

Risk Management

“Performing a Project Risk Assessment”

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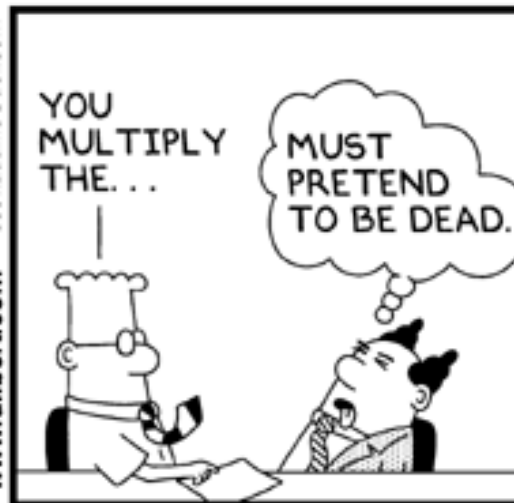
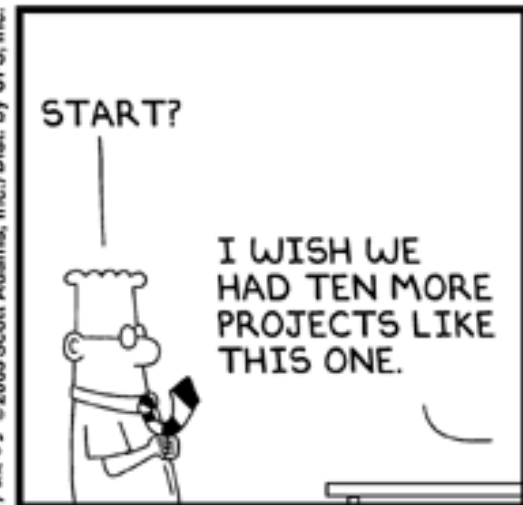
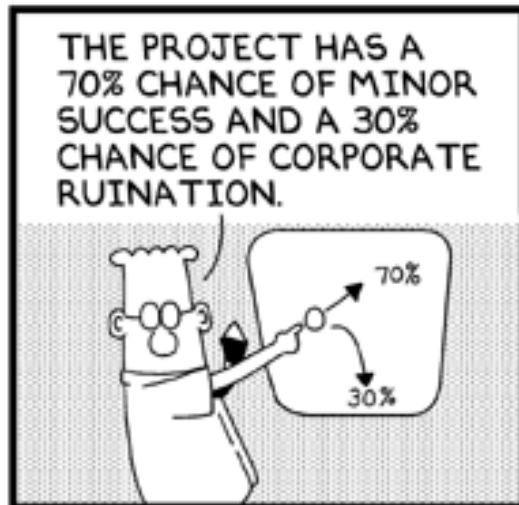
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Topics for this session

- ❑ **Why focus on risk management**
- ❑ **Who is responsible for managing risks**
- ❑ **Overview of risk management**
- ❑ **Performing a project risk assessment**
- ❑ **Budgeting for risk**

Why Focus on Risk Management

What is a Risk? The Dilbert way



Why Focus On Risk Management

- ❑ **Companies are in the risk business**
 - Custom solutions/services

- ❑ **Good risk management will**
 - Reduce the cost
 - Improve customer satisfaction
 - Improve the ability to succeed
 - Make your life easier
 - Dramatically reduce surprises

- ❑ **Risk management is a proactive way to protect and improve project performance**

Risk Management

- ❖ **Who is Responsible**
- ❖ **What is the Value**

Project Risk Management

□ Who is responsible

- ✓ Project Manager
- ✓ Project Team

□ Value of risk management performed by the Project Manager and the Project Team.

- ✓ Reduce project risk levels by applying best in class delivery strategies and practices
- ✓ Identify and provide a clear understanding of known risks, mitigation plans and actions
- ✓ Establish an accurate risk reserve
- ✓ Provide management the confidence that project risk can be managed to protect/improve the project performance
- ✓ Provide the Customer the confidence you can successfully deliver the solution to satisfy their business objectives

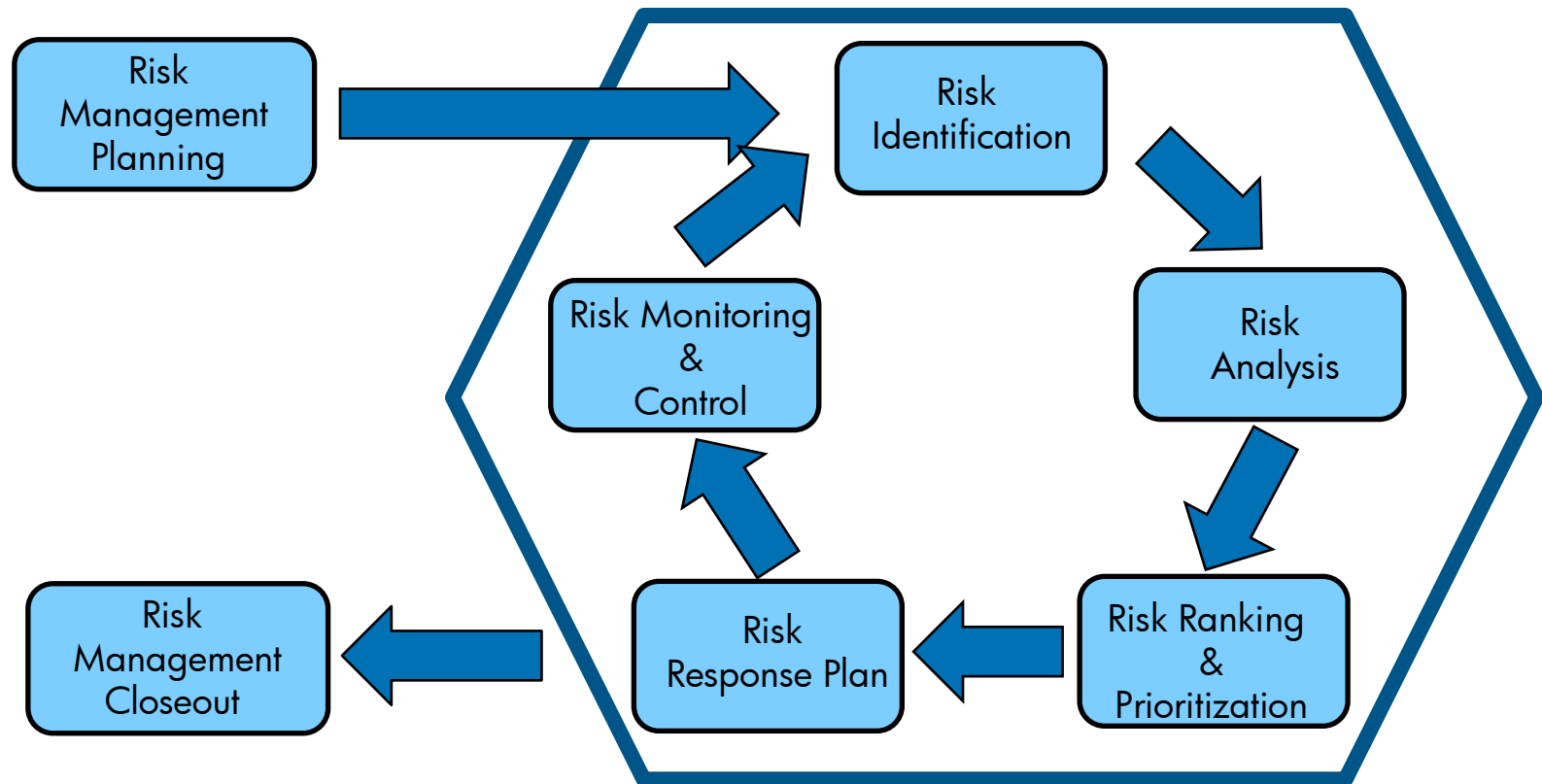
Risk Management Overview

Risk Management in PMBOK

□ Chapter 11 Project Risk Management

- Risk Management **Planning** - deciding how to approach, plan and execute the risk management activities for a project.
- Risk **Identification** - determining which risks might affect the project and documenting their characteristics.
- **Qualitative Risk Analysis** - prioritizing risks for subsequent further analysis or action by assessing and combining their probability and impacts.
- **Quantitative Risk Analysis** - numerically analyzing the effect on overall project objectives of identified risks.
- Risk **Response Planning** - developing options and actions to enhance opportunities and to reduce threats to project objectives.
- Risk **Monitoring and Control** - tracking identified risks, monitoring residual risks, identifying new risks, executing risk response plans, and evaluating their effectiveness throughout the project life cycle.

Risk Management Process



Risk Management Planning

❑ **Develop a Risk Management Plan**

- ✓ If you don't plan for risk management it is not going to happen

❑ **At the start of the project the PM should have:**

- ✓ A risk management plan
- ✓ A solid understanding of the project risks
- ✓ A risk log
- ✓ A list of key assumptions
- ✓ A risk budget

❑ **Managing risk is a not a one-time exercise.**

❑ **Once a month you need to do a full review.**

❑ **Preferably updates are done weekly.**

Risk Management Plan Content

- ✓ Methodology
- ✓ Roles and responsibilities
- ✓ Timing
- ✓ Risk categories
- ✓ Definitions of risk probability and impact
- ✓ Probability and impact matrix
- ✓ Reporting format
- ✓ Tracking
- ✓ Approach to establish the risk reserve

Performing a Risk Assessment

Risk Assessment

❑ What is a risk assessment?

- Determine the likelihood and impact of an event (risk) and what steps can be taken to mitigate the risk

❑ Start at the beginning !

- Assessing risk during planning avoids bad investments

❑ Integrated view of risk

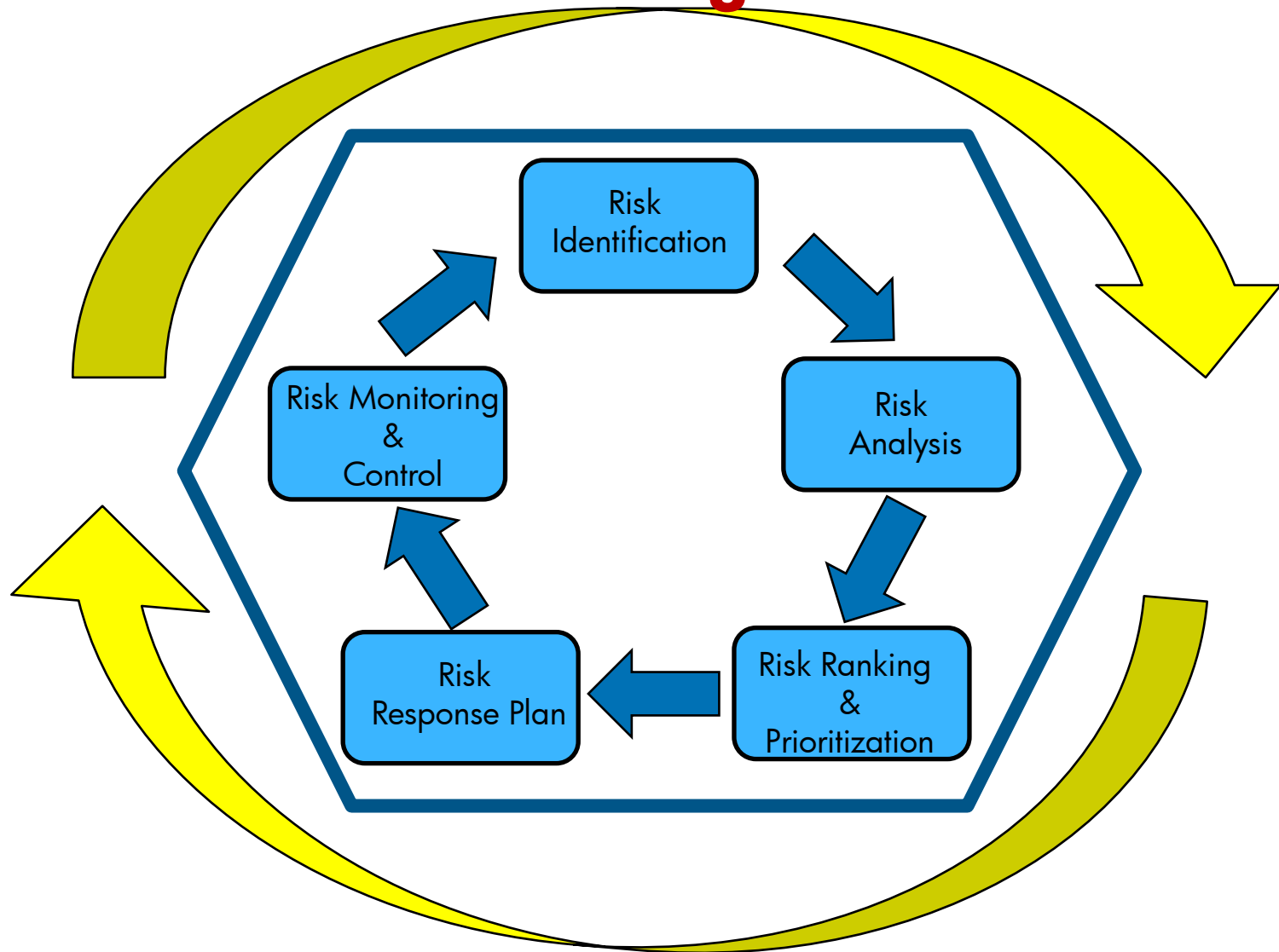
- Look at risk in any one area that effects others and impacts the success of the entire project
- Look at impact on a project as a whole and not in one area only

❑ Objective of the risk assessment

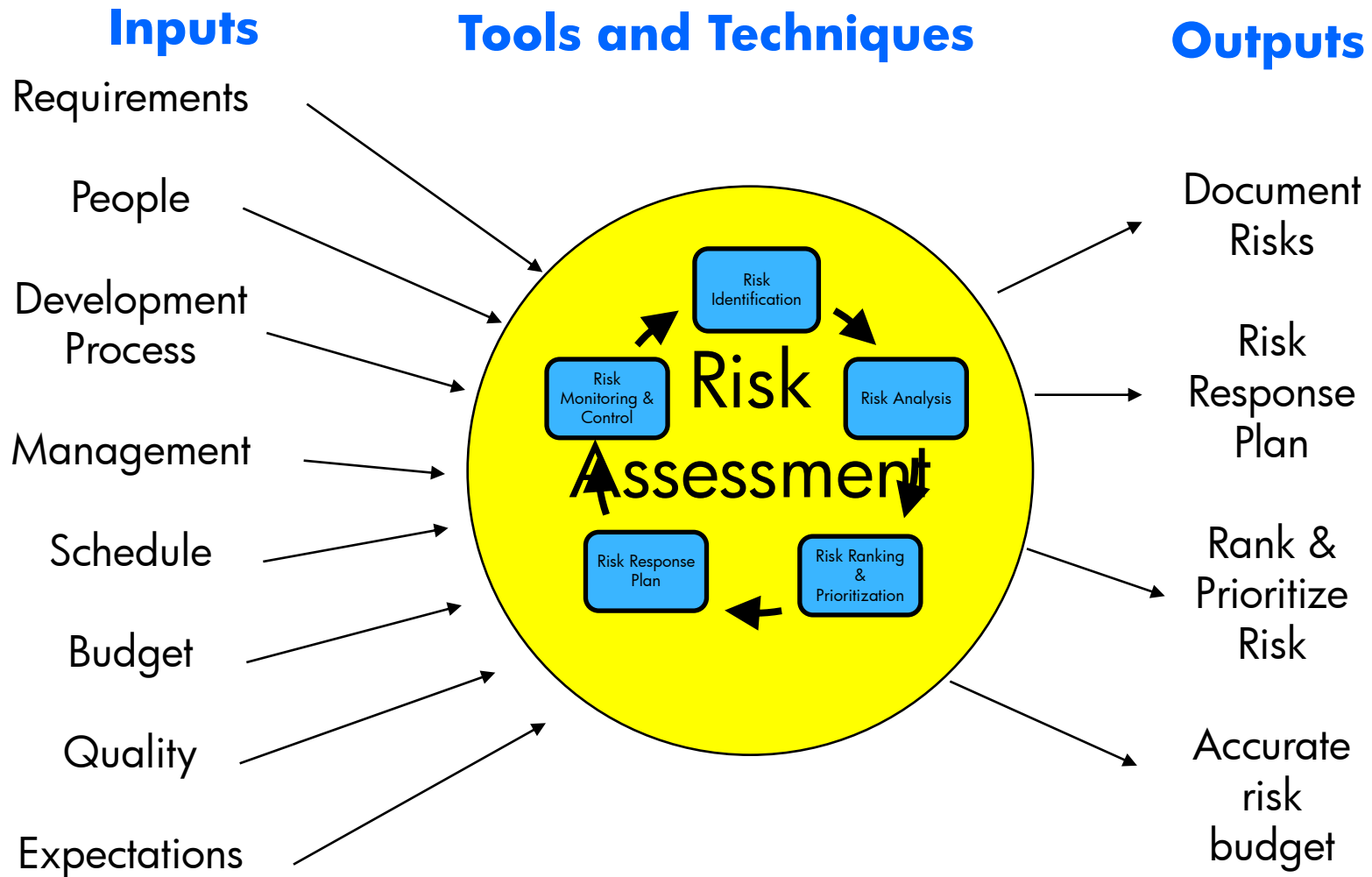
- Making risk impacts and costs visible so that they can be managed across the project lifecycle.

Risk Assessment Process

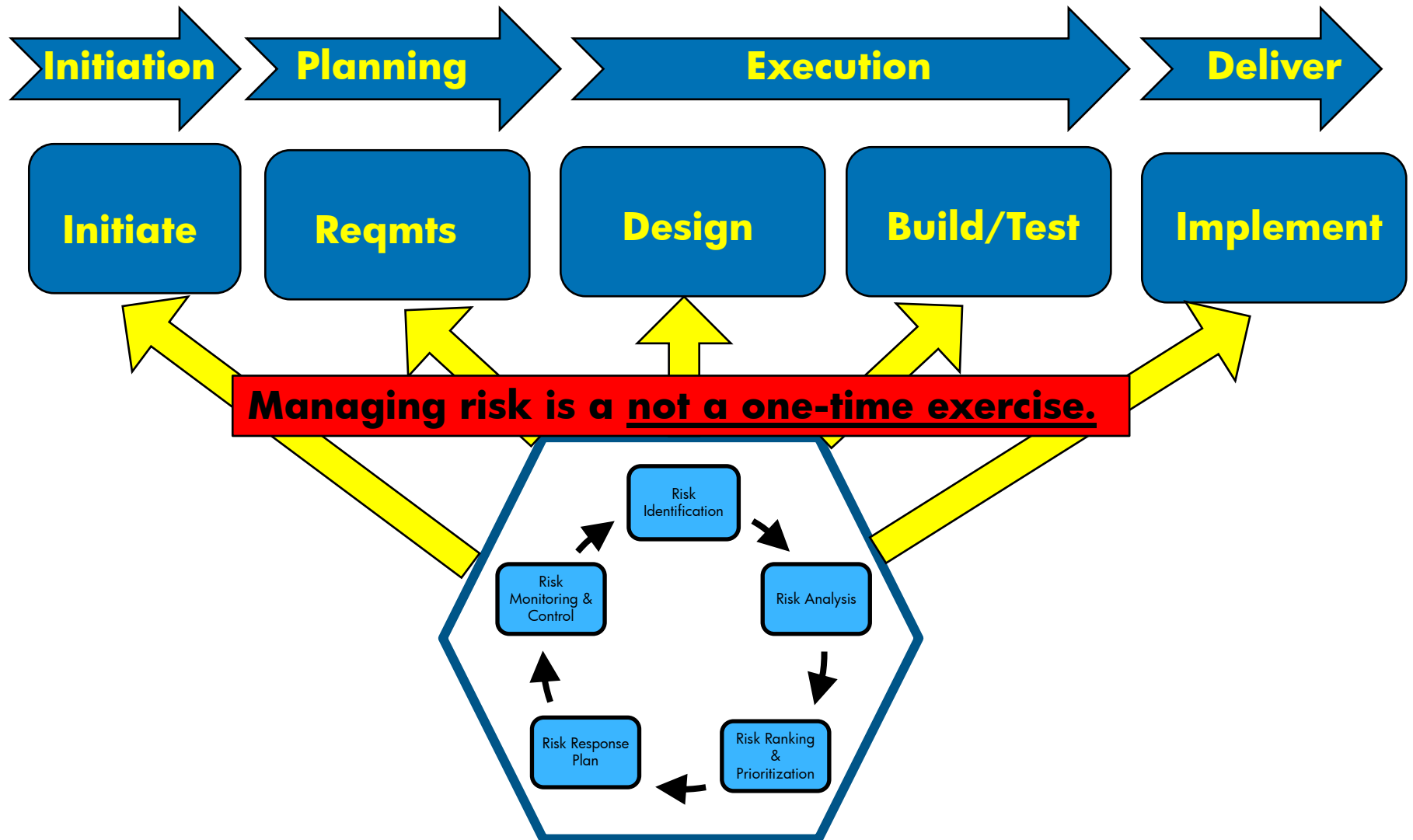
Risk Management



Risk Assessment Process



Project Risk Assessment Project Life Cycle

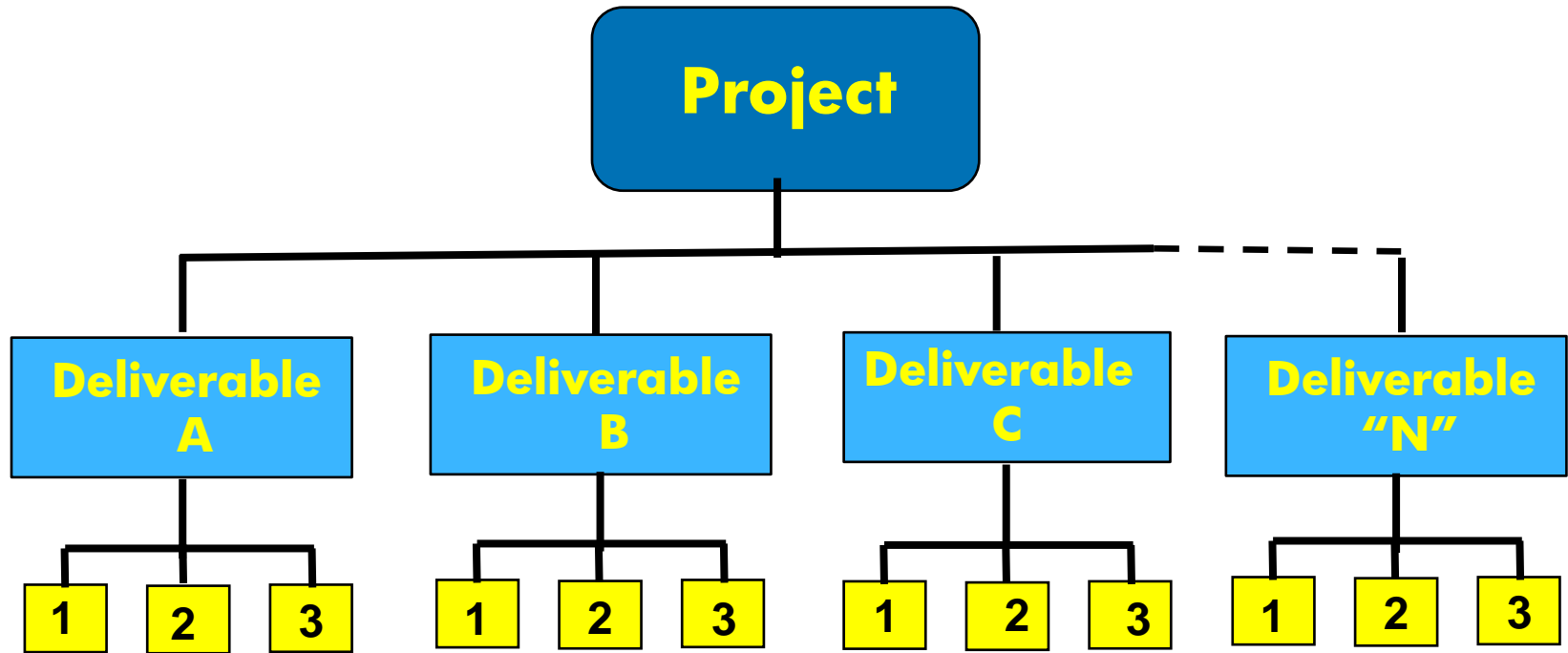


Risk Assessment Process

ACTIVITY

List the elements & deliverables
that make-up the project

Project Deliverables

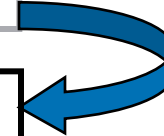


Risk Assessment Process

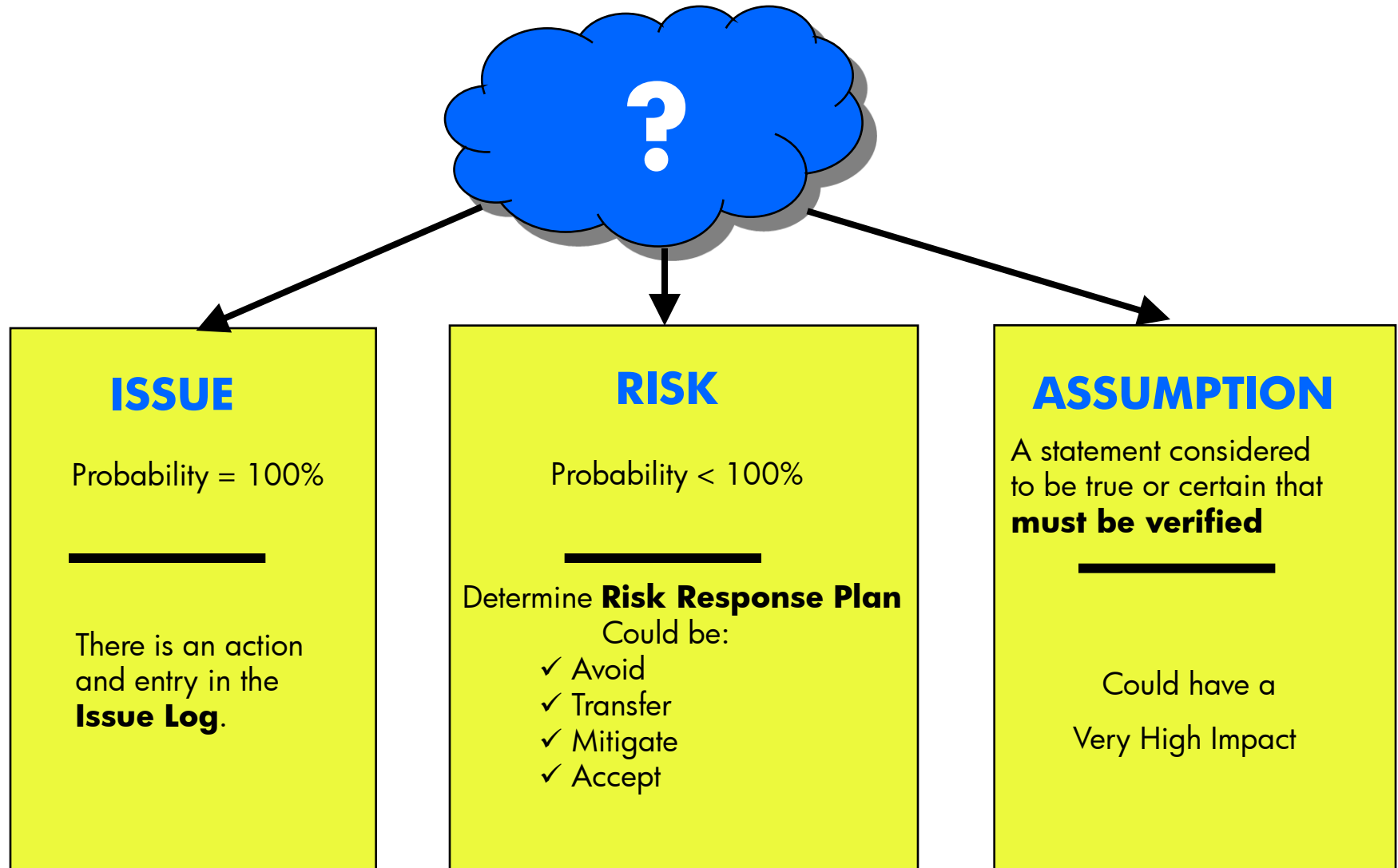
ACTIVITY

List the elements & deliverables
that make-up the project

Identify Risks and write a clear description
of the risk and the risk impact



Issue vs Risk vs Assumption



Identifying Risks

- ❑ **Brainstorming**
- ❑ **Delphi method**
- ❑ **Interviewing**
- ❑ **Root cause identification**
- ❑ **SWOT analysis**

Risk Assessment Process

□ Risk Assessment Areas

- Requirements ————— 4
- Technical Solution
- SOW & Contract
- Project Schedule ————— 3
- Project Organization
- Scope Management ————— 9
- Resource Plan ————— 2
- Quality Plan ————— 6
- Risk Plan ————— 8
- Communications Plan ————— 1
- Training Plan
- Financials/Budgets ————— 7
- Customer Satisfaction ————— 5

Categories of Risk

- ❑ **Customer Requirements**
- ❑ **Technical**
- ❑ **Schedule**
- ❑ **Resources**
- ❑ **Financial**
- ❑ **Subcontractor**
- ❑ **Contractual & Legal**

Risk Identification

Risk Description Format

The risk description is a clear statement that describes the risk, its reason and/or source and the impact.

There is a risk that **X** will happen

Because of **Y**

So That **Z** results

Where X = RISK DESCRIPTION

Y = RISK REASON / SOURCE

Z = IMPACT

Sample Card

CAT: Resources Prob: __ Impact: __ Rank: __

X

Risk Description:

In March we will need 4 server consolidation specialists for 8 weeks and there is a risk that we will only be able to get 3 of the 4 needed because one specialist may be scheduled to work on another project.

Y

If this happens it will delay *Transition by 6 weeks*

Z

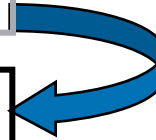
Risk Assessment Process

ACTIVITY

List the elements & deliverables
that make-up the project

Identify Risks and write a clear description
of the risk and the risk impact

Analyze & Rank all identified risks



Risk Analysis

- ❑ **How big is the risk?**
- ❑ **Probability or chance of risk happening**
- ❑ **Impact or consequences**
- ❑ **Two step process**
 1. Qualitative
 2. Quantitative

Risk Analysis- Probability

- Assign the probability to the risk event.

Qualitative Probability	Guideline	Quantitative Probability To calculate the EMC
Very High > 80%	The event is very likely to occur	0.9
High 51% - 80%	The event will probably occur	0.7
Medium 31% - 50%	The event could occur	0.4
Low <30%	The event is unlikely to occur but may still occur	0.2

Risk Impact

- ❑ **Ask “SO WHAT Is the impact...?”**

- ❑ **Assign a Qualitative risk impact**
 - Minor (Low)
 - Moderate (Medium)
 - Serious (High)
 - Critical (Very High)

Risk Analysis - Impact

□ Risk Category & Impact Definitions

- Project impact if risk event occurs
- Estimate the impact of the risk event using table:

Risk Category	Impact			
	Minor	Moderate	Serious	Critical
Scope Functionality (Impacted)	Barely	Minor areas of deliverable	Major areas of deliverable	Failure to achieve required deliverable
Cost (Increase)	< 5%	5% - 8%	>8 - 10%	>10%
Schedule (Increase)	< 5%	5%- 10%	>10%- 15%	>15%

Risk Ranking & Prioritization

- ❑ **What are the most critical project risks?**
- ❑ **Rank each risk (Low-Med-High-Very High)**
- ❑ **Prioritize the risks: Highest or top 5-10**
- ❑ **Team "Vote"**

Probability – Impact Matrix

- Use the PI Matrix to RANK each identified risk
- Use the overall risk rankings to PRIORITIZE the risks for quantification and response planning. Start with the very high and high risks

RANK VALUE

Very High = 4

High = 3

Medium = 2

Low = 1

		Impact			
		Minor	Moderate	Serious	Critical
Probability	Very High	Low (1)	High (3)	High (3)	Very High (4)
	High	Low (1)	Medium (2)	High (3)	High (3)
	Medium	Low (1)	Medium (2)	Medium (2)	High (3)
	Low	Low (1)	Low (1)	Medium (2)	High (3)

Program Risk Assessment Process

□ Risk Ranking & Scoring

PROJECT

Risk Category	A	B	C	Risk Category Total
Technical	L (1)	M (2)	L (1)	4
Schedule	M (2)	H (3)	H (3)	8
Resource	M (2)	H (3)	M (2)	7
Activity/Element Total	5	8	6	

Risk Assessment Process

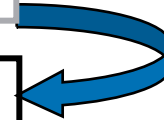
ACTIVITY

List the elements & deliverables that make-up the project

Identify Risks & write a clear description of the risk & the risk impact

Analyze & Rank all identified risks

Estimate risk impact \$ cost & calculate the EMV for risks ranked "VH" & "H"



Establishing Impact Cost & EMV

- ❑ **When determining the impact – be specific**
- ❑ **Impact Cost: you estimate the sum of:**
 - Level of effort
 - Materials
 - Equipment, tools
 - Direct costs (travel)
 - Contract related costs (i.e. SLAs, penalties)
- ❑ **Establish the EMV**
 - $EMV = (\$ \text{ cost impact of the risk}) \times (\text{Probability of risk})$
 - Use to prioritize risks
 - Use to create the risk reserve \$

Risk Assessment Process

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Select & describe a Response Strategy for risks ranked "VH" and "H"



Risk Response Planning

❑ What do we do about the risk?

❑ Develop risk response plan

- Avoid : Eliminate the risk – change project plan
- Transfer: Shift risk to others – risk still exists
- Mitigate: Reduce probability/impact of the risk
- Accept: Assume the risk - establish contingency reserves

❑ Objective of the response plan selected

- Reduce the risk impact and/or the probability
- Account for any **residual risk** in the risk reserve

Risk Response Planning

Risk Response vs. Risk Contingency

- **Risk Response plans are carried out *BEFORE* a risk event occurs**
 - *Risk response plans are how you reduce the probability and/or the impact .*

- **Risk Contingency plans are used for *ACCEPTED* risks *WHEN* a risk event *OCCURS***
 - *Contingency plans are how are you “contain”/keep under control the impact of the risk that has occurred.*

Risk Assessment Process

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Analyze & Rank all identified risks

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Select & describe a Response Strategy for risks ranked "VH" and "H"

Determine \$ cost to implement the selected Risk Response Strategy



Establishing Impact Cost & EMV

□ Response Cost- estimate the sum of:

- Level of effort
- Materials
- Equipment, tools
- Direct costs (travel)

□ Risk Response vs Risk Impact

- Compare the risk response cost to **MITIGATE** a risk to the risk Impact EMV of an **ACCEPTED** risk.

Risk Assessment Process

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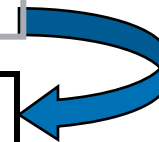
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Estimate risk impact \$ cost & calculate the EMV for risks ranked "VH" & "H"

Select & describe a Response Strategy for risks ranked "VH" and "H"

Determine \$ cost to implement the selected Risk Response Strategy

Determine the residual risk probability & impact = new rank



Residual Risk

□ Risk remaining after the effect of applying a risk response strategy of *Avoid, Transfer, or Mitigate*

□ ***EXAMPLE: Mitigate => Residual Risk***

Initial risk assessment

Risk Impact if event occurs = SERIOUS

Probability of risk event = HIGH

RANK = HIGH

“mitigate” the risk

Impact reduced to = MODERATE

Probability reduced to = LOW

Residual risk RANK = LOW

Risk Assessment Process

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List the elements & deliverables that make-up the project

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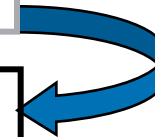
Estimate risk impact \$ cost & calculate the EMV for risks ranked "VH" & "H"

Select & describe a Response Strategy for risks ranked "VH" and "H"

Determine \$ cost to implement the selected Risk Response Strategy

Determine & select the residual risk probability & impact = new rank

Estimate residual risk revised \$ cost impact & revised EMV



Residual Risk

- ❑ Risk remaining after the effect of applying a risk response strategy of *Avoid, Transfer, or Mitigate*

- ❑ **EXAMPLE: Mitigate=> Residual Risk**

Risk Impact if event occurs = \$100K

Probability of risk event = 70% (High)

EMV = \$70K

Cost to "**mitigate**" the risk = \$40K

Probability reduced to = 20% (Low)

Impact reduced to = \$35K

Residual risk EMV = \$7K

- ❑ **Compare Response Strategy of Accept vs. Mitigate**

Accept= \$70K : **Mitigate** = \$40K+\$7K=\$47K

Risk Assessment Process

ACTIVITY

List the elements & deliverables that make-up the project

Identify Risks & write a clear description of the risk & the risk impact

Analyze & Rank all identified risks

Estimate risk impact \$ cost & calculate the EMV for risks ranked "VH" & "H"

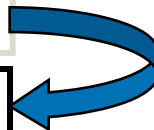
Select & describe a Response Strategy for risks ranked "VH" and "H"

Determine \$ cost to implement the selected Risk Response Strategy

Determine the residual risk probability & impact = new rank

Estimate residual risk revised \$ cost impact & revised EMV

Update & reassess risks as project proceeds



Risk Monitoring & Control

- How are things going?**
- Monitor the status of identified risks & mitigation plans**
- Identify new risks**
- Weekly/Monthly status reviews**

Risk Assessment Outputs

XYZ PROGRAM PROJECT RISK SUMMARY

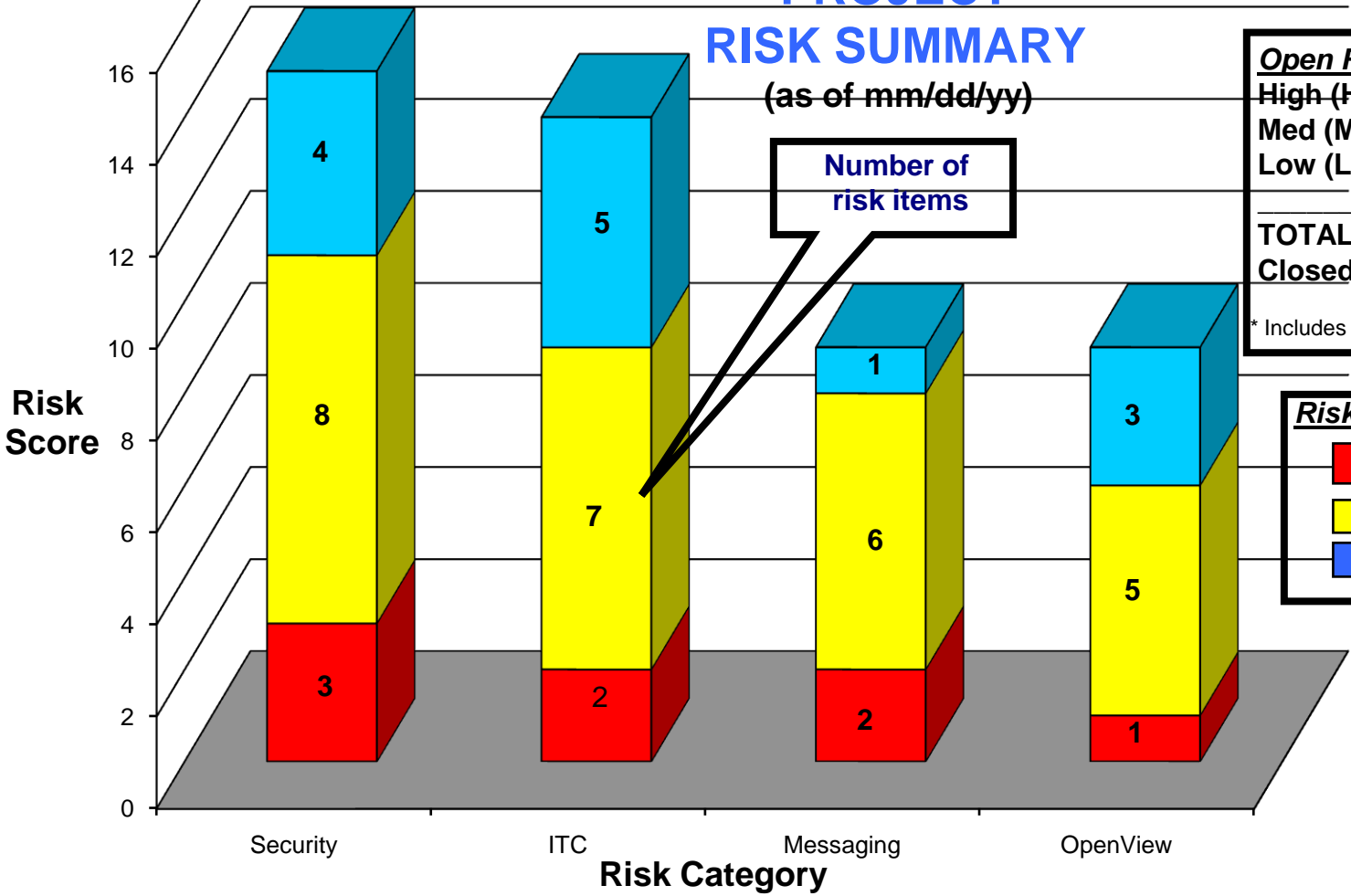
(as of mm/dd/yy)

Open Risk Items
High (H) = 8
Med (M) = 26
Low (L) = 13

TOTAL = 47
Closed = 73*

* Includes 13 for ITSM

Number of
risk items



Risk Legend
High
Med
Low

XYZ PROGRAM RISK SUMMARY

(as of mm/dd/yy)

Open Risk Items

High (H) = 8

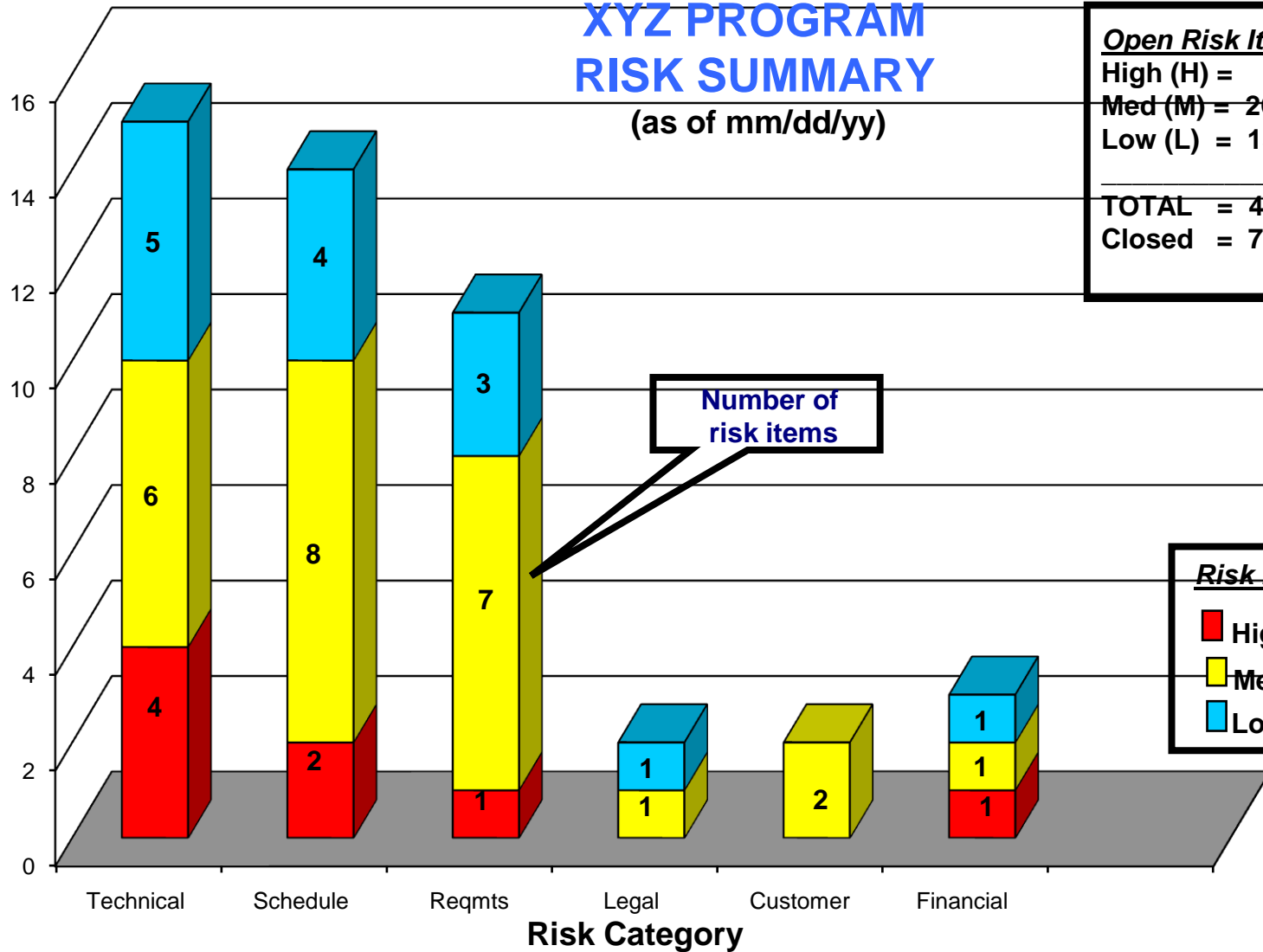
Med (M) = 26

Low (L) = 13

TOTAL = 47

Closed = 73

Risk
Score



Number of
risk items

Risk Legend

High

Med

Low

WBS Risk Assessment

EXAMPLE

XYZ PROJECT

Date: 4/1/2004

WBS Date/Revision: 04/01/2004: V2.0

Critical Path: WBS ID 8.0

Critical Path IDs:
WBS ID 12.0 - 18.0

RISK CATEGORY	WBS ID RISK RANKING																	TOTAL SCORE	PRIOR
	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0		
Technical	1	2	1	2	3	2	3	3	3	2	3	3	2	3	2	2	2	39	1
Requirements	1	2	1	1	2	2	2	2	2	2	1	N	1	2	2	1	2	26	3
Schedule	1	1	1	3	2	1	3	2	2	2	2	1	2	2	2	1	2	30	2
Cost				3			3	3				3						12	6
Resources	1	1	1	1	2	1	3	1	1	1	1	2	1	1	1	1	2	22	5
Sub-Contr	1	1	1	1	1	1	3	2	2	1	2	N	2	1	1	1	2	23	4
TOTAL SCORE	5	7	5	8	10	7	14	10	10	8	9	6	8	9	8	6	10		
PRIORITY					2		1	3	4		6		8	5					

LEGEND

RANK

Low (L) = 1

Medium (M) = 2

High (H) = 3

Budgeting For Risk

Risk Reserve Components

□ Contingency Reserve

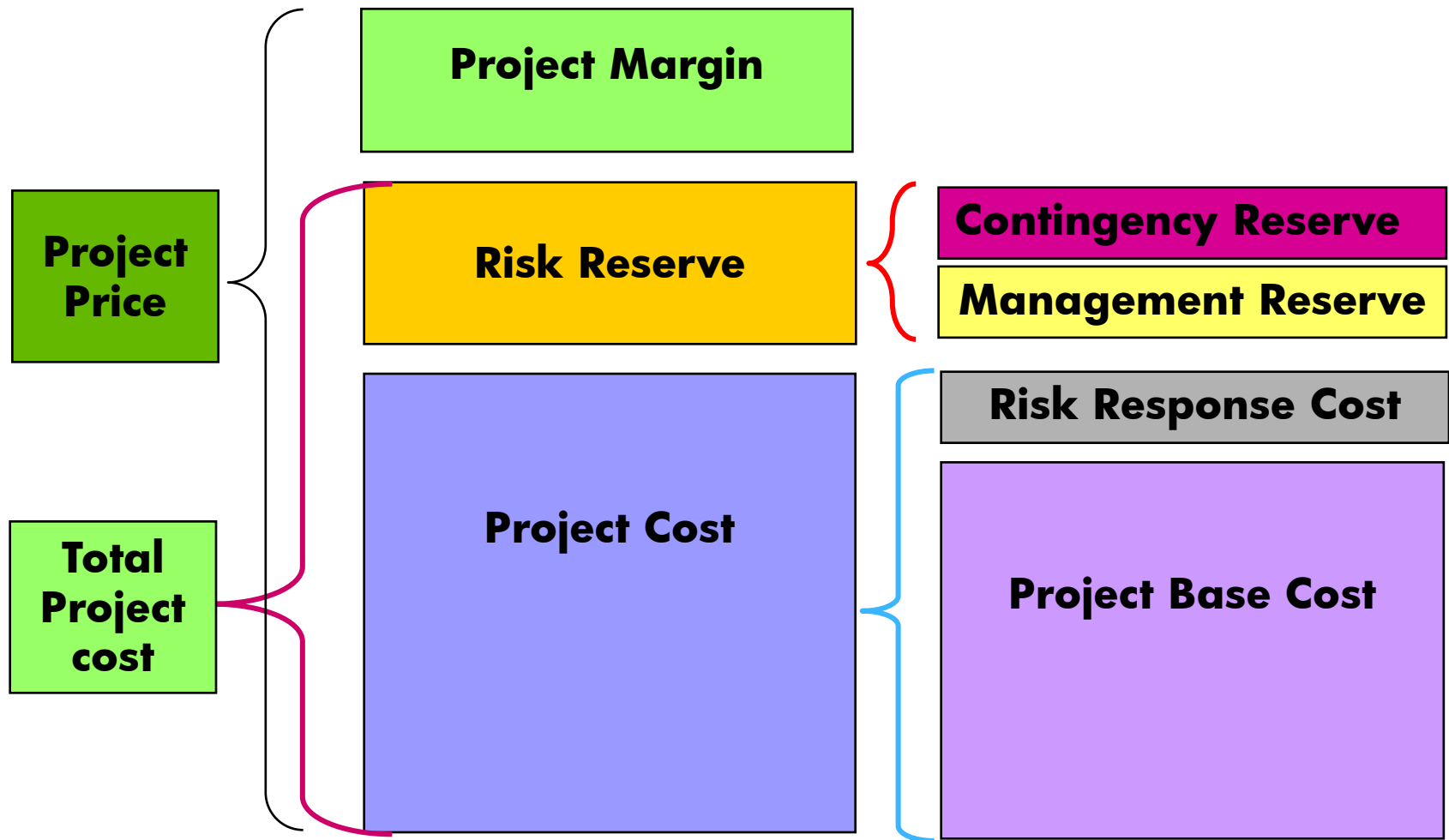
- “Known Unknowns”
- It includes **Accepted Risks** and **Residual Risks**.
- Residual risk is a risk that remains after risk responses of Mitigate, Transfer and Avoid have been implemented.
- Risk dollars are determined by the **EMV**

□ Management Reserve

- “**Unknown Unknowns**”
- An unanticipated event happening that impacts a project...”**Murphy’s Law**”
- Risk dollars are a % of the **total** estimated project labor cost

□ Costs to **Avoid, Transfer, or Mitigate** are *part of the project cost, not the risk reserve*

Risk Budgeting Graphical Summary



Establishing Known Risk Impact Costs

- **To determine cost impact estimate the sum of:**
 - ✓ Level of effort
 - ✓ Materials
 - ✓ Equipment, tools
 - ✓ Direct costs (travel)
 - ✓ Contract related costs (i.e. SLAs)

Residual Risk

- Risk remaining after the effect of applying a risk response strategy of *Avoid, Transfer, or Mitigate*
- *EXAMPLE: Mitigate=> Residual Risk*

Risk Impact if event occurs = \$100K

Probability of risk event = 70%

EMV = \$70K

Cost to "**mitigate**" the risk = \$40K

Impact reduced to = 35K

Probability reduced to = 20%

Residual risk EMV = \$7K

Replace with
new EMV

Cost is part
of Project
Cost

New EMV =>
Contingency
Reserve

- Compare Response Strategy of **Accept vs. Mitigate**
Accept= \$70K : **Mitigate** = \$40K+\$7K=\$47K

Allocating & Managing Risk Reserve

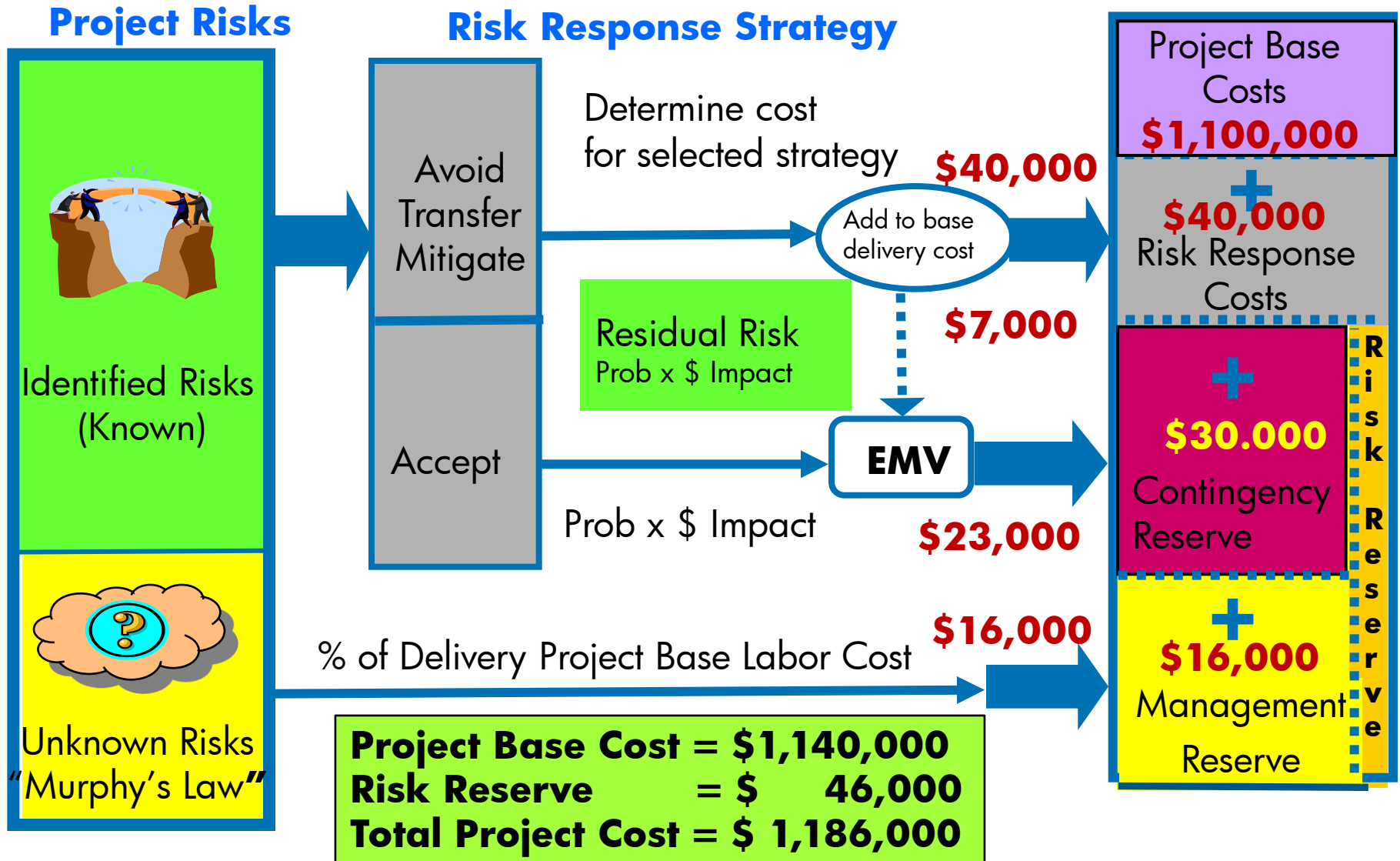
- ❑ **Allocate risk dollars to a deliverable or a milestone**
- ❑ **For each risk where a response strategy of *Accept* was selected:**
 - Determine the EMV
 - Allocate the EMV dollars to the deliverable or milestone that the risk would impact.
- ❑ **If the risk does not occur, retain the allocated risk dollars in the risk reserve**
 - Additional cost buffer for risks that have not occurred
 - Improves project margin

Risk Budgeting Example

□ Assume the following :

- ✓ The **project base cost** is \$1,100,000 including a **labor cost** of \$800,000.
- ✓ The total of the **risk response cost** is \$40,000.
- ✓ The total **EMV** for **residual risks** resulting from mitigating risks is \$7,000.
- ✓ The total **EMV** for all **accepted risks** is \$23,000.
- ✓ A 2% **management reserve** was added for **unknown risks**

Budgeting For Risk



Financial Treatment of Risk: Best Practice

- Establish **Response Strategy** costs and **EMV** for **Residual Risks**
- Establish **EMV** for all identified **Accepted Risks**
- Establish a **Management Reserve** for **Unknown Risks**
- Never** allow anyone to **take away your risk budget** without good justification

THEN during delivery

- Manage the risk reserve
- Accepted Risks that do not occur improve your margin

SUMMARY

Project Risk Assessment Summary

- ✓ Identify as many risks as you can
- ✓ Complete the “qualitative” analysis
- ✓ Carry out ranking & prioritization
- ✓ Work on the highest priority risks (top 5-10)
- ✓ Assign risk \$ to top risks
- ✓ Use judgement
 - Does EMV support qualitative assessment?
 - Experience / feel
- ✓ Develop response plans for “VH” & “H” risks first
- ✓ Review risks weekly
 - 1 hour a week well spent
 - Monthly at a minimum
- ✓ Monitor mitigation as any other critical project activity

Project Risk Assessment

□ Benefits

- Take remedial action before it is too late.
- Reduced impacts to the project.
- Provides focus to delivery issues.
- Identifies/uncovers opportunities.
- Develop more accurate risk reserves & project budget
- ***Independent*** risk assessment provides objective consultative feedback.

THANK YOU !

QUESTIONS