Project & Business Management

Alessio Falchi

Something about myself …

Education

- MSc Computer Engineering University of Pisa
- MBA Master in Business Administration – IMD (Institute for Management Development)

Career

- GE Oil and Gas (Nuovo Pignone) – various roles in Supply Chain, Project Planning
- GE Oil and Gas – Leadership program (Sales, Risk Management, Project Control)
- GE Oil and Gas – Head of Pricing
- Converteam – Head of Competitive Analysis, Head of Project Quality, Head of Project Planning
- Alstom Power – Head of EPC Project Scheduling
- Sulzer – Global Head of Project Management

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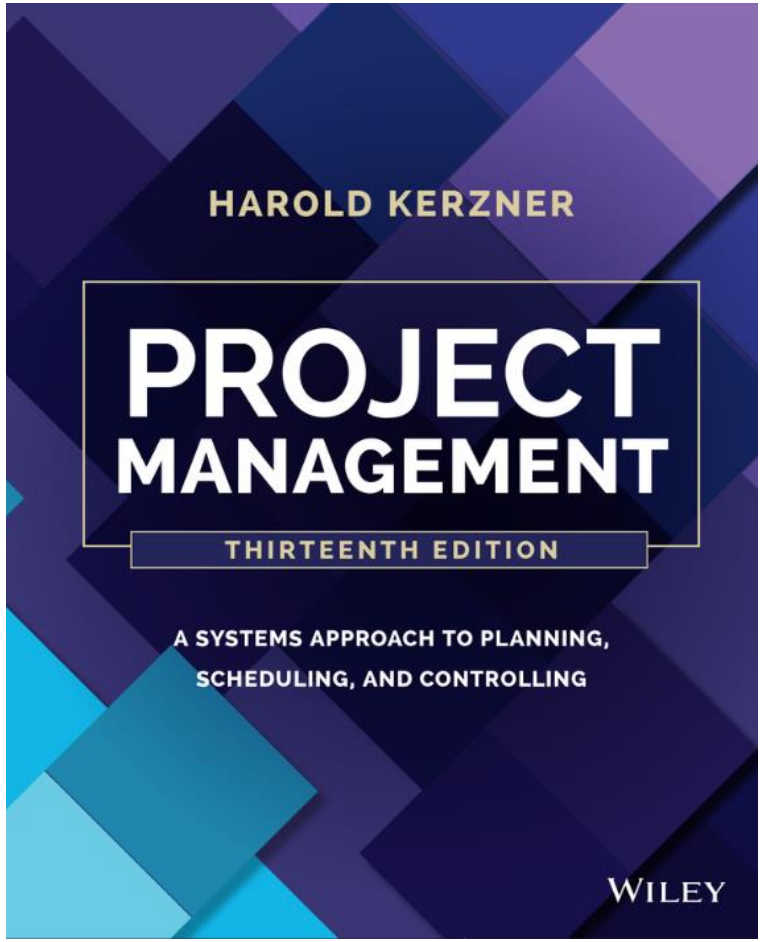
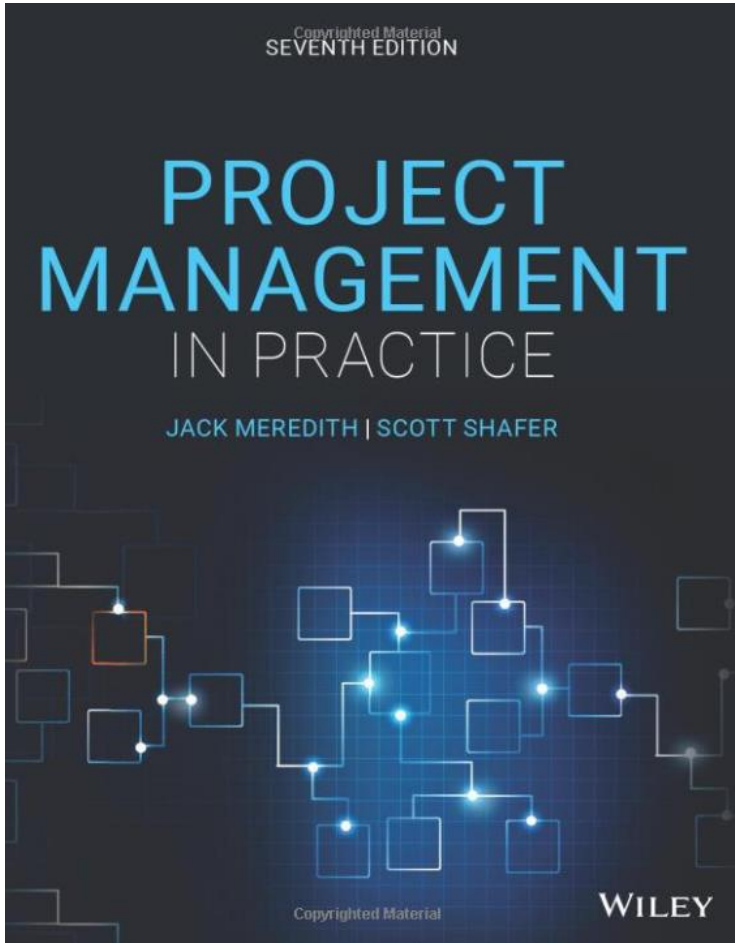
Study material – main references





Exam format

- **Written exam**
  - Written quantitative exercises
  - Can be replaced by Project work
- **Oral exam**
  - Questions / exercises

PMI (Project Management Institute) certifications

Core Certifications

Certified Associate in Project Management (CAPM)®

Project Management Professional (PMP)®

Program Management Professional (PgMP)®

Portfolio Management Professional (PfMP)®

All Professional Certifications

Specialized Certifications

PMI Construction Professional (PMI-CP)™

PMI Agile Certified Practitioner (PMI-ACP)®

PMI Risk Management Professional (PMI-RMP)®

PMI® PMO Certified Professional (PMI-PMOCP)™

PMI Professional in Business Analysis (PMI-PBA)®

Cognitive Project Management in AI (CPMAI)™

- Website: https://www.pmi.org/
- LinkedIN: https://www.linkedin.com/company/projectmanagementinstitute/

Foundations

Welcome to the project economy !

- Germany: projects account for 41% of GDP
- Project-oriented economic activity to grow from $12Tr in ’17 to $20Tr in ’27 … 88m people working on project-oriented roles
- **IBM**: Soon we will no longer have job descriptions, we will have only project roles.
- **Emaar**: abolished all traditional job titles. Employees now defined not by the department to which they belonged but by the projects on which they worked

Welcome to the project economy !

- Running the organization = **operations**
  - Sales, finance, manufacturing, IT etc
  - Efficiency, productivity, speed

- Changing the organization = **projects**
  - Strategic and tactical initiatives and programs
  - Innovation, transformation, agility

PMI: Project Management Salary Survey

13th edition

https://www.pmi.org/learning/careers/project-management-salary-survey

What is a project ?

What is a project & project management

A **project** can be considered to be any series of activities and tasks that

- Have a specific objective, with a focus on the creation of business value, to be completed within certain specification
- Have defined start and end date
- Have funding limits (if applicable)
- Consume human and nonhuman resources (i.e., money, people, equipment)
- Are multifunctional (i.e., cut across several functional lines)

- **Project management** is the planning, organizing, directing, and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives
- Projects exist to produce **deliverables**

Project Management methodologies

- A **methodology** is a set of processes and practices performed a specific way in order to accomplish a project
- 3 main approaches
  - Traditional predictive projects (or Waterfall)
  - The agile way
  - Hybrid

Traditional Predictive Projects

- Try to predict how things will unfold
- Favors prediction and anticipation
- Project life cycle is broken down into phases e.g.
  - Plan-do-check-act
  - Planning-Executing-Monitoring-Controlling-Closing
  - Design-Implementation-Testing-Evaluation
- Heavy upfront analysis and documentation about the problem and solution
- Criticism
  - Rigid, resistant to change
  - Process > product
  - Commits to technical solutions too early in the project

The agile way

- Focus: accomplishing work in smaller increments, delivering value to customers faster
- “Plan a little, execute, deliver, and adapt. Then repeat.”
- Self-organizing teams with no formal project manager
- Favours adaptation
- Criticism
  - Easy to get side-tracked delivering new, unexpected functionality
  - Projects have no finite ends
  - Constant interaction takes more time and energy for everyone involved
  - Greater demands on developers and clients

The agile manifesto

> We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

> - Individuals and interactions over processes and tools

> - Working software over comprehensive documentation

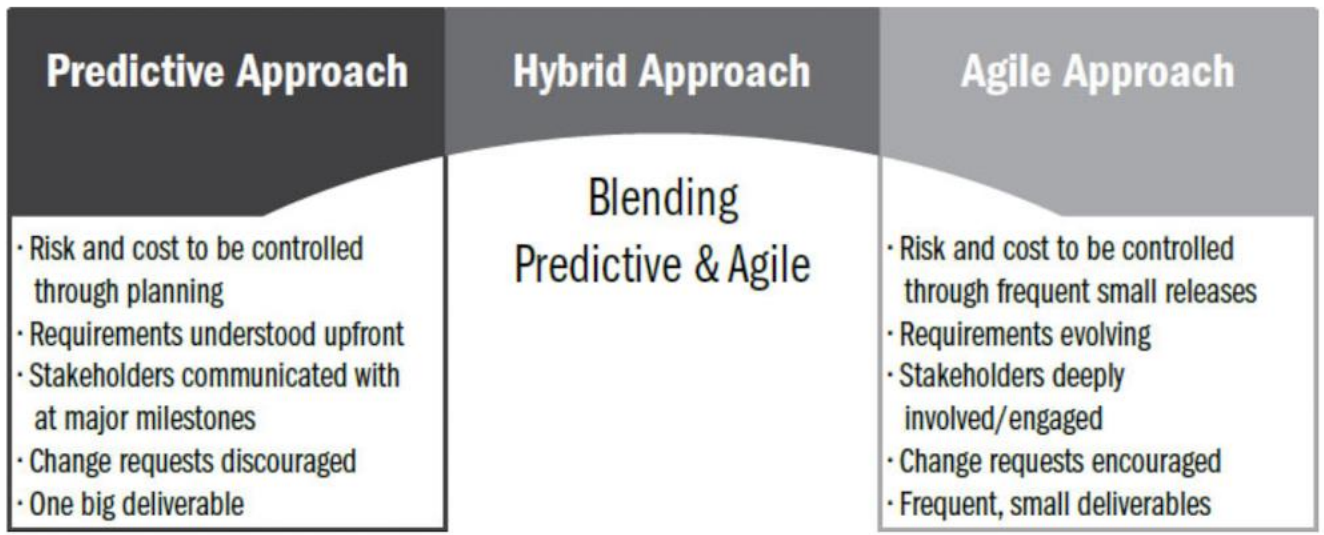
> - Customer collaboration over contract negotiation

> - Responding to change over following a plan

> That is, while there is value in the items on the right, we value the items on the left more.

Hybrid Approach*

- Mixes a predictive approach with iterative, incremental, or agile
- Example: agile approaches on the front end to explore potential solutions and a predictive approach to build or deploy that solution
- Variables to consider
  - Unknowns
  - Anticipated changes
  - Team size


Predictive Approach
Hybrid Approach
Agile Approach
Blending
Predictive & Agile
· Risk and cost to be controlled through planning
· Requirements understood upfront
· Stakeholders communicated with at major milestones
· Change requests discouraged
· One big deliverable
· Risk and cost to be controlled through frequent small releases
· Requirements evolving
· Stakeholders deeply involved/engaged
· Change requests encouraged
· Frequent, small deliverables

Would your project benefit from a hybrid approach* ?

- Diverse stakeholder needs
- Varied project phases
- Uncertain requirements
- Risk management
- Complex project structures

Waterfall*

Successes

- London’s Crossrail project – sequential phases
- Large Hadron Collider (LHC) project by CERN – detailed documentation
- Burj Khalifa project – predictibility

Failures

- Myki ticketing system (Melbourne) – rigidity
- U.S. government’s HealthCare.gov project – late discovery of issues
- National Broadband Network (NBN) project in Australia - Incompatibility with change
- New IT system for the U.S. Department of Veterans Affairs (Cerner) - Unsuitability for undefined projects

Agile

Successes

- Google search engine - Iterative development
- Amazon – customer collaboration
- Spotify - iterative development

Failures

- Lidl SAP system – documentation
- UK’s Universal Credit welfare reform project - Unpredictable delivery time and costs
- U.S. Coast Guard payroll system project - Dependance on client involvement

Hybrid successes

- Ubisoft – balance approach
- Tesla – Model 3 – risk mitigation
- Zara

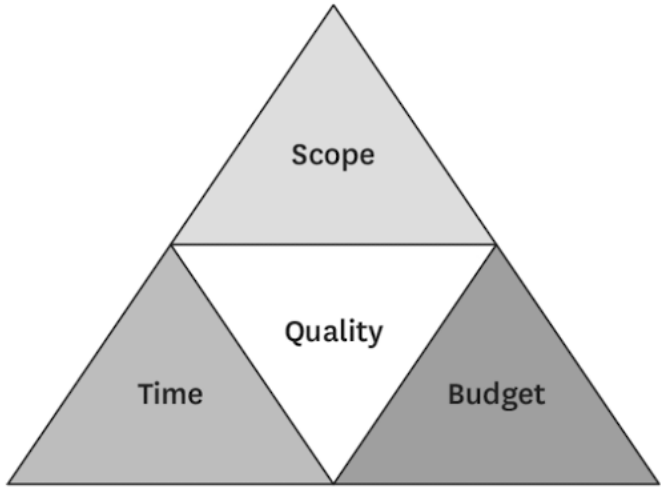
Defining Project Success

Primary project objectives:

- within time
- within cost
- at the desired performance/technology level (=within quality limits)
- while utilizing the assigned resources effectively and efficiently,
- and having the results accepted by the customer and/or stakeholders

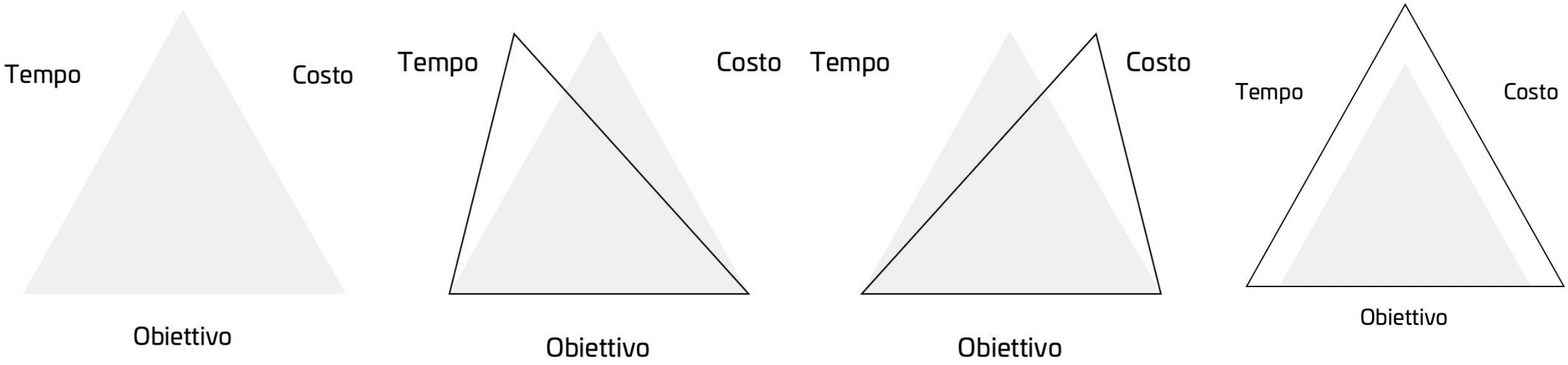
Project success = hitting a singular point ?

Triple constraint model – Time, Scope, Budget



- Cost is a function of time and scope and these three factors are related in a defined and predictable way
- All three factors come together in the middle of the triangle to determine quality

Triple constraint model – Time, Cost, Objective



Sydney Opera House

- **Time**: Completed ten years late and
- **Cost**
  - 1,400% over budget
  - Initial estimate of AU$7 million
  - Actual cost: AU$102 million
- It has become one of the most iconic buildings globally
- Attracts over 10 million visitors annually and contributing more than AU$1 billion annually to the Australian economy

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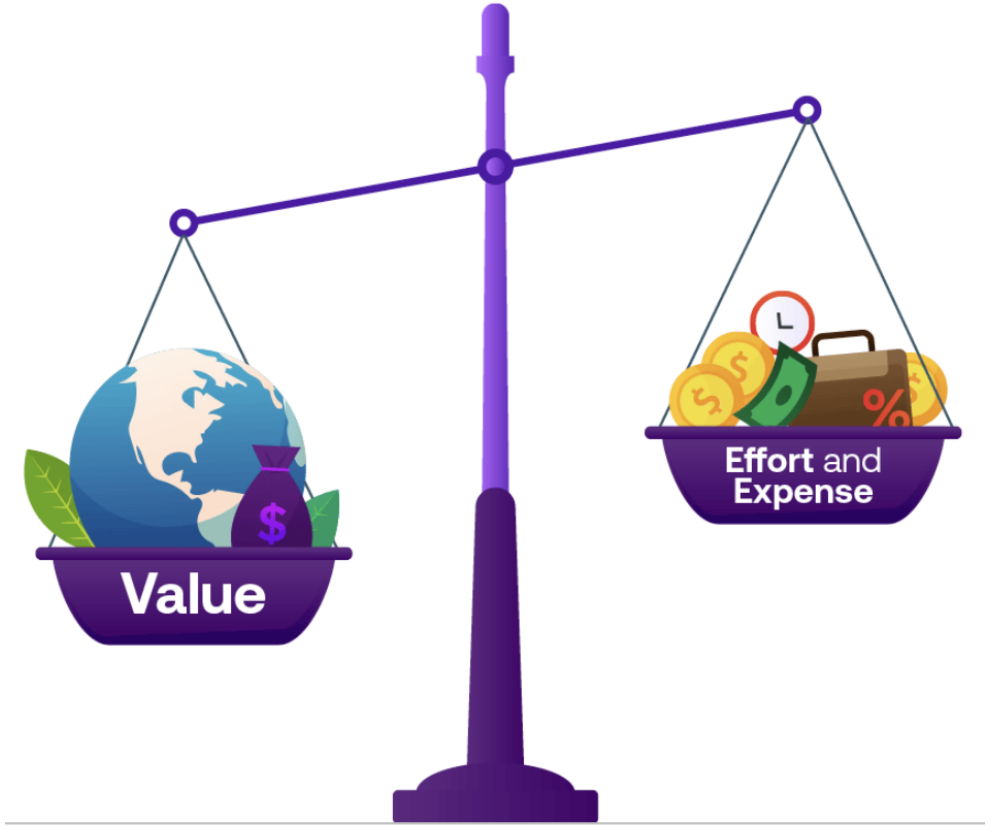
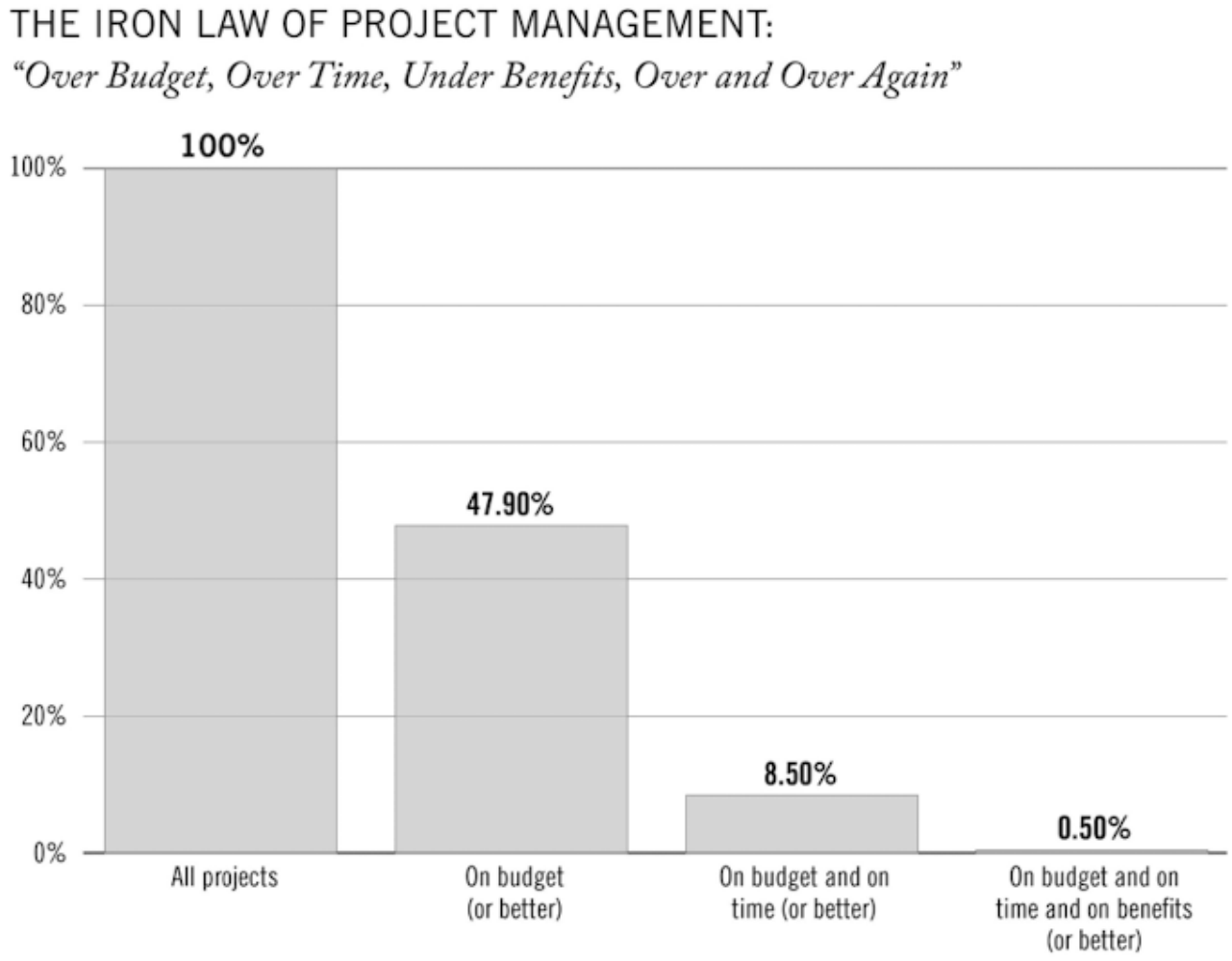
Project success – a new definition

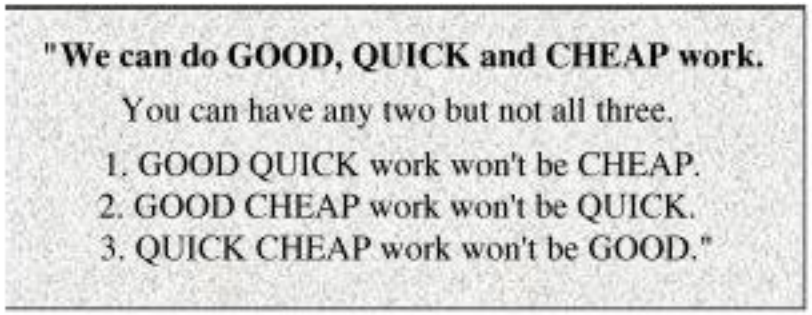
*Delivered **value** that was worth the effort and expense.*



The iron law of project management

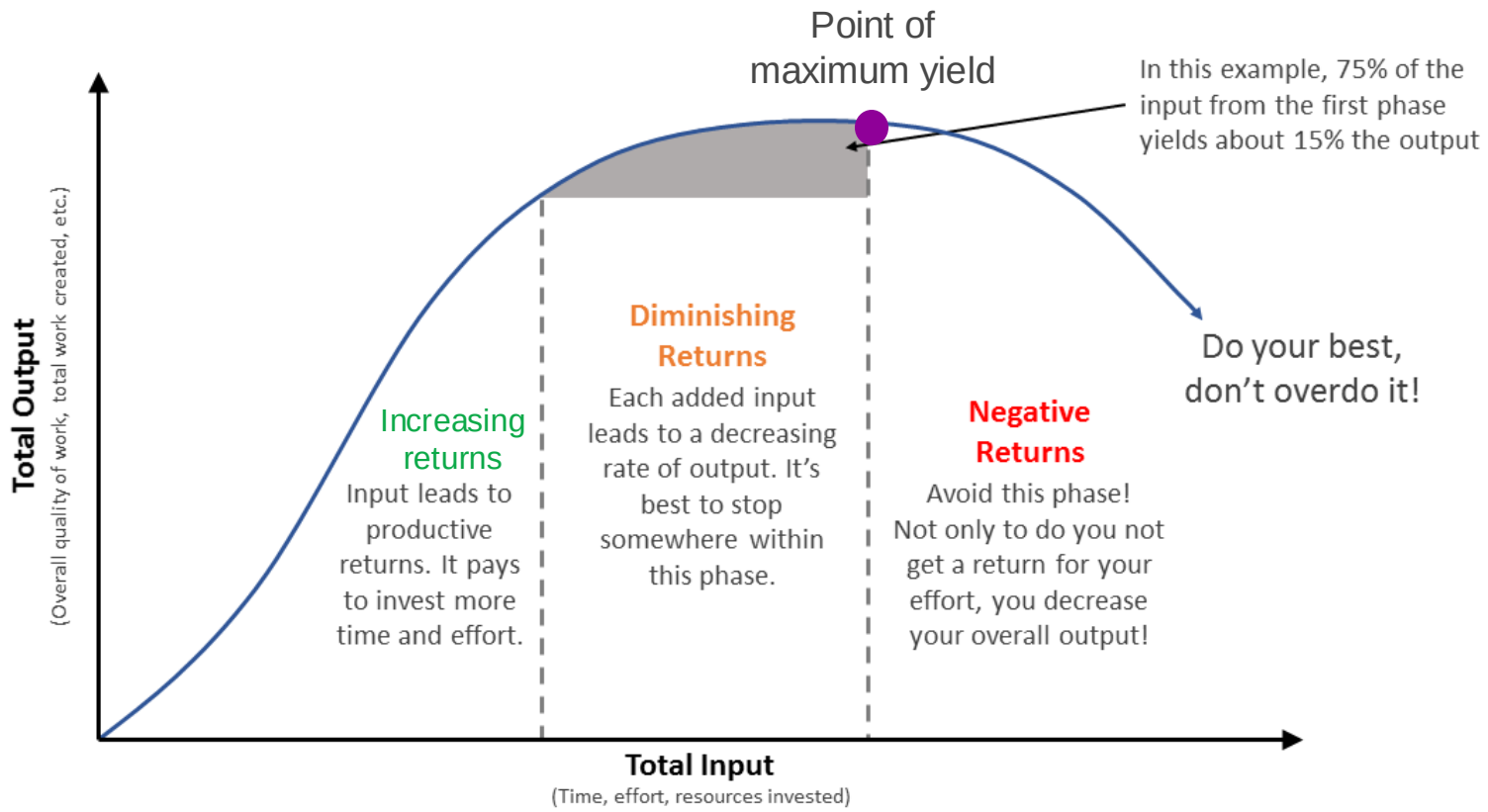


Dynamic trade-offs



A sign see at an automotive repair ship

Law of diminishing returns



What about failure ?

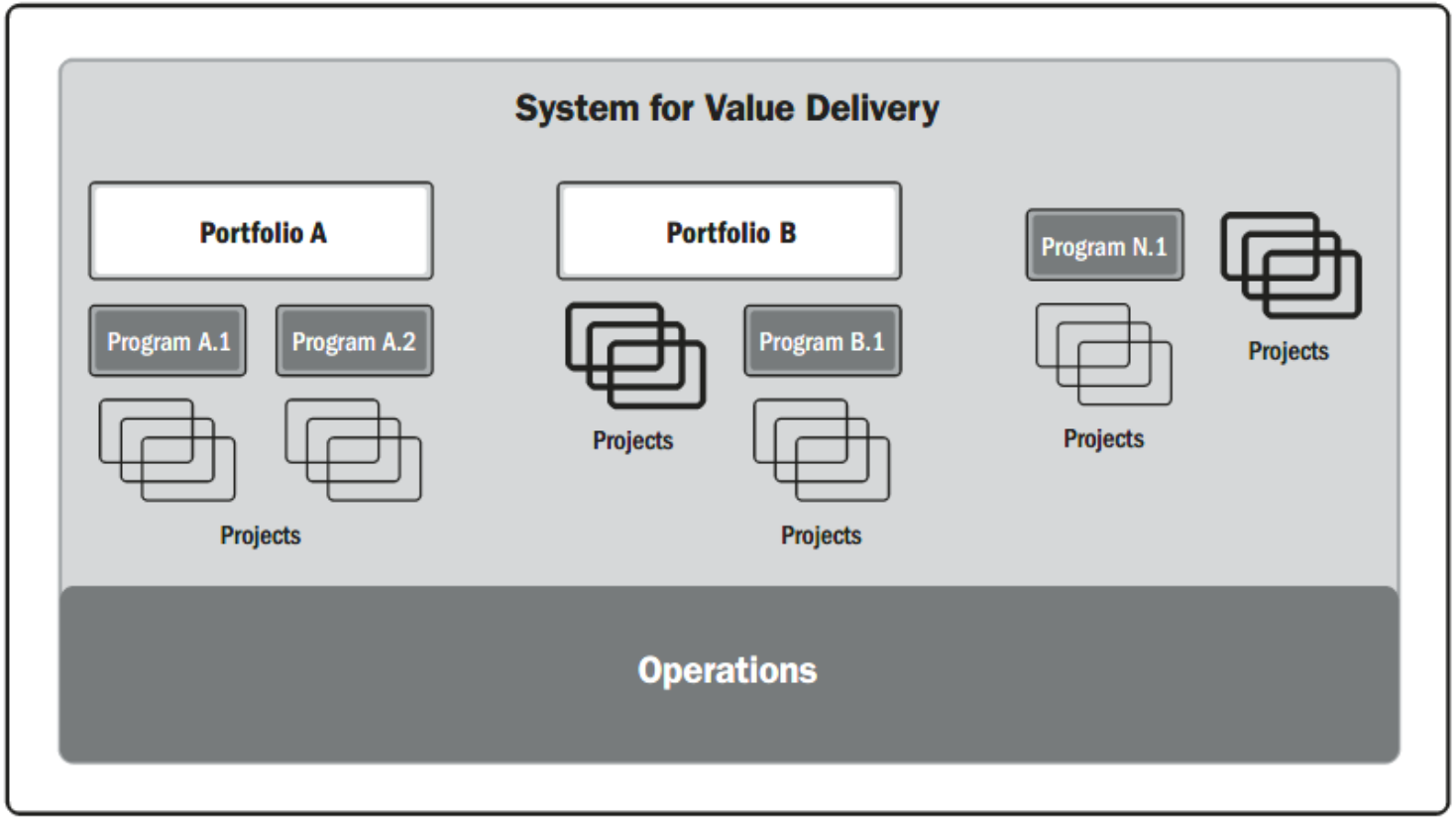
- **Failure**: when the final results are not what were expected, even though the original **expectations** may or may not have been reasonable
- **Accomplishment**
  - From “none” to “perfection”
  - Actual accomplishment (AC)
  - Planned accomplishment (PA)
  - Achievable (A)
- **Perceived failure** = PA – AC
- **Actual failure (AF)** = A – AC
- **Planning failure** = A - PA
  - Unmeetable expectations = assured failure ! → Planning failure
- What is really a failure ?

Lesson Learned

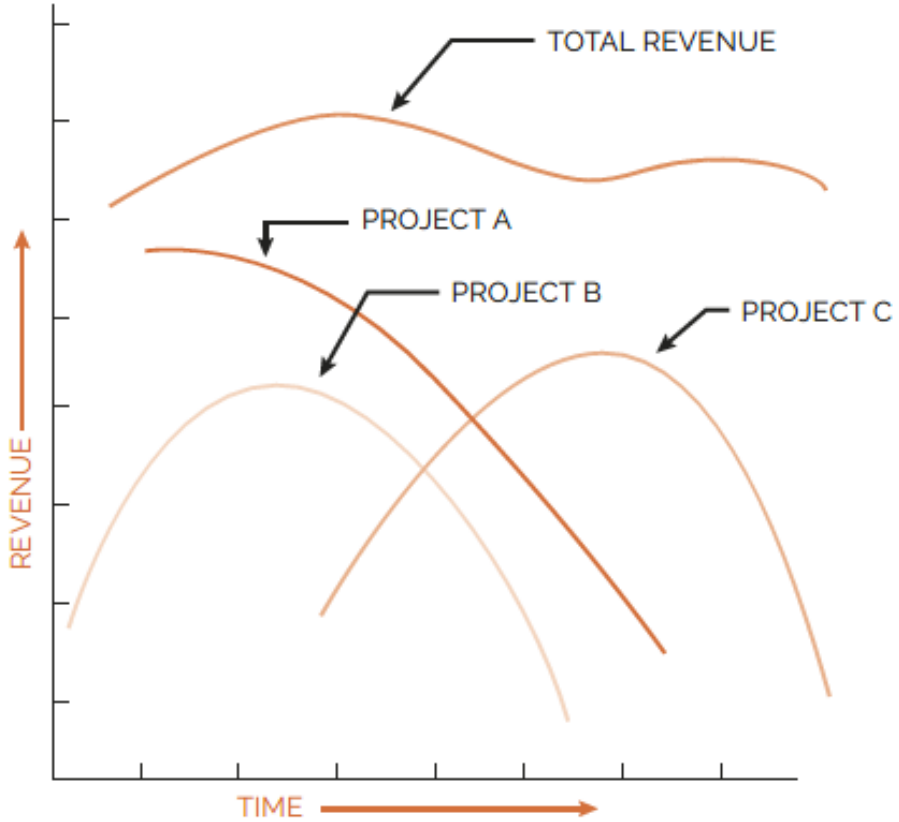
- **Lesson learned**
  - Lessons can be learned from each and every project, even if the project is a failure
  - Lesson learned must be documented !
  - Post-implementation meeting, but when ?
- **Best Practice**
  - Actions or activities undertaken by the company or individuals that lead to a sustained competitive advantage in project management
  - Best practices can be learned from both successes and failures
- **Proven Practice**
  - A best practice begins with an idea that there is a technique, process, method, or activity that can be more effective at delivering an outcome than any other approach and provides us with the desired outcome with fewer problems and unforeseen complication
  - Once this idea has been proven to be effective, we normally integrate the best practice into our processes so that it becomes a standard way of doing business → “Proven practice”

Value delivery components

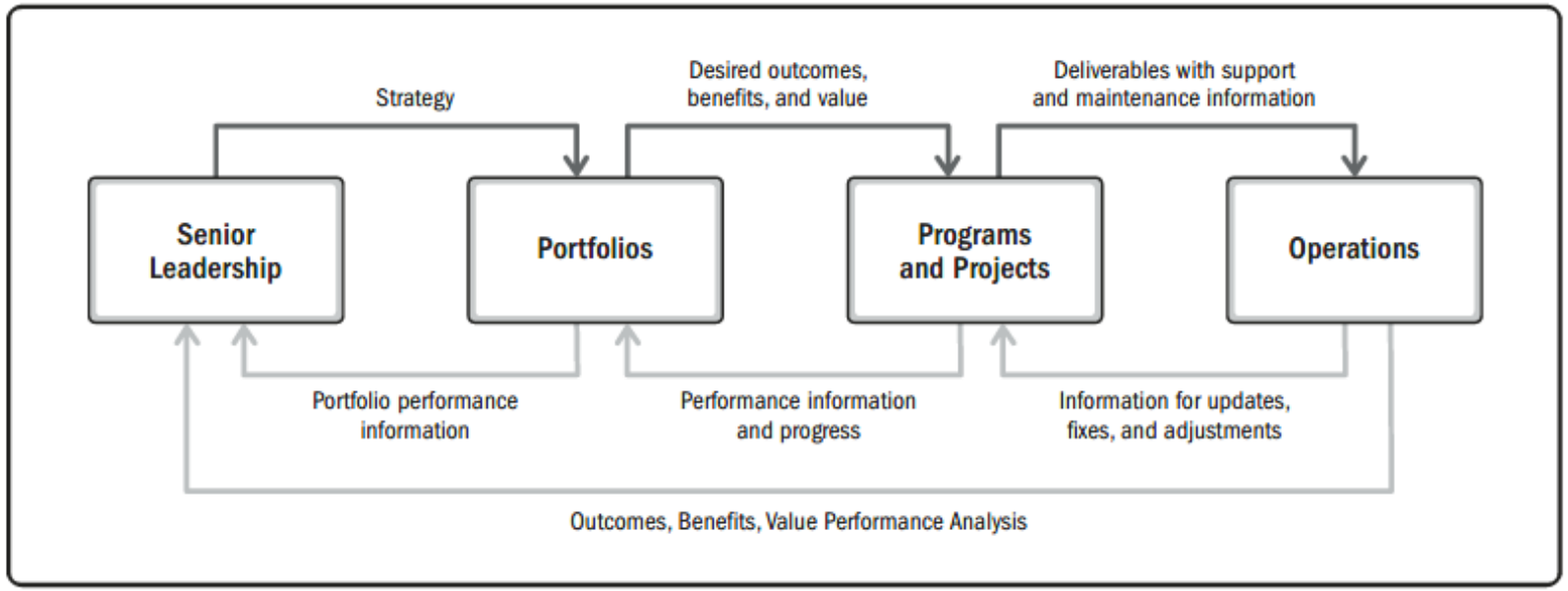
Example of a system to deliver value



Project portfolio management



Information flow



- Right to left: **reverse flow** – suggest adjustments, fixed and updates to deliverables

Business case

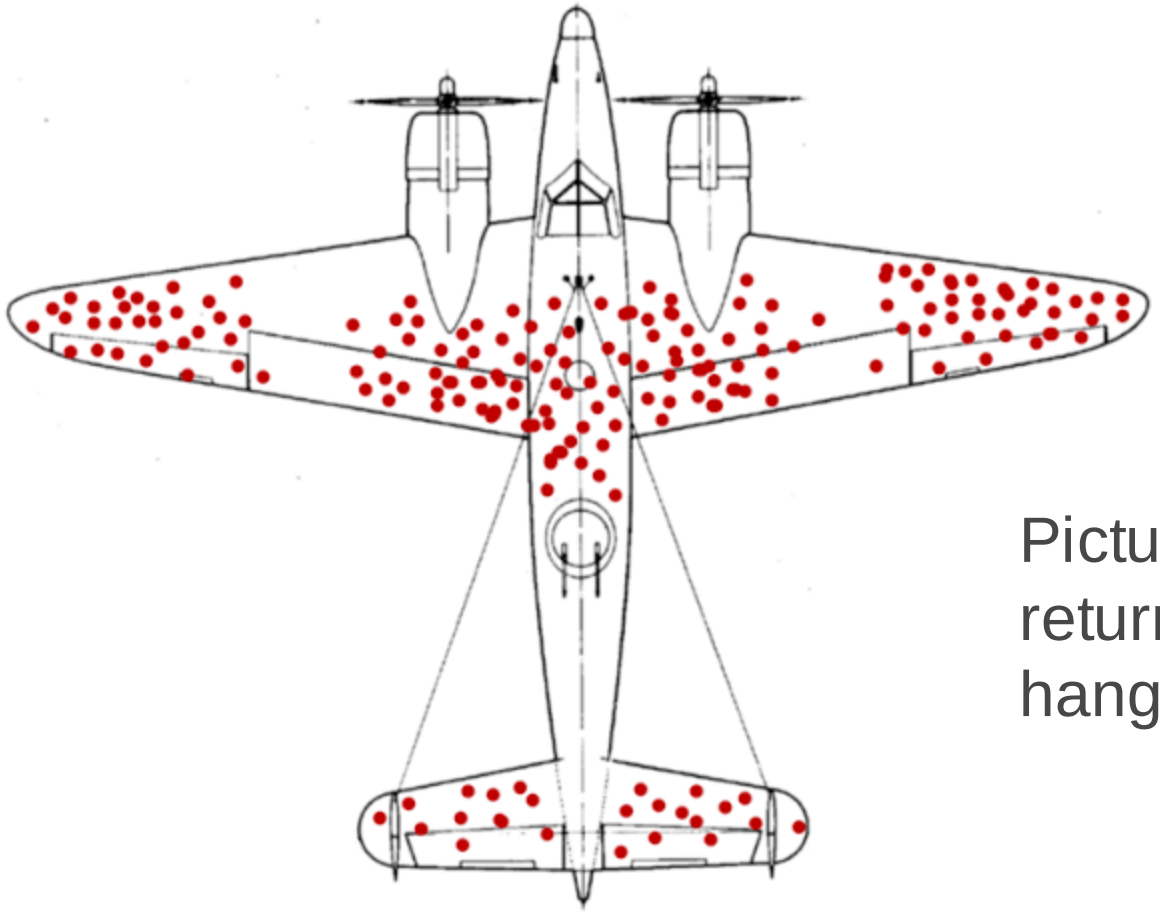
A **business case** is a document that provides the reasoning why a project should be initiated

1. **The business need**: This identifies the gap that currently exists and the need for the investment.
2. **The opportunity options:** This identifies how the project is linked to strategic business objectives.
3. **The benefit realization plan**: this identifies the value/benefits (rather than product or deliverables) that can be obtained whether they are cost savings, additional profits, or opportunities
4. **Assumptions made**: This identifies all of the assumptions that are made to justify the project. A
5. **High-level objectives**: This identifies the high-level or strategic objectives for the project. B
6. **Recommendation for evaluation**: This identifies what techniques should be used for evaluation such as a benefit-to-cost ratio, cash fw considerations, strategic options, opportunity costs, return on investment, net present value, and risks.
7. **Project metrics**: This identifies the financial and nonfinancial metrics that will used to track the performance of the project.
8. **Exit strategies**: This identifies the cancellation criteria to be used to cancel the project if necessary.
9. **Project risks**: This helps the decision makers evaluate the project by listing briefly the business, legal, technical, and other risks of the project.

Validating the assumptions

- The expectations for the final results are based upon the assumptions made.
- Assumptions can be made for items that are or are not under the direct control of the project team but can influence the outcome of the project
- At the onset of the project, **all assumptions must be challenged** to verify their validity. As the project progresses, the assumptions must be tracked and validate
- **Explicit assumptions** may be quantified are expressed without any ambiguity.
- **Implicit assumptions** may be hidden and may go undetected (e.g. people are available & have the necessary skills)
- **Critical assumptions** are those assumptions that can cause significant damage to project if even small changes take place
- **Assumptions must be documented** at project initiation using the project charter as a possible means. Throughout the project, the project man-ager must revalidate and challenge the assumptions

What parts of the plane would reinforce* ?



Picture of a plane that returned to the hangar

Validating the objectives

- A project's objectives, which are usually **high-level objectives**, provide an aim or desired end of action. Project managers must then prepare the **interim objectives** to satisfy the high-level objectives.
- Objectives are described in specific terms, are measurable, and are attainable and action-oriented, realistic, and bound by time
    - **SMART rule** (Specific, Measurable, Attainable, Realistic or relevant, Tangible or time bound)
- Bad example: "I want to write a book"
- Good example "I want to write a book on "how to add 10 years to your life" that is at least 150 pages in length and get it completed by June 22. I will write at least 4 pages every weekday until I complete the book"

Objectives – Formula 1 example*

Circuit de Monaco - 2004

Objective: "finish the lap as fast as possible"

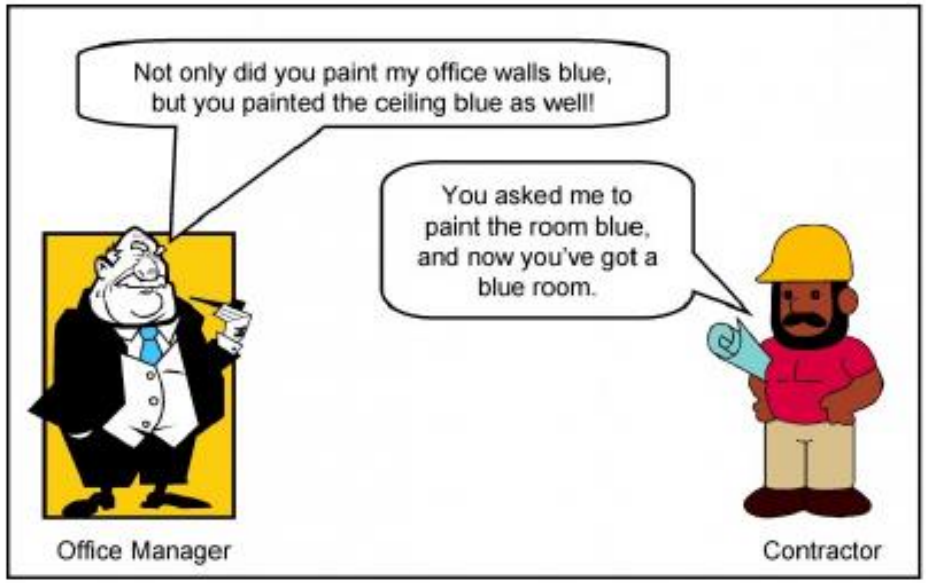
M. Schumacher

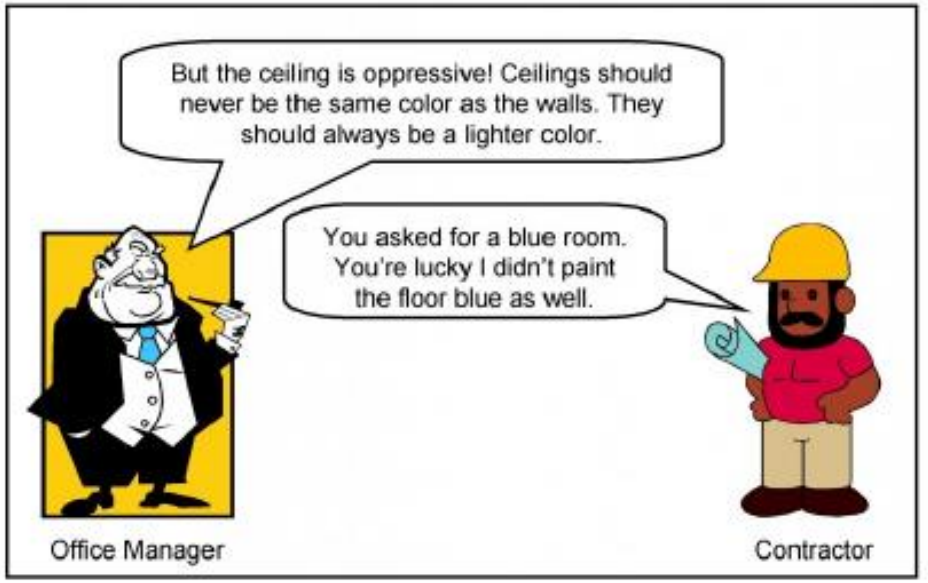
- Race lap record = 1 min 14.439 (lap 23)
- Crash on lap 44 (total 77 laps)
- Did not finish the race

Jarno Trulli

- Fastest qualifying time (1min 13.985 sec)
- Gained pole position
- Won the race

Consequences of not making your objective clear





What does it take to be a Project Manager ?

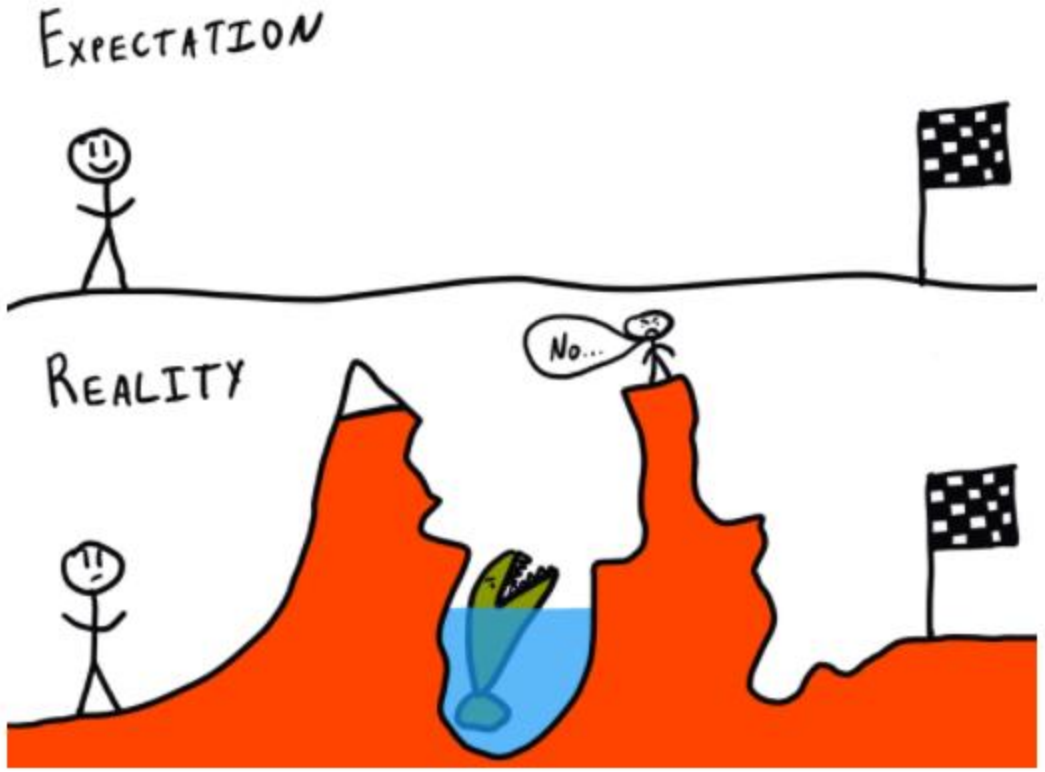
The Talent Triangle

Technical Project Management (technical skills, PM methodology and framework)

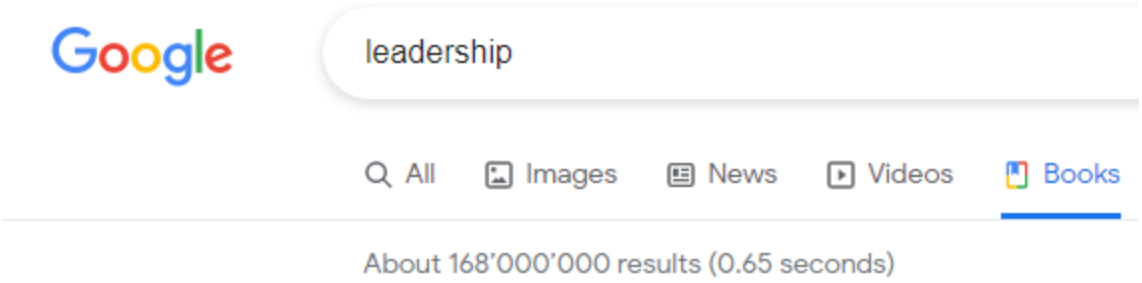
Leadership (team building, conflict management, problem solving, situational leadership etc)

Strategic & Business Management

A PM journey …



Leadership



- There are more books and articles on leadership available than we can ever hope to read !
- Despite the popularity of the topic, **leadership remains a paradox**. Leadership, after all, is an **art**, not a science. Leaders transcend the confines of a defining box
- <<A leader is best when people barely know he exists, when his work is done, his aim fulfilled, they will say: we did it ourselves>> (Lao Tzu)
- Definition 1: <<Lead me, follow me, or get out of my way>> (General S Patton)
- Definition 2: <<It is better to lead from behind and to put others in front, especially when you celebrate victory when nice things occur. You take the front line when there is danger. Then people will appreciate your leadership>> (N Mandela)

Leadership and soft skills

A non-exhaustive list …

- **Critical thinking**: disciplined, rational, logical, evidence-based thinking. It requires an open mind and the ability to analyze objectively
- **Motivating**: understanding what motivate project team members to perform, and the second is working with project team members in such a way that they remain committed to the project and its outcomes
- **Emotional intelligence**: ability to recognize our own emotions and those of others. This information is used to guide thinking and behavior. Recognition of personal feelings, empathy for the feelings of others, and the ability to act appropriately are the cornerstones for effective communication, collaboration, and leadership
- **Decision making**: unilateral, group-based decision making, diverge/converge pattern, escalation mechanism
- **Conflict management**: any mutually exclusive constraints including budget, scope, schedule, and quality, which can lead to conflict. It is not uncommon to want to avoid conflict, but not all conflict is negative. How conflict is handled can either lead to a conflict or to better decision making and stronger solution
- **Multicultural awareness**
- …

Multicultural projects

Meaning of colors in various countries

Colour	United States	China	Japan	Egypt	France
Red	Danger, stop	Happiness	Anger, danger	Death	Aristocracy
Blue	Sadness, melancholy	Heavens, clouds	Villainy	Virtue, faith, truth	Freedom, peace
Green	Novice, apprentice	Ming dynasty, heavens	Future, youth, energy	Fertility, strength	Criminality
Yellow	Cowardice	Birth, wealth	Grace, nobility	Happiness, prosperity	Temporary
White	Purity	Death, purity	Death	Joy	Naturality

Multicultural projects (1)

Communicating

US Netherlands Finland Spain Italy Singapore Iran China Japan
Australia Germany Denmark Poland Brazil Mexico France India Kenya Korea
Canada UK Argentina Peru Russia Saudi Arabia Indonesia

Low-Context ← → **High-Context**

Low-Context Good communication is precise, simple, and clear. Messages are expressed and understood at face falue. Repetition is appreciated if it helps clarify the communication.

High-Context Good communication is sophisticated, nuanced, and layered. Messages are both spoken and read between the lines. Messages are often implied but not plainly expressed.

Persuading

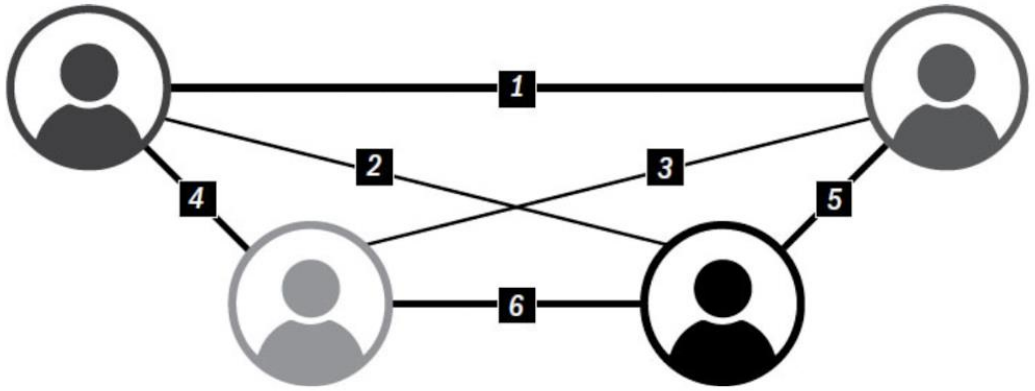
Italy Russia Germany Argentina Sweden Netherlands Australia
France Spain Brazil Mexico Denmark UK Canada US

Principles-first ← → **Applications-first**

Applications-first Individuals are trained to begin with a fact, statement, or opinion and later add concepts to back up or explain the conclusion as necessary. The preference is to begin a message or report with an executive summary or bullet points. Discussions are approached in a practical, concrete manner. Theoretical or philosophical discussions are avoided in a business environment.

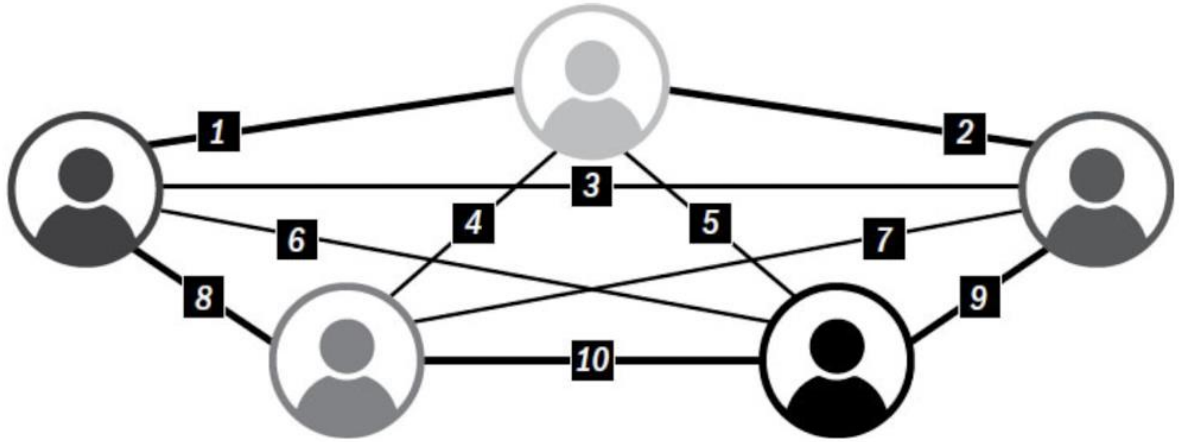
Principles-first Individuals have been trained to first develop the theory or complex concept before presenting a fact, statement, or opinion. The preference is to begin a message or report by building up a theoretical argument before moving on to a conclusion. The conceptual principles underlying each situation are valued.

Communicatation channels



Four people create six communication channels

Five people create ten communication channels,



Multicultural projects (2)

Evaluating

Russia France Italy US UK Brazil India Saudi Arabia Japan
Israel Germany Norway Australia Canada Mexico China Korea Thailand
Netherlands Denmark Spain Argentina Kenya Ghana Indonesia

Direct negative feedback ⟷ **Indirect negative feedback**

Direct negative feedback — Negative feedback to a colleague is provided frankly, bluntly, honestly. Negative messages stand alone, not softened by positive ones. Absolute descriptors are often used (totally inappropriate, completely unprofessional) when criticizing. Criticism may be given to an individual in front of a group.

Indirect negative feedback — Negative feedback to a colleague is provided softly, subtly, diplomatically. Positive messages are used to wrap negative ones. Qualifying descriptors are often used (sort of inappropriate, slightly unprofessional) when criticizing. Criticism is given only in private.

Leading

Denmark Israel Canada US France Poland Saudi Arabia Japan
Netherlands Finland UK Germany Italy Russia India Korea
Sweden Australia Brazil Spain Mexico Peru China Nigeria

Egalitarian ⟷ **Hierarchical**

Egalitarian — The ideal distance between a boss and a subordinate is low. The best boss is a facilitator among equals. Organizational structures are flat. Communication often skips hierarchical lines.

Hierarchical — The ideal distance between a boss and a subordinate is high. The best boss is a strong director who leads from the front. Status is important. Organizational structures are multilayered and fixed. Communication follows set hierarchical lines.

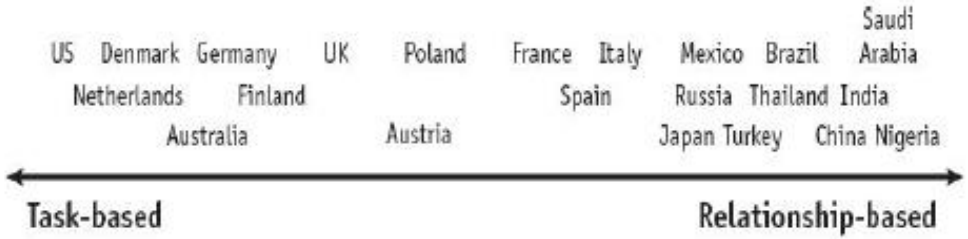
Multicultural projects (3)

Deciding

Consensual Decisions are made in groups through unanimous agreement.

Top-down Decisions are made by individuals (usually the boss).

Trusting



Task-based Trust is built through business-related activities. Work relationships are built and dropped easily, based on the practicality of the situation. You do good work consistently, you are reliable, I enjoy working with you, I trust you.

Relationship-based Trust is built through sharing meals, evening drinks, and visits at the coffee machine. Work relationships build up slowly over the long term. I've seen who you are at a deep level, I've shared personal time with you, I know others well who trust you, I trust you.

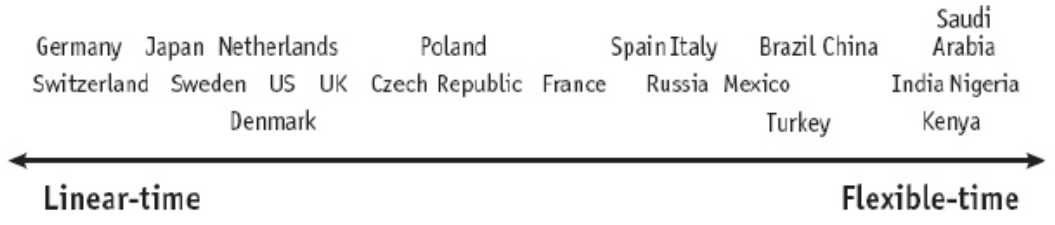
Multicultural projects (4)

Disagreeing

Confrontational Disagreement and debate are positive for the team or organization. Open confrontation is appropriate and will not negatively impact the relationship.

Avoids confrontation Disagreement and debate are negative for the team or organization. Open confrontation is inappropriate and will break group harmony or negatively impact the relationship.

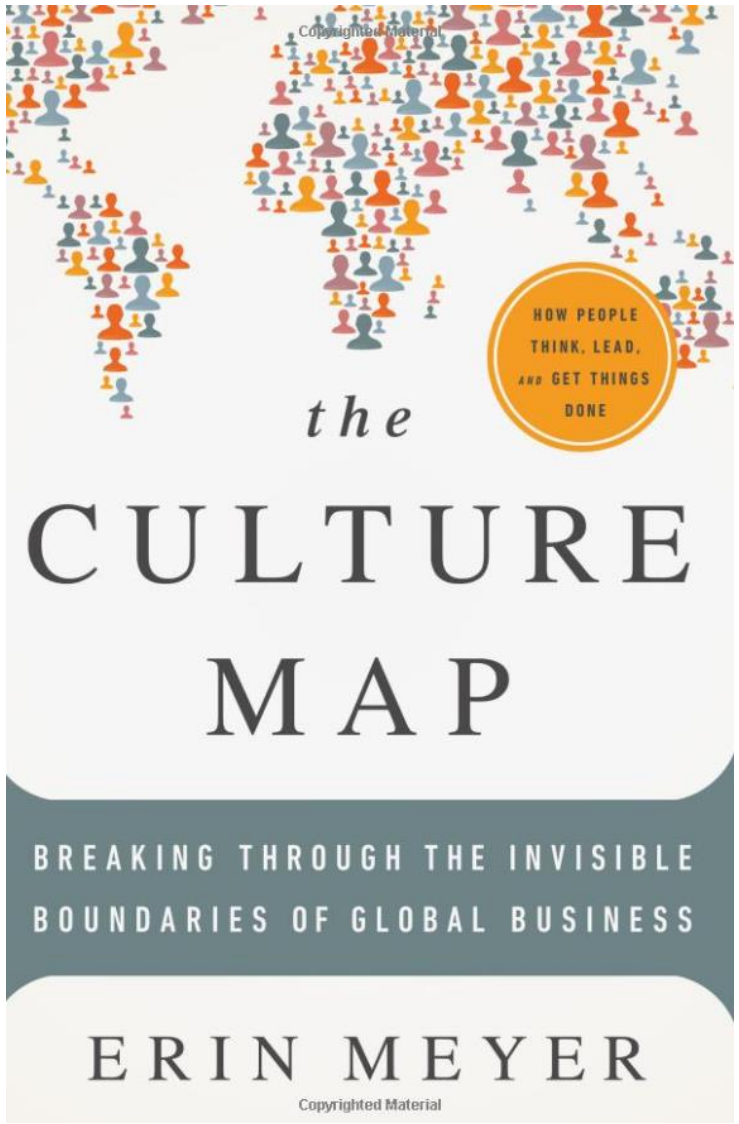
Scheduling



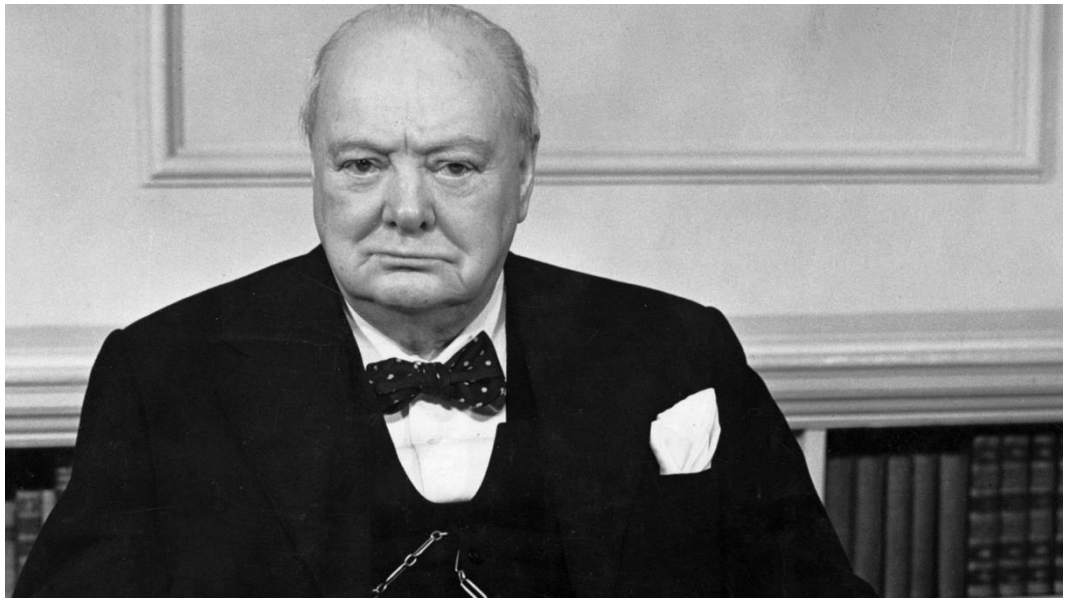
Linear-time Project steps are approached in a sequential fashion, completing one task before beginning the next. One thing at a time. No interruptions. The focus is on the deadline and sticking to the schedule. Emphasis is on promptness and good organization over flexibility.

Flexible-time Project steps are approached in a fluid manner, changing tasks as opportunities arise. Many things are dealt with at once and interruptions accepted. The focus is on adaptability, and flexibility is valued over organization.

Further reading …

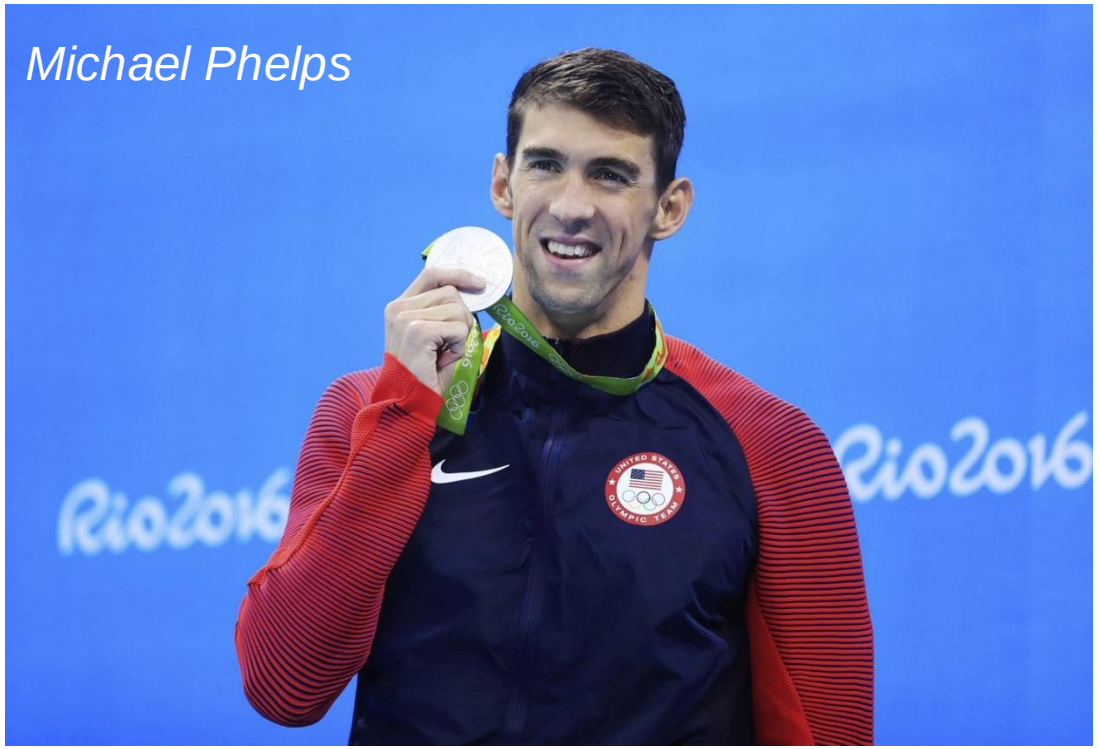


What are the ‘right’ skills* ? (1)



<< Certain qualities that are a poison under the right circumstances could be a performance-enhancing drug >>

What are the ‘right’ skills* ? (2)



Under the right circumstances there can be big upsides to “negative” qualities

PMI: Pulse of the profession 2023

https://www.pmi.org/-/media/pmi/documents/public/pdf/learning/thought-leadership/pmi-pulse-of-the-profession-2023-report.pdf?rev=df863a1f6e2e48628679c5c2ce96b3d3&sc_lang_temp=en

Organizational structures

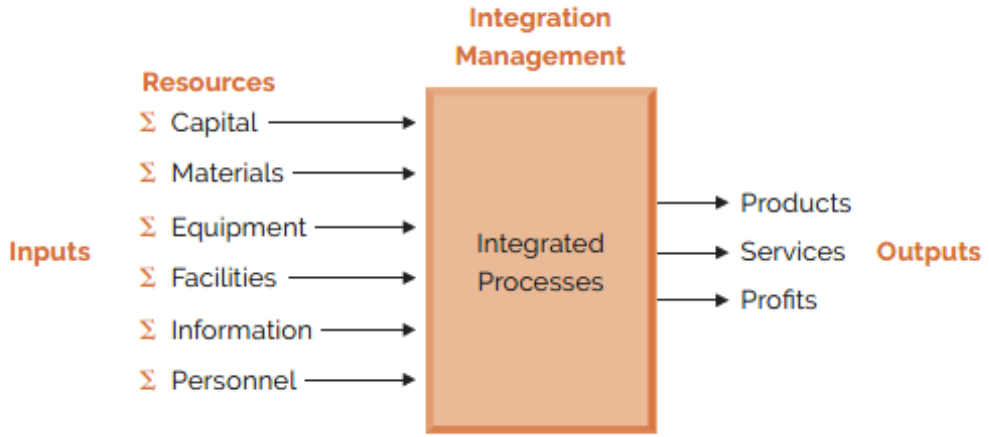
What is the PM role ? (1)

The project manager is responsible for **coordinating** and **integrating** activities across multiple functional lines. The integration activities performed by the project manager include

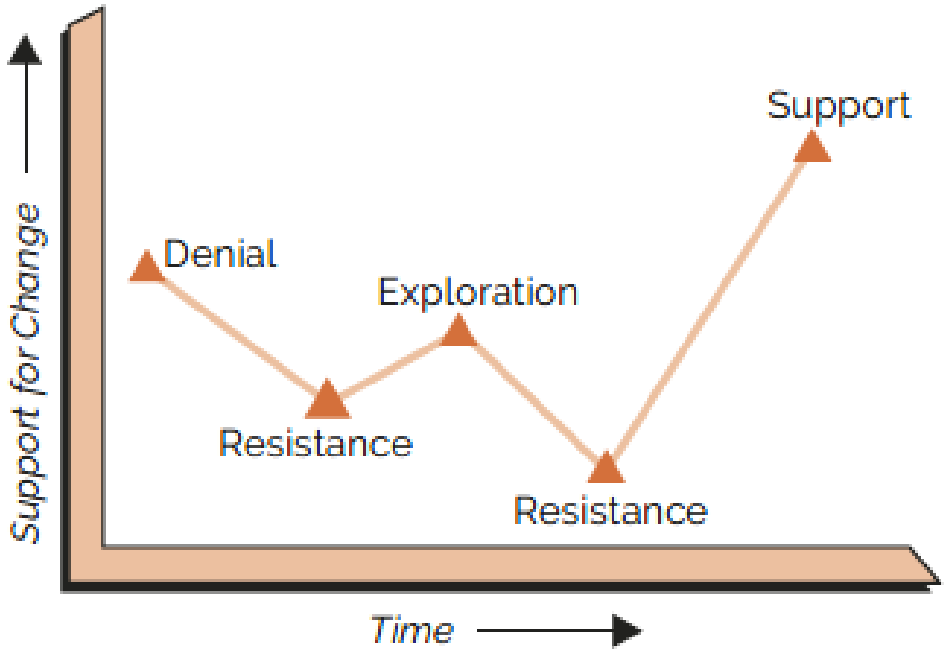
- Integrating the activities necessary to develop a project plan
- Integrating the activities necessary to execute the plan
- Integrating the activities necessary to make changes to the plan

Project management is designed to have **shared authority and responsibility** between the project and line managers.

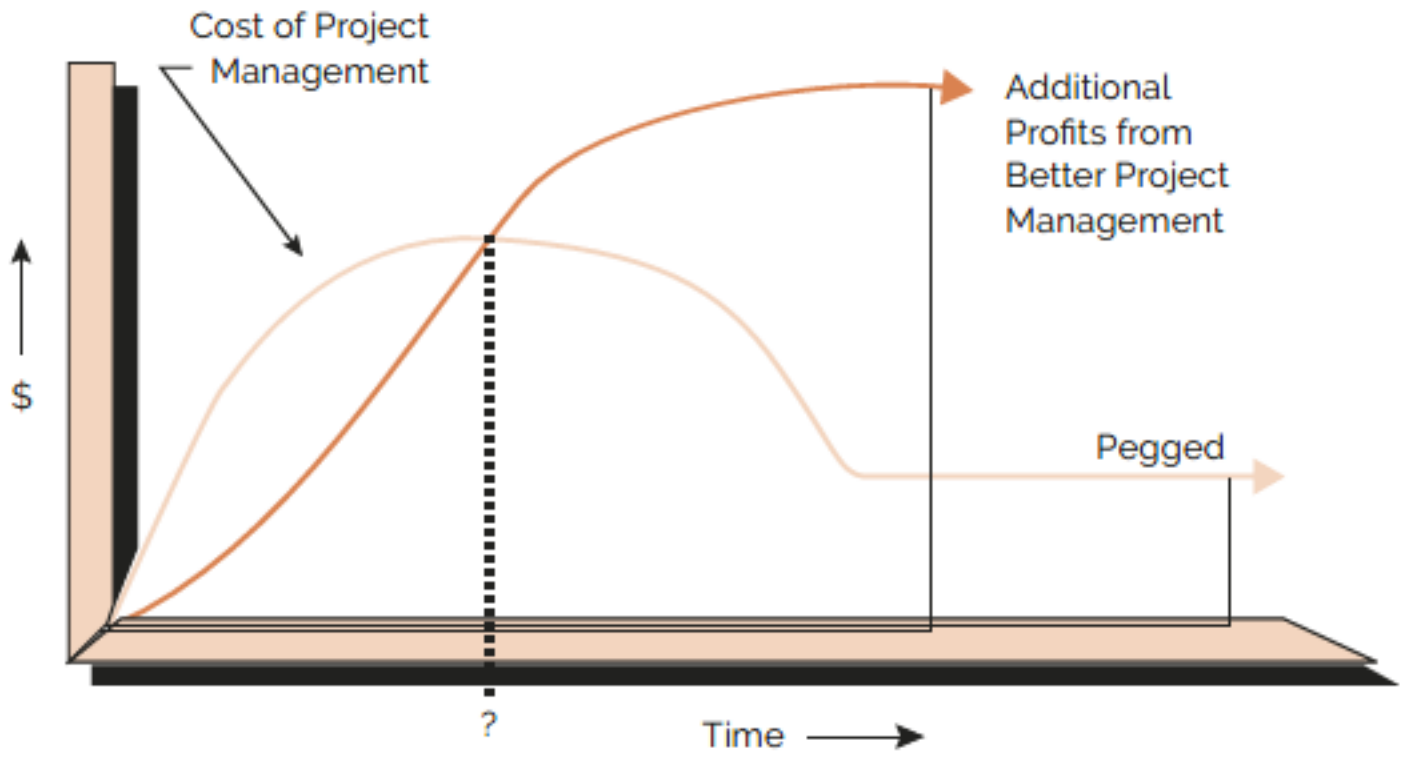
Project managers plan, monitor, and control the project, whereas functional managers perform the work



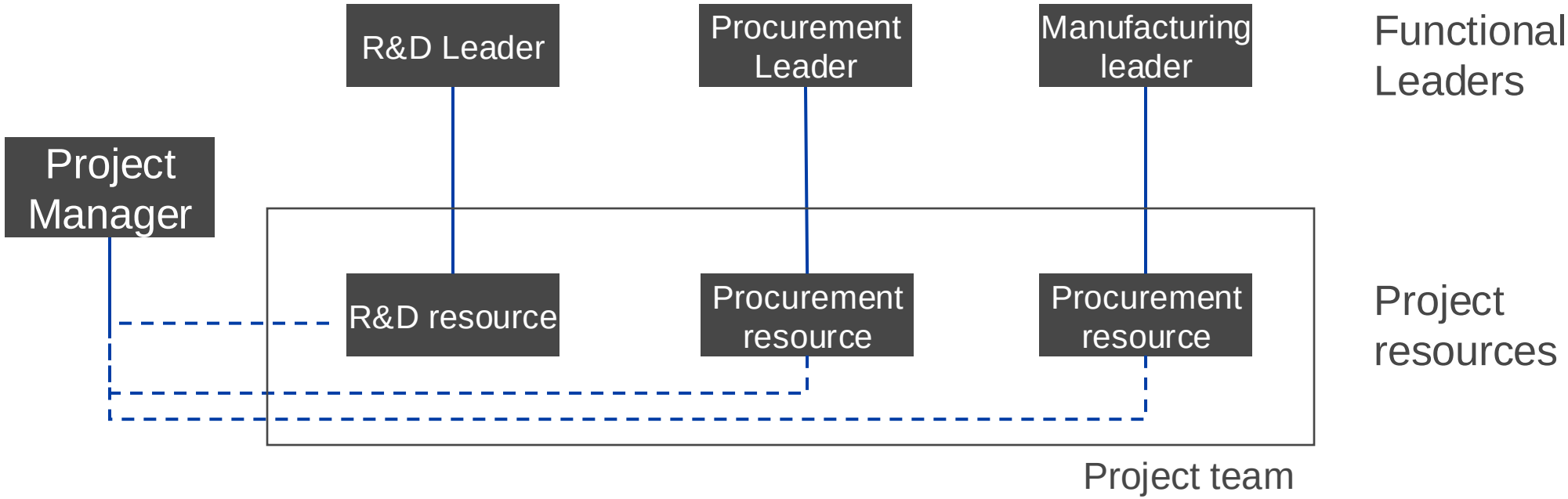
PM as the change agent



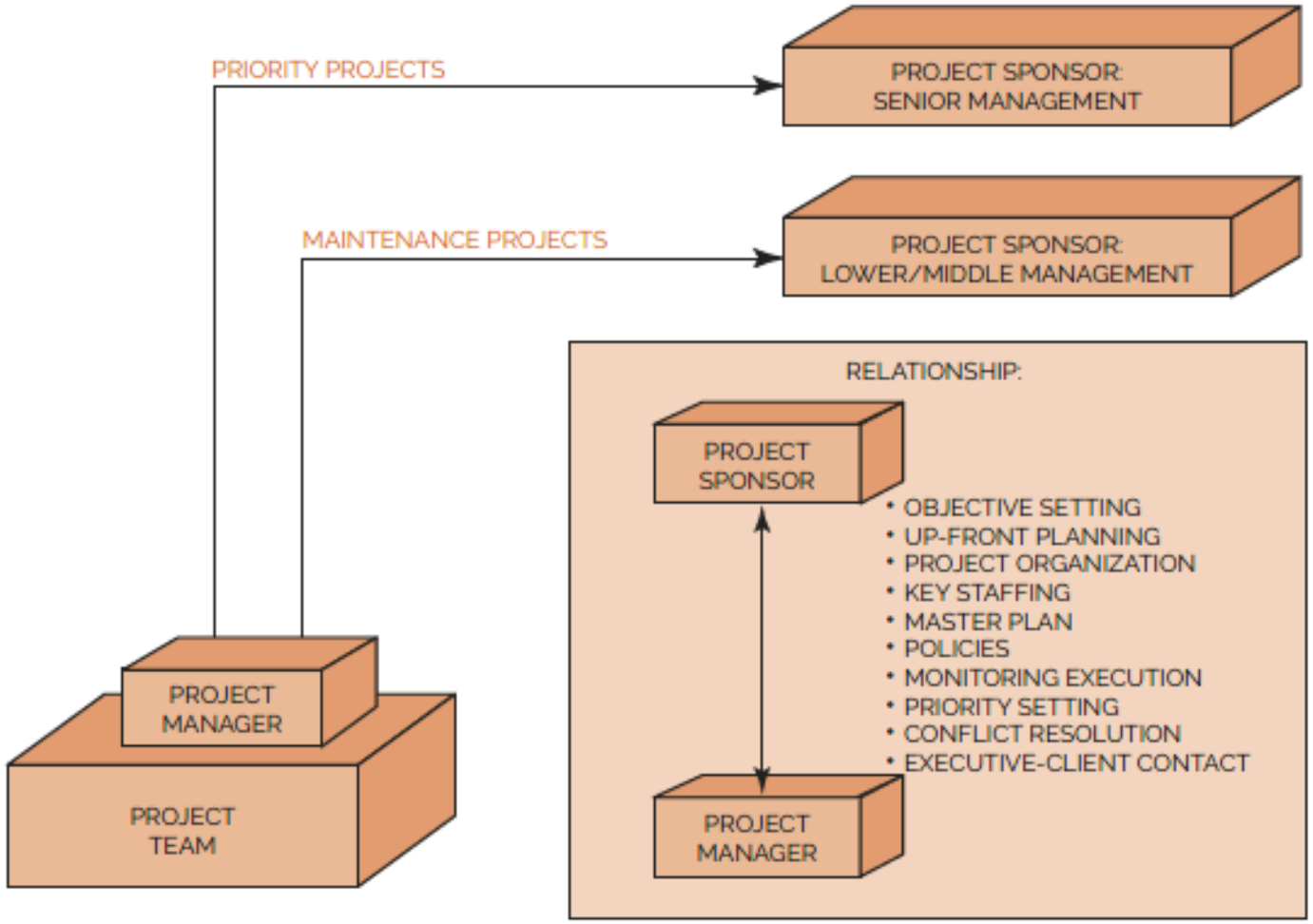
What is the PM cost ?



Project team set up - example



Project sponsor



Project vs. non-project driven organizations (1)

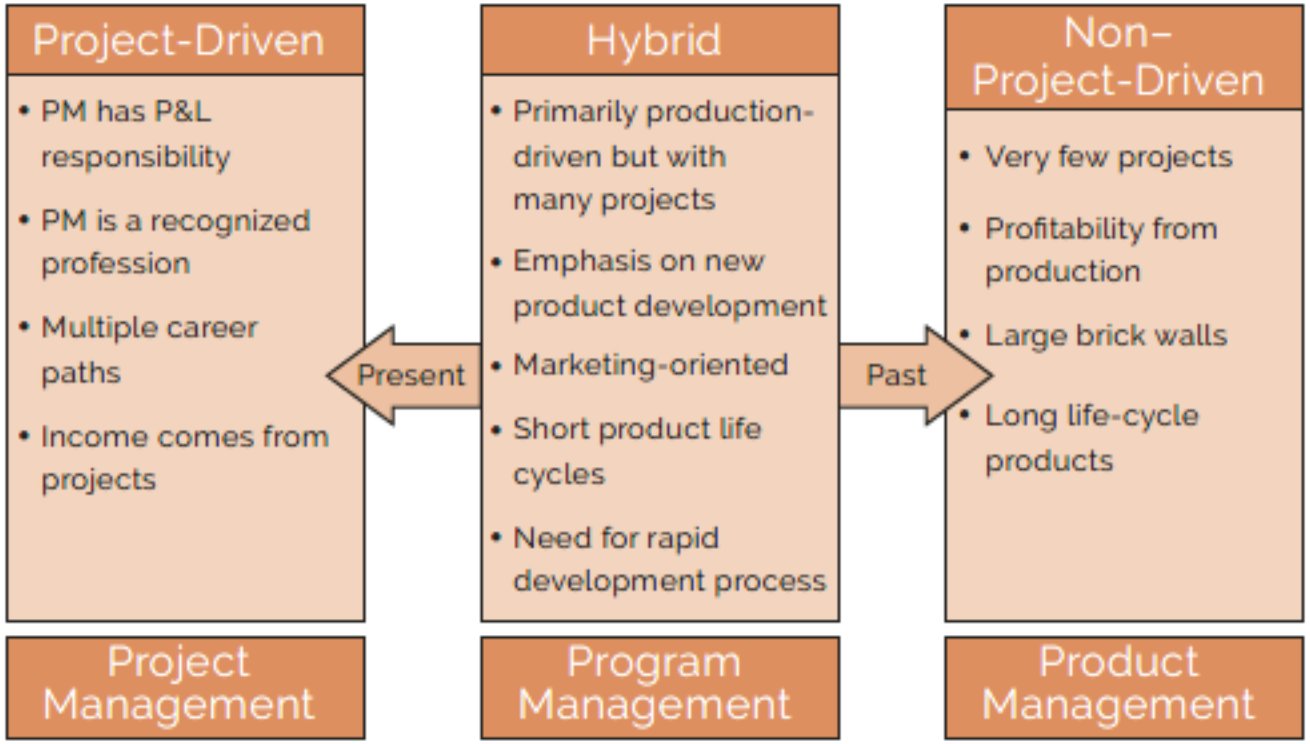
Project driven organizations

- Examples: construction, aerospace
- The work is characterized through projects, with each project as a separate cost center having its own profit-and-loss statement. The total profit to the corporation is simply the summation of the profits on all projects. In project-driven organization, everything centers on the projects.

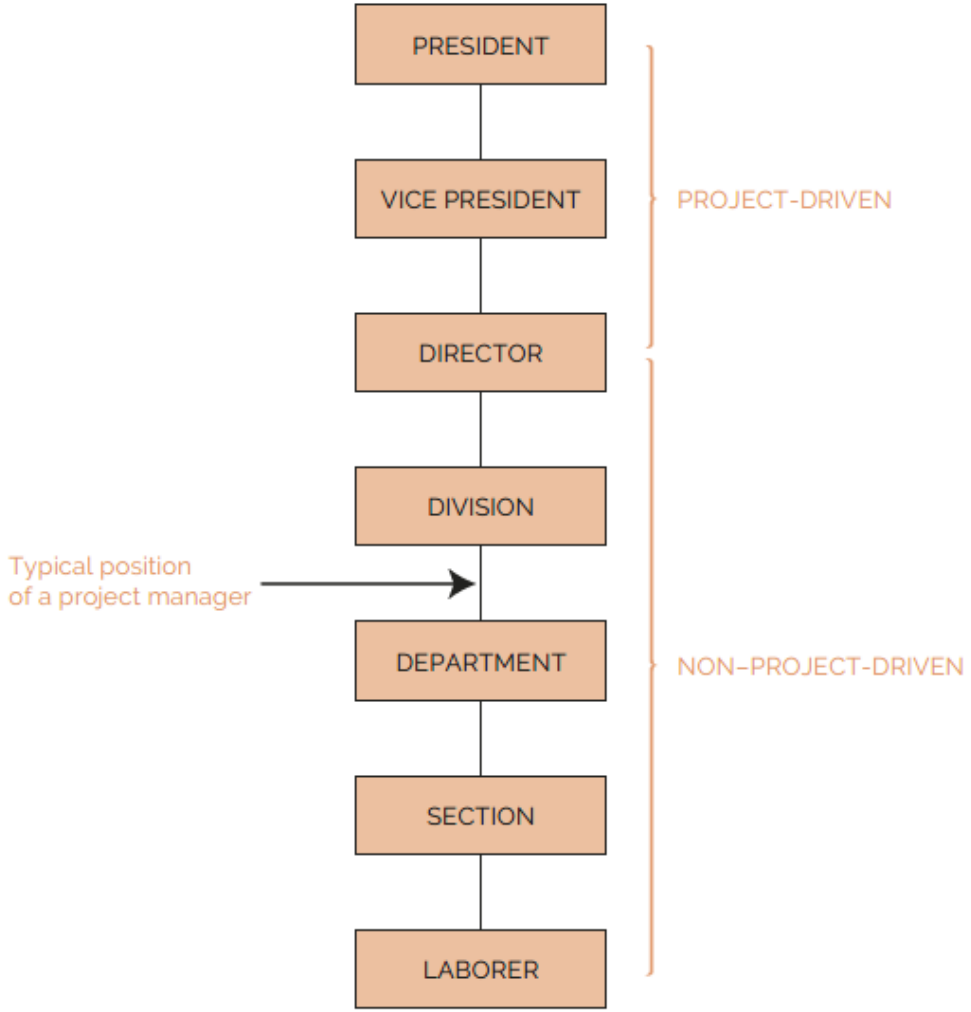
Non-project driven organizations

- Examples: low-technology manufacturing
- Projects exist to support the produce lines / functional lines

Project vs. non-project driven organizations (2)



Location of the PM within the organization



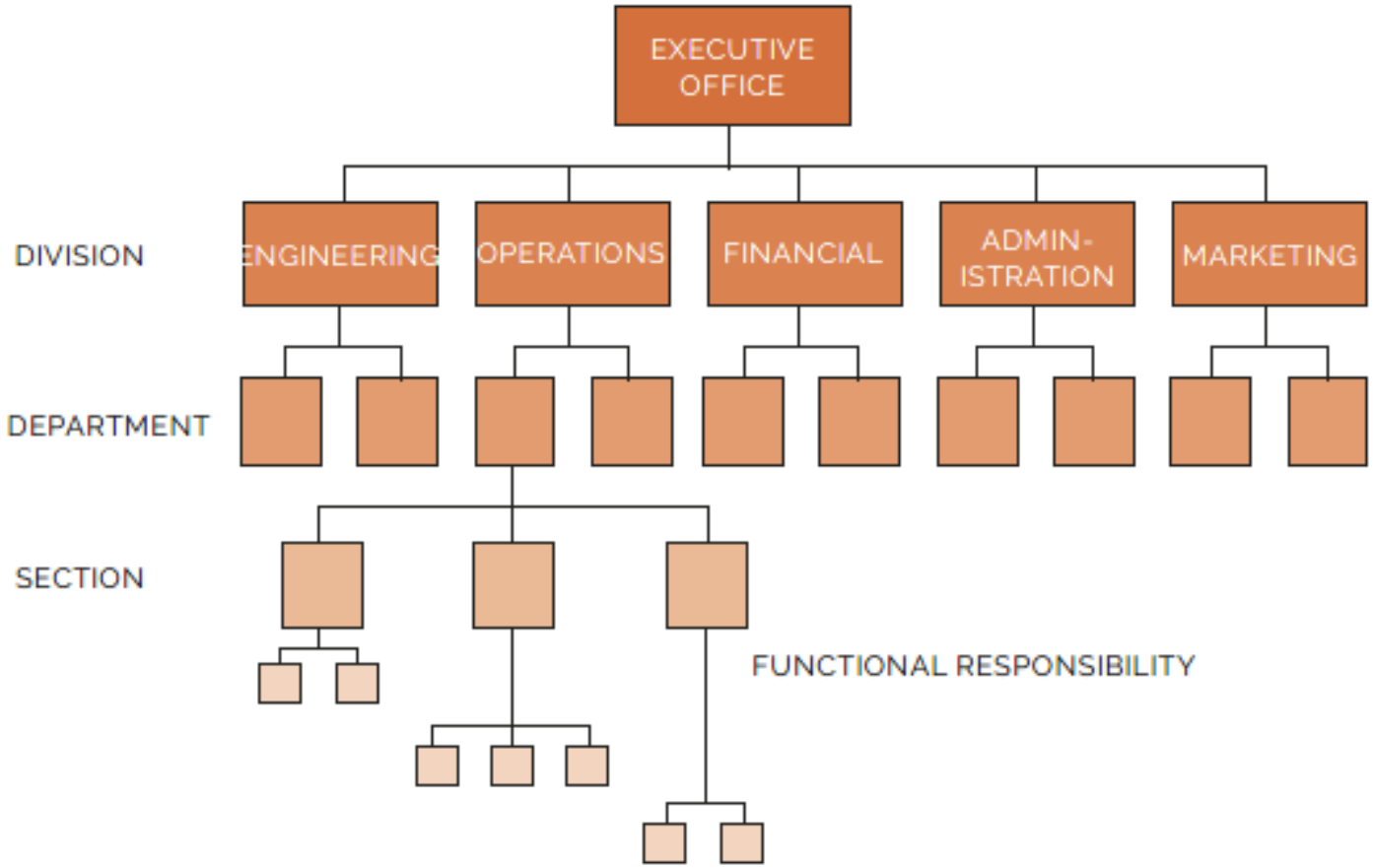
The Project Management Office (PMO)

- Represents a management structure that standardizes project-related governance processes and facilitates the sharing of resources, tools, methodologies, and techniques
- PMO capabilities
  - Fostering delivery and outcomes-oriented capabilities
  - Keeping the “big picture” perspective
  - Continuous improvement, knowledge transfer, and change management

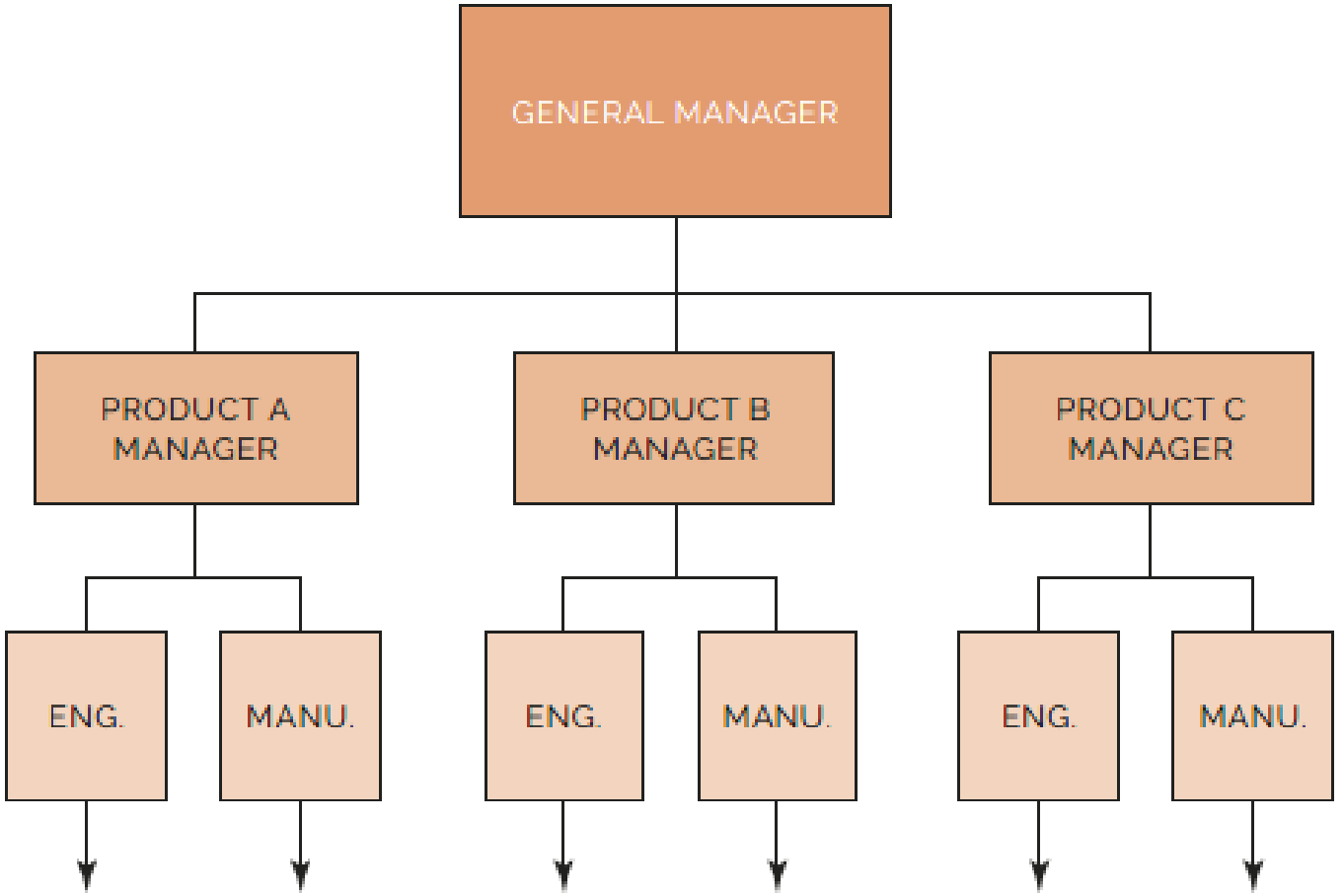
Organizational Structures - definitions

- **Authority** is the power granted to individuals (possibly by their position) so that they can make final decisions
- **Responsibility** is the obligation incurred by individuals in their roles in the formal organization to effectively perform assignments. Responsibility can be shared
- **Accountability** is being answerable for the satisfactory completion of a specific assignment. Accountability is not shared !
- Accountability = authority + responsibility
- Regardless of who is accountable or responsible for specific project work, a collaborative project team takes **collective ownership** of the project outcomes

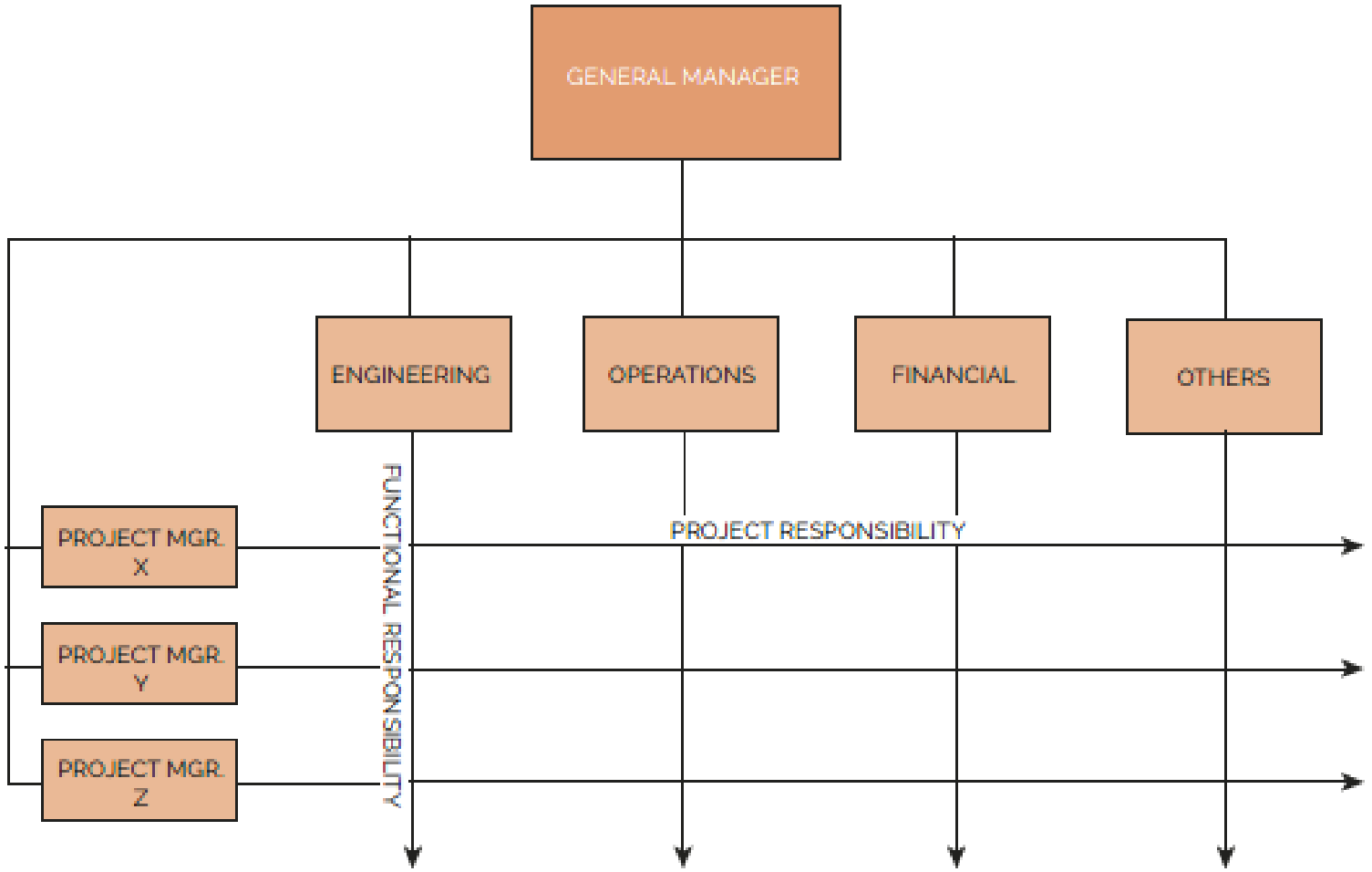
Traditional Organization



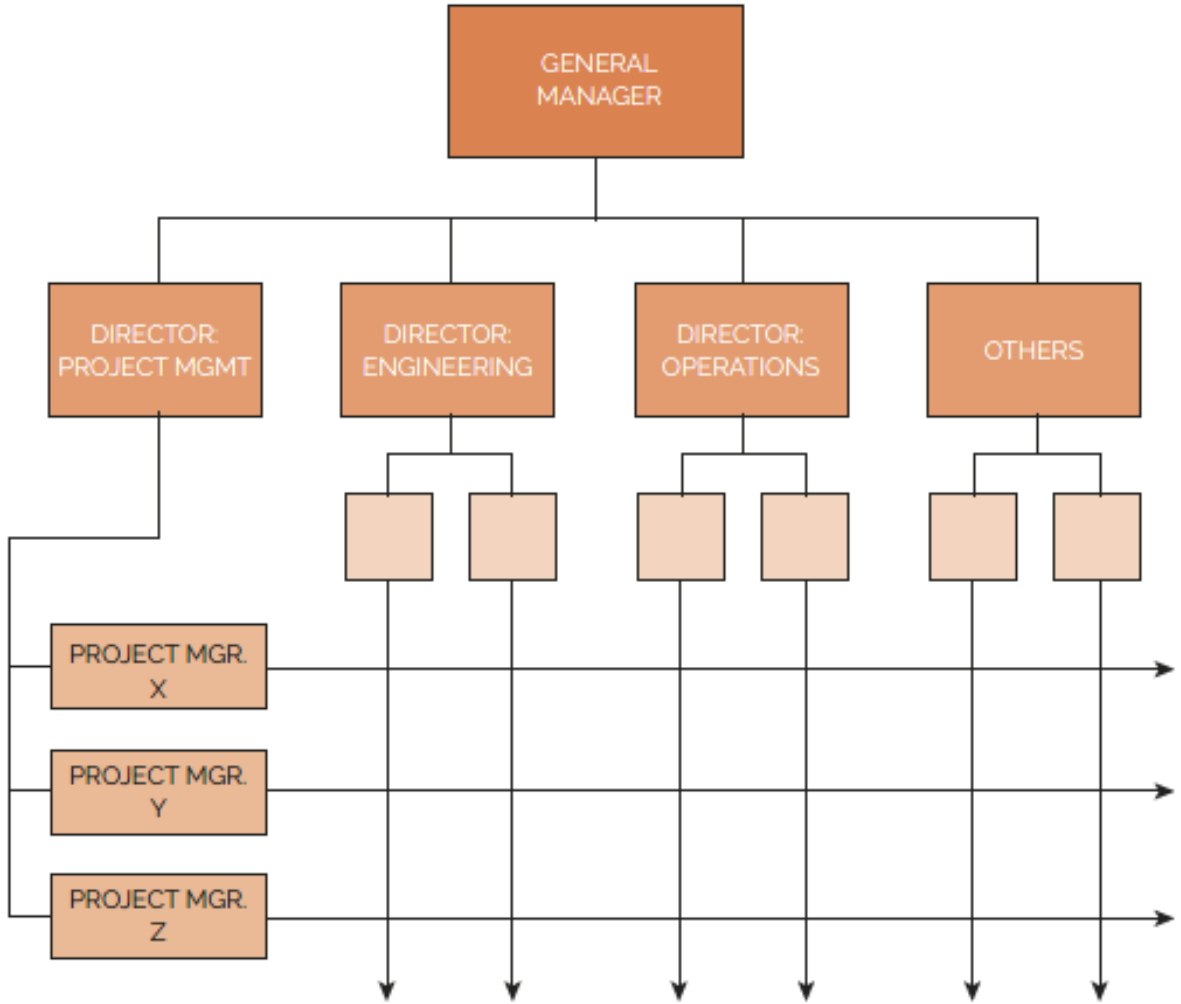
Pure Product Organization



Matrix Organization (1)

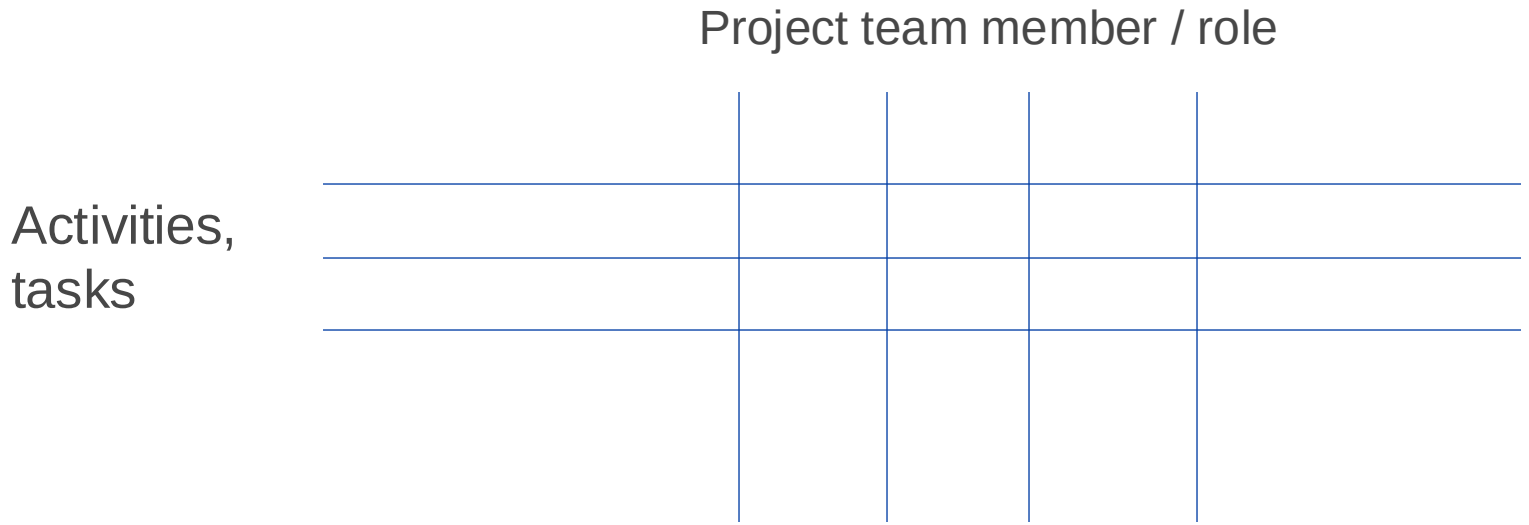


Matrix Organization (2)

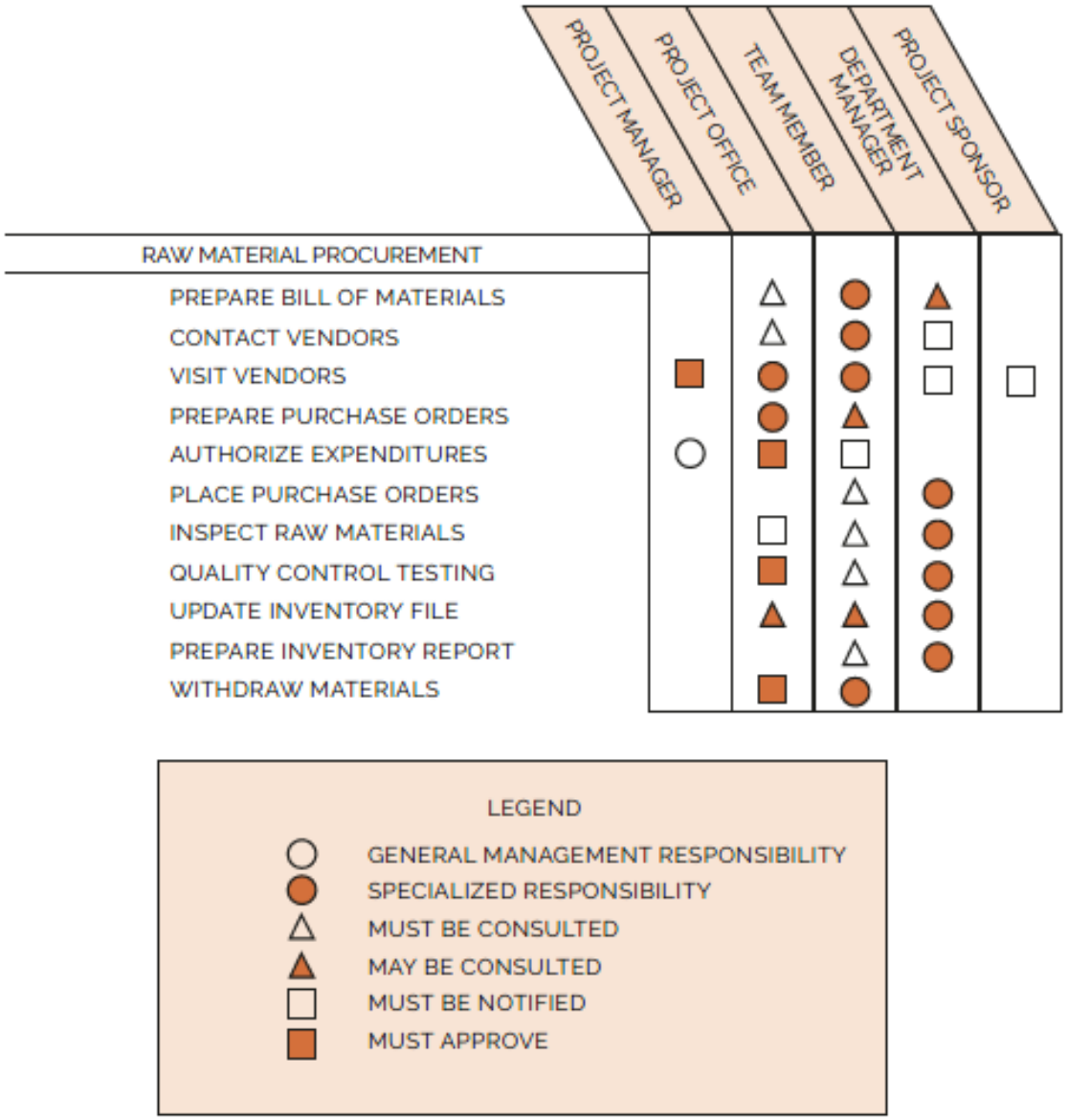


Responsibility Matrix

The responsibility matrix is often referred to as a **linear responsibility chart (LRC)** or **responsibility assignment matrix (RAM).** Linear responsibility charts identify the participants, and to what degree an activity will be performed or a decision will be made. The LRC attempts to clarify the authority relationships that can exist when functional units share common work.



Responsibility Matrix



RACI

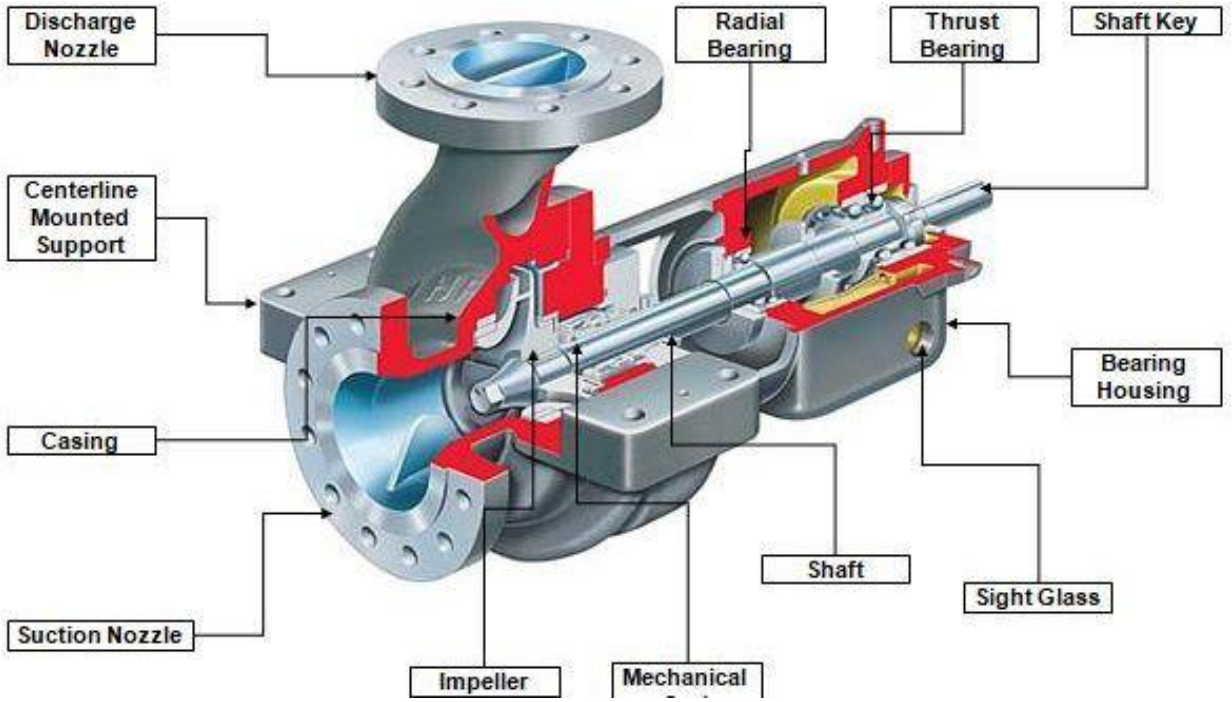
Example of a responsibility assignment (or RACI) matrix

Code	Name	Project sponsor	Business analyst	Project manager	Technical architect	Applications development
Stage A	Manage sales					
Stage B	Assess job					
Stage C	Initiate project					
- C04	Security governance (draft)	C	C	A	I	I
- C10	Functional requirements	A	R	I	C	I
- C11	Business acceptance criteria	A	R	I	C	I
Stage D	Design solution					

R = Responsible (also recommender)
Those who do the work to complete the task. There is at least one role with a participation type of responsible, although others can be delegated to assist in the work required
A = Accountable (also approver or final approving authority)
The one ultimately answerable for the correct and thorough completion of the deliverable or task, the one who ensures the prerequisites of the task are met and who delegates the work to those responsible In other words, an accountable must sign off (approve) work that responsible provides. There must be only one accountable specified for each task or deliverable.
C = Consulted (sometimes consultant or counsel)
Those whose opinions are sought, typically subject-matter experts; and with whom there is two-way communication.
I = Informed
Those who are kept up-to-date on progress, often only on completion of the task or deliverable; and with whom there is just one-way communication.

* Wikipedia: [Responsibility assignment matrix - Wikipedia]

RACI: Example

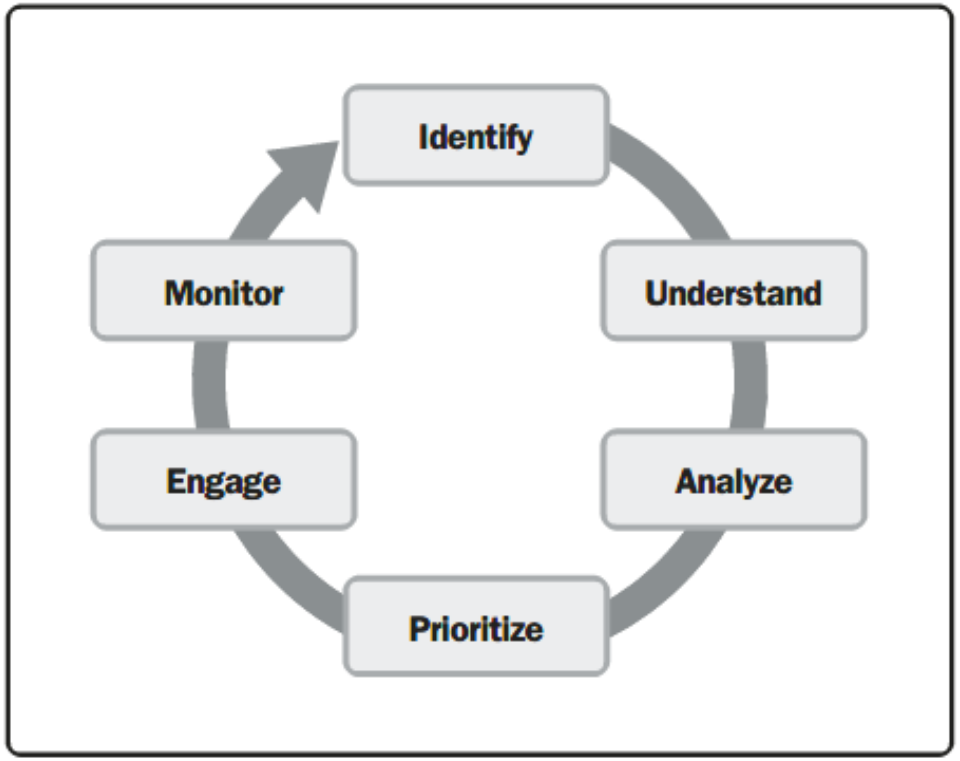


Task: shaft procurement

Project Manager	A
Procurement Manager	R
Quality Manager	C
Technical Engineer	C
Finance Manager	I

Stakeholder management (1)

Stakeholder management (2)



Type	Formal	Informal
Verbal	Presentations Project reviews Briefings Product demos Brainstorming	Conversations Ad hoc discussions
Written	Progress reports Project documents Business case	Brief notes Email Instant messaging/texting Social media

- **Push**. Communication sent to stakeholders such as memos, emails, status reports, voice mail, and so forth. Push communication is used for one-way communications with individual stakeholders or groups of stakeholders. Push communication inhibits the ability to immediately gauge reaction and assess understanding; therefore, it should be used deliberately.
- **Pull**. Information sought by the stakeholder, such as a project team member going to an intranet to find communication policies or templates, running internet searches, and using online repositories. Pulling information is used for indirect sensing of stakeholder concerns.

Stakeholder management (3)

Stakeholder analysis template

Stakeholder Names and Roles	How important? (Low – Med – High)	Current level of support? (Low – Med – High)	What do you want from stakeholders?	What is important to stakeholders?	How could stakeholders block your efforts?	What is your strategy for enhancing stakeholder support?