مدیریت پروژه بر اساس PMBOK به همراه الحاقیه ساخت

(ویرایش هفتم)

بخش دوم: استاندارد مدیریت پروژه

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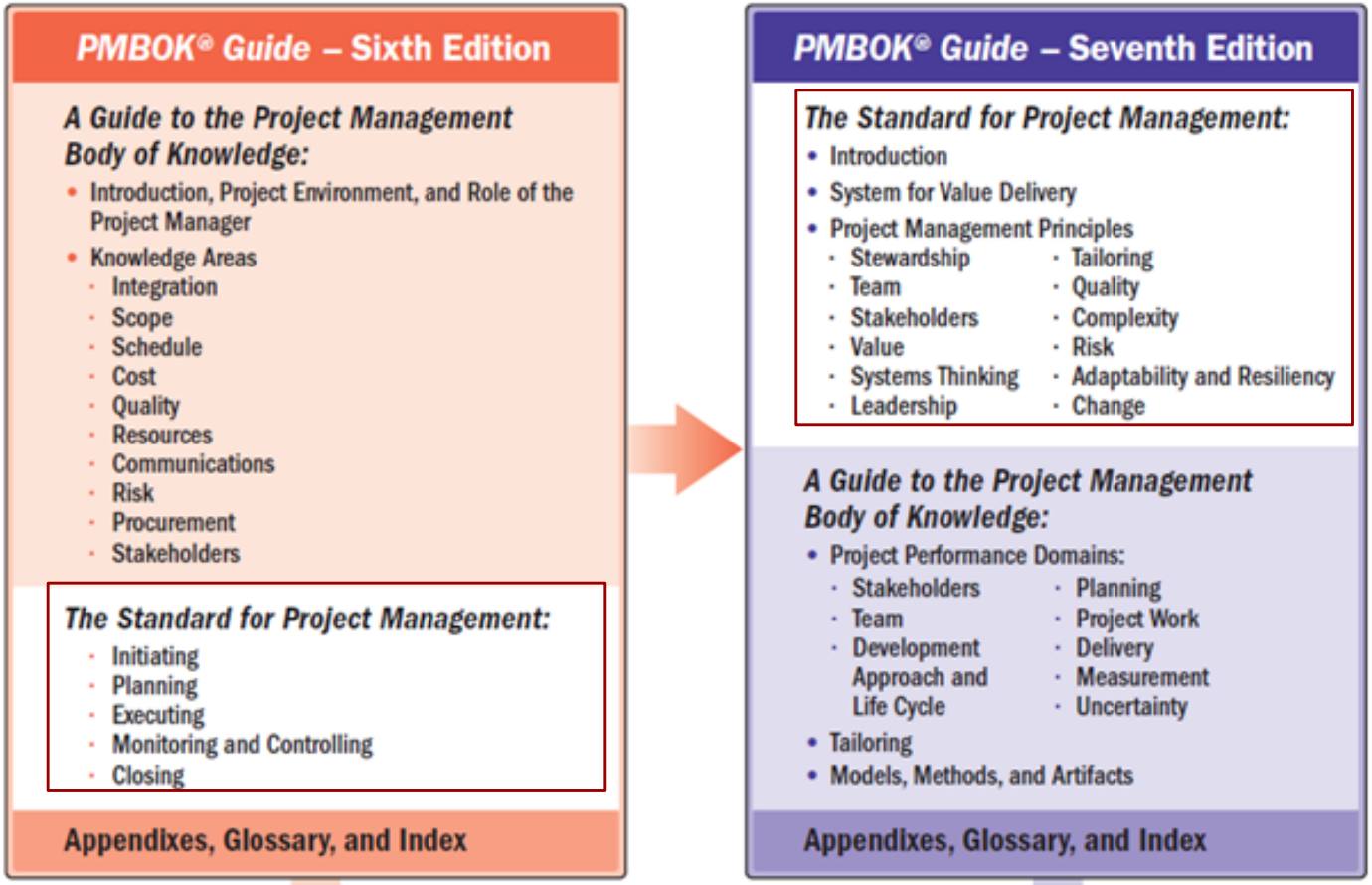
What we will learn?

- Introduction
- Standard For Project Management
  - 6th edition
  - 7th Edition – Introduction
  - 7th Edition – A System For Value Delivery
  - 7th Edition – Project Management Principles

Standard For Project Management

(7th Edition – Project Management Principles)

Standard in PMBOK 6th vs. 7th



Standard in PMBOK 7th

- Introduction
- A system for value delivery
- Project management principles

Let's see more detail!

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Introduction

- **Principles** for a profession serve as **foundational guidelines** for strategy, decision making, and problem solving.

These concepts created exactly because many of the PMBOK's authors come from the business management area

- The **principles of project management** are not **prescriptive** in nature.
  - They are intended to **guide the behavior** of people involved in projects.
- **Principles** can, but do **not** necessarily, reflect **morals**.
  - A **code of ethics** is related to **morals**.
  - A **code of ethics** for a profession can be adopted by an individual or profession to establish **expectations for moral conduct**.

How code of ethics and project management principles are related?

Code of ethics vs. Principles

The 12 principles of project management are aligned with the values identified in the PMI Code of Ethics and Professional Conduct.

1. **They do not follow the same format**
2. **They are not duplicative**

rather the principles and the Code of Ethics are complementary.

How PMI has reached these 12 principles?

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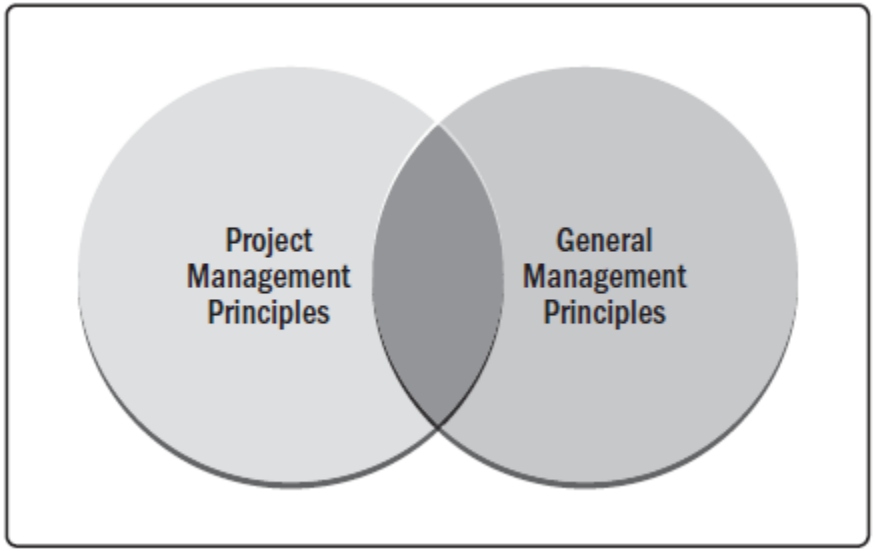
12 Project management principles

- PMI claims that:
  - *The principles of project management were identified and developed by engaging a **global community of project practitioners**.*
  - *The practitioners represent **different industries**, cultural backgrounds, and organizations in different roles and with experience in **various types of projects**.*
  - *Multiple rounds of feedback **resulted in 12 principles** that provide guidance for effective project management.*

How many of construction experts participated in these survey?
It is a real challenge.

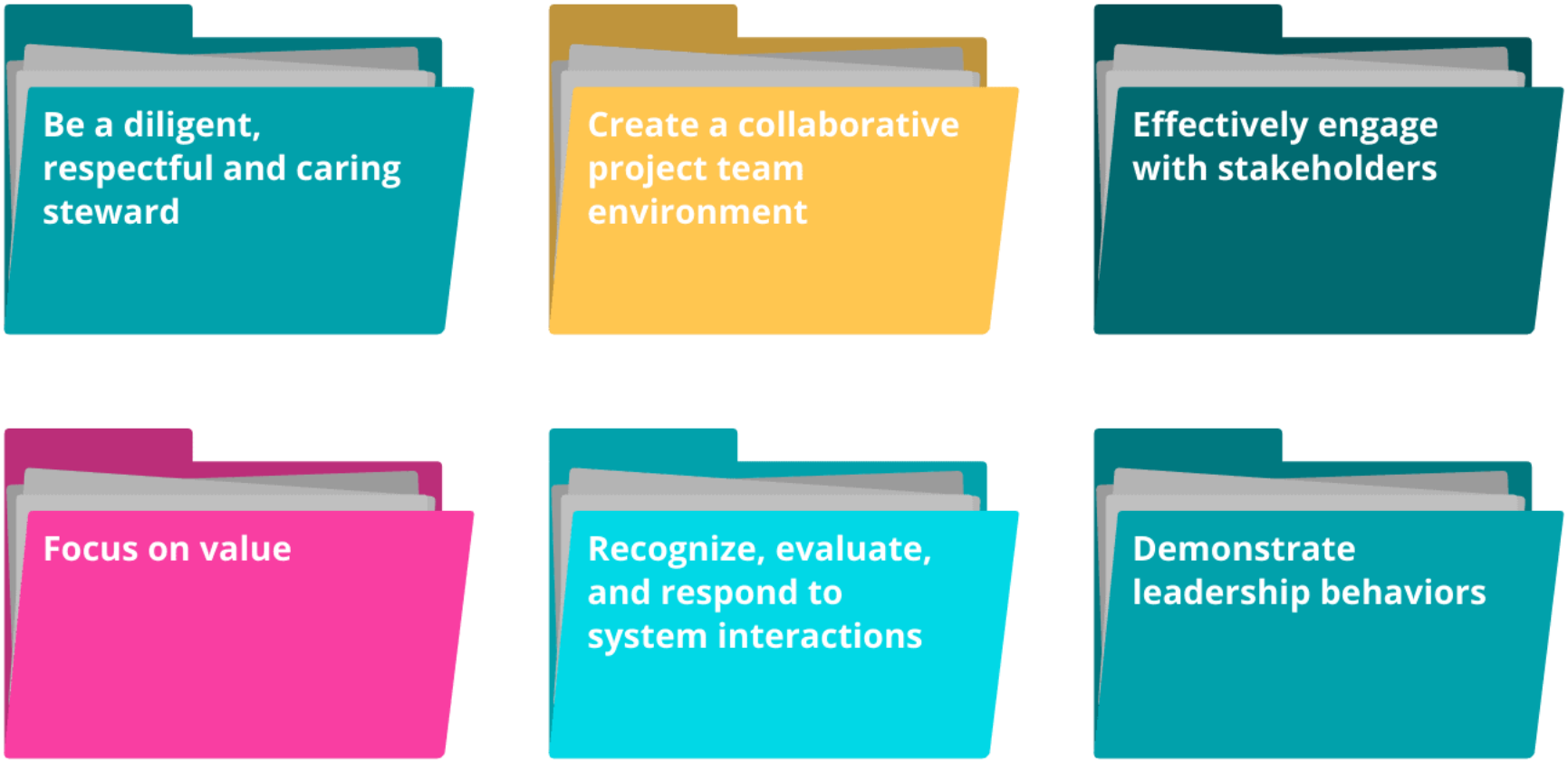
12 Project management principles

- The **principles** are **internally consistent**, meaning that **no principle contradicts** any **other principle**.
  - However, in practice there may be times when the **principles can overlap**.
- **Principles of project management** can also have areas of **overlap** with **general management principles.**

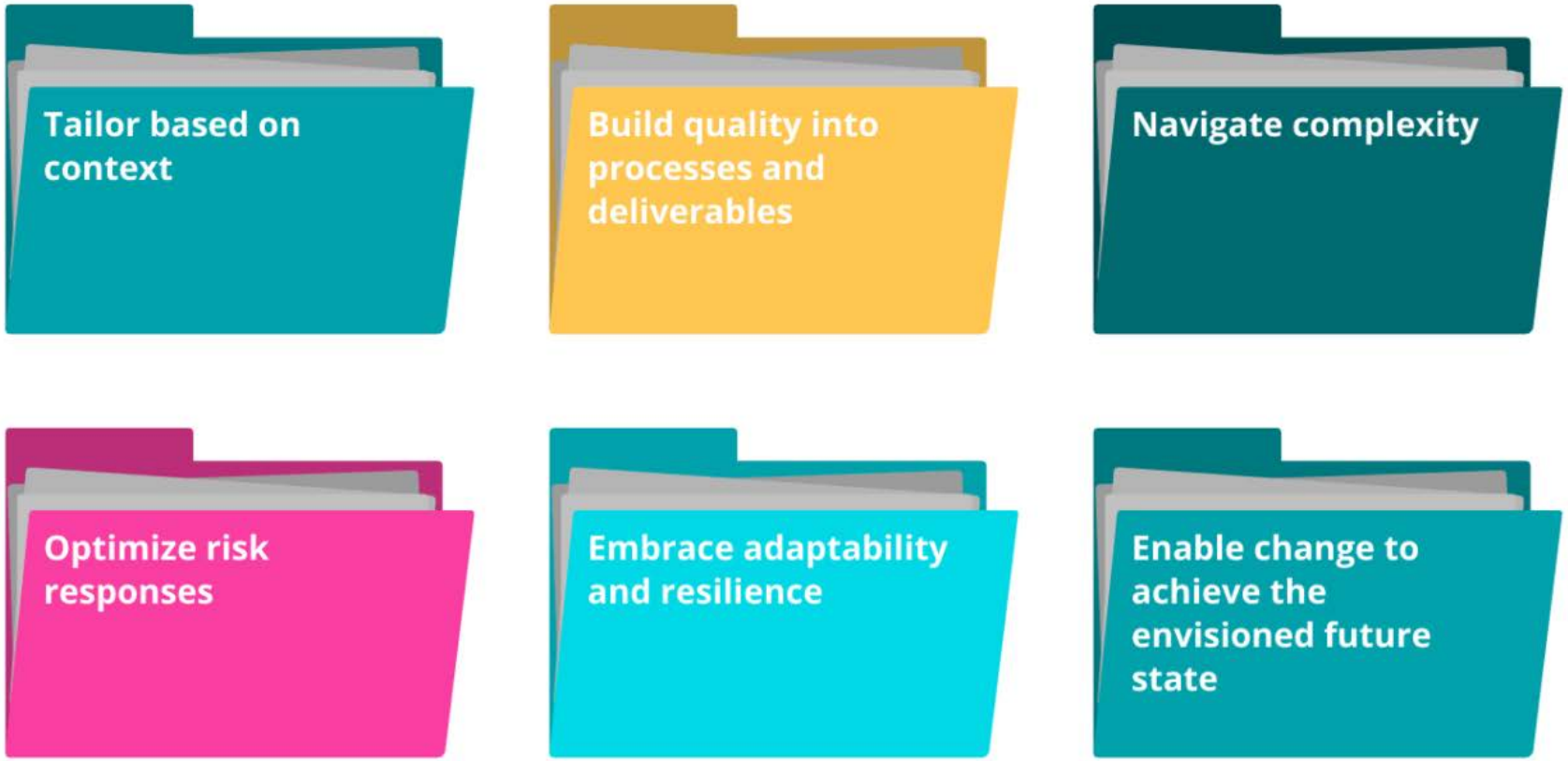


Let's see 12 project management principles!

12 Project management principles



12 Project management principles



12 Project management principles

Let's see each of these principles in detail!

Stewardship

STEWARDSHIP

Stewards act responsibly to carry out activities with integrity, care, and trustworthiness while maintaining compliance with internal and external guidelines. They demonstrate a broad commitment to financial, social, and environmental impacts of the projects they support.

- Stewardship encompasses responsibilities within and external to the organization.
- Stewardship includes:
  - Integrity,
  - Care,
  - Trustworthiness, and
  - Compliance.
- A holistic view of stewardship considers financial, social, technical, and sustainable environmental awareness.

Be a Diligent, Respectful, and Caring Steward

"Being a steward means to take care of something," says Cornelius Fichtner, PMP, CSM, and Founder of The Project Management Podcast. "In a project environment, that means to look after your project and to act with its best intentions in mind at all times."

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Team

TEAM

Project teams are made up of individuals who wield diverse skills, knowledge, and experience. Project teams that work collaboratively can accomplish a shared objective more effectively and efficiently than individuals working on their own.

- Projects are delivered by project teams.
- Project teams work within organizational and professional cultures and guidelines, often establishing their own "local" culture.
- A collaborative project team environment facilitates:
  - Alignment with other organizational cultures and guidelines,
  - Individual and team learning and development, and
  - Optimal contributions to deliver desired outcomes.

Create a Collaborative Project Team Environment

Creating a collaborative project team environment involves multiple contributing factors, such as

1. **Team agreements**
2. **Structures**
3. **Processes**

Team – Team agreements

- A **set of behavioral parameters** and **working norms** established by the project team
- The team agreement should be created at the **beginning of a project**
- Will **evolve over time** as the project team **continues to work** together

Team – Organizational structures

- **Any arrangement** of or **relation** between the elements of **project work** and **organizational processes**.
- Can be **based** on roles, functions, or authority.
- Can be **defined** as
  1. Being external to the project
  2. Tailored to fit the project context, or
  3. Newly designed to meet a unique project need

Examples of organizational structures that can improve collaboration include, but are not limited to:

- Definitions of roles and responsibilities,
- Allocation of employees and vendors into project teams,
- Formal committees tasked with a specific objective, and
- Standing meetings that regularly review a given topic.

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Team – Processes

- **Enable completion** of tasks and work assignments.
  - *For example, project teams may agree to a decomposition process using a work breakdown structure (WBS), backlog, or task board.*

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Team – Roles and responsibilities

- This includes the authority, accountability, and responsibility related to tasks:
  - **Authority.** The condition of having the right, within a given context, to make relevant decisions, establish or improve procedures, apply project resources, expend funds, or give approvals.
    - ✓ Authority is conferred from **one entity to another**, whether done explicitly or implicitly.
  - **Accountability.** The condition of being **answerable for an outcome**.
    - ✓ Accountability is **not shared**.
  - **Responsibility.** The condition of being obligated to do or fulfill something.
    - ✓ Responsibility **can be shared**.

Team – Roles and responsibilities

- Researchers (**Shepherd and Clovis, Small Groups, 1964**) have long shown that successful groups or teams exhibit **five basic traits** as represented in the chart below.

5 BASIC TRAITS OF SUCCESSFUL GROUPS

1. **Goals:** Group goals and objectives are clearly stated and individual members know where their own goals stand in relation to the group goals.
2. **Values and Norms:** To a significant degree, the group shares common values and norms (the rules that govern behavior).
3. **Roles:** Each group member has a differentiated role, a way to make a meaningful contribution.
4. **Membership Criteria:** The criteria for why you are in the group are clear and well known.
5. **Communication:** There is open and full communication.

Do you remember this?

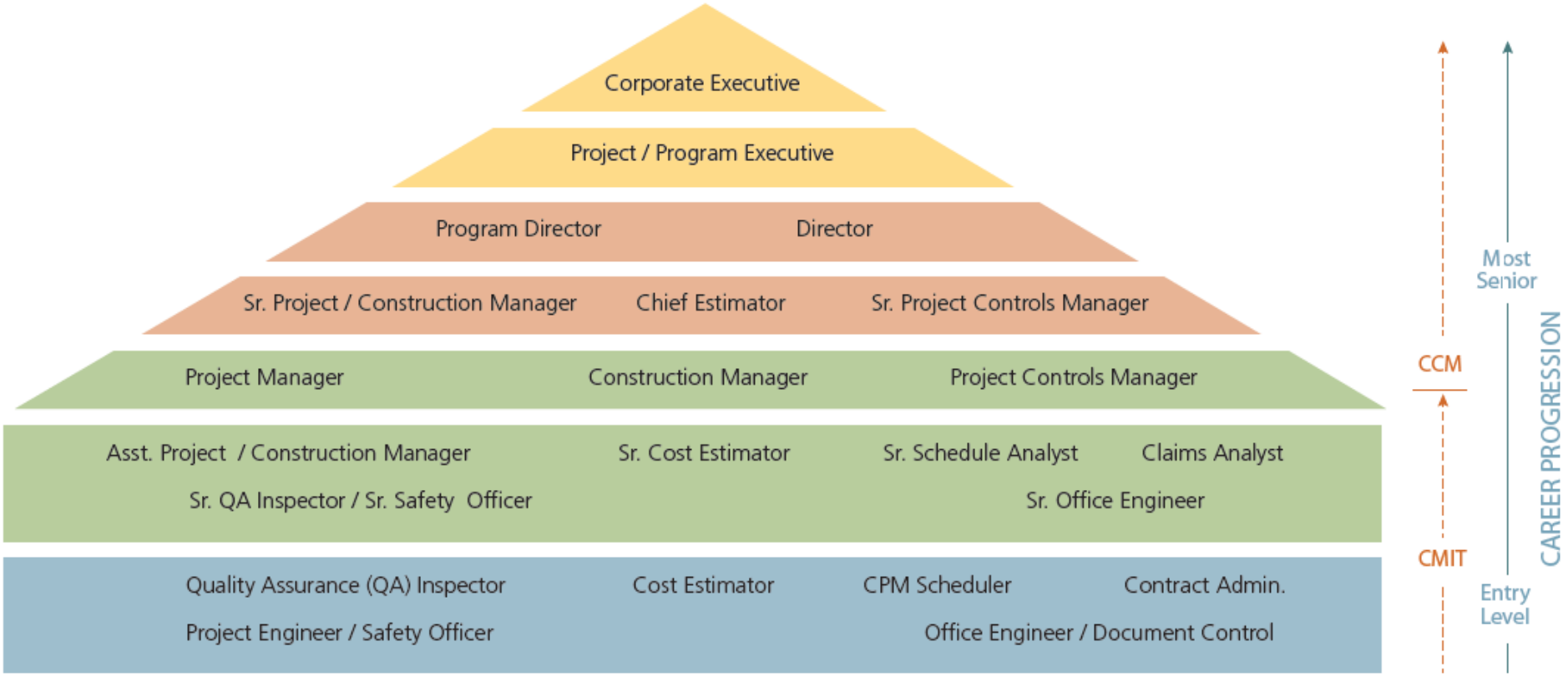
Team – Roles and responsibilities

GROUP DYSFUNCTIONS—WHAT CAUSES TEAMS TO BREAK DOWN?

- **No clear understanding** of the overall goals or the individual tasks of the team;
- **No stated rules of behavior,** which leads to a lack of respect for each other;
- **A failure to follow-up on ideas,** to close the loop on a thought or proposal;
- **Poor documentation of team decisions;**
- **Too many/too long meetings,** which takes time away from accomplishing tasks;
- **Team members don't listen to each other.**

Do you remember this?

Team – Roles and responsibilities



Note: This is a general representation of potential career progress in an Agency CM firm. Actual titles, levels of progression and time spent at each level, will vary from company to company. There is no set progression of positions from one level to the next.

Do you remember this?

Stakeholders

STAKEHOLDERS

Engage stakeholders proactively and to the degree needed to contribute to project success and customer satisfaction.

- Stakeholders influence projects, performance, and outcomes.
- Project teams serve other stakeholders by engaging with them.
- Stakeholder engagement proactively advances value delivery.

Effectively Engage with Stakeholders

A stakeholder is someone who is interested in or impacted by the project. Each stakeholder expects something from the project, and it's important to fully understand their needs so you can tailor the engagement to be most effective.

How stakeholders could affect aspects of a project?

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Stakeholders

- *Scope/requirements,* by revealing the need to add, adjust, or remove elements of the scope and/or project requirements;
- *Schedule,* by offering ideas to accelerate delivery or by slowing down or stop delivery of key project activities;
- *Cost,* by helping to reduce or eliminate planned expenditures or by adding steps, requirements, or restrictions that increase cost or require additional resources;
- *Project team,* by restricting or enabling access to people with the skills, knowledge, and experience needed to deliver the intended outcomes, and promote a learning culture;
- *Plans,* by providing information for plans or by advocating for changes to agreed activities and work;

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Stakeholders

- *Outcomes,* by enabling or blocking work required for the desired outcomes;
- *Culture,* by establishing or influencing—or even defining—the level and character of engagement of the project team and broader organization;
- *Benefits realization,* by generating and identifying long-term goals so that the project delivers the intended identified value;
- *Risk,* by defining the risk thresholds of the project, as well as participating in subsequent risk management activities;
- *Quality,* by identifying and requiring quality requirements; and
- *Success,* by defining success factors and participating in the evaluation of success.

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Stakeholders

- **"Differing site conditions" clause of the Federal Acquisition Regulation (FAR):**

Look at the word "Promptly"

(a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.

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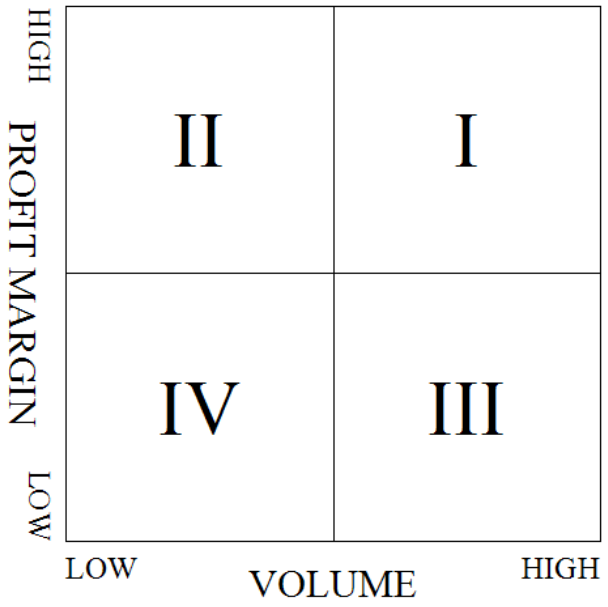
Stakeholders

- From the start to the end
- Project teams are a group of stakeholders
- Communication is a key part of engagement
- Stakeholder engagement relies heavily on interpersonal skills, including taking initiative, integrity, honesty, collaboration, respect, empathy, and confidence.

Stakeholders

❑ Customers in Quadrant IV:

- ❖ Should be
  1. **Moved** into one of the **other quadrants** or
  2. **Dropped**
- ❖ **No company** can **survive** on **Quadrant IV**.



Do you remember this?

Value

VALUE

Continually evaluate and adjust project alignment to business objectives and intended benefits and value.

- Value is the ultimate indicator of project success.
- Value can be realized throughout the project, at the end of the project, or after the project is complete.
- Value, and the benefits that contribute to value, can be defined in quantitative and/or qualitative terms.
- A focus on outcomes allows project teams to support the intended benefits that lead to value creation.
- Project teams evaluate progress and adapt to maximize the expected value.

Focus on Value

Value

- From the perspective of the **customer or end user**
- **Ultimate success indicator** and driver of projects
- Focuses on the **outcome of the deliverables**
- Value **may be a measure** of public good achieved, for example, social benefit or the customer's perceived benefit
- Many projects, though not all, are initiated based on a **business case**.

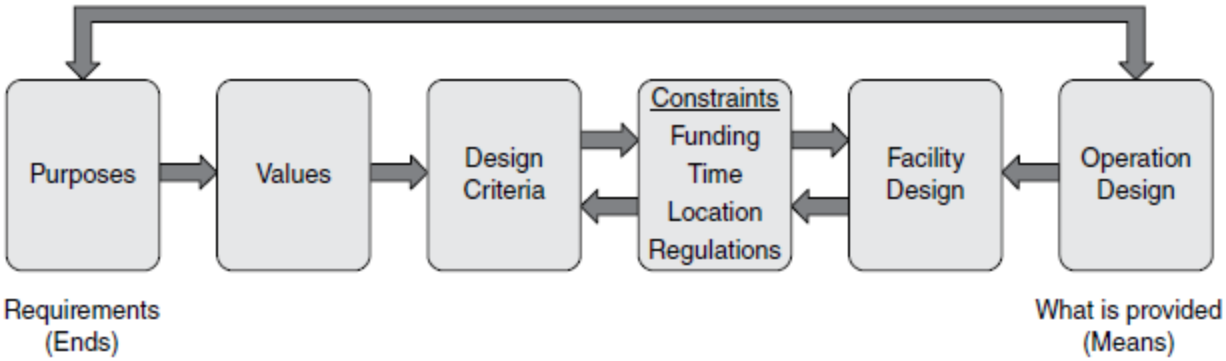
What supporting and interrelated elements a business case contains?

Value – Business case

- **Business need.** Business provides the rationale for the project, explaining why the project is undertaken. It originates with the preliminary business requirements, which are reflected in the project charter or other authorizing document. It provides details about the business goals and objectives. The business need may be intended for the performing organization, a client organization, a partnership of organizations, or public welfare. A clear statement of the business need helps the project team understand the business drivers for the future state and allows the project team to identify opportunities or problems to increase the potential value from the project outcome.
- **Project justification.** Project justification is connected to business need. It explains why the business need is worth the investment and why it should be addressed at this time. The project justification is accompanied by a cost-benefit analysis and assumptions.
- **Business strategy.** Business strategy is the reason for the project and all needs are related to the strategy to achieve the value.

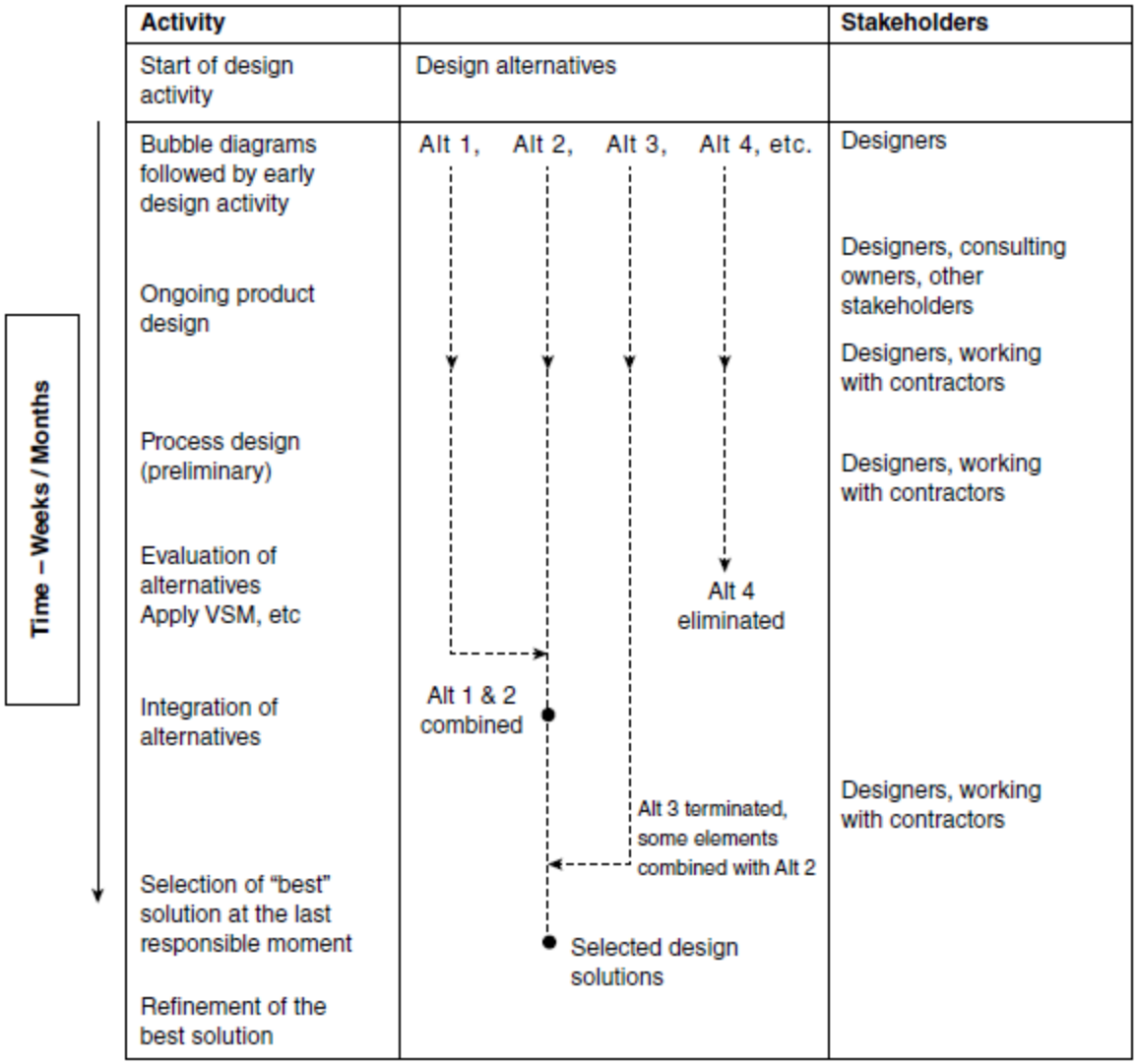
Value – Business case

A representation of the lean project definition process



Do you remember this?

Value – Business case



Set-based design
Do you remember this?

System thinking

SYSTEMS THINKING

Recognize, evaluate, and respond to the dynamic circumstances within and surrounding the project in a holistic way to positively affect project performance.

- A project is a system of interdependent and interacting domains of activity.
- Systems thinking entails taking a holistic view of how project parts interact with each other and with external systems.
- Systems are constantly changing, requiring consistent attention to internal and external conditions.
- Being responsive to system interactions allows project teams to leverage positive outcomes.

Recognize, Evaluate, and Respond to System Interactions

System thinking

- A system is a set of **interacting** and **interdependent** components that function as a unified whole.
- **Systems thinking** also considers timing elements of systems,

  such as what the project delivers or enables over time.
  - *For example, if project **deliverables** are released incrementally, each increment **expands** the cumulative outcomes or capabilities of previous versions.*
  - ***Project teams** should think **beyond** the end of the project to the operational state of the project's deliverable, so that **intended outcomes** are realized.*

Let's see an example in construction

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System thinking

- As projects unfold, internal and external conditions are **continuously changing**.
- A single change can create several impacts.
  - *For example, on a **large construction project**, a **change in requirements** can cause contractual changes with the primary contractor, subcontractors, suppliers, or others.*
  - *In turn, those changes can **create an impact** on project cost, schedule, scope, and performance.*
  - *Subsequently, these changes could **invoke a change control protocol** for obtaining approvals from entities in external systems, such as the service providers, regulators, financiers, and government authorities.*

Remember the change management procedure in claim management course?

System thinking

What skills needed to support a system view of the project?

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System thinking

What skills needed to support a system view of the project?

- Empathy with the business areas;
- Critical thinking with a big picture focus;
- Challenging of assumptions and mental models;
- Seeking external review and advice;
- Use of integrated methods, artifacts, and practices so there is a common understanding of project work, deliverables, and outcomes;
- Use of modeling and scenarios to envision how system dynamics may interact and react; and
- Proactive management of the integration to help achieve business outcomes.

What positive outcomes advanced system thinking made?

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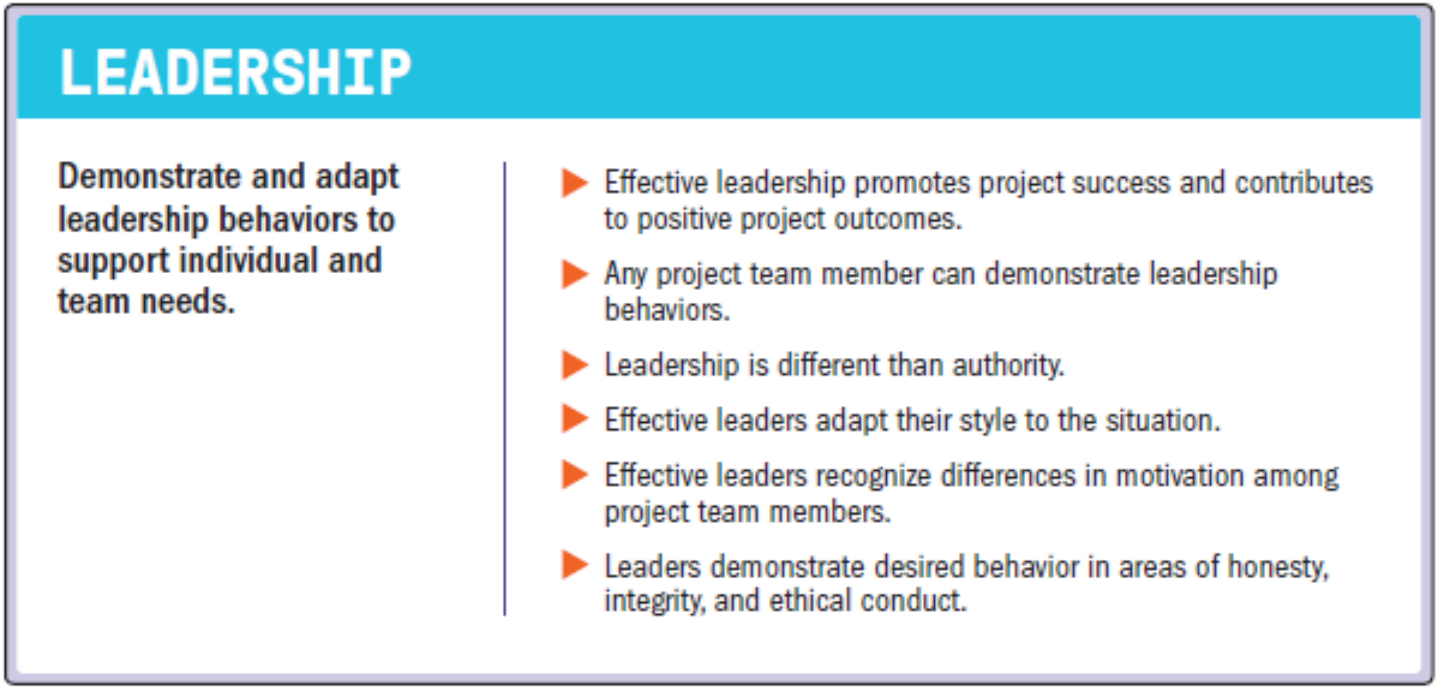
System thinking

What positive outcomes advanced system thinking made?

- Early consideration of uncertainty and risk within the project, exploration of alternatives, and consideration of unintended consequences;
- Ability to adjust assumptions and plans throughout the project life cycle;
- Provision of ongoing information and insights that inform planning and delivery;
- Clear communication of plans, progress, and projections to relevant stakeholders;
- Alignment of project goals and objectives to the customer organization's goals, objectives, and vision;
- Ability to adjust to the changing needs of the end user, sponsor, or customer of the project deliverables;
- Ability to see synergies and savings between aligned projects or initiatives;
- Ability to exploit opportunities not otherwise captured or see threats posed to or by other projects or initiatives;
- Clarity regarding the best project performance measurement and their influence on the behavior of the people involved in the project;
- Decisions that benefit the organization as a whole; and
- More comprehensive and informed identification of risks.

Leadership



Demonstrate Leadership Behaviors

Leadership

- **Higher expectations** than regular **operational functions**
- **Higher degrees** of confusion and conflict
- A **project environment** that prioritizes vision, creativity, motivation, enthusiasm, encouragement, and empathy can support better outcomes.
  - These **traits** are often associated with **leadership**.
- Leadership **comprises** the attitude, talent, character, and behaviors

  to **influence individuals** within and outside the project team toward the desired outcomes.
- **Anyone working** on a project can **demonstrate** effective leadership traits, styles, and skills

  to **help** the project team perform and deliver the required results.

What is the difference between leadership and authority?

Leadership – Leadership vs. authority

- Leadership is **not** an authority
- **Authority** is the **position of control** given to individuals within an organization to **foster** overall effective and efficient **function**.
- **Authority** denotes **accountability** for certain activities, actions of individuals, or decision making in certain circumstances.
  - *Organizational executives may grant someone the **authority to form a project team** to deliver an outcome.*
  - *However, **authority alone is insufficient**.*
  - *It **takes leadership** to motivate a group toward a common goal, influence them to align their individual interests in favor of collective effort, and achieve success as a project team rather than as individuals.*

What leadership styles do we have?

Leadership – Leadership styles

- **Effective leadership** draws from or **combines** elements of **various styles of leadership**.

- **Documented leadership styles** range from autocratic, democratic, laissez-faire, directive, participative, assertive, supportive, and autocratic to consensus.

Which style has been proven?

Leadership – Leadership styles

- **No single leadership** style has proven to be the universally best or recommended approach.
  - Instead, **effective leadership** is shown **when it best fits a given situation**.
    - For example:
      - *In moments of **chaos**,*
        - ✓ ***directive action** creates more clarity and momentum than **collaborative problem solving**.*
      - *For environments with **highly competent and engaged staff**,*
        - ✓ ***empowered delegation** elicits more productivity than **centralized coordination**.*

Could we learn leadership skill?

Leadership – Leadership learning

- It **can be learned** and developed.
- A project team member **deepens leadership** acumen by adding or practicing a combination of **various skills or techniques**, including but not limited to:
  - Focusing a project team around agreed goals,
  - Articulating a motivating vision for the project outcomes,
  - Seeking resources and support for the project,
  - Generating consensus on the best way forward,
  - Overcoming obstacles to project progress,
  - Negotiating and resolving conflict within the project team and between the project team and other stakeholders,
  - Adapting communication style and messaging so that they are relevant to the audience,
  - Coaching and mentoring fellow project team members,

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Leadership – Leadership learning

- It **can be learned** and developed.
- A project team member **deepens leadership** acumen by adding or practicing a combination of **various skills or techniques**, including but not limited to:
  - Appreciating and rewarding positive behaviors and contributions,
  - Providing opportunities for skill growth and development,
  - Facilitating collaborative decision making,
  - Employing effective conversations and active listening,
  - Empowering project team members and delegating responsibilities to them,
  - Building a cohesive project team that takes responsibility,
  - Showing empathy for project team and stakeholder perspectives,
  - Having self-awareness of one's own bias and behaviors,
  - Managing and adapting to change during the project life cycle,
  - Facilitating a fail-fast/learn quickly mindset by acknowledging mistakes, and
  - Role modeling of desired behaviors.

Does personal character matters in a leader?

Leadership – Character in leadership

- **Personal character** matters in a leader.

- A **person may have strong ability** in leadership skills

  but then have **their influence undermined** by the perception of being self-serving or untrustworthy.

What characters effective leaders have?

Leadership – Characters of effective leaders

- **Effective leaders** seek to be a **role model** in areas of honesty, integrity, and ethical conduct.
- **Effective leaders** focus on being transparent, behave unselfishly, and are able to ask for help.
- **Effective leaders** understand that project team members **scrutinize** and **emulate** the values, ethics, and behaviors that **leaders exhibit**.

*Therefore, leaders have an **additional responsibility** to **demonstrate expected behaviors through their actions**.*

- Projects work best when leaders **understand what motivates** people.

By blending styles, continuing skill growth, and leveraging motivators,

any project team member or stakeholder can motivate, influence, coach, and grow the project team,
regardless of role or position.

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Tailoring

TAILORING

Design the project development approach based on the context of the project, its objectives, stakeholders, governance, and the environment using "just enough" process to achieve the desired outcome while maximizing value, managing cost, and enhancing speed.

- Each project is unique.
- Project success is based on adapting to the unique context of the project to determine the most appropriate methods of producing the desired outcomes.
- Tailoring the approach is iterative, and therefore is a continuous process throughout the project.

Tailor Based on Context

Project teams tailor the appropriate framework that will enable the flexibility to consistently produce positive outcomes within the context of the life cycle of the project.

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Tailoring

- **Tailoring** aims to maximize value, manage constraints, and improve performance by using **"just enough"** processes, methods, templates, and artifacts to achieve the **desired outcome** from the project.

How the project is tailored?

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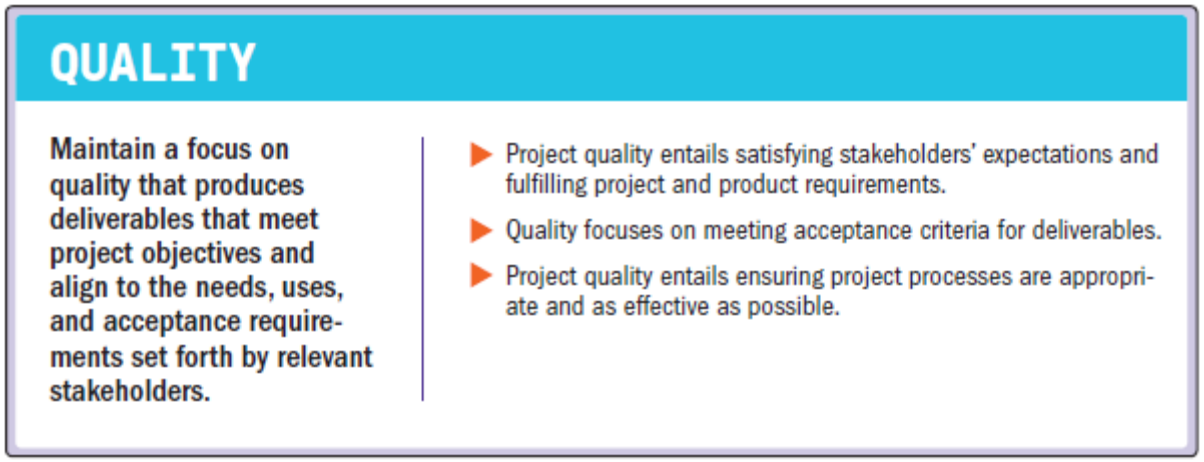
Tailoring

- An **existing methodology** or **common way** of working can inform the way in which a project is tailored.
- A **methodology** is a system of practices, techniques, procedures, and rules used by **those who work** in a discipline.
- **Project teams** may be required to assume the **methodology** of the parent organization.
  - **While** this provides a **degree of consistency** to projects within an organization, the methodology itself may still need **tailoring to suit each project**.
    - ✓ **Organizational policies** and procedures prescribe authorized **boundaries** within which the **project team can tailor**.

Give me some examples…

Is it one time approach or iterative in nature?

Quality



Build Quality into Processes and Deliverables

Quality is the degree to which a set of inherent characteristics of a product, service, or result fulfills the requirements.

What dimensions the quality may have?

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Quality – Dimensions

- **Performance.** Does the deliverable function as the project team and other stakeholders intended?
- **Conformity.** Is the deliverable fit for use, and does it meet the specifications?
- **Reliability.** Does the deliverable produce consistent metrics each time it is performed or produced?
- **Resilience.** Is the deliverable able to cope with unforeseen failures and quickly recover?
- **Satisfaction.** Does the deliverable elicit positive feedback from end users? This includes usability and user experience?
- **Uniformity.** Does the deliverable show parity with other deliverables produced in the same manner?
- **Efficiency.** Does the deliverable produce the greatest output with the least amount of inputs and effort?
- **Sustainability.** Does the deliverable produce a positive impact on economic, social, and environmental parameters?

Difference between requirements and quality?

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Quality – Requirements vs. quality

- Project teams **measure quality** using metrics and acceptance criteria **based on requirements**.

- **Requirements**,
  - Either explicit or implicit
  - May **come from** stakeholders, a contract, organizational policies, standards, or regulatory bodies, or a combination of these

- **Quality**
  - **Closely linked** to the product **acceptance criteria**,

    as described in the statement of work or other design documents.

Difference between objective and intention of quality?

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Quality – Requirements vs. quality

- The **objective** of quality activities is to

  help **ensure** that what is delivered meets the **objectives** of the customer and other relevant stakeholders in the **most straightforward path**.

- The **intention** is to
  - **Minimize** the **waste of resources**
  - **Maximize** the probability of **attaining** the **desired outcome**.

Quality management processes and practices
help produce deliverables and outcomes
that meet project objectives and align to the expectations, uses, and acceptance criteria

expressed by the organization and relevant stakeholders.

Complexity

COMPLEXITY

Continually evaluate and navigate project complexity so that approaches and plans enable the project team to successfully navigate the project life cycle.

- Complexity is the result of human behavior, system interactions, uncertainty, and ambiguity.
- Complexity can emerge at any point during the project.
- Complexity can be introduced by events or conditions that affect value, scope, communications, stakeholders, risk, and technological innovation.
- Project teams can stay vigilant in identifying elements of complexity and use a variety of methods to reduce the amount or impact of complexity.

Navigate Complexity

How the project team could manage complexity?

Complexity – Manage complexity

- **Complexity** is a **characteristic** of a project or its environment that is **difficult to manage** due to
  1. Human behavior,
  2. System behavior,
  3. Ambiguity

- Though complexity **cannot be controlled**,
  1. Project teams **can modify** their **activities** to **address impacts** that occur as a **result of complexity**.
  2. Project teams **often cannot foresee** complexity emerging because it is the **result of many interactions** such as risks, dependencies, events, or relationships.

How complexity could happen?

Complexity – Manage complexity

- **Project complexity** occurs as the **result** of
  1. Individual elements **within the project**
  2. **Project system** as a whole
     - *For example, complexity within a project may be **amplified** with a greater number or **diversity of stakeholders**, such as regulatory agencies, international financial institutions, multiple vendors, numerous specialty subcontractors, or local communities.*
     - *These stakeholders can have a **significant impact** on the complexity of a project, both **individually** and **collectively**.*

What are the more common sources of complexity?

Complexity – Common sources of complexity

- **Human behavior.** Human behavior is the interplay of conduct, demeanors, attitudes, and experience of people. Human behavior can also contribute to complexity by introducing elements of subjectivity such as personal agendas that conflict with the project's goals and objectives. Stakeholders located in remote locations may have different time zones, speak different languages, and have different cultural norms.

Complexity – Common sources of complexity

- **System behavior.** System behavior is the result of dynamic interdependencies within and among project elements. For example, the integration of different technology systems may cause threats that could impact project outcomes and success. The interactions among components of the project system may lead to interconnected risk, create emerging or unforeseeable issues, and produce unclear and disproportional cause-and-effect relationships.

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Complexity – Common sources of complexity

- **Uncertainty and ambiguity.** *Ambiguity* is a state of being unclear, of not knowing what to expect or how to comprehend a situation. Ambiguity can arise from having many options or a lack of clarity on the optimal choice. Unclear or misleading events, emerging issues, or subjective situations can also lead to ambiguity.

  Uncertainty is the lack of understanding and awareness of issues, events, paths to follow, or solutions to pursue. Uncertainty deals with the probabilities of alternative actions, reactions, and outcomes. Uncertainty includes unknown unknowns and black swans, which are emerging factors that are completely outside of existing knowledge or experience.

  Within a complex environment, uncertainty and ambiguity can combine to blur causal relationships to the point where probabilities and impacts are ill defined. It becomes difficult to reduce uncertainty and ambiguity to the point where relationships can be well defined and therefore addressed effectively.

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Complexity – Common sources of complexity

- **Technological innovation.** Technological innovation can cause disruption to products, services, ways of working, processes, tools, techniques, procedures, and more. The introduction of desktop computing and social media are examples of technological innovations that have fundamentally changed the way project work is performed. New technology, along with the uncertainty of how that technology will be used, contributes to complexity. Innovation has the potential to help move projects toward a solution, or to disrupt the project when associated uncertainties are not defined, leading to increased complexity.

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Risk

RISK

Continually evaluate exposure to risk, both opportunities and threats, to maximize positive impacts and minimize negative impacts to the project and its outcomes.

- Individual and overall risks can impact projects.
- Risks can be positive (opportunities) or negative (threats).
- Risks are addressed continually throughout the project.
- An organization's risk attitude, appetite, and threshold influence how risk is addressed.
- Risk responses should be:
  - Appropriate for the significance of the risk,
  - Cost effective,
  - Realistic within the project context,
  - Agreed to by relevant stakeholders, and
  - Owned by a responsible person.

Optimize Risk Responses

Risk

- A **risk** is an **uncertain** event or condition that,

  if it occurs, can have a positive or negative **effect**

  on one or more **objectives**.

- Project teams seek to **maximize** positive risks (opportunities) and **decrease** exposure to negative risks (threats).

1. **Threats** may result in issues such as delay, cost overrun, technical failure, performance shortfall, or loss of reputation.
2. **Opportunities** can lead to benefits such as reduced time and cost, improved performance, increased market share, or enhanced reputation.

What does overall project risk mean?

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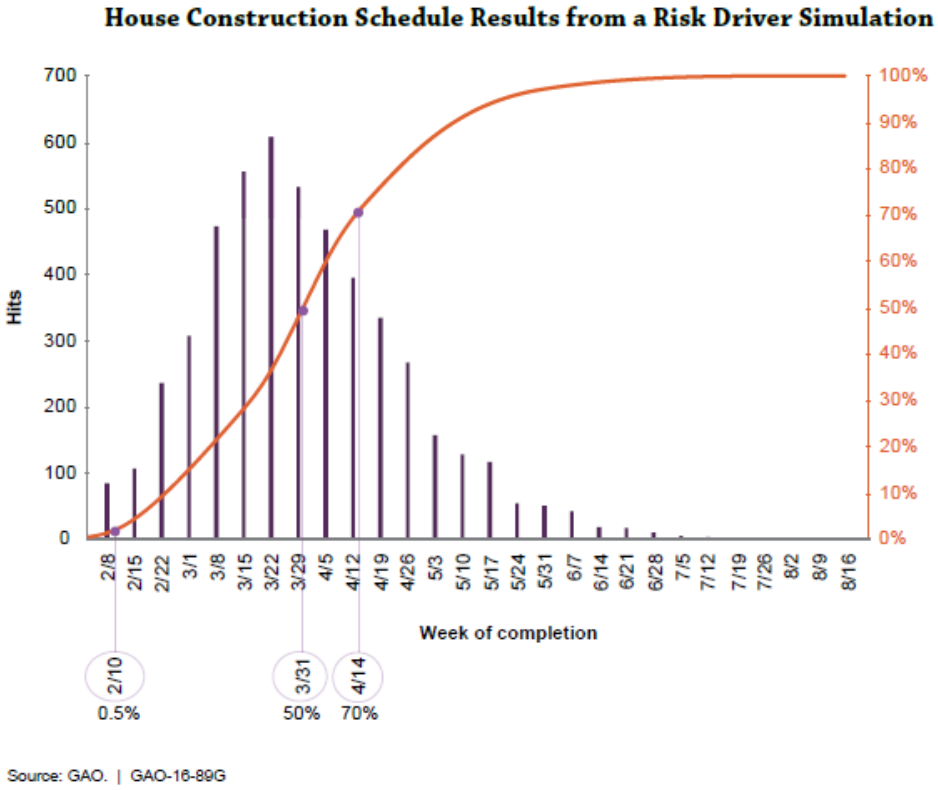
Risk – Overall project risk

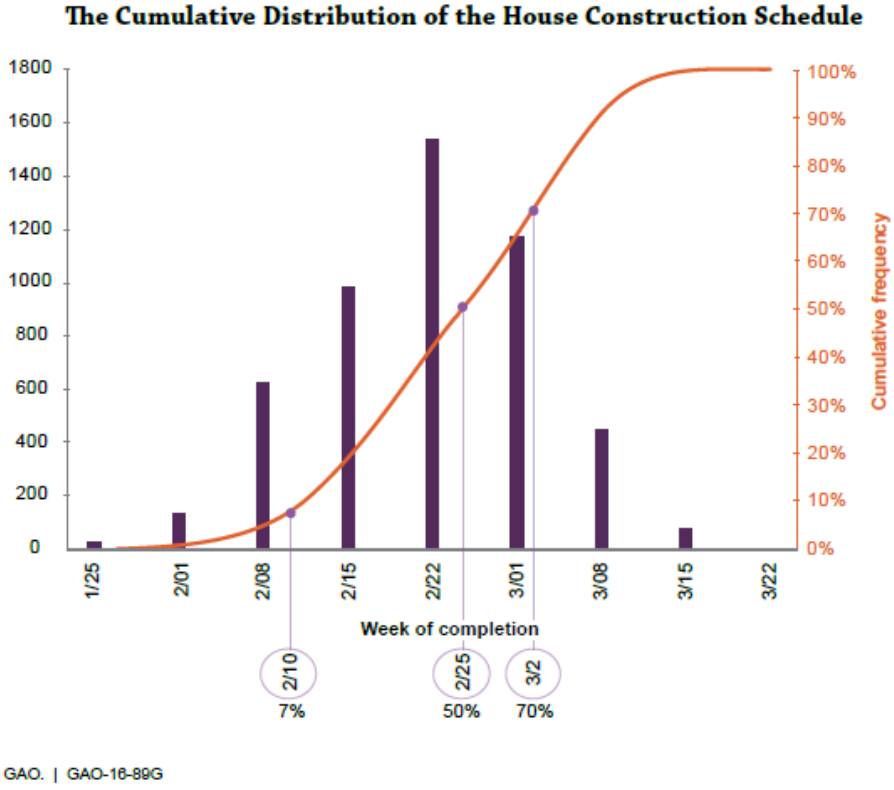
- Project teams also **monitor** the overall project risk.

- **Overall project risk** is the effect of uncertainty on the project as a **whole**.

- Overall risk arises from **all sources of uncertainty**, including individual risks and represents the **exposure of the stakeholders** to the implications of **variations in project outcome**,
  both positive and negative.

Risk – Overall project risk





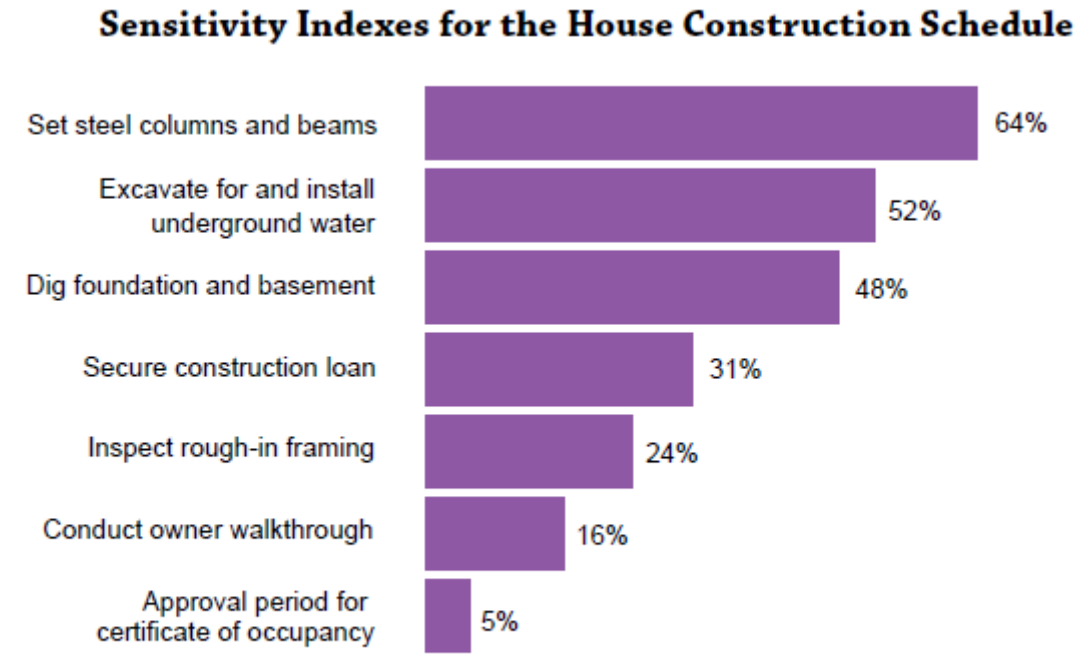
What does risk management mean?

Risk – Management of overall project risk

- **Management** of **overall project risk** aims to keep project risk exposure within an **acceptable range**.

- **Management strategies** include
  1. **Reducing** drivers of threats
  2. **Promoting** drivers of opportunities
  3. **Maximizing** the probability of **achieving** overall project objectives

Risk – Management of overall project risk



Source: GAO. | GAO-16-89G

Top Prioritized Risks in the House Cons

Priority	Risk		
	All	April 23, 2026	
1.	Design is incomplete	April 1	22
2.	Machines are not available	March 23	9
3.	Material is not available	March 17	6
4.	Efficacy of the general contractor	March 10	7
5.	Materials are late or defective	March 4	6

Source: GAO | GAO-16-89G.

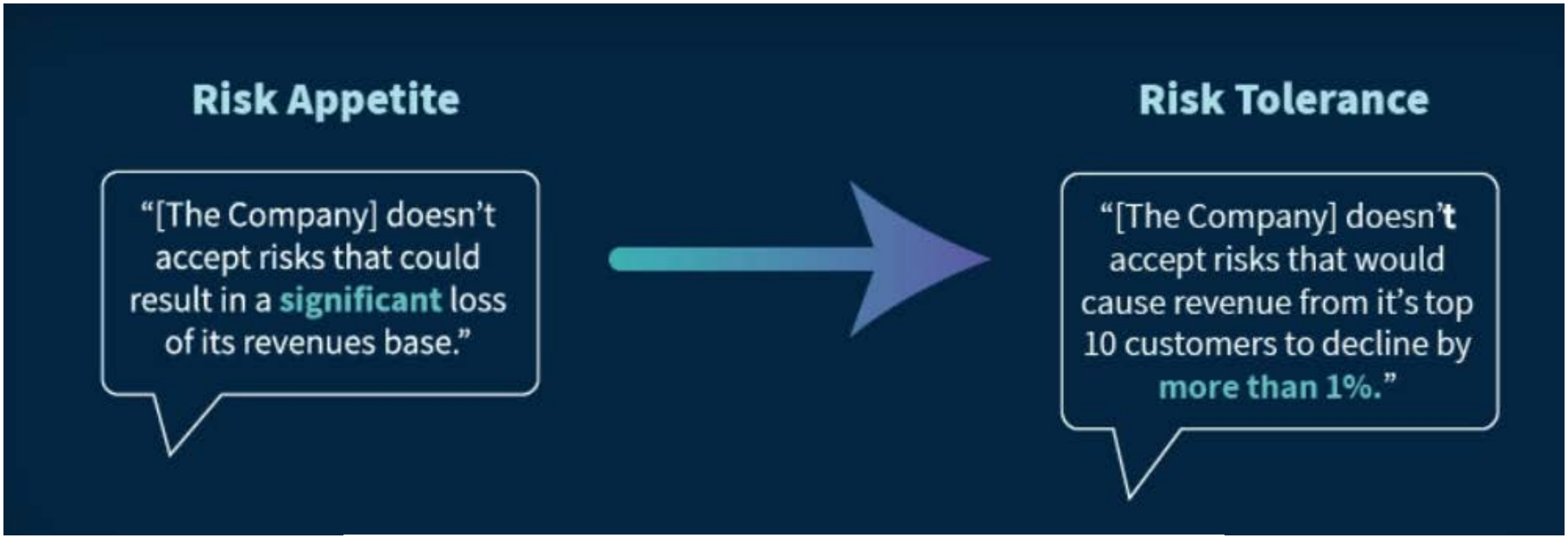
How to specify acceptable range?

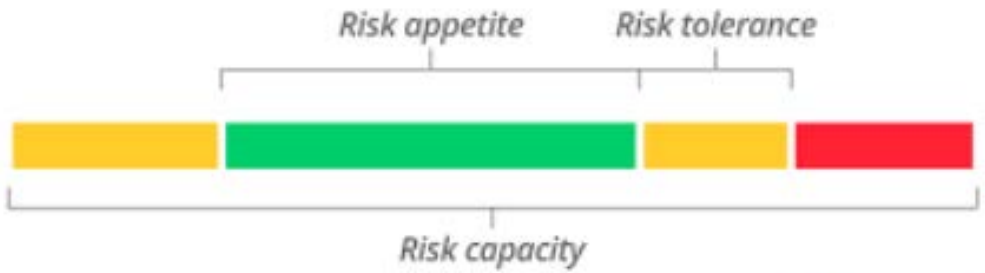
Risk – Acceptable range

- Project team members **engage** with relevant stakeholders to understand their
  1. Risk appetite
  2. Risk thresholds
- **Risk appetite** describes the **degree of uncertainty** an organization or individual is **willing to accept** in anticipation of a reward.
- **Risk threshold** is the measure of **acceptable variation** around an objective that **reflects the risk appetite** of the organization and stakeholders.
  - The **risk threshold** reflects the **risk appetite**.
  - A risk **threshold of ±5%** around a cost objective reflects a **lower risk appetite** than a risk threshold of ±10%.

PMI published
The Standard for Risk Management in Portfolios, Programs, and Projects
However, we have more customized standards for construction industry.

Risk – Acceptable range





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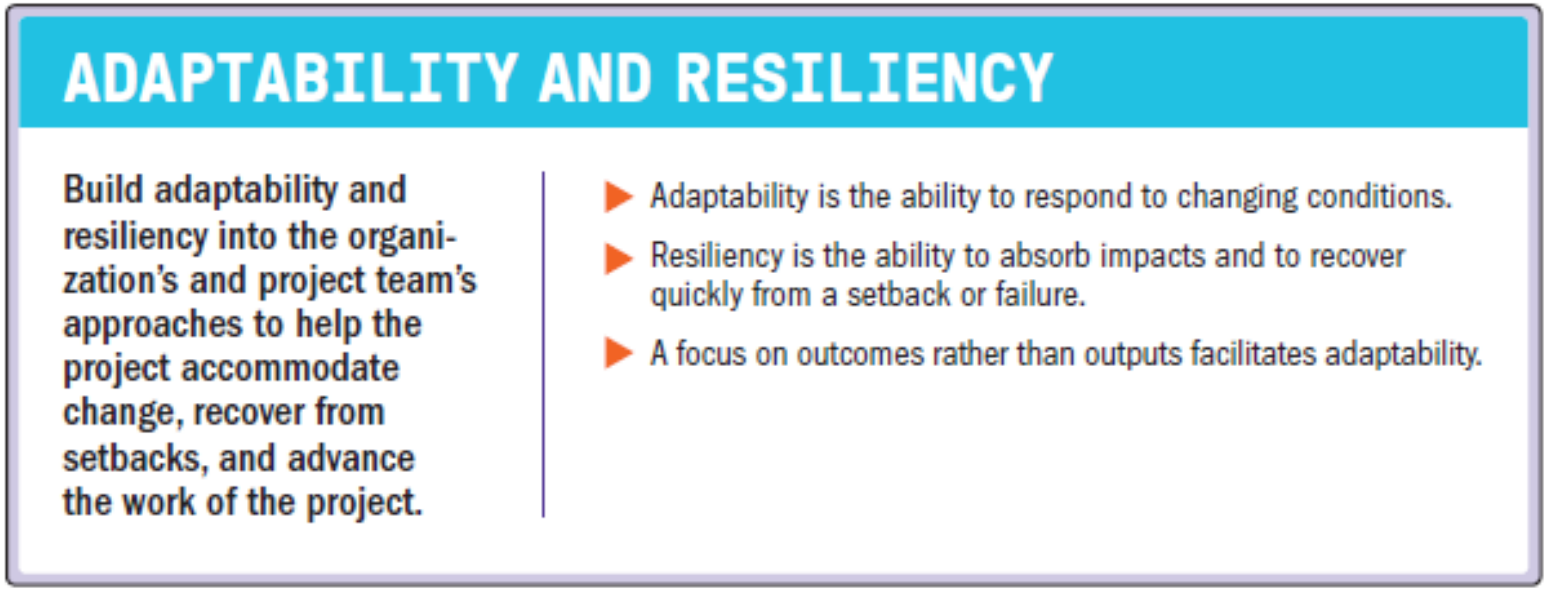
Risk – Acceptable range

Remember how we determined confidence level?

Adaptability and resiliency



Embrace Adaptability and Resiliency

Do you think a project should go exactly as initially planned?

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Adaptability and resiliency

- A project **rarely performs** exactly as initially planned.
- Projects are **influenced** by internal and external factors—

  new requirements, issues, stakeholder influences, among other factors—which exist in a system of interactions.

  Some elements *within a project may fail or fall short of expectations, requiring the project team to regroup, rethink, and replan.*

The view that projects should hold firm to plans and commitments made during the early stages, even after new or unforeseen factors emerge,

is not beneficial to stakeholders, including customers and end users,

as this limits the potential for generating value.

What are the capabilities that support adaptability and resilience?

Adaptability and resiliency – Capabilities needed

- Short feedback loops to adapt quickly;
- Continuous learning and improvement;
- Project teams with broad skill sets, coupled with individuals having extensive knowledge in each required skill area;
- Regular inspection and adaptation of project work to identify improvement opportunities;
- Diverse project teams to capture a broad range of experiences;
- Open and transparent planning that engages internal and external stakeholders;
- Small-scale prototypes and experiments to test ideas and try new approaches;
- Ability to leverage new ways of thinking and working;
- Process design that balances velocity of work and stability of requirements;

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Adaptability and resiliency – Capabilities needed

- Open organizational conversations;
- Diverse project teams with broad skill sets, cultures, and experience, coupled with subject matter experts in each required skill area;
- Understanding from past learning of the same or similar endeavors;
- Ability and willingness to anticipate multiple potential scenarios and prepare for multiple eventualities;
- Deferring decision making to the last responsible moment;
- Management support; and
- Open-ended design that balances speed and stability.

Building adaptability and resiliency in a project keeps project teams focused on the desired outcome when internal and external factors change, and it helps them recover from setbacks.

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Change

CHANGE

Prepare those impacted for the adoption and sustainment of new and different behaviors and processes required for the transition from the current state to the intended future state created by the project outcomes.

- A structured approach to change helps individuals, groups, and the organization transition from the current state to a future desired state.
- Change can originate from internal influences or external sources.
- Enabling change can be challenging as not all stakeholders embrace change.
- Attempting too much change in a short time can lead to change fatigue and/or resistance.
- Stakeholder engagement and motivational approaches assist in change adoption.

Enable Change to Achieve the Envisioned Future State

What is the difference between change management and change control?

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Change

- **Change management**, or **enablement**,

  is a comprehensive, cyclic, and structured approach for

  transitioning individuals, groups, and organizations from a **current state** to a **future state** in which they **realize desired benefits**.

- **Project change control**,

  which is a **process** whereby **modifications** to documents, deliverables, or baselines associated with the project

  are **identified** and **documented**, and then are approved or rejected.

What is difference between change in organization and project?

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Change – Change in organization

- **Originate** from internal or external sources.
- May be **implemented** by and have **consequences for stakeholders**.
- Enabling **stakeholder change** is **part of facilitating** the project to provide the **required deliverable** as well as the **intended outcome**
  - This is **not the case** in construction industry)
- The **benefits** of the change and the impact on work processes should be **communicated to all levels** of the organization throughout the project
  - Many times you **don't have choice** in the construction industry.

Change – Change in organization

- **Adapt** the **speed of change** to the change appetite, cost, and ability of the stakeholders and the environment to assimilate change
  - Many times you **don't have choice** in the construction industry.

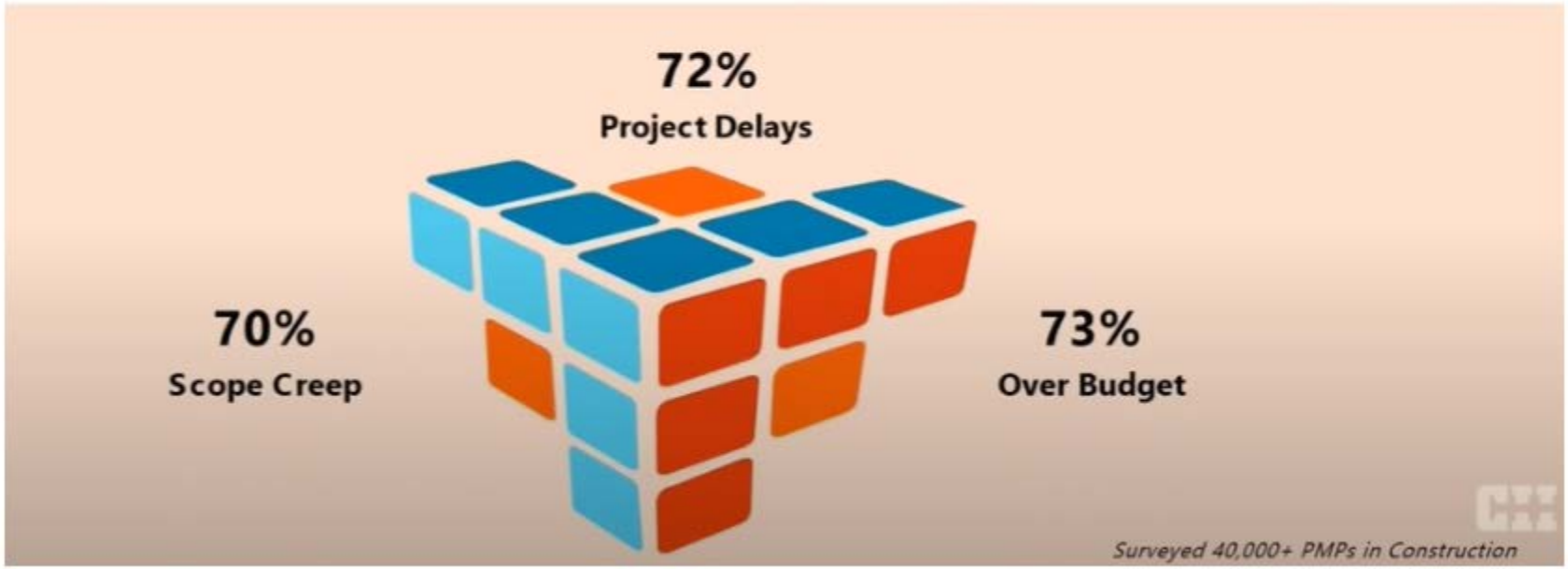
- Attempting to create too **many changes** in too short a time can **lead to resistance** because of **change saturation**.
  - Many times you **don't have choice** in the construction industry.

PMI published
Managing Change in Organizations

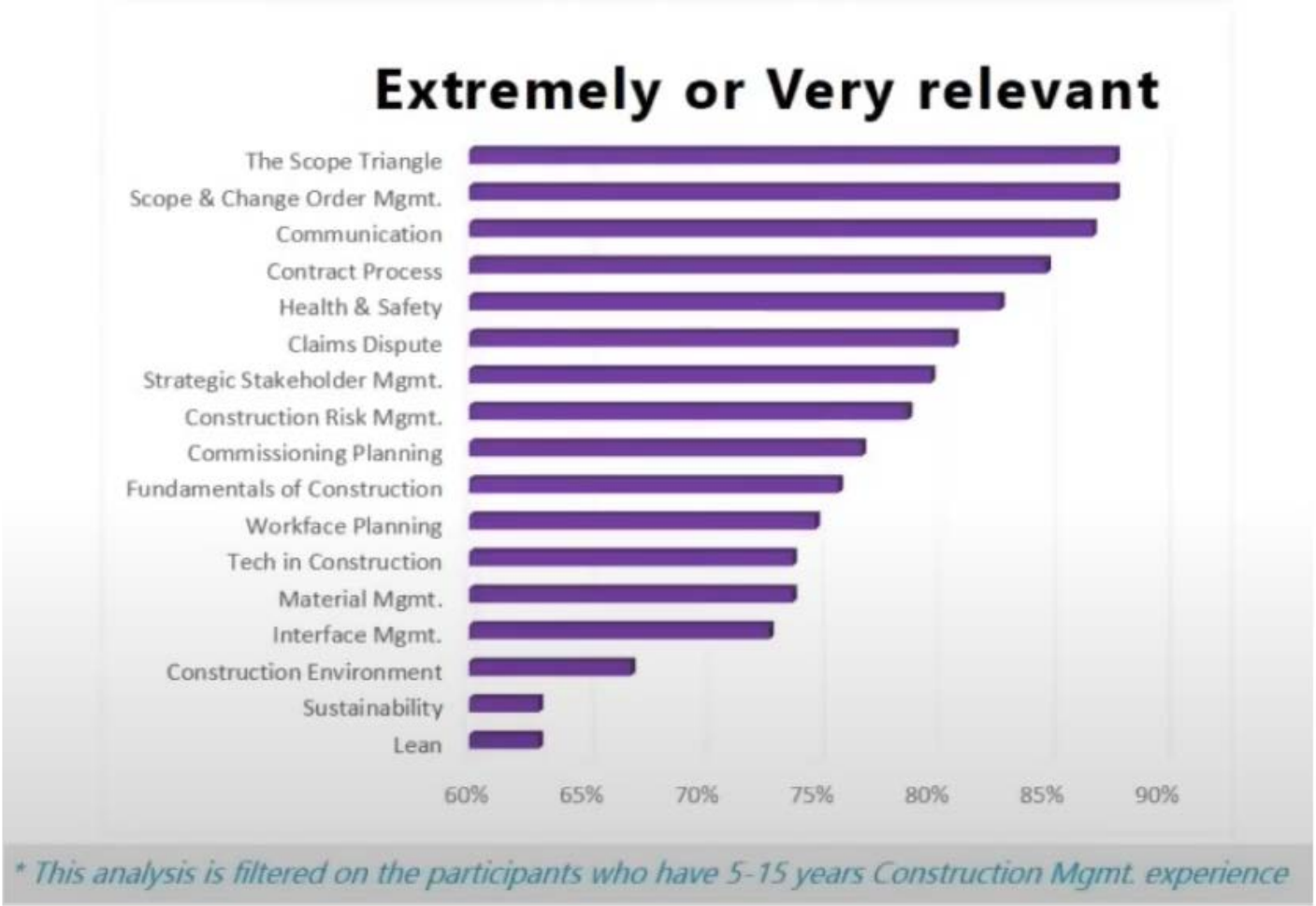
Conclusion on 12 principles compared to construction industry

For every $1billion spent on construction projects, $127M is wasted.

- PMI Pulse of the Profession research - 2020



Conclusion on 12 principles compared to construction industry



Conclusion on 12 principles compared to construction industry

Participants were asked to choose 3 subject matter areas most important to their role. The top 5 for each choice were as follows:

1st Choice:

- **The Scope Triangle**
- Strategic Stakeholder Mgmt.
- Interface Mgmt.
- **Contract Process**
- Material Mgmt.

2nd Choice:

- **Effective Project Communication**
- The Scope Triangle
- **Scope and Change Order Mgmt.**
- Contract Process
- Health & Safety

3rd Choice:

- **Scope & Change Order Mgmt.**
- Construction Risk Mgmt.
- **Effective Project Communication**
- Commissioning Planning
- Construction Environment

** This analysis is filtered on the participants who have 5-15 years Construction Mgmt. experience*

What do you think? Are they the same?

مدیریت پروژه بر اساس PMBOK به همراه الحاقیه ساخت

(ویرایش هفتم)

بخش سوم:

بررسی مقدماتی راهنمای پیکره دانش مدیریت پروژه PMBOK + الحاقیه ساخت

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