Buying the right wall

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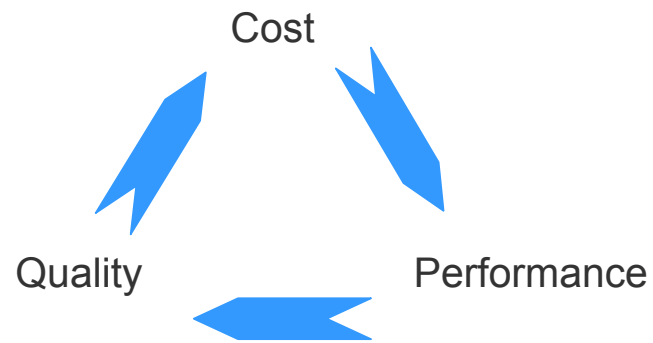
Director CWCT

The cost, performance quality equation



Value is required performance and quality at the right price

Client value - Client cost

What costs?

- Direct costs
  - Tender price
  - Variations
  - Claims
- Indirect costs
  - Management
  - Inspection
- Risk costs
  - Warranties
  - Insurance
  - Failure
    - Programme
    - Technical

What performance?

Core	Specified	Optional
- Structural integrity	- U-value	- Acoustic
- Water penetration	- Solar control	- Security
- Air permeability	- Durability	- Fire resistance
- Wind resistance	- Wind resistance	- …

Is a secondary defence system better than a face-sealed one?

How do we assess durability of finishes?

What quality?

- ISO 9000 but;
- What standards – technical?
- What standards – aesthetic, texture, tactile?
- Prestige building!

What are we buying

- The Client is buying;
  - Construction
  - Manufacturing
  - Design

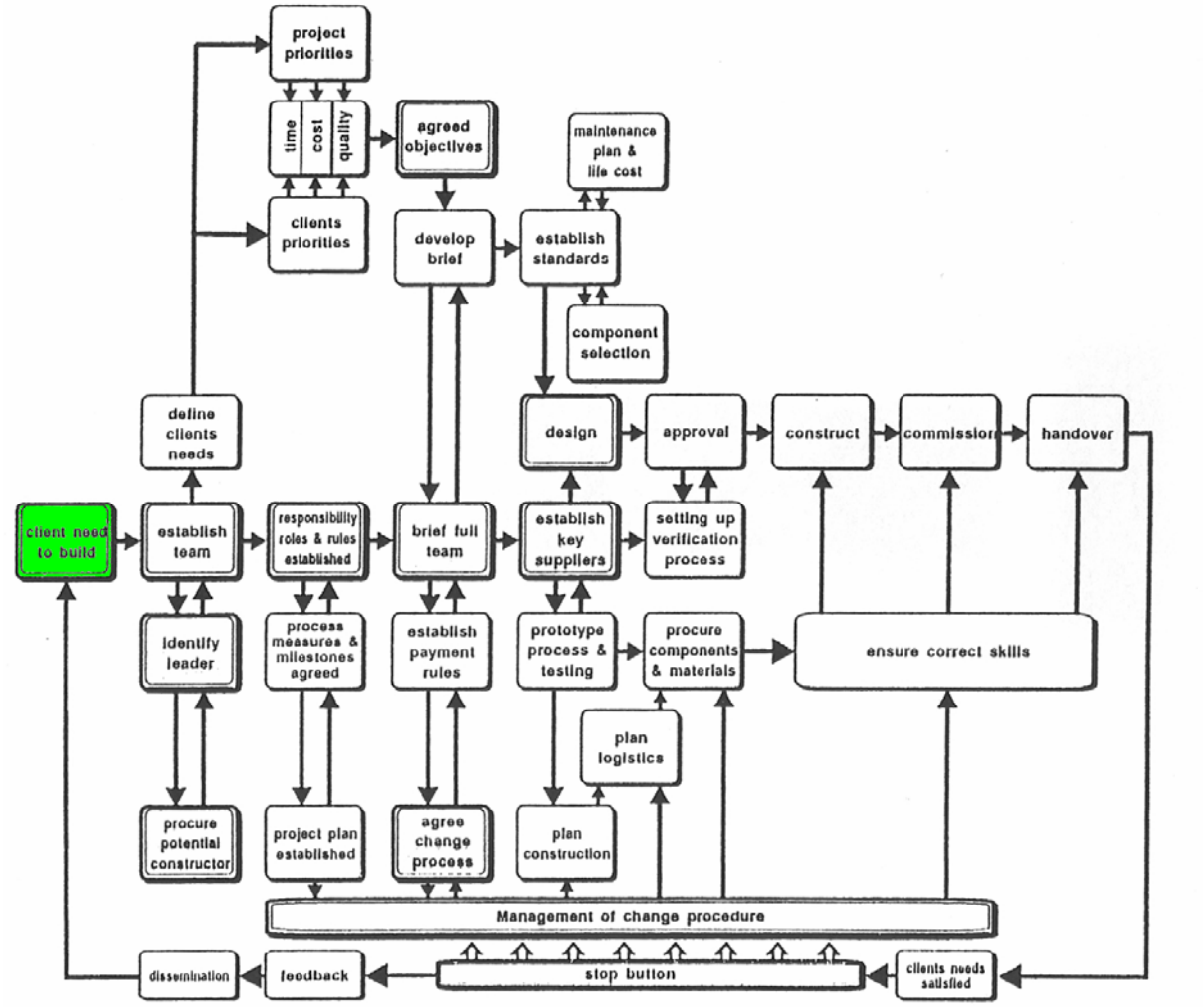
As prioritised by many purchasers

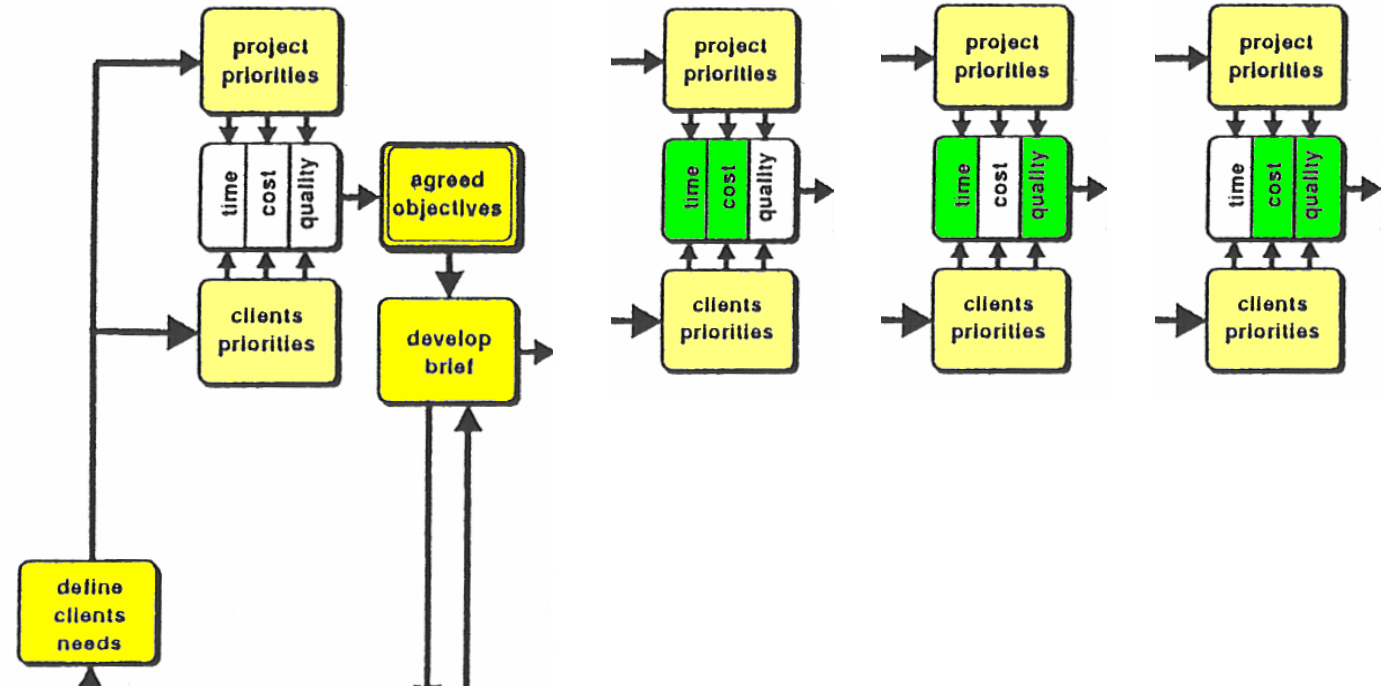
How do we buy it?

- What should it cost to buy a wall?
- What is the buying process?
- What is the role of the Architect's team?
- What is the role of the Main Contractor's team?

Towards zero defects construction

- A study on how to deliver a building:
  - With no faults
  - That meets Clients needs
- It identified:
  - A clear need to design the design and construction process in parallel with the building design,
  - A need to involve contractors and specialist contractors early on
- Report – *'Towards zero defects construction'*


project priorities
time
cost
quality
agreed objectives
maintenance plan & life cost
clients priorities
develop brief
establish standards
component selection
define clients needs
design
approval
construct
commission
handover
client need to build
establish team
responsibility roles & rules established
brief full team
establish key suppliers
setting up verification process
identify leader
process measures & milestones agreed
establish payment rules
prototype process & testing
procure components & materials
ensure correct skills
plan logistics
procure potential constructor
project plan established
agree change process
plan construction
Management of change procedure
dissemination
feedback
stop button
clients needs satisfied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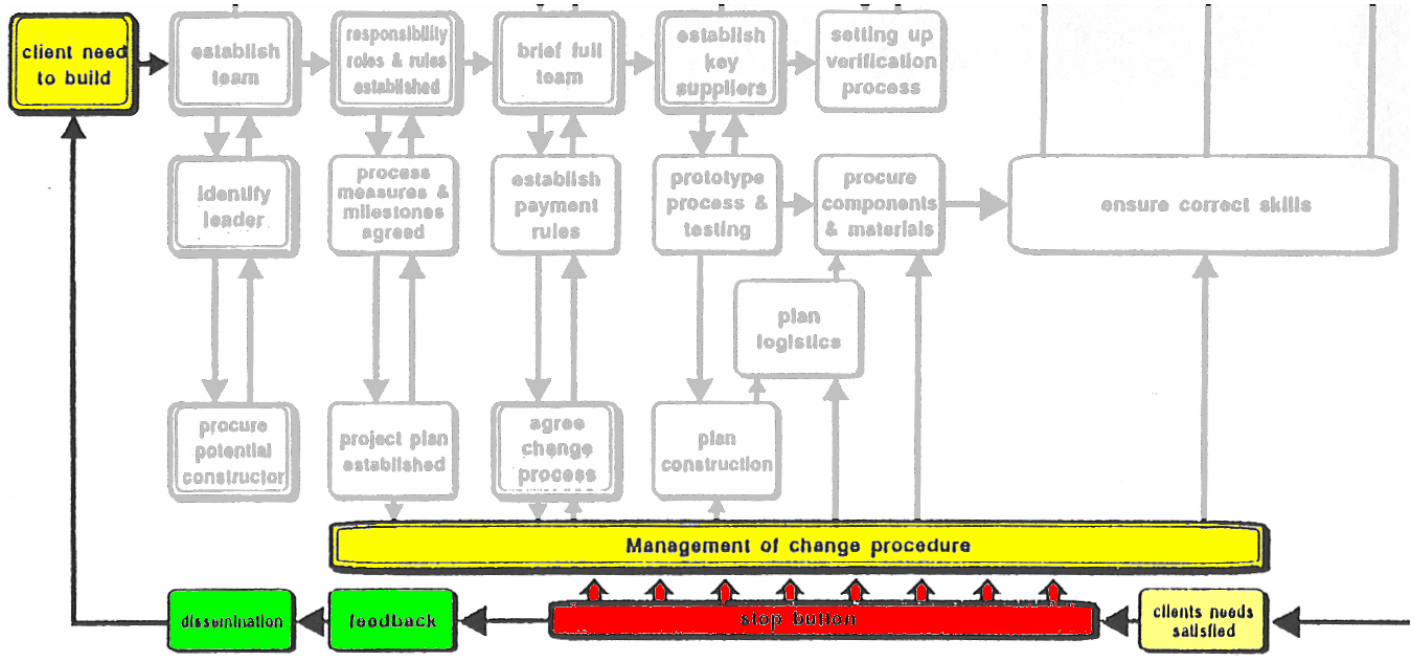
clients priorities

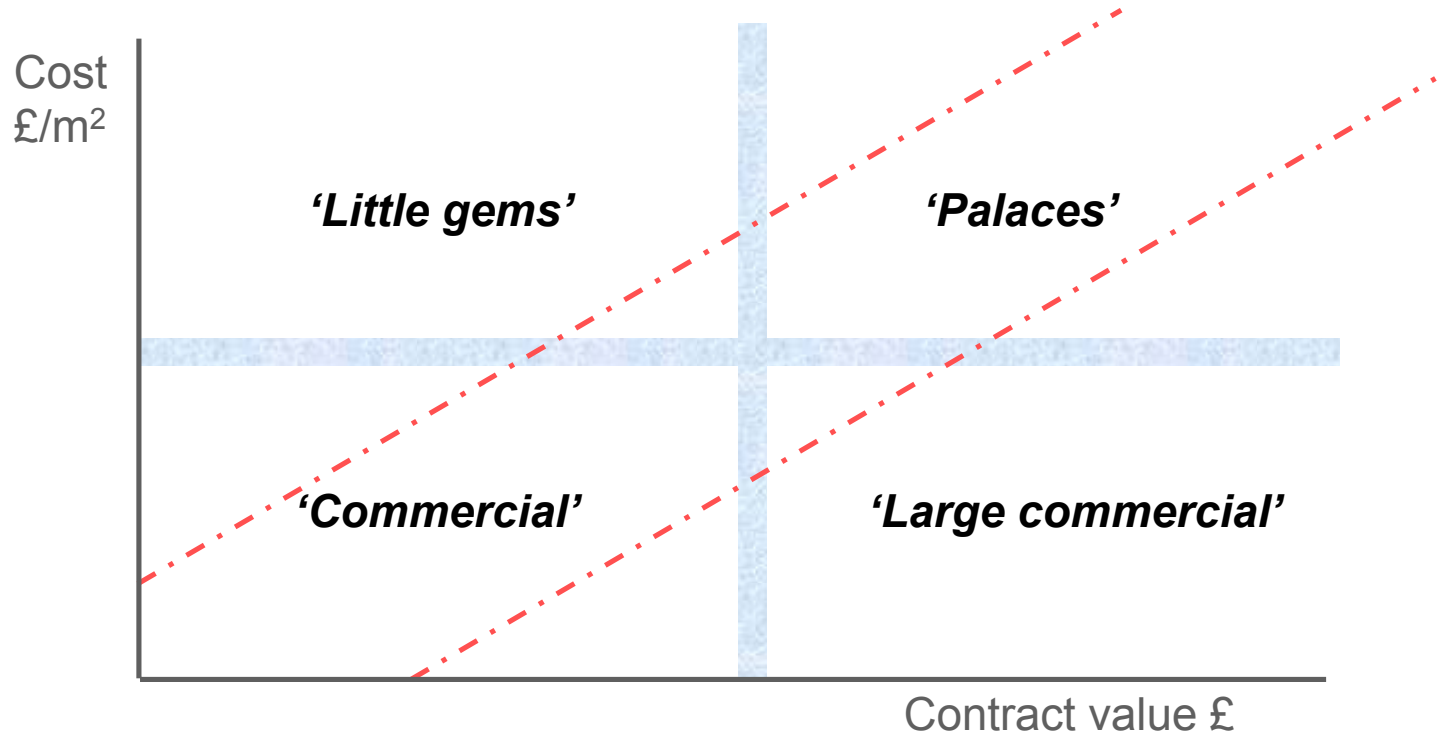
One approach to quality

- Faced with a low tender price the Client/Contractor may:
  - Allow cost of additional management
  - Allow cost of inspections
  - Allow costs of insurance
- If properly costed the lowest tender is probably not the cheapest to the Client

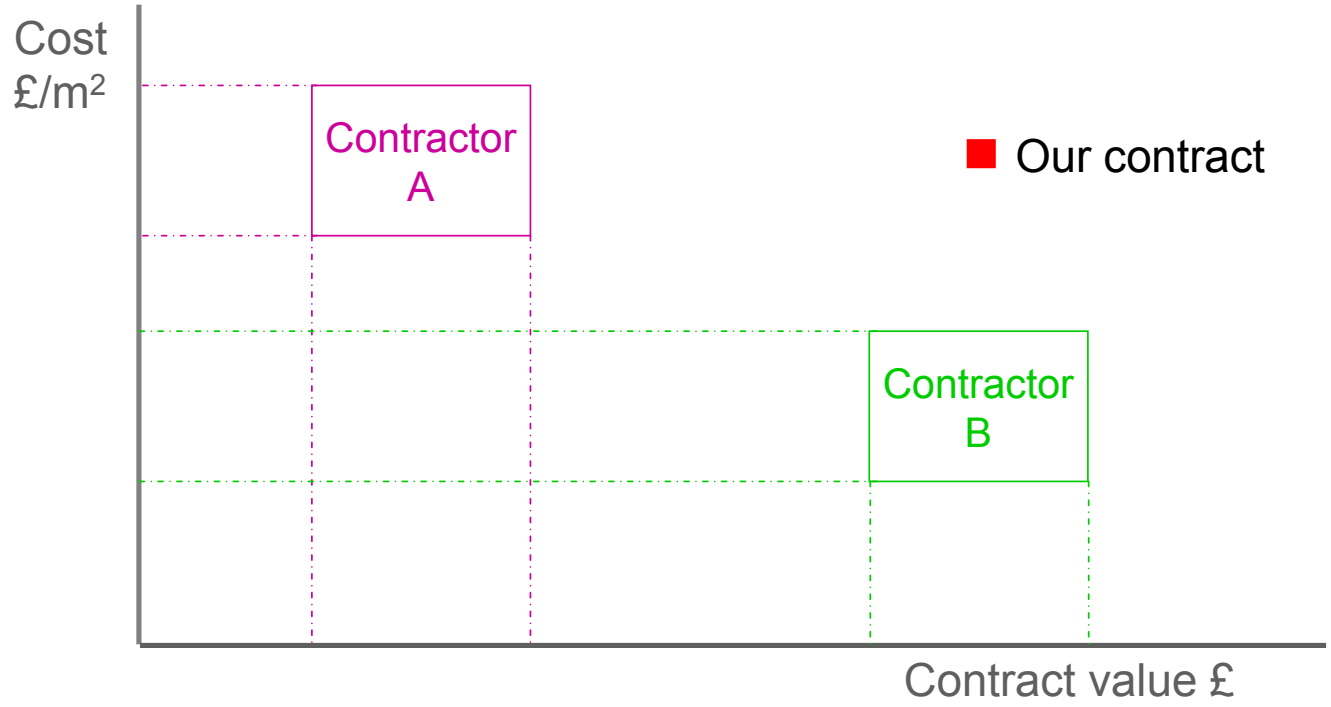
The 'STOP' button



What type of project?



Choice of contractors (then)



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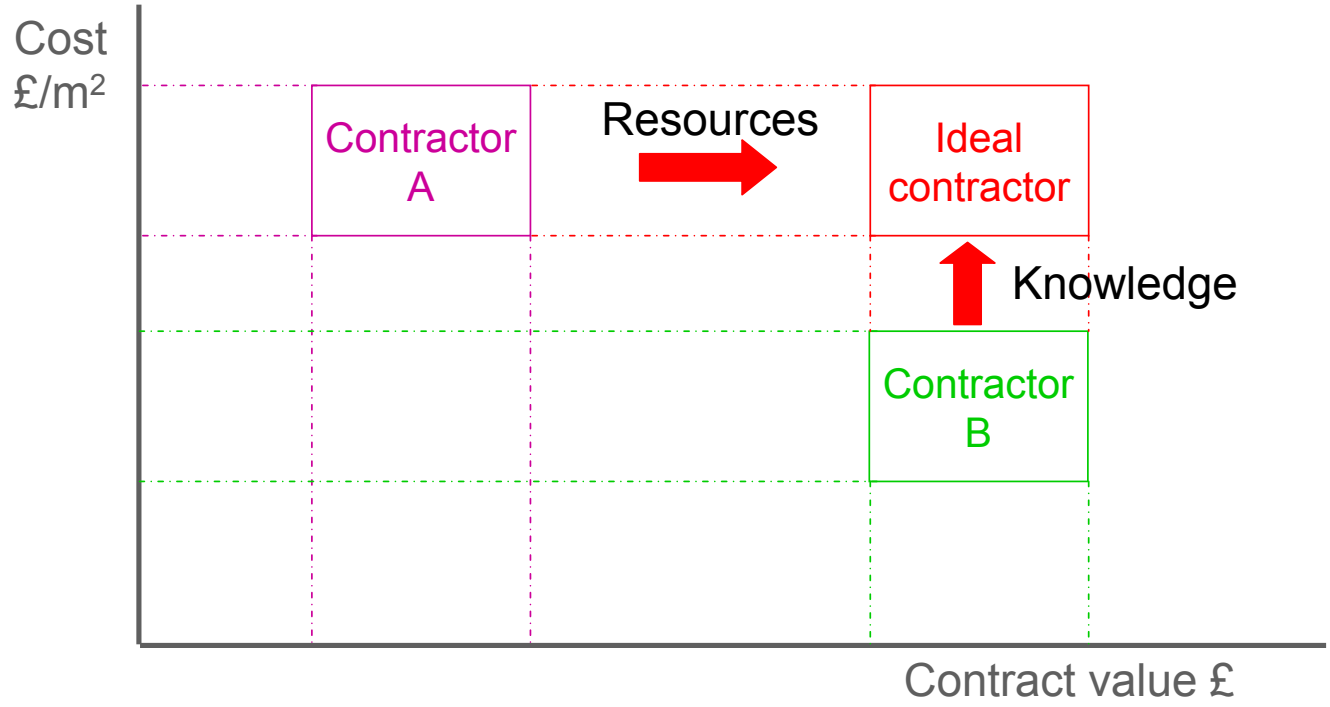
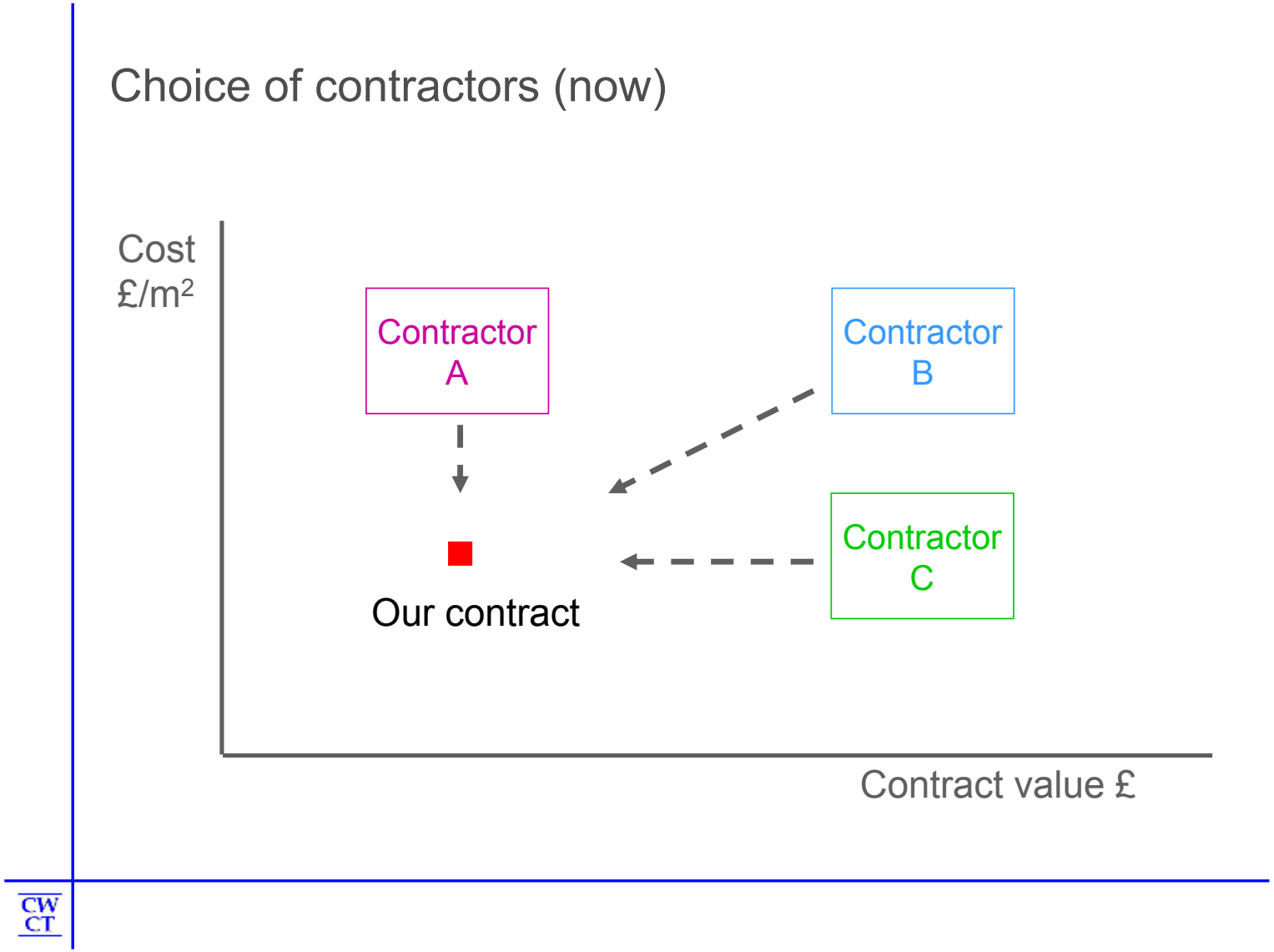



Choice of contractors (now)
Cost
£/m²
Contractor A
Contractor B
Contractor C
Our contract
Contract value £

Does this deliver better value?

- Do they understand the cost base?
- Do they over deliver on quality?
- Do they understand the limitations of cheaper designs?

Value (or cost) engineering?

- Cost engineering is a crude form of cost reduction
- It may be undertaken against two sets of criteria
  - Whole life costs
    - Solely maintenance and repair costs
    - Operating costs including energy etc.
  - Initial costs only
- Value engineering considers the cost – performance balance

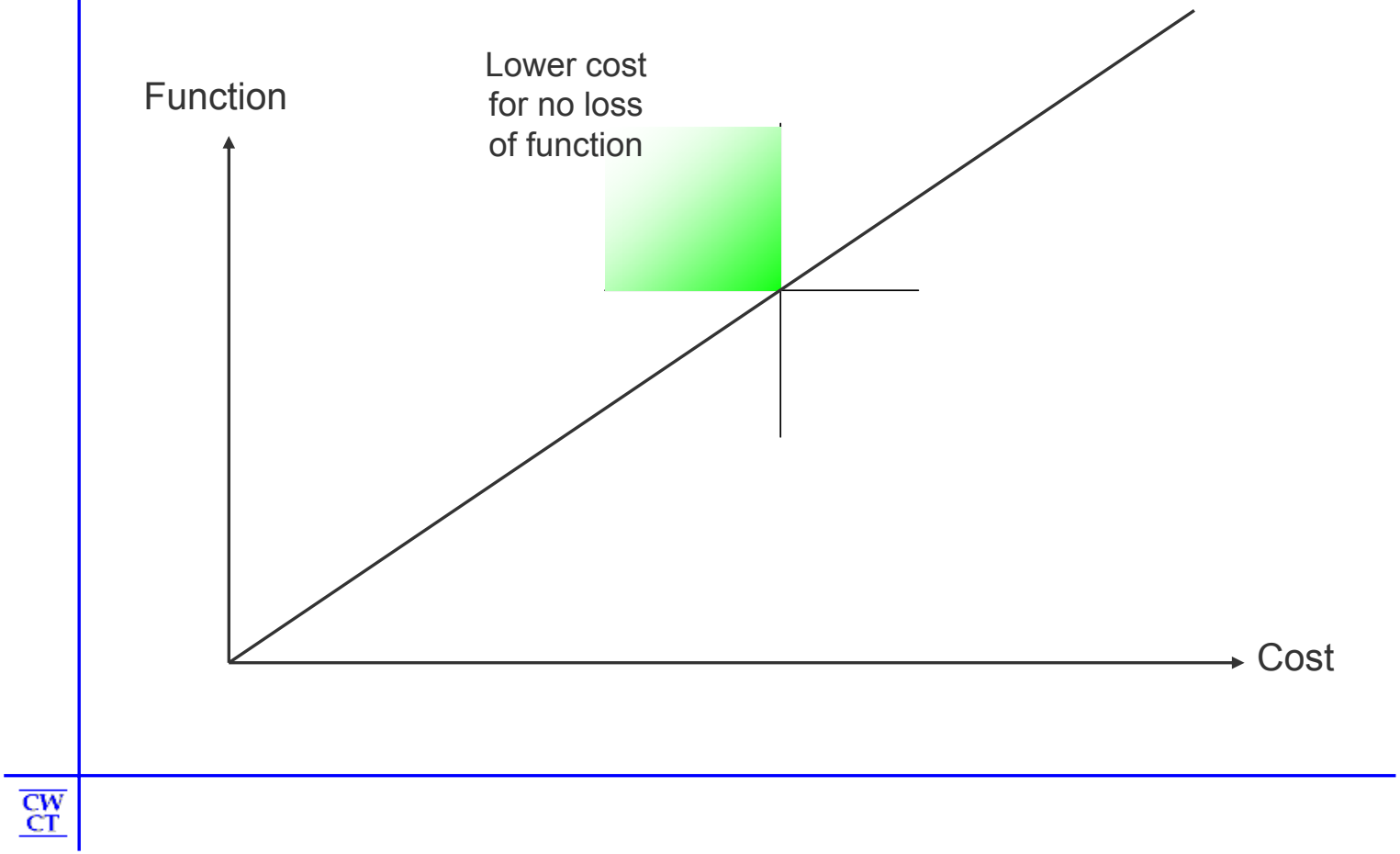
Who value engineers?

- Value engineering on the basis of whole life costs requires input from:
  - Client
  - Building physicist
  - Facilities manager
  - Design team
  - Main contractor
  - Specialist contractor
- Cost engineering on the basis of initial costs requires input from:
  - Design team
  - Main contractor
  - Specialist contractor

Who gains from value engineering?

- Client potential
  - Lower initial cost
  - Reduced risk
  - Greater income
  - Reduced operating costs
- Contractor potential
  - Happier (repeat) client
  - Reduced risk
  - Cost reductions to be shared

What is better value?

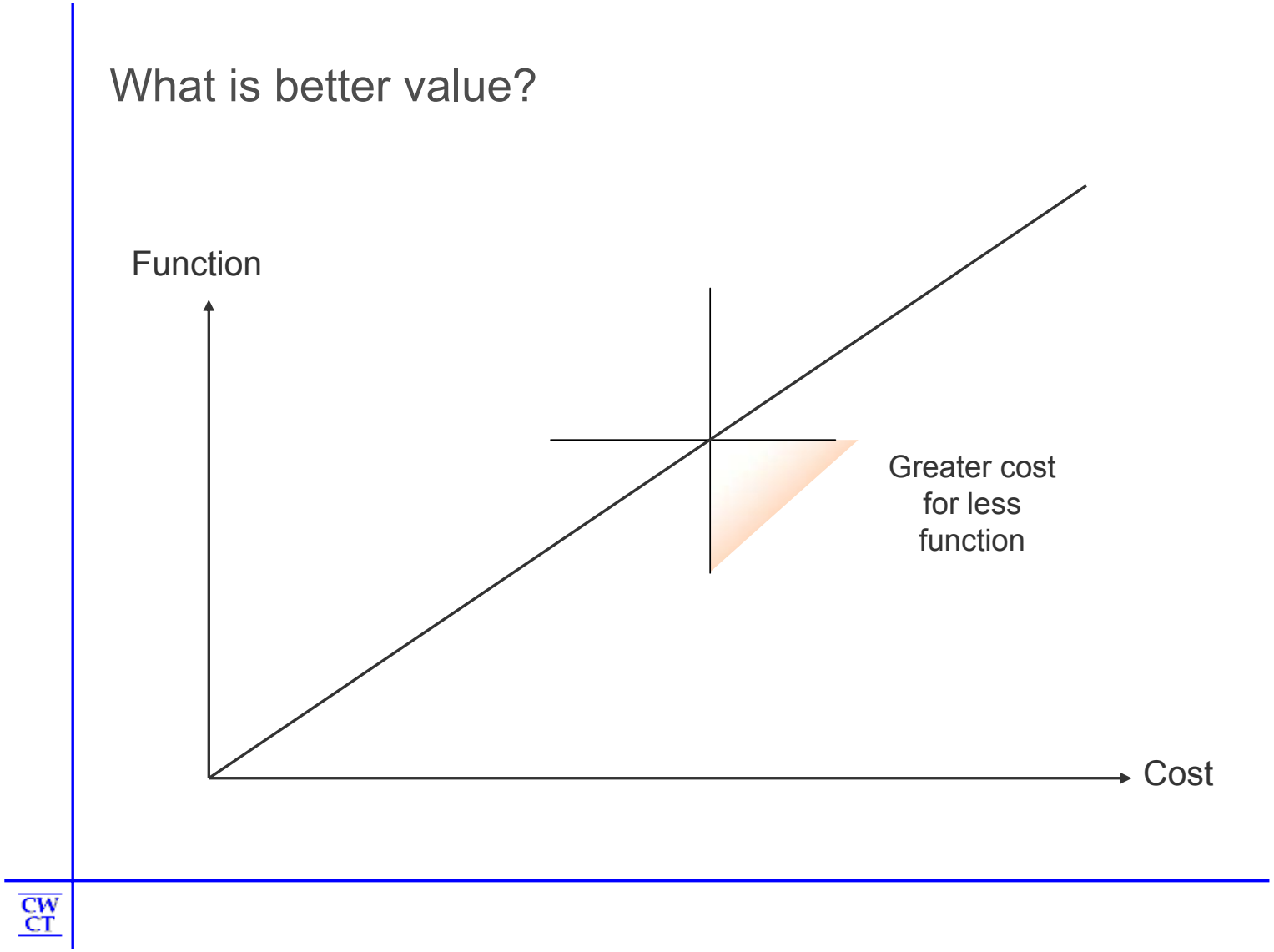


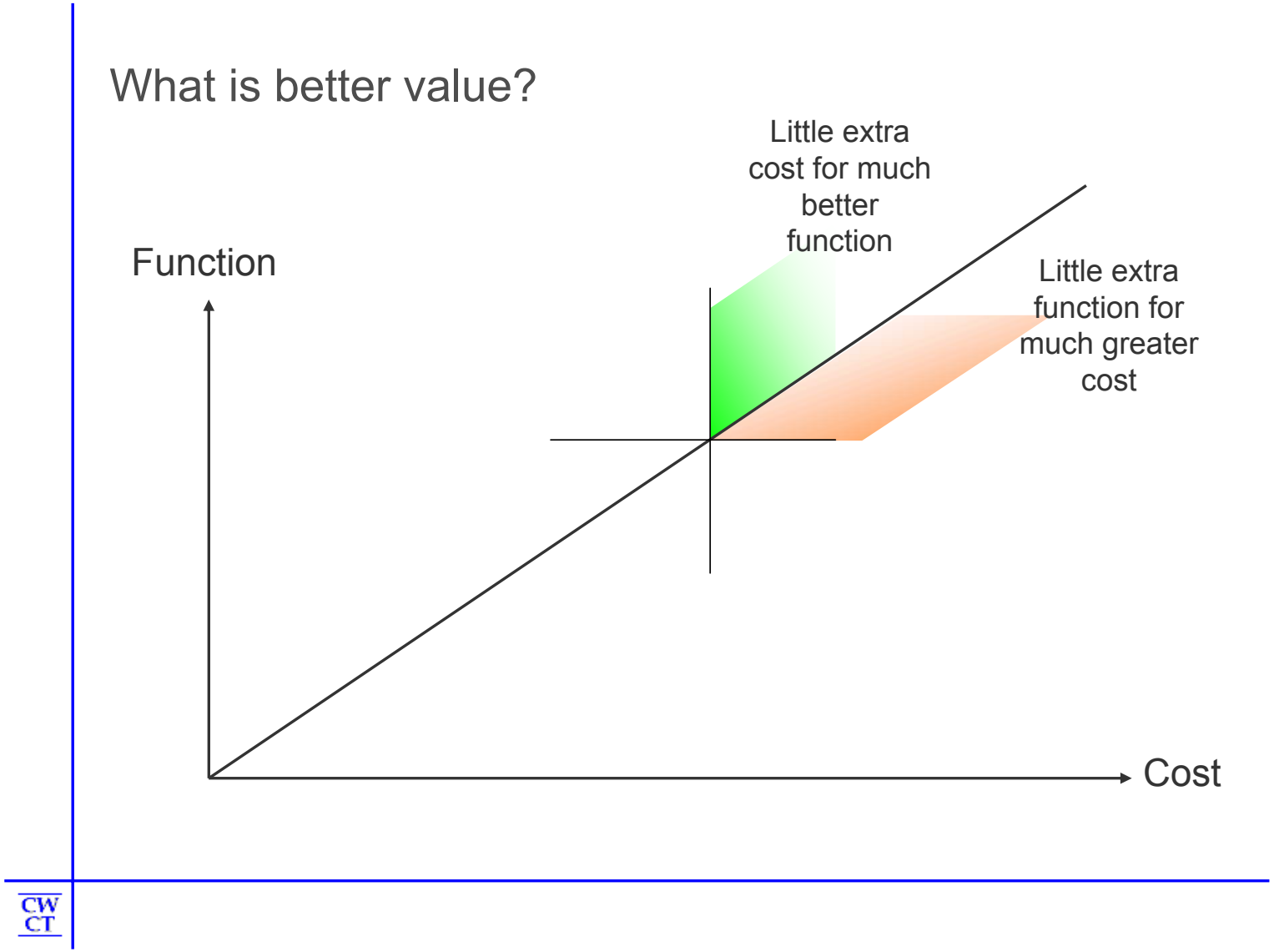
Reduced cost with no loss of function

- Traditionally stainless steel brackets have been used to support stone. A specialist contractor may show that aluminium is strong enough to support the thin stone panels in a rainscreen wall.
- The cost of testing the durability of aluminium brackets may be considerably less than the savings made by using aluminium in place of stainless steel.
- This may lead to a saving shared between the Client and contractor

Reduced cost with no loss of function

- A double curved atrium roof glazing require 200 glazing units including 50 differs (different shape and size). This initially has a marginal effect on cost.
- It is decided that the glass has to be printed with a pattern to reduce solar gain. This requires 50 separate screens for screen printing at a cost of £5000 each.
- It is concluded that the atrium roof will be designed as a simple barrel vault at a saving of £250,000

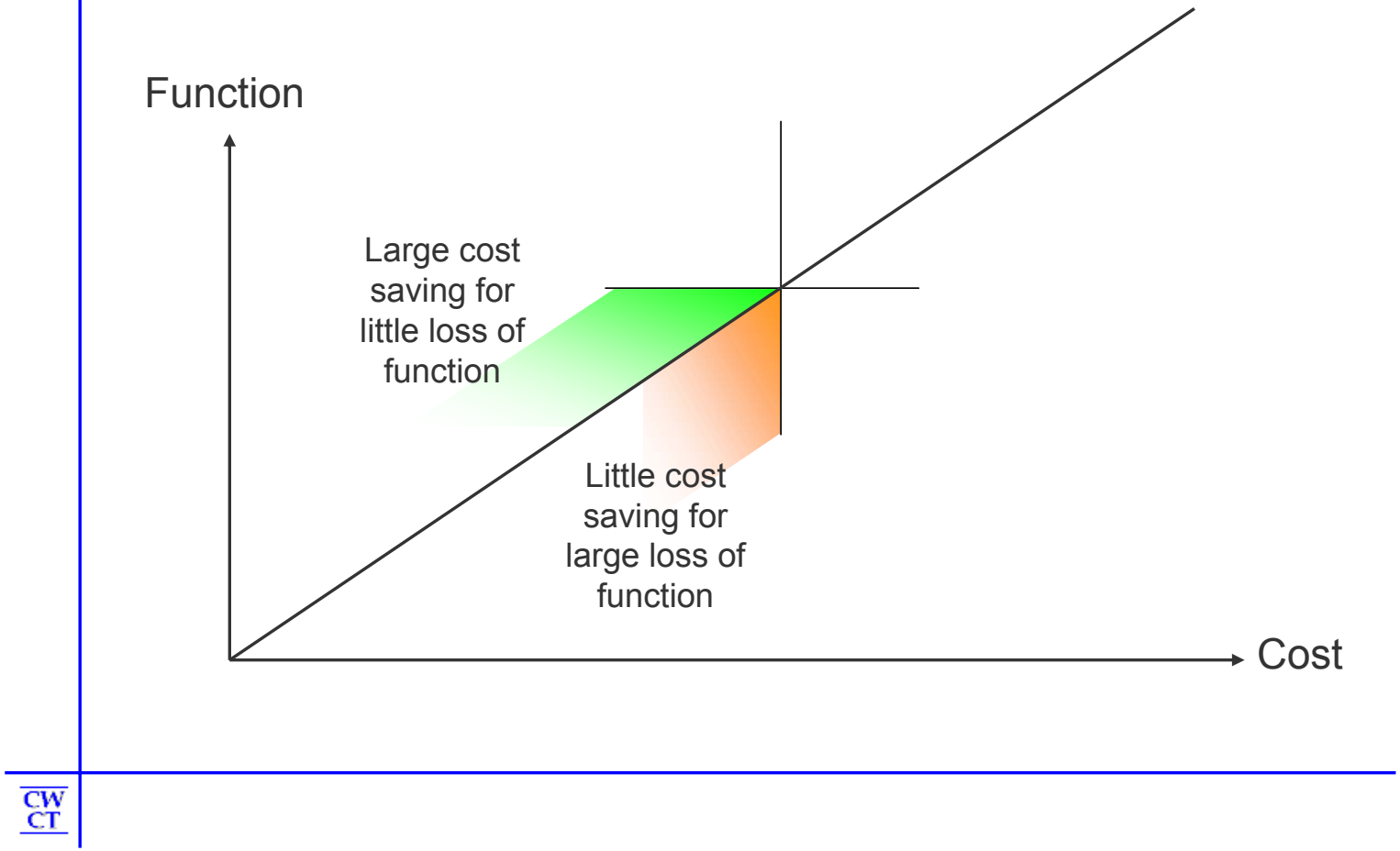

What is better value?
Function
Greater cost
for less
function
Cost
CW
CT


What is better value?
Little extra cost for much better function
Little extra function for much greater cost
Function
Cost
CW CT

Extra function for little extra cost

- It is proposed to build a rainscreen wall comprising a blockwork support wall and light gauge aluminium rainscreen panels. The wall extends over eight floors starting from ground level.
- It is argued that replacing the ground floor rainscreen panels with an outer leaf of brickwork will add some cost but will eliminate the high risk of damage to the ground floor rainscreen panels which would require frequent replacement
- The Client realises that damaged panels not only cost money to replace but reduce the image of the building if they are frequently left in a damaged state, albeit temporarily

What is better value?



Lower cost for a slightly reduced function

- An window specification requires an acoustic reduction of 40dBa which can only be provided by the use of expensive acoustic laminates.
- The specialist contractor offers to provide an acoustic reduction of 38 dBa knowing that the cost saving can be shared between themselves and the client.
  - Is this solely a comfort issue or a regulatory issue?
  - Will the Client accept the lower performance?
  - Does the Client appreciate the cost savings?

Multi-variate value engineering

- Establish core costs:
  - What are the key performance criteria?
  - What is the appearance and design intent?
- Establish Client view of cost:
  - What is the budget and is it fixed?
  - Are there contingencies and for what?

Multi-variate value engineering

- Establish Client's view of risk:
  - Who will own risk?
  - Should warranties be available or should risk be designed out?
- Establish a Client wish list:
  - What would they like the envelope to do?
  - What would increase the lettability or rental value?
  - What would they spend an extra £xx pounds on?

Multi-variate value engineering

- Test the Client's objectives:
  - Discuss aspects of lower performance?
  - What might be sacrificed?

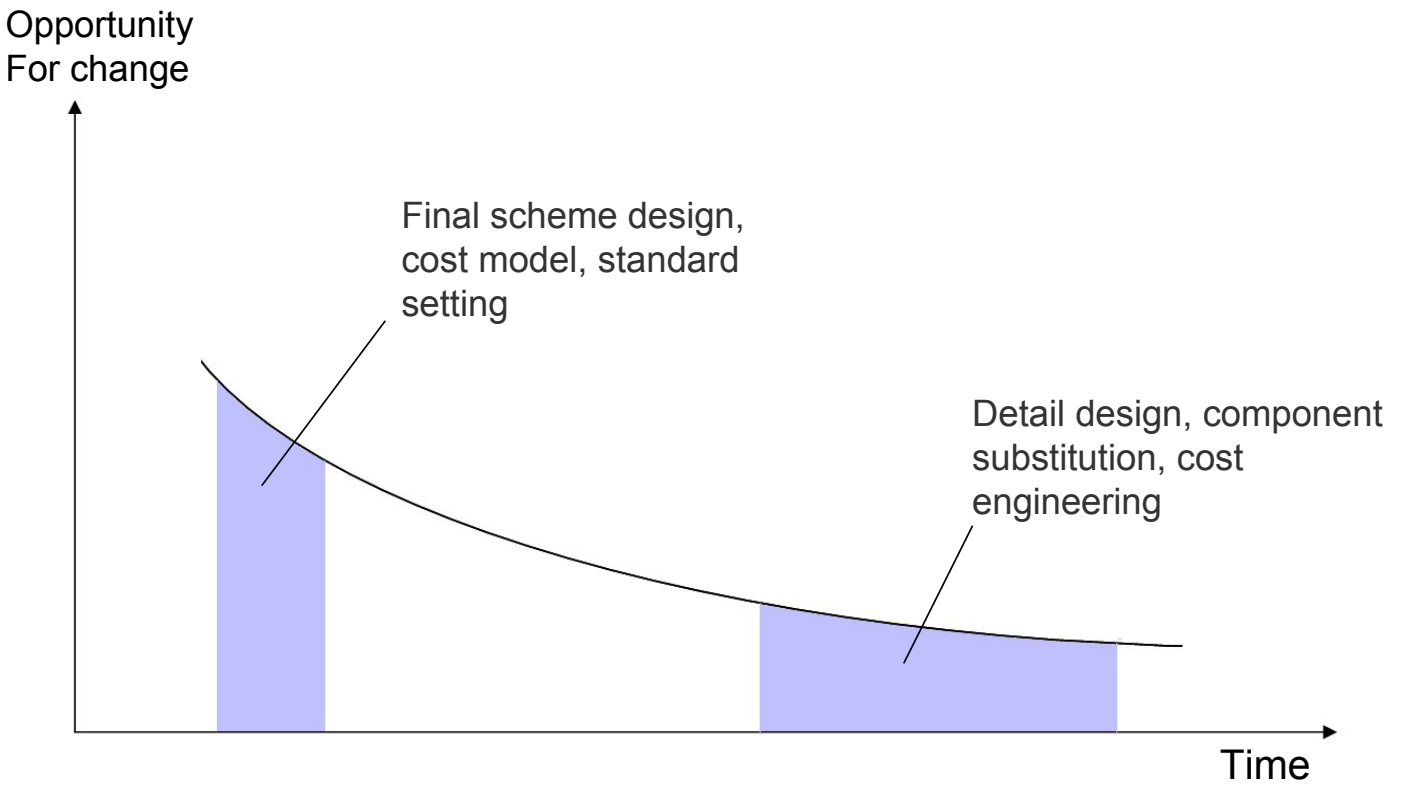
- These are all ways of discerning the Client's view of a project
- They are the basis for making value adding proposals

- The Client aims to get better value
- The Contractors aim to increase margin and reputation

Opportunities for change

- Designs can most easily be changed when they are least well defined
- That is at the very early stages of a project
- Risk is minimised by having a final agreed design before commencing construction
- It follows that there is little or no design flexibility in the later stages of the contract

Maximum opportunity to improve value



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