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Fermilab Risk Management and Register

Lucas Taylor, Fermilab Risk Manager

PIP-II Risk Workshop, 6th April 2017

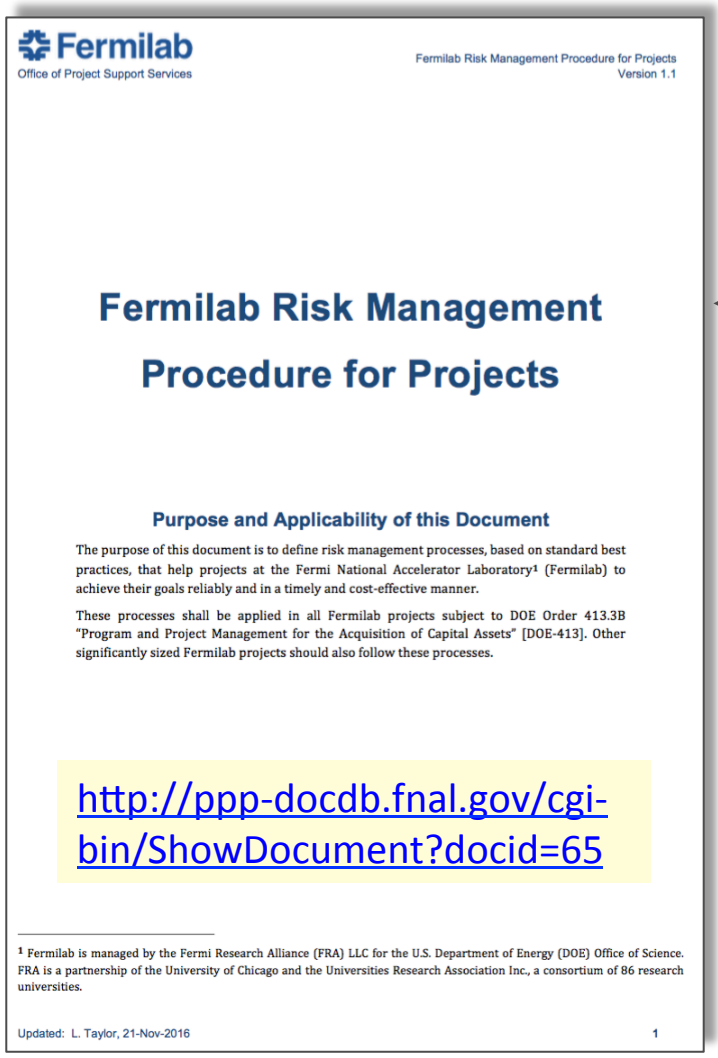
Lucas Taylor

- Particle Physicist (PhD)
  - CMS, L3, Pierre Auger Observatory, UA1
  - Higgs discovery, (g-2) of tau, tau neutrino mass, Vtb, rare decays, b-lifetime, mixing, hadron production …
- Project Management Professional (PMP)
  - CMS detector upgrades, CMS Head of Communications, construction of Control Rooms, LHC Grid, CMS Software
- Current Roles
  - **Deputy Project Manager, CMS Phase 1 Upgrades**
    - Cost, Schedule and Risk from CD-0 to CD-1 to CD2/3 (CD-4a fall 2017)
  - **Associate Project Manager, CMS HL-LHC Upgrades**
    - Established Cost, Schedule and Risk processes and related documents
    - BoE templates, P6 customization and guidance, risk register and risk analysis
    - Training and guidance for CAMs and oversight of Project Controls
  - **Fermilab Risk Manager**
    - Established Lab-wide “Fermilab Risk Management Procedures for Projects”, Enterprise and Operations Risk programs (Chair of Fermilab Risk Mgmt. Board)
    - Lab-wide Risk Register, risk workshops, analysis, MC modeling, reviews
    - Helping CMS Phase 1, LBNF/DUNE, HL-LHC CMS Upgrades, LHC AUP, PIP-II

Overview

- Fermilab Risk Management Procedure
  - Including key terminology
- Practical guidance on using the Risk Register tool
- Some takeaway messages

Fermilab Risk Management Procedure



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Office of Project Support Services

Fermilab Risk Management Procedure for Projects
Version 1.1

Fermilab Risk Management Procedure for Projects

Purpose and Applicability of this Document

The purpose of this document is to define risk management processes, based on standard best practices, that help projects at the Fermi National Accelerator Laboratory[1] (Fermilab) to achieve their goals reliably and in a timely and cost-effective manner.

These processes shall be applied in all Fermilab projects subject to DOE Order 413.3B "Program and Project Management for the Acquisition of Capital Assets" [DOE-413]. Other significantly sized Fermilab projects should also follow these processes.

http://ppp-docdb.fnal.gov/cgi-bin/ShowDocument?docid=65

[1] Fermilab is managed by the Fermi Research Alliance (FRA) LLC for the U.S. Department of Energy (DOE) Office of Science. FRA is a partnership of the University of Chicago and the Universities Research Association Inc., a consortium of 86 research universities.

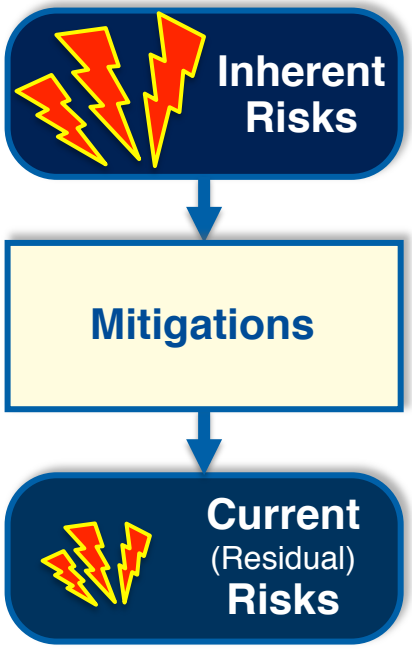
Updated: L. Taylor, 21-Nov-2016 1

For CD-1 the Project shall:

- develop a preliminary Risk Management Plan (based on this document, as described in sec. 2.1)
- identify the main risks to the project, perform qualitative analysis, and
- document the risks in the Project's risk register.

The cost and schedule impacts of this preliminary risk analysis shall be factored into the CD-1 cost and schedule range.

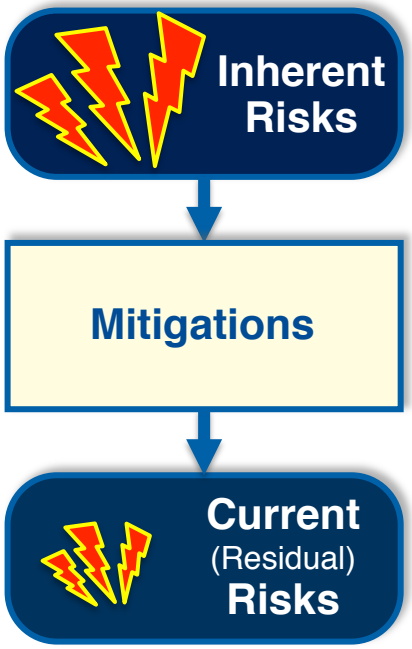
Risk Mitigations



- **Mitigations** – actions taken ***before*** a risk occurs, to reduce risk probability / impacts
  - Mitigations are often part of standard operating procedures and controls
  - Funds for mitigations must be in base plans

  Examples: build and test prototypes, work with multiple vendors, manufacture spares, safety training, financial controls, IT security…

Risk Mitigations vs. Proposed Actions

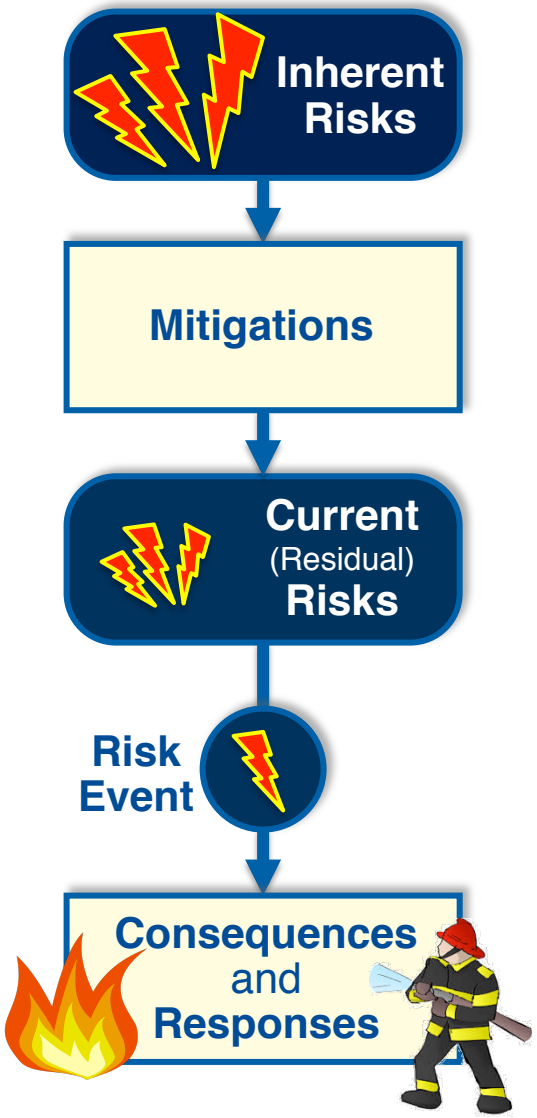


IF *mitigation IS in the base plan* THEN
- Describe in **Risk Mitigation** field (including mitigation cost if known)
- Cost of mitigation is not necessarily expected (e.g. if mitigation actions are simply following usual best practices)

ELSE
- Describe in **Proposed Actions** field
- Fill in **Proposed Actions Cost** (k$)

Workshop (and after) will need to decide whether to incorporate new, **proposed actions** into baseline **mitigation plans**

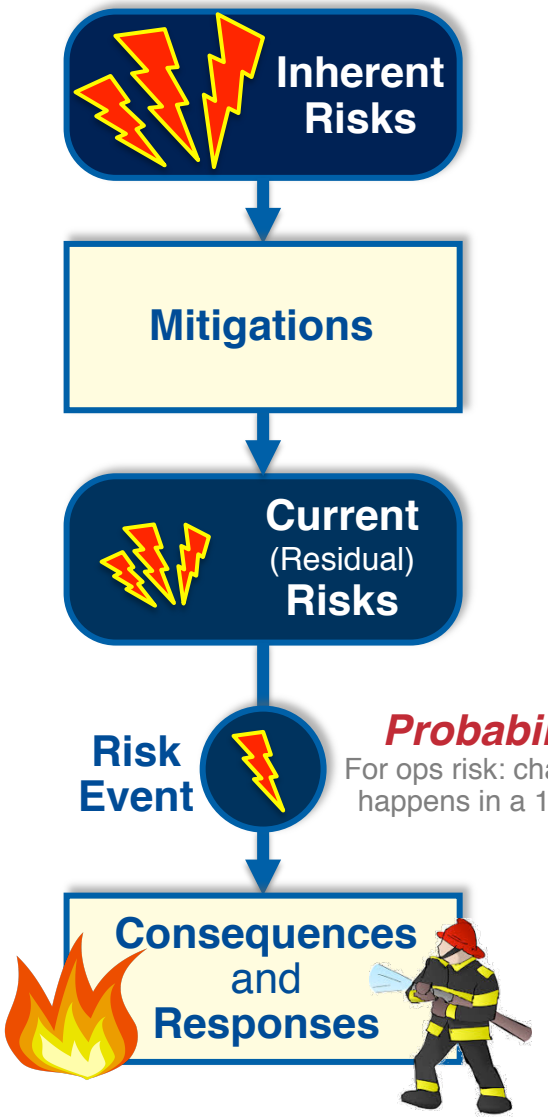
Risk Responses



- **Risk responses** – actions only taken ***after*** a risk occurs, to reduce the impacts
  - They are contingency (not baseline) plans
  - Funds for responses in contingency budget

  Examples: rework non-compliant items, install spare hardware, respond to a fire, restore a hacked IT system…

Probability and Impacts



Probability (%)
For ops risk: chance that risk happens in a 1 year period

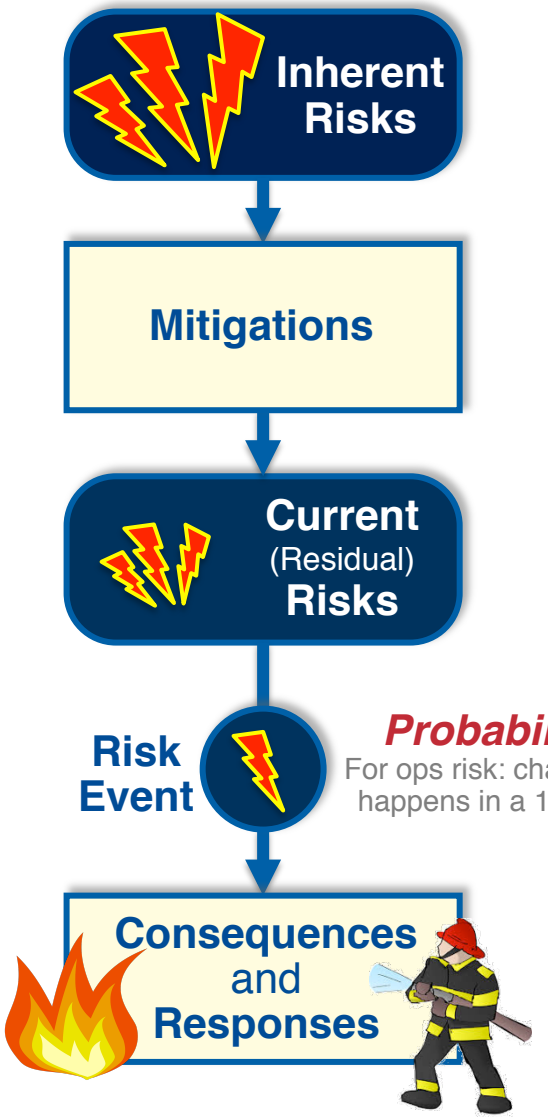
Cost impact (k$)
(including cost of response plans)

Schedule impact
(including delays due to responses)

Technical impact

- **Probability** and **Impacts** are estimated post-mitigation
- **Impacts** cover the risk event itself and the response plans

Probability and Impacts



Probability (%)
For ops risk: chance that risk happens in a 1 year period

Cost impact (k$)
(including cost of response plans)

Schedule impact
(including delays due to responses)

Technical impact

Estimate the cost of proposed new (mitigation) actions
Proposed Actions Cost (k$)

Decide which new actions should be incorporated into baseline plan (cost-benefit trade-offs)

Probability x Cost Impact (k$)

Risk Ranking

Risks are ranked according to the values of the **Probability** and **Impacts** (technical, cost, schedule). *The register tool does the ranking automatically.*

Risk Impact Scoring	Low Impact	Medium Impact	High Impact
Technical Impact	Slightly sub-standard	Moderately sub-standard	Significantly sub-standard or KPP in jeopardy
Cost Impact	< 0.1 M$	(0.1 - 1) M$	> 1 M$
Schedule Impact	< 2 weeks	2 weeks – 2 months	> 2 months

Maximum value of all impacts (above) determines overall risk impact (below)

Risk ranking matrix (Probability vs. Impact)		Low Impact	Medium Impact	High Impact
Very High	64 - 100%	Medium Rank	High Rank	High Rank
High	39 - 64%	Medium Rank	High Rank	High Rank
Medium	21 - 39%	Low Rank	Medium Rank	High Rank
Low	9 - 21%	Low Rank	Medium Rank	Medium Rank
Very low	0 - 9%	Low Rank	Low Rank	Medium Rank

(these are current default values – matrix could be tuned if needed)

Risk Ranking – implications

High Rank risks → PM + Lab / DOE
- May jeopardize the Project's key performance parameters (KPPs)
- May lead to failure to complete major deliverables within cost or schedule
- Well-developed mitigation or response plans are required

Medium Rank risks → PM / L2 manager
- Not expected to jeopardize Project KPPs
- Significant impact on ability to deliver all scope in a timely & cost-effective manner
- Have mitigation or response plans.

Low Rank risks → L2 / L3 manager
- Will not jeopardize KPPs
- Modest technical, cost or schedule impact
- Mitigation or response plans not required

Risk Impact Scoring	Low Impact	Medium Impact	High Impact
Technical Impact	Slightly sub-standard	Moderately sub-standard	Significantly sub-standard or KPP in jeopardy
Cost Impact	< 0.1 M$	(0.1 - 1) M$	> 1 M$
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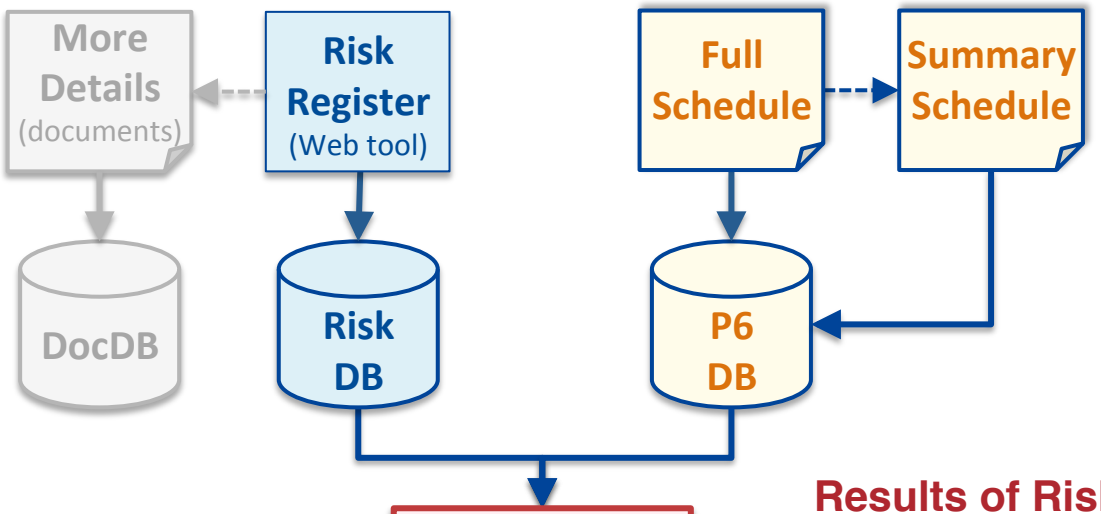
(these are current default values – matrix could be tuned if needed)

After the workshop

Risk Monte Carlo Modeling – Contingency Analysis

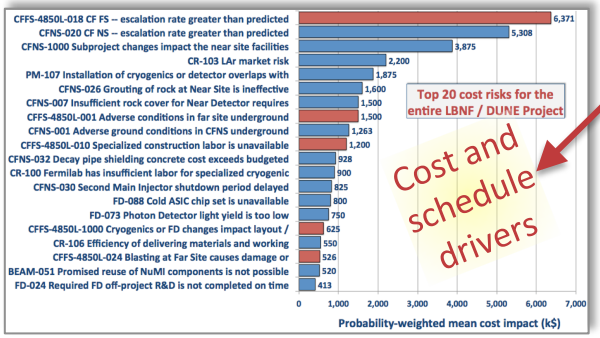


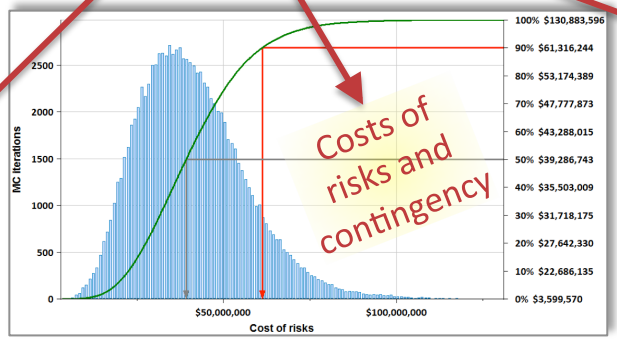
All activities to deliver the project, logically linked. Can be the full schedule or a summary schedule.

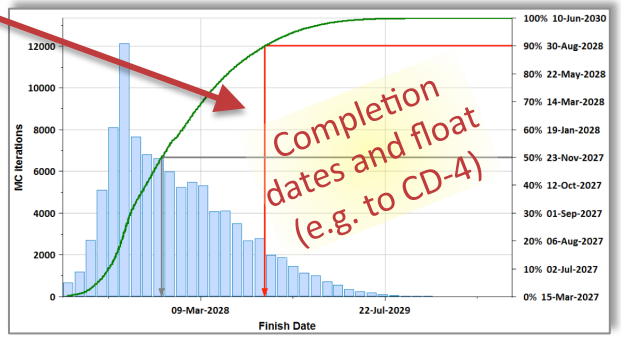
Implements Risk Events as probabilistic activities in the P6 schedule

Results of Risk Modeling

- Evaluate effectiveness of risk mitigations
- Identify cost and schedule risk drivers
- Determine cost and schedule contingency to finish on time, within budget (at 90% C.L.)





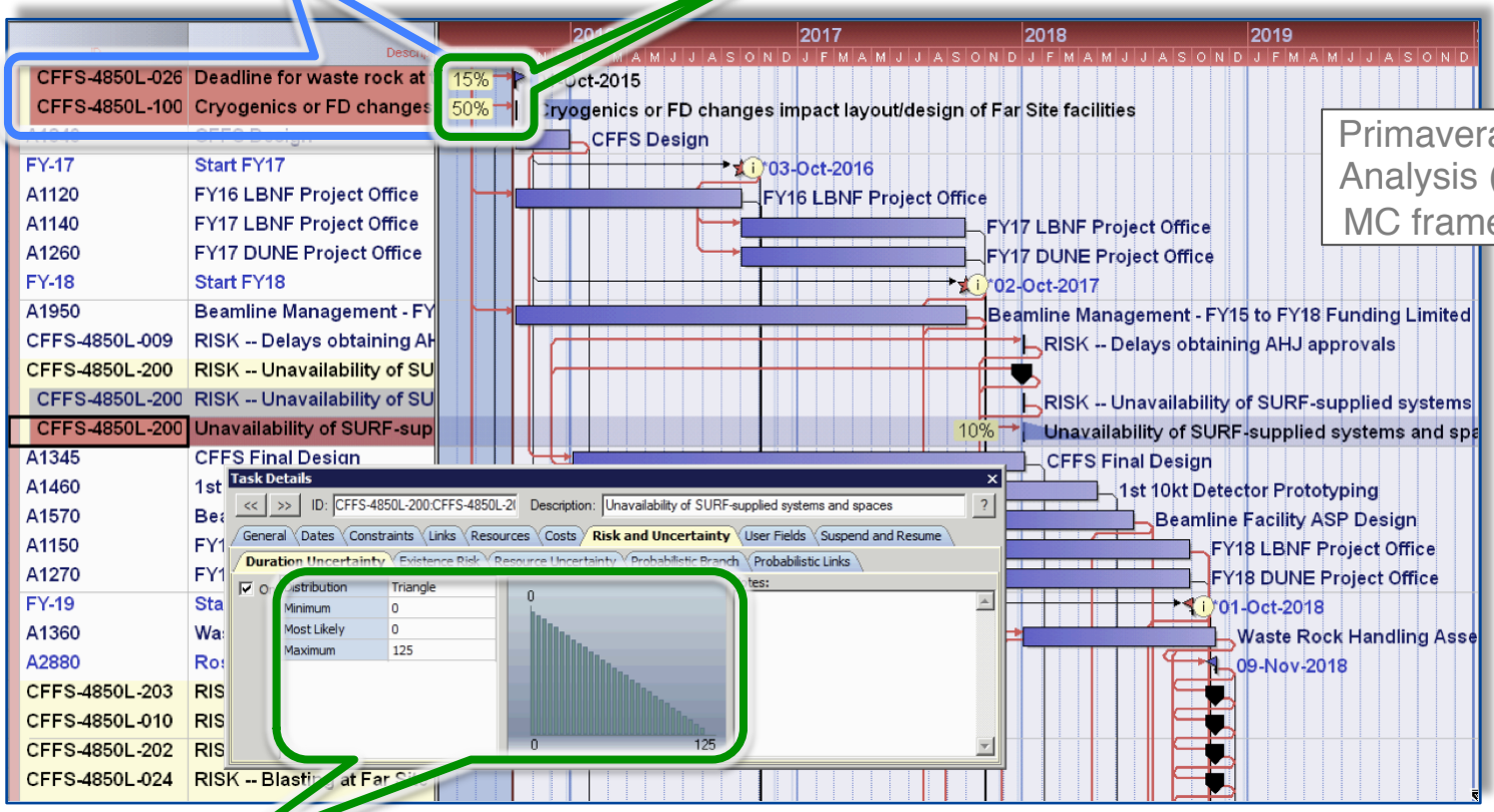


After the workshop

Risk Monte Carlo Modeling – Contingency Analysis

(1) Placeholder risk events are inserted into schedule with zero cost and zero duration

(2) Throw dice – if risk happens, risk activity is assigned risk impacts (cost and duration)



(3) Choose cost and schedule impacts from distributions

(4) Update entire schedule to generate one complete project outcome (scenario)

(5) Repeat steps (2) – (4) thousands of times to study the statistical behavior of many scenarios

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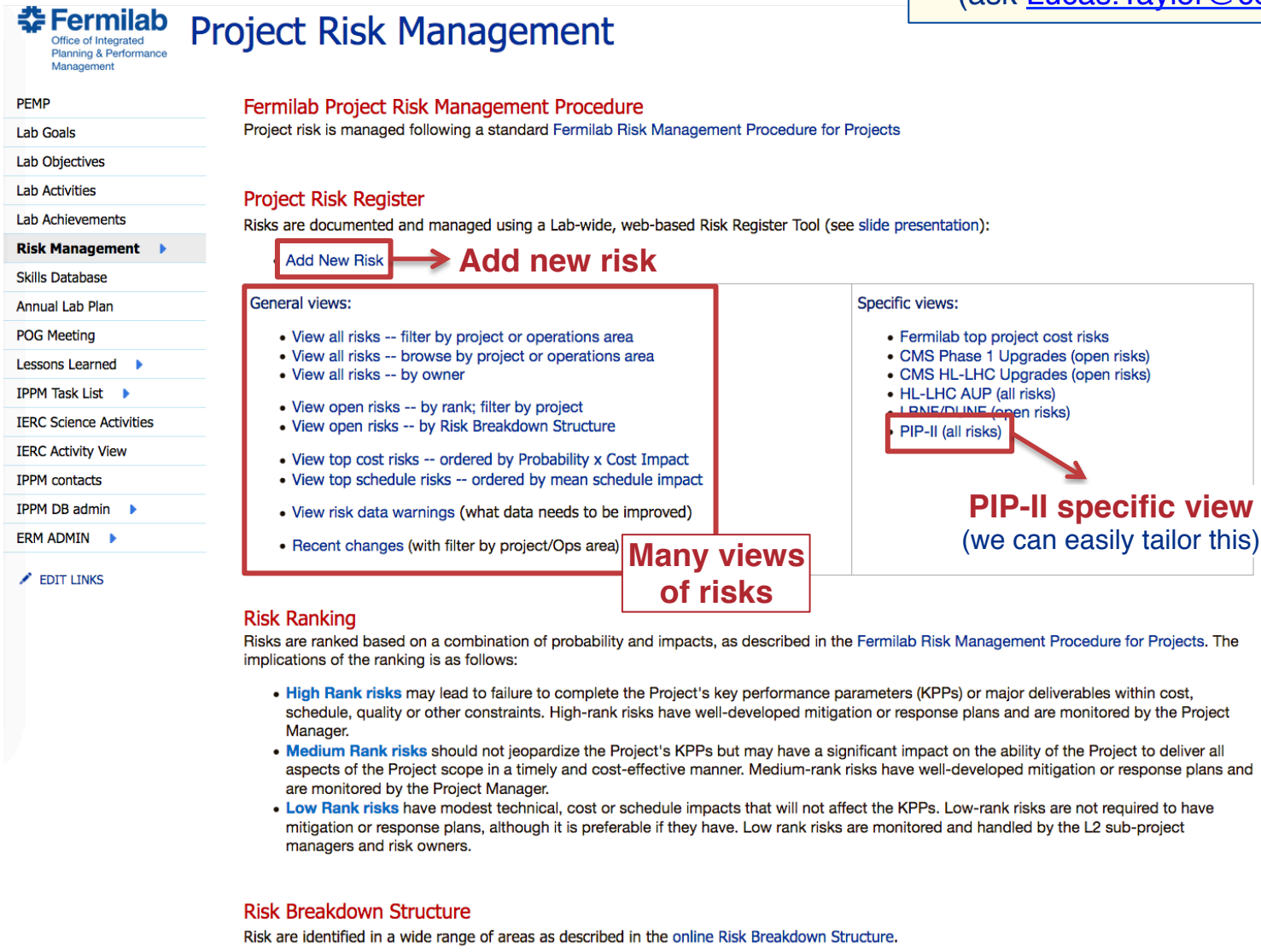
Practical Guide to the Fermilab Risk Register

Fermilab Risk Register

https://go.usa.gov/x9sCm

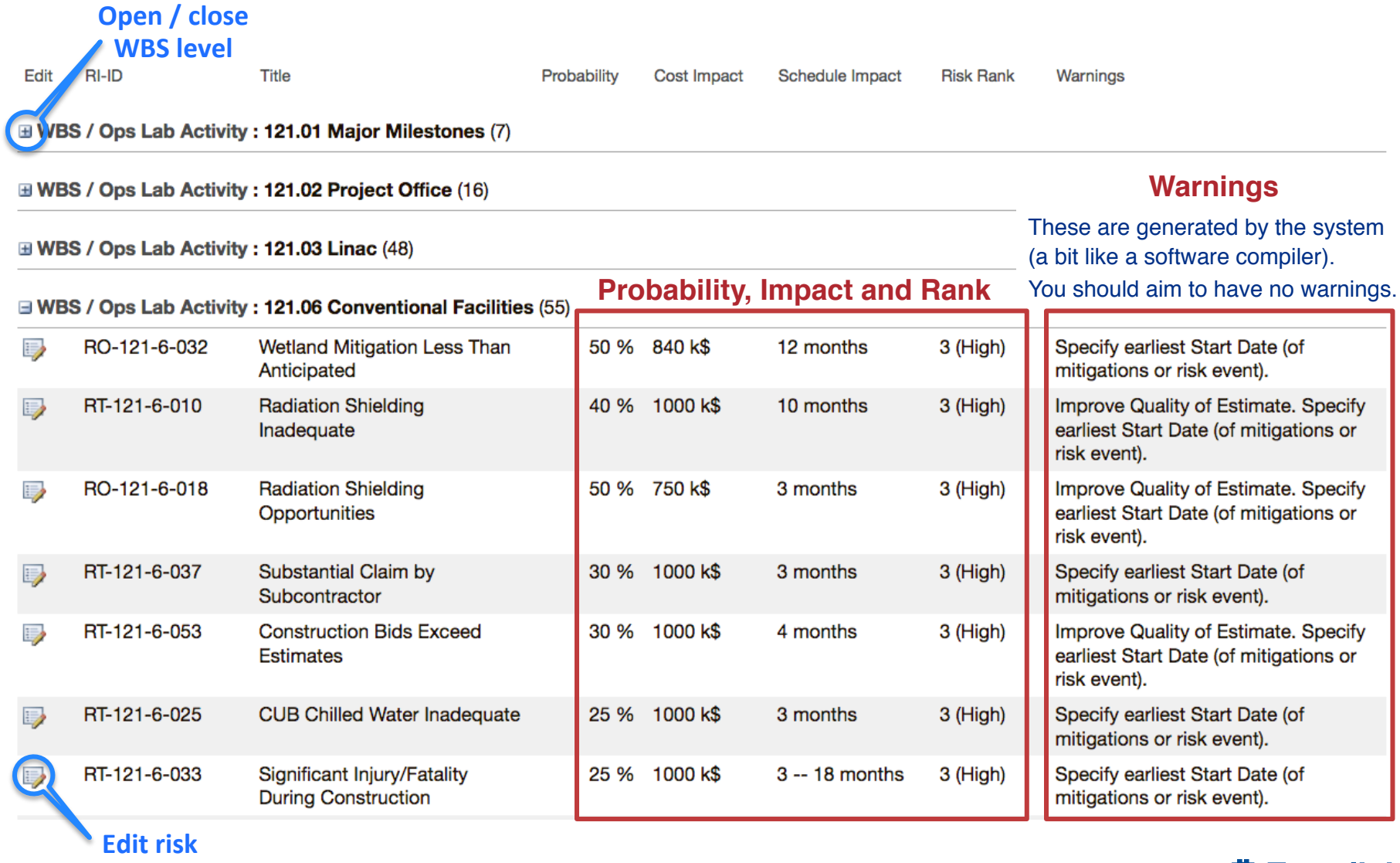
Login: *your-Fermilab-services-account*

(ask Lucas.Taylor@cern.ch to get access)



PIP-II Risk Register View

https://go.usa.gov/xXRrr



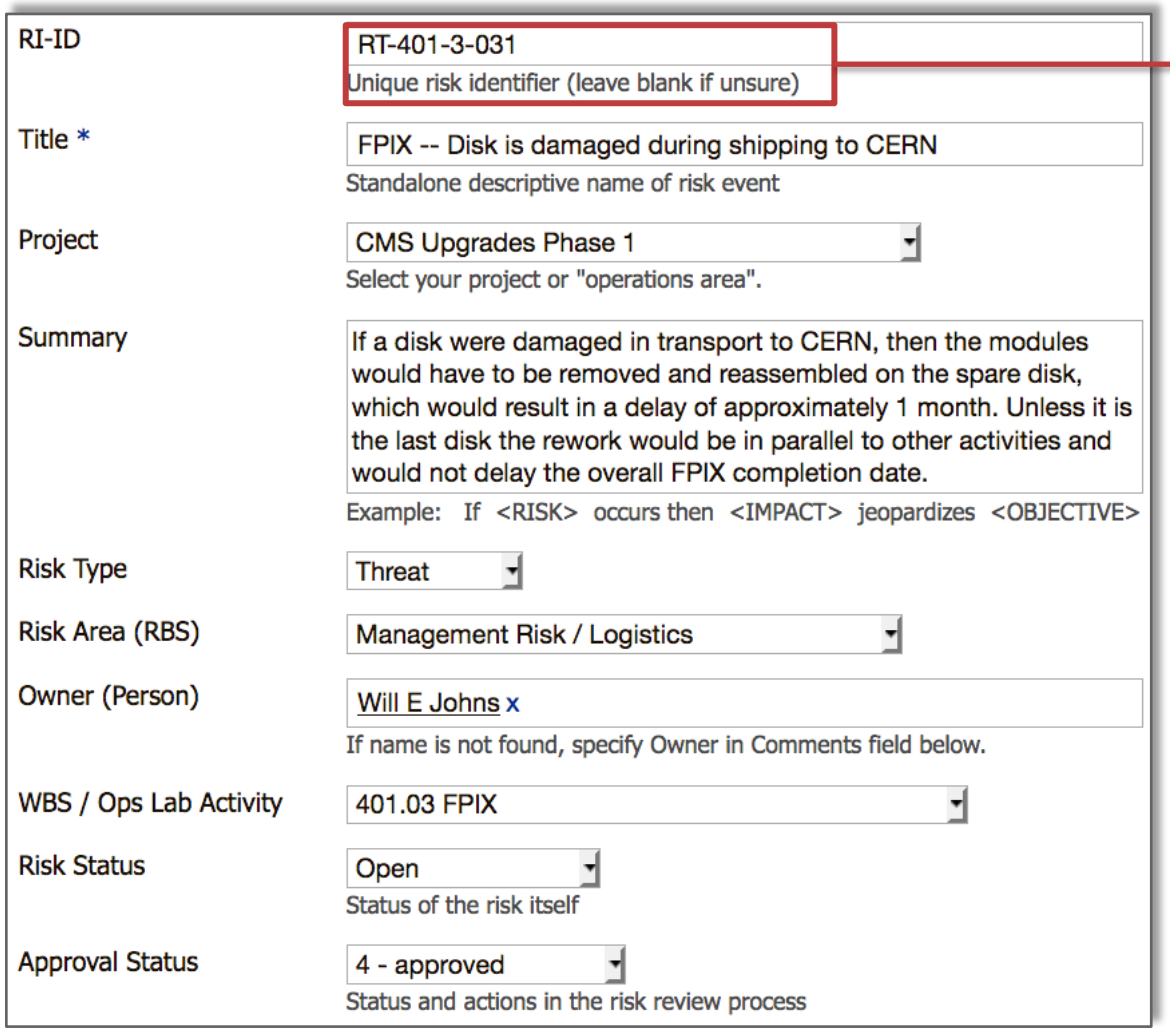
Probability, Impact and Rank

Warnings

These are generated by the system (a bit like a software compiler).

You should aim to have no warnings.

Risk Register: (1) General description & metadata

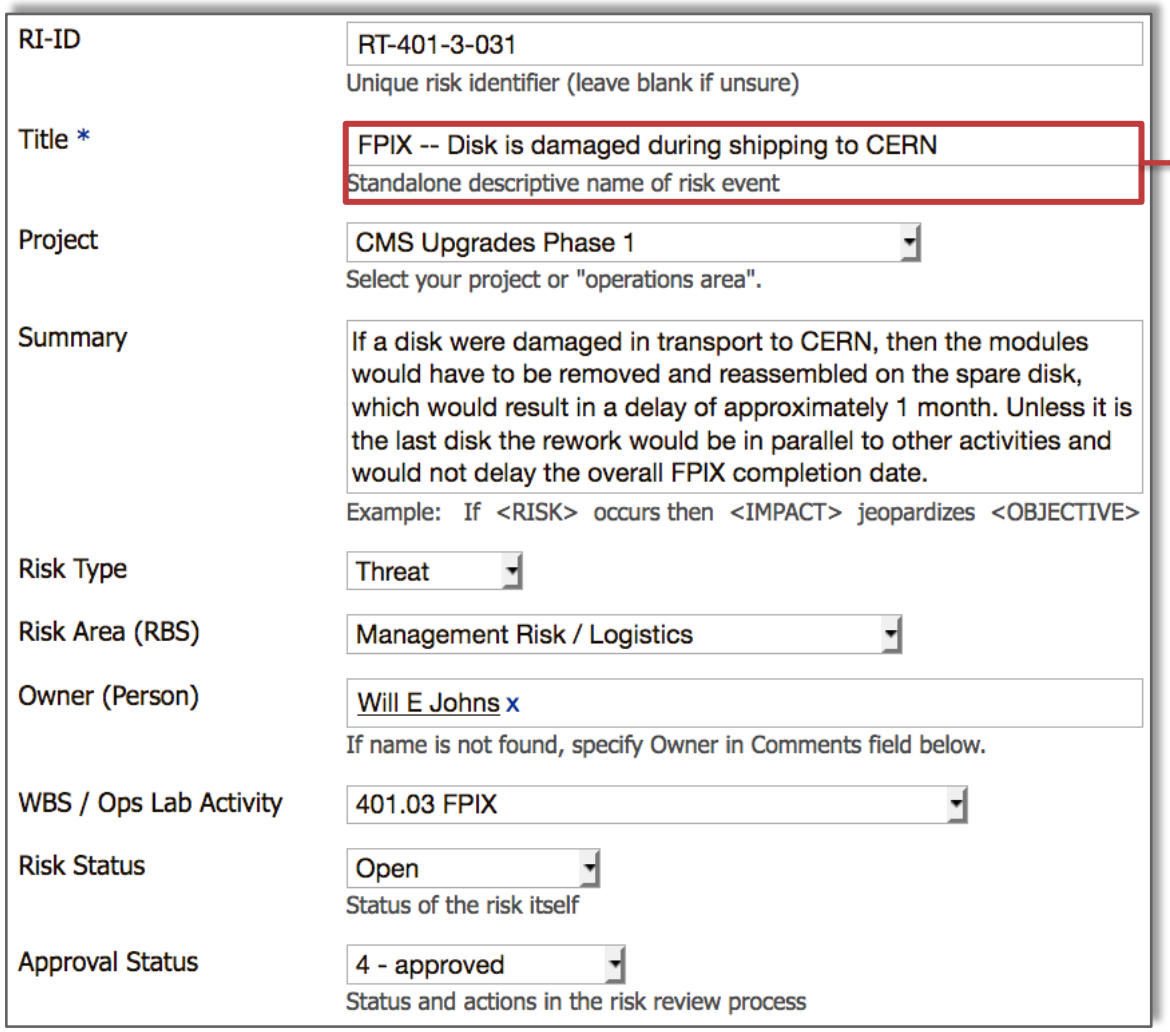


RI-ID	RT-401-3-031 Unique risk identifier (leave blank if unsure)
Title *	FPIX -- Disk is damaged during shipping to CERN Standalone descriptive name of risk event
Project	CMS Upgrades Phase 1 Select your project or "operations area".
Summary	If a disk were damaged in transport to CERN, then the modules would have to be removed and reassembled on the spare disk, which would result in a delay of approximately 1 month. Unless it is the last disk the rework would be in parallel to other activities and would not delay the overall FPIX completion date. Example: If <RISK> occurs then <IMPACT> jeopardizes <OBJECTIVE>
Risk Type	Threat
Risk Area (RBS)	Management Risk / Logistics
Owner (Person)	Will E Johns x If name is not found, specify Owner in Comments field below.
WBS / Ops Lab Activity	401.03 FPIX
Risk Status	Open Status of the risk itself
Approval Status	4 - approved Status and actions in the risk review process

Risk ID = Rx-nnn-i-jjj

- **x** = "T" (threat) or "O" (opportunity)
- **nnn** = P6 project ID (121 for PIP-II)
- **i** is the L2 P6 ID (= 1,2,3,4)
- **jjj** is risk number (001, 002, etc.)

Risk Register: (1) General description & metadata



RI-ID	RT-401-3-031 Unique risk identifier (leave blank if unsure)
Title *	FPIX -- Disk is damaged during shipping to CERN Standalone descriptive name of risk event
Project	CMS Upgrades Phase 1 Select your project or "operations area".
Summary	If a disk were damaged in transport to CERN, then the modules would have to be removed and reassembled on the spare disk, which would result in a delay of approximately 1 month. Unless it is the last disk the rework would be in parallel to other activities and would not delay the overall FPIX completion date. Example: If <RISK> occurs then <IMPACT> jeopardizes <OBJECTIVE>
Risk Type	Threat
Risk Area (RBS)	Management Risk / Logistics
Owner (Person)	Will E Johns x If name is not found, specify Owner in Comments field below.
WBS / Ops Lab Activity	401.03 FPIX
Risk Status	Open Status of the risk itself
Approval Status	4 - approved Status and actions in the risk review process

Risk title describes a risk event rather than a consequence of a risk

It should make sense standalone

Examples:

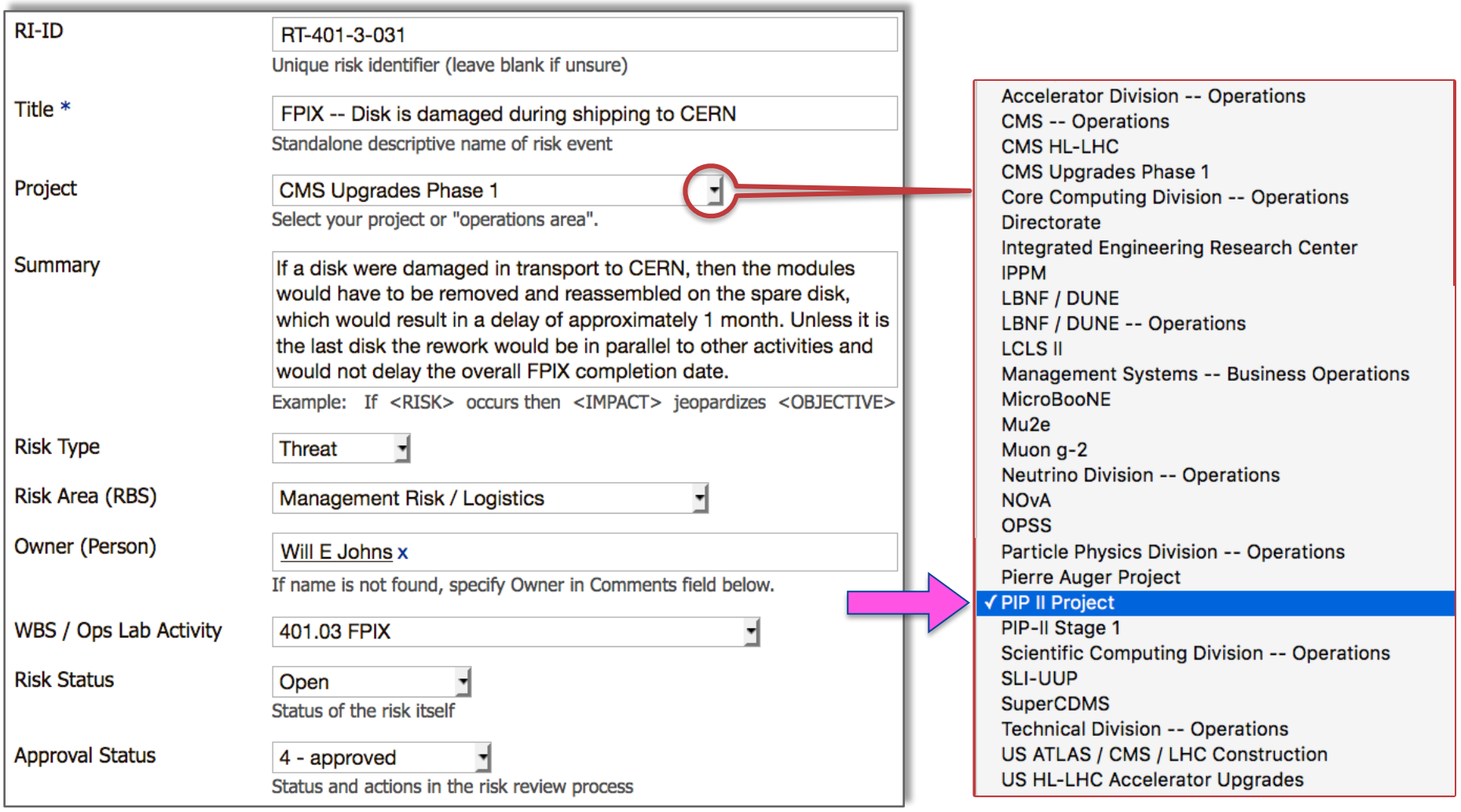
Not good: "Delivery damage"

Better: "FPIX – Disk is damaged during shipping to CERN"

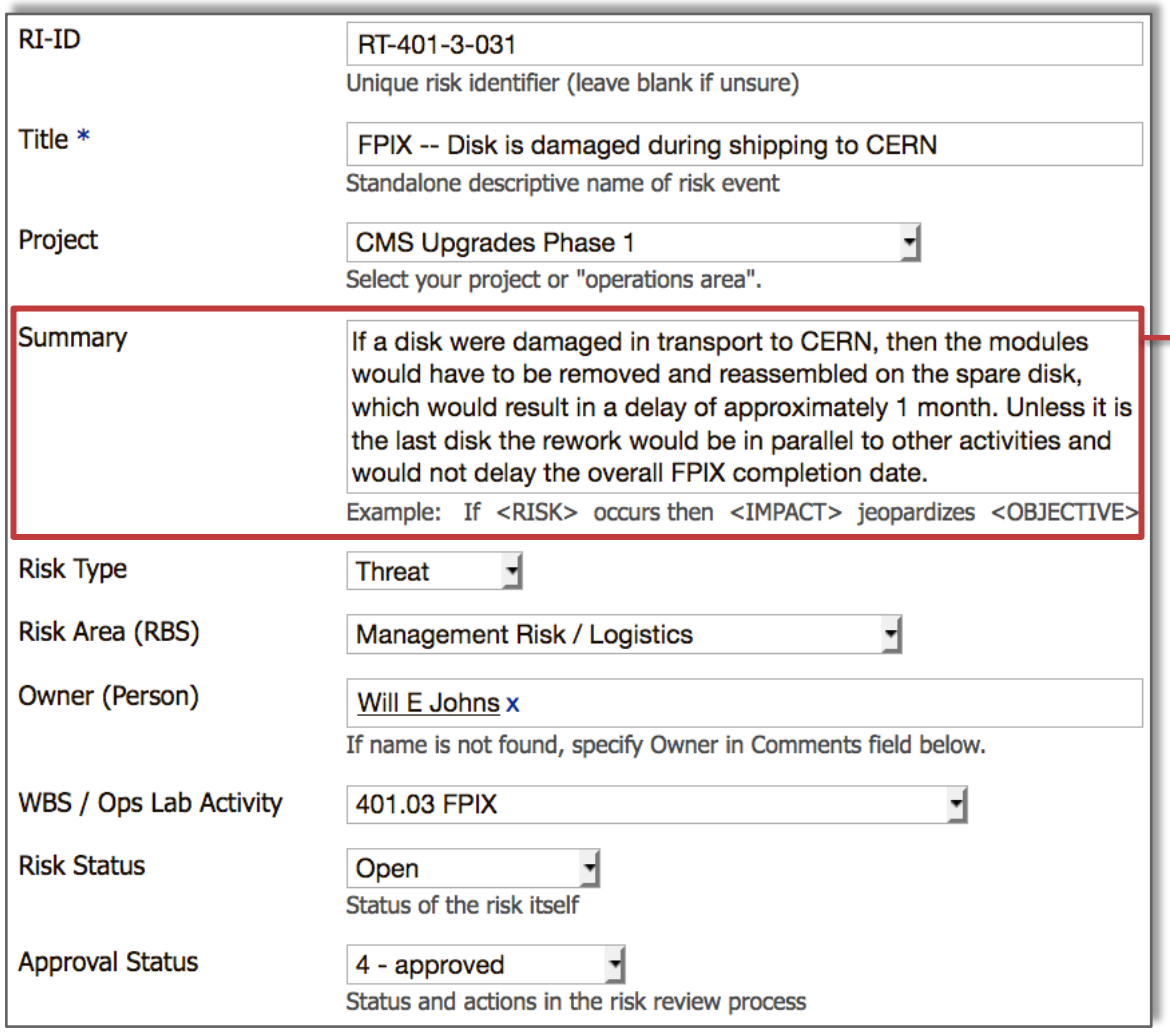
Not good: "Cost increases"

Better: "Niobium price increases faster than assumed escalation rate"

Risk Register: (1) General description & metadata



Risk Register: (1) General description & metadata



RI-ID	RT-401-3-031 Unique risk identifier (leave blank if unsure)
Title *	FPIX -- Disk is damaged during shipping to CERN Standalone descriptive name of risk event
Project	CMS Upgrades Phase 1 Select your project or "operations area".
Summary	If a disk were damaged in transport to CERN, then the modules would have to be removed and reassembled on the spare disk, which would result in a delay of approximately 1 month. Unless it is the last disk the rework would be in parallel to other activities and would not delay the overall FPIX completion date. Example: If <RISK> occurs then <IMPACT> jeopardizes <OBJECTIVE>
Risk Type	Threat
Risk Area (RBS)	Management Risk / Logistics
Owner (Person)	Will E Johns x If name is not found, specify Owner in Comments field below.
WBS / Ops Lab Activity	401.03 FPIX
Risk Status	Open Status of the risk itself
Approval Status	4 - approved Status and actions in the risk review process

Risk "grammar" captures risk **causes** and **effects**, and hence points towards mitigation actions

If <RISK EVENT> occurs then

- IMPACTS to technical scope, or
- IMPACTS to cost, or
- IMPACTS to schedule

would jeopardize the Project's

- Technical OBJECTIVES (e.g. KPP)
- Cost OBJECTIVES (e.g. TPC)
- Schedule OBJECTIVES (e.g. CD-4)

(If it does not jeopardize a project objective, is it really a risk?)

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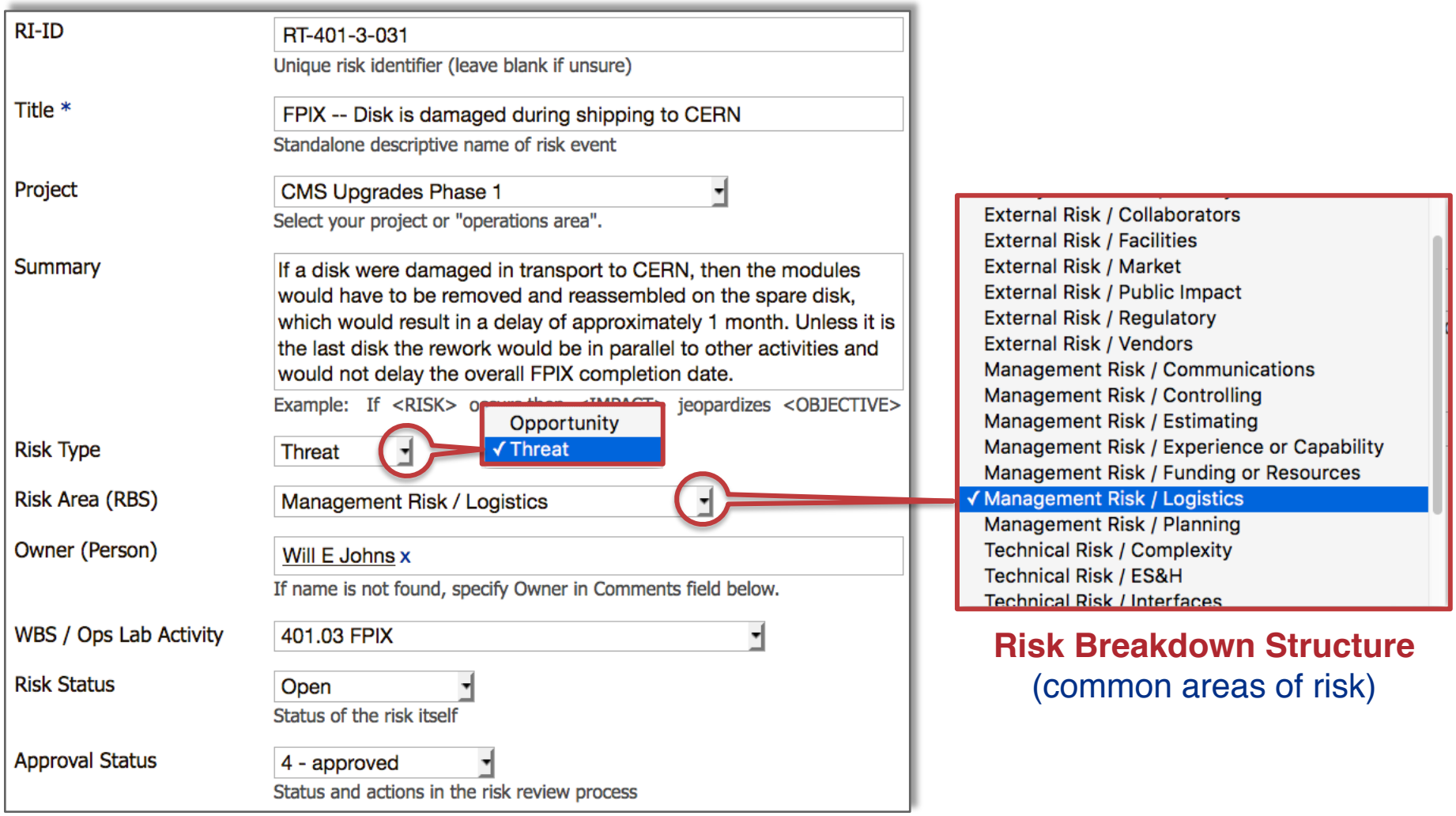
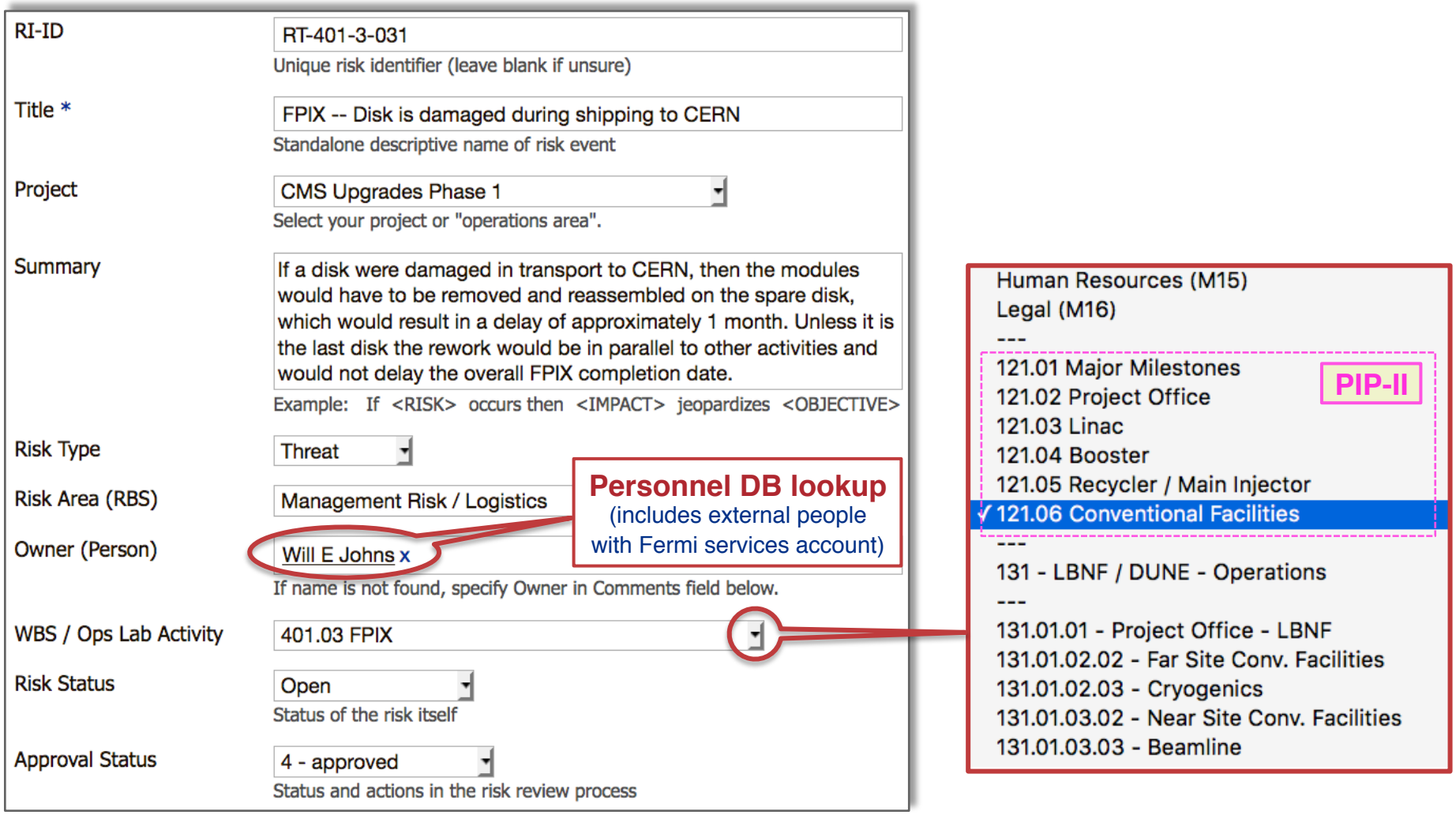
Risk Register: (1) General description & metadata

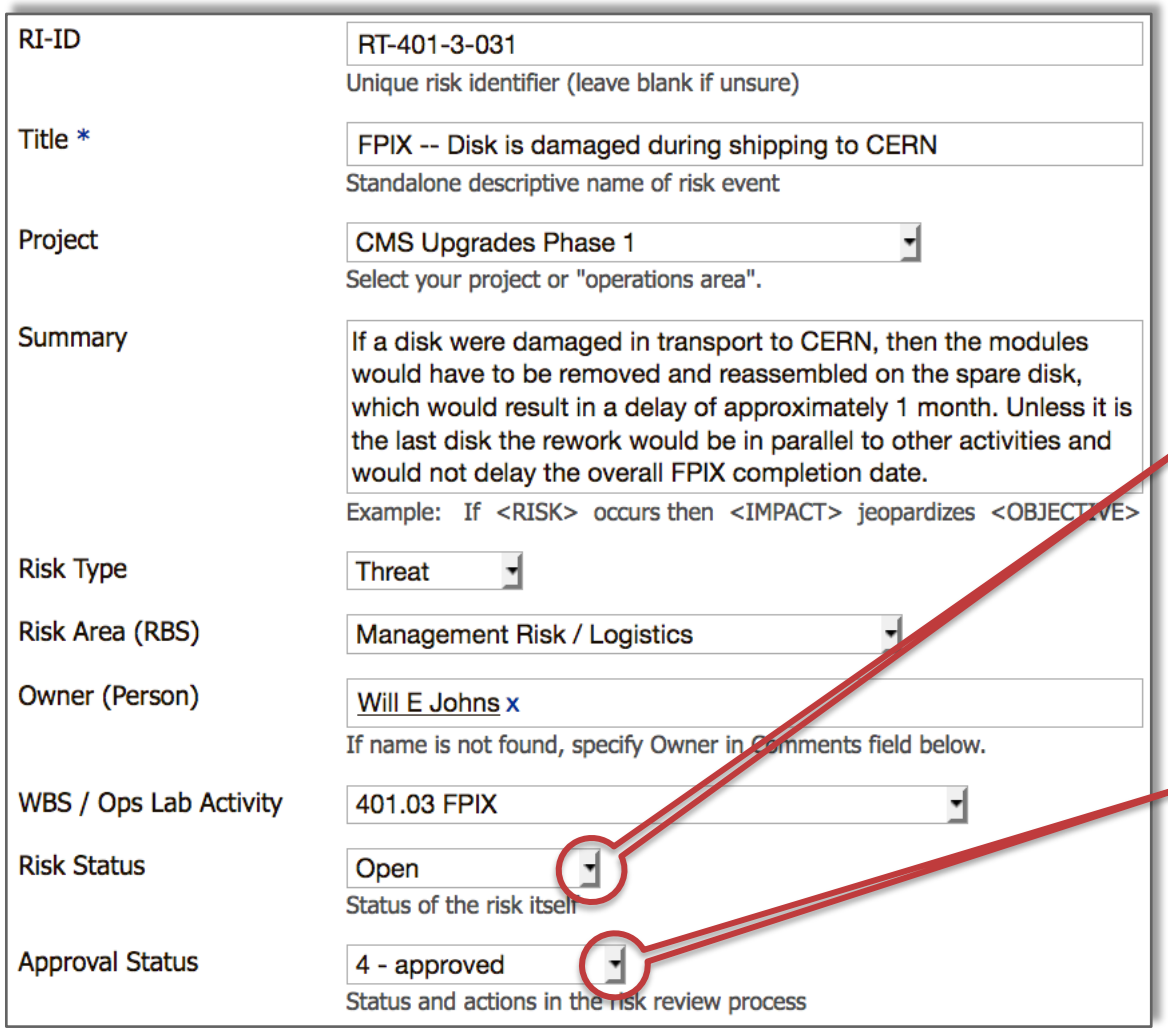


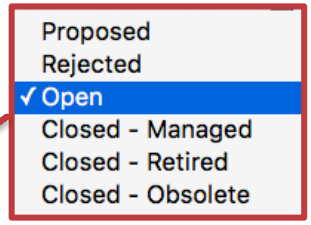
Risk Breakdown Structure
(common areas of risk)

Risk Register: (1) General description & metadata



Risk Register: (1) General description & metadata





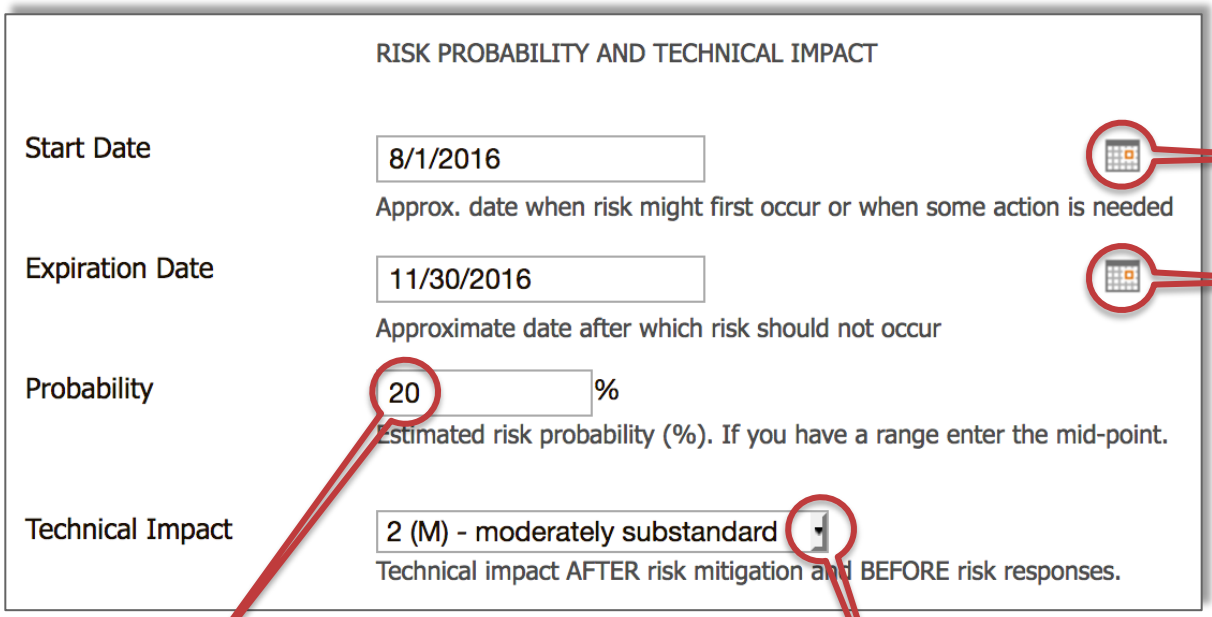
Risk Status:

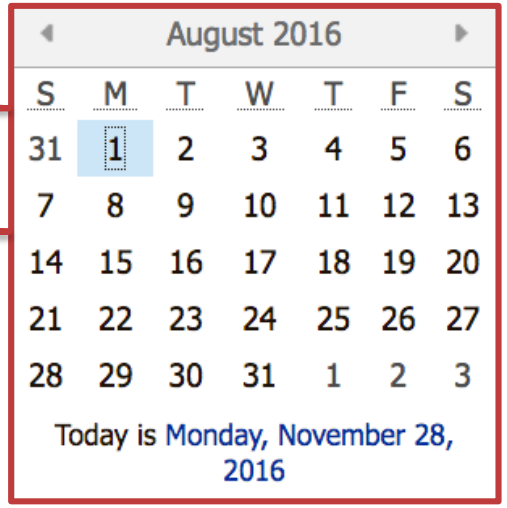
- Used in project execution phase to track if risk is still a concern

Approval status:

- Used in planning phase (e.g. risk workshop) to tag progress
- Enter proposed risks freely – use this field to tag approval (or not)

Risk Register: (2) dates, probability, tech. impact

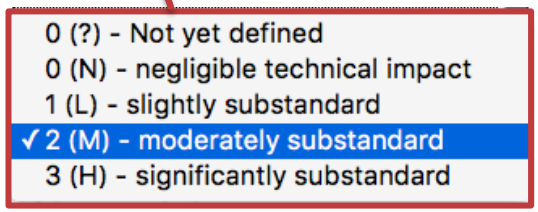




Entering dates is optional
They can be used for risk reports (e.g. “6-month look-ahead”) and to track risks to closure

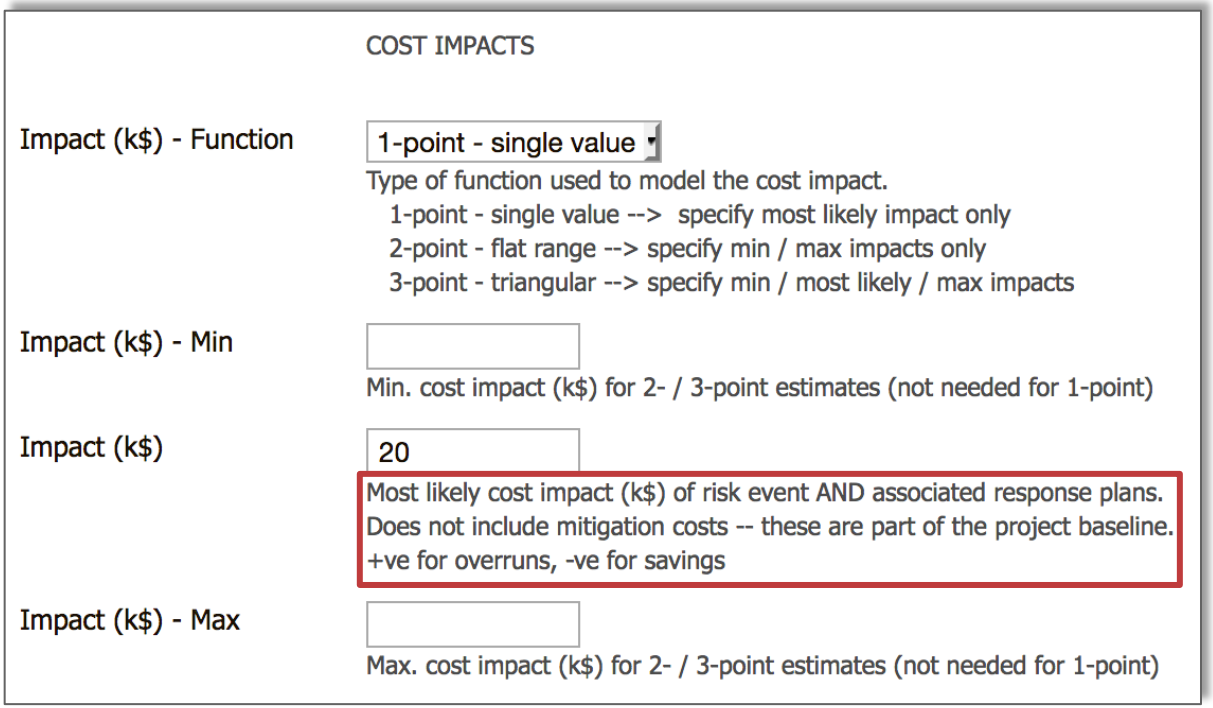
Probability that risk occurs
This is critical input to the choice of risk mitigation strategy, and the contingency and float MC analysis

It does not need to be very precise!
(by it’s very nature, risk is imprecise)



Used in risk ranking. Impact levels are project-specific.

Risk Register: (3) cost impact



COST IMPACTS

Impact (k$) - Function: 1-point - single value

Type of function used to model the cost impact.
1-point - single value --> specify most likely impact only
2-point - flat range --> specify min / max impacts only
3-point - triangular --> specify min / most likely / max impacts

Impact (k$) - Min:

Min. cost impact (k$) for 2- / 3-point estimates (not needed for 1-point)

Impact (k$): 20

Most likely cost impact (k$) of risk event AND associated response plans.
Does not include mitigation costs -- these are part of the project baseline.
+ve for overruns, -ve for savings

Impact (k$) - Max:

Max. cost impact (k$) for 2- / 3-point estimates (not needed for 1-point)

- Impact *(assessed **after** mitigations in the baseline were done)* includes
  - Cost of risk if it happens (e.g. higher cost of a backup vendor)
  - Cost of response plans (e.g. rework needed to repair damage)
- Cost impact fields do not include burn rate costs of delays (standing army and escalation) – this comes out of a MC risk simulation of the schedule

Risk Register: (3) cost impact – single value

COST IMPACTS

Impact (k$) - Function: 1-point - single value

Type of function used to model the cost impact.
1-point - single value --> specify most likely impact only
2-point - flat range --> specify min / max impacts only
3-point - triangular --> specify min / most likely / max impacts

Impact (k$) - Min:

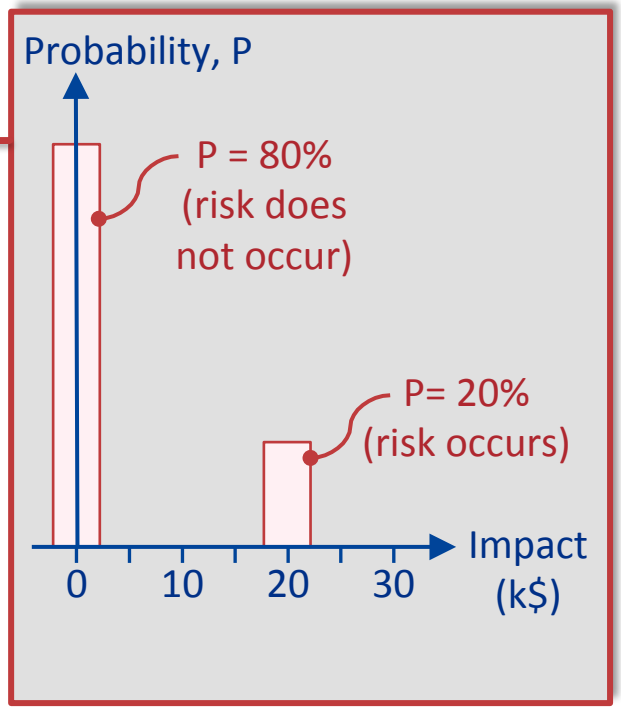
Min. cost impact (k$) for 2- / 3-point estimates (not needed for 1-point)

Impact (k$): 20 — Most likely value

Most likely cost impact (k$) of risk event AND associated response plans.
Does not include mitigation costs -- these are part of the project baseline.
+ve for overruns, -ve for savings

Impact (k$) - Max:

Max. cost impact (k$) for 2- / 3-point estimates (not needed for 1-point)



- 1-point estimate (single value) for impact
  - If risk occurs, impact is always exactly 20k$

Risk Register: (3) cost impact – range

COST IMPACTS

Impact (k$) - Function: 2-point - flat range

Type of function used to model the cost impact.
1-point - single value --> specify most likely impact only
2-point - flat range --> specify min / max impacts only
3-point - triangular --> specify min / most likely / max impacts

Impact (k$) - Min: 15 — Minimum value

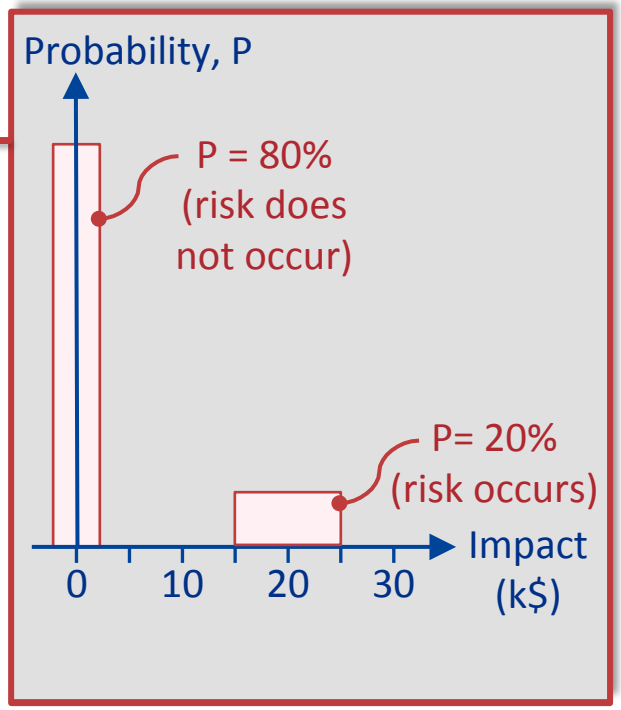
Min. cost impact (k$) for 2- / 3-point estimates (not needed for 1-point)

Impact (k$):

Most likely cost impact (k$) of risk event AND associated response plans.
Does not include mitigation costs -- these are part of the project baseline.
+ve for overruns, -ve for savings

Impact (k$) - Max: 25 — Maximum value

Max. cost impact (k$) for 2- / 3-point estimates (not needed for 1-point)



- 2-point estimate (flat range) for impact
  - If risk occurs, impact is in range 15k$ – 25k$ (all equally likely)
  - Most likely impact = 20k$; Mean impact = 20k$

Risk Register: (3) cost impact – 3-point estimate

COST IMPACTS

Impact (k$) - Function: 3-point - triangular

Type of function used to model the cost impact.
1-point - single value --> specify most likely impact only
2-point - flat range --> specify min / max impacts only
3-point - triangular --> specify min / most likely / max impacts

Impact (k$) - Min: 15 — Minimum value

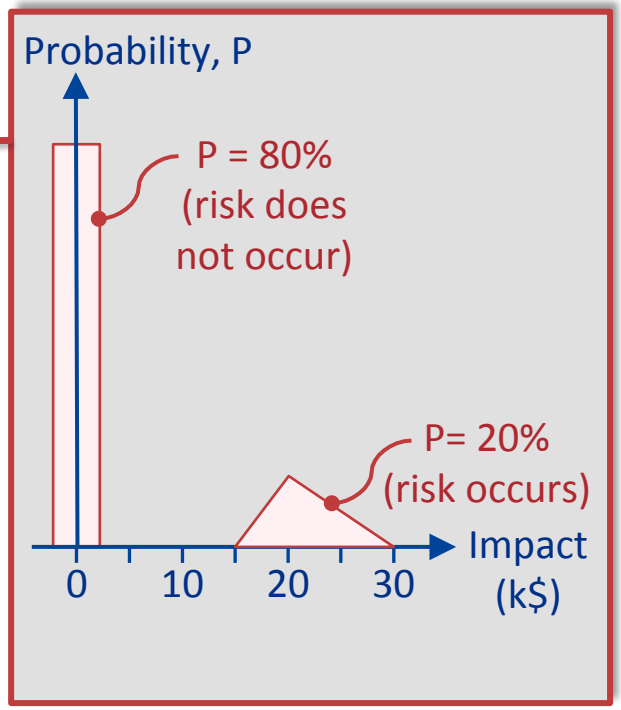
Min. cost impact (k$) for 2- / 3-point estimates (not needed for 1-point)

Impact (k$): 20 — Most likely value

Most likely cost impact (k$) of risk event AND associated response plans.
Does not include mitigation costs -- these are part of the project baseline.
+ve for overruns, -ve for savings

Impact (k$) - Max: 30 — Maximum value

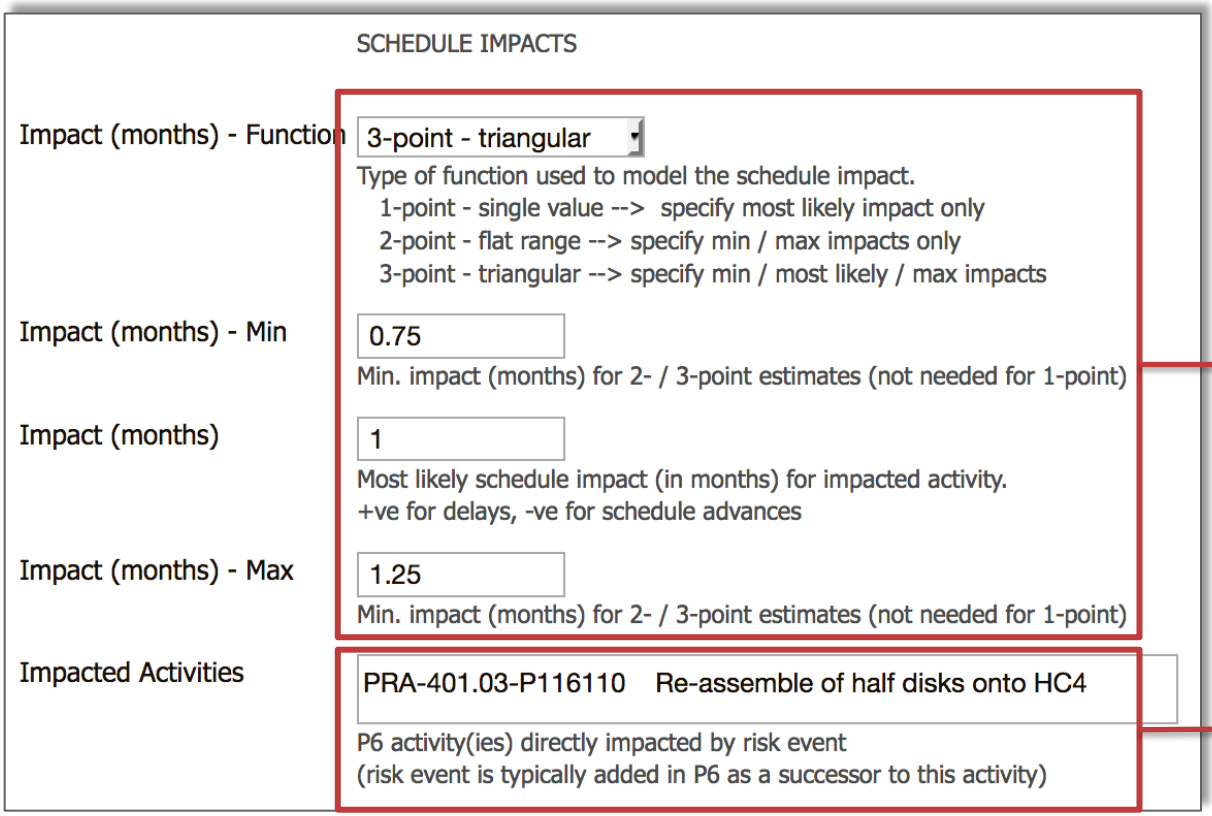
Max. cost impact (k$) for 2- / 3-point estimates (not needed for 1-point)



- 3-point estimate (triangle distribution) for impact
  - If risk occurs, impact in range 15k$ – 30k$ (extremes less likely)
  - Most likely impact = 20k$; Mean impact* = 21.7k$

* Mean **x** of triangular probability distribution function
= (minimum **x** + most likely **x** + maximum **x**) / 3

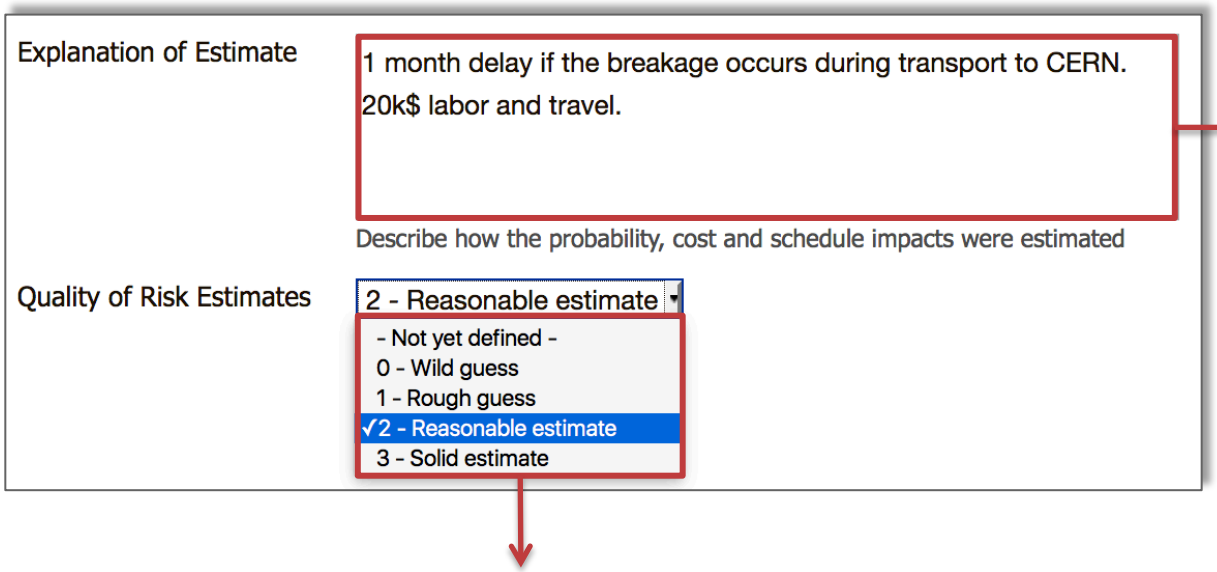
Risk Register: (4) schedule impact



1-, 2-, 3-point schedule impacts (in months) (similar to cost impacts)

For now, just say in a few words what work is delayed

Risk Register: (5) explanation & quality of estimate

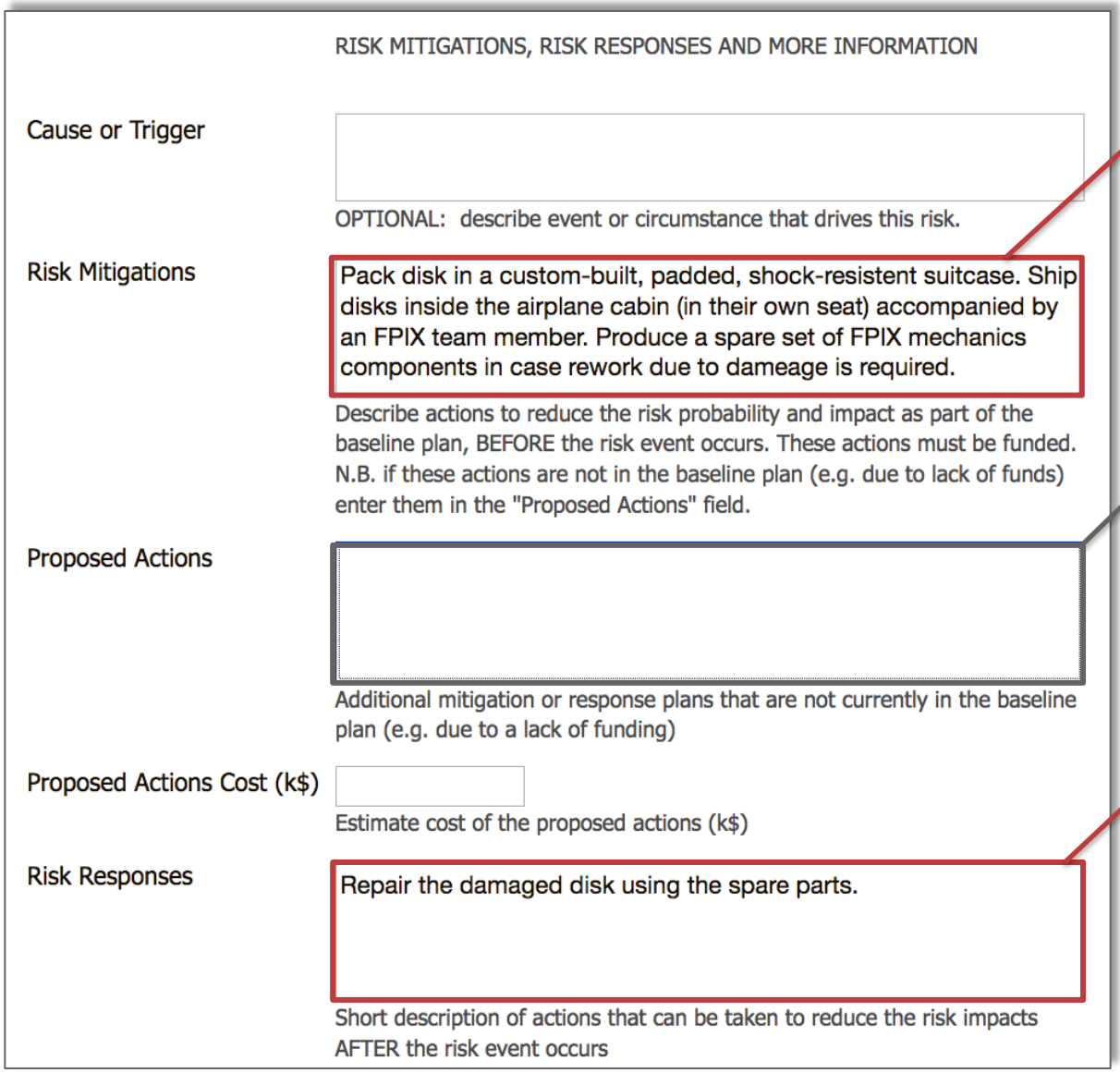


Brief explanation of how the risk probability and impacts were estimated

See “Link to more details” field below, to add a URL

Tag your level of confidence in the estimates so you know what might need follow-up analysis

Risk Register: (6) mitigation and response plans


RISK MITIGATIONS, RISK RESPONSES AND MORE INFORMATION

Cause or Trigger

OPTIONAL: describe event or circumstance that drives this risk.

Risk Mitigations

Pack disk in a custom-built, padded, shock-resistent suitcase. Ship disks inside the airplane cabin (in their own seat) accompanied by an FPIX team member. Produce a spare set of FPIX mechanics components in case rework due to dameage is required.

Describe actions to reduce the risk probability and impact as part of the baseline plan, BEFORE the risk event occurs. These actions must be funded. N.B. if these actions are not in the baseline plan (e.g. due to lack of funds) enter them in the "Proposed Actions" field.

Proposed Actions

Additional mitigation or response plans that are not currently in the baseline plan (e.g. due to a lack of funding)

Proposed Actions Cost (k$)

Estimate cost of the proposed actions (k$)

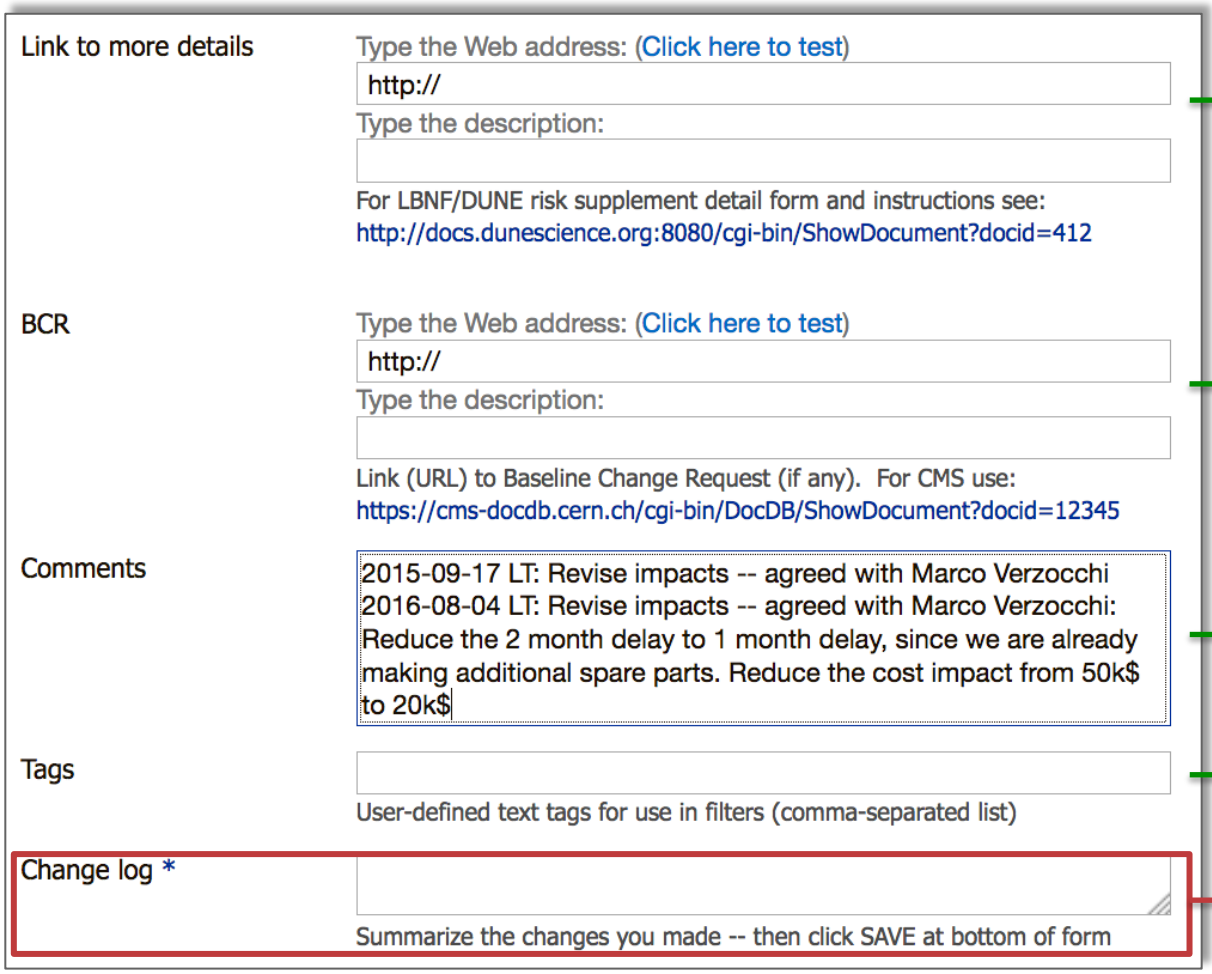
Risk Responses

Repair the damaged disk using the spare parts.

Short description of actions that can be taken to reduce the risk impacts AFTER the risk event occurs

- **Risk mitigations:** pre-emptive actions to reduce the probability and impact of a risk **BEFORE** it happens. Such actions are included in the baseline plan.
- **Proposed Actions:** capture any mitigations that you are considering, but which are not yet approved for inclusion in the baseline
- **Risks responses:** actions that are executed **AFTER** a risk happens, to reduce the impacts. Cost and schedule impacts should also account for response plans.

Risk Register: (7) more information



Optional: link to more information (can be left blank)

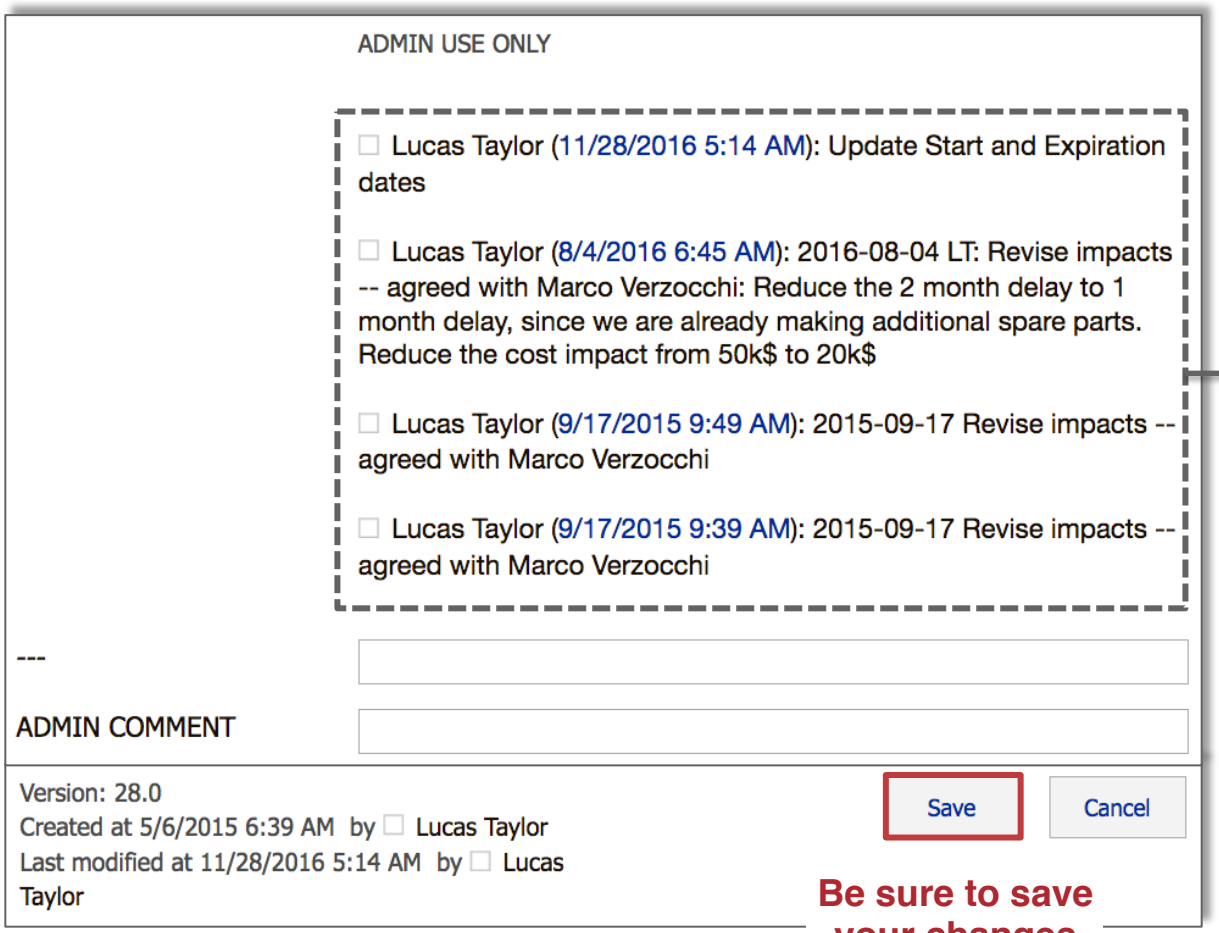
Pre-CD-1: leave blank (used for baseline change control)

Optional: any other comments (e.g. next steps to assess risk)

Optional: tags for creating custom filters or views

Obligatory: keeps track of what was changed and why

Risk Register: (8) version history



Displays the change log

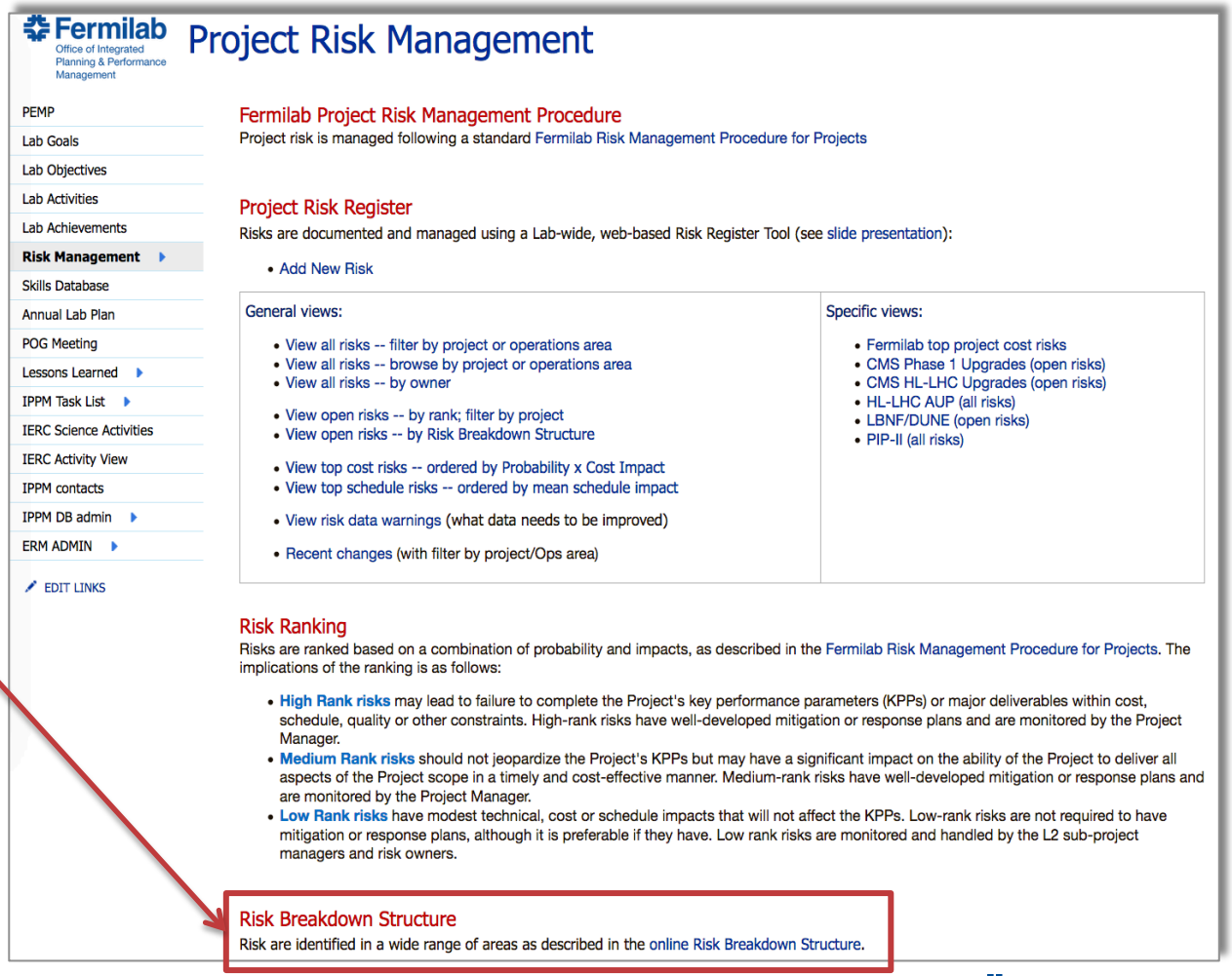
Be sure to save your changes

Risk Breakdown Structure

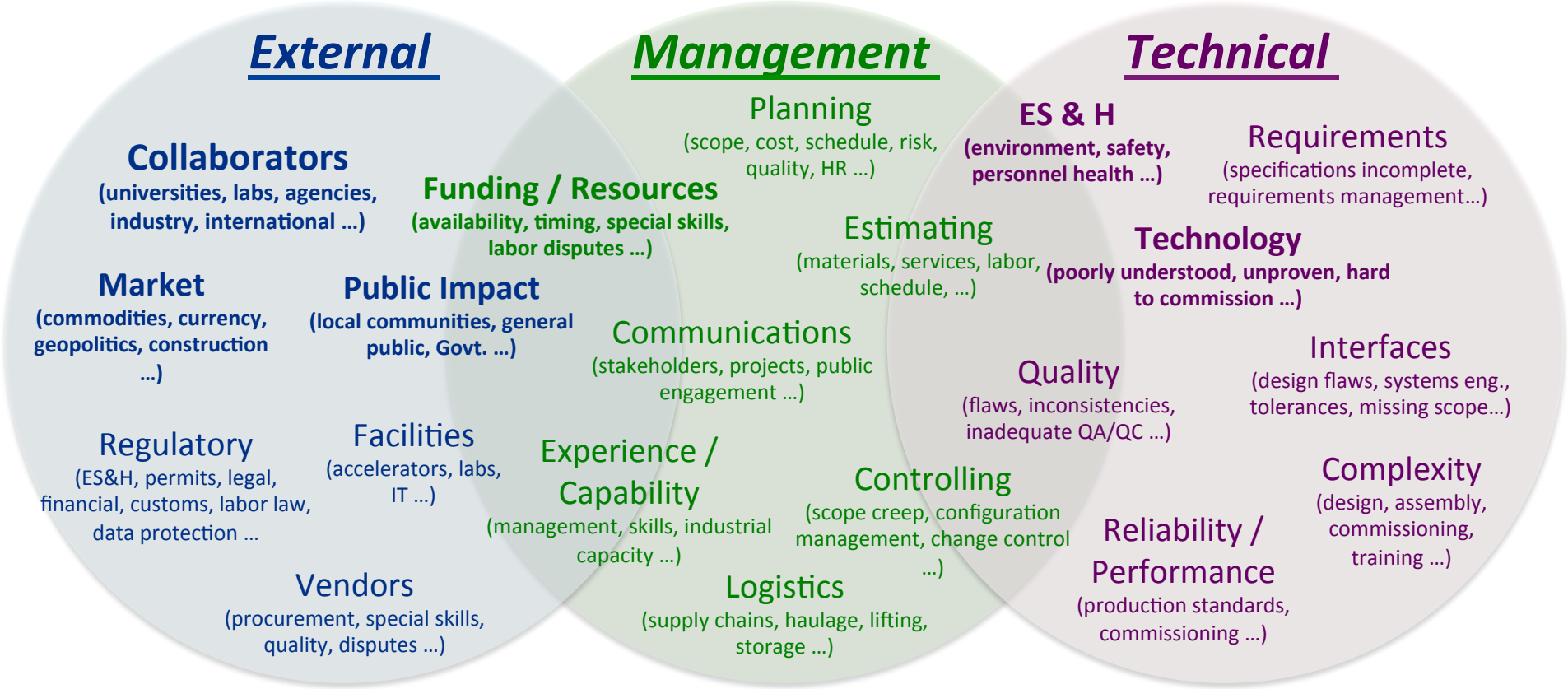
https://go.usa.gov/x9sCm

One risk identification approach

1. Brainstorm all risks with open mind
2. Consider risks for each WBS area
3. Look through the Risk Breakdown Structure to see if you missed major risk areas



Risk Breakdown Structure



Some takeaways

- ***Risk Management*** **just means** ***"managing when there is uncertainty"***
  - You all already do this. The risk register tool just provides structure.
- **Consider positive** ***opportunities*** **as well as negative** ***threats***
- **Capture candidate risks in the register without too much filtering** and don't over-polish the data. You'll refine everything later anyway.
  - Come from different angles: brainstorming, WBS, RBS review
- **Don't confuse** ***risk causes*** **with** ***risk events*** **with** ***risk impacts***
  - Work back from risk consequences to find possible root causes
- **Consider pre-emptive** ***mitigations*** **and reactive** ***risk responses***
- **Today: aim to capture all the major risks with broad brush strokes**
  - Don't forget to agree on a risk owner to further assess the risk

More information

- Fermilab Risk Management → https://go.usa.gov/x9sCU
- **Project Risk Management** → https://go.usa.gov/x9sCm
- Risk Management Board → https://go.usa.gov/xXcyM
- Operations Risk Management → https://go.usa.gov/x9sCp
- Enterprise Risk Management → https://go.usa.gov/x9sCv

- **PIP-II Risk Summary** → https://go.usa.gov/xXRrr

Any questions: Lucas.Taylor@cern.ch

EXTRAS

Fermilab | U.S. DEPARTMENT OF ENERGY | Office of Science

Fermilab Risk Register

SharePoint Reference Documentation

SharePoint details

The Risk Register is built using several three inter-linked Lists:

1. **RBS**
   - Risk Breakdown Structure: areas of risk with descriptions
   - Each risk is assigned an RBS category

2. **Projects**
   - List of projects (also includes operations areas)
   - Each risk is assigned to a project / ops area

3. **Risk Register**
   - The main list – one entry per risk

RBS : SharePoint List Definition

Columns

A column stores information about each item in the list. The following columns are currently available in this list:

Column (click to edit)	Type	Required
Risk Area -- base	Choice	
Risk Topic	Single line of text	✓
RBS	Calculated (calculation based on other columns)	
Risk Area	Calculated (calculation based on other columns)	
Description	Multiple lines of text	
Modified	Date and Time	
Created	Date and Time	
Created By	Person or Group	
Modified By	Person or Group	

Projects: SharePoint List Definition

Columns

A column stores information about each item in the list. The following columns are currently available in this list:

Column (click to edit)	Type	Required
Title	Single line of text	✓
P6 ID	Number	
Home page	Hyperlink or Picture	
ID plus Title	Calculated (calculation based on other columns)	
IS_OPERATIONS	Single line of text	
Modified	Date and Time	
Created	Date and Time	
Created By	Person or Group	
Modified By	Person or Group	

Risk Register: SharePoint List Definition (1 of 6)

Columns

A column stores information about each item in the list. The following columns are currently available in this list:

Column (click to edit)	Type	Required
RI-ID	Single line of text	
Title	Single line of text	✓
Project	Lookup	
Summary	Multiple lines of text	
Risk Type	Choice	
Risk Area (RBS)	Lookup	
Owner (Person)	Person or Group	
WBS / Ops Lab Activity	Choice	
Risk Status	Choice	
Approval Status	Choice	
Start Date	Date and Time	
Expiration Date	Date and Time	

Risk Register: SharePoint List Definition (2 of 6)

Probability	Number
Technical Impact	Choice
Impact (k$) - Function	Choice
Impact (k$) - Min	Number
Impact (k$)	Number
Impact (k$) - Max	Number
Impact (months) - Function	Choice
Impact (months) - Min	Number
Impact (months)	Number
Impact (months) - Max	Number
Impacted Activities	Multiple lines of text
Explanation of Estimate	Multiple lines of text
Quality of Risk Estimates	Choice

Risk Register: SharePoint List Definition (3 of 6)

Cause or Trigger	Multiple lines of text
Risk Mitigations	Multiple lines of text
Proposed Actions	Multiple lines of text
Proposed Actions Cost (k$)	Number
Risk Responses	Multiple lines of text
Link to more details	Hyperlink or Picture
BCR	Hyperlink or Picture
Comments	Multiple lines of text
Change log	Multiple lines of text

Risk Register: SharePoint List Definition (4 of 6)

ADMIN COMMENT	Single line of text
ADMIN TAGS	Single line of text
Comments to Tim	Single line of text
LT done	Choice
Workshop comment	Calculated (calculation based on other columns)
RBS:Risk Topic	Lookup
RBS:Risk Area	Lookup
Project:P6 ID	Lookup
Project:ID plus Title	Lookup
Created	Date and Time
Modified	Date and Time
Project:IS_OPERATIONS	Lookup
Created By	Person or Group
Modified By	Person or Group

Risk Register: SharePoint List Definition (5 of 6)

Impact (workdays)	Calculated (calculation based on other columns)
Impact (workdays) - Min	Calculated (calculation based on other columns)
Impact (workdays) - Max	Calculated (calculation based on other columns)
P x Impact (k$)	Calculated (calculation based on other columns)
Post-mitigation P x Impact (k$)	Calculated (calculation based on other columns)
Impact (months) - Mean	Calculated (calculation based on other columns)
Impact (k$) - Mean	Calculated (calculation based on other columns)
Probability Score	Calculated (calculation based on other columns)
Impact Score - Schedule	Calculated (calculation based on other columns)
Impact Score - Cost	Calculated (calculation based on other columns)
Impact Score - Max	Calculated (calculation based on other columns)
PS	Calculated (calculation based on other columns)
IS	Calculated (calculation based on other columns)
Risk Rank	Calculated (calculation based on other columns)
RR	Calculated (calculation based on other columns)
Risk ID plus Title	Calculated (calculation based on other columns)
Cost Impact	Calculated (calculation based on other columns)
Schedule Impact	Calculated (calculation based on other columns)

Risk Register: SharePoint List Definition (6 of 6)

PID	Calculated (calculation based on other columns)
CBIN1	Calculated (calculation based on other columns)
CBIN2	Calculated (calculation based on other columns)
CBIN3	Calculated (calculation based on other columns)
CMAX	Calculated (calculation based on other columns)
SBIN1	Calculated (calculation based on other columns)
SBIN2	Calculated (calculation based on other columns)
SBIN3	Calculated (calculation based on other columns)
SMAX	Calculated (calculation based on other columns)
Months to Start Date	Calculated (calculation based on other columns)
Within next 12 months	Calculated (calculation based on other columns)
Warnings	Calculated (calculation based on other columns)
Warning01	Calculated (calculation based on other columns)
Warning08	Calculated (calculation based on other columns)
Warning11	Calculated (calculation based on other columns)
Warning13	Calculated (calculation based on other columns)
Warning15	Calculated (calculation based on other columns)
Warning16	Calculated (calculation based on other columns)
Warning19	Calculated (calculation based on other columns)