Risk Recon Overview

Risk Recon Overview
Prepared by: Lisa Graf and Mike Olsem
October 28, 2010

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 plans in place to mitigate or prevent issues from occurring –* ***doing it right the first time.***
- *Minimize or prevent cost overruns, schedule delays, and performance problems*
- *Product and design quality are improved.*
- *Optimal usage of resources.*
- *Promoting teamwork and system engineering.*
- *Improved communications with stakeholders and decision makers.*

What is a risk?

Risk Defined

Risk is the potential of *future* uncertainties in achieving program performance goals and objectives within established baselines of cost, performance and schedule constraints.

If the item being described has already occurred in real time, or there's a 100% likelihood it will occur, it is an ISSUE and not a RISK.

The words IF, THEN and MAY in a problem statement indicates that something has not yet occurred, but has the potential to occur in the future, hence it is a risk.

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.

Risk Affects Everyone…

Even on a beautiful day, though the likelihood is low, there is still the risk of loss of power from a thunderstorm.

Lightning has the *potential* to hit your house or a power tower during a storm.

If the lightning strike hits your house or a power tower *then* power to the house *may* be lost, and the consequence could be that your alarm clock may not go off, making you late for work.

Risk Mitigation

In the previous example of a risk of loss of power during a thunderstorm, the risk is the loss of power, the consequence is that you might be late to work, but what can be done to mitigate this risk from becoming an issue?

The goal of risk management is to mitigate risks to prevent them from becoming issues. In this case, mitigation steps and action plans could include:

- Installing a back-up generator in your home's electrical system
- Having the electrical company bury power lines underground to reduce the risk of downed power lines due to high winds.
- Add lightning rods to the top of your house to ground the lightning strike.

Each of these plans can help mitigate the risk, though each has a different impact to the risk consequence and likelihood. Some plans are more successful and easier to achieve than others.

Key Components of Risk

A Risk is composed of three key components:

1. **Future root cause** (yet to happen), which, if mitigated, eliminated or corrected, would prevent or minimize a potential consequence from occurring

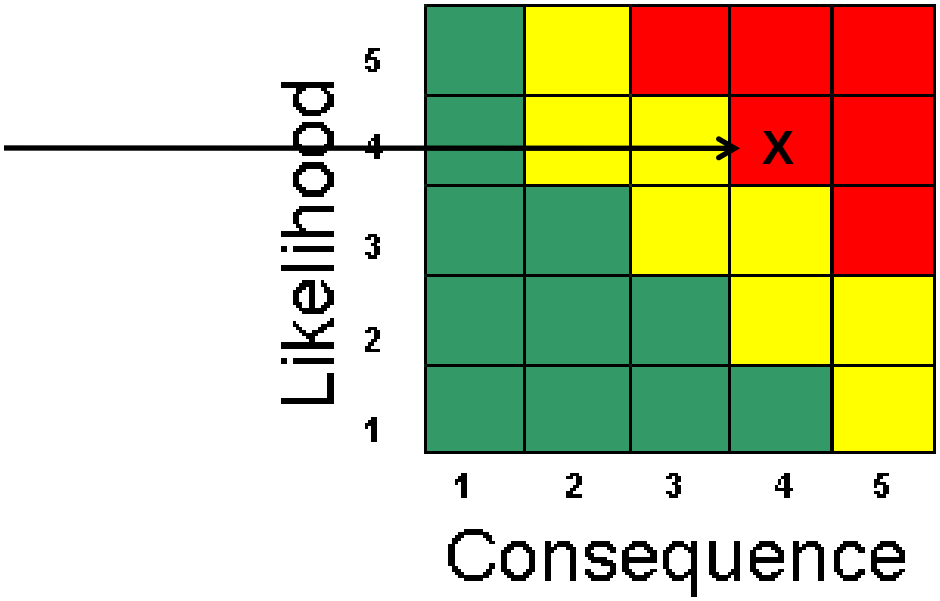
2. **Likelihood**, or probability of the future root cause event occurring

3. **Consequences**, or impact to the project, of the future event occurring.

Risk Matrix

The likelihood and consequences are tracked in a risk matrix (*see below*). Their combined values form a risk rating or assessment of high, medium or low.

Risk Rating (4,4)



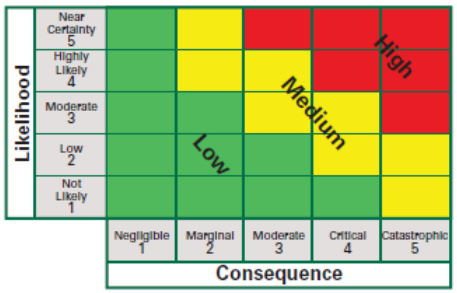
Risk Rating = Likelihood X Consequence

- Likelihood describes the probability of the event occurring.
- Consequence denotes the magnitude of loss.

Consequence Guidance

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

Risk Recon Risk Management Tip Sheet



"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 breech 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 *potential* 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).

Likelihood Guidance

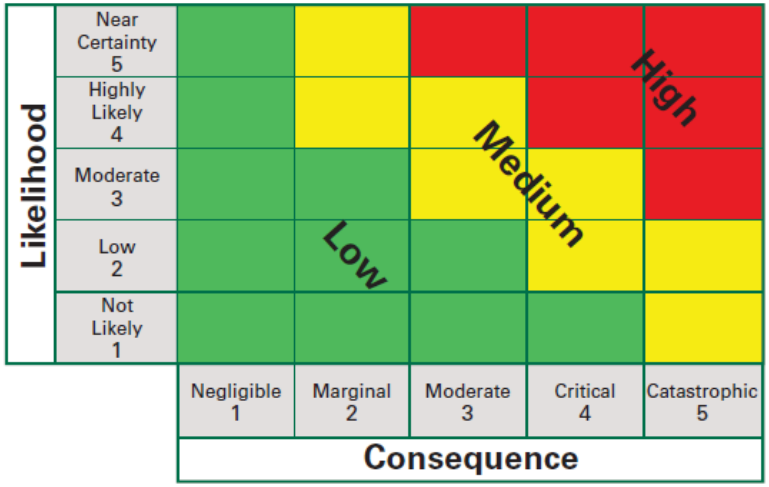
(Available in Risk Recon under "Help" and "Tip Sheet")

Risk Recon Risk Management Tip Sheet

Risk Recon Website:
https://peoportalap.tacom.army.mil/riskmgmt

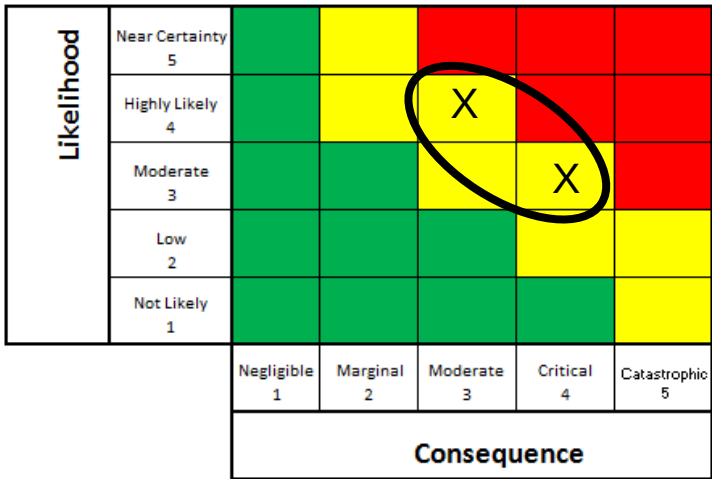
POCs: **Lisa.Graf@us.army.mil**
George Wiklund@us.army.mil

Risk Information Sheet	
Description of Risk Condition	State the risk in one clear and concise sentence, creating an "IF...THEN...MAY" statement or a brief description.
Context	Details of the risk - the Who, What, Where, When, Why, How and How Much of the risk.
Consequence	What are the impacts to the program in terms of Cost, Schedule, Performance or Other if this risk becomes an issue.
Mitigation Plan	This is the detailed mitigation plan - what will be done to mitigate the risk. List steps with due dates, owners and impact to the risk.
CloseOut Rationale	List the agreed upon details for closing this risk - who agreed to close it at what meeting, date and for what reasons.

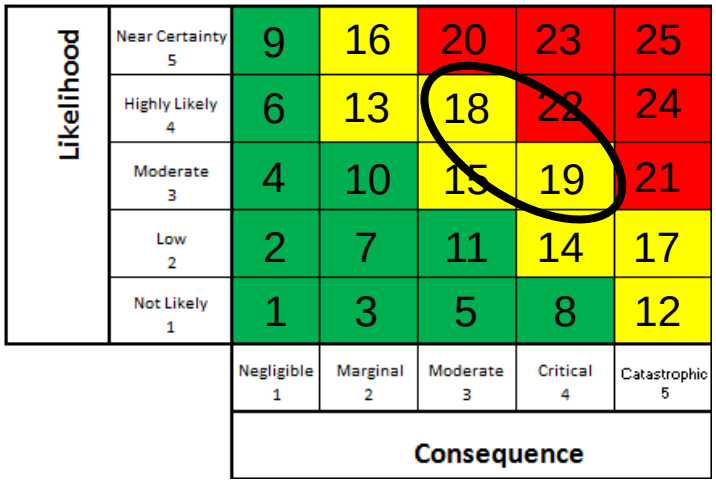


Likelihood - Probability Levels and Indicators
5 (Near Certainty) - Assume & anticipate occurrence (>90%) Approach and processes cannot mitigate risk; Immature technology; System very complex
4 (Highly Likely) - Very high chance of occurrence (>65% to 90%) Approach and processes not well documented; Technology available but not validated
3 (Moderate) - Significant chance of occurrence (> 40% to 65%) Approach and processes are partially documented; Un-validated technology has been shown to be feasible by analogy, test, or analysis
2 (Low Likelihood) - Occurrence possible but less than likely (10% to 40%) Current approach and processes understood & documented; most technology has been validated
1 (Not Likely) - Occurrence is possible but very unlikely (<10%) Approach and processes are well understood and documented

Ranking of Risk Ratings



A "4,3" and "3,4" – Which Rates Higher?



Risk Recon Weighted Ratings

One thing that is important to note is that the consequence rating is typically weighted higher than the equivalent likelihood number. For instance – a "4,3" where the consequence is the "4" is weighed higher than a "3,4" where the likelihood is a 4. This is because the consequence is viewed as of slightly higher importance than the likelihood. This is also used as they way risks are organized in a hierarchy for risk reports – those equivalent risk numbers (example "3,5" or "5,3") are ranked with the higher consequence number first.

See the "Risk Recon Weighted Ratings" chart as an example of the risk rating matrix that software uses to organize the hierarchy of risk ratings. Each risk management software will likely have some sort of ranking system, so consult the guidebook for the software you are using to determine what the ranking is.

History of Risk Mgmt. at PEO GCS

- PEO GCS Six Sigma Green Belt project – 2005
  - Flow diagram & templates developed and approved
  - Flow diagram & templates posted to web portal site
- Tool Evaluation – 2007
  - Some tools were expensive with security issues
  - Some tools did not match approved process
  - Develop new tool (Risk Recon): Portal Dynamics
- Policy Letter – 2008
- SOP developed - 2008
- IPT Reconstituted - 2008

Risk Recon – Risk Management Tool Benefits

• ***Ease of Use*** - The software is easy to use – training of personnel takes approximately 1 hour.

• ***Lessons Learned -*** Uniform Method for Capturing and Reporting Data – Captures data in a centrally accessible, secure location. This provides for a lessons learned database that is searchable for all new programs.

• ***Imbedded Reporting*** – Risk Recon has several built-in reporting options including an Executive Summary and export to an Excel spread sheet. Future upgrades include metrics for monitoring mitigation plans, MS Project integration, Issues database, etc.

• ***Integrated Process Flow*** – Risk Recon has an integrated work process flow in the software as well as a notification system for when new risks are created. Future upgrades include the ability to mail updates notices to team members.

• ***Attachments*** – Risk Recon has an attachment function so that the team can attach briefs, data etc to the risk – saves time on updating the risk status and eliminates duplication of effort.

• ***No Cost*** – Since Risk Recon is owned by the US Army, there is no program cost for using this database.

Risk Recon – Risk Management Tool Benefits

• ***Traceability*** - There is 100% traceability for risk history – nothing is ever permanently deleted.

• ***Accessibility*** - It is a database that everyone can access – unlike an excel spreadsheet that can only be accessed by one person at a time and lacks traceability. The software can be accessed by all DoD locations and off-site with a user name and password. Access can be limited down to the project level.

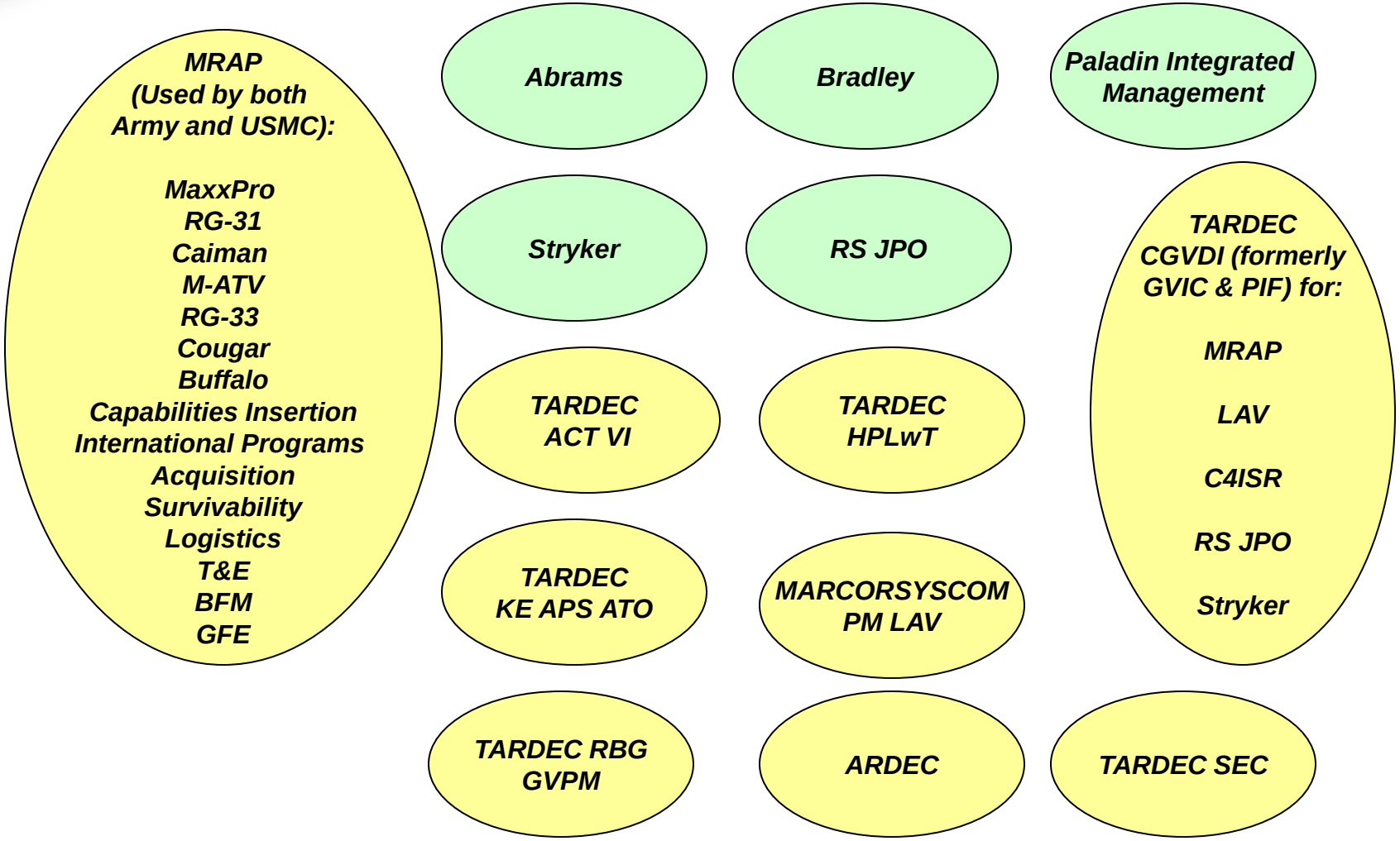
• ***Server Based Application*** - The software runs from a server – "unlimited" users at one time.

• ***Data Storage*** - There is virtually unlimited storage for risks – memory limitation is not a concern.

• ***Security*** - It is secure for information including FOUO – Classified information is not permitted, though classified teams do use the database with "code" language.

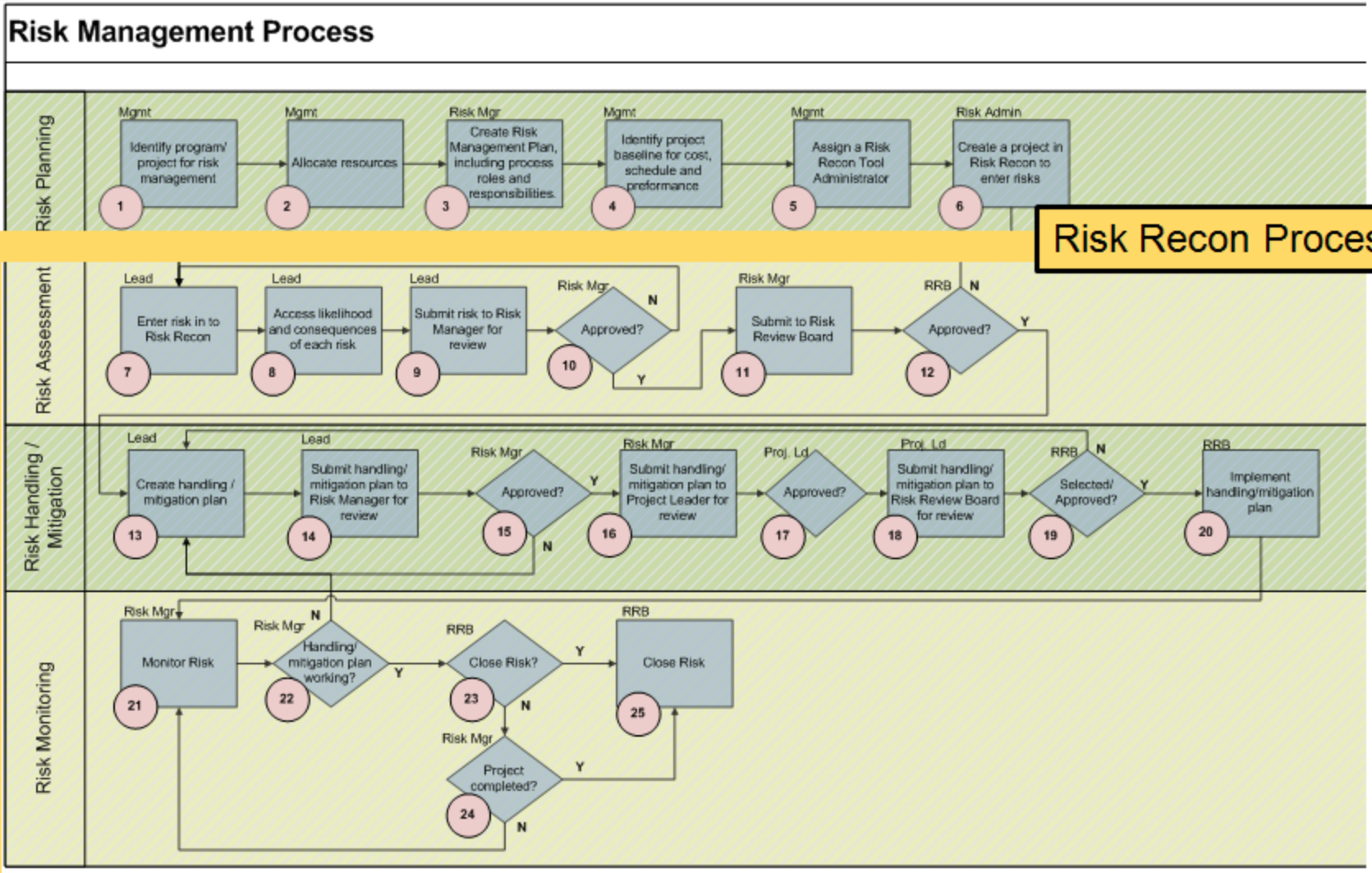
• ***Customization*** – The tool is owned by PEO GCS but overseen by the Risk Recon IPT represented by all user groups. This allows all users to have input in requesting upgraded features for future versions of Risk Recon.

Current Risk Recon Users ~ 1000 users:

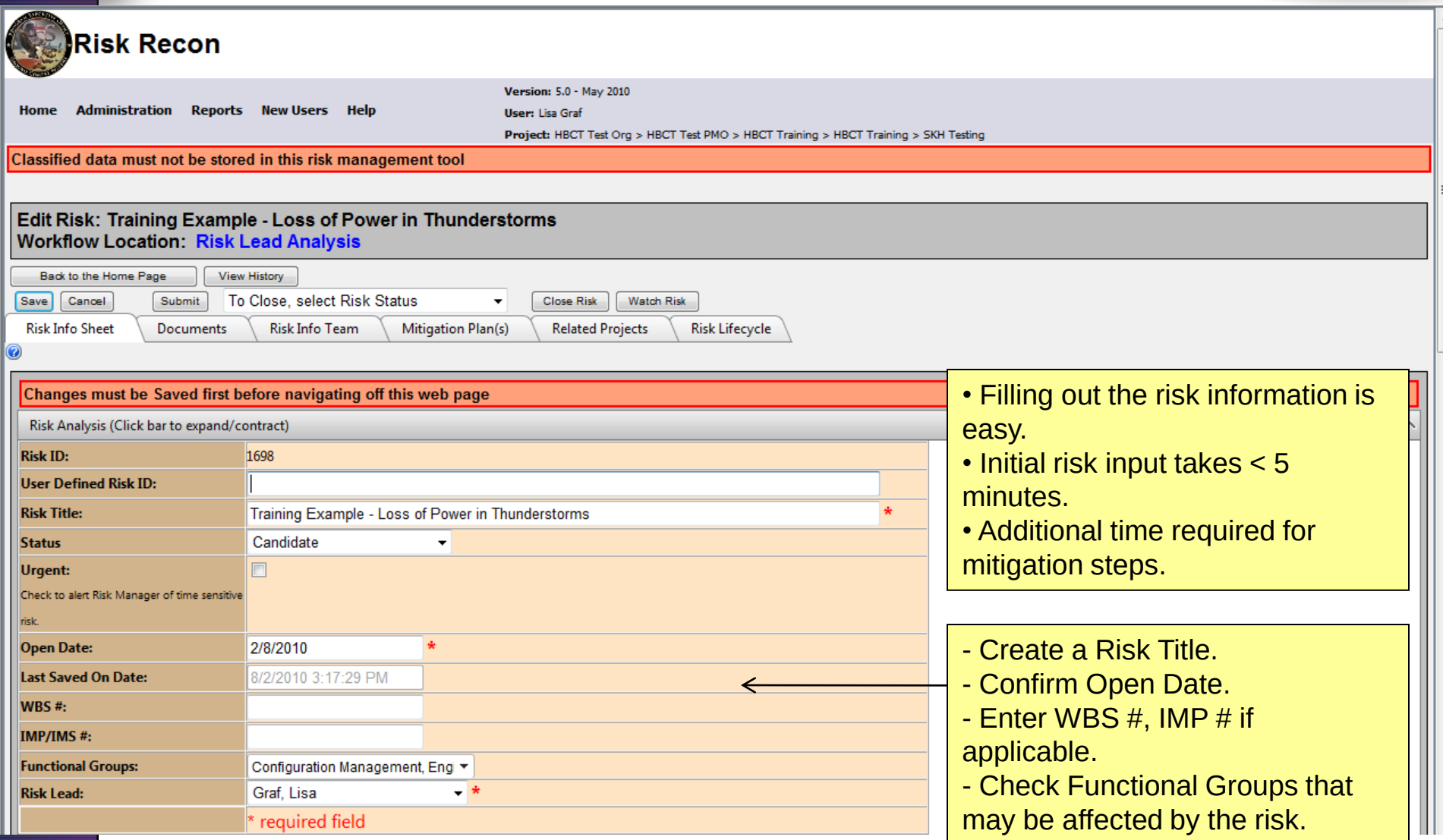


Set-up and trained by TARDEC

Risk Management Process Workflow



Creating a Risk



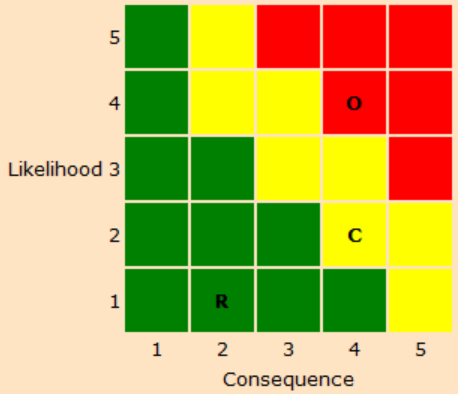
- Filling out the risk information is easy.
- Initial risk input takes < 5 minutes.
- Additional time required for mitigation steps.

- 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

File Edit View Favorites Tools Help

Administration - Risk Info



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

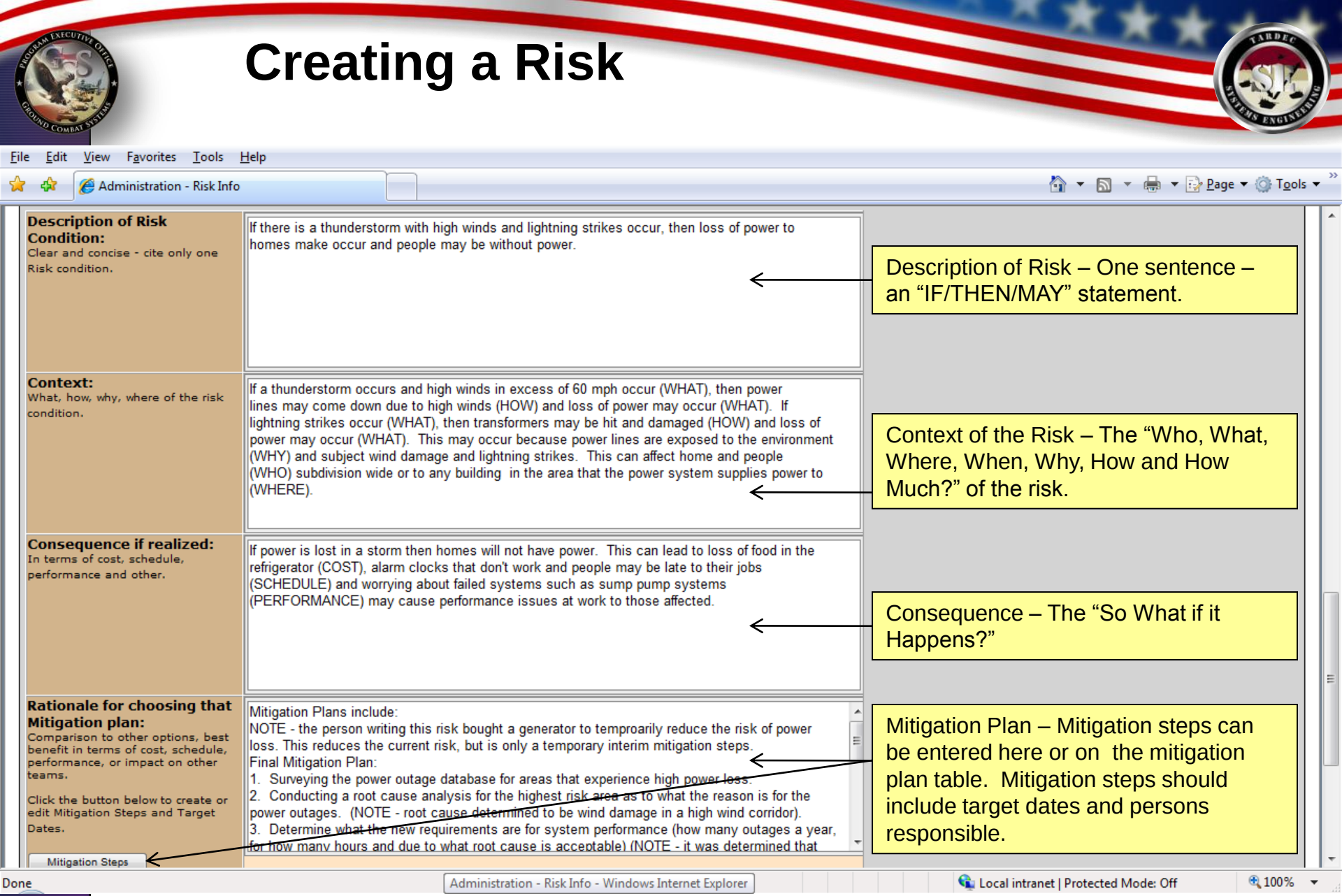
Risk Impacts	
Cost:	☑
Schedule:	☑
Performance:	☑
Other:	☐
Affects the Critical Path:	☐

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

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

Done

Creating a Risk



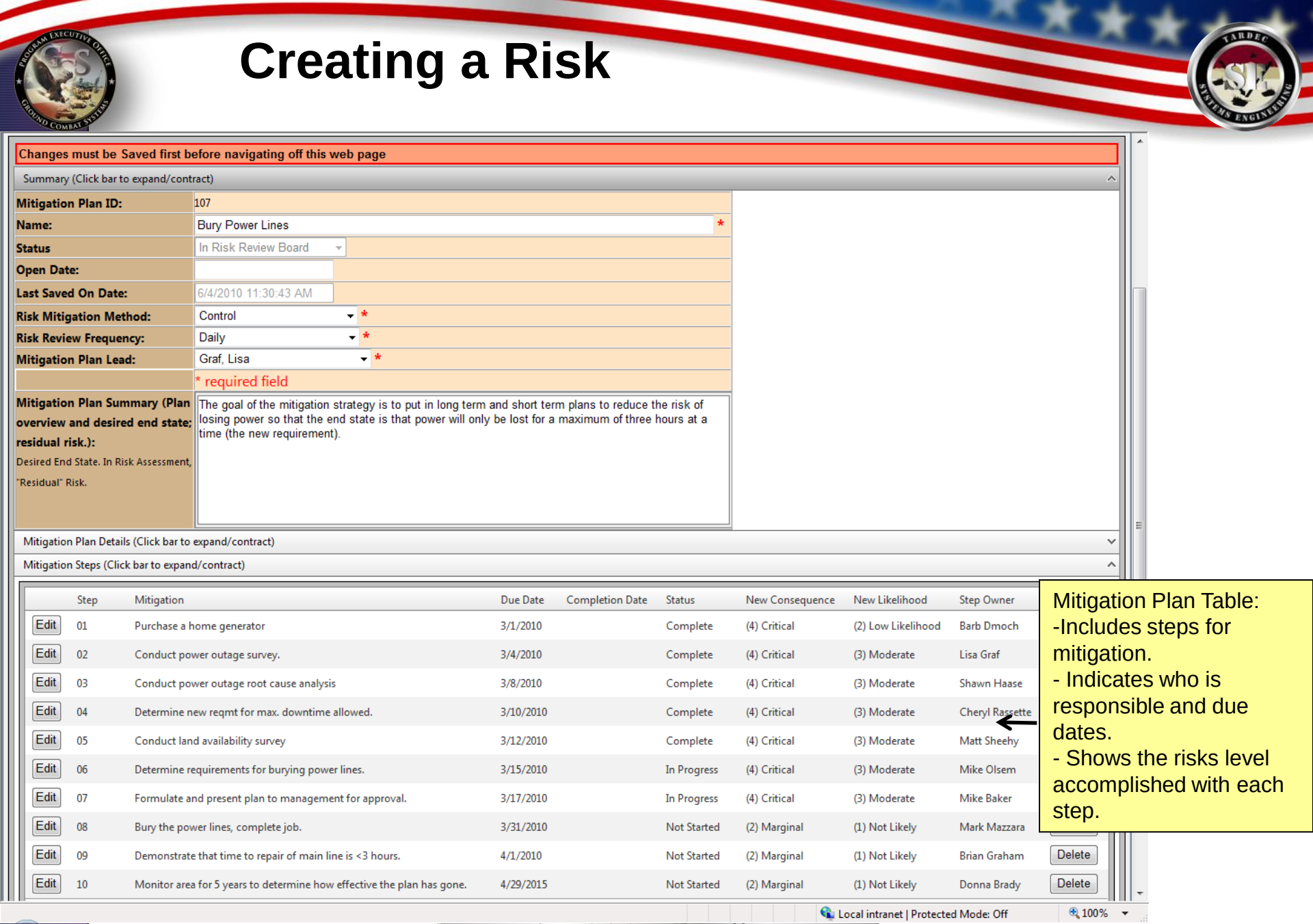
Description of Risk – One sentence – an "IF/THEN/MAY" statement.

Context of the Risk – The "Who, What, Where, When, Why, How and How Much?" of the risk.

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



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.): Desired End State. In Risk Assessment, "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).

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 Rassette	
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	Delete
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	Delete

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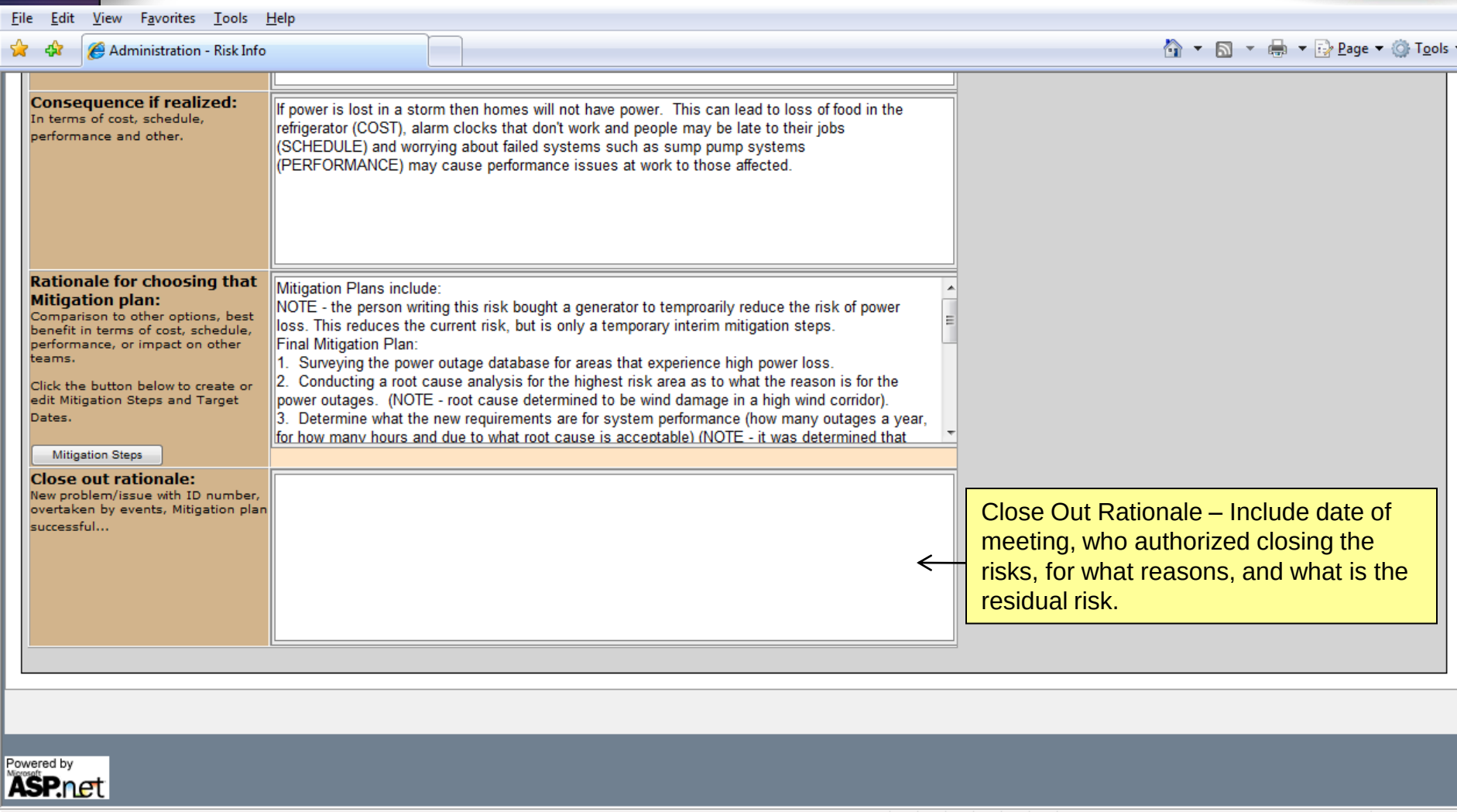
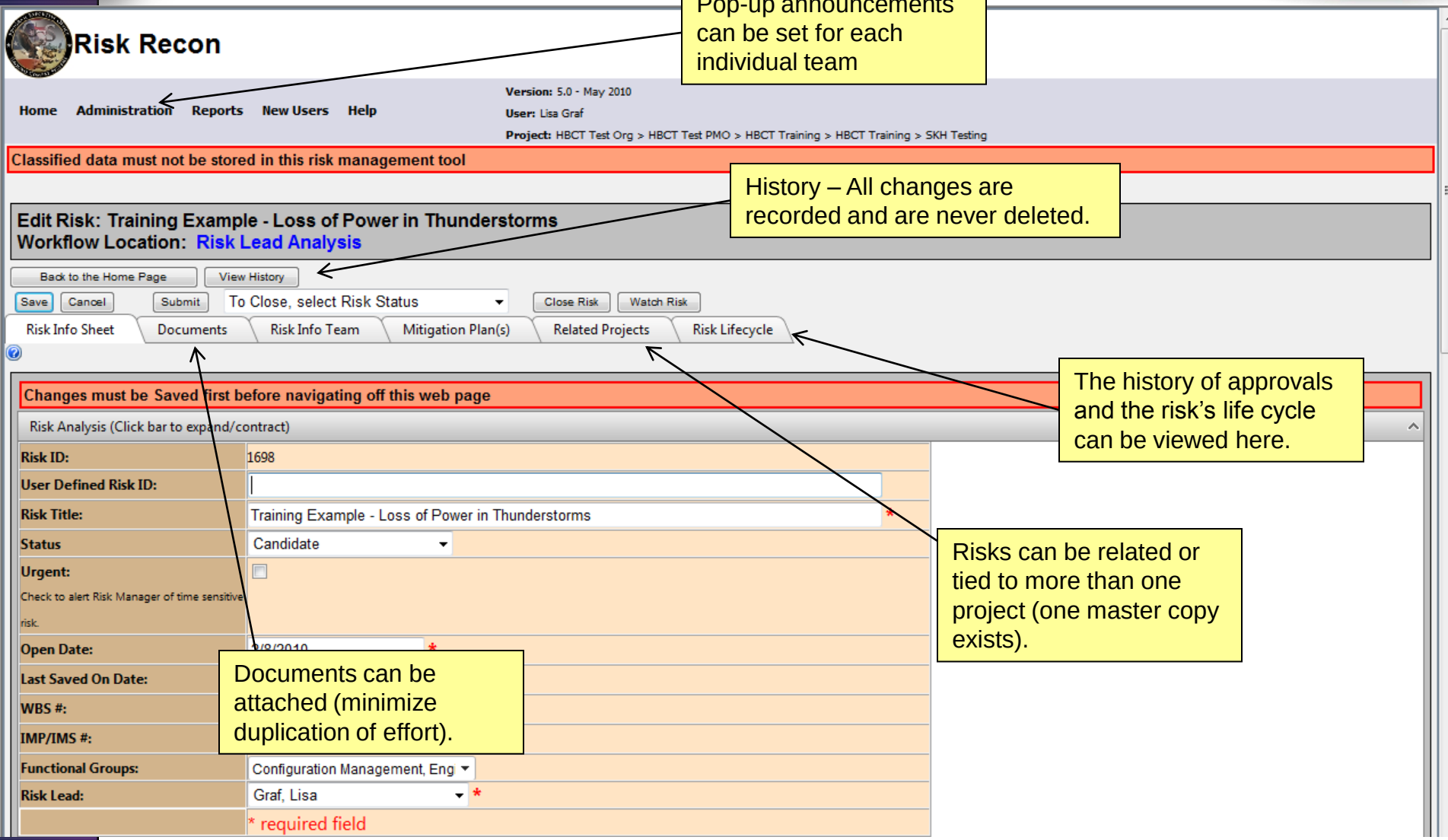
Mitigation Plan Table:
-Includes steps for mitigation.
- Indicates who is responsible and due dates.
- Shows the risks level accomplished with each step.

Creating a Risk



Close Out Rationale – Include date of meeting, who authorized closing the risks, for what reasons, and what is the residual risk.

Additional Features



Risk Recon Reports
Risk Information Sheet

Risk Information Sheet (FOUO)

Risk Title: Loss of Power in Thunderstorms

User Defined ID:

Status: Baselined

Unique ID #: 659

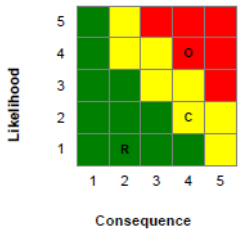
Opened Date: 02/08/2010

Last Saved Date: 02/08/2010

Risk Lead: Graf, Lisa

Risk Information Team Members

Risk Assessment



Risk Impacts:

X	Cost
X	Schedule
X	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.

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 temproarily 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 - …pment).

…

…

…wer tower to the ground, the main line could be impact of loss of power.

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 Rassette
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

- 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, web archive, etc.

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 devide 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 power lines are exposed to the environment (WHY) and subject wind damage and lightning strikes. This can	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 work to those affected.	Mitigation Plans include: NOTE - the person writing this risk bought a generator to temproarily reduce the risk of power loss. This reduces the current risk, but is only a loss. 2. Conducting a root cause analysis for the highest risk area as to what the reason is

- Risks can also be exported into an Excel spreadsheet.
- This allows for easy sorting, searching and customization for reports.

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

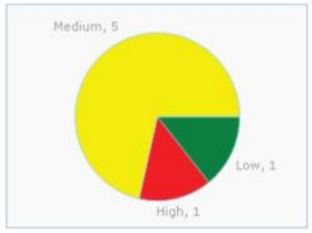
Summarize of Risk Status
8/2/2010

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

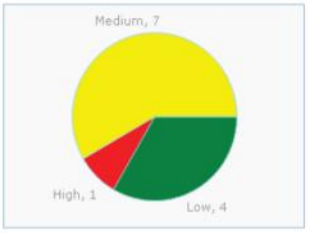
Risk Assessment Status (Pie Chart) Report (FOUO)

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)



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- 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.

Future Enhancements

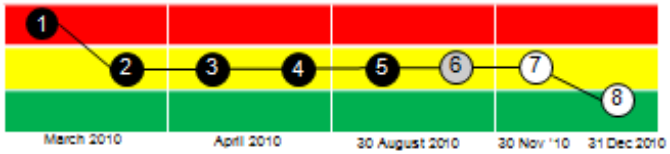
Loss of Power in Thunderstorms

Consequence	Likelihood
4	2

Description:
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, then power lines may come down due to high winds and loss of power may occur. This may occur because power lines are exposed to the environment and subject to wind damage and lightning strikes. This can affect homes and people subdivision wide or to any building in the area that the power system supplies power to.

Mitigation Steps and Events – Bury Power Lines:
1. Initial Risk Level
2. Purchase a home generator (owner).
3. Conduct power outage root cause analysis.
4. Determine new requirements for burying power lines and max. downtime.
5. Present plan to management for approval.
6. Hire new contract support personnel – In Process.
7. Bury the power lines.
8. Validate the system to the requirements.



Lead POC: Lisa Graf

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2

A – Risk of Loss of Power in a Thunderstorm

Consequence	Likelihood
3	4

Risk Statement
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 (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).

Risk Mitigation Steps

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.

Lead POC

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Future Enhancements Include:

- Risk Waterfall Charts
- Selected Risk Summaries.
- FMEA integration into the tool
- Issue database
- Microsoft Project integration
- EVM Integration
- Integration with other SE tools (DOORS, etc.)

Resources

- **Risk Management Guide for DOD Acquisition, http://www.acq.osd.mil/sse/docs/2006RMGuide4Aug06finalversion.pdf**

- **Risk Recon**
  - **Link→ https://peoportalap.tacom.army.mil/riskmgmt/Default.aspx**
    - **User Guide (click help in Risk Recon)**
    - **Workflow (located in the User Guide)**
    - **Risk Management Plan (click help in Risk Recon)**
    - **Tip Sheet (click help in Risk Recon)**
    - **Standard Operating Procedure (PEO GCS Knowledge Center)**

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