

Target Value Design and BIM: Delivering the targets of construction 2025

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Presentation structure

- What are the 2025 targets?
- What has been done till now ?
- Project Delivery System: LCI Perspective
- Introduction to TVD
- How is TVD Different?
- TVD Case Studies: US
- TVD savings & Government 2025 cost targets
- Way forward

Government Targets

Lower costs

33%

Reduction in the initial cost of construction and the whole life cost of built assets

Faster delivery

50%

Reduction in the overall time from inception to completion for new build refurbished assets.

Lower emissions

50%

Reduction in greenhouse gas emissions in the built environment

Improvement in exports

50%

Reduction in the trade gap between total exports and total imports for construction products and material.

Targets set out by the Construction 2025 report (HM Government 2013)

What means have been proposed to achieve the government targets?

- New Methods of Construction Procurement (NMCP)
 - Two Stage Open Book
 - Cost led procurement
 - Integrated Project Insurance

What is a Project Delivery System ?

Project Delivery System

- Organizational structure
- Communication flows
- Decision-making process
- Project governance



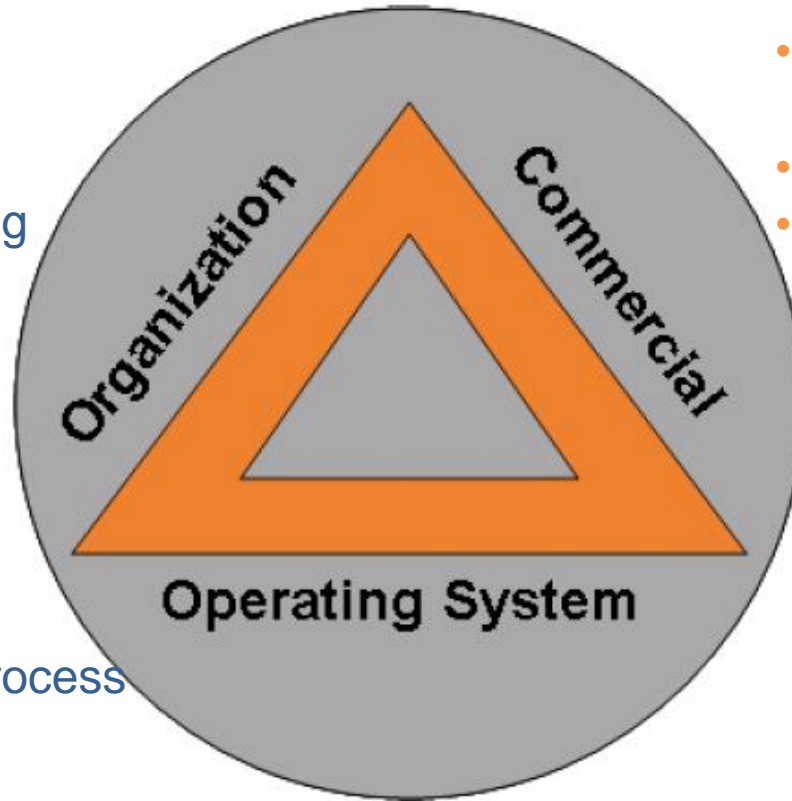
- Contracts
- Agreements
- Payment conditions
- KPIs

- Operating tools
- Technology
- Planning tools
- Selection tools

The LCI triangle model (Thomsen et al., 2009)

Traditional Project Delivery System

- Silo - organizational structure
- Vertical and wasteful communication flows
- Isolated decision-making process
- Vertical Project governance

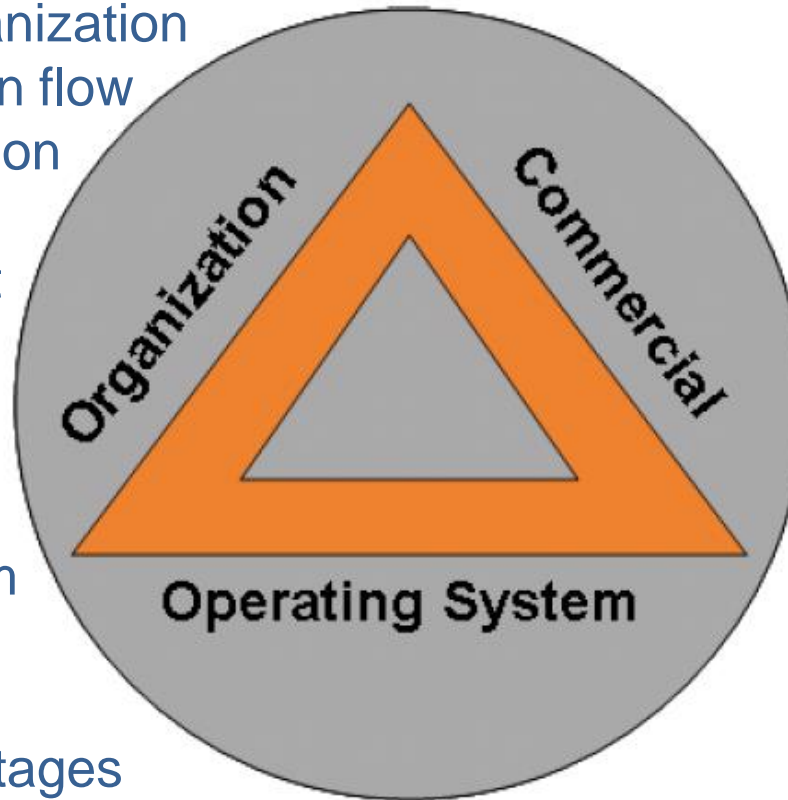


- Single party contracts
- Cost based selection procedure
- Target 'Price' not 'cost'
- Individual/Consultant KPIs

- Isolated Push planning
- Cost based selection process
- Unaligned technology
- No real collaboration

The LCI triangle model (Thomsen et al., 2009)

Lean Project Delivery System



- Cross functional organization
- Structured information flow
- Joint and open decision making process
- Transparent and joint project governance

- Multi Party contracts
- Value based selection procedure
- Pain and Gain Mechanism
- Common Project based KPIs

- Last Planner System
- BIM
- Target Value Design
- Choosing By Advantages
- Set Based Design

The LCI triangle model (Thomsen et al., 2009)

Target Value Design

Target Value Design (TVD) is a management practice that drives the design [and construction] to deliver customer values (cost, function, sustainability targets etc.) within project constraints.

- Toyota Planning System's practice of self-imposing necessity as a means for continuous improvement.
- Based on Target Costing from manufacturing industry
- Developed in University of California, Berkeley
- It embraces the project life cycle approach.

Target Value Design

*Design based on
detailed estimate*

Target
Costing

Set Based
Design

*Carry solution sets far
into design process*

Collaboration

Production
System
Design

*Don't evaluate
constructability –
Design the
constructible*

*Design together,
Review together,
Take decisions together*

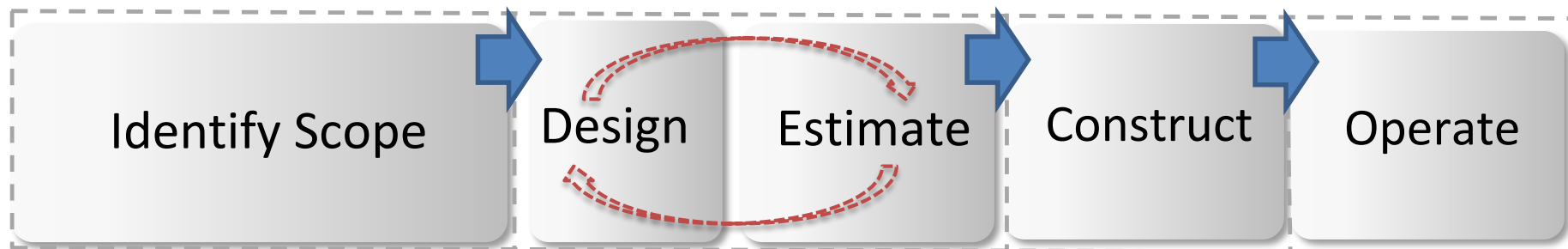
Collocation

*Work in groups, face to face –
structured Integrated decision
process*

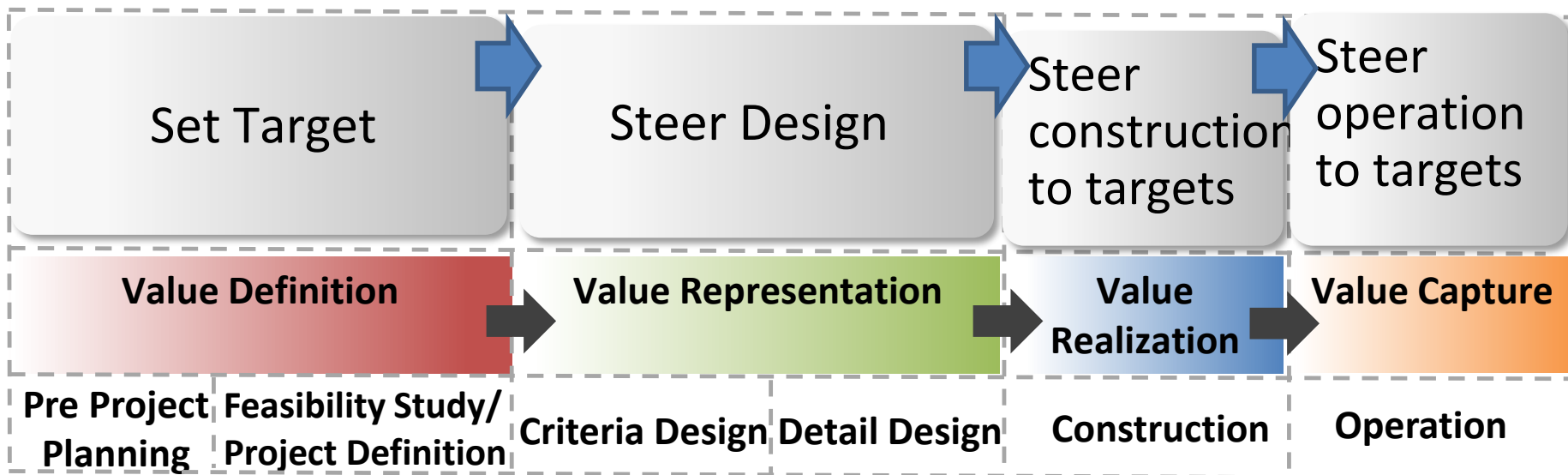
How Target Value Design is different ?



Traditional approach

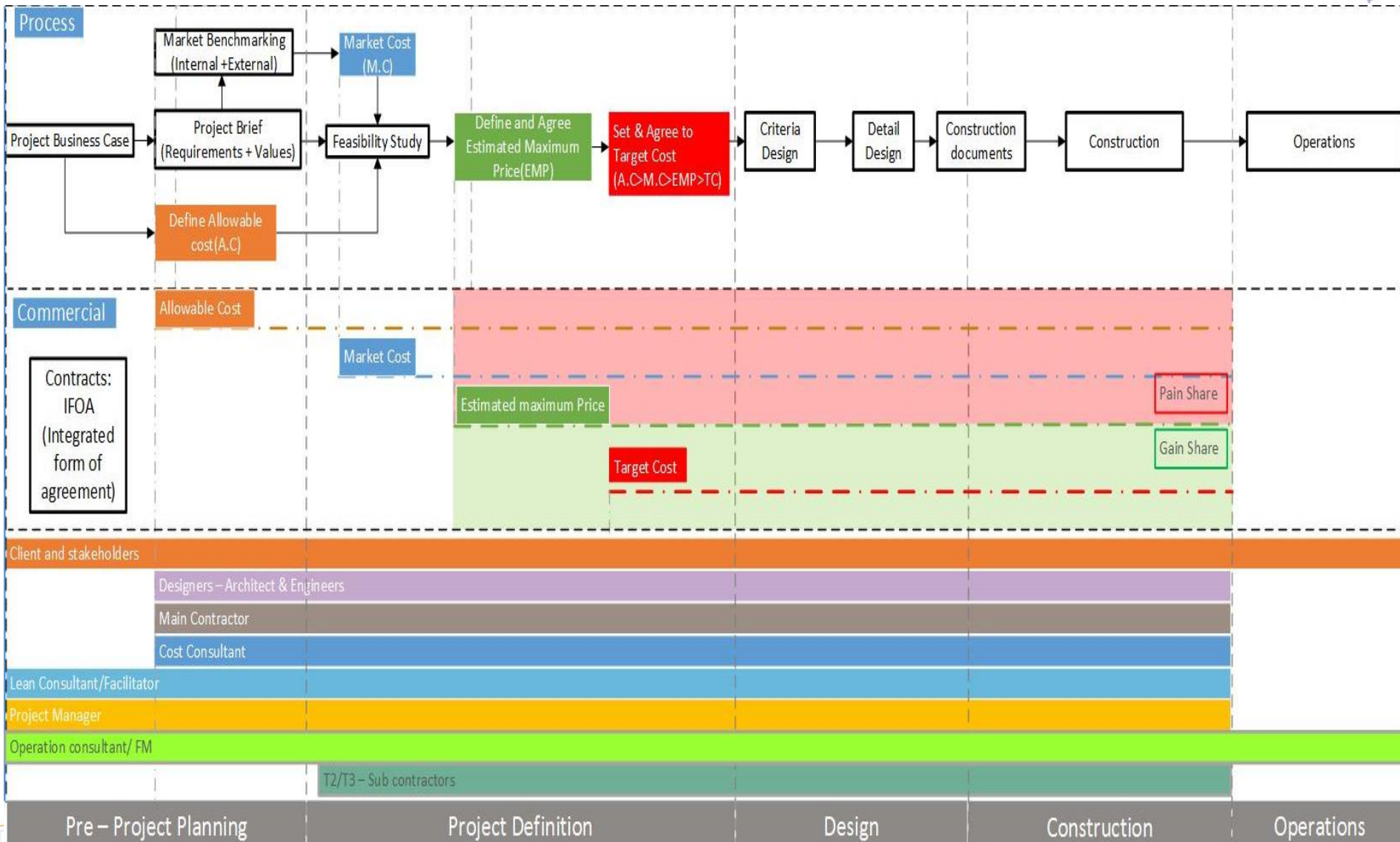


Target Value Design



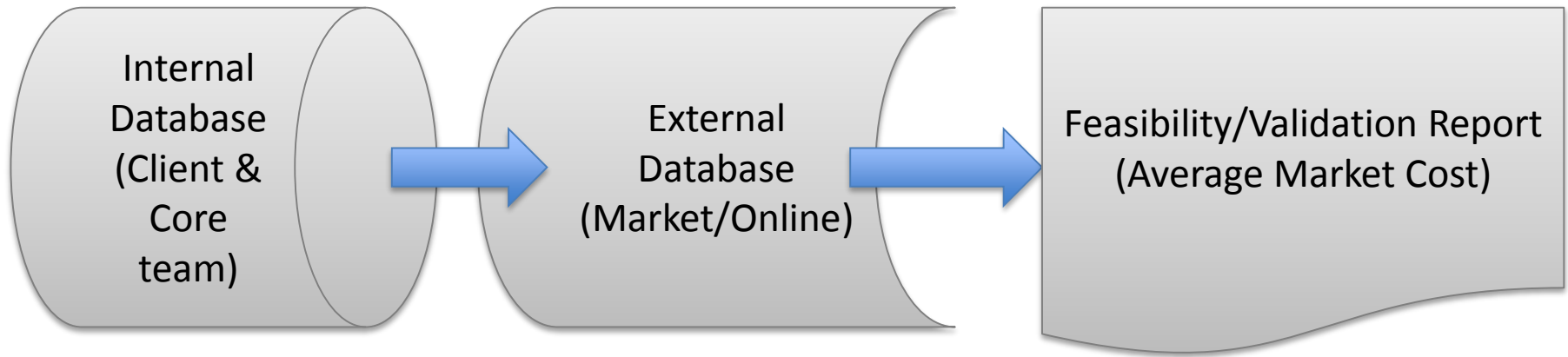
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Target Value Design



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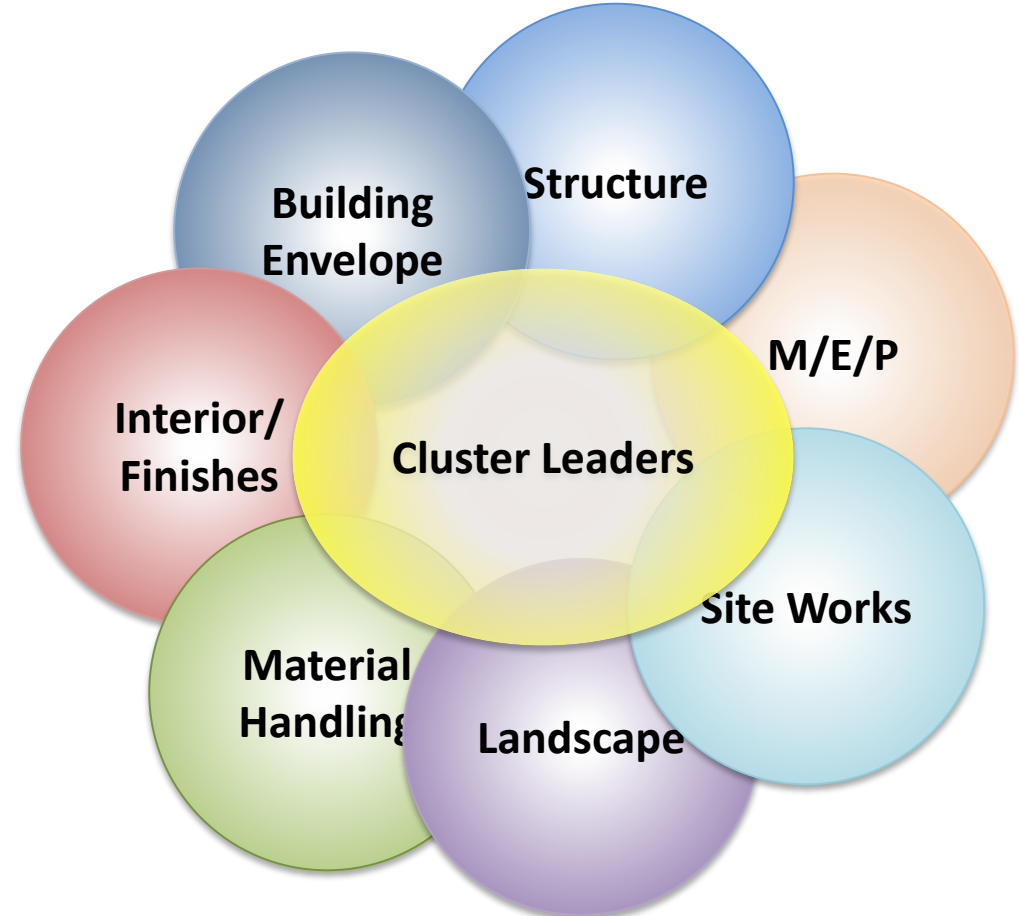
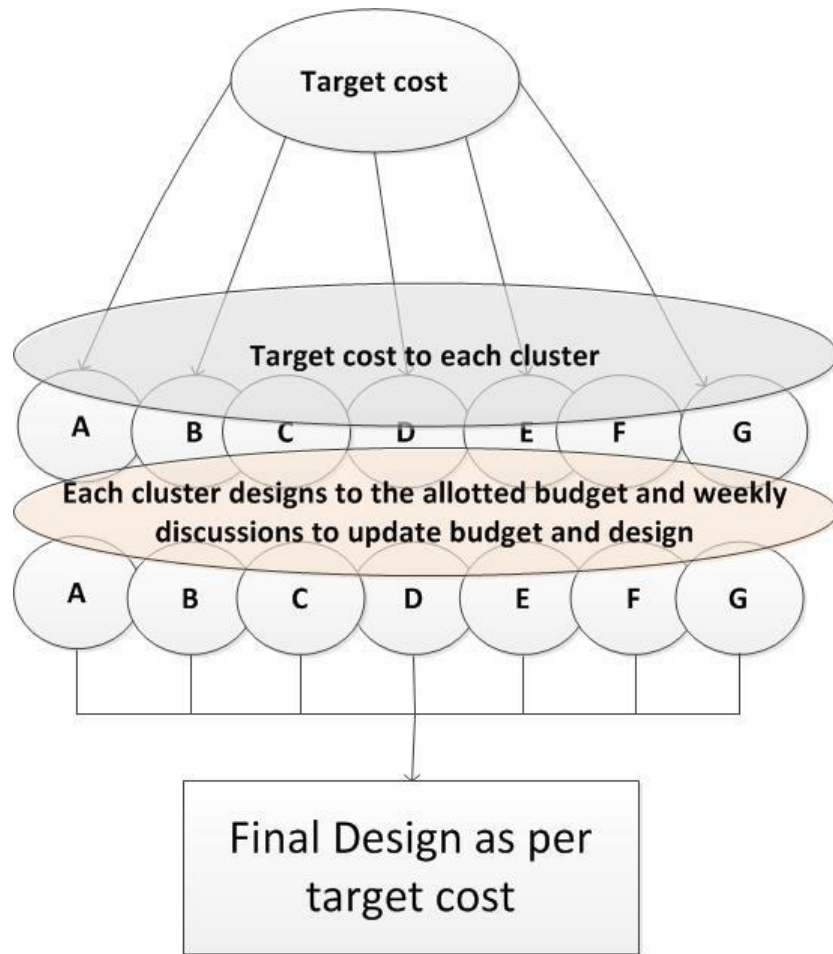
Market Cost Benchmarking



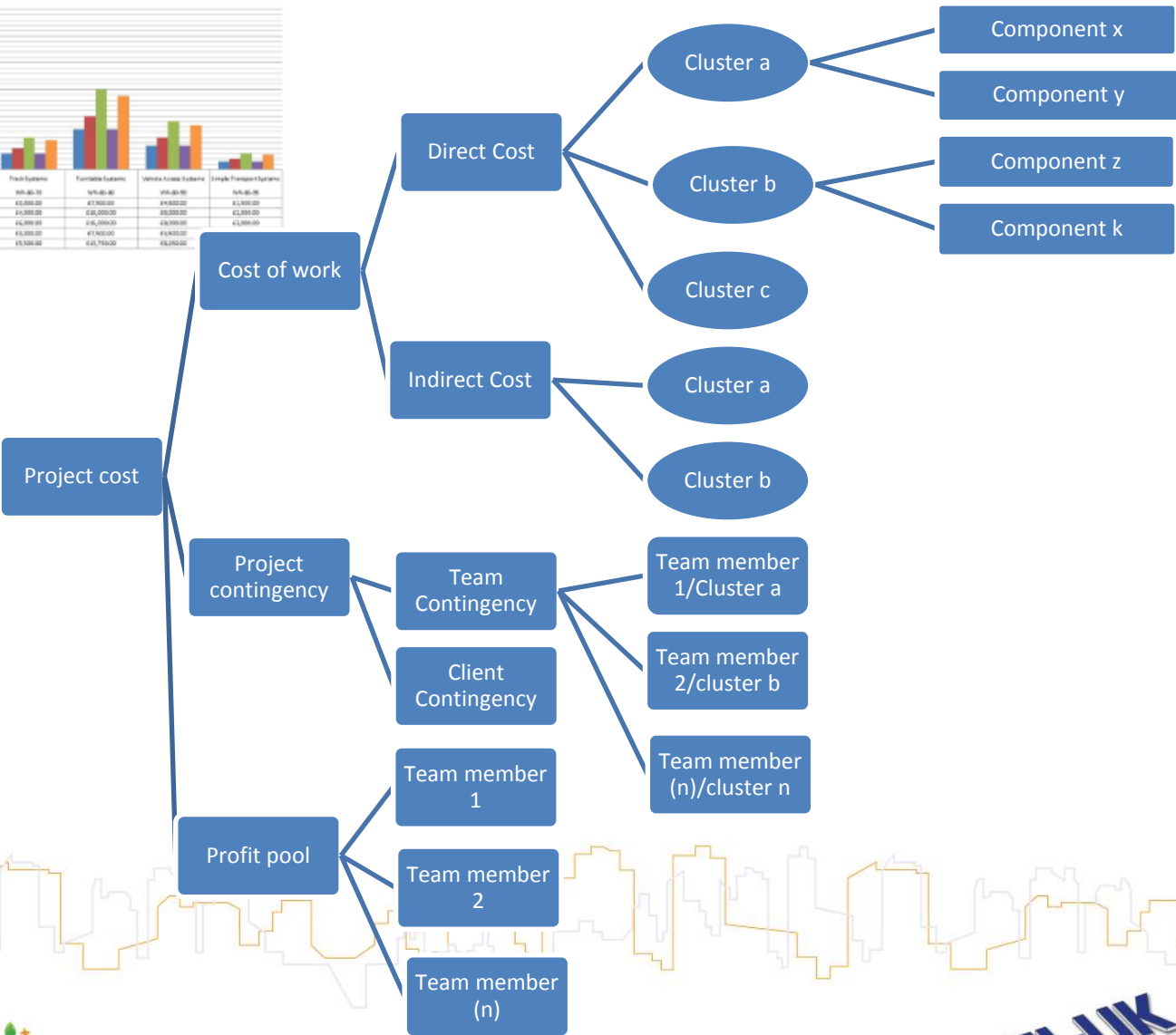
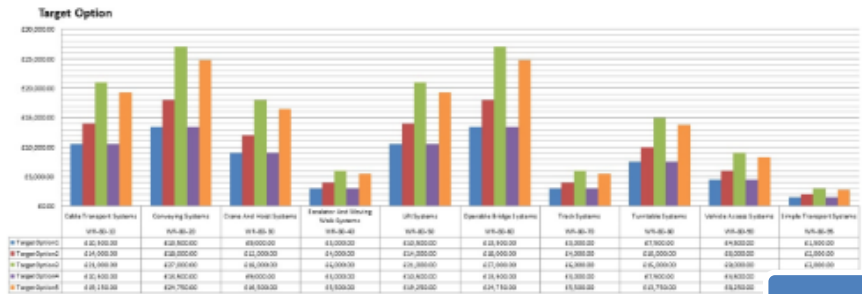
Collocated Workshop

- Project stakeholders values
- Function vs. cost vs. worth Matrix
- Multi scenario Analyses (New build, refurb etc.)
- Potential risks and respective solutions

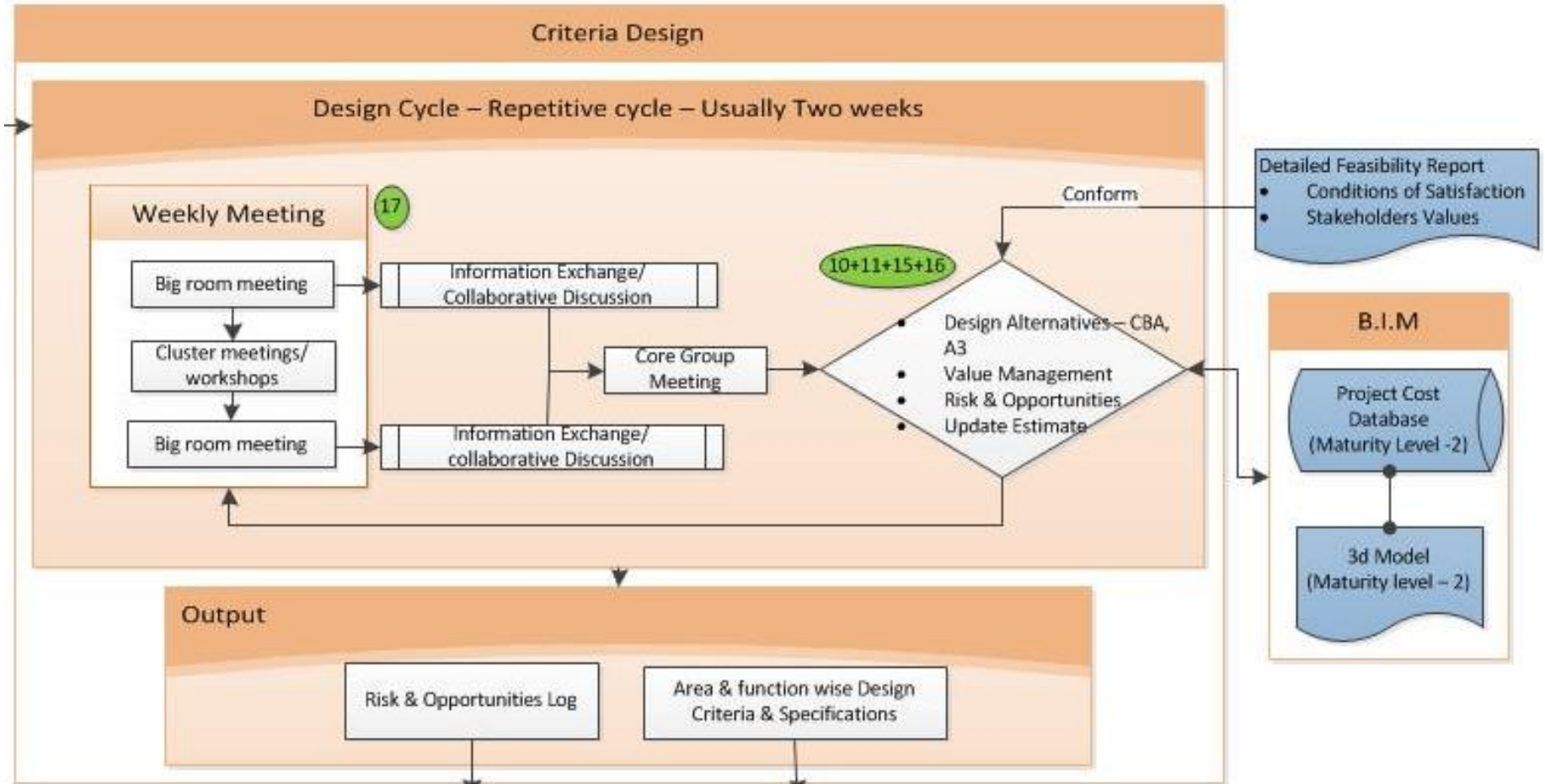
Cluster Organisation in TVD



Cluster Analysis – Cost Breakdown



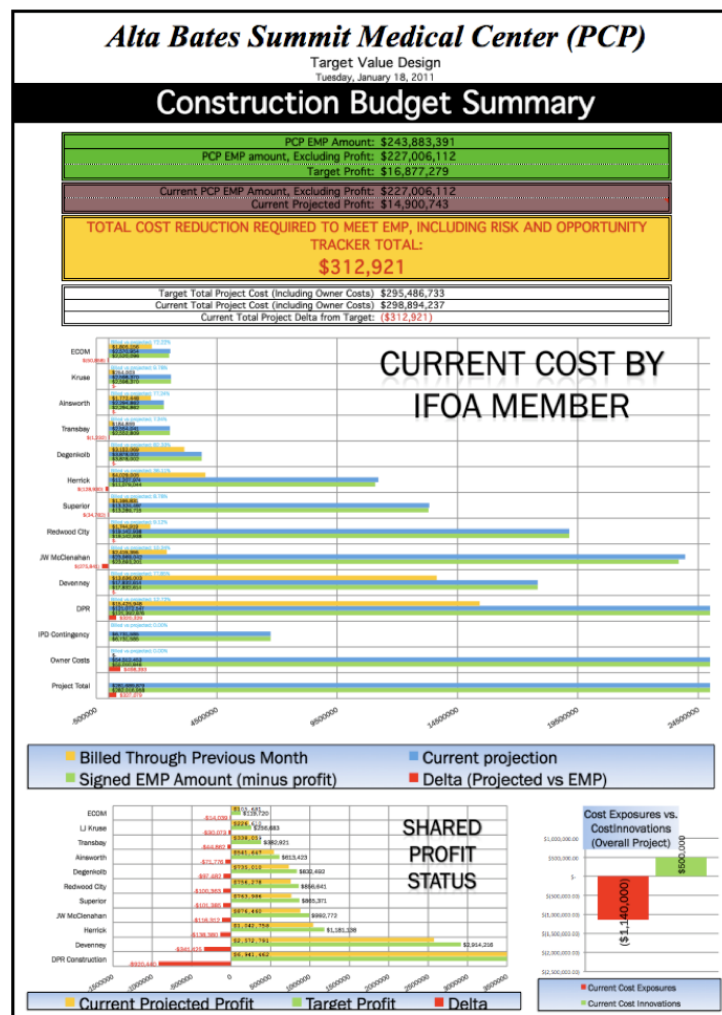
TVD and BIM



Lean Infrastructure
Meeting the challenges of
Construction 2025



Lean Infrastructure
Meeting the challenges of
Construction 2025



Technical Report on TVD Projects – DPR Construction

Lean tools under one approach

- Last Planner System – Collaborative pull planning
- Choosing By Advantage – Decision making tool
- Set Based Design – Concurrent design process
- A3 – Solution seeking and representation method
- BIG Room – Collaboration through structured collocation

Is Target Value Design different from Value Engineering ?

Value Engineering versus TVD

	Value Engineering	Target Value Design
TimeLine	Discrete event(s) at fixed point(s) in time	Continuous throughout design and construction
Practitioner	Value engineer/ manager external to design team	Core Team (incl. owner, designer, contractor) + input from trades
Targeted Outcome	Least Cost (Value rationalized to meet set budget)	Most Value (Cost optimized to deliver explicit value)

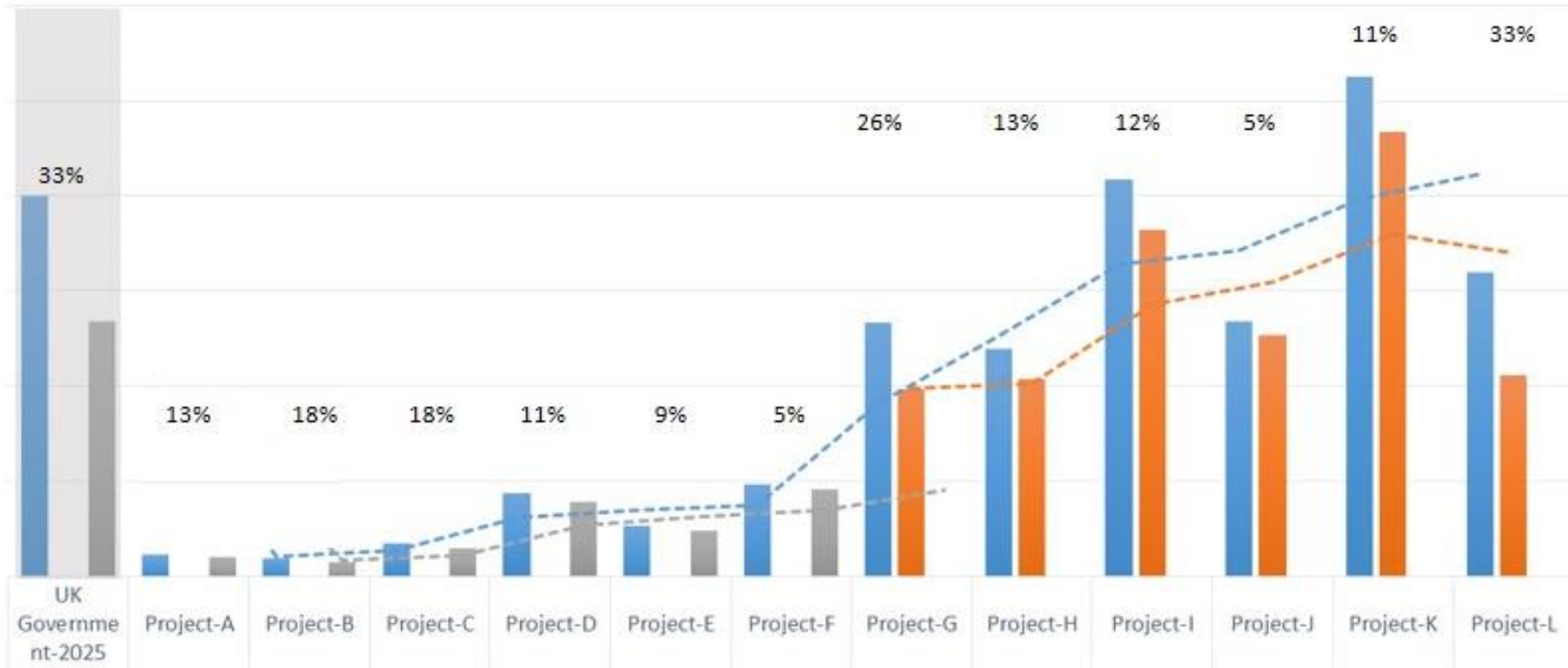
Target Value Design : Managing Sustainability Values in Construction – Novak -2012

TVD and Government 2025 cost targets






TVD Projects in U.S versus proposed savings by the UK government by 2025

Iris D Tommelein (2011)



- Project A to F - 5% to 18% - 12 % Avg. – Realised cost savings
- Project G to L - 5% to 33% - 17% Avg. - Projected cost savings

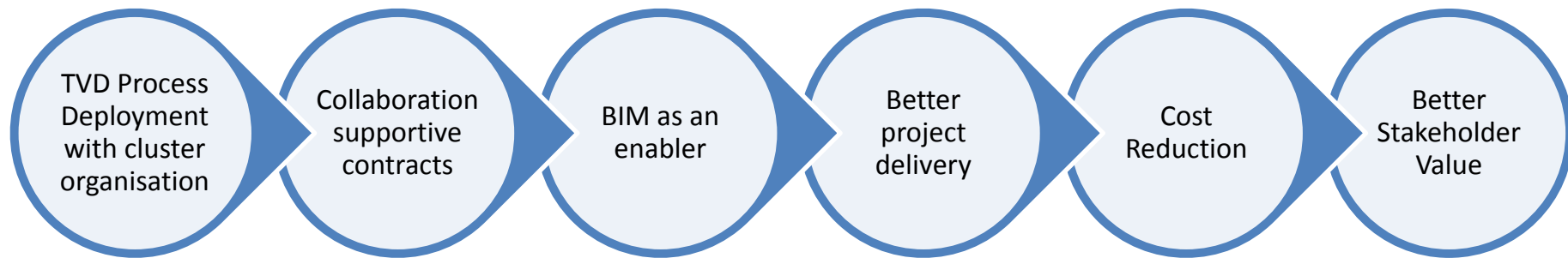
TVD Case Studies - Hospitals

Project	Contract	Detail	Result (Expected)	Partners
University of California, SF Hospital, Mission Bay, San Francisco \$1.5 Billion Project	Two Stage GMP (Guaranteed Maximum Price)	<ul style="list-style-type: none"> 289 patient beds 869,000 square feet Medical Research Centers 	<ul style="list-style-type: none"> \$765 million for design and construction – Feb 2015 Roughly 10-15% Savings Expected 	
Alta Bates Summit Medical center, Oakland	IPD, IFOA (Integrated Form Of Agreement)	<ul style="list-style-type: none"> 240 patient beds 230,050 square feet 	<ul style="list-style-type: none"> \$245 Million 15% savings 	
UHS Temecula, South California	IPD, IFOA	<ul style="list-style-type: none"> 5 Story Building 178,000 square feet 	<ul style="list-style-type: none"> \$159 Million Project 30 % – US Standard 40% - California State 	

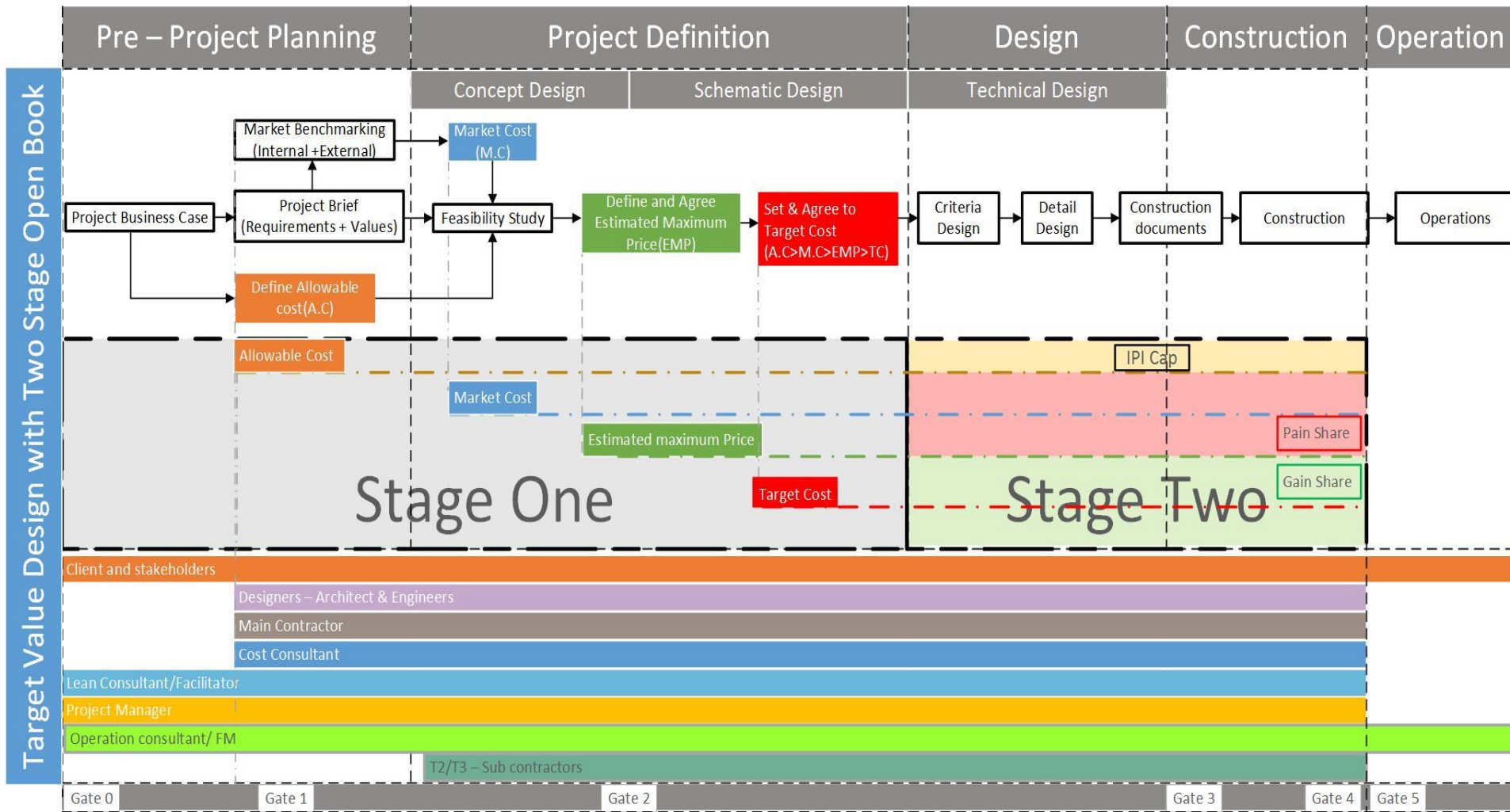
Way forward



TVD, BIM and NMCP: Way forward



TVD, BIM and NMCP: Way forward



Thank You

We are happy to present and discuss more about Target Value Design in any interested organisation. We are looking for a case study for Target Value Design.



Knowledge
Transfer
Partnerships

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MANCHESTER

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