

Project Procurement & Evaluation

Presented by

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Agenda

- Introduction to Procurement
- Procurement model and process
- Procurement terminologies
- Evaluations and Contract award
- Standards
- Concession and ALARP
- Case studies – London Olympic
- Workshop – PESTEL / SWOT analysis

About me

Automotive Engineering Industries, UK (1997 – 2007) (2540-50)

1997-2001(2540-44) – Pilot Industries UK – Automotive ‘Fuel System Test & development Engineer’

2001-2007(2544-50) – Fuel system, Heat&Cooling, Project Engineer, Visteon Automotive UK (Sub of Ford motor company, UK)

Railways Engineering Industries, UK (2007^{“2550”} – present)

2007(2550) – present – London Underground / Transport for London

2007 -2011(2550-54) - Sub-surface Line Upgrade and Signal Interface Engineer,

2011-2016(2554-59) - Signal Design Engineer, Sub-surface and Central lines

2016 -2017(2559-60) - Project Engineer – Rail Systems, Metropolitan line Extension,

2017 – 2018(2560-61) - Signal Project Engineer, Jubilee and Northern Lines.

2018 – present - Assistant Project Manger, Signal & Train Control, Piccadilly Line Upgrades, Deep Tube Upgrade.

Committee members of : London Underground Technical Society (TechSoc)

: London and South East - Institution of Railway Signalling Engineers (LSE - IRSE)

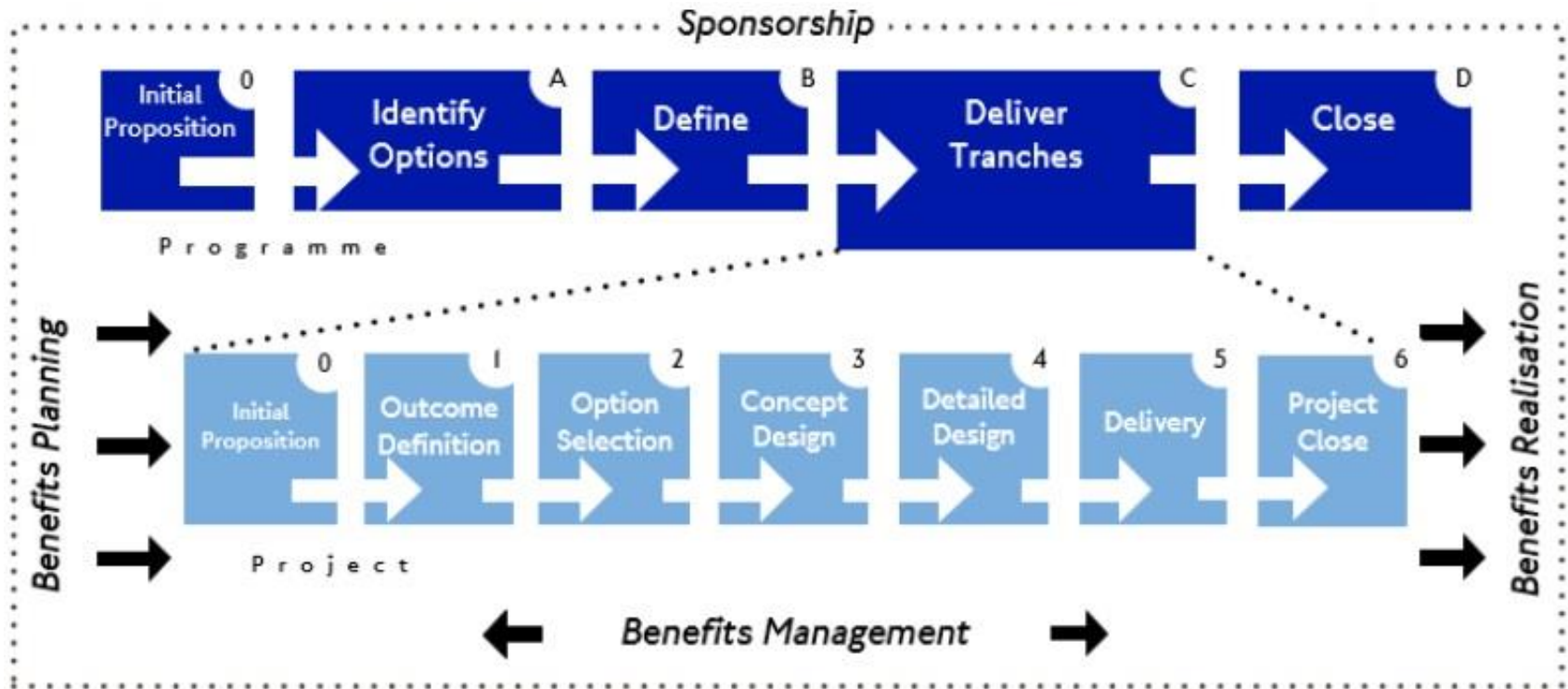
Member of

: The Engineering and Technology (The IET)

Introduction to Procurement

- The process of finding and agreeing to terms, and acquiring goods, services, or works from an external source, often via a tendering or competitive bidding process.
- Generally involves making buying decisions under conditions of scarcity. If sound data is available, it is good practice to make use of economic analysis methods such as cost-benefit analysis or cost-utility analysis.
- To ensure the buyer receives goods, services, or works at the best possible price when aspects such as quality, quantity, time, and location are compared.
- Corporations and public bodies often define processes intended to promote fair and open competition for their business while minimizing risks such as exposure to fraud and collusion.
- Almost all purchasing decisions include factors such as delivery and handling, marginal benefit, and price fluctuations.

Programme / Project lifecycle



Programme life cycle and process flow guidance and requirements to facilitate how projects are managed and documented.

Procurement Module

Improving Infrastructure Delivery: Project Initiation Routemap

By IPA Infrastructure and Project Authority

Characteristics of good procurement:

- fosters and supports strategic ongoing or early engagement to encourage market capability development;
- enables a client and the supply chain to fully appreciate the risks related to the delivery of the requirements;
- is based on understanding of the shared drivers. This will enable client and the supply chain to work towards better alignment and thus engender a truly collaborative relationship;
- recognises that there is always likely to be shared reputation benefits, risk and reward;
- adopts and complies with a clear and transparent process;
- supports the overall execution strategy and client model and Projects Authority.

Consideration for Procurement

Pillars of 'good' procurement:

Optimises both the delivery of requirements and the clear articulation and allocation of risk for the client and the supply chain.

To engage in good procurement, the client needs to know:

- What the requirements of the project are and the outcomes and benefits expected;
- The market appetite capability and capacity to provide the services required and engage in a longer term strategic relationship;
- Which risks are best managed in-house, based on the organisation's risk appetite, and which risks are best placed with and managed by the supply chain;
- The key business drivers for the suppliers, both reputational and remunerative, within the various markets that will deliver the requirements;
- How the procurement will support the proposed target operating model and client model being adopted.

Good Procurement

Good procurement has six primary sets of activities:

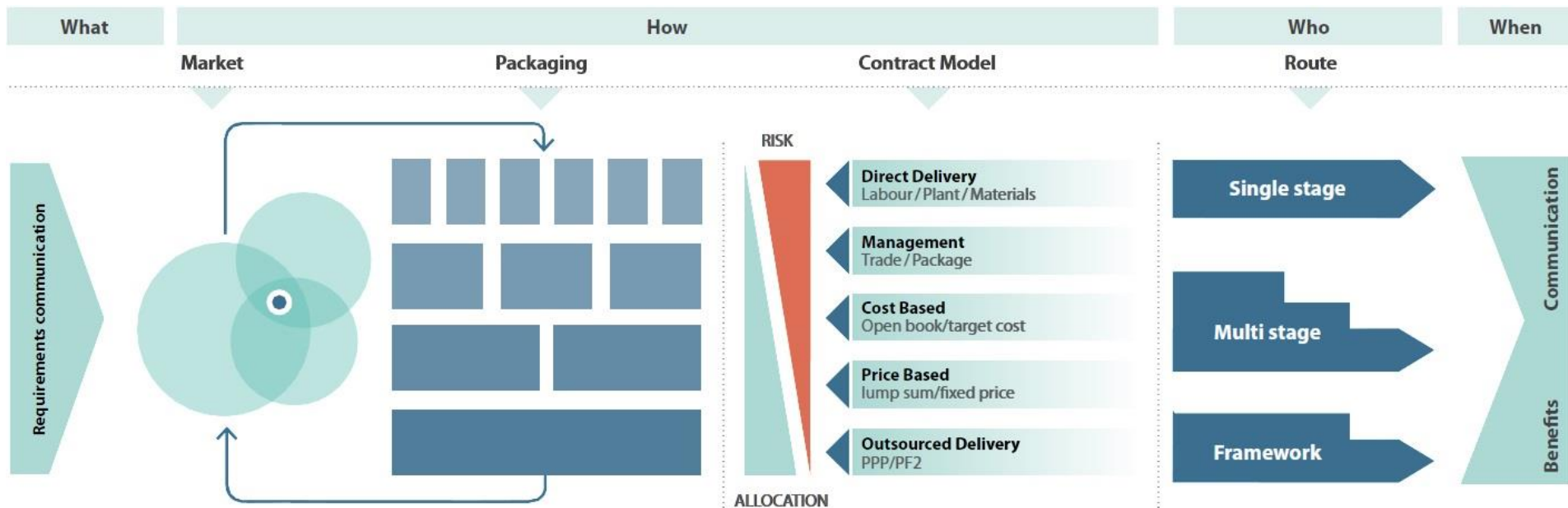
1. Understand & communicate requirements
2. Engage the market
3. Package the works
4. Choose the risk allocation model – Contracting Model
5. Choose the route to market
6. Communicate the benefits

It is important that these six pillars link together to form an effective procurement approach. If one of the pillars is missing or out of balance the procurement will be inefficient and likely to lead to heightened risk or loss of value.



Procurement Model Diagram

The diagram illustrates stages of procurement, starting with an understanding of both the project requirements, the client's understanding of its position within the market and the market's appetite to transact.



The model shows how the client and the market work together to determine the best packaging and contract model based on risk, complexity, capability and technical interfaces. It is an iterative process to define what, how, who and when. The approach balances risk and value outcomes to inform decisions on the packaging strategy, approach to risk, and the market's ability to deliver the requirements.

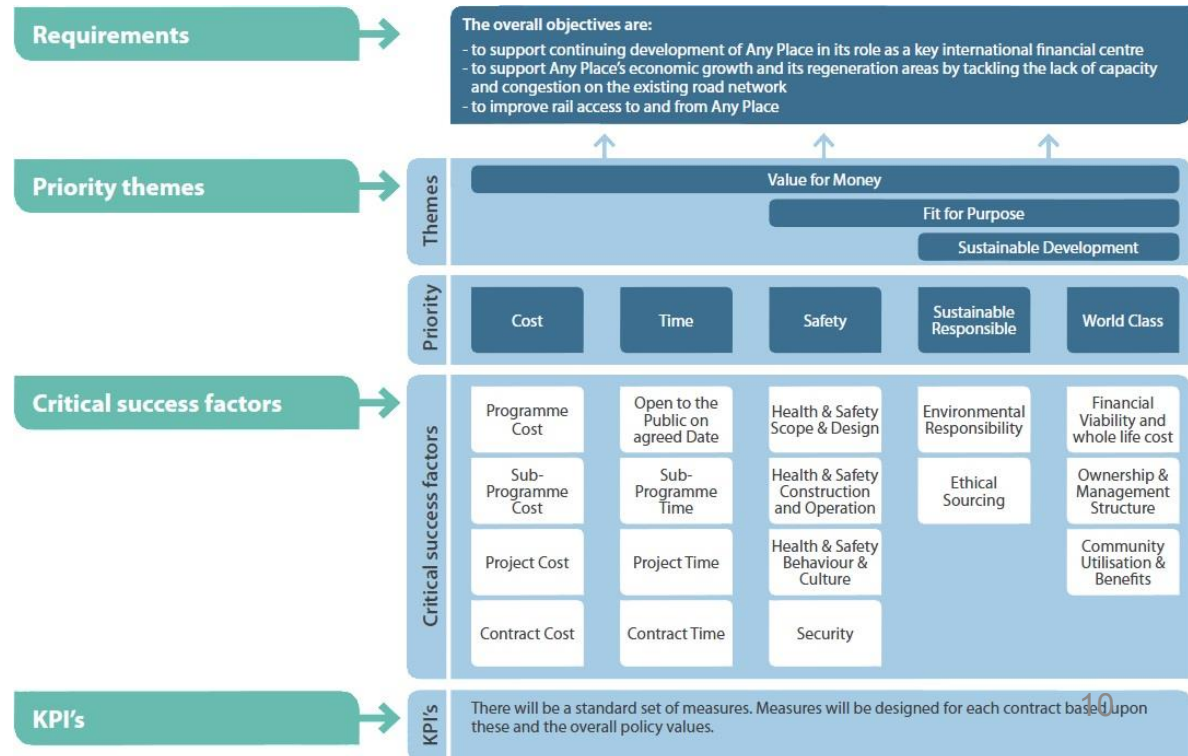
Procurement - Balanced Scorecard

The balanced scorecard is a tool that supports a client in identifying and communicating its priority themes and the underlying critical success factors that will support delivery of the Requirements.

Underpinning each critical success factor, there is a set of key performance indicators which are measured and which enable the client to manage performance during the delivery phase.

In terms of how this affects the procurement module, the balanced scorecard (as shown in the example below) can be divided into specific areas to enable testing during the procurement process, each priority theme and critical success factor weighted according to their value to the client.

Each tenderer would be assessed against the scorecard during the procurement process and their strength or deficiency against each item would contribute to their overall score.



Procurement – Market engagement

Engagement with the market has a dual benefit:

- To the client - understanding what the market can or cannot do (capability), and what the market will or will not bear (capacity) in pursuit of an opportunity;
- To the suppliers - insight into future opportunities, as well as the risks and rewards associated with that opportunity.

Successful market engagement allows the supply chain to begin planning their tender resources in anticipation, i.e, get themselves ready to supply. More importantly, it enables the client to identify potential risks in its packaging strategy.

The market capability assessment in the Routemap Handbook will provide a good characterisation of the wider marketplace and the supplier capability table contained within this supporting material can be used to assess specific supplier capability.

Once a client organisation has considered and reflected on the market environment it operates within, and the maturity of its strategic relationship, the client can test the market on various options, or more specifically, gauge the market's reaction to risk transference, technical solutions, funding, interfaces, methodology.

The greater the maturity level of strategic market relationships, the greater the possibility of achieving an enhanced offering and of nurturing market appetite over the longer term.

Procurement Terminologies (1)

Early Engagement phase

Procurement strategy sits under Commercial

Business Plan Option(s) defined and agreed

Procurement Strategy (Funding Approval)

PIN- Prior Information Notice (Formal announcement issued)

OJEU - Official Journal of the European Union

PQQ – Pre-Qualification-Questionnaire

PQQ Evaluation – process require scores set by requirement criteria. Short listing from Companies competencies to approx 5

Finding out
who's may be
interested in
bidding for
business



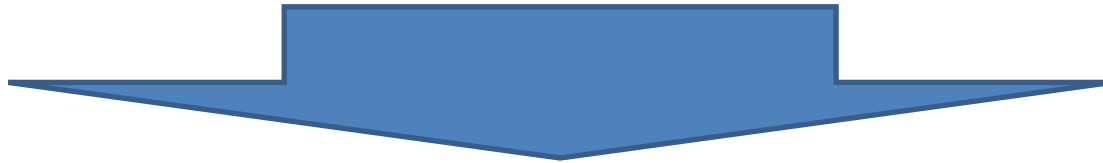
Down Select and short listing phase

Procurement Terminologies (2)

Selected PQQ short listing

ITT – Invitation To Tender – Assess companies capability to delivery end product.

Tender Evaluation Process



Preferred bidder

Selection from Short listing Companies to one bidder

Governance and Contract award

Internal Governance Approval

Obtain release of funding

Contract Award Recommendation – 10 days cool off period

Review legal requirement

Contract Management Plan

Contract award and Obtain funding release

Pre-Qualification-Questionnaire - PQQ Stage

The process defines and govern by Procurement Regulation.

Evaluation regulate by Legal, case law – defines what you can and can't do.

Legal – onsite – Advance on formation of contract.

At PQQ is a (Short list stage)

- Defining clear requirements on what are we buying.
- Assess capability of a company apply to do the job. (Not any specific at this stage).
- If companies interested in willing to spend money on bidding.

We look FOR TENDERER on their :

- Case studies that they have done before.
- Policy documents of how they do things
- Assess their Health and Safety file
- Assess their competencies= If pass , they can do the job.

ITT Stage

ITT Evaluation Stage;

There are 2 (One stage or Multiple stages) This depend on route to market we take. i.e there are no one way of evaluating.

There are numbers of route evaluation

Can lead to Open procurement where by you have one stage of all applicants, why you measure everything

- Restricted
- Negotiated
- Competitive dialogue
- Or permutation of those

These are many types of evaluation you can do. But once you pass the 'Capability of the company' you then access them on the confident you have on their offer they are given to you.

ITT Evaluation

The Evaluation criteria and how these are scores need to be agreed with all stakeholders

- There are many details / issues/ opinions.
- Are you looking at the whole life cost?
- Looking a social values?
- Looking for innovations?

Require to set scoring values

- Evaluation model to be agreed with all (stakeholders, i.e. what they want out of them)
- Usually, company have evaluation model.
- Company / aim / vision, as Criteria
- Each project has different requirements and should be made clear on scoring criteria

ITT Evaluation process

- The process must be fair and consistence to all bidders.
- Technical evaluation must have separate scores
- Consensus to ask each evaluator for clarification to ensure the process and criteria are correctly followed and judge fairly. (Some people may have strong views).
- Ensuring that, they have applied the question?
- The evaluators (usually 2) must be individual and cannot talk / discuss amongst themselves. This is to avoid bias opinion or influence in any decision making thus would affect the score.

Sample of ITT Evaluation (1)

Look for offer stage: [Assess Capability of the company on What they offer

- Price / programme
- Commercially processes
- Technical questions – what they offers comprises – or made off.
- How confident in how they will be delivering the works.

Example : It's dinner time. Client wants to buy a sandwich. Before going to the shop. We send out a note

[Is there anyone can supply sandwich to me?]

[Responses from 5 companies says (Yes)]

Sample of ITT Evaluation (2)

Pre-Qualification Stage : on [What on offers]

- 1) Are you the right company?
- 2) Do you do this?
- 3) Have you done this before?
- 4) Are you pop-up thing? Or are you a proper shop?
- 5) Do you have a lot of customers that keeps coming back?

Evaluation (Criteria)

- Policy for keeping kitchen clean?
- Do you actually sell sandwiches or do you sell pieces of bread and ingredients and stuffs without putting them together?
- Short listed: “Of all companies responded, (out of you). Top marks I will give to the 5 companies.

Sample of ITT Evaluation (3) Transparency

2nd Stage [What can you 'actually' provide for me]?

- We will visit to see what type of sandwich they do and what price they are.
- We need to be fair to all suppliers, to prove fairness is 'Transparency'.
- Which has dual elements to ensure No one can commit fraud.

On our side, we must made clear 'what we are looking for' and put estimate forward and see if you can afford it.

For company that is bidding: You must 'tell' them 'exactly what you want'.

i.e. You look at all 5 companies and you picked 'Cheese and Ham sandwich' as per price and is what you want.

- Other 4 companies can say, challenge that you haven't told you want (Cheese and Ham sandwiches). As they also do and cheaper than that picked.

The question on transparency can be challenged in court.

Include 'inside information' on 'what we want', to potential supplier, can also causes issues.

Comparison of PQQ and ITT

The PQQ stage is simpler as this assesses their competency on:

- Ability to deliver
- Company capability
- What they have done in the past

The 2nd stage (ITT) is more to the point as we are looking at what they are offering. (Compare Products)

- Sample of Signalling Systems / Legacy / TBTC / CBTC / Radio base?
- Different to looking for consultancy?
- Train – Cost / customer satisfaction / number and quality of seats
- Depot – Live depot / HSE for people working on site etc.

How to score ? – Price/ quality / safety / Engineering / Technical etc.

Time scale and Contract award

Generic Time Frame

- 6 months PQQ – (include write responses to bidders)
- 12-18 months ITT – (inc write processes)
- 6 – 9 months Evaluation

Contract award

- The governance period are included in the above
- Notification to award. The 10 days cooling period for client to provide feedback to other bidders on shortfall of evaluation process
- Opportunity for bidders to challenge the results can potentially delay Contract award process.
- Confirmation of Contract award and Signing
- Agreed commencement date of the project
- Project and Contract management phase commence

Regulations and Safety Requirements

- Requirement to adhere to regulations to European and British Standards
- Governance as the safety requirement to run the railways
- LU Standards derive from industry best practice and control measures of top event risk.
- Details on 'how' the risks are controlled
- The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS) provide the regulatory regime within the UK.

Standards

Industries Best practice and control measures of top event risk.

A document detailing requirements a product, system or services shall comply.

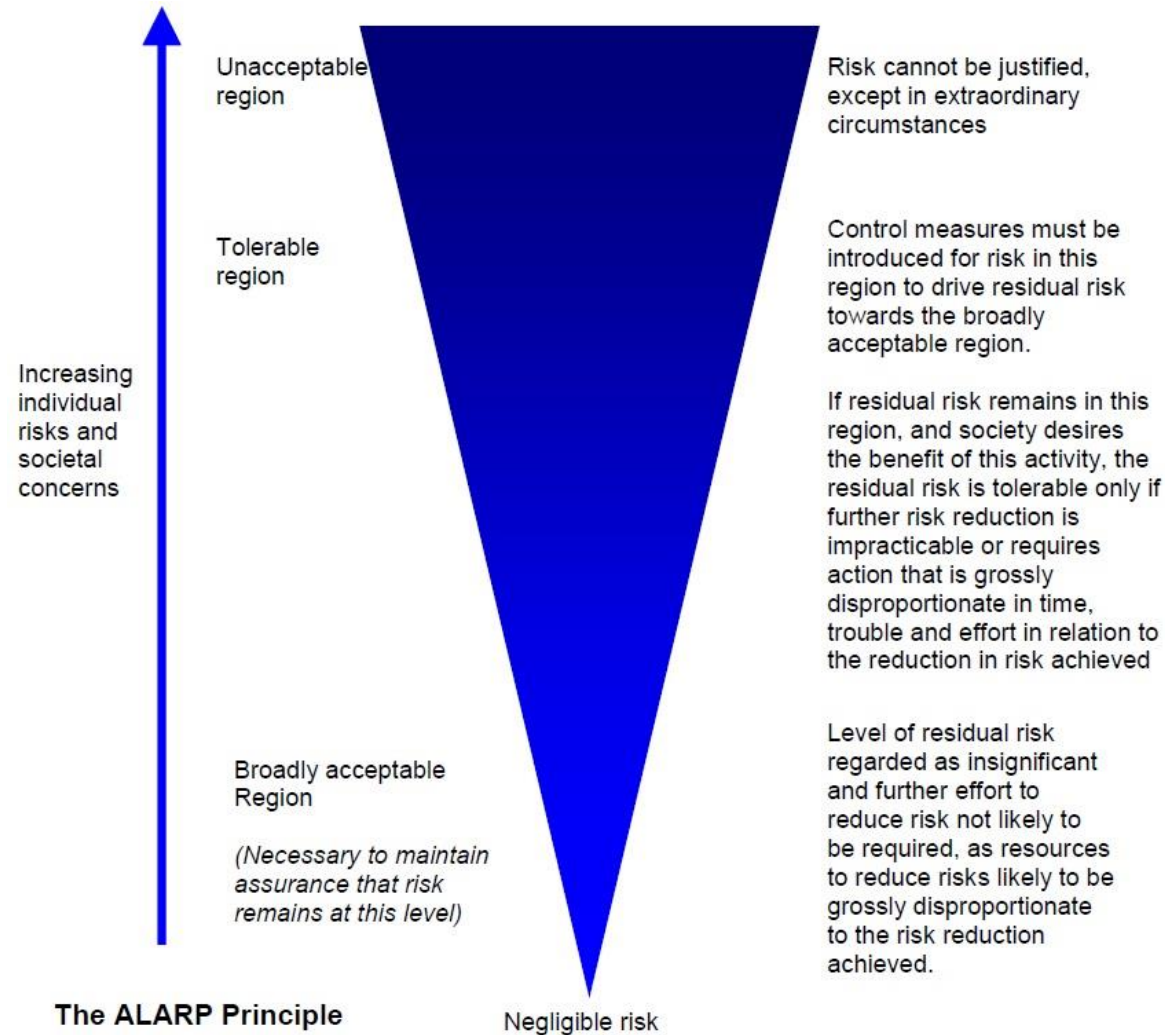
Standard	A document issued by a national, international, industry or company authority, which defines overall or minimum requirements with which a product or service shall comply.
Category One Change	A change which has a significant bearing on safety and/or could affect the risk of fatality.
Category Two Change	A change with safety implications that do not meet the criteria for Category One.
Category Three Change	A change which has no safety implications.

Note: Operational and maintenance are considered as one on the main stakeholders. Standards often required to clarified in details to ensure they are clear and fit for purpose to avoid any misinterpretation.

Deviation to Standards

- Concessions provide the mechanism where we record the reasons why we might not be able to meet Standards' requirements, propose alternatives and assess/mitigate risks.
 - Category 1 Standard “Concessions to Standards” provides this mechanism, and "Guidance Notes" provides appropriate guidance and advice on how to complete the "concession request template"
 - Required details are:
 - Why requirement cannot be met
 - Alternatives options available
 - Details information of prefer option
 - Demonstration of ALARP# and details support of risks assessments
- # ALARP – As Low as Reasonably Practicable

The ALARP Principle



The Figure illustrates the principle described above. This is often referred to as the **ALARP Principle**, because it ensures that risk is reduced to 'As Low As Reasonably Practicable'.

What to do when Standard cannot be met

Management and Concession

- The process is time bound – has an end date (or expiry date) related to it.
- Location specific (Geographical Limits defined)
- Use of written notice – To explain and made clear, and clarify the requirements.
- Other process could also be used called Physical Design Non-Compliance (PDNC) – for Old Assets compliance to Old Standards

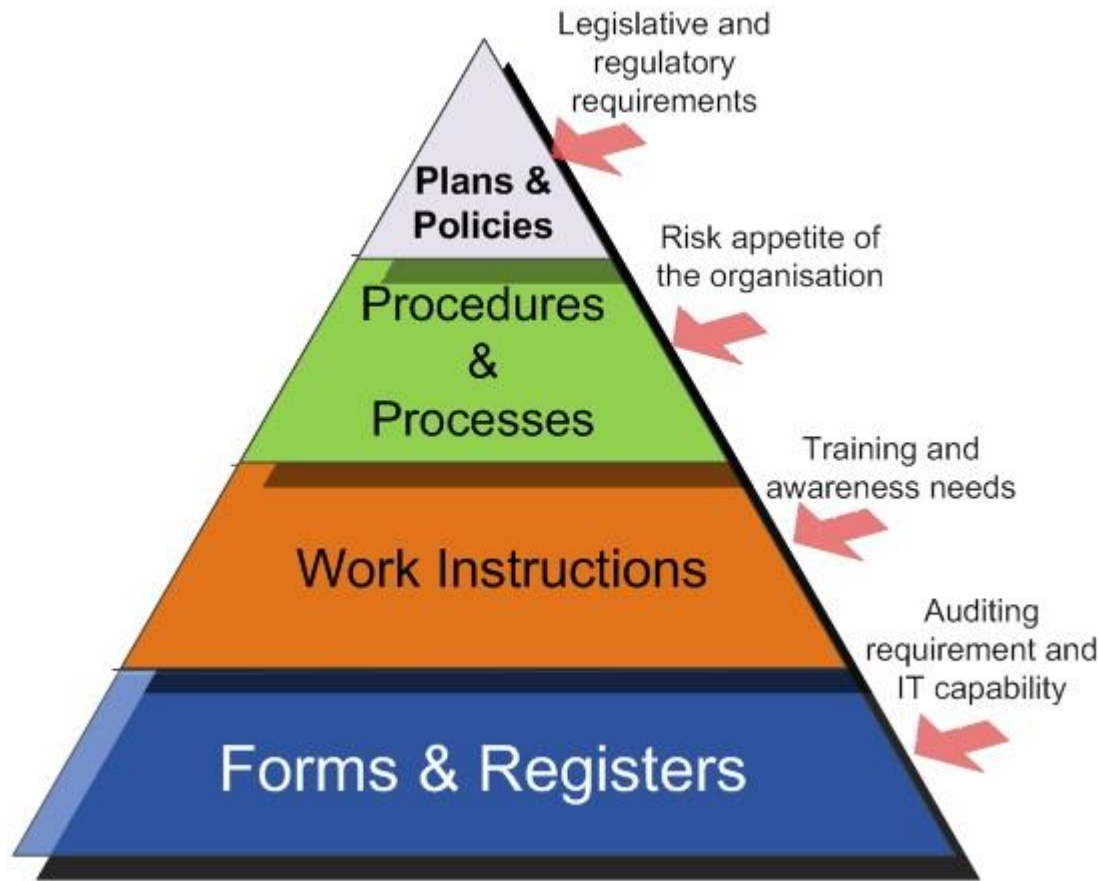
Alignment of standards

Alignment of standards will allow clear clarification of most frequently referenced within functional requirements would be incorporated into Project 'Works Information'.

This procedure reduces number of standards which the 'supplier' must follow, and the associated time and effort which is required during the system lifecycle through analysis, interpretation, clarification, verification, validation, acceptance and assurance.

Standard ID Req	Standard Clause	Suggested re-wording	Justification for non-inclusion/comments	Recommended location	Classification	Reference in Sxxxx Issue A	Detailed referenced requirement
Sxxxx-10	The system shall provide a minimum of two levels of control: a) Line-based control b) Control of individual interlockings.	The Signal Control system shall provide a minimum of two levels of control: a) Line-wide control from Ops Control Centre b) Control of local interlockings from Maintainer Signal Control Terminals.	n/a	Doc.01 after 1.2	I-MW	3.1.1.1.1	[Sxxxx-10] 'The Signal control system shall provide a minimum of two levels of control: a) Line-wide control from Ops Control Centre b) Control of local interlockings from Maintainer Signal Control Terminals.

Samples Notes: Cyber Security documentation toolkit



As a part of Project assurance, the technical project looked at developing suite of documents to drive cyber security strategy and overall needs. They aimed at developing framework for managing cyber security, structure of clearly defined roles and responsibilities structure and work instructions for the users of the systems. These documents to also provide the evidence for acceptance and cyber related material for staff training.

Cybersecurity documentation toolkit (1)

Plans and Policies: were created to capture cyber strategy and for implementing a sound and consistent cybersecurity approach. They were derived from legal and regulatory requirements. The plans were specific to issues like governance, protection, detection and response and recovery. They detail the framework for managing the cyber security risk on the operational railway. Policies like Removable Media and Temporary Connection listed the rules for connecting external devices to CBTC assets.

Procedures and Processes: were created to establish a structured approach and carry out activities in a specified way. As plans and policies were deciphered here for implementation, risk appetite for the project guided what to do, who does it and when. It included majority of the cyber documents. Some of these documents were providing details to plans like process for responding to different cyber incidents. Others documents were procedures, expanding cyber security element of end user work instructions.

Cybersecurity documentation toolkit (2)

Work Instructions: It covers part of a process and procedure which require greater emphasis or likely to have compliance issue or greater risk associated with it as step-by-step instruction.

Most of the work instructions aimed at front line fleet, wayside and centrally located staff were already covered by the asset specific maintenance work instructions and their training. Majority of them needed to refer to Malware Scanning Device (MSD) instruction, which was captured as a procedure as it was aimed at wider group of people including internal and external staff. Later on in the process it was decided to call most of the cyber related work instructions as procedures.

Forms and Registers: were created to support various cyber security plans, policies, processes and procedures like anti-malware scan record, removable media signing record, asset register etc. These records and registers are required to securely control aspects of the 'Railway Network' to minimise risk and are also records from an auditing point of view.

Case Studies

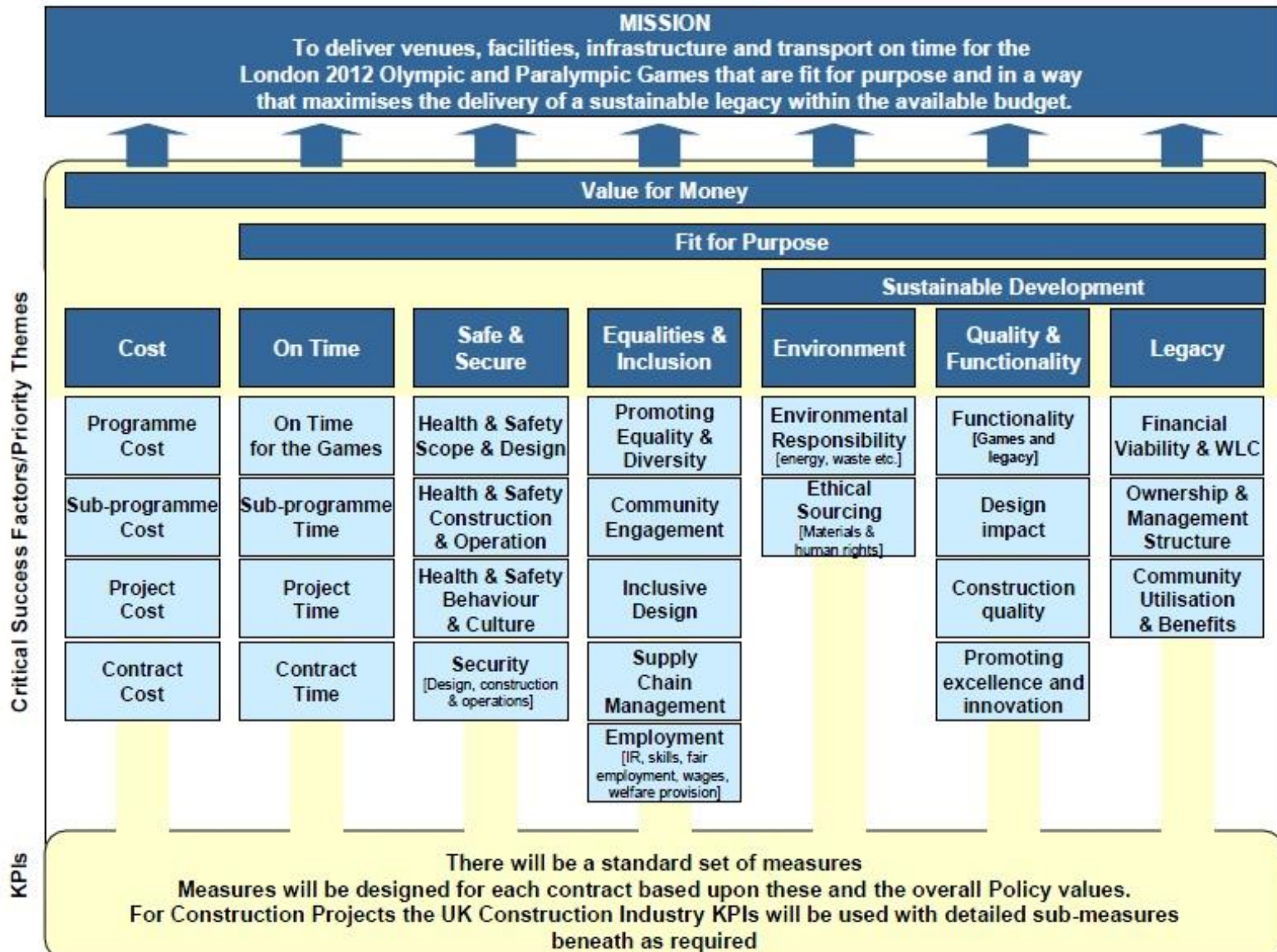
Olympics 23 Jan 2013

Constructions works to the Olympic Park for the 2012 London Olympic



Case Studies – Balance scorecard

Balanced Scorecard for Procurement



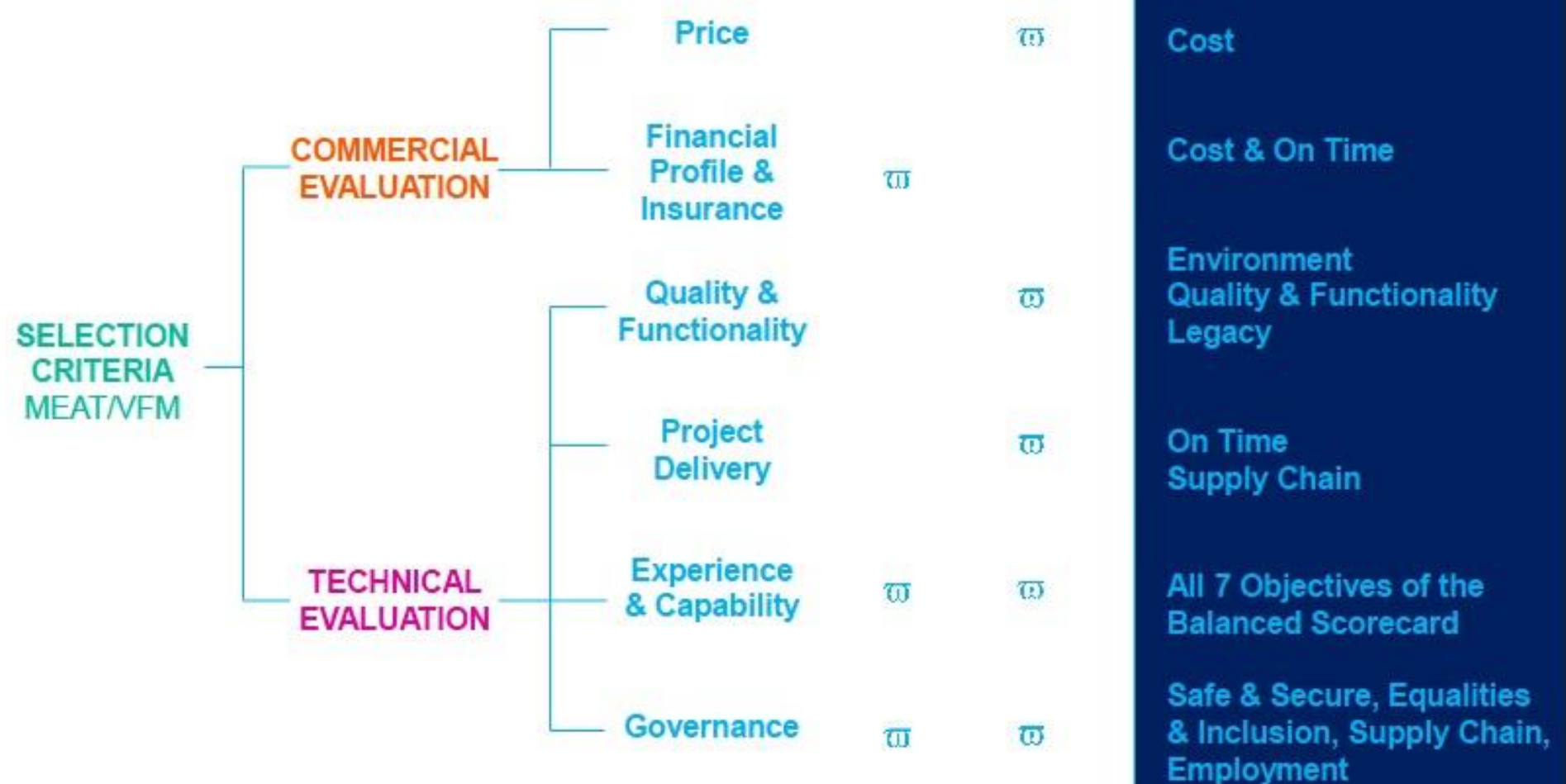
Case Studies – Applying Scorecard

Applying the Scorecard

PQQ

ITT

Balanced Scorecard



Case Studies – Packaging Strategy

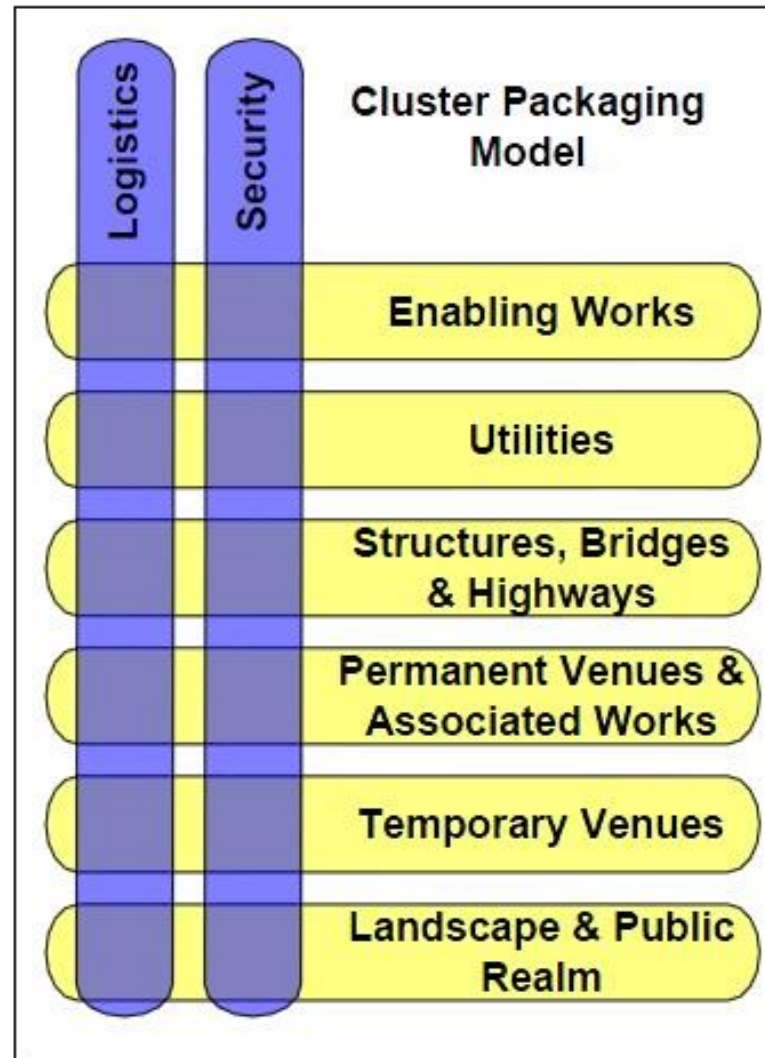
Packaging Strategy

ODA central control:

- Security
- Logistics

Central supply:

- Quality
- Sustainability
- Leverage

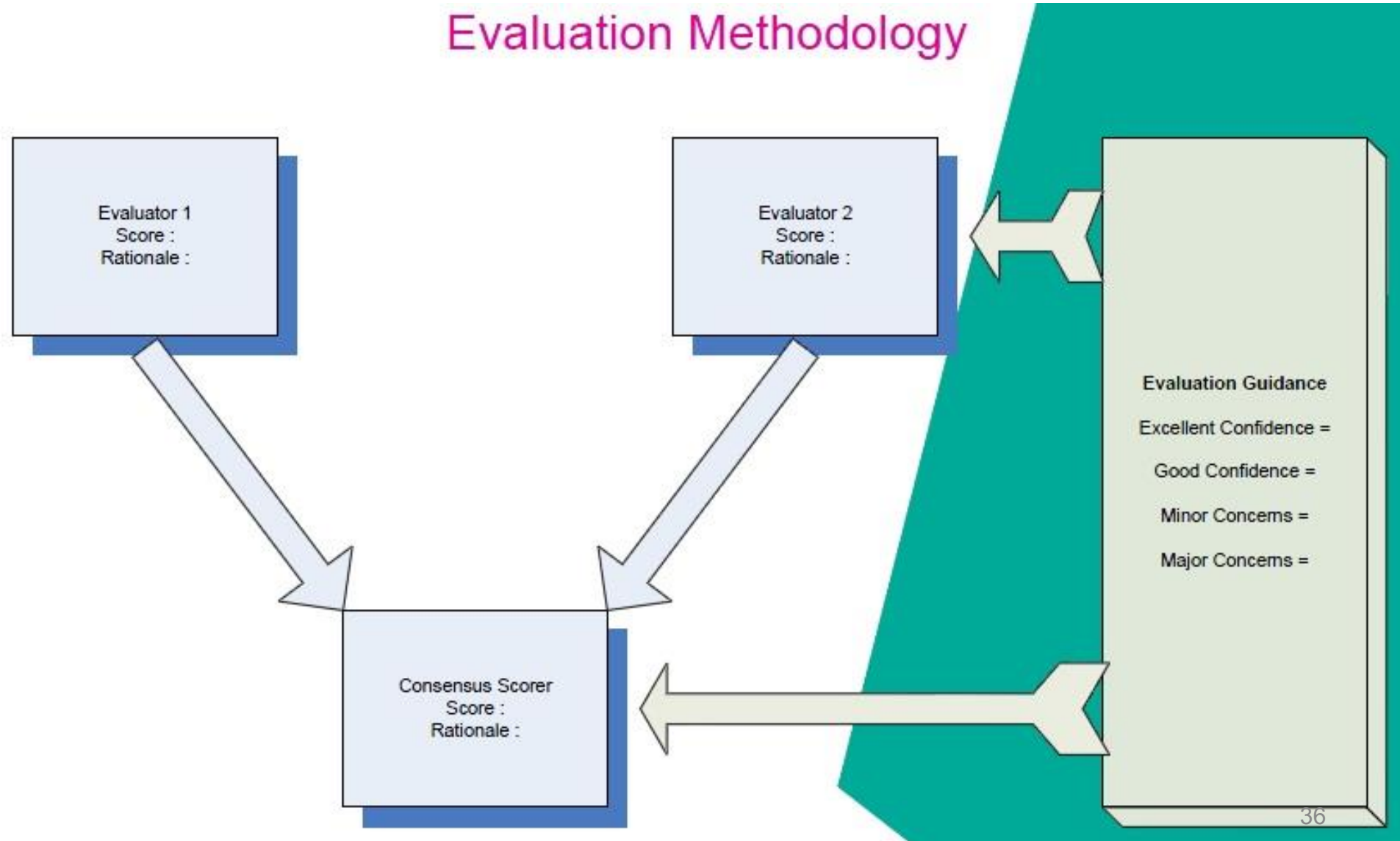


Venue packages

- Responsibility
- Programme Flexibility
- Palatable Risk
- Managed Package (temp venues)

Case Studies – Evaluation Methodology

Evaluation Methodology

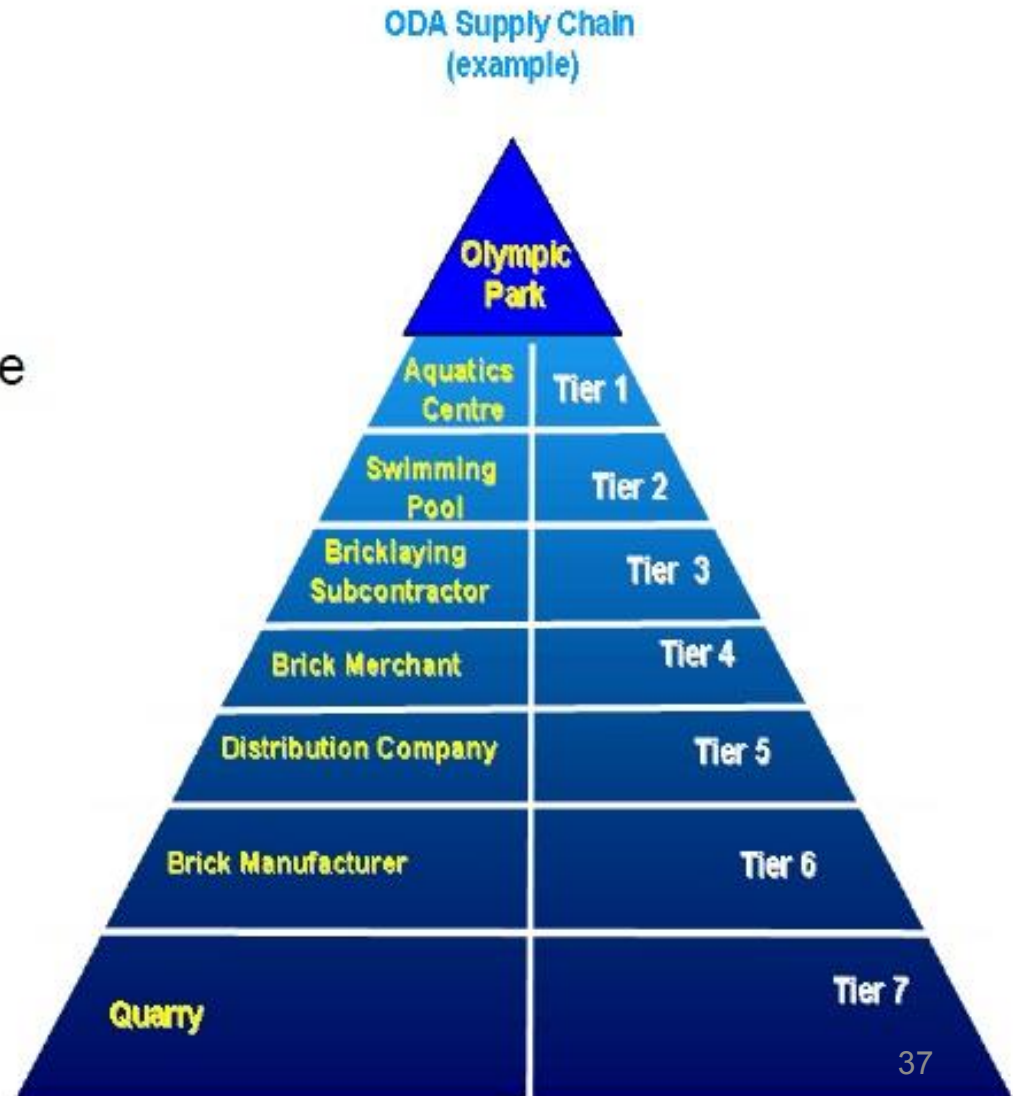


Case Studies – Responsibilities

Supply Chain

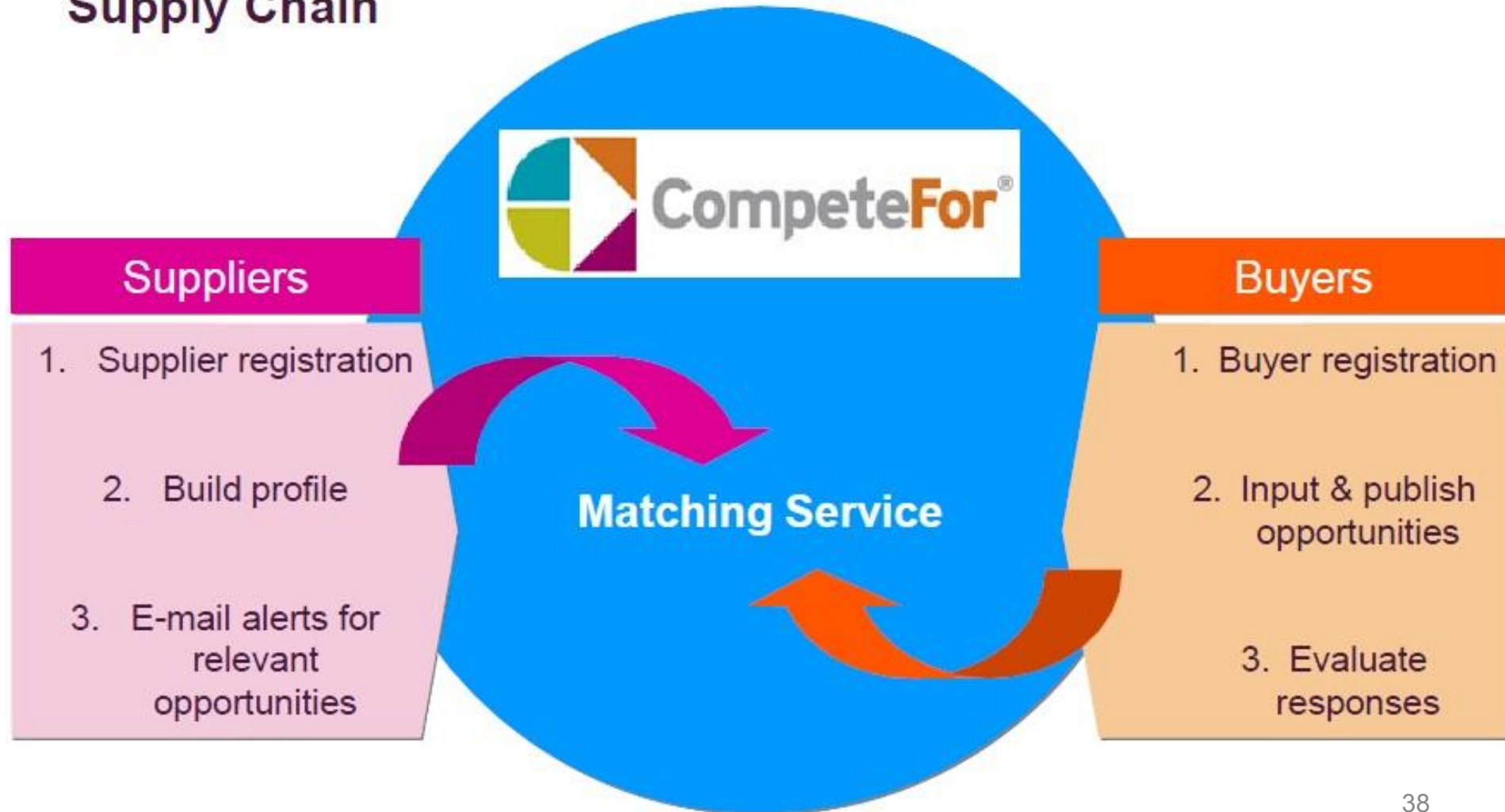
Cascade Responsibilities

- Balanced Scorecard
- Maximising results throughout the supply chain
- Supply Chain monitoring
- Pyramid 'multiplier' effect



Case Studies – Managing project

Supply Chain

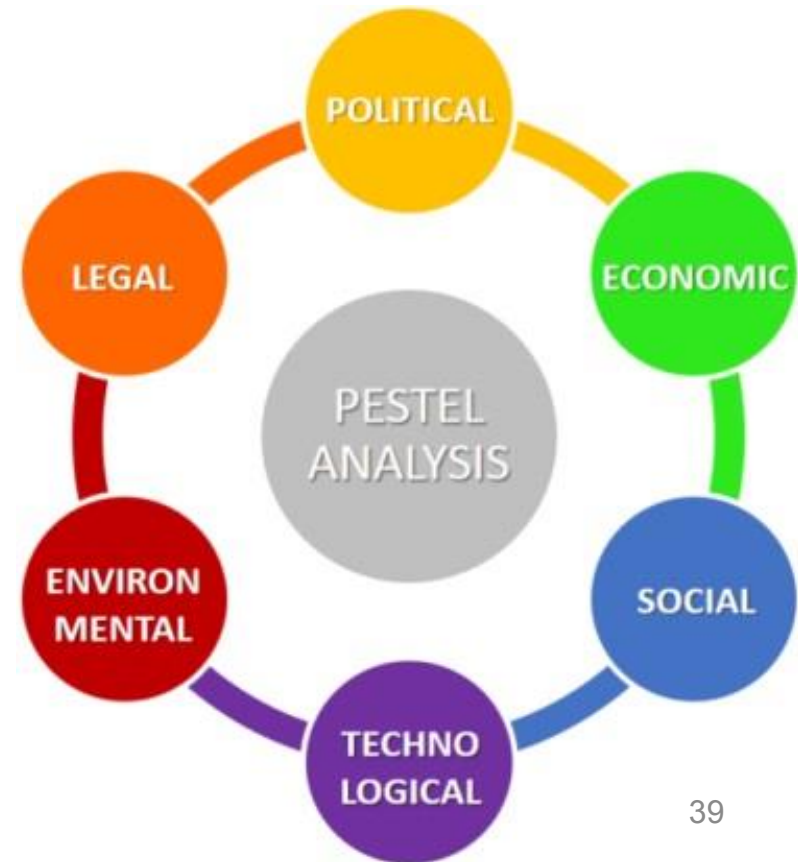


Workshop - PESTEL and SWOT analysis models

A *PESTEL analysis* is a framework or tool used by marketers to analyse and monitor the macro-environmental (external marketing environment) factors that have an impact on an organisation. The result of which is used to identify threats and weaknesses which is used in a *SWOT analysis*.

The letters stand for Political, Economic, Social, Technological, Environmental and Legal.

Depending on the organisation, it can be reduced to PEST or some areas can be added i.e. International.



P

- Government policy
- Political stability
- Corruption
- Foreign trade policy
- Tax policy
- Labour law
- Trade restrictions

E

- Economic growth
- Exchange rates
- Interest rates
- Inflation rates
- Disposable income
- Unemployment rates

S

- Population growth rate
- Age distribution
- Career attitudes
- Safety emphasis
- Health consciousness
- Lifestyle attitudes
- Cultural barriers

T

- Technology incentives
- Level of innovation
- Automation
- R&D activity
- Technological change
- Technological awareness

E

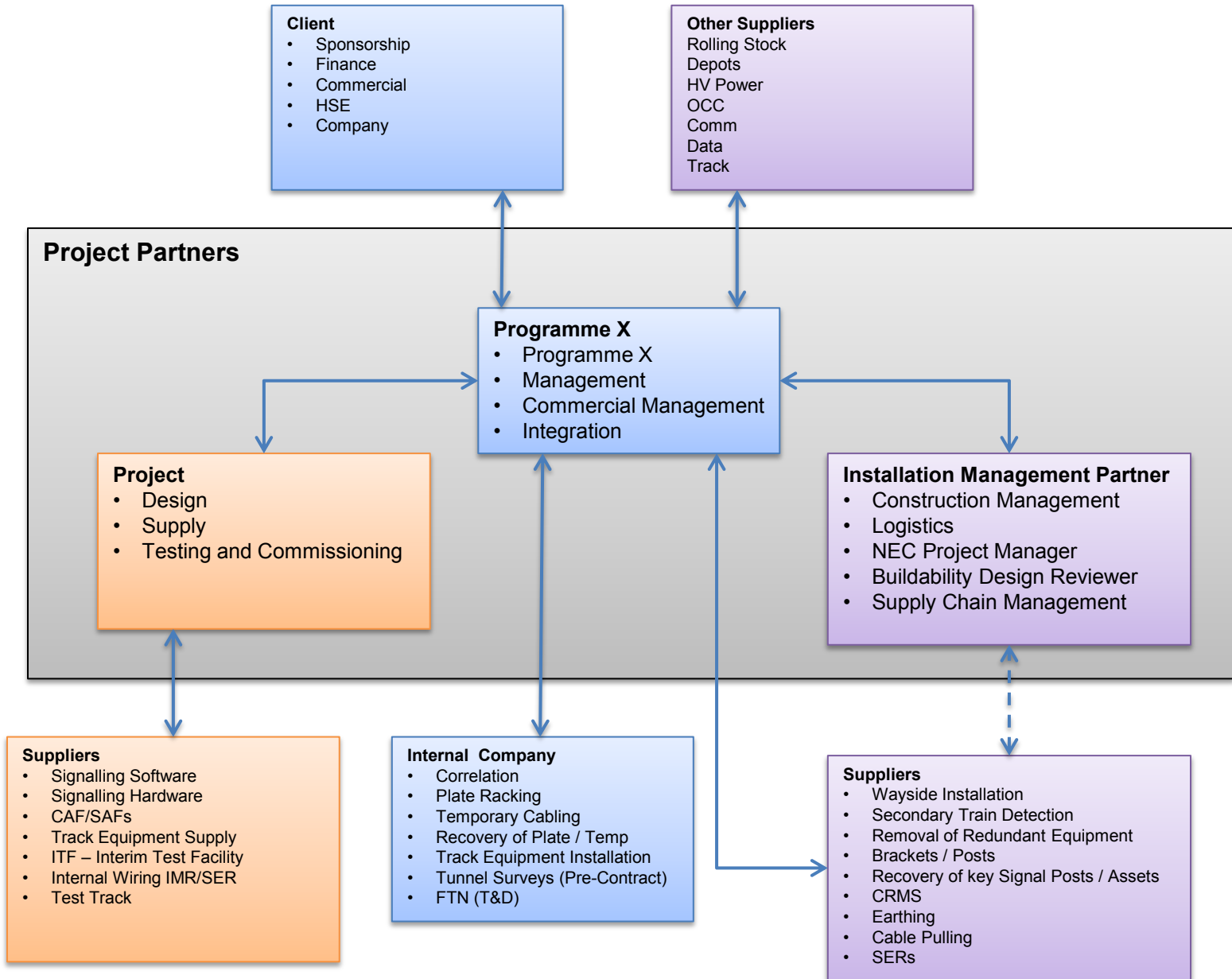
- Weather
- Climate
- Environmental policies
- Climate change
- Pressures from NGO's

L

- Discrimination laws
- Antitrust laws
- Employment laws
- Consumer protection laws
- Copyright and patent laws
- Health and safety laws

SWOT ANALYSIS





Strengths:

- IMP can be incentivised to drive innovation
- IMP can drive efficiencies (modern techniques)
- Focus can be maintained on "What the contractor is best at"
- Better definition of installer strengths

Weakness:

- No specific technical incentive from model
- Risk increases over interface

Political

Opportunities:

- Development of mechanisation incentivised
- Innovation can be incentivised in different areas

Threats:

- Changing requirements maybe harder
- Risk installer not familiar with product.
- Installer/T&C interface changed
- Interface Management of Intellectual Property Rights, defects, completion, reliability growth

Strengths:

- Easier to apply apprenticeship quotas through installation management separation.
- Enables early contractor engagement

Weakness:

- Price Cap effects suppliers competitive ability
- Design buildability conflict between parties causes increase in cost
- Signal Contractor & installation management partner may be paid in separate currency

Economic

Opportunities:

- Better management of site works
- Shared incentives can be established
- Reduce man marking through integrated team

Threats:

- Appetite for lower value packaging with risky client may be low
- Could create a management layer at head contract level, which would burn costs

Strengths:

- Best athlete can be fitted into model as diverse supplier base
- Collaborative working etc. more attractive
- IMP comes with own culture (+ve)
- Safety culture controlled

Weakness:

- Appetite for apprenticeships in Signal contract reduced

Social

Opportunities:

- Opportunity to share company incentives to workplace H&S

Threats:

- Model requires new way of co-operatively working

Strengths:

- Installation Management partner (IMP) can be incentivised to drive innovation
- IMP can drive efficiencies by use of modern techniques
- Focus can be maintained on "What the contractor is best at"
- IMP will bring a wider view of construction technologies

Weakness:

- no specific technical incentive from this model
- Interface design + install: Risk increases over interface but forces clear definition of installation design strength & weakness

Technologies

Opportunities

- Wider options on Mechanisation
- Innovation can be incentivised in different areas as suppliers are separated

Threats:

- Change in requirements could be harder if its an alliance
- Separate design, T&C and install risk that install not familiar with product design
- Management of interface: Intellectual Property Rights, completion, defects etc.

Strengths:

- Liquidated Damages (Claims) assignment can be different for each supplier
- Opportunity to delay installation works independent of Signal Programme control increased

Weakness:

- process will now be split differently requiring extra definition in contracts
- Separate design, T&C & install puts greater barrier between design and knowledge of environment in which it will be installed / used.

Environmental

Opportunities:

- lower carbon technologies can be developed as time can be allowed due to installation contractor on-board early and programmes controlling subcontract procurement

Threats:

- Interface management has changed with supplier / client being better placed to manage, but new risks
- If not clearly defined at outset could result in poor environmental performance.

Strengths:

- Easier to ensure policy / legal changes are cascaded to supply chain
- CDM Better managed through a separate supplier

Weakness:

- new contracting model for - risk
- suppliers may not be willing to share knowledge of propriety system with IMP
- Interface handover between install and test is now across a contractual boundary.

Legal

Opportunities:

- (Court cases) legal/competition fair implications of new contracting model.

Threats:

- IMP will be agent so when / if contractual issue arises they could just pass buck to client
- Intellectual Property Rights issues with installation staff suppliers needing knowledge

Identify External Stakeholders

1. Governor
2. Independent assurance and expert advice on investment programme
3. Sponsors
4. Project Suppliers (Signal / Telecoms/COMMs)
5. Railways regulators
6. Local Councils
7. Heritage
8. Department of Rails & Transport
9. Other line's System / Connecting Systems
10. Transplant – Engineering Vehicles
11. Internal Projects
 - Blue lines, etc
12. Third party Interfaces
 - Sport Stadium
 - Arsenal
 - Airport
 - Main line railways
13. Main Corp
 - Legal, etc.
14. Suppliers

Identify internal Stakeholders

15.Operations

16.Maintenance

17.Main system Supplier

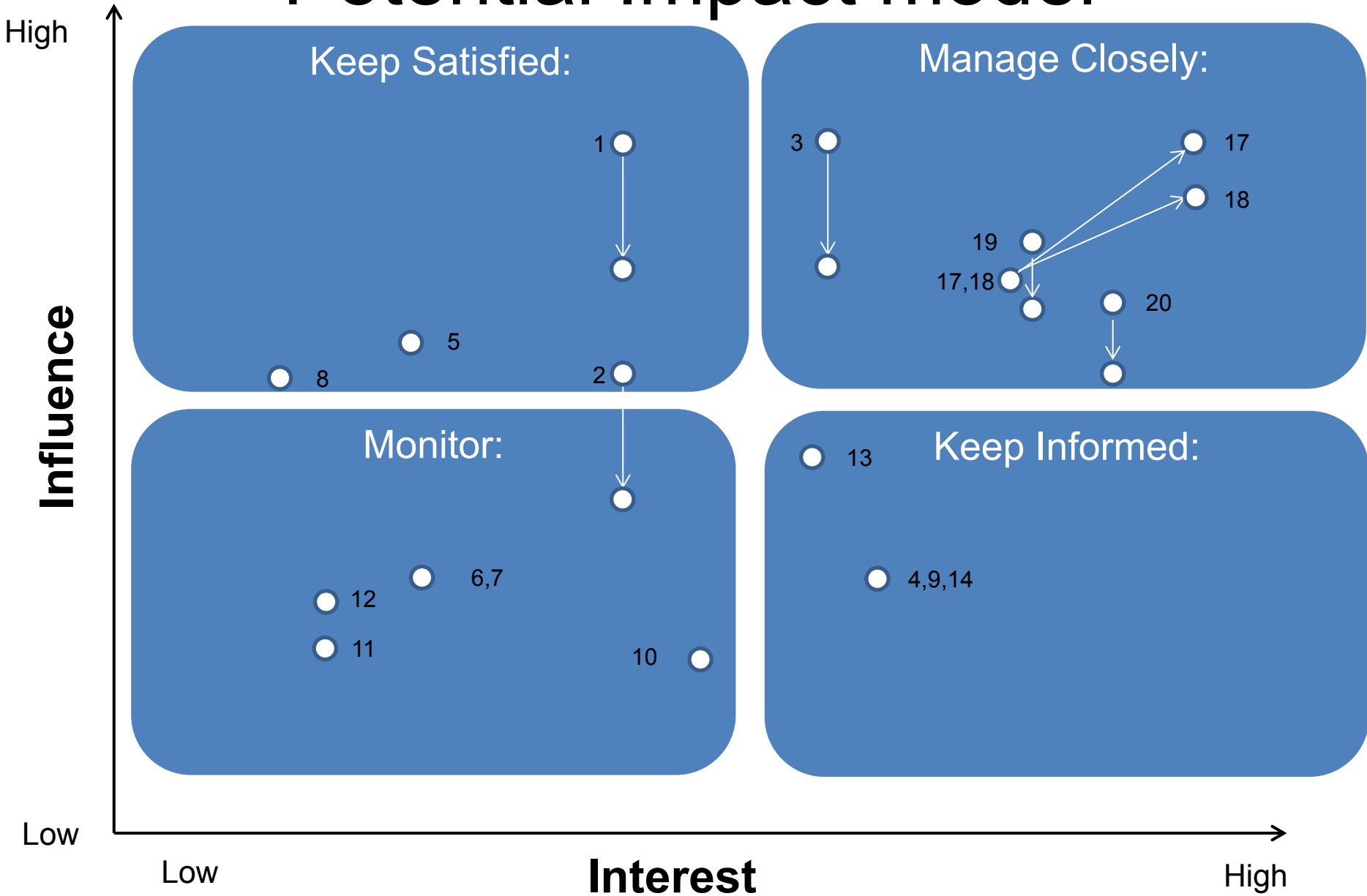
18.Sub-Supplier

19.Main Projects Corp

- Leadership
- Programme office
- Construction
- HSE
- Engineering

20.Integration

Potential Impact model



SWOT Analysis Positional Matrix

Strengths:

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?
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Weaknesses:

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?

Opportunities:

?
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?

Threats:

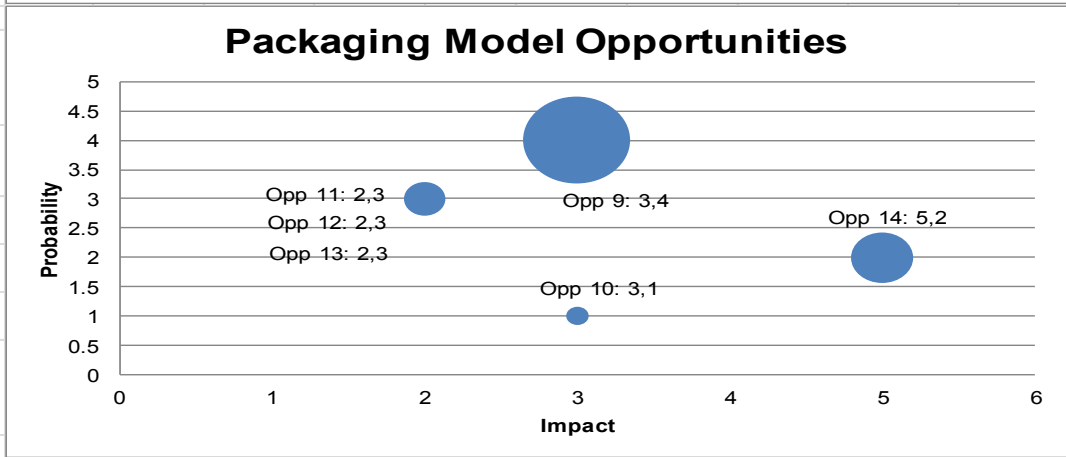
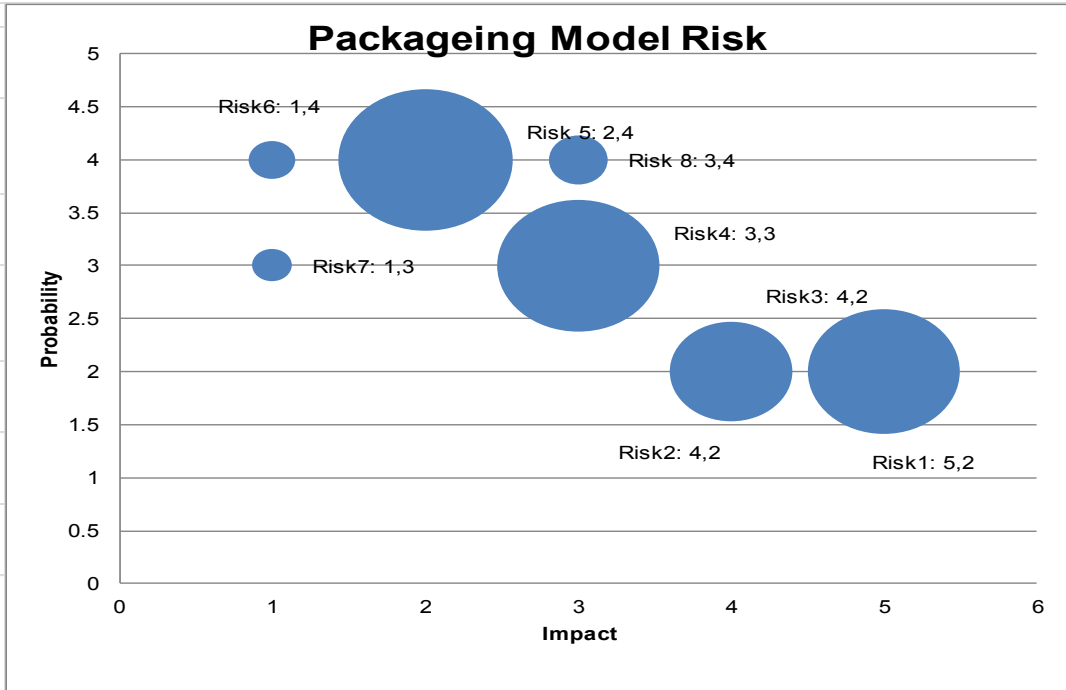
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Risk / Opportunity review

- Validate primary interface links
- Brainstorm Risks
- Brainstorm Opportunities
- Rate Risks
- Identify mitigations
- Identify Incentives

Risk / Opportunity Heat Map

	Threats
1	
2	
3	
4	
5	
6	
7	
8	
	Opportunities
9	
10	
11	
12	
13	
14	



Specific Migration / Incentives Options

Scope Item	Contract Stage 1/2	Justification on Incentivising Activity	Signal team	IMP
Concept/System Design	1	Efficient design & minimise delivery costs	Y	
Equipment Requirements	1	Minimise Equip to reduce install & maintenance costs	Y	
Training				
Facilities/Documentation	2	Facilitate effective introduction into service	Y	
Commissioning, Testing Rigs	2	Facilitate testing efficiencies & minimise closures	Y	
Performance	2	Deliver capacity and reliability targets	Y	
Installation of Signal Assets	2	Facilitate installation to programme		Y
Wayside testing / handover	2	Facilitate Handopver from install to test		Y
Reduce wayside assets	2	Minimise assets to install wayside	Y	Y
Optimise buildability of assets	2	Ensure the design facilitates the easiest construction / maintenance methods	Y	Y
Optimise, technology & mechanisation	2	Innovative process and equip,ment utilised.	Y	Y
Reduce access requirements	2	minimise install and testing on the railway	Y	Y
Expediate handover to Operation/Asset Management	2	Facilitate effective introduction into service/maintenance	Y	Y

Q&A

