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

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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.*

Current State of Risk Management

- *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.*
- *Risks are tracked in a database or spreadsheet.*
- *Issues are tracked in a database or spreadsheet.*
- *There is no acknowledged Army wide way to capture lessons learned effectively.*

There is no traceability or linkage from FMEAs, to risks, issues or lessoned learned.

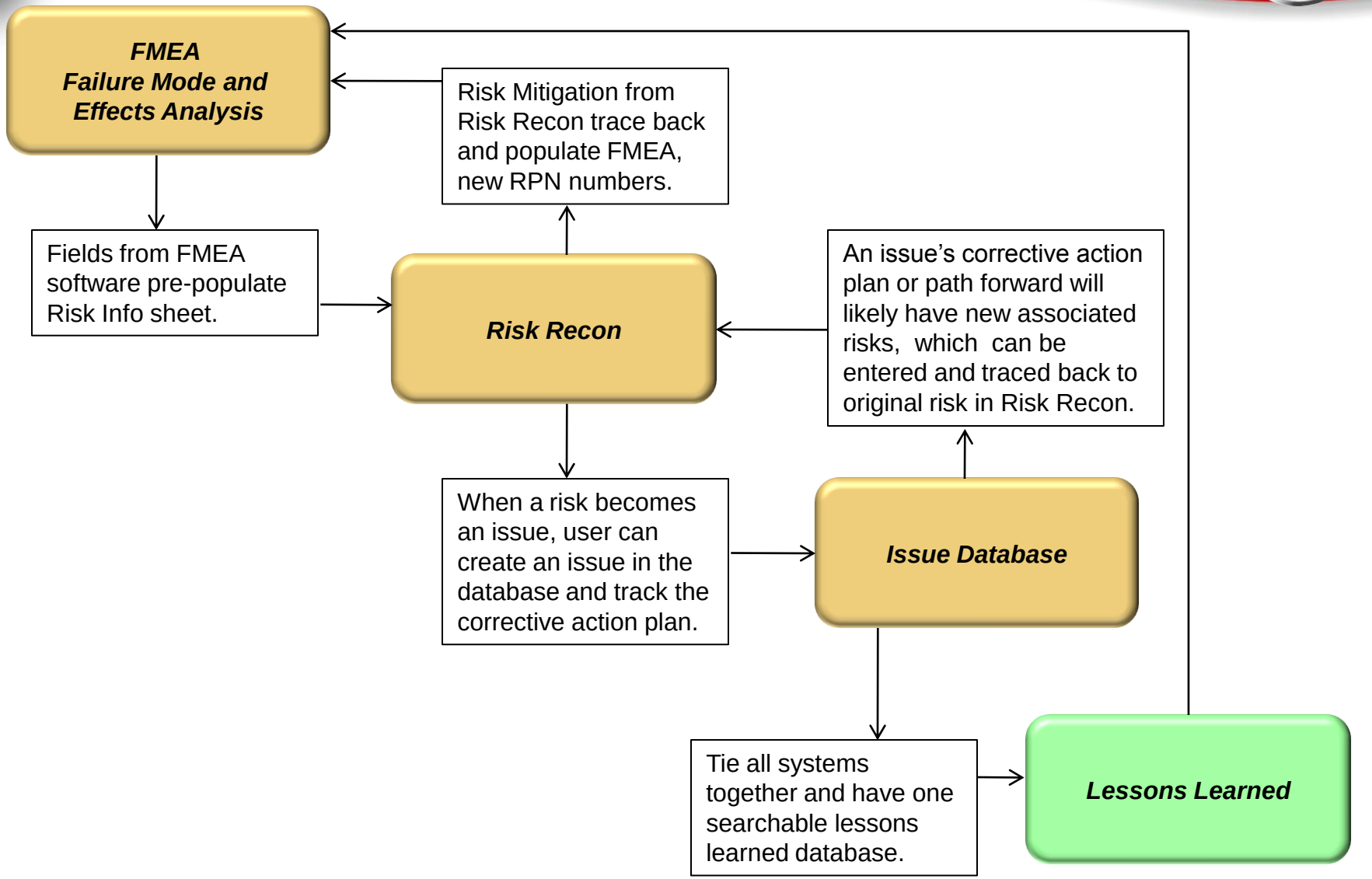
FMEA (Failure Mode and Effect Analysis)	Risk Management	Issue Management	Lessons Learned

Why Is an Integrated Risk Approach So Important?

Taking an integrated approach to risk management is a way to:

- *Shorten design time*
- *Avoid program mistakes*
- *Prevent cost overruns*
- *Avert schedule delays*
- *Maximize usage of resources.*
- *Deliver a higher quality system to the warfighter*
- *Do it right the first time!*

Integrated Risk Management



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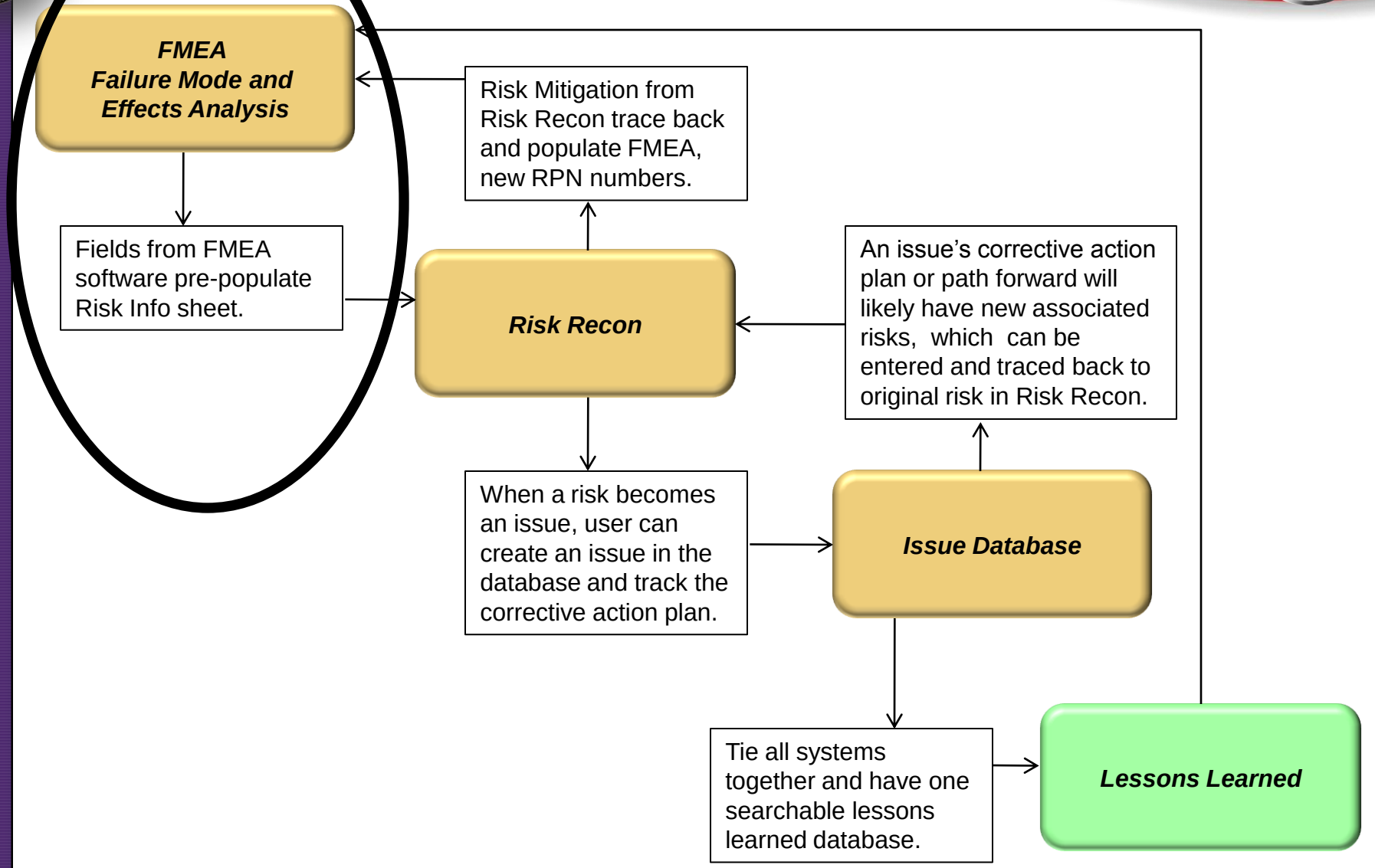


Why risk management starts with a FMEA…

- Failure mode and effect analysis (FMEA) is an analysis of all potential failure modes within a system.
- A FMEA can be performed on a system, subsystem, or the components of a system/subsystem.
- FMEA is used as a foundation for root cause analysis of design/ process/ system failures.
- *FMEA are best conducted using a cross functional group of subject matter experts (SMEs).*
- *FMEAs should be required for systems or subsystems via the contract. They should be readily accessible and usable by the government.*

Types of FMEAs

- **Design FMEA (DFMEA) :** Identifies how a product can fail to do what it was designed to do or why it does things it should not do.

- **Process FMEA (PFMEA):** Identifies the possibilities of incorrectly manufacturing or assembling a product.

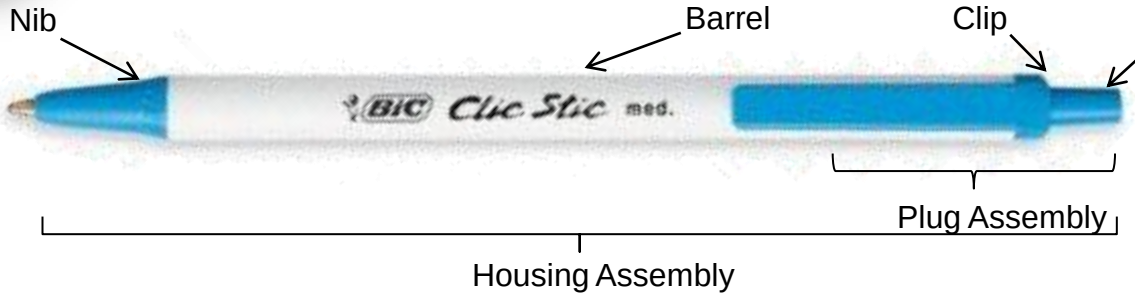
- **Program FMEA** : Identifies potential failure modes ina non-technical process (business systems, procurement processes, hiring practices – any process not describing a product or the manufacturing, assembly or integration of that product).

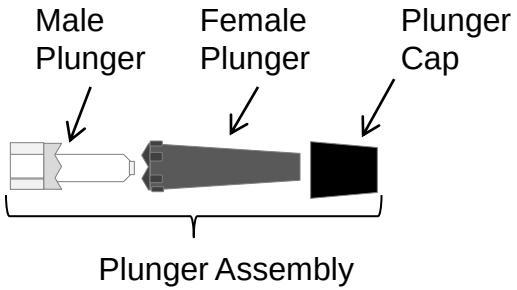
- **Applicable Standards:**
  - **SAE J-1739:** Automotive Industry
  - **SAE ARP-5580:** Aerospace Recommended Practice
  - **MIL-STD-1629A:** Failure Mode, Effect and Criticality Analysis (FMECA) by US Air Force (Canceled on 4 August,1998 , FMEA IPT is working on new MIL-STD).

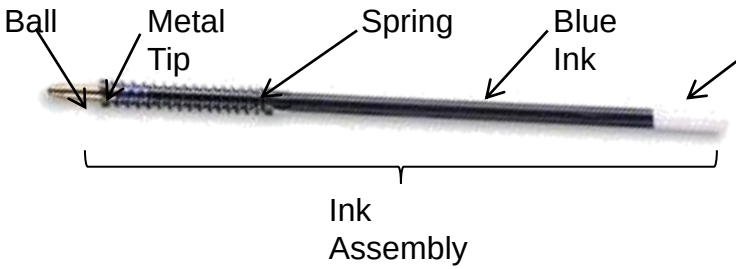
How do you create a FMEA?

- Start with a known program element:
  - Bill of Materials (BOM)
  - Work Breakdown Structure (WBS)
  - Parameter Diagram (P-Diagram)
  - Process Workflow

Bill of Materials

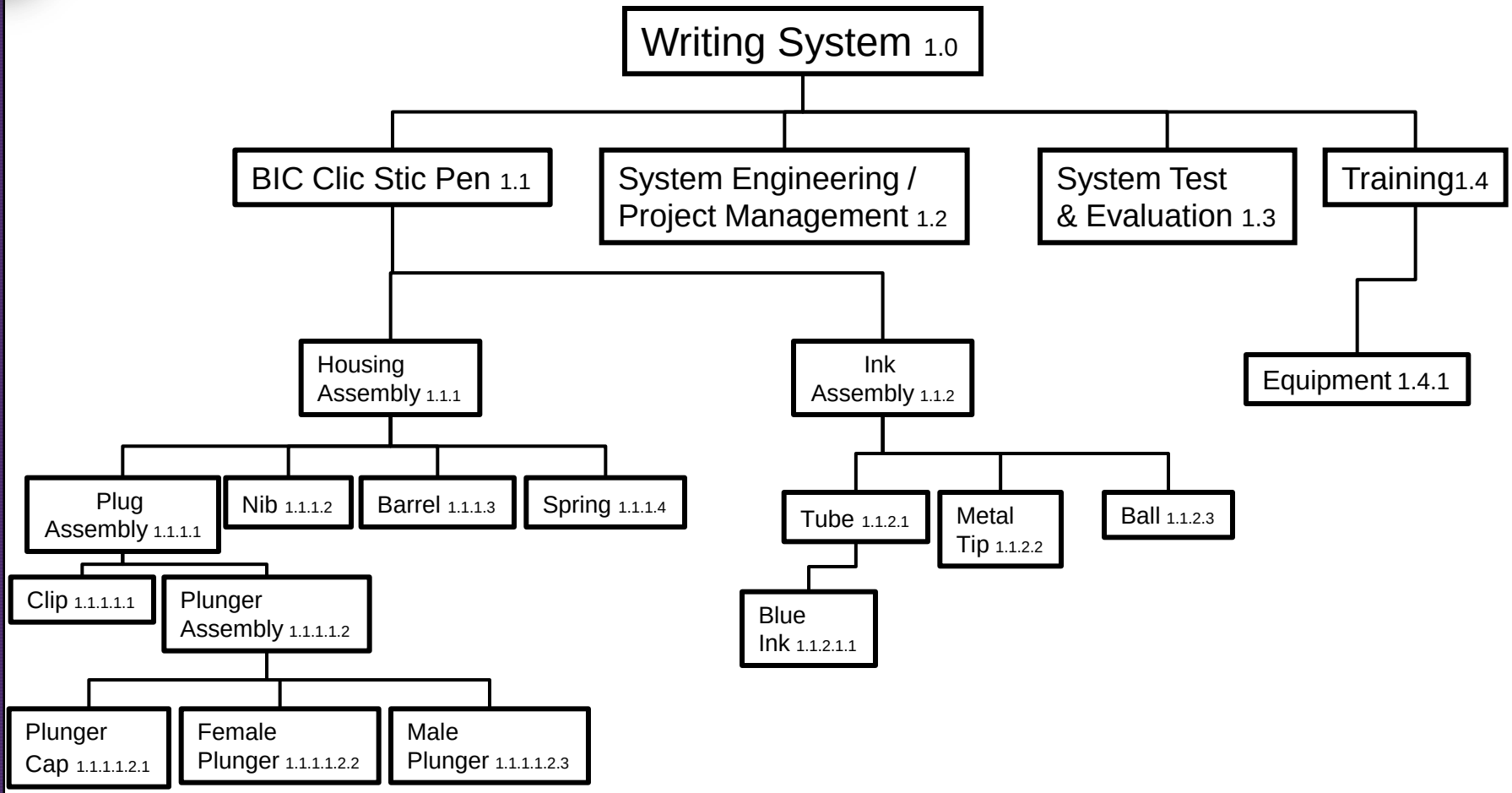






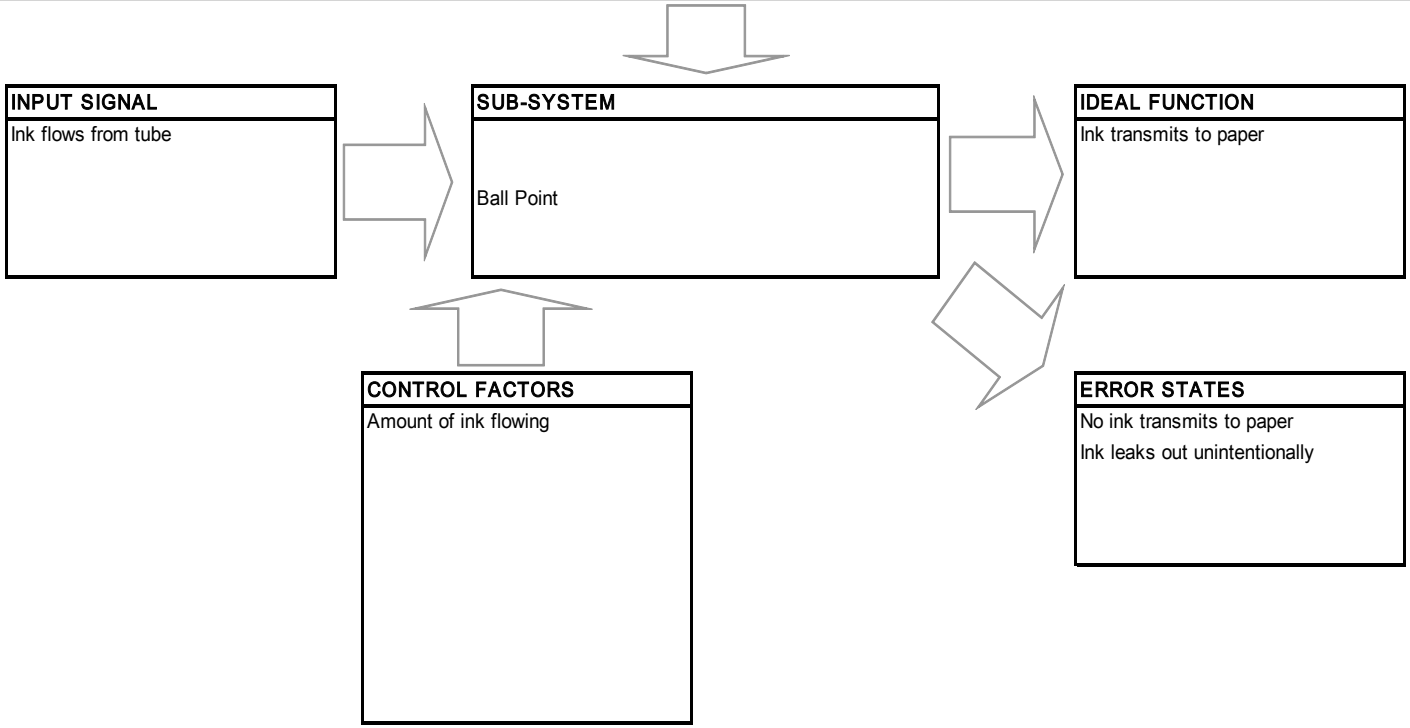
Components			Material	Qty
1.0	Writing System			
1.1	BIC Clic Stic Pen			
1.1.1	Housing Assembly			
1.1.1.1	Plug Assembly			
1.1.1.1.1	Clip		ABS/PP	1
1.1.1.1.2	Plunger Assembly			
1.1.1.1.2.1	Plunger Cap		ABS/PP	1
1.1.1.1.2.2	Female Plunger		ABS/PP	1
1.1.1.1.2.3	Male Plunger		ABS/PP	1
1.1.1.2	Nib		ABS/PP	1
1.1.1.3	Barrel		ABS/PP	1
1.1.1.4	Spring		Steel	1
1.1.2	Ink Assembly			
1.1.2.1	Tube		ABS/PP	1
1.1.2.1.1	Blue Ink		Ink	.1 grams
1.1.2.2	Metal Tip		Brass	1
1.1.2.3	Ball		Tungsten Carbide	1

WBS for a Retractable Pen



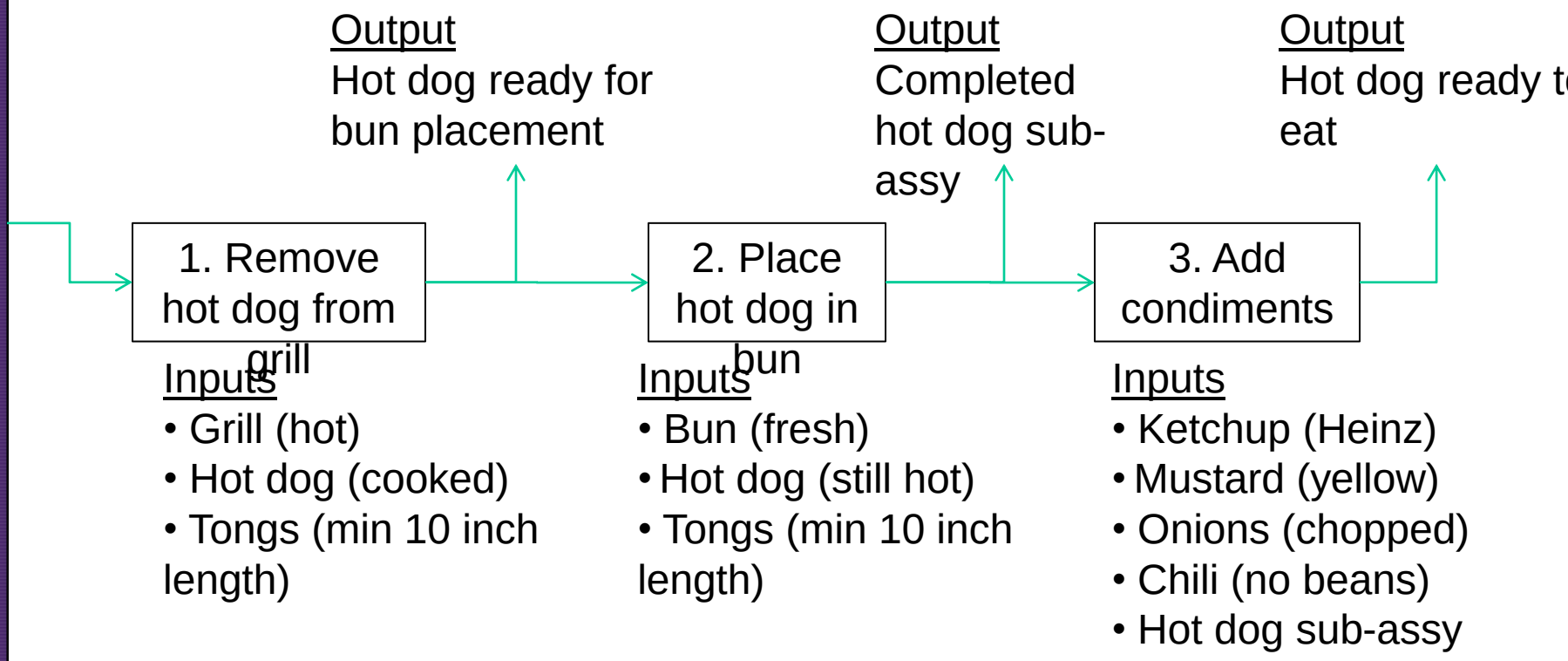
Parameter (P) Diagram

NOISE 1: Piece to Piece	NOISE 2: Change Over Time	NOISE 3: Customer Usage	NOISE 4: External Environment	NOISE 5: System Interaction
Dimensional (interference with tip) Material discrepancies	Ink running low Ink drying out	Too much pressure on the ball point Not enough pressure on the ball point Unintended usage (pushing buttons, et	Humidity (corrosion of point) Drying of ink around point Viscosity of ink (too thick/runny)	Writing surface (not enough friction)



Process Flow Diagram

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 the FMEA work?

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 npot apply condiments until customer is present	G. Ratajczak Day of BBQ	No hot dogs "built" without customer present	9	9	1	81

How does the 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!

Determine Path Forward

Item or step # from WBS, Process Map, or other	Process step / function / requirement	Failure Mode	Effect	Sev	Cause	Occ	Current Process Controls Prevention	Current Process Controls Detection	Detect	R.P.N.
						9	None	None	10	**810**
		dog is not present	Major delay: Customer hungry, angry	9	Insufficient hot dog supplies, ran out	7	Educated guess on needs	None	10	**630**
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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**

How do you know if the FMEA is Done Properly?

- Is every failure possibility you can think of included in the FMEA?

- Is every component or part or process step included in the FMEA?

- Is every subsystem and it's interaction to the larger system accounted for in the FMEA?

- Are the effects of the integration of this component or subsystem to the larger whole (vehicle level, system level, SoS level, etc.) taken into account?

How Can a FMEA Help My Program?

- A DFMEA provides robustness of design.
- A PFMEA provides robustness of process.
- A FMEA reused from a previous program reduces the design time for the system
- Potential failure modes are identifed early in the program and can be dealt with up front, rather than detected later.
- FMEAs can be used to determine the root cause of system or part failures, once fielded!!!

Root Cause Analysis

System: A/C Condenser Fan System
Subsystem: A/C Condenser Fan
Component: -
Model Year / Vehicle (s) :
Core Team:
Support:

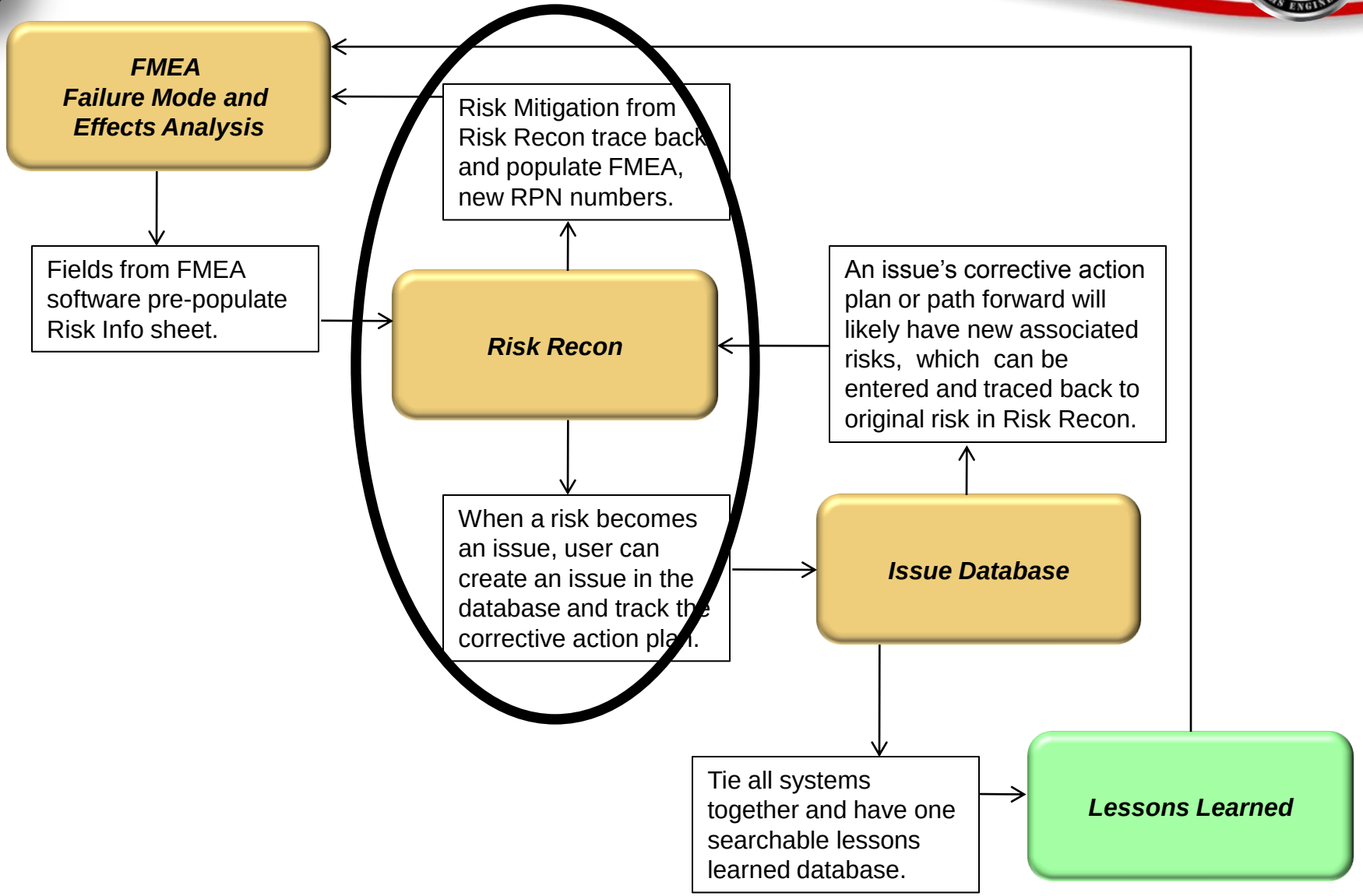
Design Responsibility :
Kick off Date :

Item / Function	Potential Failure Mode	Potential Effects of Failure	Severity	Potential Causes / Mechanisms of Failure	Occurrence	Current Controls: Prevention Controls	Current Controls: Detection Controls
[1] The fan subsystem shall meet airflow requirements (6 in. WCΔP 1500 CFM for XXXX)	**[1.1]** The fan subsystem **does not** meet airflow requirements (6 in. WCΔP 1500 CFM for XXXX)	Complete loss of airflow (8)	8	**[1.1.1]** Loss of source current / voltage - Blown fuse - Broken wire	4	- Conduct a worst case circuit analysis of vehicle control circuit - Compare fuse capacity to in-rush current and stall current during high ambient temperature conditions - Review wire routing, attachment and shielding	- **Yuma** - Test vehicle - **New Yuma** - test vehicle
		Partial loss of airflow (6)		**[1.1.2]** Over-voltage / Transients	3		- **FW 3** - Electrical Requirements and characterization - **FW 4** - Body Fan Requirement validation - **Yuma** - Test vehicle - **New Yuma** - test vehicle
				[1.1.3] Control circuit malfunction	5		- **FW 3** - Electrical Requirements and characterization - **FW 4** - Body Fan Requirement validation - **Yuma** - Test vehicle - **New Yuma** - test vehicle
				[1.1.4] Mechanical impedence/obstruction that either slows or stops the rotation of the impeller (internal/external contamination)	6		- **DTL 1** - Hot Clean - **DTL 2** - Hot + Dust - **DTL 3** - Hot + Imbalance - **DTL 4** - Hot + Dust + Road load / Resonance - **FW 1** - Fan imbalance cycling - **FW 2** - Dust - **Yuma** - Test vehicle - **New Yuma** - test vehicle - **Airflow verification**

Benefits of FMEAs

- Prevent major risks, reduce failures, minimize cost and reduce development time - Do it right the first time.
- FMEA prioritizes the actions that should be taken to reduce risk. It also highlights where further actions would result in further risk reduction.
- FMEA is an important tool of reliability and maintainability analysis. Reliability increases when risk is mitigated.
- Aids in root cause analysis, failure investigation, and finding corrective actions.
- FMEA Provides a repository for lessons learned, best practices, and sharing of technical knowledge which can be used in other programs.

Integrated Risk Management



What is a Risk?

- A risk is a potential failure mode that is likely to occur in the future.
- Usually characterized in terms of impact on a program's cost, schedule and performance.
- Rated in terms of:
  - Likelihood – Probability of occurrence
  - Consequence – Impact to the program is the risk becomes an issue.
- Usually states as an "*IF* this happens *THEN* this *MAY* happen…"

DoD Risk Management

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.

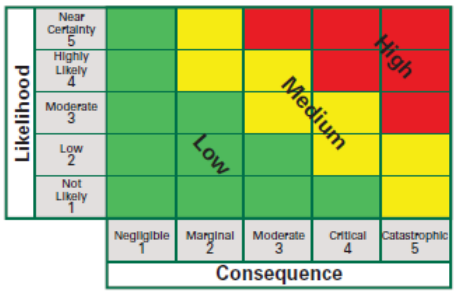
Risk Mitigation Approaches

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.

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

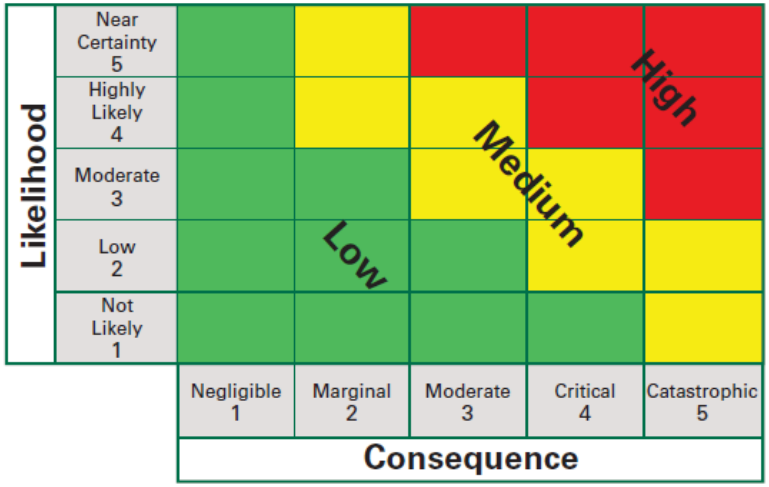
(Available in Risk Recon under "Help" and "Tip Sheet")

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

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.

For more information go to https://peoportalap.tacom.army.mil/riskmgmt and click on the Help Menu to email the Risk Recon help desk to get more information on how to get your program set-up to use this free tool.

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	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 temproarily 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

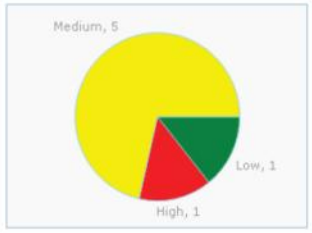
Summarize of Risk Status
8/2/2010

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				

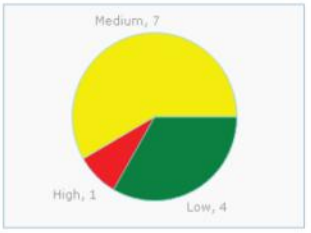
Risk Assessment Status (Pie Chart) Report (FOUO)

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)



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

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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.

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

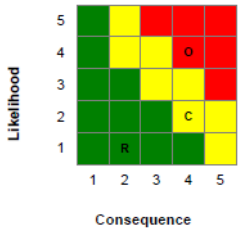
Opened Date: 02/08/2010

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.

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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).

…

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

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 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

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- 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

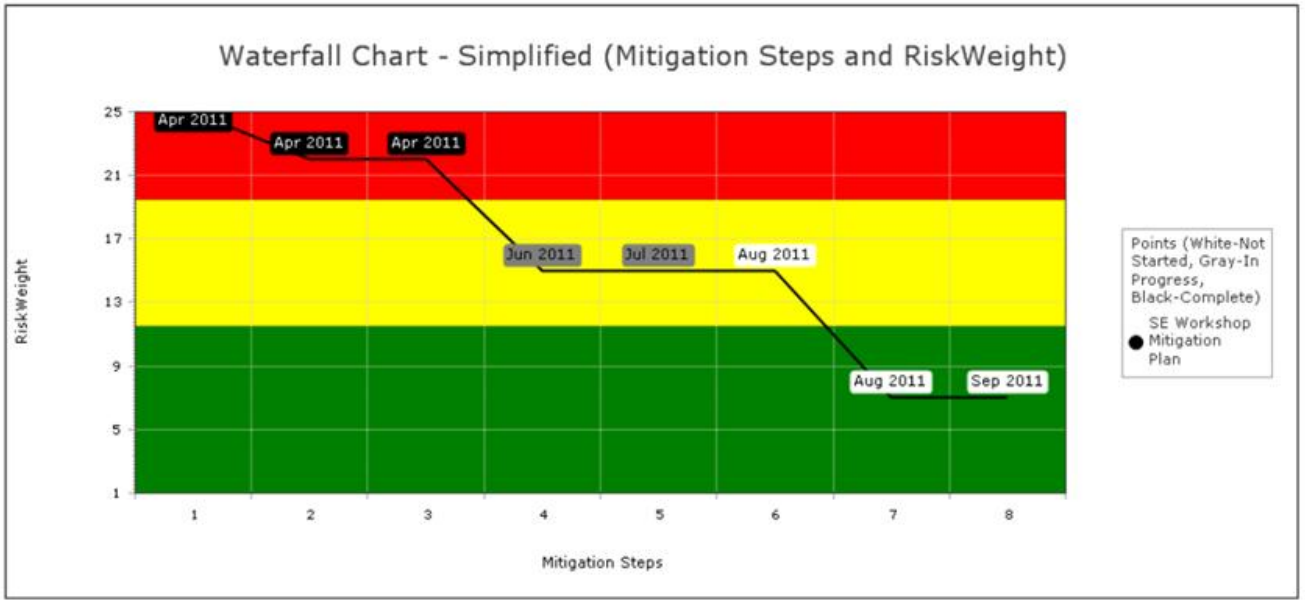
Risk Waterfall Report (FOUO)

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.

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



What happens when a risk becomes an issue?

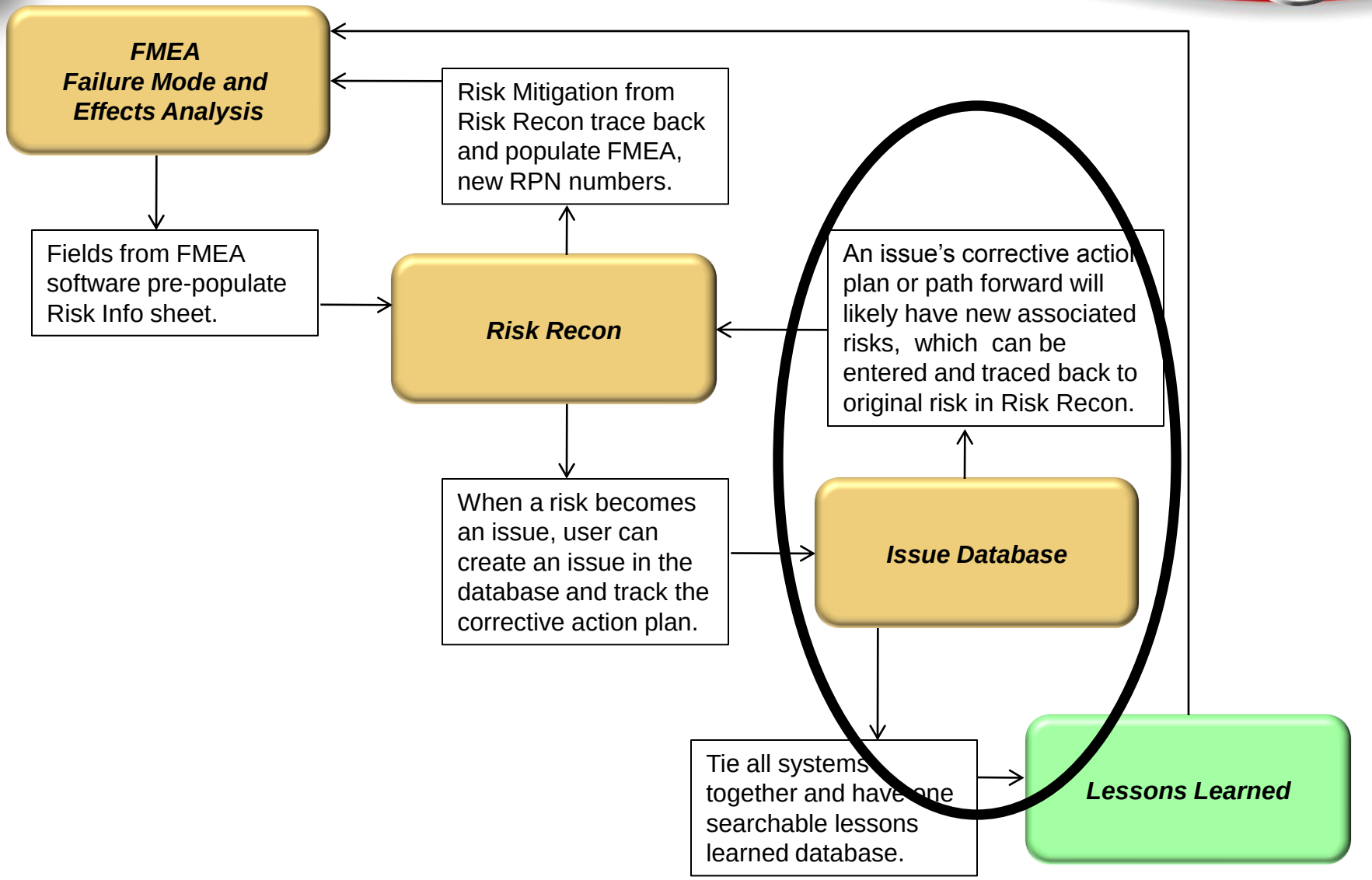
Issue Management is a natural progression of risk management as risks that are not successfully mitigated become issues.

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 tired 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.

Integrated Risk Management



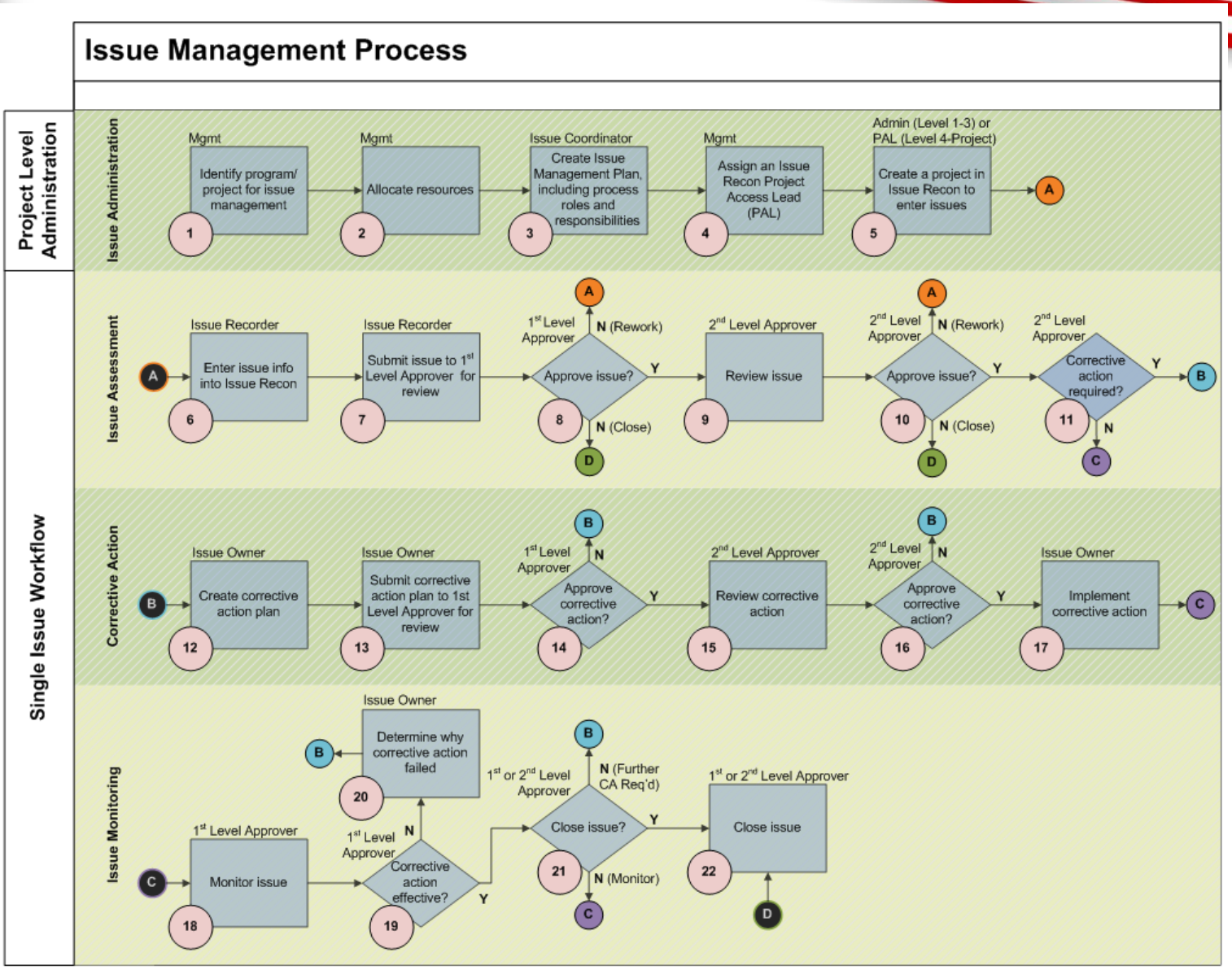
What is an Issue?

- An issue is something that has already happened or will certainly happen.
- Risks, when mitigation is unsuccessful, become issues after an event has occurred such as testing has failed, the schedule has slipped, etc.
- Usually characterized in terms of impact on a program's cost, schedule and performance.
- Rated in terms of:
  - Severity: Impact on the program
  - Priority: How quickly the issues has to be addressed and resolved.

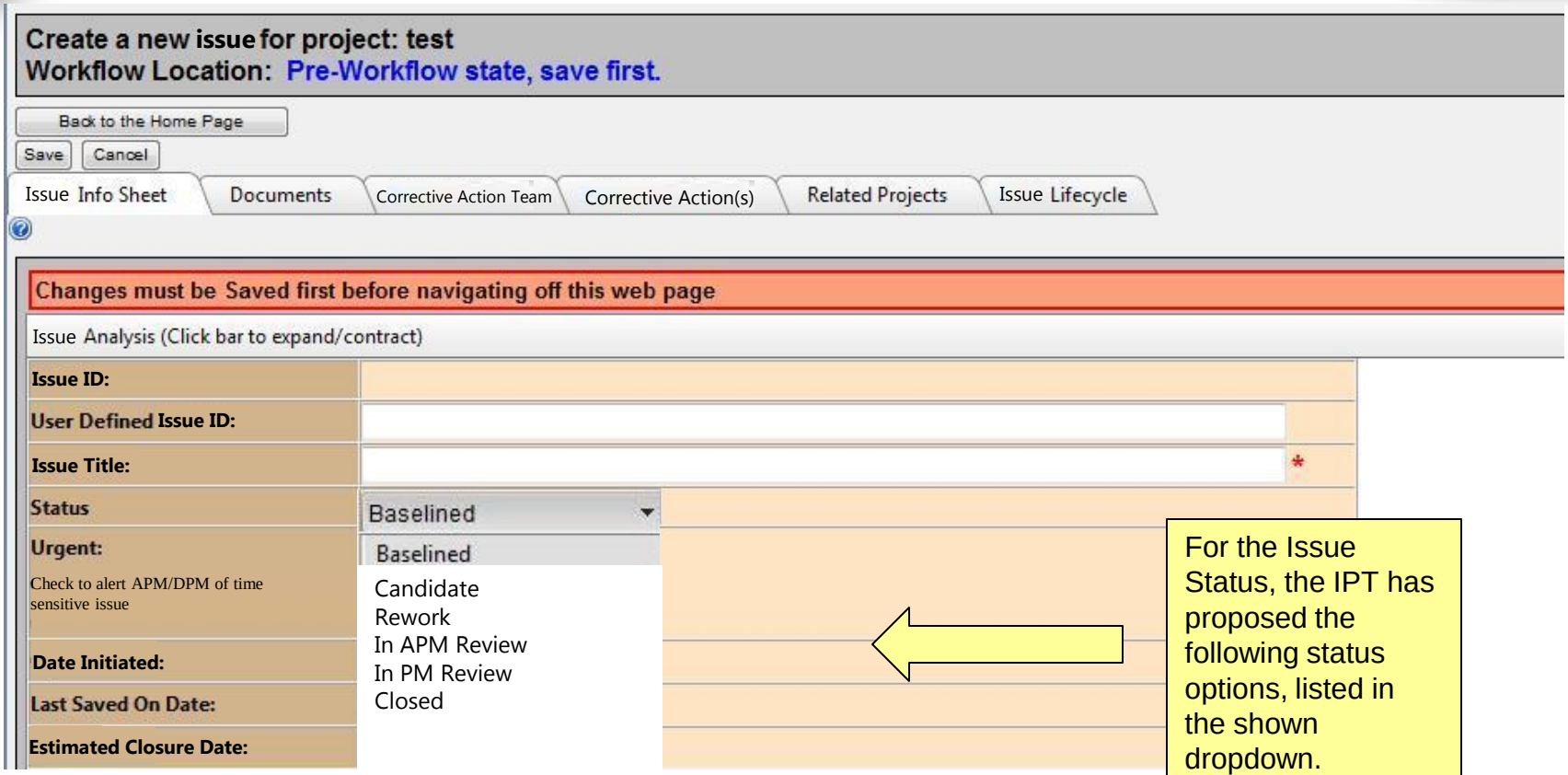
Issue Management Benefits Using a Linked Approach with FMEA and Risk

- Linking Issue Management to Risk and FMEA takes on more of a proactive approach to identifying and addressing programmatic concerns.
- Quickly resolving issues early in the program reduces cost, schedule delays and performance problems.
- Linking processes and databases enhances the ability to revisit failure modes and the actions taken to address them
- Confirmation of the effectiveness of the corrective action after implementation is tracked and documented.

Issue Management

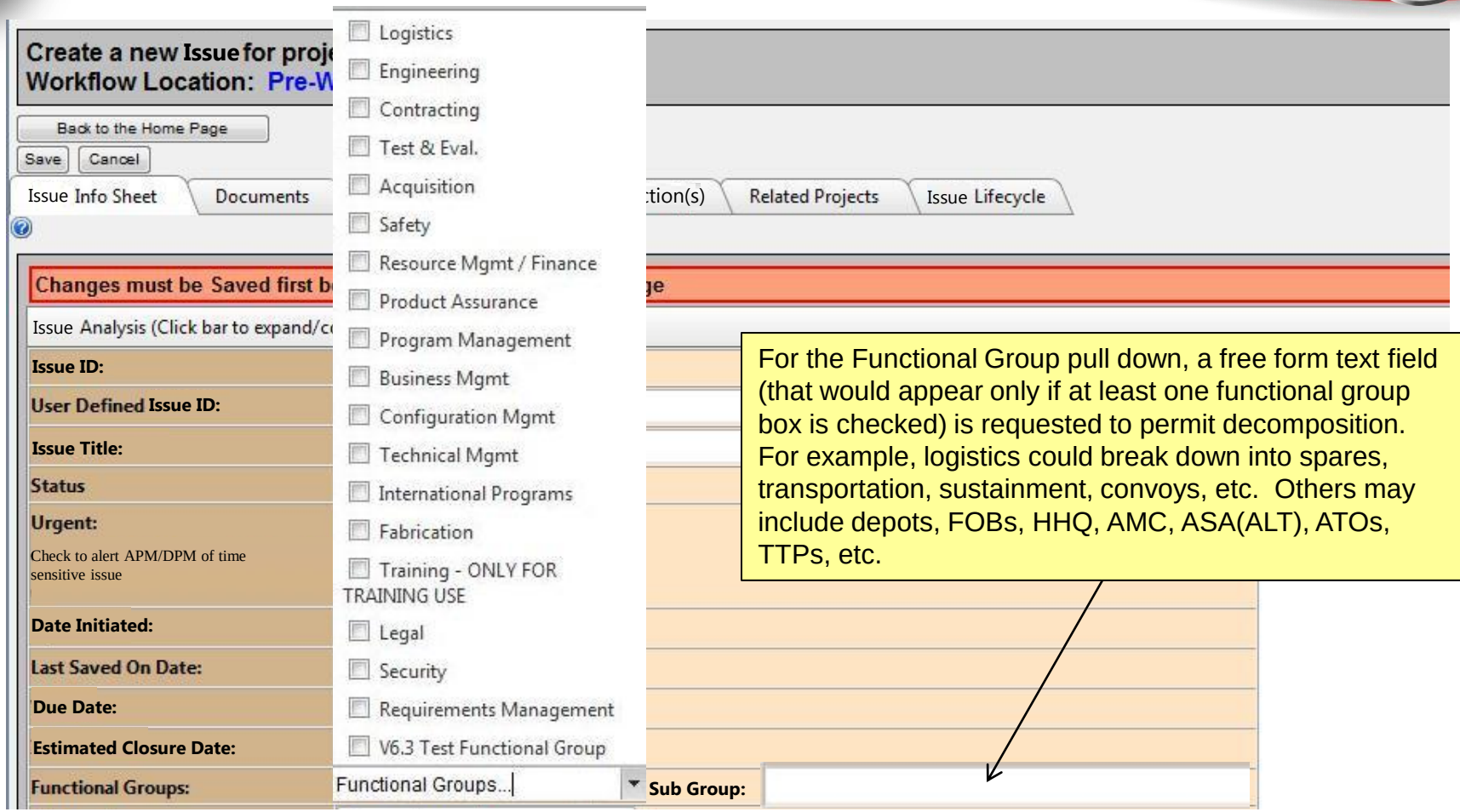


Risk Recon Based Issues Database



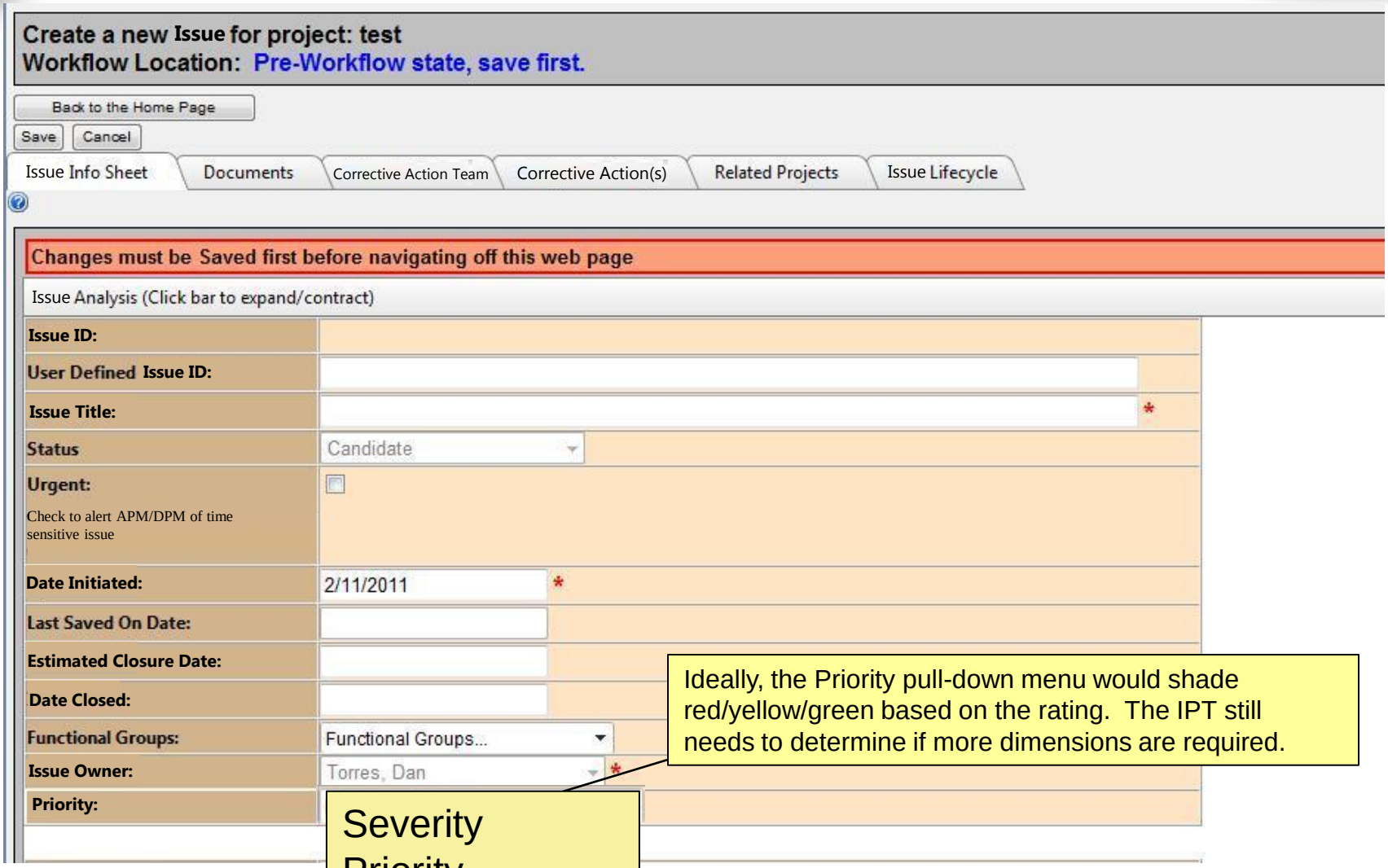
For the Issue Status, the IPT has proposed the following status options, listed in the shown dropdown.

Issue Info Sheet (cont):



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:



Issue Impacts:

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

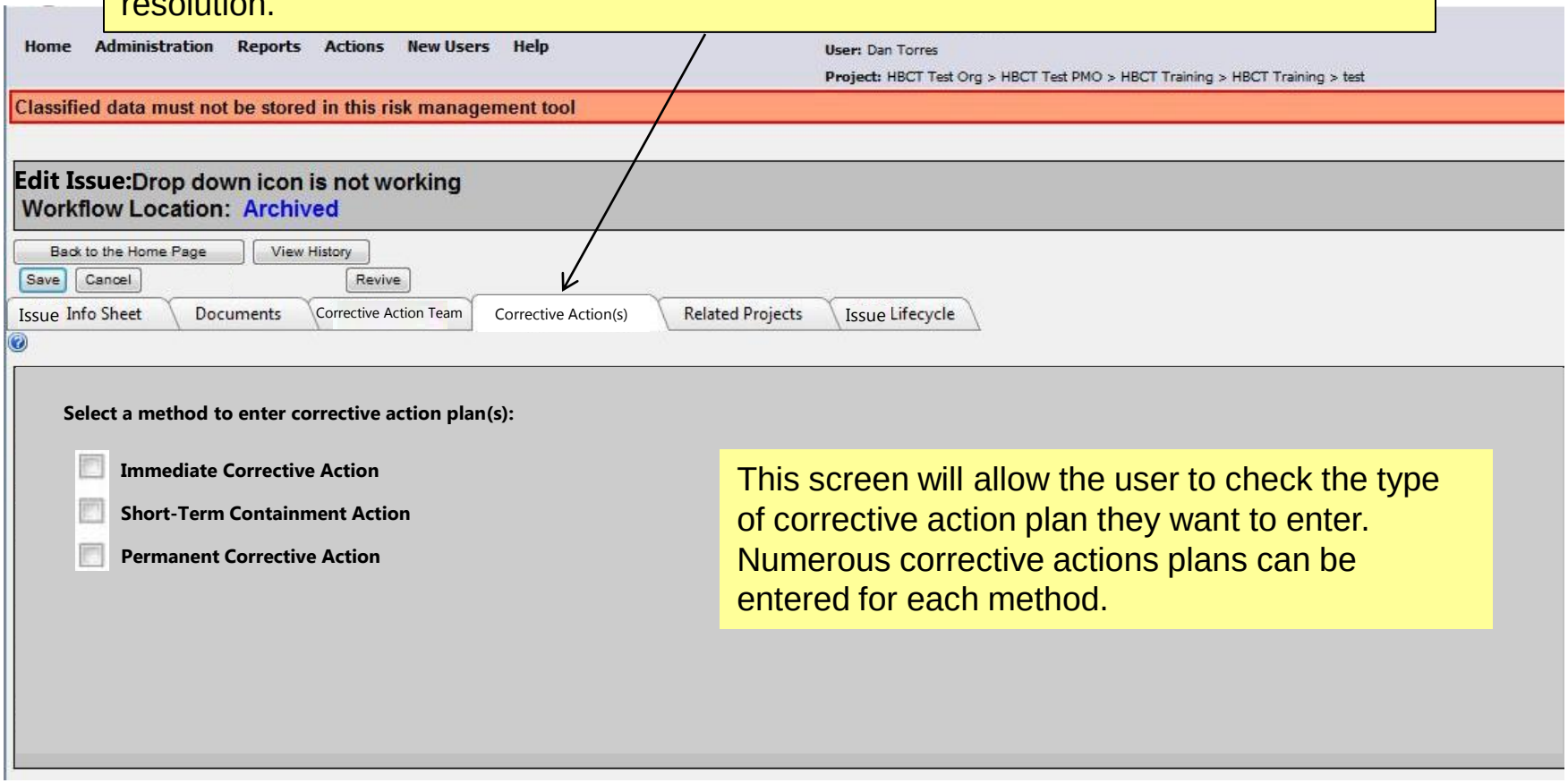
Issue Impacts			
	☑ Acceptance Testing	☑ Analysis	☑ Procurement
Schedule:	☑ Development (TD/EMD)	☑ Deployment	☑ Redlined
☐ Affects the Critical Path:	☑ Characterization	☑ FRP Decision	☑ Contracting

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.

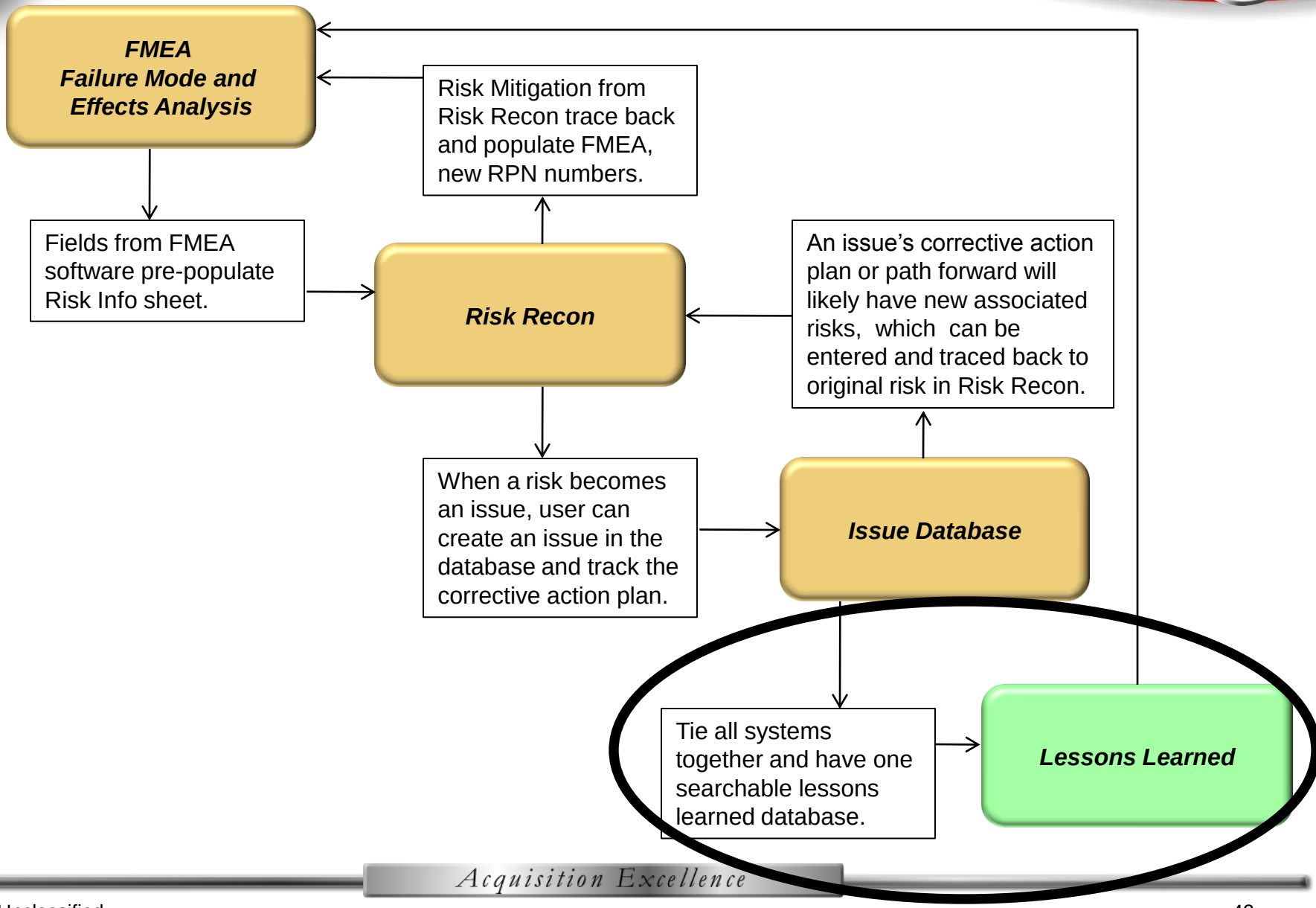
Corrective Action Tab:

This is a tab with more fields to define complex corrective actions vs. a simple issue resolution.



This 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.

Integrated Risk Management



Lessons Learned

- Provides the organization with effective feedback and useful information for future programs.
- Document program-specific issues that may be relevant to technical and logistical support after full rate production.
- Increase warfighter satisfaction and provide the warfighter with useful program information as the program moves into the operations and sustainment phase

Lessons Learned Documentation

- Program feedback such as field failures, process changes, design changes (ECP), fed back into the FMEA → The FMEA is a lessons learned starting point for new programs.
- Search functions enabled in Risk and Issues databases for keywords, programs, dates, etc. to quickly determine past risks and applicability to future programs.
- Free form input from subject matter experts into database at any time to capture best practices, failures on any programs, design considerations, etc.
- Integration with the TARDEC Advanced Systems Engineering Lab (ASEL) SE Suite of tools which includes the ability to search on all program information in the database including requirements, data, etc.

Summary

- By linking FMEA, Risk and Issue processes and database tools, potential and actual failure modes will be more effectively addressed and managed from identification through lessons learned.

- Collaboration throughout organizations within the Department of the Army will be facilitated by implementing a common architecture and approach for handling failure modes.

Resources

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

- **Risk Management Integrated Approach:**
  - George Wiklund – 586-282-9725 – george.c.wiklund.civ@mail.mil
  - Lisa Graf – 586-306-2572 - lisa.j.graf2.civ@mail.mil

- **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
    - Risk Recon Help Desk - usarmy.detroit.peo-gcs.mbx.risk-recon-helpdesk@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

Special Thanks to…

The Risk Recon IPT Member

The TARDEC Issues IPT Members

The TARDEC FMEA IPT Members

For their contribution, input and hard work that made this briefing possible.