Project Alliancing (PA) and Critical Chain Project Management (CCPM)

Methods that INCREASE and ENSURE project collaboration and EXECUTION

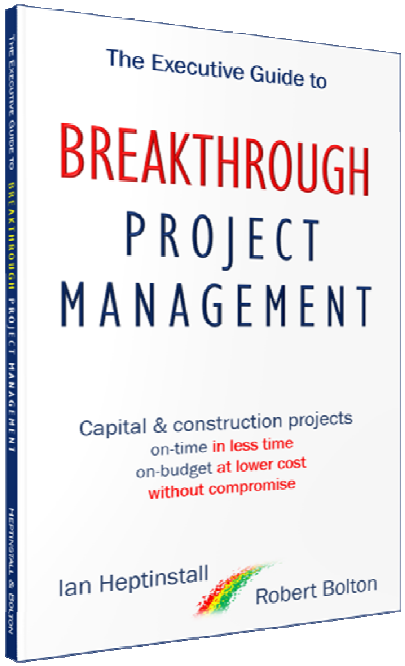
Robert Bolton

3rd May 2017

Project Governance and Controls Symposium

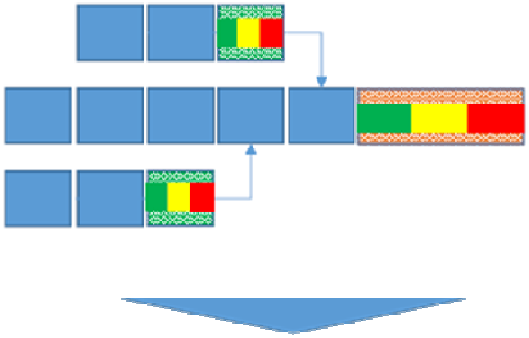
www.pgcs.org.au

"Better Management – Better Projects"



Real Capacity
"Providing Focus"

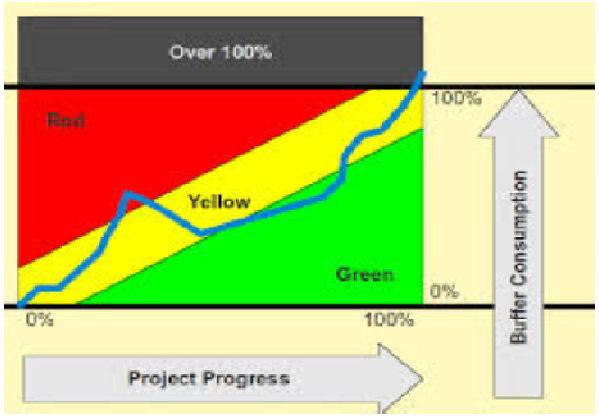
Agenda



Background

What is wrong with capex projects?
Critical Chain Project Management (CCPM)
Project Alliancing
Breakthrough Project Management flow

Questions & answers



Robert Bolton

Civil Engineer (Sydney)
MBA (Ashridge UK)
Company Director (AICD)
Demand Driven Planner (CDDP)

Infrastructure, mining, oil & gas, IT,
Funds Management.

All aspects of Project Management

Expert in Theory of Constraints (ToC),
Developed Critical Chain & ToC Mining
Throughput Focused Mining (TFM)
Fast track construction
Activity Based Costing (ABC)

Sydney Convention Centre

Collector Bypass

Sydney Harbour Tunnel (SHT), Cut & Cover

London Victoria Goldmine

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Land Rover, Birmingham UK

Argyle Diamonds, WA

Worsley Alumina, WA

JNA Lucent, NSW

Iuka Resources, WA

Chevron FMC, Subsea, China

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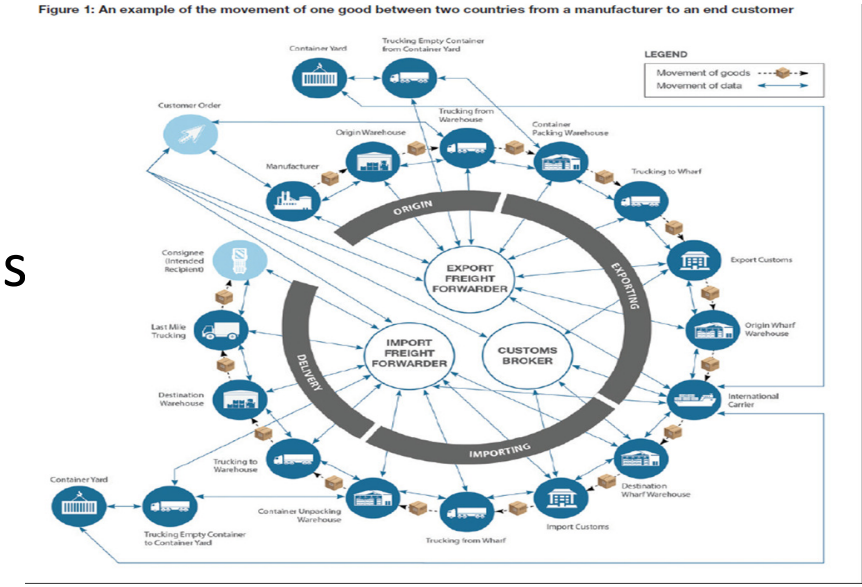
Robert Bolton – Financial and IT

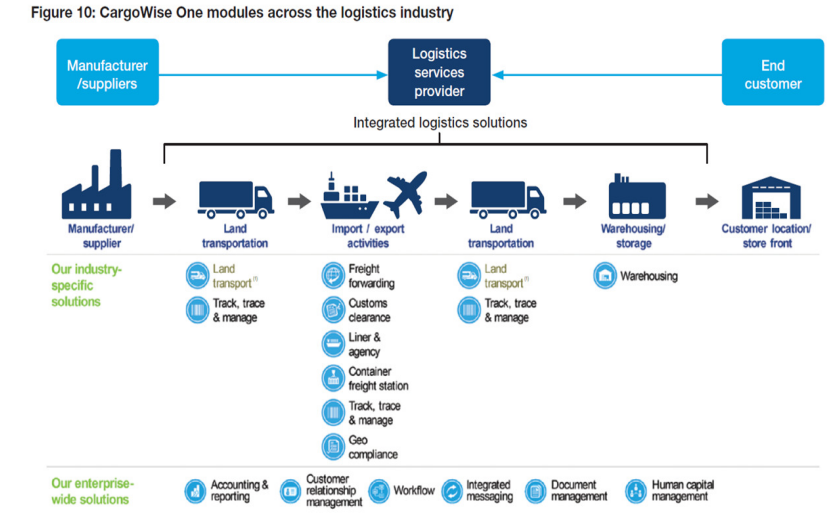
Common theme: Smart people dealing with lots of data trying to make the right decisions at the right time.

Direction: Building the systems that manage the projects

WiseTech GLOBAL (ASX: WTG)

- Software (Saas)for Supply Chain and Logistics Industry.
- Simplifies industry information flows
- Development & Commercialisation of CCPM system and approach
- Strategic Projects





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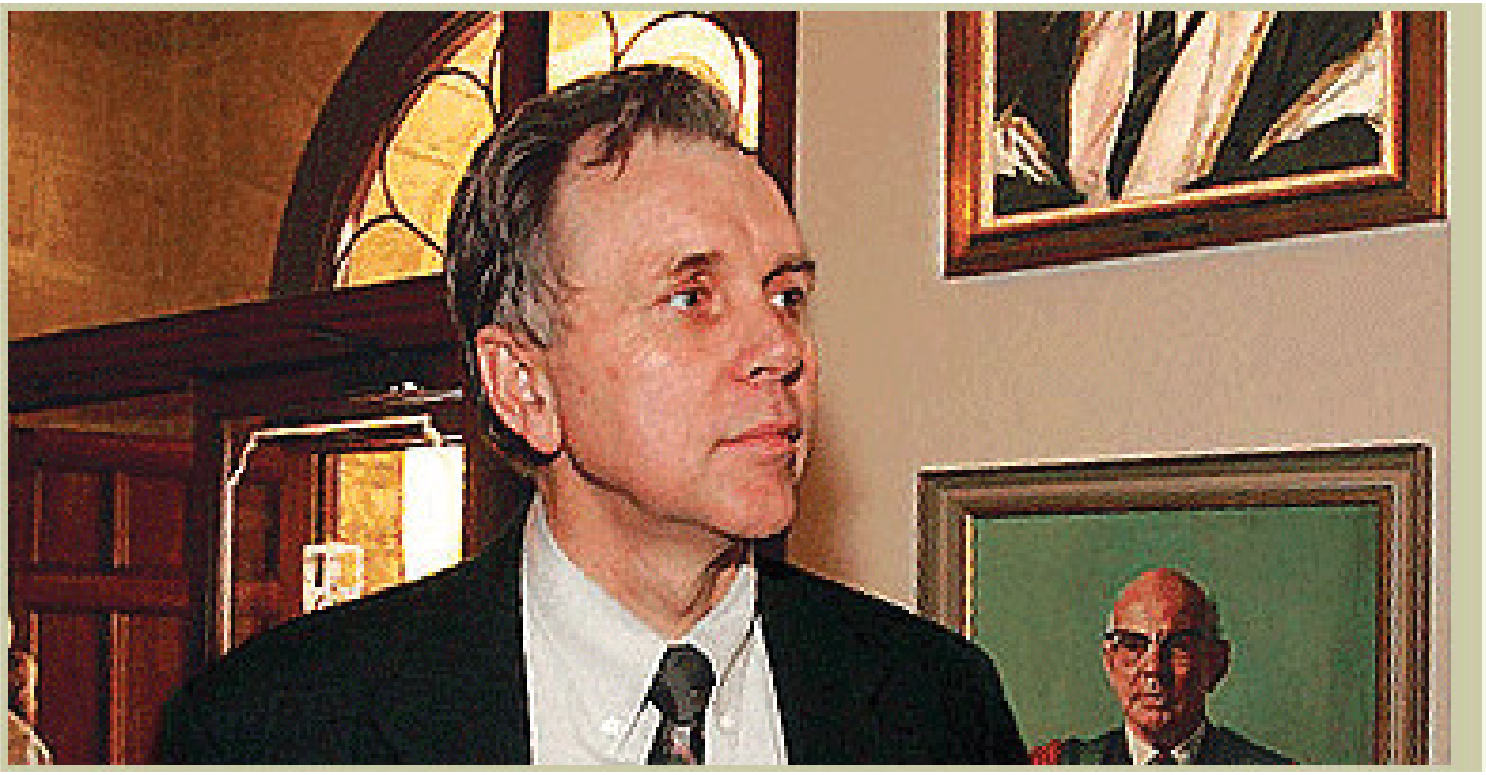
A request…

Remember Dr Barry Marshall

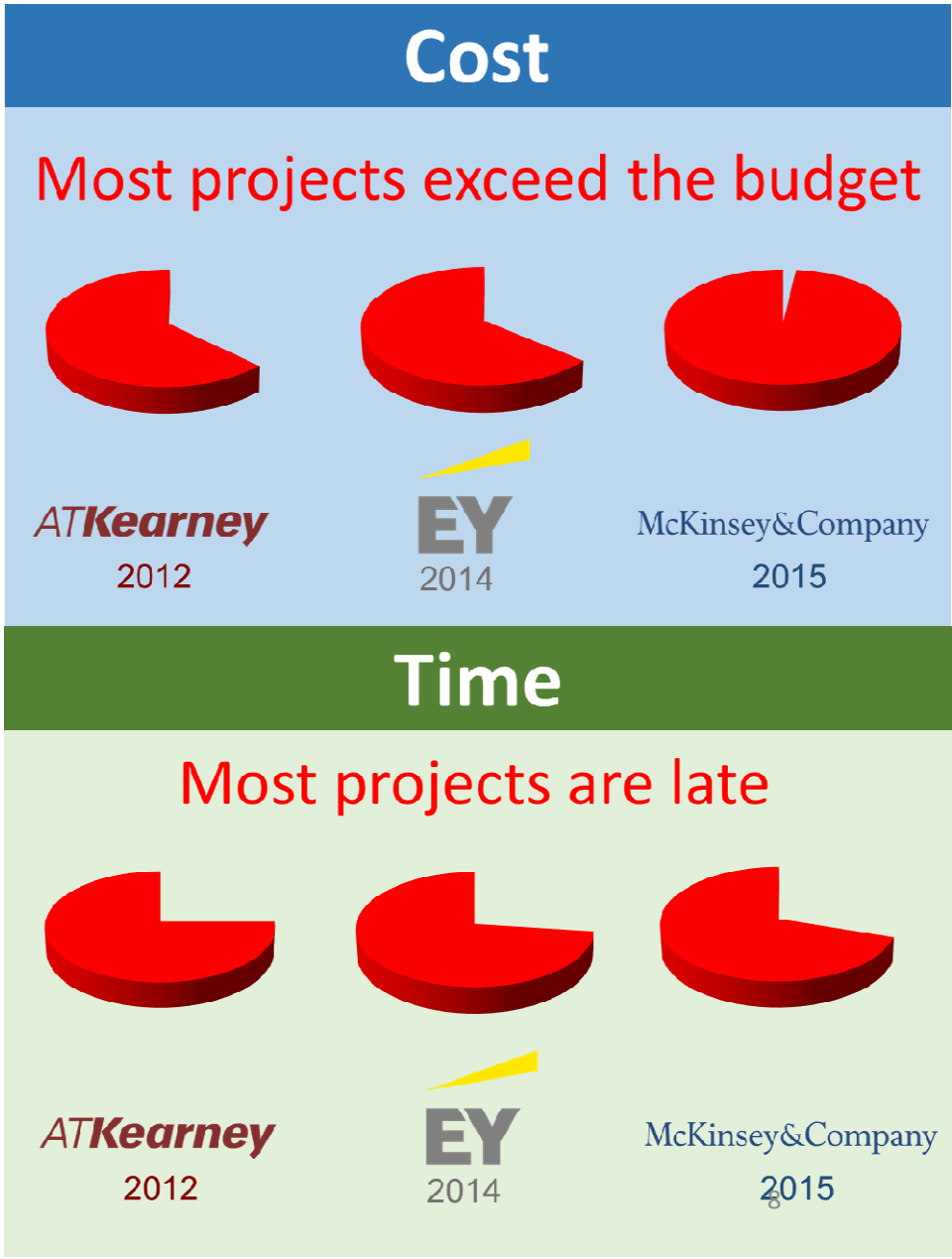


NOBEL PRIZE
IN MEDICINE

"EVERYONE was against me, but I knew I was right."

~ Inducted: 1998 ~

What is wrong with capex projects today?



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What is wrong with capex projects today?

Commercials take so much time

Disputes and claims

Fixed prices for uncertain s

Tension between supply members

Poor plans & no-one follows the

Murphy

No, or little, team spirit

Everyone for themselves

Issues become BIG
before they are noticed

Shortage of skilled resources

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Is it the people?

…or the methods we use

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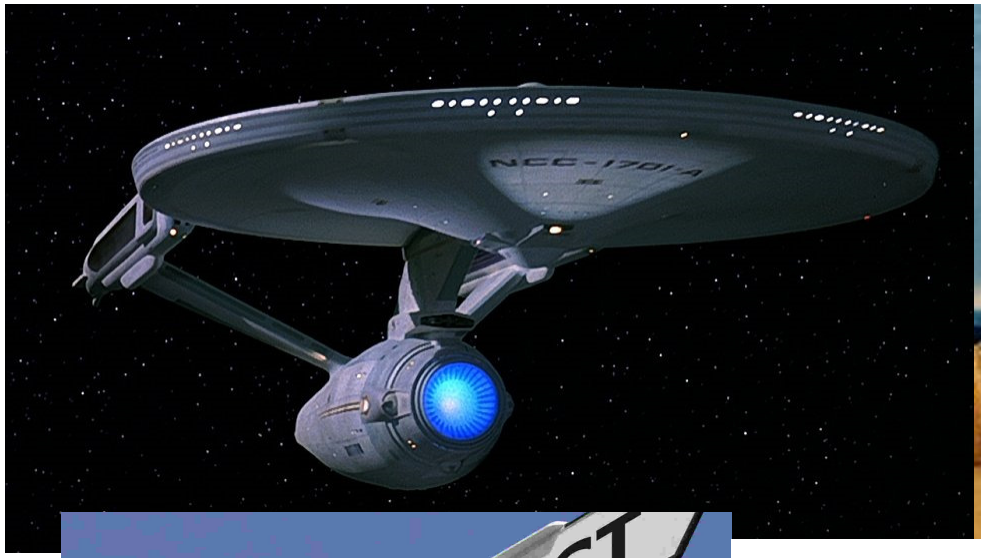
HikingArtist.com



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Known & Defined methodology, but we are **still** getting….

Inconsistent delivery dates
Inconsistent budget performance
Better & Faster means more expense
Expensive Control

At the heart of the problems…

- How we contract
- How we plan
- How we manage execution

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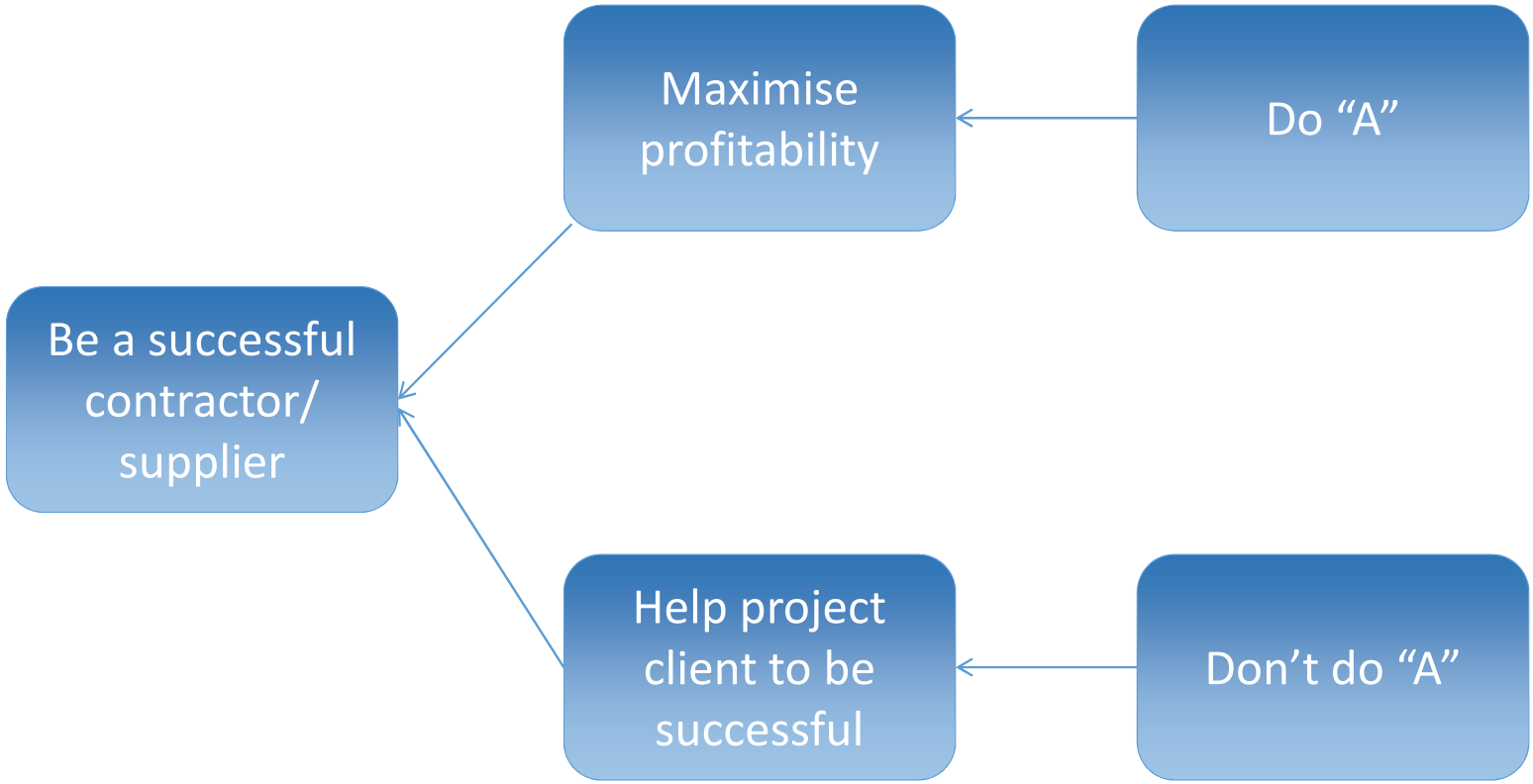
The Project Managers Dilemma ?



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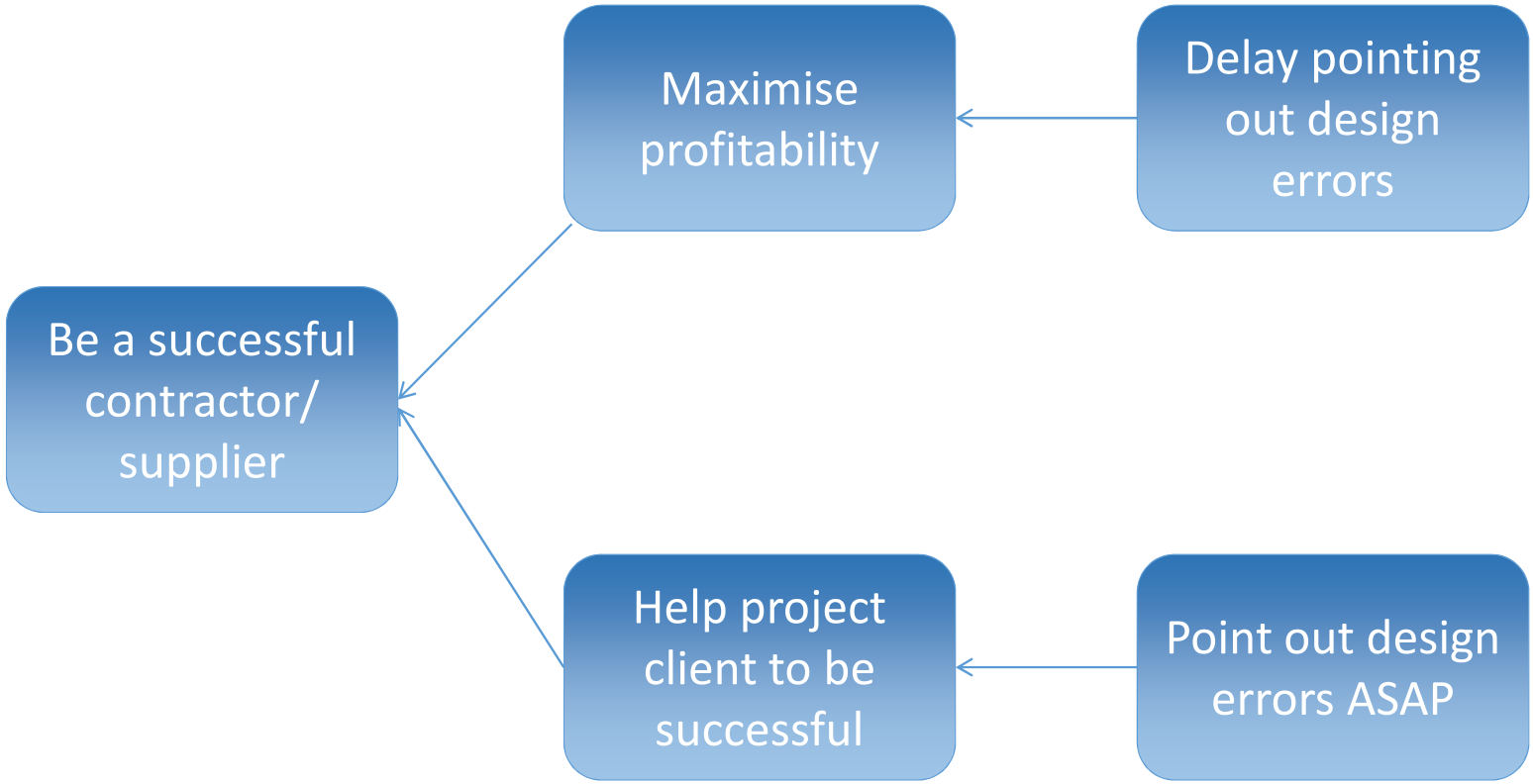
The Contractors Dilemma for example….



An project truism

An project truism

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And to overcome this

- Contract to form a true TEAM
- Exploit collaboration
- Plan & Manage Execution

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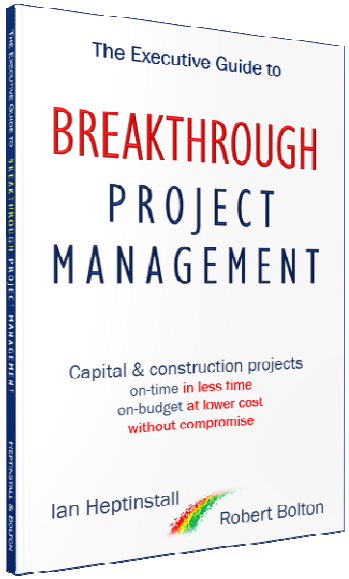


1

How we plan

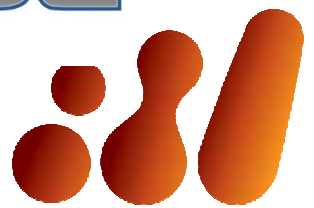
How we manage execution

- Fixed prices & deadlines
- The Plan
- Monthly
- Cost
- Start ASAP

- Ranges & best efforts
- Execution & Control
- Daily / Weekly
- Focus & Flow
- Start ALAP

But that sounds crazy!

Surely things will spiral out of control?...



bhpbilliton

MLIT

Ministry of Land, Infrastructure, Transport and Tourism

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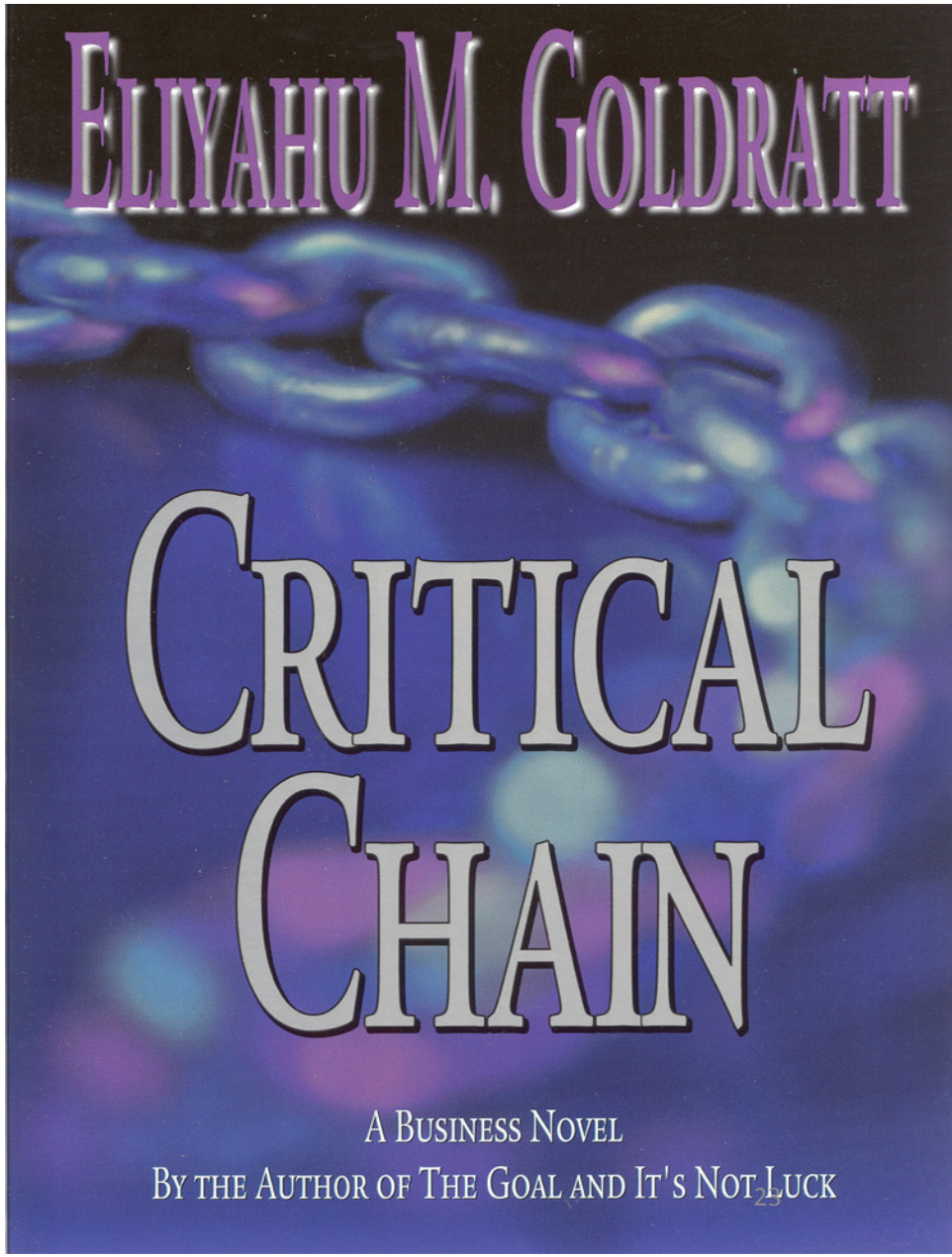
- 35% faster than before

  25% increase in project throughput

  90%+ due date performance

CCPM
Critical Chain Project Management



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CCPM
Critical Chain Project Management

- Codifies much of what the best PM's do 'intuitively'
- Systemic
- Many differences in focus from Critical Path
- BUFFERS

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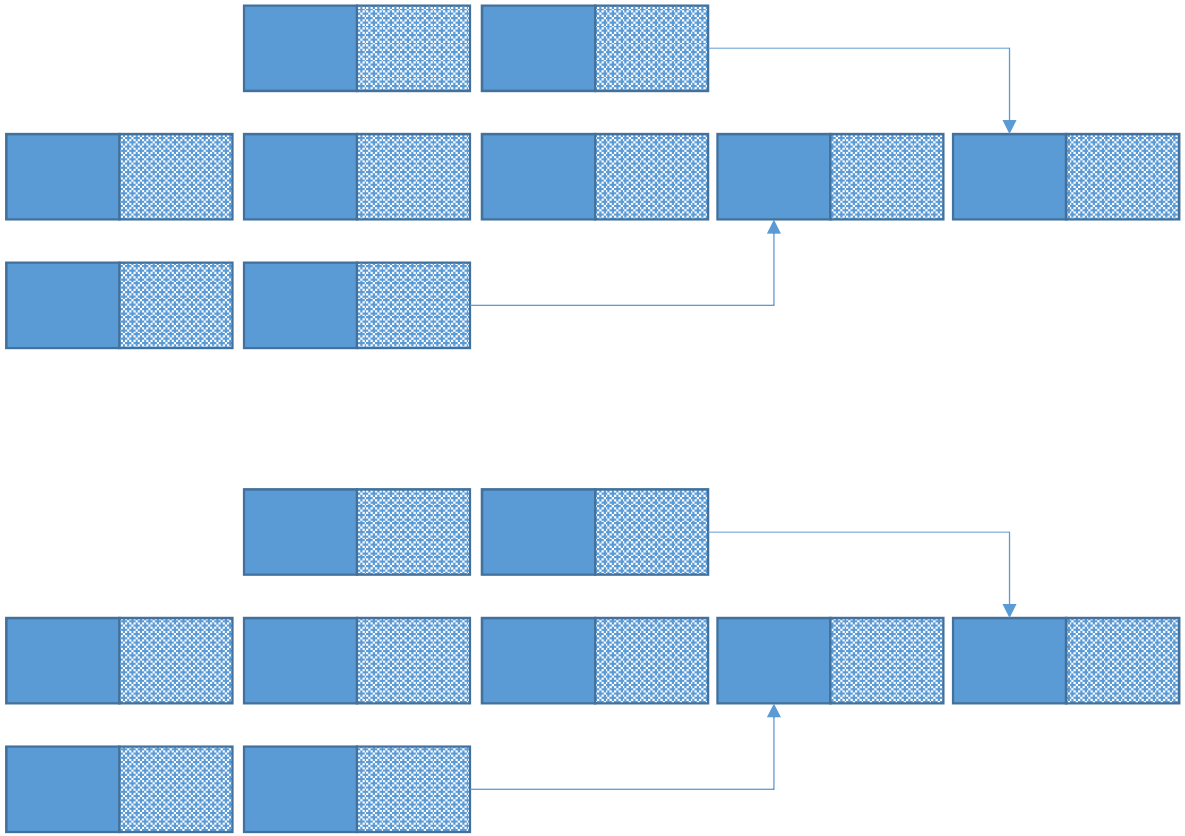
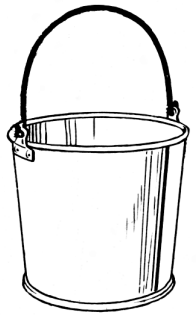
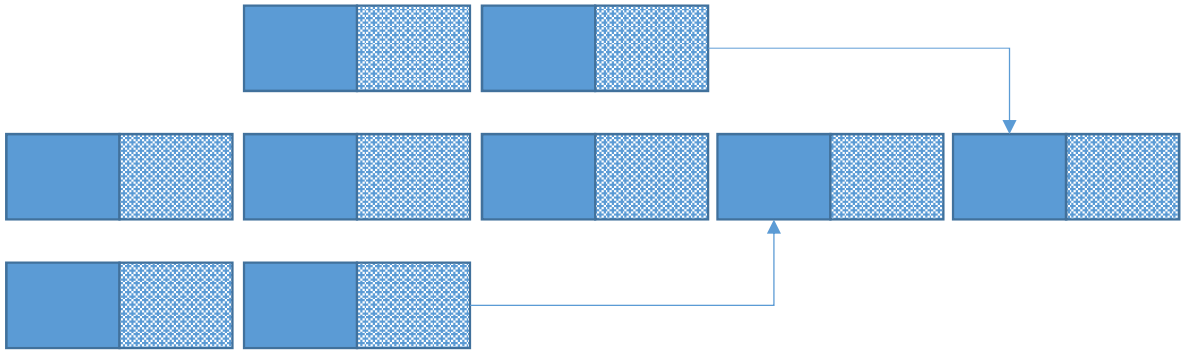
BUFFERS: Shared Safety

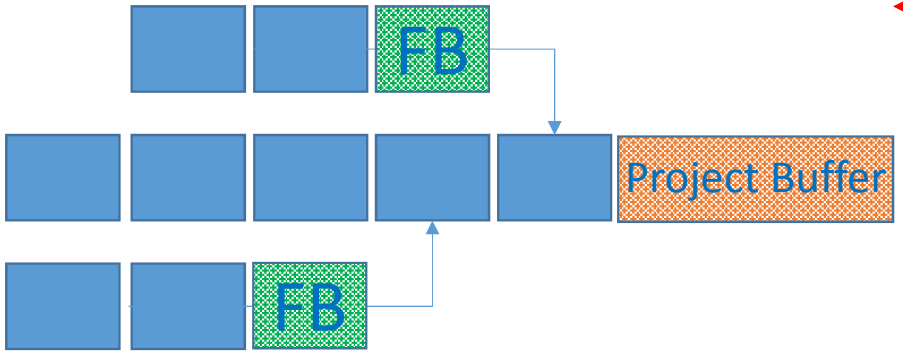


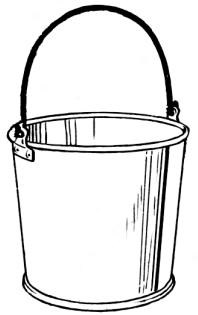


BUFFERS: Shared Safety

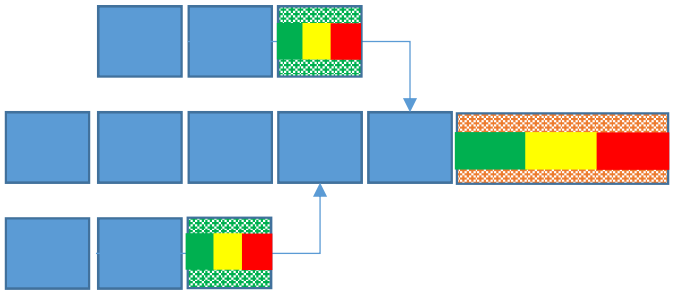


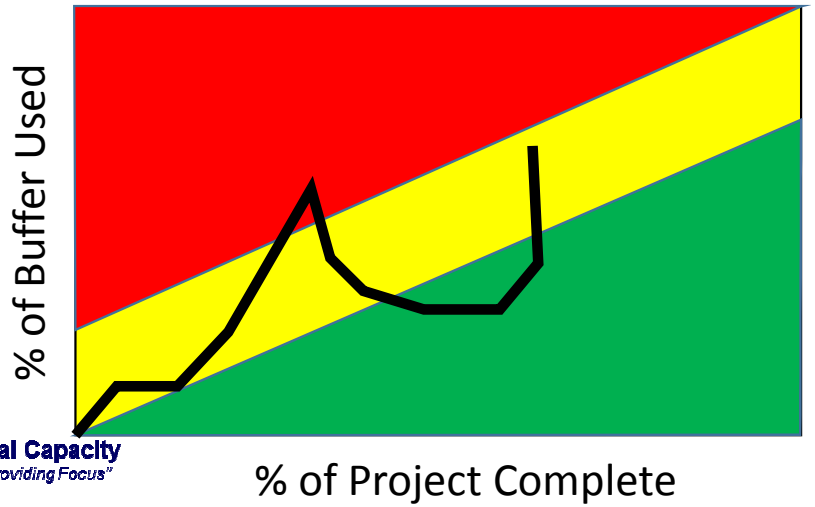
Typically 25% shorter

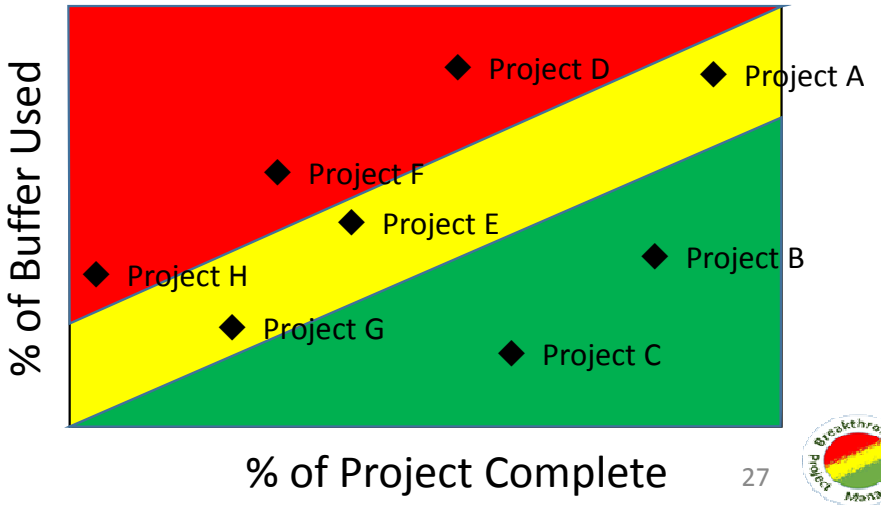




BUFFERS: Management Focus







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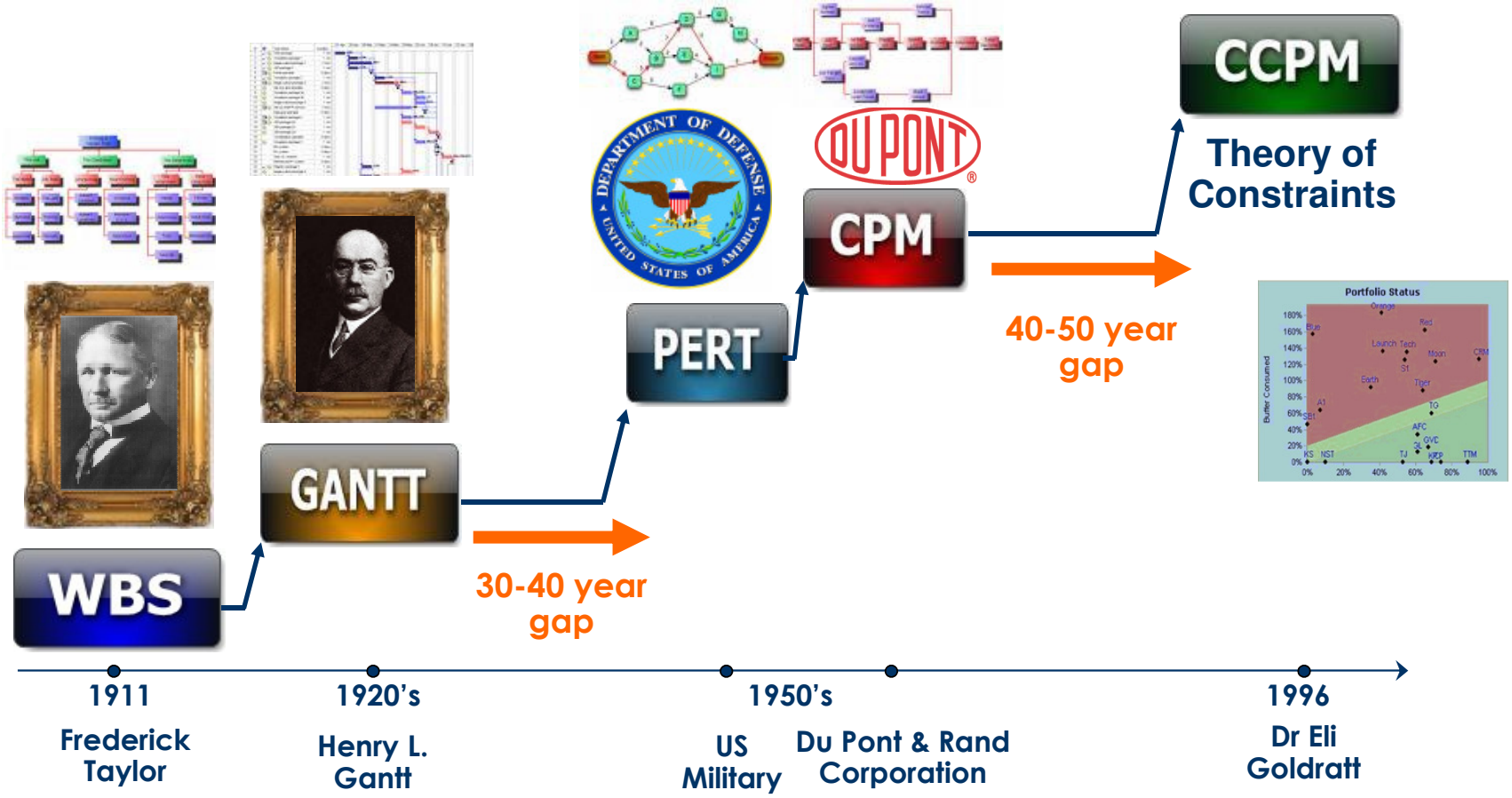
History of project scheduling



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CCPM works

The main obstacles to using CCPM

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The most common approaches to selecting and contracting with the project supply team do NOT encourage teamwork

Win – Lose

Blame & Responsibility

Fixed-prices & risk-offloading

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And CCPM requires a collaborative team

Shared safety/buffer

Relay-runner

Focus on the project

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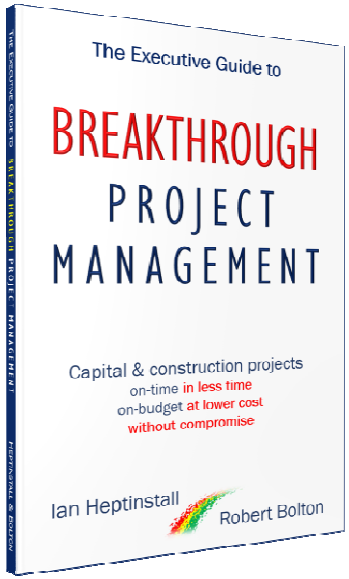
Do your procurement policies handcuff your supply chain?



2

How we select

How we contract

- Fixed prices
- Independent Suppliers
- Push risk down WBS
- Every one for themselves, separate measures

- Performance-related fee
- Aligned suppliers
- Manage risk across project
- Single team, same measures

Fixed Prices

Add more time to the project schedule

Usually increases the project cost

Discourage collaboration amongst the project team, resulting in a poorer design and a worse plan

Prevent the use of CCPM

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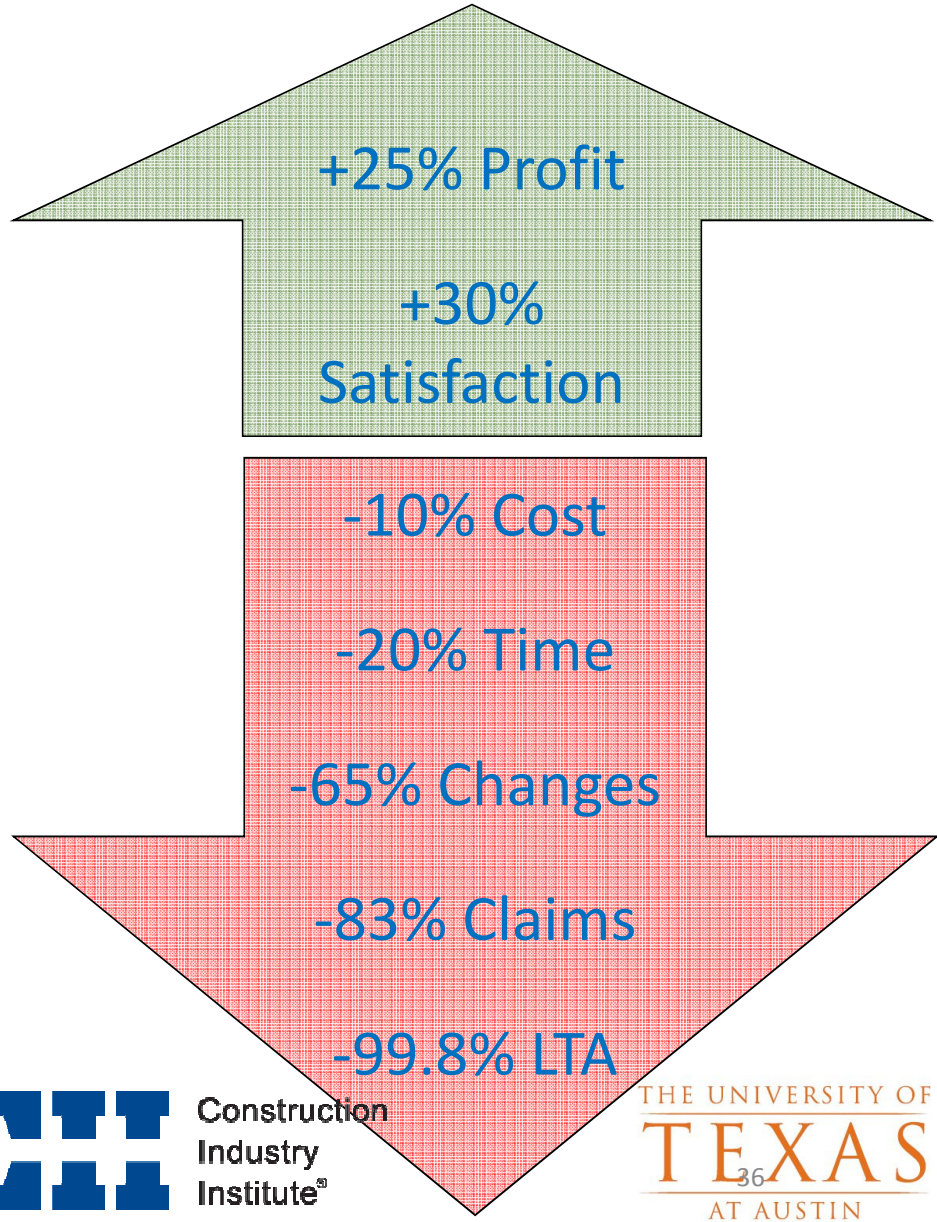
Collaborative project teams deliver better results



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Construction Industry Institute

THE UNIVERSITY OF TEXAS AT AUSTIN

Our recommended form of contractual collaboration:

Project Alliances

An ideal partner for CCPM

Establishes a collaborative project team – no barriers to working together

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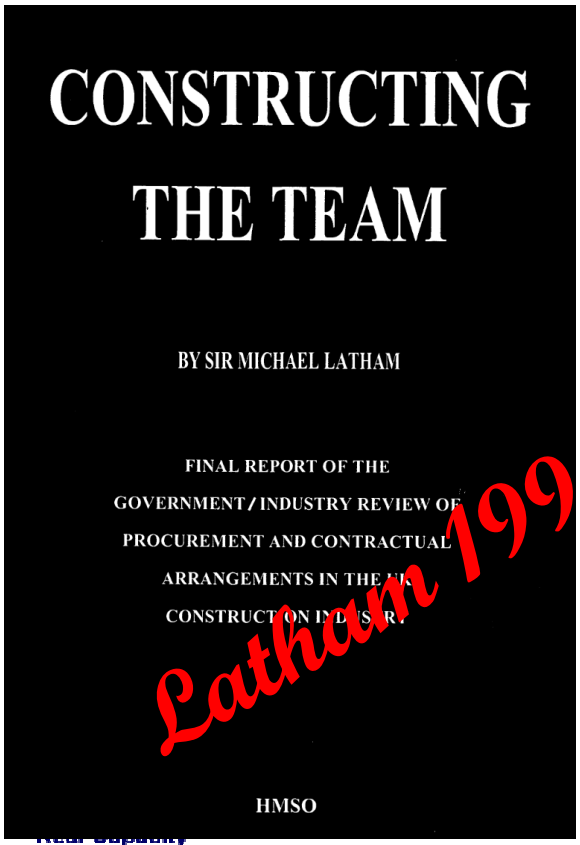
Project Team Collaboration - A Holy Grail



Latham 1994

Egan 1998

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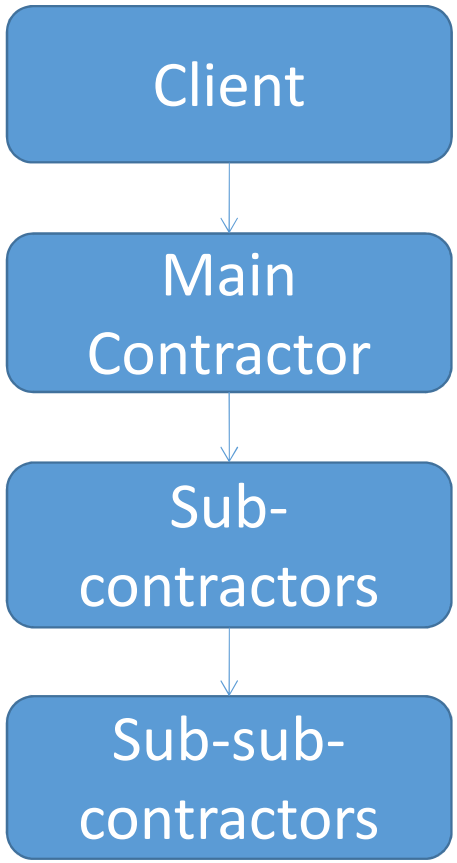
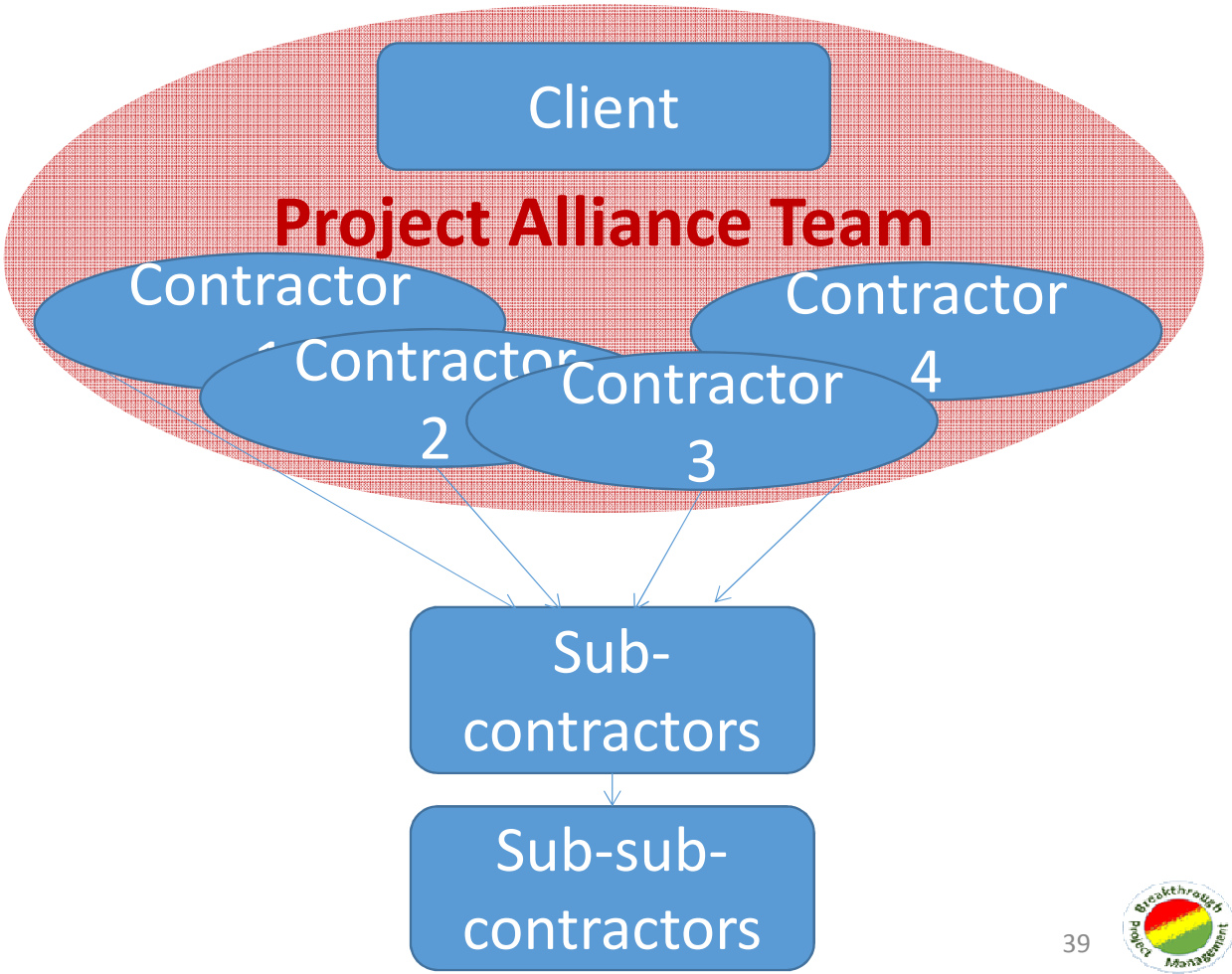
Traditional Contracting



A Project Alliance



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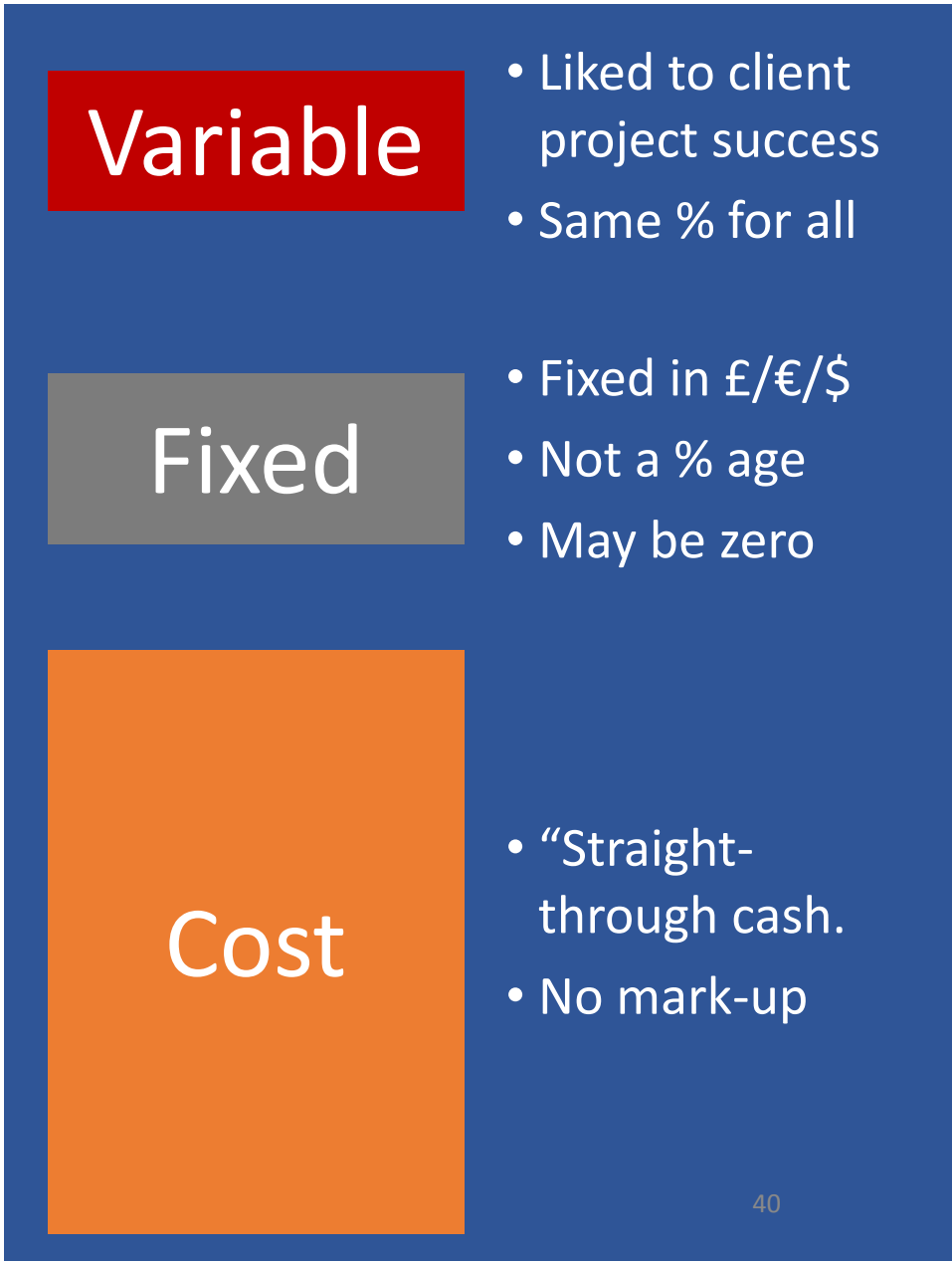
Payment under Project Alliance

CFV

Cost-Fixed-Variable



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Characteristics of Project Alliances

- Victoria Treasury guidelines considered worlds best practice.

An integrated team, competence-based selection

Collective sharing of risks and opportunities

“Fault” and “blame” irrelevant in the contract

Fully reimbursed variable costs, and margin aligned to the overall project success

Unanimous, principle-based, decision making

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I'm glad the hole isn't in our end!

Success in Project Alliance - Infrastructure

Department of Treasury and Finance, Victoria

In Pursuit of Additional Value

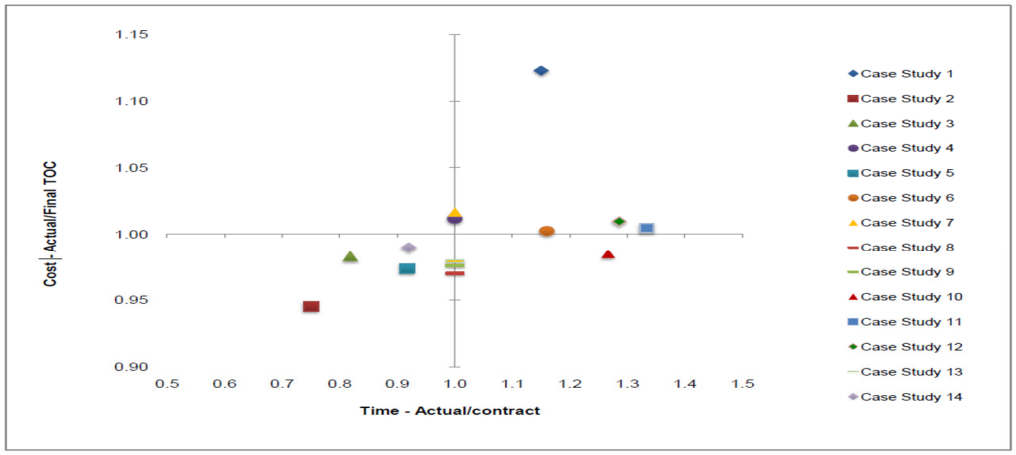
A benchmarking study into alliancing in the Australian Public Sector

A Research Study for the Inter-Jurisdictional Alliancing Steering Committee into how value for money can be enhanced when using the alliance delivery method for governments' major physical infrastructure projects.

Released in 2009

> *"The total value of alliance projects in the road, rail and water sectors in New South Wales, Victoria, Queensland and Western Australia, over the period 2004 to 2009 was $32 billion."*

Page 4



A benchmarking study into alliancing in the Australian Public Sector
Appendix D – Summary Data

Key finding 11: Project delivery – No disputes

There were no indications of any disputes between the Owner and the NOPs that needed to be resolved outside the alliance.

Page 38

Collaborative Contracts can still be competitively sourced

Traditional

- Late-as-possible selection
- Detailed bids based on scheme (Design-Bid-Build)
- Select lowest/fastest bid
- A chain selected one at a time
- Conflicting commercials

Collaboration

- Early-as-possible selection
- Outline bids based on capability (Bid-Design-Build)
- Select best available team
- A team selected together
- Aligned commercials

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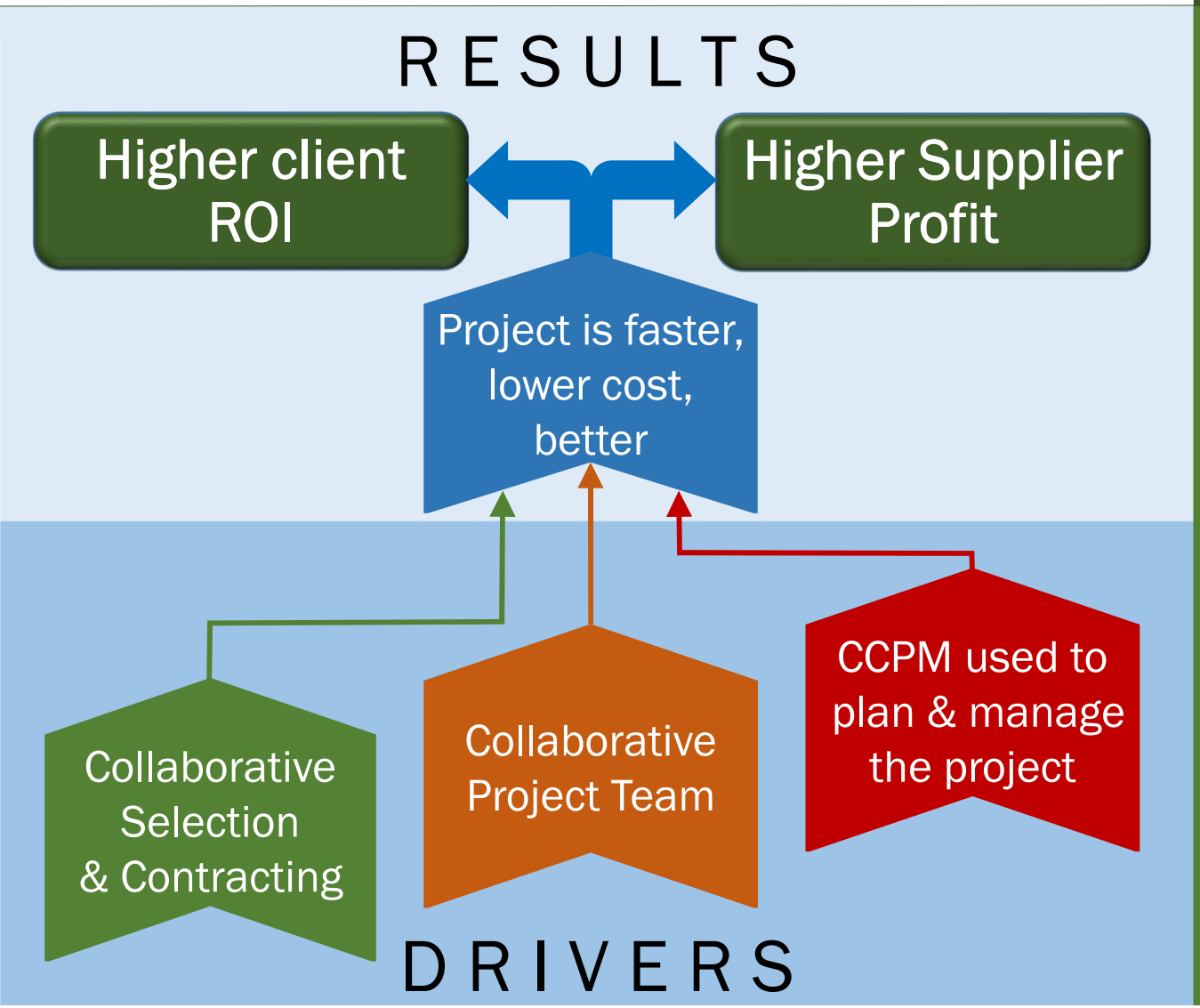
BREAKTHROUGH PROJECT MANAGEMENT

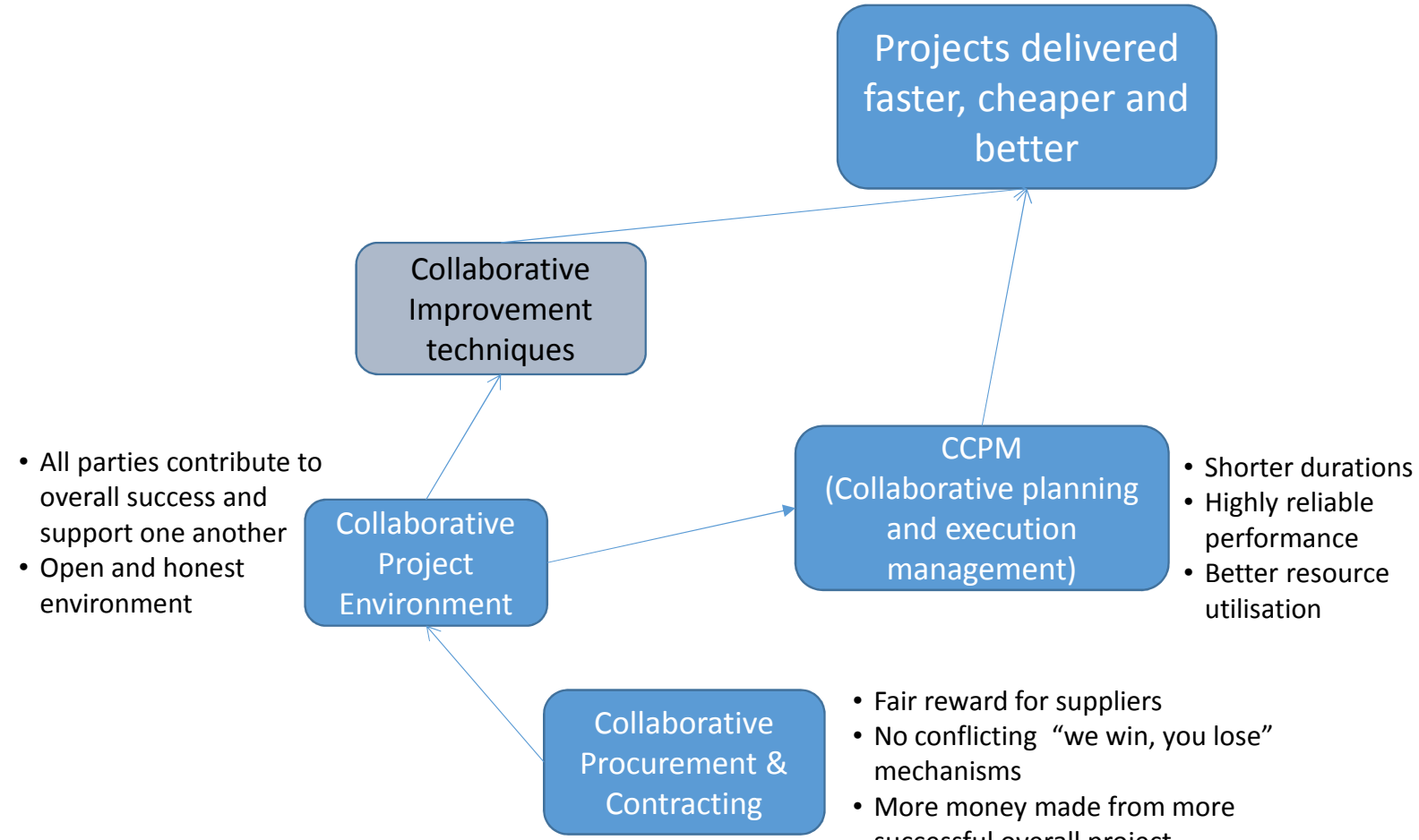
On time in less time
On budget at lower cost
No compromise on scope or quality



BELIEFS

- Projects are inherently uncertain, and cost and time uncertainty should be managed at the project-level, not by individual suppliers/contractors
- A collaborative project team produces better results
- Traditional, fixed price or reimbursable, contracting discourages team collaboration
- Key project suppliers should be rewarded in proportion to the overall project success - making more or less profit together, and
- Blame and fault are irrelevant. "One for all, all for one"

Breakthrough Project Management in Outline



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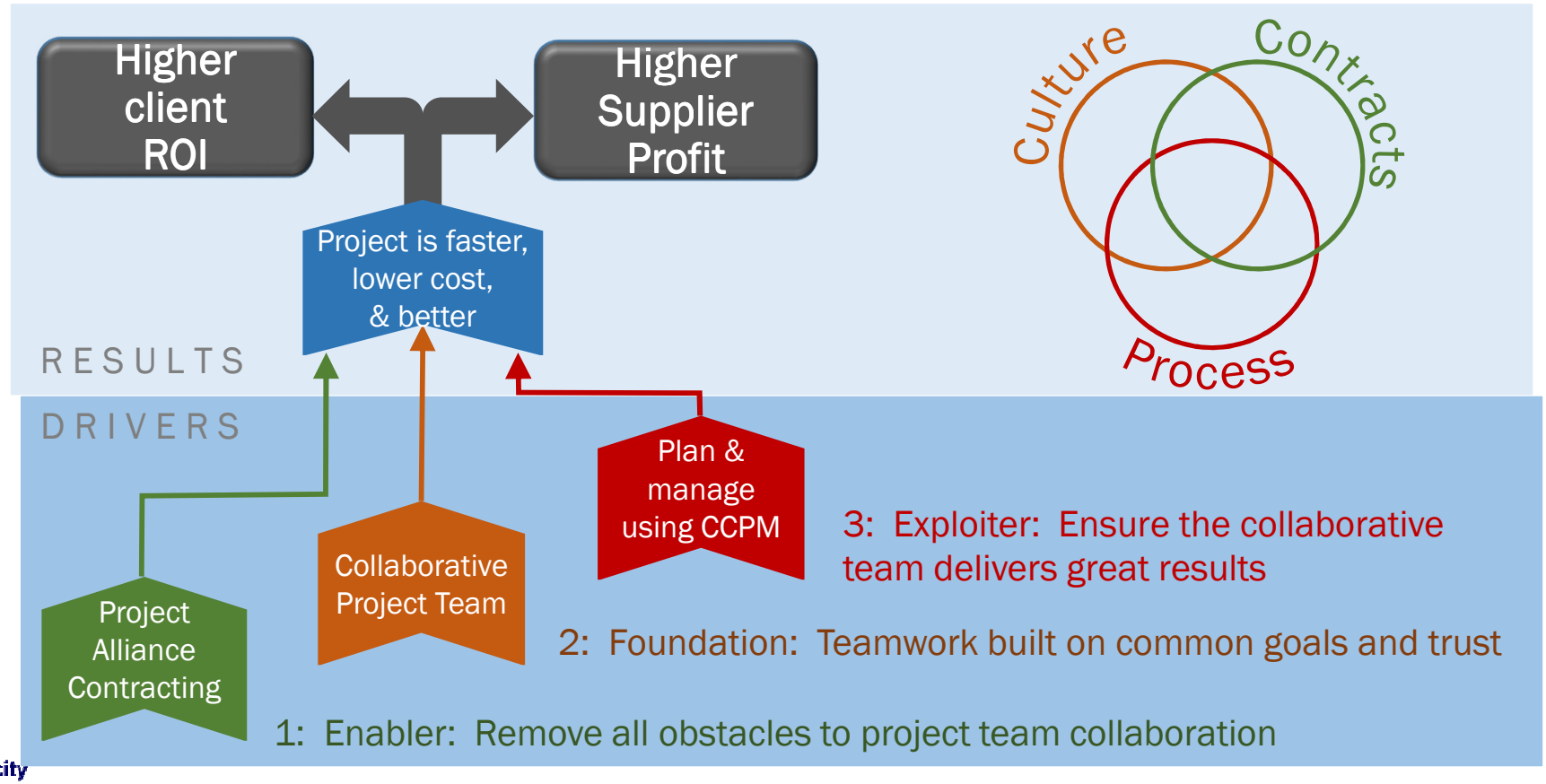
Summary



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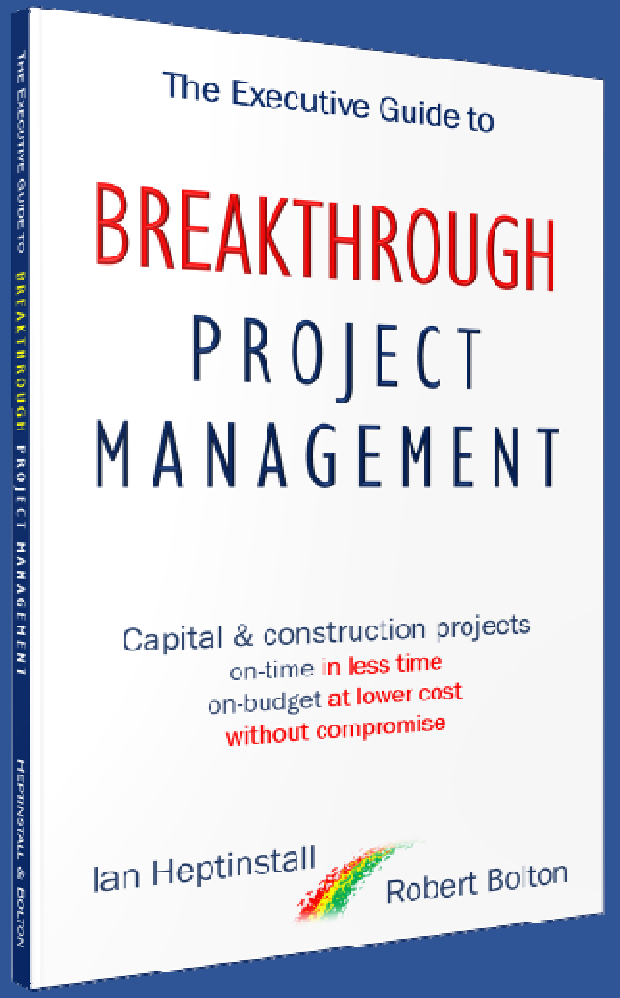
Thank you for your attention



www.BreakthroughProjectManagement.com

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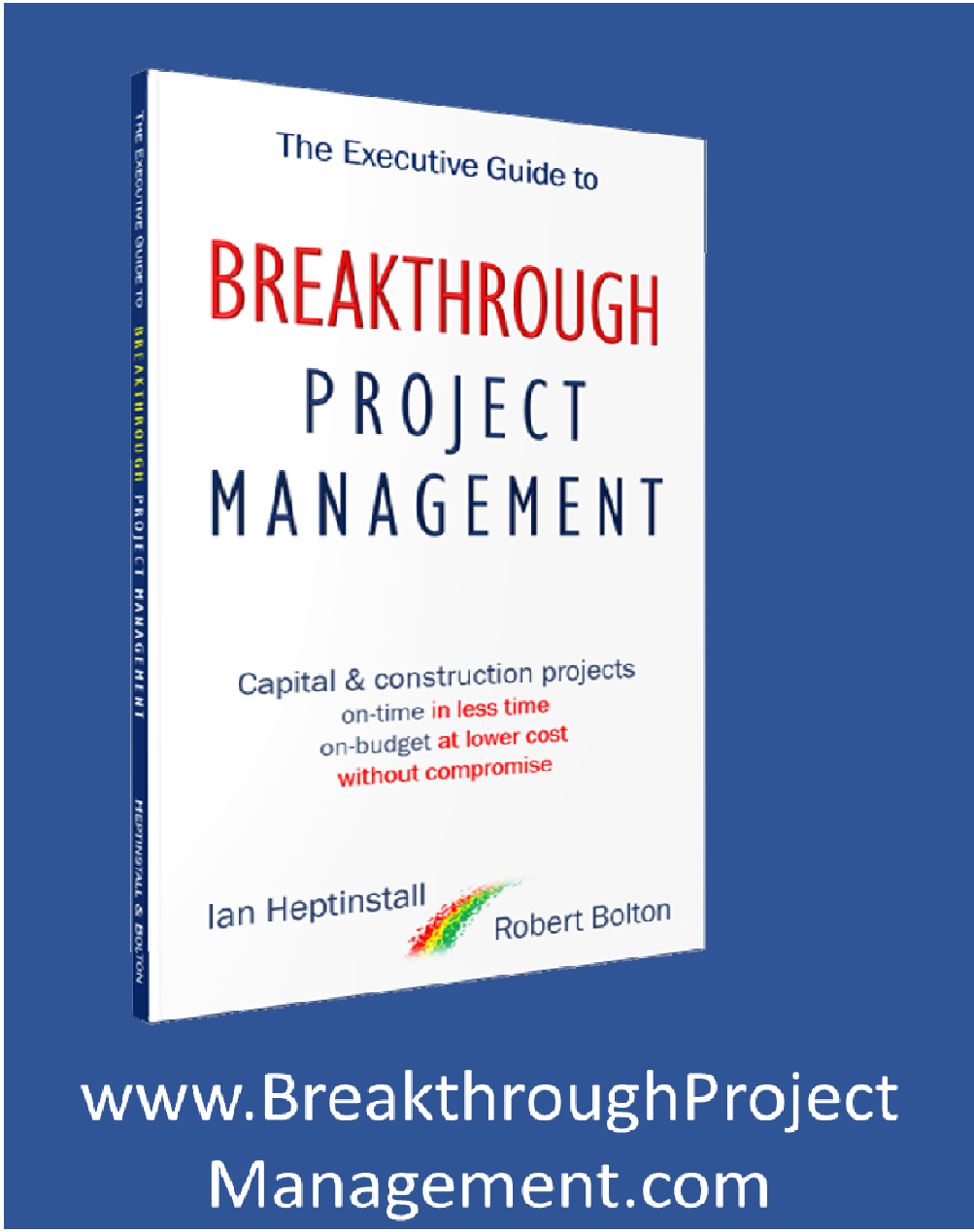
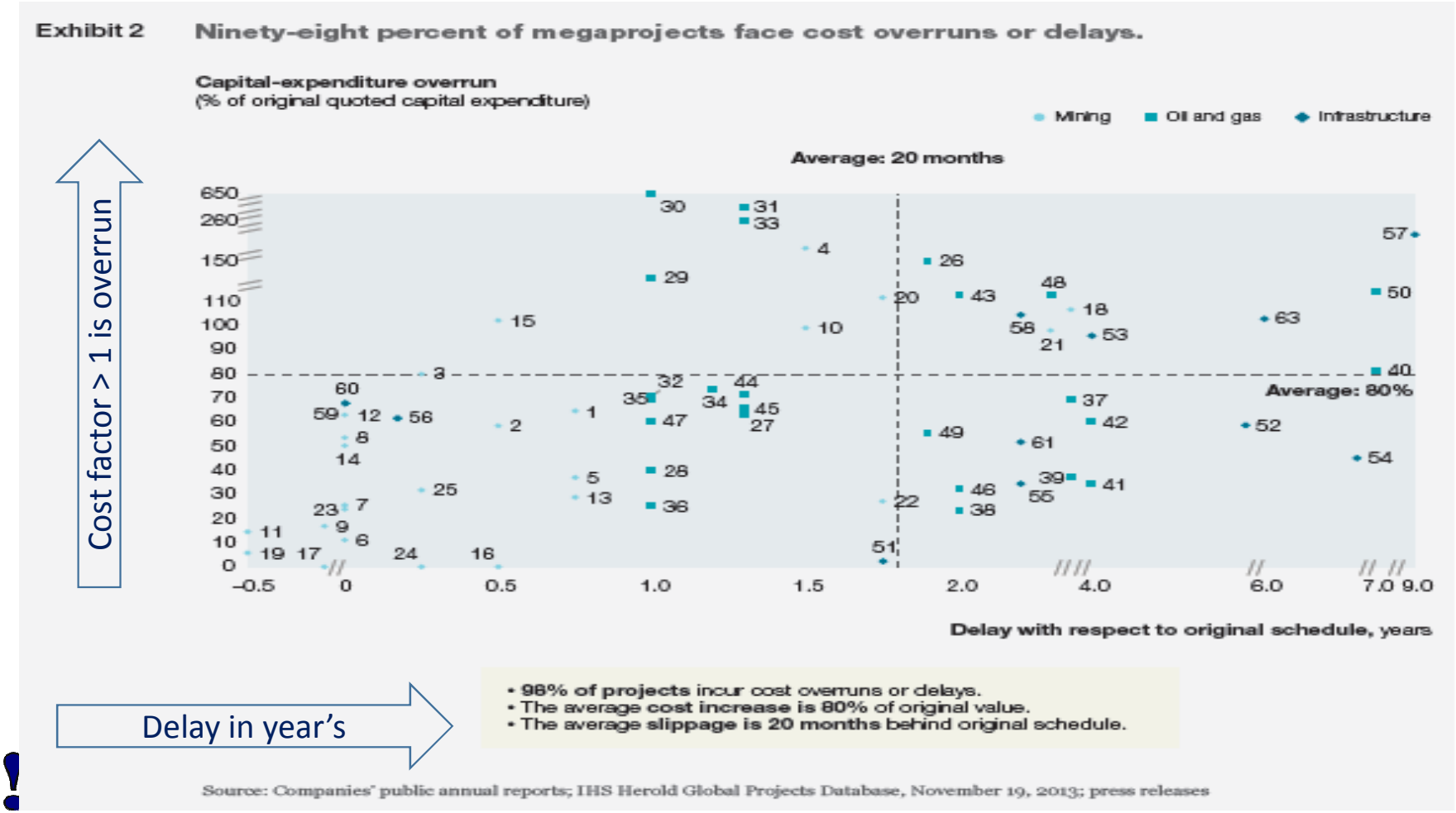


Case Studies

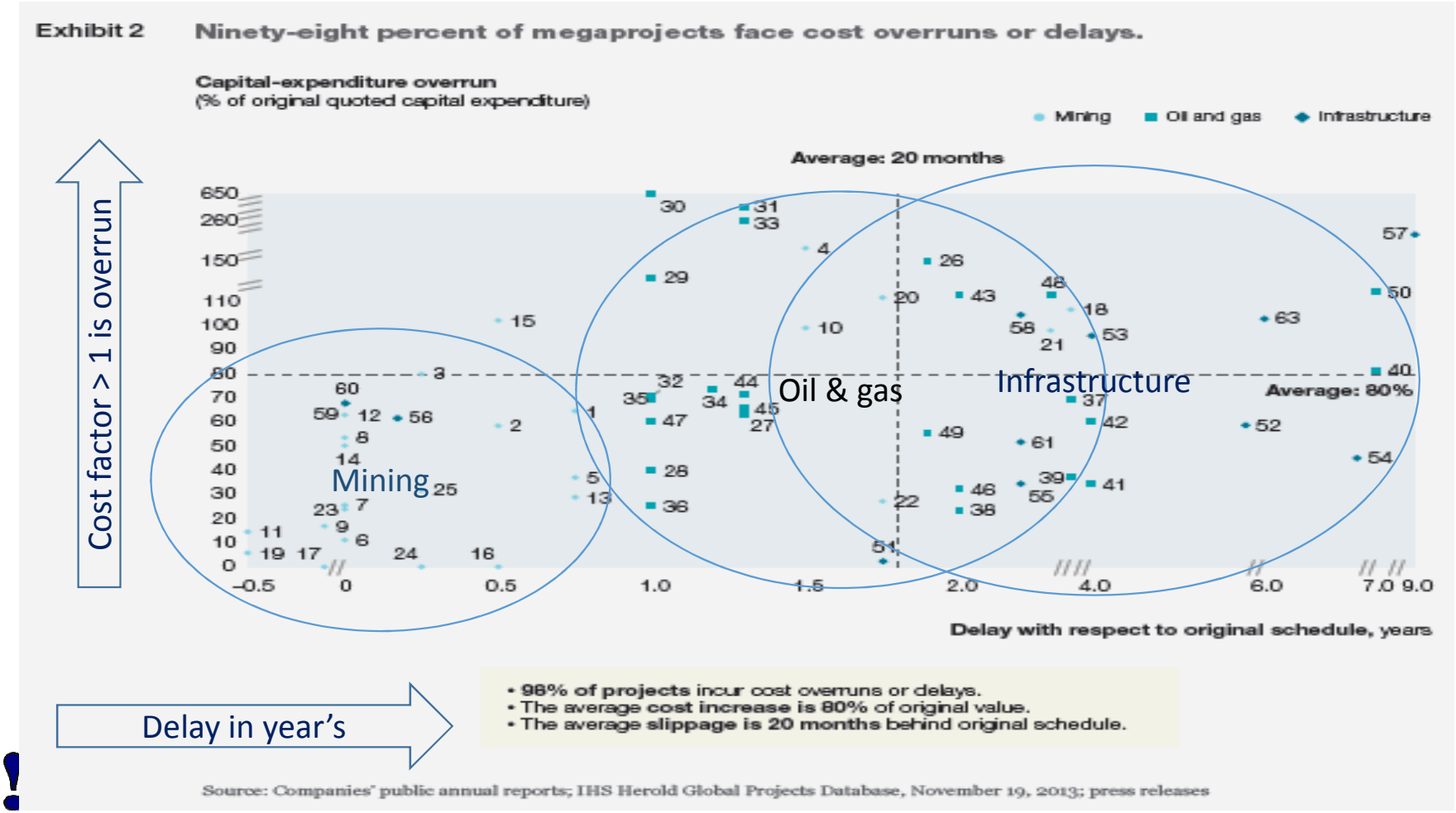
98% of mega (complex) projects incur cost overruns or delays



Source:
McKinsey
"The construction Productivity Imperative"

June 2015

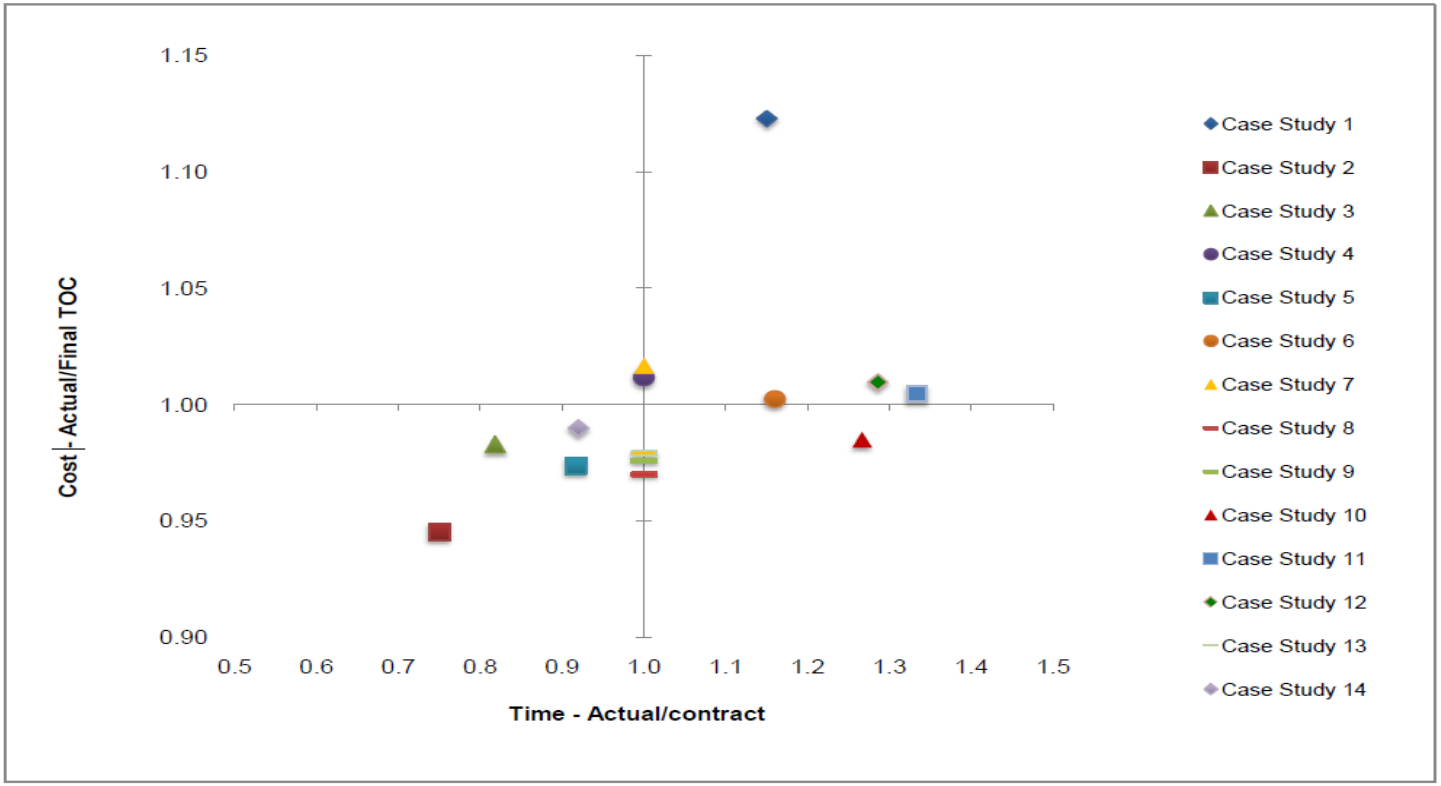
98% of mega projects (complex) incur cost overruns or delays - by sector



Source:
McKinsey
"The construction Productivity Imperative"

June 2015

Project Alliancing "Pursuit of Excellence – 2009



Source: In Pursuit of

A benchmarking study into alliancing in the Australian Public Sector
Appendix D – Summary Data

CCPM used around the world…

Source: Business Flow

©Real Capacity Pte Ltd 2010

Case Study 1 - M7 Motorway (Sydney Orbital)

circa 2003 - 2005

M7 Motorway

- Problem – viewpoint of Tony Spink, Project Director
  - 15 PMs were updating project system (P6). The lead time for this task was 2 weeks / month.
  - Too much data and not much meaningful information.
- Solution
  - Report progress for each of the 15 packages in a production format. Progress per major work items.
- Benefits
  - It was found that there were not enough curbing machines to meet schedule. 2 more were purchased from Europe
  - Project execution became more visible and under control.
- M7 opened in 2005

Source: One of 15 Project Managers (PM's)

Oil & Gas - Wheatstone

- Project turnaround – “Accelerate Wheatstone”
- Background FMC won $325 M in November 2011 – 65 pay items
  - Complex project out of control - Key executive “We do not know how late it is” - Aug 2013
- Team of 8 - 12 team members
  - Singapore, Malaysia, China, US, Norway

- FMC – silo’s, low PM skills, diverse cultures, measures not aligned

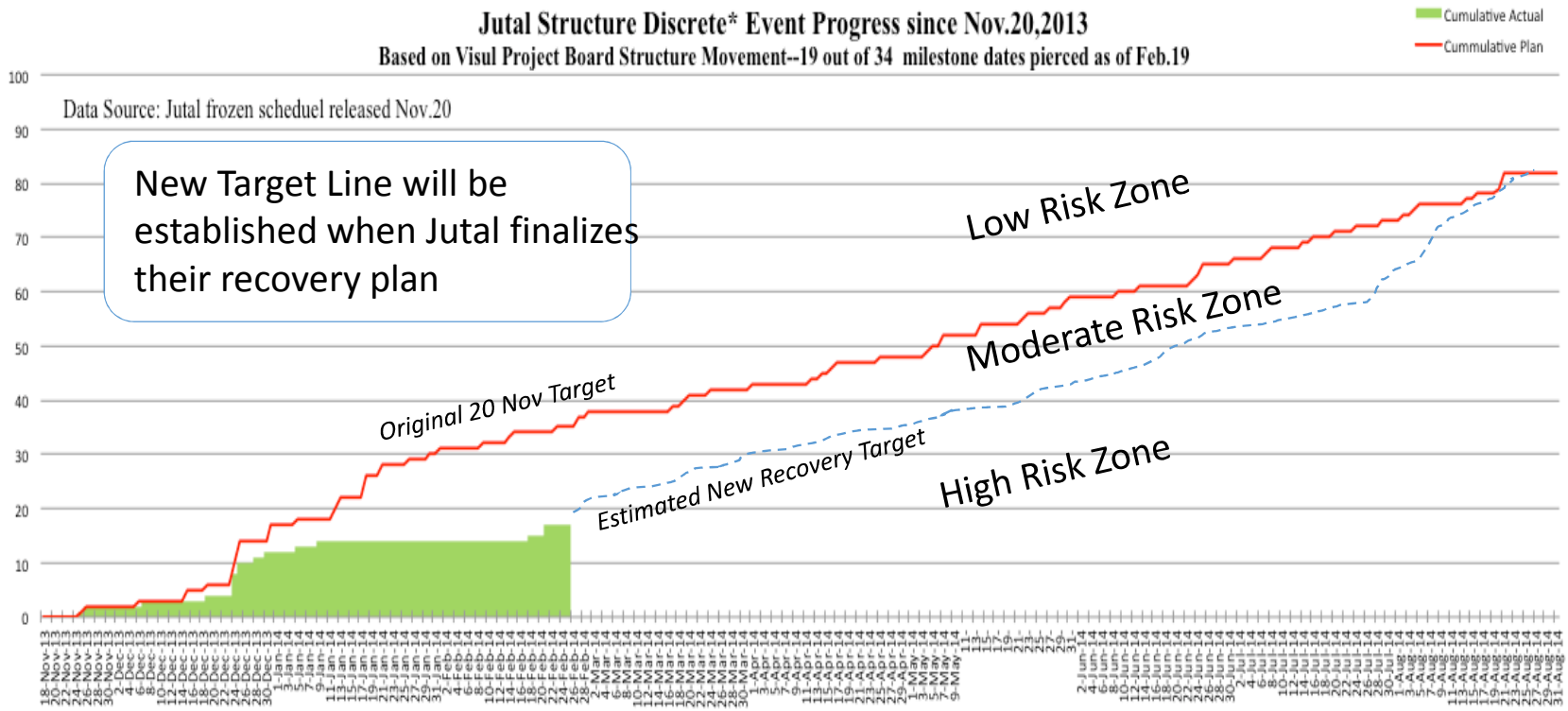
- Outcomes
  - P6 – 12,000 tasks – re-base lined
    - Vs 8,000 with –ve float
  - streamlined information flow
  - improved Stakeholder relations (CVX)
  - single priority point & portfolio boards
  - de-risking the manufacturing and delivery of
    - key high value components
  - developed scheduling & process for manifolds
  - buffer systems

Project Progress – Variance Brick Wall –
Based on latest Jutal recovery plan (Dated Mar.14)

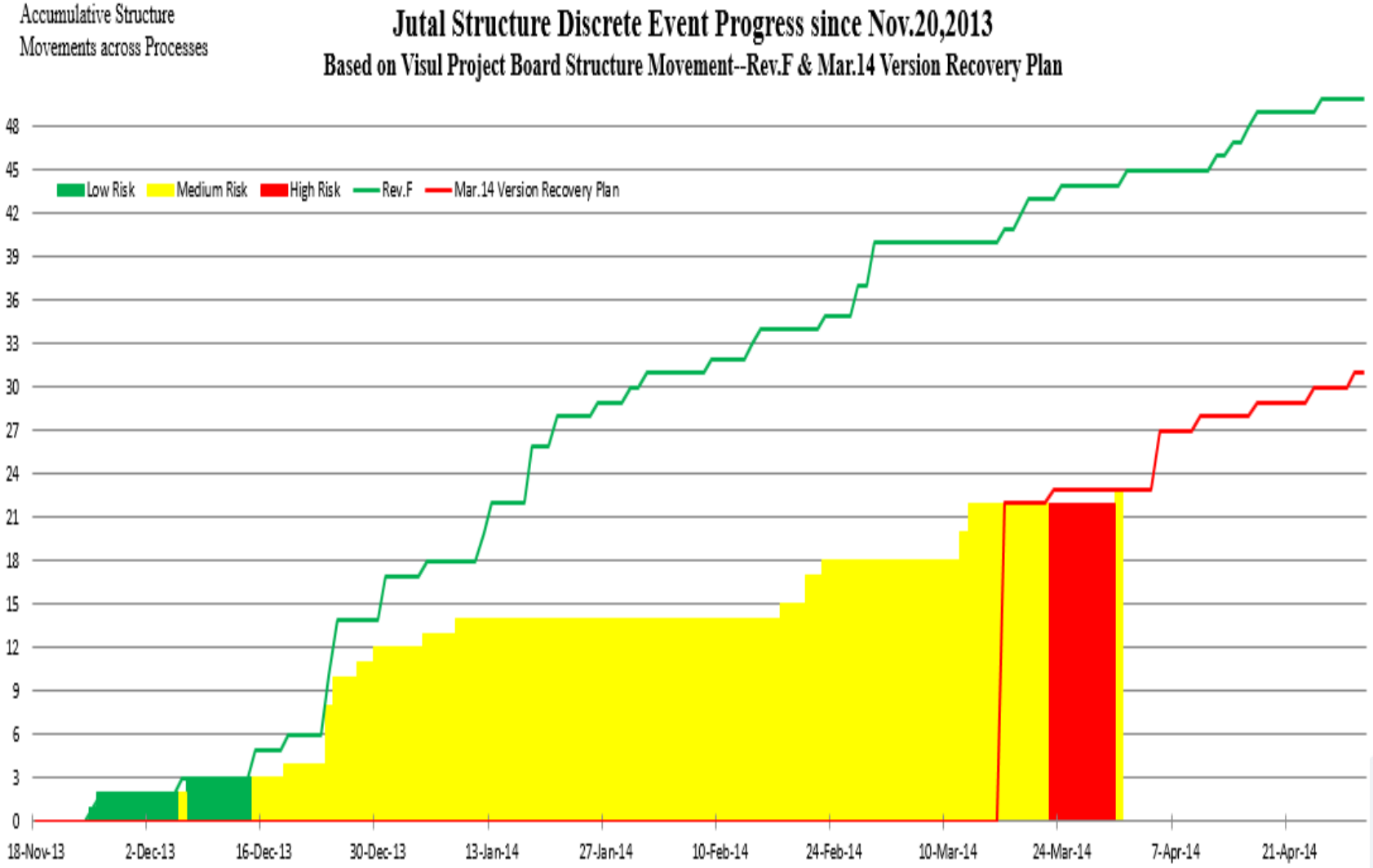
		Jutal Variance Brick Wall Based on latest recovery Plan dated Mar.14									
		Variance = Percent Actual Done less Percent Planned(based on Mar.14 recovery schedule)									
		Level 3 Data Supplied by Jutal Apr.1									
		Fab	Blast/Coat	Piping	Tubing	Top Asm	FAT	SIT	Load-Out	Immediate Challenges	Sceondary Challenges
DH IAG-1	Structure	Done	-1%	6%	7%			NA		2 Multibore Hubs, 9" gate valves	bolts, nuts, washers for 2" gate valves
	Mudmat	2%									
SH WST-1	Structure	Done	-9%	2%	-2%					2" SDSS Tee, 2" flange, 4" carbon steel Tee,	DOP drawings, bolts(M20X80, M16X60)
	Mudmat	1%									
SH WST-3	Structure	Done	-7%	-2%	-6%			NA		Multibore Hubs, 9" gate valves	bolts, nuts, washers for 2" gate valves
	Mudmat	1%									
MOL IAG-1	Lower Deck	Done	0%	-20%	-13%					Imperfect in KL 4-27, Tubing supports blasting/coating, hub supports blasting/coating	
	Upper Deck										
	Mudmat	3%									
EOL WST-1	Lower Deck	Done	11%	-1%	13%			NA		Finish Blast/Coat(top deck under 2nd coat touch up), tubing supports,hub supports	9" MGV
	Top Deck										
	Mudmat	30%									
EOL WST-3	Lower Deck	Done	11%	-1%	2%			NA		Finish Blast/Coat(top deck under 2nd coat touch up), tubing supports,hub supports	hub connector, 9" MGV
	Top Deck										
	Mudmat	1%									
Utility WST-2	Lower Deck	Done	8%	-1%	-3%			NA		Finish Blast/Coat(top deck under 2nd coat touch up), tubing supports,hub supports	9" MGV
	Top Deck										
	Mudmat	-9%									
Utility IAG-2	Lower Deck	Done	8%	-3%	0%			NA		Finish Blast/Coat(top deck under 2nd coat touch up), tubing supports,hub supports	hub connector, 9" MGV
	Top Deck										
	Mudmat	-8%									
PLR	PLR 24"-1	-10%	0%	5%				NA		Accellerate fabrication progress with more manpower from Jutal	Fil material
	PLR 24"-2	-7%	0%	-24%				NA			
	PLR 14"-1	1%	0%	14%				NA			
	PLR 14"-2	-13%	0%	-4%				NA			

0%	Green - Low Risk, Variance (V) >-2%
-15%	Yellow - Moderate Risk, V between -2% and -20%
-25%	Red - High Risk, V < -20%
Done	Process Complete

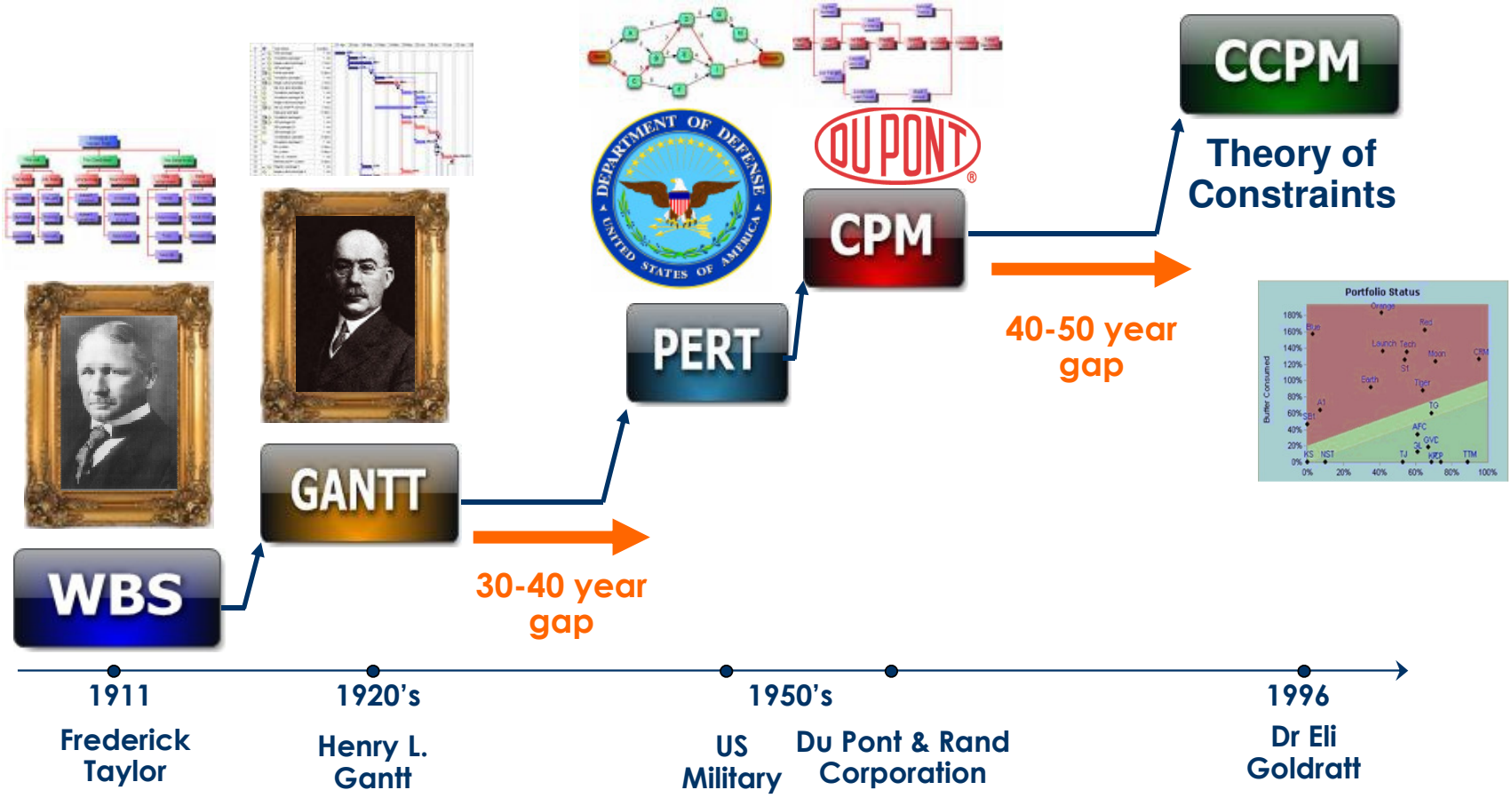
Project Health Metric – Structure Movement



Structure Movements are in yellow zone(medium risk) after SH WST-1 Mudmat movement into blasting chamber 1.



History of project scheduling



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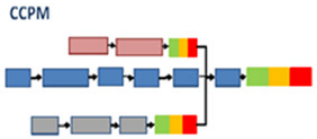
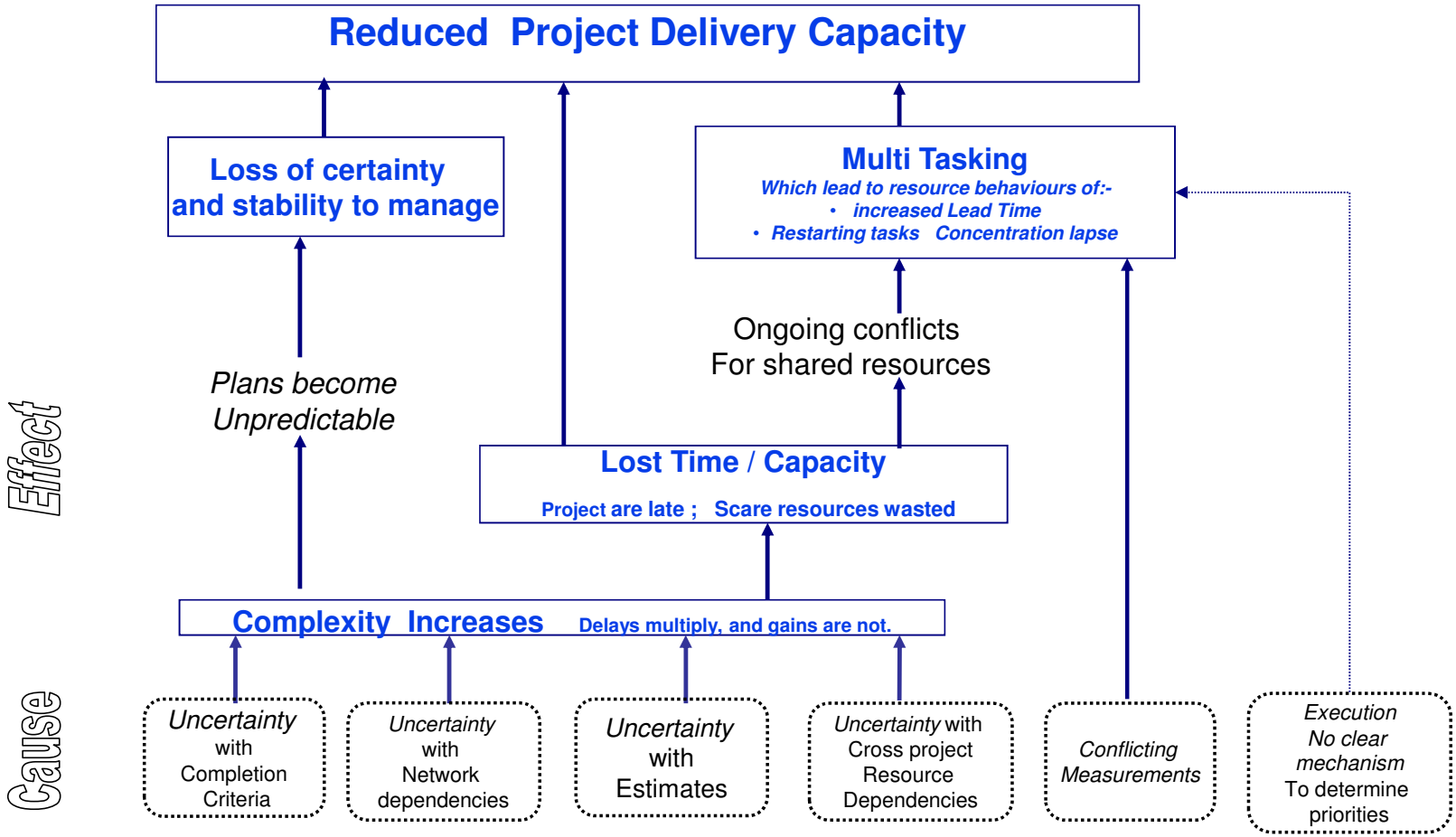


Problem Summary



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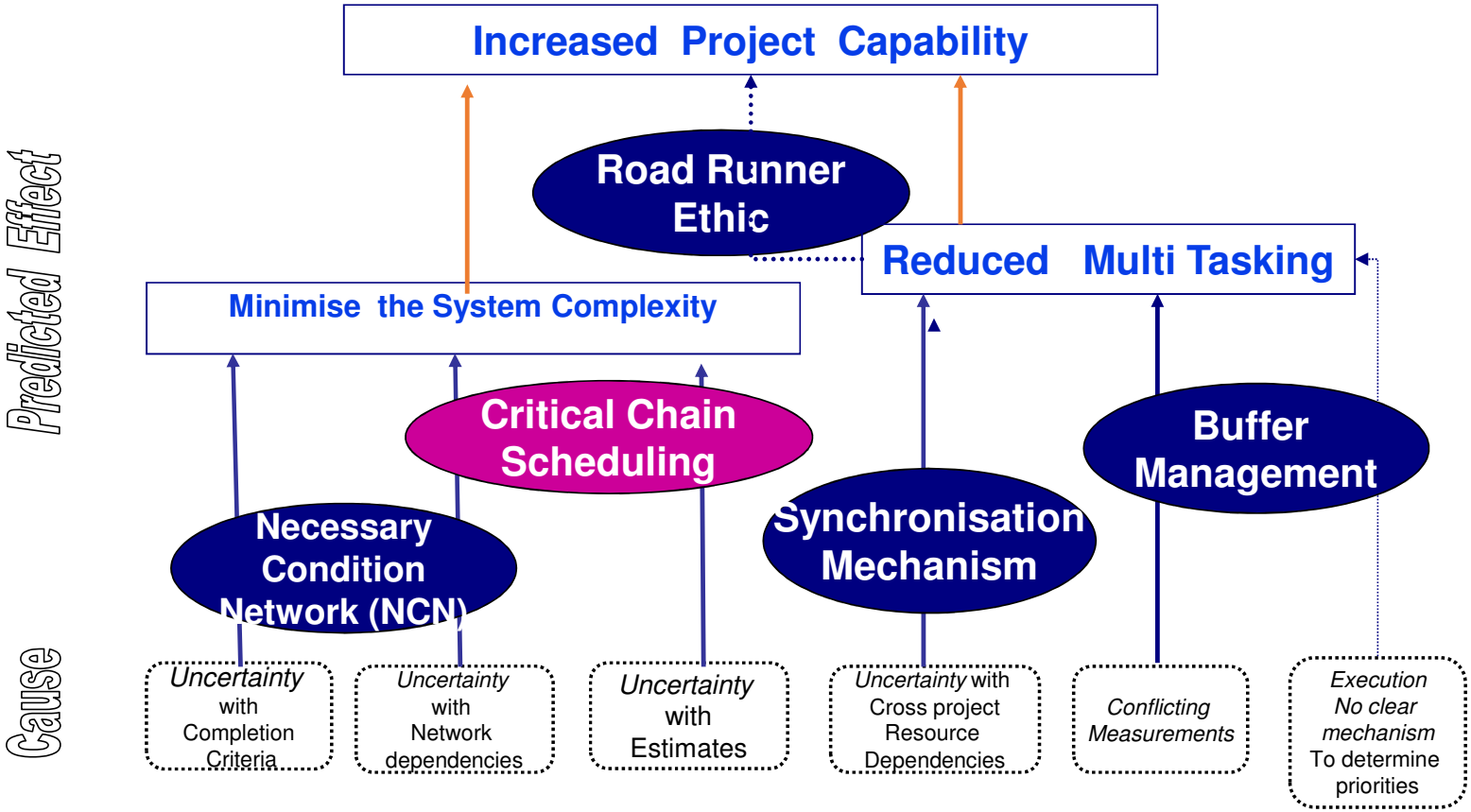
CCPM Solution



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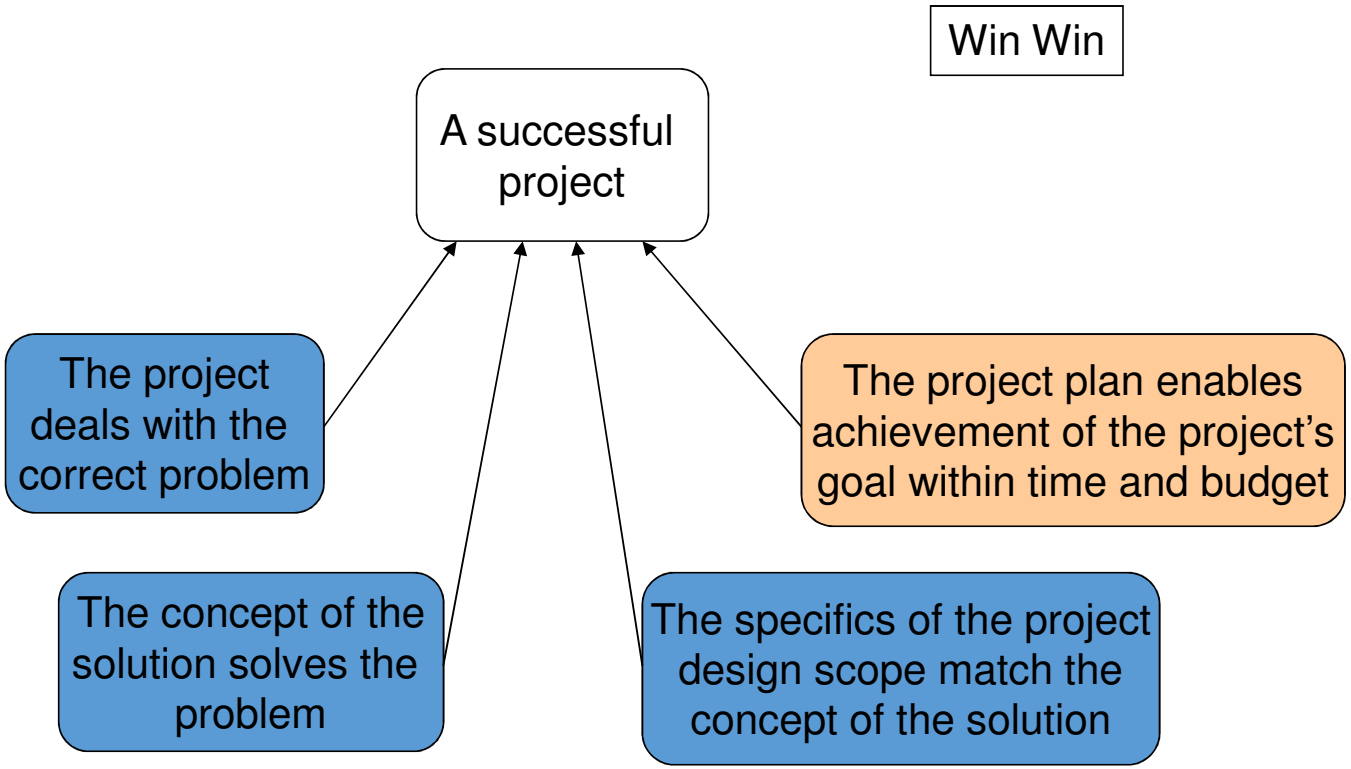
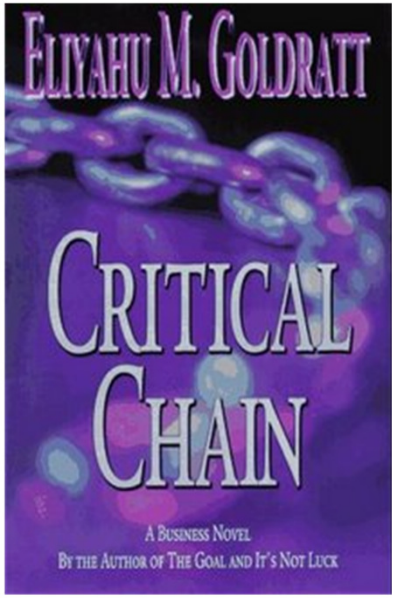
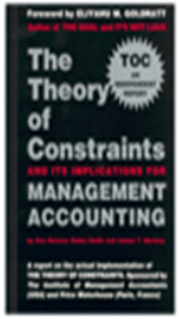
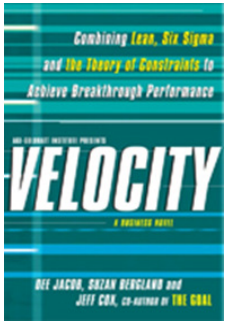
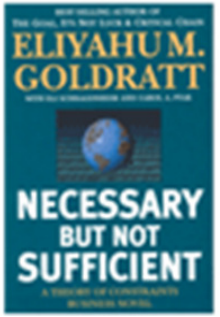
The necessary conditions for a successful project











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Breakthrough Project Management

Only 2 types of projects

- Olympic Stadiums

or

an Oil Well ?

- Fixed milestone or date

Value is released when operating

Benefits Summary

- Early-as-possible selection increases commitment – both client and supply chain
- Outline bids based on capability (ie BOO to align over long term)
- Commercials and aligned with risk and reward allocated.
- Quicker problem resolution and communication between parties

- 95% on time (vs. >85% not on time with traditional methods)
- 20% - 50% faster cycle times
- 10% - 20% higher throughput (more projects per business units)
- Better synchronization
- Less Bad Multi-tasking

And much less burn out of Project Managers and their team?