



Eating Your Cake – and having it too

Managing Constraints While
Upgrading an Electrical Distribution
System at the Denver Mint.



Project Context

The United States Mint at Denver

- All denominations of coins are minted in this facility.
- Up to 50 million coins per day.
- Current “Italian Renaissance” structure dates to 1904.
- National Register of Historic Places.





Project Context

Square D Services
provided a complete
turnkey solution, including
engineering, equipment and installation.



- Upgrade of critical electrical systems.
- NEC and OSHA compliance with NFPA 70E.
- Fixed price, three year contract.



Conventional Wisdom

- First penned in a collection of English proverbs in 1546 by John Haywood
(Wikipedia, The Free Encyclopedia)
- The meaning of the proverb is philosophical in nature, not procedural.
- Mutually Exclusive Options



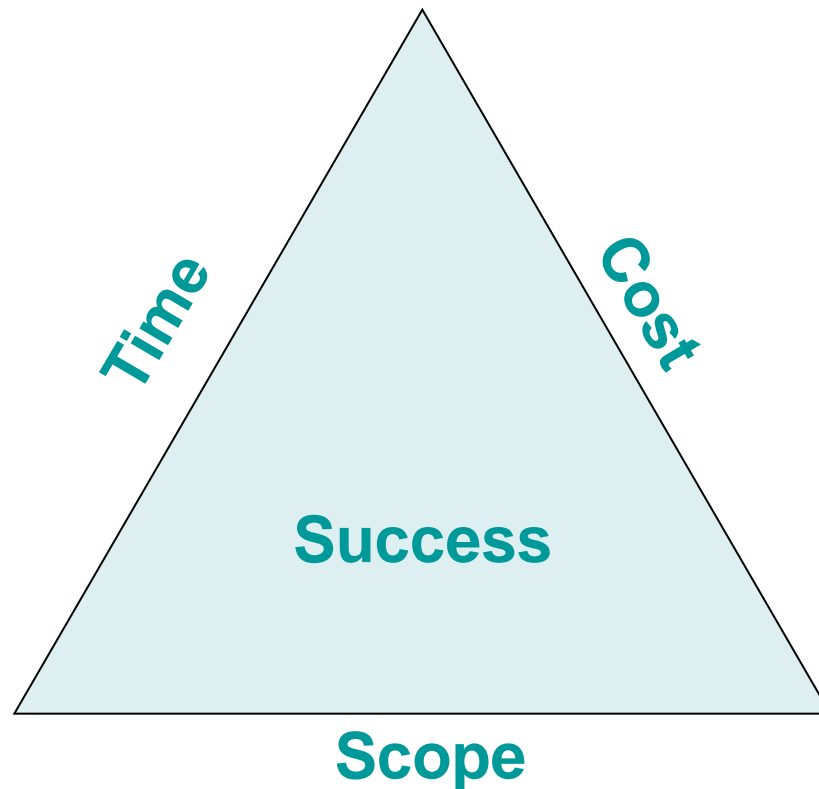
Project Constraints in PMBOK®

...Project managers often talk of a “triple constraint”—project scope, time and cost—in managing competing project requirements. Project quality is affected by balancing these three factors (Chapters 5 through 7). High quality projects deliver the required product, service or result within scope, on time, and within budget. The relationship among these factors is such that if any one of the three factors changes, at least one other factor is likely to be affected...

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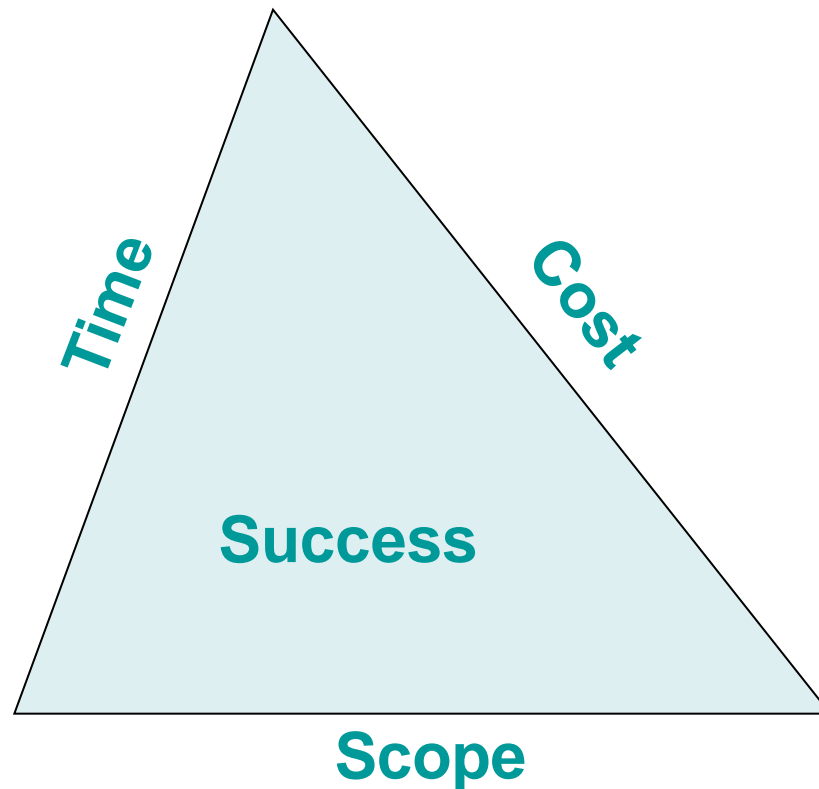


Triple Constraint Diagram



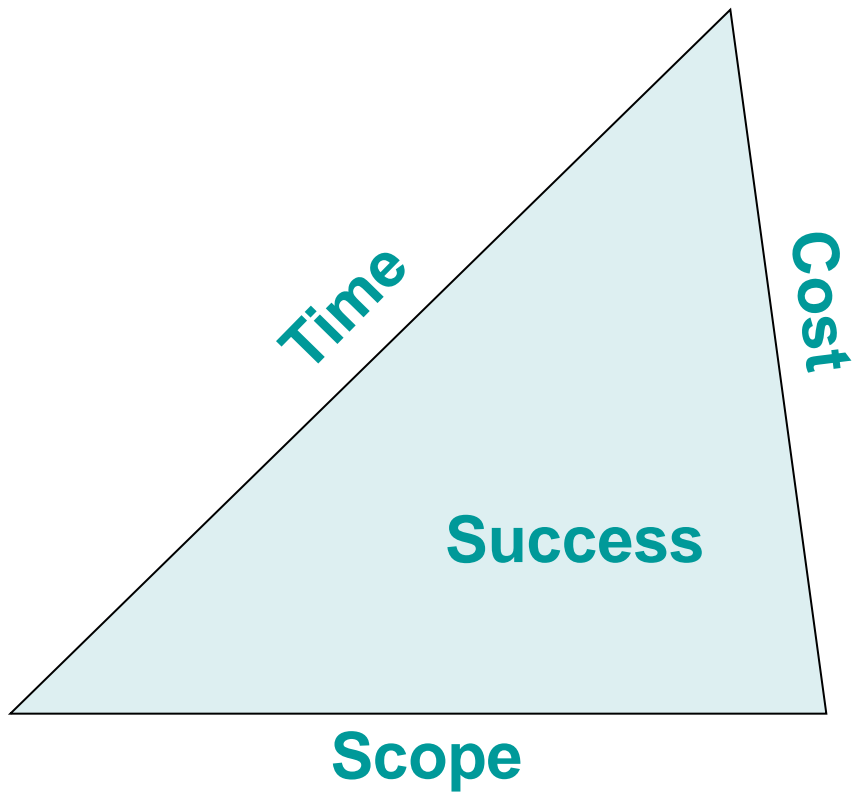


Triple Constraint Diagram





Triple Constraint Diagram





Project Constraints in PMBOK®

...Balancing the competing project constraints including, but not limited to:

- Scope
- Quality
- Schedule
- Budget
- Resources, and
- Risk

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Project Constraints in PMBOK®

The specific project will influence the constraints on which the project manager needs to focus.

The relationship among these factors is such that if any one factor changes, at least one other factor is likely to be affected.

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The Hierarchy of Constraints

- All constraints are not equal.

“One of the most powerful secrets of the triple constraints comes from ranking them in the order of their priority and impact on the project.”

(Dobson, p.13)



Project Example – Initiating Phase

Hierarchy of Constraints

1. Time (36 months to complete)
2. Cost (\$'s committed to the project)
3. Scope (largely undefined)



Project Example – Planning Stage

Hierarchy of Constraints

1. Cost (resources not available)
2. Scope (work more clearly defined)
3. Time (re-phasing the project reduces time pressures)





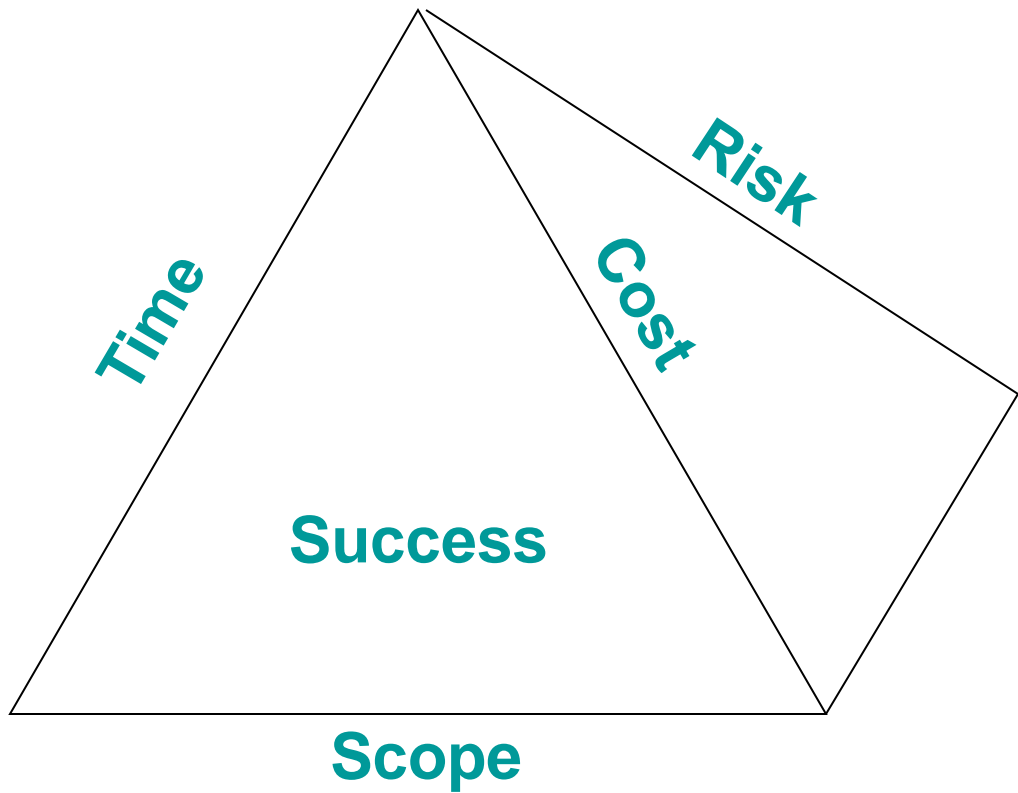
Project Example – Execution – Phase 1 (beginning)

Hierarchy of Constraints

1. Risk (protect people and property)
2. Cost (unknown unknowns discovered)
3. Scope (expanding to address unknown unknowns)
4. Time (still projecting ahead of deadline)



Quadruple Constraint Diagram





Quadruple Constraint Diagram





Project Example – Execution – Phase 1 (key milestone)

Hierarchy of Constraints

1. Risk (protect people and property)
2. Time (short, fixed duration)
3. Scope (specific tasks must be completed)
4. Cost (whatever it takes)



Eating Cake... as a Project Team

*The Construction Extension to the
PMBOK Guide (3rd Edition – 1.5.5 -
Interpersonal Skills)*

- Leading
- Communicating
- Negotiating
- Problem Solving



Eating Cake... a recap

- Mutually exclusive options are always present in a project scenario.
- Understanding where you can fail, and still succeed will help prioritize the project constraints.
- Understanding the hierarchy of constraints will provide valuable insight to the project team.
- Negotiate project constraints to put your project team in the best position to succeed.



Rocky Mountain Project Management Symposium
Navigating the Waves of Change: Learn. Lead. Succeed.



...Let them eat cake!