

Risk management

Chapter 7

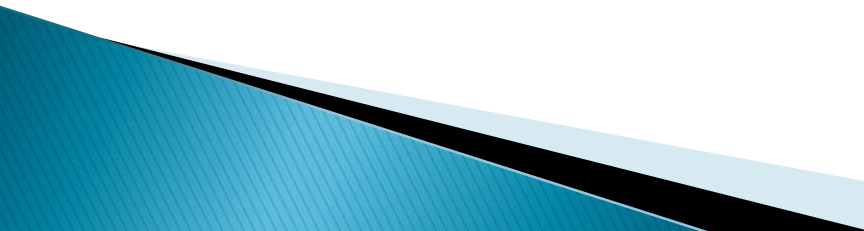
Risk management

*Risk management – the **art** and **science** of **identifying, analyzing, and responding** to risk factors throughout the **life of a project** and in the best interest of its objectives.*

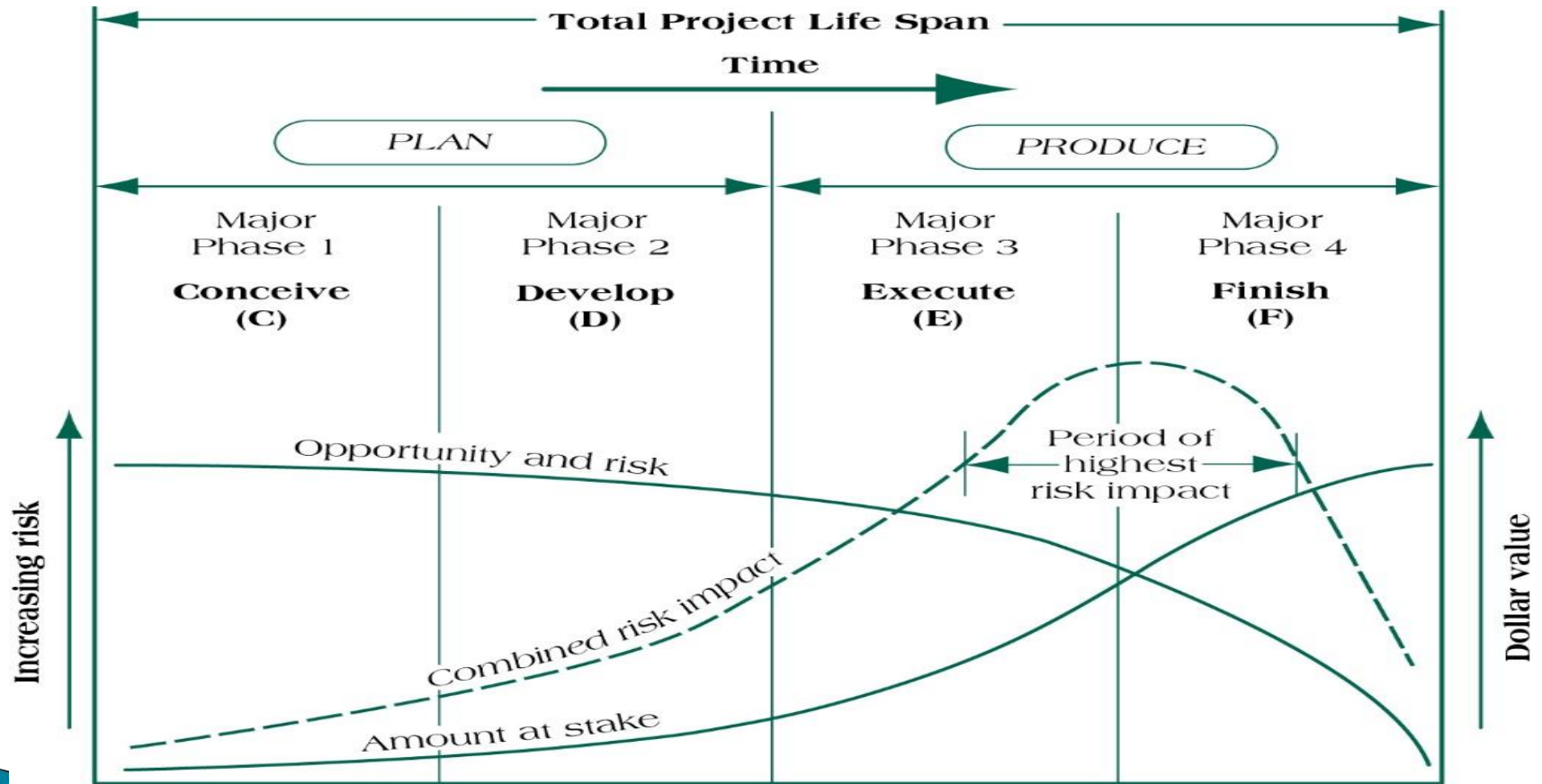
*Project risk – an **uncertain event** or **condition** that, if it occurs, has a **positive** or **negative** effect on one or more **project objectives** such as **scope, schedule, cost, or quality**.*

*Risk = (Probability of Event) * (Consequences of Event)*

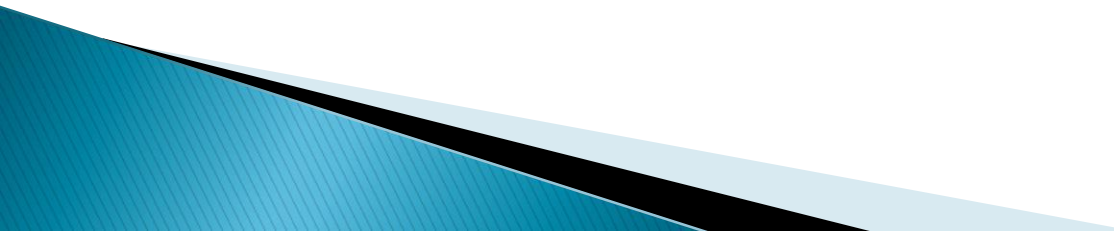
Questions to consider in risk management

- What is likely to happen (the probability and impact)?
 - What can be done to minimize the probability or impact of these events?
 - What cues will signal the need for such action (i.e., what clues should I actively look for)?
 - What are the likely outcomes of these problems and my anticipated reaction?
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Risk versus Amount at Stake: Challenge in Risk Management



Four Stages of Risk Management

1. Risk *identification*
 2. *Analysis* of probability and consequences
 3. Risk *mitigation* strategies
 4. *Control* and documentation
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Risk Clusters

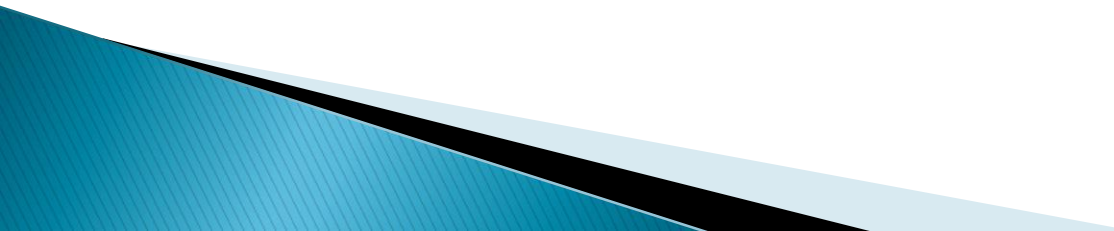
- ❖ Financial
- ❖ Technical
- ❖ Commercial

- ❖ Execution
- ❖ Contractual or legal risk

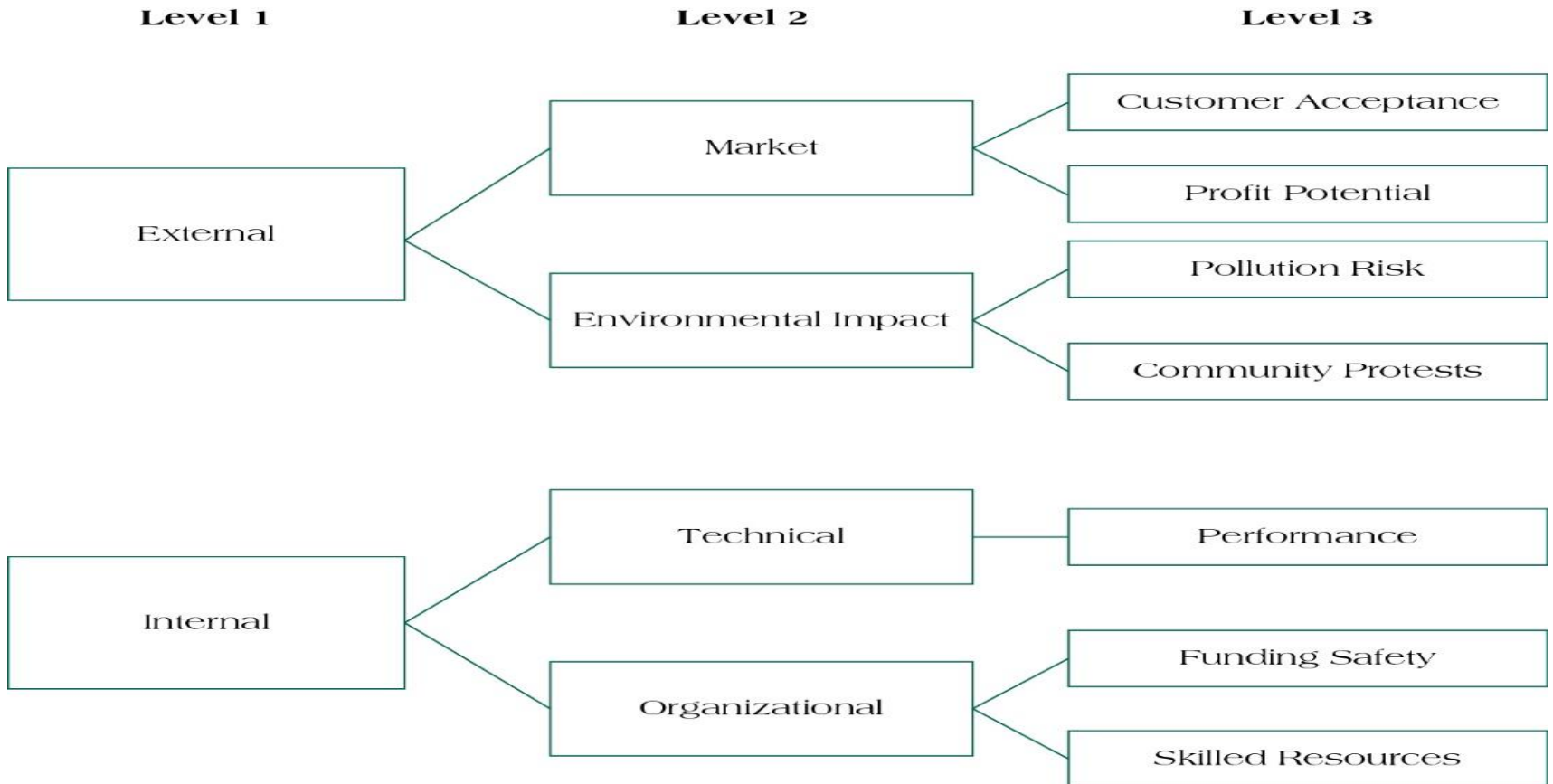
Common Types of Risks

- Absenteeism
- Resignation
- Staff pulled away
- Time overruns
- Skills unavailable
- Ineffective training
- Specs incomplete
- Change orders

Risk Factor Identification

- Brainstorming meetings
 - Expert opinion
 - Past history
 - Multiple (or team based) assessments
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Risk breakdown structure (RBS)



Risk Impact Matrix

Consequences

Low

High

Likelihood

High

Low

Project Risk Scoring

1. Use project team's consensus to determine the score for each Probability of Failure category: Maturity (P_m), Complexity (P_c), and Dependency (P_d).
2. Calculate overall probability.

$$P_f = \frac{P_m + P_c + P_d}{3}$$

3. Use project team's consensus to determine the score for each Consequence of Failure category: Cost (C_c), Schedule (C_s), Reliability (C_r), and Performance (C_p).

Project Risk Scoring

4. Calculate C_f by adding the four categories and dividing by 4:

$$C_f = \frac{C_c + C_s + C_r + C_p}{4}$$

5. Calculate Overall Risk factor for the project by using the formula:

$$RF = P_f + C_f - (P_f)(C_f)$$

Rule of Thumb:

Low Risk	$RF < 0.30$
Medium Risk	$RF = 0.30$ to 0.70
High Risk	$RF > 0.70$

Risk Mitigation Strategies

- ▶ Accept
- ▶ Minimize
- ▶ Share
- ▶ Transfer
- ▶ Contingency Reserves
 - Task contingency
 - Managerial contingency
 - Insurance

- ▶ Other Mitigation Strategies
 - Mentoring
 - Cross training
- ▶ Control and Documentation
 - Change management

Control & Documentation

Helps managers classify and codify risks, responses, and outcomes

Change management report system answers:

- ▶ What?
 - ▶ Who?
 - ▶ When?
 - ▶ Why?
 - ▶ How?
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Project Risk Analysis & Management (PRAM)

*PRAM presents a **generic methodology** that can be applied to multiple project environments, and encompasses the key components of project risk management.*

Key Features of PRAM

- Risk management follows a **life cycle**.
- Risk management **strategy changes** over the project life cycle.
- **Synthesized, coherent** approach

Nine Phases of Risk Assessment

1. Define
 2. Focus
 3. Identify
 4. Structure
 5. Clarify ownership of risks
 6. Estimate
 7. Evaluate
 8. Plan
 9. Manage
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