

Project Time Management

مقرر: إداره وقت المشروع

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PMG 212

Lecture 06



Agenda

Analyzing and Reporting Variances in Schedule and Cost

- Analyzing and Reporting Variances
- Understanding Project Analyses
- S-Curve Overview
- Tracking Gantt Chart
- Control Charts
- SPI and CPI Charts
- Causes of Variances
- Variance Thresholds
- Root Cause Analysis (RCA)
- Reporting Project Status
- Projects Life Cycle
- The Stage-Gate Process
- Gatekeepers
- The Stage-Gate Most Common Decisions
- The Major Benefits of the Stage-Gate
- Pitfalls That May Disrupt the Process
- The Stage-Gate Vs life-cycle

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Analyzing and Reporting Variances

- Project manager reviews data if schedule or cost deviates from plan
- Determine whether variance requires corrective action or is normal
- Use earned value and efficiency ratios for analysis
- Assess impact of variances on overall project
- Identify potential causes and root causes of variances

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Understanding Project Analyses

- Project data comes from multiple sources and must be compiled
- Graphical representation helps in understanding trends
- Common graphical tools: S-Curves, Gantt charts, Control charts, SPI/CPI charts
- Visual analysis aids in quick decision-making and problem detection

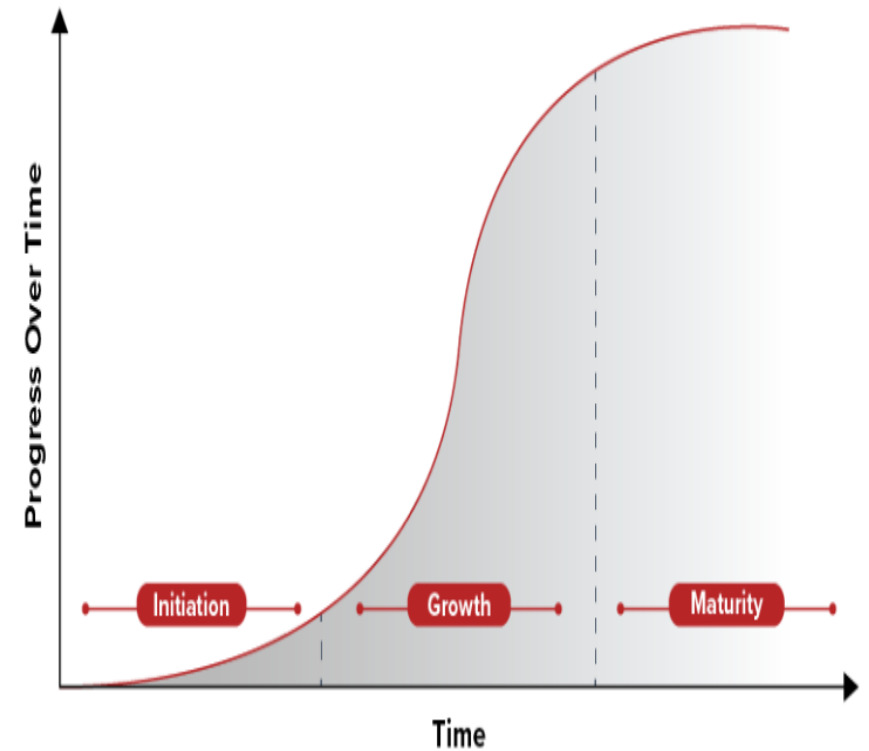
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S-Curve Overview

- A graph that shows **how the project is progressing over time**
- **S-shape**: starts slow → speeds up → slows down at the end
- **Planned line** = what we expected to finish
- **Actual line** = what we really did
- **Earned line** = value of work completed
- Helps the manager **see delays or extra costs quickly**



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Tracking Gantt Chart

Chapter

06

- Compares actual vs baseline start/finish times for tasks
- Visual format shows critical path impact
- Updates reveal trends and causes of delays
- Useful for cost monitoring alongside schedule
- Immediate visual impact aids in corrective action

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Control Charts

- Used to track **schedule performance over time**
- Shows if the project is **ahead or behind schedule**
- Middle line = planned schedule (baseline)
- Points above the line = ahead of schedule
- Points below the line = behind schedule
- Helps managers see **performance trends quickly**

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SPI and CPI Charts

Used to measure **project efficiency**

SPI (Schedule Performance Index) → shows schedule performance

$SPI = 1.00$ → on schedule

$SPI < 1.00$ → behind schedule

$SPI > 1.00$ → ahead of schedule

Charts help track performance trends over reporting periods

SPI and CPI Charts

Used to measure **project efficiency**

CPI (Cost Performance Index) → shows cost performance

$\text{CPI} = 1.00 \rightarrow$ on budget

$\text{CPI} < 1.00 \rightarrow$ over budget

$\text{CPI} > 1.00 \rightarrow$ under budget

Charts help track performance trends over reporting periods

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Causes of Variances

Cost Variances:

- Poorly defined scope, incorrect budgeting, excessive front-loading
- Performing work out of sequence, scope creep
- Premium wages, inefficient crew sizes, material delays

Schedule Variances:

- Interruptions, inadequate supervision, rework
- Late starts, incorrect task linkage, equipment breakdown
- Crew issues, scope changes, insufficient resources

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Variance Thresholds

- Variances may not always require immediate action
- Thresholds set based on risk tolerance and project size
- Example: SPI $\pm 5\%$, CPI $\pm 8\%$ → triggers investigation if exceeded
- Helps distinguish normal fluctuations from serious issues
- Thresholds may vary over project life cycle

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Root Cause Analysis (RCA)

Systematic approach to identify causes of variances

Steps:

- 1) Collect data
- 2) Organize contributing factors
- 3) Identify root causes
- 4) Recommend solutions and track implementation

Focuses on correcting underlying issues, not symptoms

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Reporting Project Status

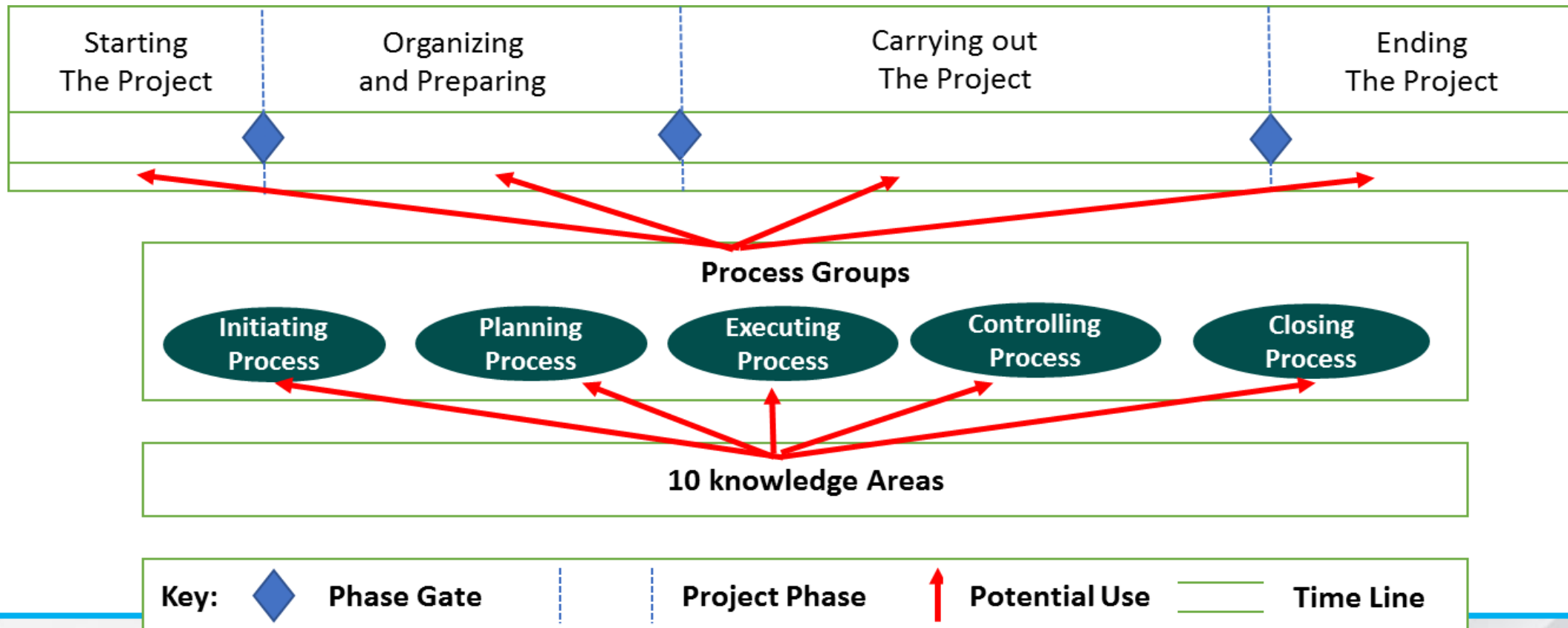
- Consolidate data from reports, schedules, and cost tracking
- Status reports summarize project progress, not opinions
- Include: completed tasks, delayed tasks, milestones, issues
- Use concise, third-person, bullet format
- Regular distribution ensures team alignment and proactive action

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Projects Life Cycle



Projects Life Cycle

◆ Phase Gates (Decision Points)

Represent **checkpoints** between phases (e.g., “Start → Plan → Execute → Close”).

Purpose: Decide whether the project should **Continue, Stop, or Be Adjusted**.

They ensure resources are not wasted on projects that are no longer viable.

Example: Before moving from “Organizing & Preparing” to “Carrying out the project,” management reviews cost, risks, and scope.

Projects Life Cycle

◇ Process Groups

- The **work performed inside each phase.**
- They are **ongoing management activities** that happen across all phases.
- 5 groups: **Initiating, Planning, Executing, Controlling, Closing.**
- Example: While carrying out the project, the team is executing work, controlling progress, and sometimes re-planning.

Projects Life Cycle

◇ Relationship Between Them

Phase gates are “WHERE” decisions happen (end of a phase).

Process groups are “WHAT” you do inside phases to manage the work.

At each **gate**, outputs from the process groups are reviewed:

Initiating → provides project charter for approval at Gate 1.

Planning → provides detailed project plan for review at Gate 2.

Executing + Controlling → progress reports & performance data reviewed at Gate 3.

Closing → final deliverables reviewed at the last gate.

Projects Life Cycle

☒ In short:

Gates = Decision checkpoints between phases.

Process Groups = Management actions within the phases.

The **process groups produce deliverables and reports** → which are then evaluated at **gates** to decide whether the project should move forward.

Projects Life Cycle

Project Management Phases & Process Groups

The Four Project Phases:

- Starting the Project
- Organizing and Preparing
- Carrying Out the Project
- Ending the Project

Projects Life Cycle

Phase Gates

Represent decision points before moving to next stage

Key checks: Feasibility, Resources, Risks, Approval

Diamond symbols in diagram = “Go / Kill / Hold / Recycle” decisions

Projects Life Cycle

Process Groups Overview

Initiating

- Define objectives & scope
- Identify stakeholders
- Secure approvals & resources

Projects Life Cycle

Process Groups Overview

Planning

- Develop project plan (schedule, cost, resources)
- Risk management planning
- Communication planning

Projects Life Cycle

Process Groups Overview

Executing

- Assign and manage teams
- Coordinate resources
- Deliver project outputs

Projects Life Cycle

Process Groups Overview

Controlling

- Track progress vs. plan
- Manage changes
- Monitor risks and quality

Projects Life Cycle

Process Groups Overview

Closing

- Formal project closure
- Deliverables handover
- Lessons learned & documentation

Projects Life Cycle

Process Groups Overview

Key Pitfalls to Avoid

(Based on the list we built earlier)

- Weak gatekeeping
- Unrealistic deadlines
- Poor communication
- Lack of risk management
- Misaligned objectives

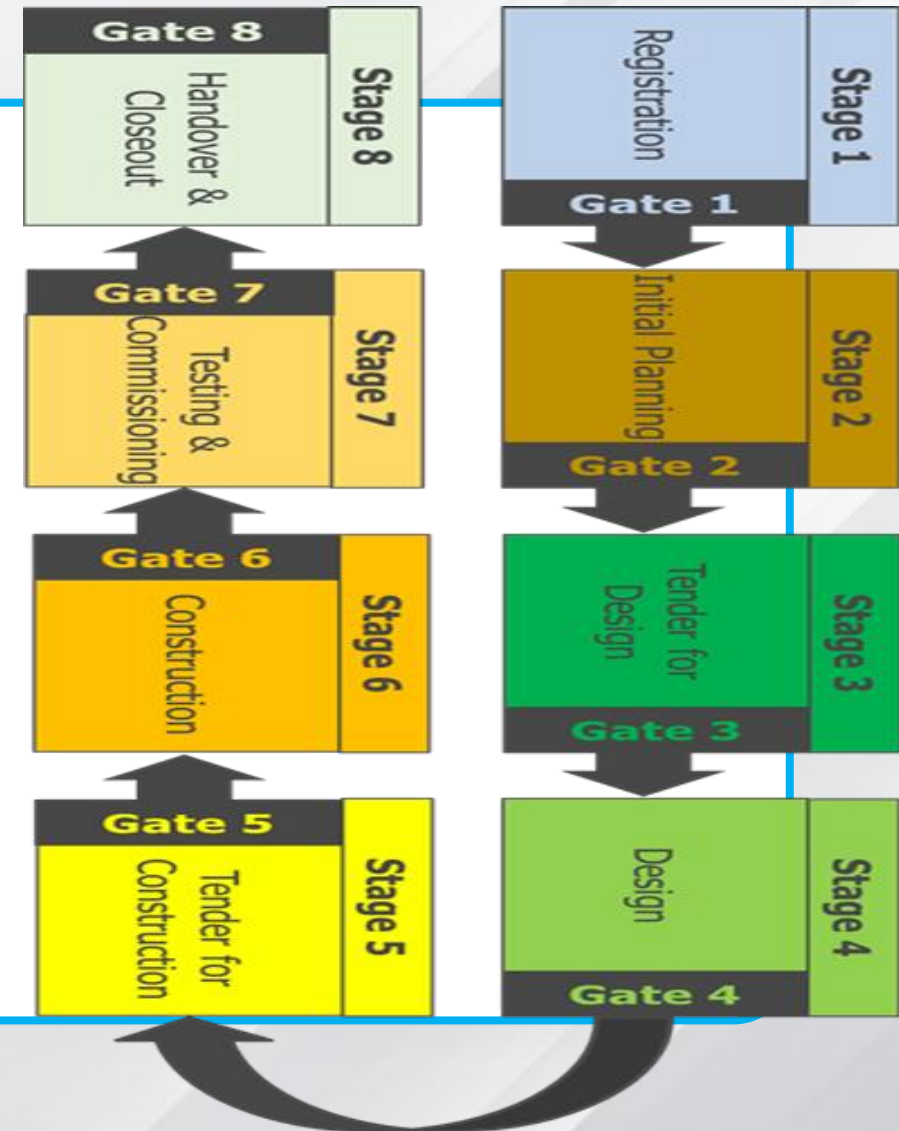
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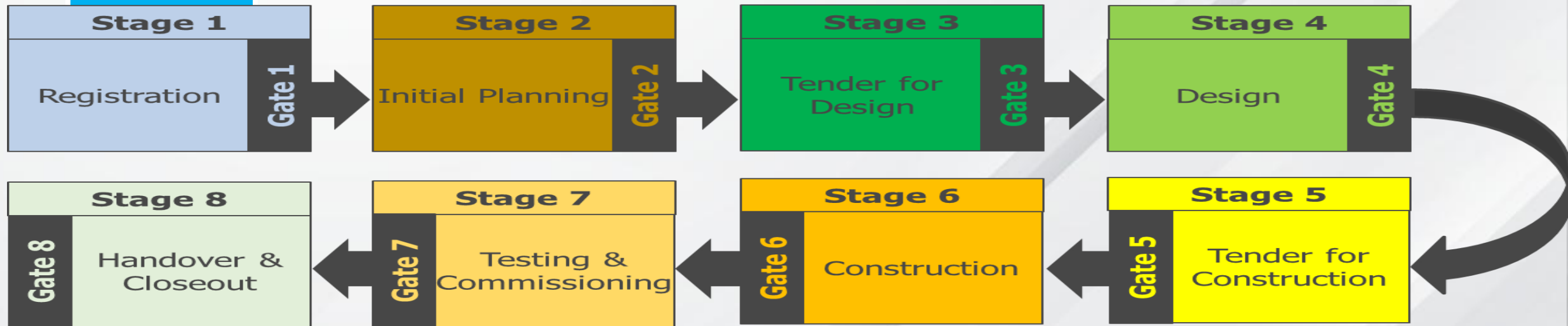
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The Stage-Gate Process

- 1 Provides a project delivery systematic process
- 2 Contains a list of critical deliverables for each of the 8 stages over the life cycle of the project
- 3 Contains a list of critical deliverables for each of the 8 stages over the life cycle of the project



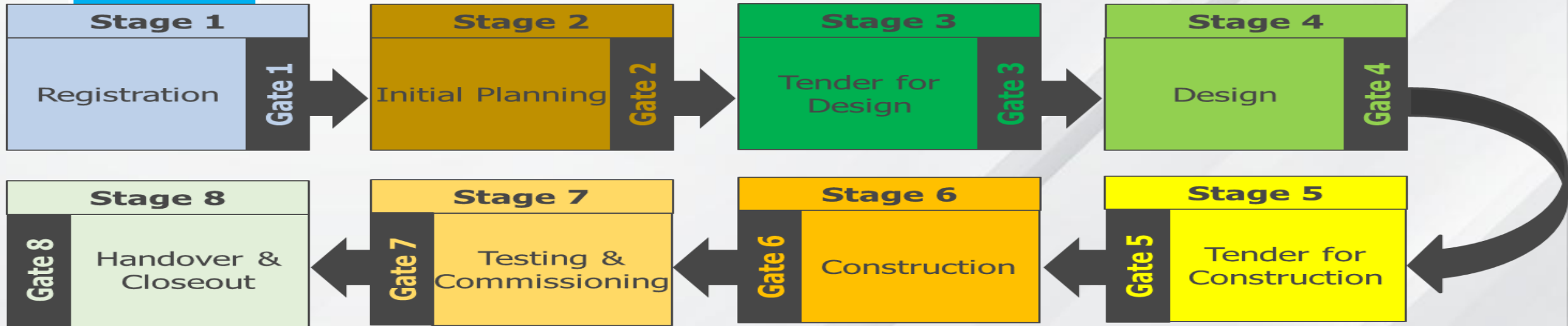
The Stage-Gate Main Roles



- ✓ Align Kick-off meeting and Gate Review Meeting to the project schedule
- ✓ Participate in the kick-off meeting
- ✓ Approve the stage deliverables.
- ✓ Decide on "Go / No-go" to the next stage.
- ✓ Assign the Gate Coordinator.

Gate Keeper

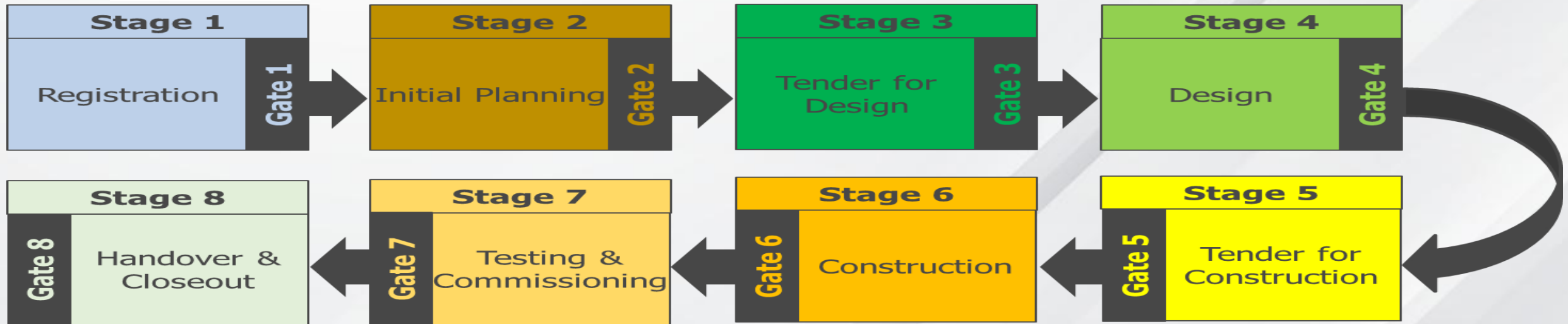
The Stage-Gate Main Roles



Gate Coordinator

- ✓ Establish the Gate Committee.
- ✓ Issue the Stage Gate Checklist.
- ✓ Chair the Stage Kick-off Meeting.
- ✓ Finalize the Stage Deliverable Checklist

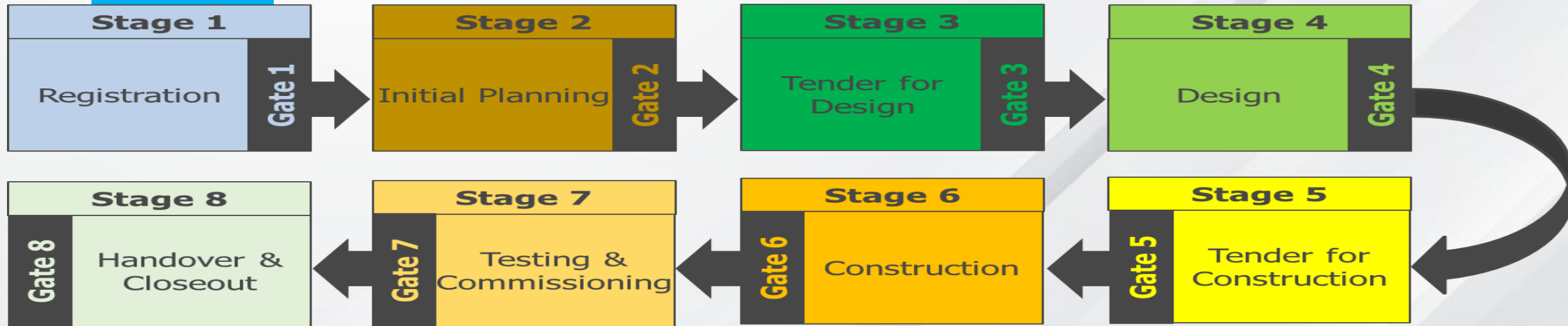
The Stage-Gate Main Roles



- ✓ *Schedule the Gate Review Meeting*
- ✓ *Chair the Gate Review Meeting*
- ✓ *Prepare the Gate Review Summary sheet*
- ✓ *Coordinate resolution of any deliverable deficiencies with Functional Departments*

Gate Coordinator

The Stage-Gate Main Roles



✓ *Participate in the Stage Kick-off Meeting.*

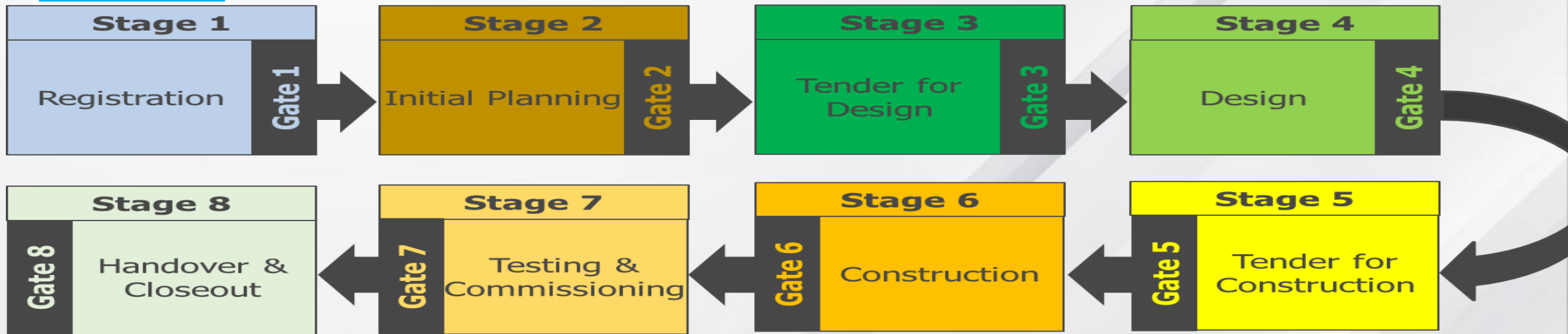
✓ *Agree on the Stage Deliverable Checklist.*

✓ *Confirm all Gate deliverables are complete.*

✓ *Typical make-up: Project level Functional Department representatives from Engineering, Construction, Safety, Contracts, Quality, etc.*

Gate Committee

The Stage-Gate Main Roles



Functional Departments

- ✓ Agree on the key stage deliverables.
- ✓ Complete the assigned stage deliverables.
- ✓ Support the Gate Committee by resolving any deliverable deficiencies.

The Stage-Gate Process

The stage-gate process was created because the traditional organizational structure was designed primarily for top-down, centralized management, control, and communications, all of which were no longer practical for organizations that use project management and horizontal work flow.

The Stage-Gate Process

Project management is used to manage the stages between the gates, and can shorten the time between the gates.

This is a critical success factor if the stage-gate process is to be used for the development and launch of new products.

A good corporate methodology for project management will provide checklists, forms, and guidelines to make sure that critical steps are not omitted.

The Stage-Gate Checklists

Checklists for gate reviews are critical. Without these checklists, project managers can waste hours preparing gate review reports. Good checklists focus on answering these questions:

- Where are we today (i.e., time and cost)?
- Where will we end up (i.e., time and cost)?
- What are the present and future risks?
- What assistance is needed from management?

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Gatekeepers

Project managers are never allowed to function as their own gatekeepers.

The gatekeepers are either individuals (i.e., sponsors) or groups of individuals designated by senior management and empowered to enforce the structured decision-making process.

Gatekeepers

The gatekeepers are authorized to evaluate the performance to date against predetermined criteria and to provide the project team with additional business and technical information.

Gatekeepers must be willing to make decisions

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The Stage-Gate Most Common Decisions

The four most common decisions are:

- Proceed to the next gate based upon the original objectives
- Proceed to the next gate based upon revised objectives
- Delay making a gate decision until further information is obtained
- Cancel the project

The Stage-Gate Most Common Decisions

Sponsors must also have the courage to terminate a project. The purpose of the gates is not only to obtain authorization to proceed, but to identify failure early enough so that resources will not be wasted but will be assigned to more promising activities.

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The Major Benefits of the Stage-Gate:

- Providing structure to project management
- Providing possible standardization in planning, scheduling, and control (i.e., forms, checklists, and guidelines)
- Allowing for a structured decision-making process

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Pitfalls That May Disrupt the Process:

- Assigning gatekeepers and not empowering them to make decisions
- Assigning gatekeepers who are afraid to terminate a project
- Denying the project team access to critical information
- Allowing the project team to focus more on the gates than on the stages
- Treating the Stage-Gate process as a formality rather than a decision-making tool

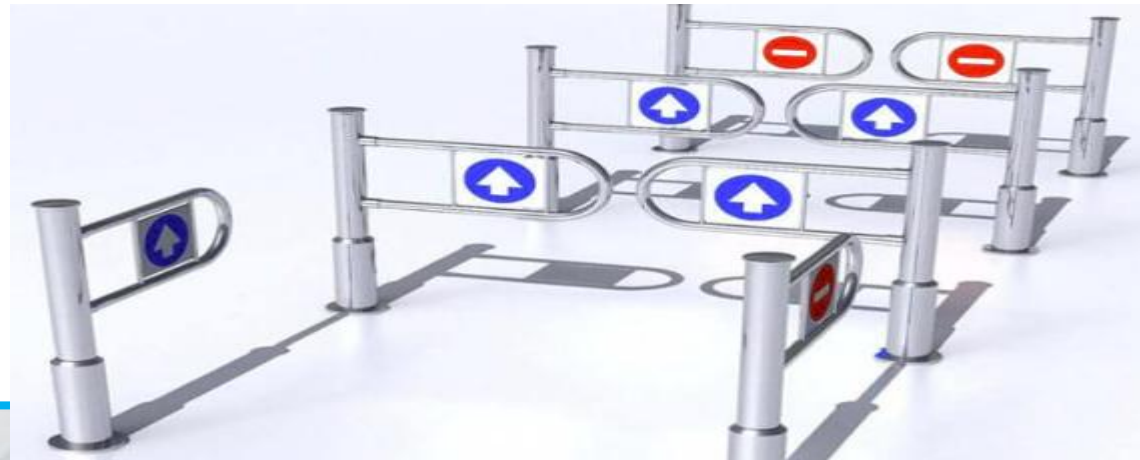
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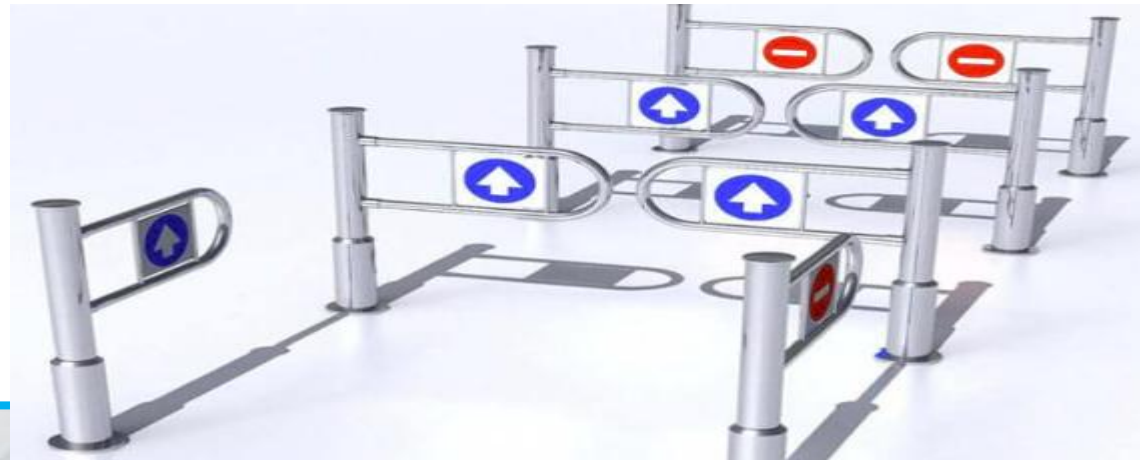
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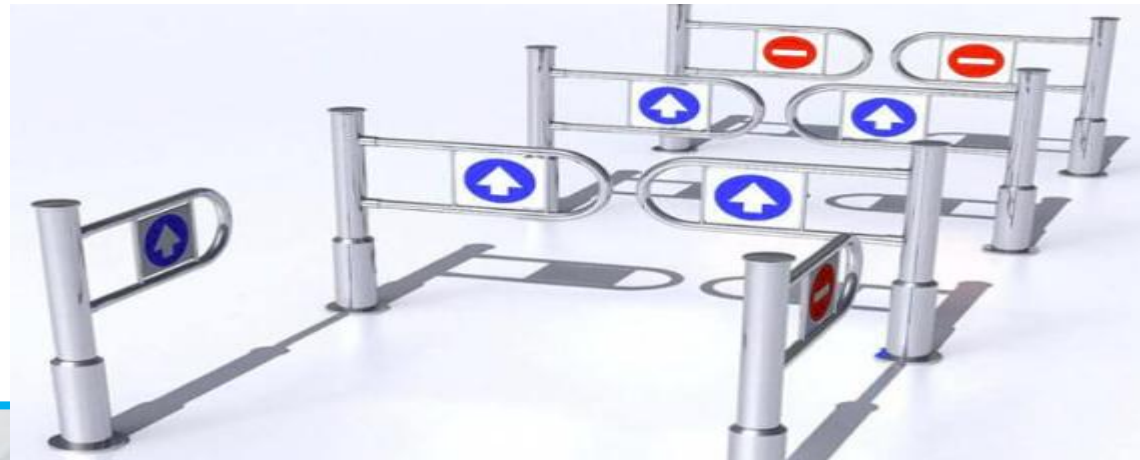
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Since the stage-gate process focuses on decision-making more than life-cycle phases, the stage gate process is being used as an internal, decision-making tool within each of the lifecycle phases.



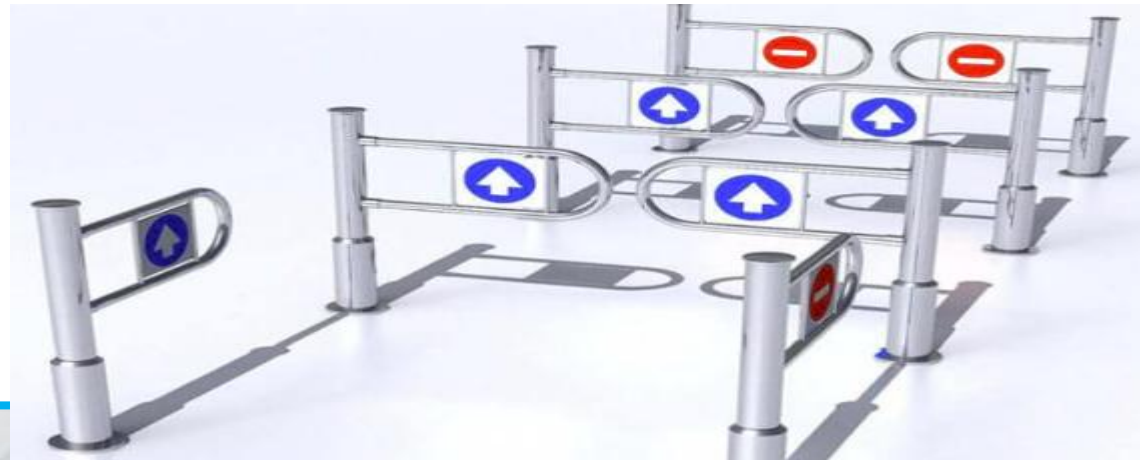
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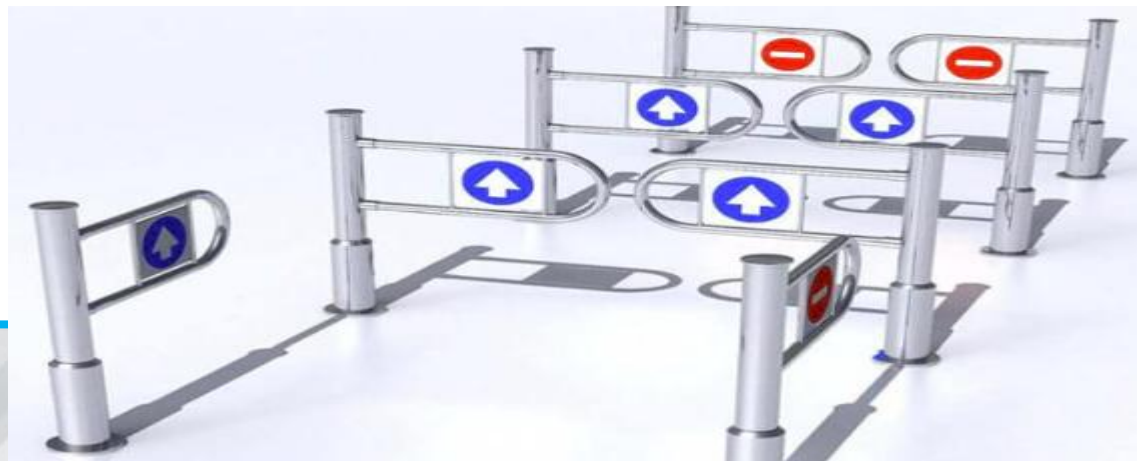
The advantage is that, while life-cycle phases are the same for every project, the stage-gate process can be custom-designed for each project to facilitate decision making and risk management.



The Stage-Gate Vs life-cycle

Every program, project, or product has certain phases of development known as life-cycle phases.

A clear understanding of these phases permits managers and executives to better control resources to achieve goals.





Thank You