

Project Time Management

مقرر: إداره وقت المشروع

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PMG 212

Lecture 10



Agenda

Part 1

- Introduction to Risk Management
- Why Risk Management Is Important
- Sources of Risks
- Objectives of Risk Management
- Risk Assessment
- Components of Risk Management

Part 2

- What Is Project Closeout?
 - Initiation of Project Closeout
 - Closeout Checklist
 - Building a Closeout Matrix
 - Contract Closeout Example
 - Administrative Closeout Example
 - Archiving Project Files
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Introduction to Risk Management

All projects contain some amount of risk.

Risk is an uncertain event that can positively or negatively affect project goals.

Example – Apple:

Apple faces supply chain risks when major suppliers experience delays. This uncertainty affects product launch timelines.



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Why Risk Management Is Important

Risk cannot be fully eliminated.

Most risks have negative consequences.

Some risks can be predicted and planned for; others cannot.

Example – Toyota:

After the 2011 earthquake, Toyota realized some risks (natural disasters) cannot be fully controlled. They improved supplier diversification to reduce future impact.



TOYOTA

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Sources of Risk (with Examples)

Internal Risks

Poor planning (Example: *Boeing's 737 MAX development delays*)

Design errors (Example: *Samsung battery design issue – Note 7 recall*)

External Risks

Supply shortages (*Toyota 2021 semiconductor shortage*)

Economic changes (*Amazon warehouse expansion delays during inflation*)

Regulatory changes (*Meta privacy regulation impacts in Europe*)

Weather disasters (*Apple suppliers hit by 2022 floods in China*)

Sources of Construction & Project Risks

Risks may come from:

Owners

Designers

Contractors

Subcontractors

Weather

Economic changes

Material shortages



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Objectives of Risk Management

The goal is to:

Identify risks early

Reduce likelihood

Minimize impact

Improve project control

Increase chances of meeting time & budget goals

Example – Amazon:

Amazon predicts delivery risks during Black Friday using analytics to minimize delays and protect promised delivery dates.

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Risk Assessment

- Evaluate each risk by:
 - **Probability** (1–5 scale)
 - **Impact** (1–5 scale)
- High probability + high impact = **High priority**
- Output: **Risk Severity Matrix**



Risk Assessment

Example of Probability vs Impact

10% chance of losing \$100,000 = **serious**

90% chance of losing \$1,000 = **less serious**

→ Impact often more critical than probability



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Components of Risk Management

1. Risk Identification
2. Risk Assessment
3. Risk Response Planning
4. Risk Monitoring & Control

Example – Microsoft:

Microsoft identifies and monitors cybersecurity risks 24/7 to prevent system failures.

1. Risk Identification

Team lists all possible risks during planning.
Includes internal vs. external risks.
WBS is used to ensure no activity is missed.
Use risk profiles and historical data.

Example – Tesla:

Tesla identifies technical risks early when designing new batteries by testing prototypes before mass production.



2. Risk Assessment

Assess probability and impact of each risk.
Some risks are minor; others need deep evaluation.
Scenario analysis is used to classify severity.
Both probability and impact are rated 1–5.

Example – Google:

Google assessed the market and privacy risks for Google Glass.
High impact led them to discontinue the consumer version.



3. Risk Response Planning

Choose the best plan:

- A. **Mitigate** – reduce probability
 - B. **Avoid** – remove the risk altogether
 - C. **Transfer** – move risk to another party
 - D. **Share** – multiple parties handle the risk
 - E. **Retain** – accept and plan for it
-

3. Risk Response Planning

A. Mitigation

Reduce likelihood and/or impact

Understand the **cause**

Provide alternatives to reduce effect on cost or time

3. Risk Response Planning

B. Avoidance

Change plan to remove risk source

Choose proven methods

Sometimes: do **not** bid the project

3. Risk Response Planning

C. Transfer

- Give responsibility to a more capable party
- Examples:
 - Subcontracting
 - Contract clauses (e.g., No-Damage-for-Delay)

3. Risk Response Planning

D. Sharing

Joint ventures

Partnering with owner

Shared cost and responsibility

3. Risk Response Planning

E. Retention

Risk stays with original party

Used when probability is low or risk is manageable

Requires a ready action plan

4. Risk Response Control

Monitor risks continuously

Check for trigger events

Adjust plans as needed

Regular updates in meetings and reports

Assign clear responsibility (“Who handles what?”)

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What Is Project Closeout?

What Is Project Closeout?

Final step in the construction project life cycle

Ensures orderly transfer from contractor → owner

Includes documentation, inspections, payments, training, warranties

Begins **from the pre-construction phase**, not at the end

What Is Project Closeout?

What is Project Closeout?

Final phase of the project life cycle

Ensures an **orderly, documented transition** from contractor → owner

Includes: physical work, administrative tasks, documentation, lessons learned

Starts early during **pre-construction**

Example:

Microsoft Data Center Projects begin collecting closeout documents from the first construction month to avoid delays at handover.

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Initiation of Project Closeout

Begins during **pre-construction**

Closeout meeting with subcontractors & vendors

Review of **Section 01 70 00** requirements (closeout procedures, cleaning, testing, warranties, etc.)

🌐 **Example:**

Tesla Gigafactory introduces closeout checklists at the start of the project so suppliers know documentation expectations months in advance.



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Closeout Checklist

Includes:

Final cleaning

Starting systems

Testing & commissioning

Punchlist & substantial completion

Warranty items

As-built drawings

Maintenance manuals

Spare parts

Bond releases & insurance

Extra stock materials

Closeout Checklist

🌐 Example:

Siemens Energy requires full testing & commissioning reports before equipment handover on all power plant projects.



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Building a Closeout Matrix

Matrix includes:

Document name

Submission date

Date requested

Date received

Sent to owner? (Y/N)

Person responsible

Building a Closeout Matrix

Amazon Web Services (AWS) Construction Team uses a digital matrix via **Procore** to track all subcontractor documents.



Objectives of Closeout

Smooth transition to owner

Reduce owner anxiety

Ensure all contractual and technical requirements are complete

Build long-term relationship

🌐 Example:

Dubai Expo 2020 Projects emphasized orderly handover to avoid delays and ensure positive relations with global partners.



Risks of Poor Closeout

Owner may withhold payments

Retainage delays

Claims or disputes

Damage to contractor reputation

Example:

UK NHS Hospital Projects delayed final payments for months because incomplete O&M manuals were not submitted on time.

Two Types of Closeout

1. Contract Closeout

Verify contract obligations

Match POs with invoices

Review change orders

Close vendor agreements

2. Administrative Closeout

Financial reconciliation

Payment records

Archive documents

Lessons learned

Two Types of Closeout

🌐 Example:

Bechtel Corporation uses a dual closeout: contract reviews + administrative audits to avoid disputes in mega-projects.



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Contract Closeout Example

Global Example:

Apple Park Construction

Contractor had to submit 100% verified change orders and warranty records before Apple released final payment.
PO-to-invoice matching was mandatory for every vendor.



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Administrative Closeout Example

Global Example:

Google Office Campus Projects

Use automated financial reconciliation in Oracle systems

Archive everything digitally

Final job cost reports shared with HQ



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➤ Archiving Project Files



Archiving Project Files

Files include:

Contracts

Change orders

Correspondence

RFIs

Payments

Schedules

Meeting minutes

Lessons learned

🌐 **Example:**

Saudi Aramco keeps digital archives for 10–15 years due to long-term operational needs of oil & gas facilities.



Lessons Learned Meetings

- Review successes and issues
- Identify root causes
- Document cost/schedule differences
- Recognize team achievements
- Share best practices for future projects

🌐 Example:

NASA conducts formal “Post-Project Reviews” for all missions to capture lessons for future launches.



Lessons Learned Example

Global Example:

Hyundai Engineering & Construction

Learned that early supplier integration reduced delays by 18%

Standardized the process for all future global projects



Lessons Learned Documentation

Must include:

Issue description

Impacts (cost/schedule)

Root cause

Corrective actions

References

Opportunities (if positive event)

🌐 **Example:**

IBM Data Center Builds maintain a global lessons-learned library shared across all continents.



Project Closeout Report

- Summarizes project baselines & achievements
- Records schedule & cost variances
- Includes lessons learned
- Written 60–90 days after project completion

🌐 Example:

Qatar FIFA World Cup Projects produced closeout reports to ensure stadium and infrastructure data remain accessible for future events.





Thank You