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

Prepared by: Lisa Graf
Deputy Associate Director
TARDEC Systems Engineering
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**Report Documentation Page**

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Standard Form 298 (Rev. 8-98)  
Prescribed by ANSI Std Z39-18
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

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

Risk Assessment

• Study WBS, SOW, IMP/IMS, EVM.
• Lessons learned.
• Review IPTs’ areas of responsibility.
• Ask “why” multiple times.

Risk Handling / Mitigation

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

Risk Monitoring

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

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.

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 big is the risk?
• Consider likelihood of root cause occurrence.
• Identify consequences in (Cost, Schedule, and Performance).

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.
Risk Identification Resources
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?

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<tr>
<th>Program Management</th>
<th>Sustainment</th>
<th>Human System Int.</th>
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<tr>
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Other Areas to Consider

- Project Scope
- Resources
- Threat
- Schedule
- Technical Risk/Design
- Performance
- Processes
- Production
- Requirements
- Software
- Life Cycle
- COTS Considerations
- Environmental
- Lessons Learned
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

USAF Risk Identification, Integration and Illities

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

<table>
<thead>
<tr>
<th>Approach</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Avoid:</strong></td>
<td>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”).</td>
</tr>
<tr>
<td><strong>Transfer:</strong></td>
<td>Develop a strategy to place the risk with the party most able to do something about it.</td>
</tr>
<tr>
<td><strong>Assume:</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Control:</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Watch:</strong></td>
<td>Monitor and periodically re-evaluate the risk for change.</td>
</tr>
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</table>
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.
Maximizing Risk Management:

**FMEA (Failure Mode and Effect Analysis)**

- Risk Mitigation from Risk Recon trace back and populate FMEA, new RPN numbers.
- Product, Process, etc FMEA identify risks which are then logged into Risk Recon.

**Risk Recon**

- An issue’s corrective action plan or path forward will likely have new associated risks, which can be entered and traced back to original risk in Risk Recon.
- When a risk becomes an issue, user can create an issue in the database and track the corrective action plan. Issues can also be entered independently.

**Issue Database**

- Tie all systems together and have one searchable lessons learned database.

**Lessons Learned**
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.*

Unclassified
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
**How does FMEA work?**

**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.

---

**Output**
- Hot dog ready for bun placement

**Inputs**
- Grill (hot)
- Hot dog (cooked)
- Tongs (min 10 inch length)

---

**Output**
- Completed hot dog sub-assy

**Inputs**
- Bun (fresh)
- Hot dog (still hot)
- Tongs (min 10 inch length)

---

**Output**
- Hot dog ready to eat

**Inputs**
- Ketchup (Heinz)
- Mustard (yellow)
- Onions (chopped)
- Chili (no beans)
- Hot dog sub-assy

*Unclassified*
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!

<table>
<thead>
<tr>
<th>Bin or step # from VBS, Process Map, or other</th>
<th>Process step function / requirements</th>
<th>Potential Failure Mode</th>
<th>Potential Failure of Failure</th>
<th>Appraisers</th>
<th>Potential Causes / Mechanisms of Failure</th>
<th>Occurence</th>
<th>Current Process Controls Prevention</th>
<th>Current Process Controls Detection</th>
<th>Effect</th>
<th>R.P.M.</th>
<th>Recommended Actions</th>
<th>Responsibility &amp; Target Completion Date</th>
<th>Action Results</th>
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<tbody>
<tr>
<td>1</td>
<td>Remove hot dog from grill</td>
<td>Hot dog is not ready</td>
<td>Delay: customer hungry</td>
<td>7</td>
<td>Grill is not hot</td>
<td>1</td>
<td>None</td>
<td>Temperature gauge on grill</td>
<td>1</td>
<td>7</td>
<td></td>
<td>G. Ratyczak One week prior to BBQ</td>
<td>Shopping list and RSVP list kept together, updated as guests call in</td>
</tr>
<tr>
<td>2</td>
<td>Place hot dog in bun</td>
<td>Hot dog not in bun</td>
<td>Delay: Rewarm or get new hot dog</td>
<td>7</td>
<td>Operator error, missed bun</td>
<td>1</td>
<td>Handeye coordination</td>
<td>None</td>
<td>2</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Add condiments</td>
<td>Hot dog does not meet end of line requirements (condiments missing)</td>
<td>Minor delay: more work needed</td>
<td>3</td>
<td>Favorite condiment not available (not present)</td>
<td>5</td>
<td>None</td>
<td>None</td>
<td>10</td>
<td>159</td>
<td>Use list while shopping to minimize mistakes/missing items</td>
<td>G. Ratyczak Two days prior to BBQ</td>
<td>Shopping list used at store</td>
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<tr>
<td>4</td>
<td></td>
<td>Hot dog does not meet end of line requirements (unwanted condiments added)</td>
<td>Major delay: Scrap hot dog, start over</td>
<td>9</td>
<td>Wrong condiment added to hot dog</td>
<td>9</td>
<td>None</td>
<td>None</td>
<td>10</td>
<td>81</td>
<td>Do not apply condiments until customer is present</td>
<td>G. Ratyczak Day of BBQ</td>
<td>No hot dogs 'built' without customer present</td>
</tr>
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Unclassified
How does FMEA work?

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!

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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?

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<tbody>
<tr>
<td>1</td>
<td>Remove hot dog from grill</td>
<td>Hot dog is not “ready”</td>
<td>Delay: customer hungry</td>
<td>6</td>
<td>None</td>
<td>Use grill marks to indicate fully cooked status</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>Remove hot dog from grill</td>
<td>Hot dog is not “ready”</td>
<td>Delay: customer hungry</td>
<td>7</td>
<td>Insufficient hot dog supplies, ran out</td>
<td>Educated guess on needs</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Place hot dog in bun</td>
<td>Hot dog incorrectly positioned in bun</td>
<td>Dissatisfaction: Customer will have difficulty eating, or may have to adjust hot dog manually</td>
<td>5</td>
<td>None</td>
<td>None</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Add condiments</td>
<td>Hot dog does not meet end of line requirements (condiments missing)</td>
<td>Minor delay; more work needed</td>
<td>3</td>
<td>None</td>
<td>None</td>
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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.
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

Paladin Integrated
Management
Abrams
Bradley
PEO GCS
Stryker
RS JPO
PEO AMMO
PM CAS
TARDEC
OCS
TARDEC
HPLwT
PEO LS (USMC)
PM LAV
TARDEC
KE APS ATO
ARDEC
CMR
ARDEC
ALAS-MC
MARCORSYSCOM
PG-15
(USMC/Navy)
TARDEC
RAMP
TARDEC
RBG
GVPM
PEO IEWS
TARDEC
CGVDI
Risk Management Process Workflow

Risk Management Process

Risk Planning
1. Identify program/project for risk management
2. Allocate resources
3. Create Risk Management Plan, including project roles and responsibilities
4. Identify project opportunity, schedule and performance
5. Assign a Risk Recon Tool Administrator
6. Create a project in Risk Recon to enter risks

Risk Assessment
7. Enter risk in to Risk Recon
8. Access likelihood and consequence of each risk
9. Submit risk to Risk Manager for review
10. Risk Mgr: Approved?
11. Risk Mgr: Submit to RRB: Review Board
12. RRB: Approved?

Risk Handling / Mitigation
13. Lead: Create handling/mitigation plan
14. Lead: Submit handling/mitigation plan to Risk Manager for review
15. Risk Mgr: Approved?
16. Risk Mgr: Submit handling/mitigation plan to Project Leader for review
17. Proj. Lt: Submit handling/mitigation plan for review
18. Proj. Lt: Selected, Approved?
19. RRB: N
20. Implement handling/mitigation plan

Risk Monitoring
21. Risk Mgr: Monitor risk handling/mitigation plan working?
22. RRB: Y
23. RRB: N
24. Risk Mgr: Project completed?
25. RRB: Y

Risk Recon Process
MRAP Program under PEO CS/CSS

Risk Management Process

Tailored MRAP JPO Risk Management Process

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

(Available in Risk Recon under “Help” and “Tip Sheet”)

“Knowing our risks provides opportunities to manage and improve our chances of success.”
—Roger Vanscoy

Consequence Table

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

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 potential variation in the planned approach and expected 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). |

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Creating a Risk

- 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

Filling out the risk information is easy.

- Initial risk input takes < 5 minutes.

The Risk Matrix has three Risk Ratings:
- Original
- Current
- Residual

Select Risk Impacts:
- Cost
- Schedule
- Performance
- Other
- Critical Path
Creating a Risk

Description of Risk – One sentence – an “IF/THEN/MAY” statement.


Consequence – The “So What if it Happens?”

Mitigation Plan – Mitigation steps can be entered here or on the mitigation plan table. Mitigation steps should include target dates and persons responsible.
Creating a Risk

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

<table>
<thead>
<tr>
<th>Step</th>
<th>Mitigation</th>
<th>Due Date</th>
<th>Completion Date</th>
<th>Status</th>
<th>New Consequence</th>
<th>New Likelihood</th>
<th>Step Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit</td>
<td>Purchase a home generator</td>
<td>3/1/2010</td>
<td>Complete</td>
<td></td>
<td></td>
<td></td>
<td>Barb Dromsh</td>
</tr>
<tr>
<td>Edit</td>
<td>Conduct power outage survey</td>
<td>3/4/2010</td>
<td>Complete</td>
<td></td>
<td></td>
<td></td>
<td>Lisa Graf</td>
</tr>
<tr>
<td>Edit</td>
<td>Conduct power outage root cause analysis</td>
<td>3/8/2010</td>
<td>Complete</td>
<td></td>
<td></td>
<td></td>
<td>Shawn Haase</td>
</tr>
<tr>
<td>Edit</td>
<td>Determine new req for mau. downtime allowed</td>
<td>3/10/2010</td>
<td>Complete</td>
<td></td>
<td></td>
<td></td>
<td>Cheryl Barrette</td>
</tr>
<tr>
<td>Edit</td>
<td>Conduct land availability survey</td>
<td>3/12/2010</td>
<td>Complete</td>
<td></td>
<td></td>
<td></td>
<td>Matt Sheehy</td>
</tr>
<tr>
<td>Edit</td>
<td>Determine requirements for burying power lines</td>
<td>3/15/2010</td>
<td>In Progress</td>
<td></td>
<td></td>
<td></td>
<td>Mike Ollem</td>
</tr>
<tr>
<td>Edit</td>
<td>Formulate and present plan to management for approval</td>
<td>3/17/2010</td>
<td>In Progress</td>
<td></td>
<td></td>
<td></td>
<td>Mike Baker</td>
</tr>
<tr>
<td>Edit</td>
<td>Buy the power lines, complete jobs</td>
<td>3/31/2010</td>
<td>Not Started</td>
<td></td>
<td></td>
<td></td>
<td>Mark Mazzara</td>
</tr>
<tr>
<td>Edit</td>
<td>Demonstrate that time to repair of main line is &lt; 3 hours</td>
<td>4/1/2010</td>
<td>Not Started</td>
<td></td>
<td></td>
<td></td>
<td>Brian Graham</td>
</tr>
<tr>
<td>Edit</td>
<td>Monitor area for 5 years to determine how effective the plan has gone</td>
<td>4/29/2015</td>
<td>Not Started</td>
<td></td>
<td></td>
<td></td>
<td>Donna Brady</td>
</tr>
</tbody>
</table>
### Risk Recon - Detailed Risk Report (FOUO)

<table>
<thead>
<tr>
<th>Status</th>
<th>Current Con/Lik</th>
<th>Impact</th>
<th>Risk Title</th>
<th>Description of Risk Condition</th>
<th>Context</th>
<th>Consequence if Realized</th>
<th>Mitigation - Rational for Choosing that Mitigation Plan</th>
</tr>
</thead>
</table>
| Baseline | 4/4 | C/S/P/O | Hitting a deer | If a driver hits a deer THEN their new car MAY be damaged. | This 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. |
| Baseline | 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 may 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 power to the refrigerator (COST), alarm clocks that don't work and people may be...
\[
\text{Mitigation Plans include:} \\
\text{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 solution.}} \\
\text{Other people can plug in...} \\
\text{Other people can plug in...} |

- 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

- 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.
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.
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.

Mitigation Steps

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

Waterfall Chart - Simplified (Mitigation Steps and Risk Weight)

Points (White: Not Started, Gray: In Progress, Green: Complete)

SE Workshop
Mitigation Plan

Acquisition Excellence
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.*
### Create a new issue for project: test

**Workflow Location:** Pre-Workflow state, save first.

<table>
<thead>
<tr>
<th>Issue ID:</th>
<th>Status: Baselined</th>
<th>Urgent: Baselined</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Defined Issue ID:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issue Title:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Candidate**
- **Rework**
- **In APM Review**
- **In PM Review**
- **Closed**

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

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.
### Issue Impacts:

#### Cost:
- Sustainment
- Contract Revision
- MIPR Required
- RFI Required
- Operations
- Validation
- Spares
- TD/EMD
- Labor/Overtime
- WD Required
- Training
- Capital

#### Schedule:
- Acceptance Testing
- Analysis
- Procurement
- Development (TD/EMD)
- Deployment
- Redlined
- Characterization
- FRP Decision
- Contracting

#### Performance:
- KPP/KSA
- Comms
- Maintainability
- Transportability
- Mobility
- DOTLPF
- Consumption
- Force Protection
- Op Effectiveness
- Lethality
- Power
- Survivability
- Network/C4I
- Reliability

______________

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.

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:

- Corrective Action Status
- Corrective Action Methods
- 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!
Resources


• 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