to be used. Later increments could include links to root cause methods. The pull down help menu will have reference documentation available for root cause determination.

Home Administration Reports Actions New Users Help

User: Dan Torres
Project: HBCT Test Org > HBCT Test PMO > HBCT Training > HBCT Training > test

Classified data must not be stored in this risk management tool

Edit Issue: Drop down icon is not working
Workflow Location: [Archived](#)

Back to the Home Page View History

Save Cancel Revive

Issue Info Sheet Documents **Corrective Action Team** Corrective Action(s) Related Projects Issue Lifecycle

Select a method to enter corrective action plan(s):

- ☐ Immediate Corrective Action
- ☐ Short-Term Containment Action
- ☐ Permanent Corrective Action

This screen will allow the user to check the type of corrective action plan they want to enter. Numerous corrective actions plans can be entered for each method.



Corrective Action Status:

Mitigation Plan ID:	423
Name:	Bury Power Lines
Status:	Executing
Open Date:	Select a Status
Last Saved On Date:	Closed
Corrective Action Method:	Executing
Plan Review Frequency:	In Development
Corrective Action Lead:	Rework
	In APM Review
	In PM Review

Corrective Action Status

Corrective Action Method:

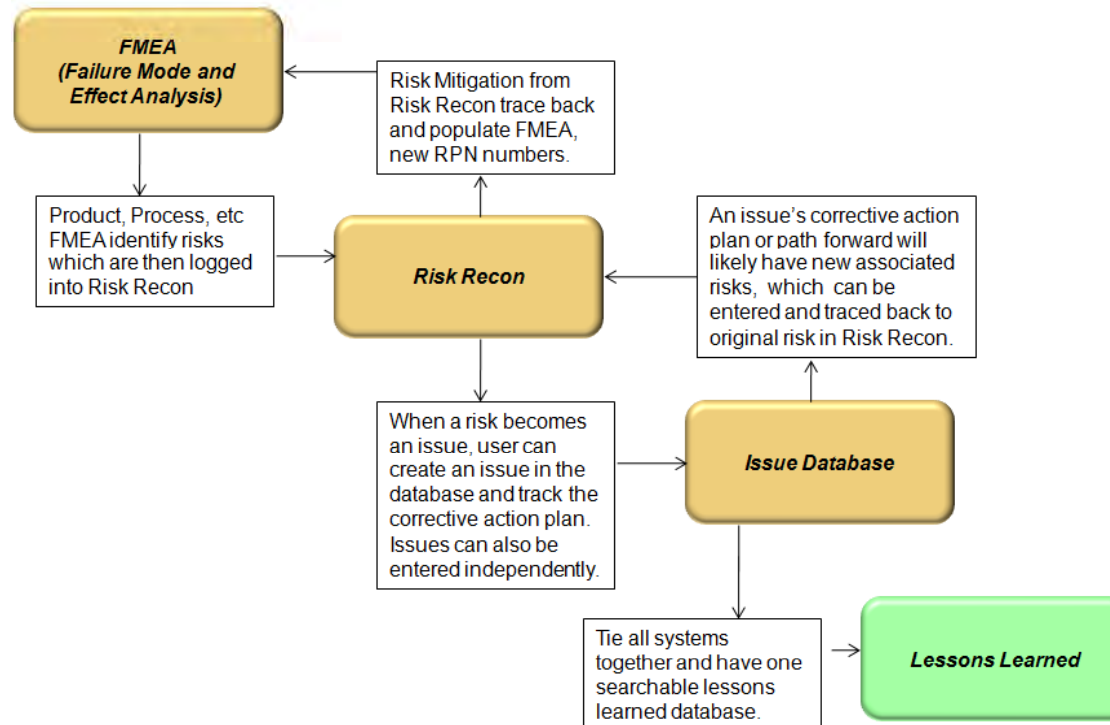
Corrective Action Methods..

- ☐ Containment
- ☐ Resolution
- ☐ Doctrine Change
- ☐ ECP
- ☐ Field Modification/Retrofit
- ☐ Training
- ☐ Assume
- ☐ Transfer

More than one method should be permitted for a single corrective action plan



Risk Management as an Integrated Approach.



Conducting risk management as a proactive, integrated approach will shorten design time, help avoid program mistakes, and deliver a higher quality system to the warfighter in reduced time.

Do it right the first time!

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Resources

- **Risk Management Guide for DOD Acquisition,**
<http://www.acq.osd.mil/sse/docs/2006RMGuide4Aug06finalversion.pdf>
- **Risk Recon :**
 - To set up training on how to use Risk Recon, or to get your program set up to use the tool, contact:
 - Becky Addis - 586-214-2582 – rebecca.l.addis.civ@mail.mil
 - Lisa Graf – 586-306-2572 - lisa.j.graf2.civ@mail.mil
- **Issue Management IPT:**
 - To join the Issues Management IPT or to use the Issues Management tool starting March 2012, contact:
 - Dawn Packard – 586-282-8827 – dawn.m.packard2.civ@mail.mil
- **FMEA Training:**
 - Kadry Rizk – 586-282-5403 - kadry.w.rizk.civ@mail.mil
 - Gregor Rataczak – 586-282-4618 - gregor.a.rataczak.civ@mail.mil

