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Value Trade-offs

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Context

- Increasingly, success is defined not just by delivering hardware but by creating and sustaining high value capabilities.
 - Estimating for Partnering and Services requires the cost estimator to go beyond Product Cost Estimating.
 - The range of solution options explodes
 - The subtlety of cost drivers and benefits increases
 - Trade-offs between options require more than just a cost balance
 - The Value-for-Money challenge must be addressed
 - Procuring complex systems and systems-of-systems is less about specifying hardware than it is about specifying outcomes.
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- We need to compare the real Value of the different options
 - We need to be able to explain or justify the Value judgements we make

Value

- Everyone understands value, but very few can explain it.
- We all make value judgements all the time, any decision we make is a value judgement
- Most of the time, our instinct or intuition is sufficient to make value judgements:
 - Most of the time we only have ourselves to please
 - The value implications are mostly trivial or very personal
 - We often need to make instant judgements
- Sometimes we have to take these judgements more seriously:
 - When we are accountable to others for our decisions
 - When the value implications are more significant
 - When we have time to think about it
- This is when we often go wrong...



Problems with Value Judgements

- Definition of Value:
 - Value for Money
 - Often confused with “a fair price for goods and services”
 - Cost/Input/Effort \neq Value
 - Money is just a promise to honour a deferred transaction
 - Intrinsic Value
 - Economists like to talk about intrinsic and instrumental value, but we have known since Aristotle that ultimately all value is instrumental, i.e. only of value for its contribution to something else
 - Gold may have intrinsic market value, but it was of no value to Midas
 - Water is priceless to a man dying of thirst in a lifeboat adrift on the open ocean, but water is worthless to a man drowning in the sea.
 - Universal Value
 - Emanuel Kant described a system of universal values, or moral laws, that should govern human behaviour. But history has confounded attempts to find laws that can pass his test of universality.

Value is the contribution that an individual perceives that something can make towards their own objectives or goals in the given context and with their own knowledge and assumptions

Definition of Value

Value is the contribution that an individual perceives that something can make towards their own objectives or goals in the given context and with their own knowledge and assumptions

- All Value is instrumental towards something else
 - The meaning of life, the universe and everything is whatever meaning we choose to give it, otherwise it is just the relentless ticking of the universal entropy clock
- All Value is subjective
 - “beauty is in the eye of the beholder”
- All Value is contextual
 - Are you drowning or dying of thirst?
 - Peacetime or wartime?
 - How long do you think you might have to live?
- Value can only be judged absolutely in retrospect
 - Hindsight is 20:20
 - Could I have got a better deal?

Estimating Value is all about Objectives

Practical Value judgements are always at some level of abstraction

The Basic Balanced Scorecard

| Objective | KPI | Target performance | KPI performance | Weight | Weighted Score |
|------------|-------------------|--------------------|-----------------|--------|-------------------------|
| Have fun | Laughs per minute | 5 | 2 | 50% | $=(2/5)*50%$ $=20%$ |
| Make Money | Savings | £1m | £10k | 20% | $=0.01*20%$ $= 0.2%$ |
| Raise kids | No. of children | 2 | 2 | 30% | $=(2/2)*30%$ $=30%$ |

Total Score: 50.2%

Without weightings the scorecard isn't balanced – it's just a scorecard

How to compile a BSC and use it for value trade-offs

- How to choose objectives and KPI's
- How to weight objectives
- How to trade-off the value of options

We need methods that...

...engage all stakeholders in a dialogue...

... through which we derive a shared vision of success,...

... an agreed definition of the objectives...

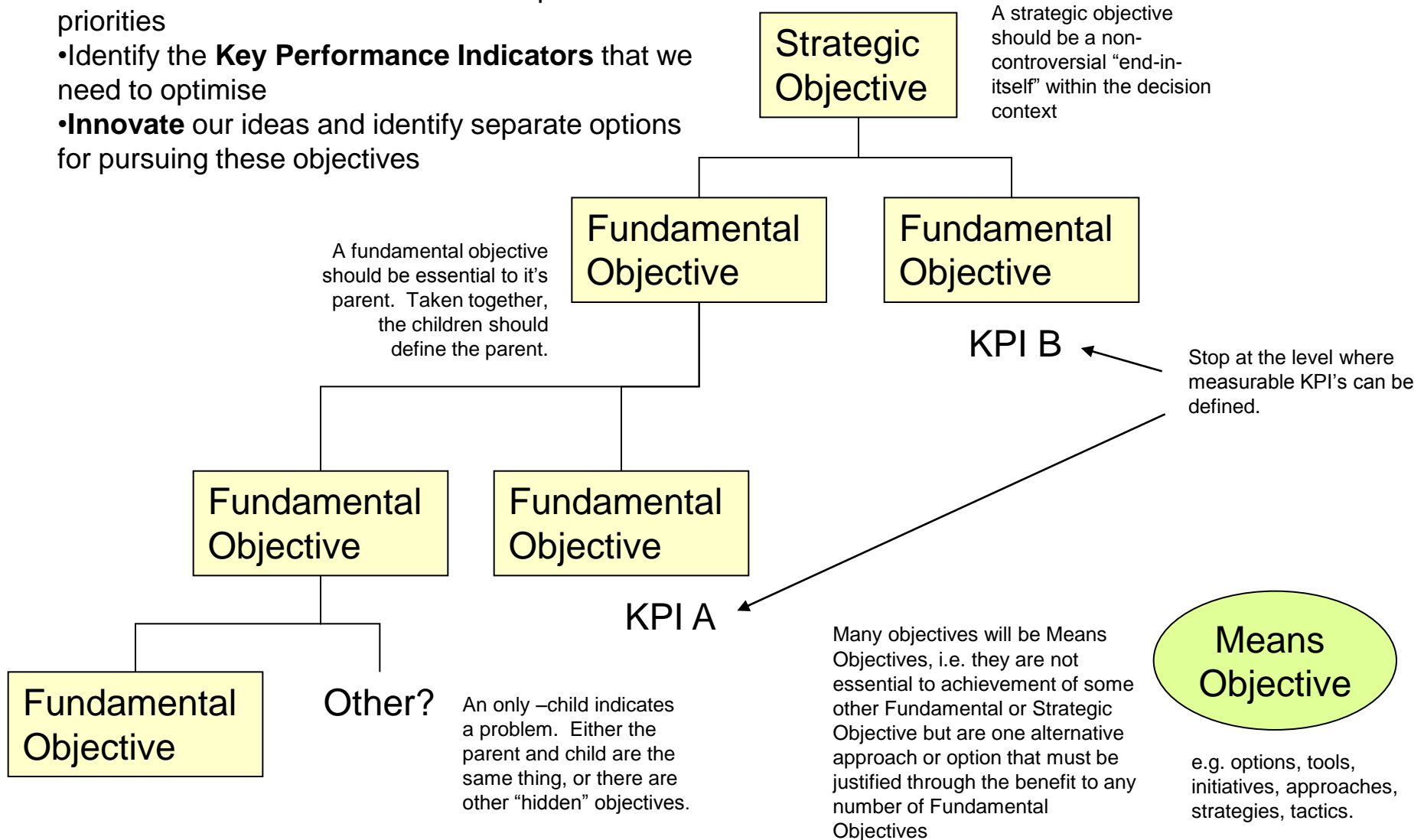
... and a process for scoring and weighting achievement that is both understandable and justifiable to all stakeholders and flexible to be adapted to changing circumstances.

Choosing Objectives & KPI's – Objectives Hierarchies

Create an Objectives Hierarchy to:

- Focus on the essential **output** requirements
- Align** our thinking to a unified set of objectives
- Create a **narrative** to enable us to explain our priorities
- Identify the **Key Performance Indicators** that we need to optimise
- Innovate** our ideas and identify separate options for pursuing these objectives

Raising the level of abstraction



Weighting Objectives - Prioritisation

Pairing Analysis is a useful way to weight the KPI's.

| | B | C | D | E | F | G | Total | Weight |
|-------|----|----|----|----|----|----|-------|--------|
| KPI A | A1 | C1 | A2 | A2 | A3 | A3 | 12 | 30% |
| KPI B | | C3 | B3 | B1 | F1 | B1 | 6 | 15% |
| KPI C | | C3 | C1 | C1 | F1 | C1 | 10 | 25% |
| KPI D | | | | D1 | F1 | G1 | 2 | 5% |
| KPI E | | | | | F1 | E1 | 2 | 5% |
| KPI F | | | | | | F1 | 6 | 15% |
| KPI G | | | | | | | 2 | 5% |

KPI C is significantly more important to improve than KPI D

40

Key:

3 = significantly more important to improve

2 = moderately more important to improve















1 = slightly more important to improve

- Sensitivity - low
- Flexibility - high

The Balanced Scorecard

Weight
(Wt)

Performance Score (out of ten)

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-------|---|---|---|---|---|--|---|---|---|---|----|
| KPI A | | | |  | | | | |  | | |
| KPI B | | | | | |  | | | |  | |
| KPI C | | | | |  | | |  | | | |
| KPI D | | | | | | | |  |  | | |
| KPI E | | |  | | |  | | | | | |
| KPI F | | | | |  | | |  | | | |
| KPI G | | | | | | |  | | |  | |

Current State

Target

KPI A 30%

0.9

2.4

KPI B 15%

0.75

1.35

KPI C 25%

1.0

1.75

KPI D 5%

0.35

0.4

KPI E 5%

0.1

0.25

KPI F 15%

0.6

1.05

KPI G 5%

0.3

0.45

 Current State

 Target

4

7.65

So Target represents a quantifiable improvement in a dimensionless value score

Value Trade-offs

Weight (Wt) Performance Score (out of ten)

| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Current State | Target | Option |
|-------|-----|---|---|---|---|---|---|---|---|---|---|----|---------------|-------------|------------|
| KPI A | 30% | | | | ◇ | → | → | ? | | ◆ | | | 0.9 | 2.4 | 1.8 |
| KPI B | 15% | | | | | | ◇ | → | ? | | ◆ | | 0.75 | 1.35 | 1.05 |
| KPI C | 25% | | | | | ◇ | → | ? | ◆ | | | | 1.0 | 1.75 | 1.5 |
| KPI D | 5% | | | | | | ? | ← | ◇ | ◆ | | | 0.35 | 0.4 | 0.25 |
| KPI E | 5% | | | ◇ | → | ? | ◆ | | | | | | 0.1 | 0.25 | 0.2 |
| KPI F | 15% | | | | | ◇ | → | ? | ◆ | | | | 0.6 | 1.05 | 0.9 |
| KPI G | 5% | | | | | | | ◇ | ? | | ◆ | | 0.3 | 0.45 | 0.3 |
| | | | | | | | | | | | | | <u>4</u> | <u>7.65</u> | <u>6.0</u> |

◇ Current State ◆ Target ? Option

So Target represents a quantifiable improvement in a dimensionless value score

Options can be given a dimensionless score, in this case 6.0, to compare with other options, taking into account the balance of all KPI's.

Note that not all KPI's necessarily increase.

Portfolio Analysis

- Not only can we trade on option against another, but we can combine options into portfolios.
- Portfolios enable us to combine options that individually might be rejected to create a “super option” or portfolio of options that together is better than any of the single options.

E.g. One option might offer a big increase in Availability, but requires significant investment that is unaffordable.

A second option might save significant costs, but at the expense of availability.

Individually, both are unacceptable. However, the balanced scorecard allows us to combine their features to evaluate the combination where the downside of one option is offset by the benefits of another.

Together, these two options might deliver improved Availability **AND** reduced cost.

Summary

- We need to compare the real Value of different options
- Estimating Value is all about Objectives
- Balanced Scorecards help trade value between complex stakeholders
- Objectives are hierarchical, understanding this:
 - Helps us innovate by raising the level of abstraction
 - Helps understand and weight our real objectives
 - Helps identify the right KPI's
 - Helps to align stakeholders
 - Helps create a narrative to explain value
- KPI's must be weighted to balance the scorecard
- Scoring needs to be based on a value scale for each KPI
- Options can be given a dimensionless value score
- Options can be combined into portfolios

Value is whatever the customer says it is

and the customer is responsible for getting it right...

When we make value decisions for ourselves, subjective judgement may be adequate.

When we are accountable to others for our judgements, we need an auditable approach to better decisions.

Suppliers need to focus the value of their products and services to the needs of the customer.

These tools enable customers and suppliers to develop their understanding of value in any context either separately or, ideally, in collaboration.

Cost/Input/Effort \neq Value