UK Public Private Partnerships:

The Role of Asset Management

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What is (Infrastructure) asset management?

*Systematic and coordinated activities and practices through which an organization optimally and **sustainably** manages its assets and **asset systems**, their associated performance, risks and expenditures over their life cycles for the purpose of achieving its organizational strategic plan*

British Standards Institute – PAS-55: **2008** Part 1 – Specification for the Optimised Management of Physical Assets – produced in association with the Institute of Asset Management

- It is an overall approach to running an asset-intense business – not a technology, technique, system or fad;
- It is a combination of management, financial, economic, engineering and practices applied to physical asset;
- It is about making the most of our assets by doing the right amount of work, at the right time and cost to deliver the right level of service

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Examples of benefit…

- **Yorkshire Water**: 81% improvement in performance and 11% reduction in operating costs – only A-A ranked WASC in the UK
- **Railcorp (Australia)**: 30% saving on maintenance costs – adopting RBM
- **National Grid:** 30% volume of work removed – adopting RCM
- **Energy Australia:** 30% saving on maintenance costs
- **Metronet Rail:** OpEx reduction of $15Million, performance improvement of $17million and removal of financed risk of $32million over 18months.
- **Merseyrail**: Reduction of $11Million in costs and performance improvement by 2015 (25% of Engineering budget)
- **Highways Agency**: reduction of $101 Million operating costs and $78Million of opportunity benefits over a 10year period.

Benefits of Improved Asset Management…

- Being able to prove you are a “best appropriate practice” asset steward;
- Enable systematic evaluation of approaches and systems;
- Winning the tariff or budget debate with regulators;
- Assuring the logic of their capital and maintenance allocations;
- Reporting the long term sustainability of asset systems
- The interdependency of assets for example – rolling stock, track, signals
- Determining how to prioritise restricted budgets
- Prepare a programme of Asset Management Improvement Priorities

Issues in the transport sector…

- Complex asset ‘systems’
- Lack of built-in redundancy in the system
- High dependency on the system
- Severe lack of stable funding mechanisms
- Maintenance backlogs (infrastructure deficit)

Overview…

- **Examples from the UK – London Underground and the PPP**
- **Metronet Rail – Private Contractors**
- **Lessons Learnt –.how to make a success of PPP's**

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(1). London Underground

Since 2003 LU fixed assets (including track, signalling, telecoms, stations and structures) and rolling stock have been managed through 3 public private partnership contracts

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Why the need for Private Investment?

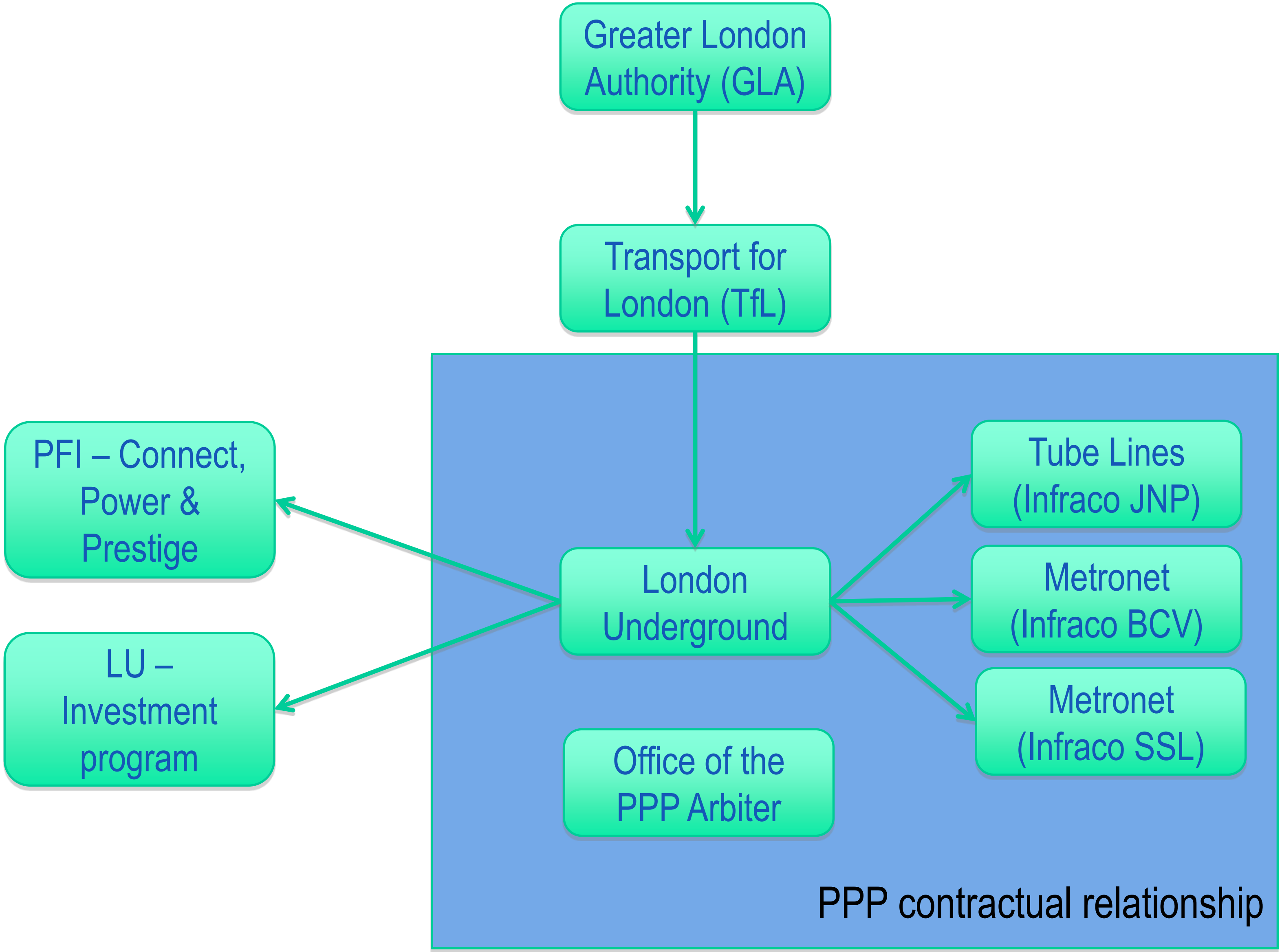
Financial

- LU needed sustained and stable funding in order to continue to operate a safe and reliable mass transit system
- In excess of $3 Billion investment backlog to bring assets to a State of Good Repair
- Public Sector – Annualised Funding is very inefficient in delivery of long-life assets
- From the outset – the potential for Billions of Dollars of additional investment.

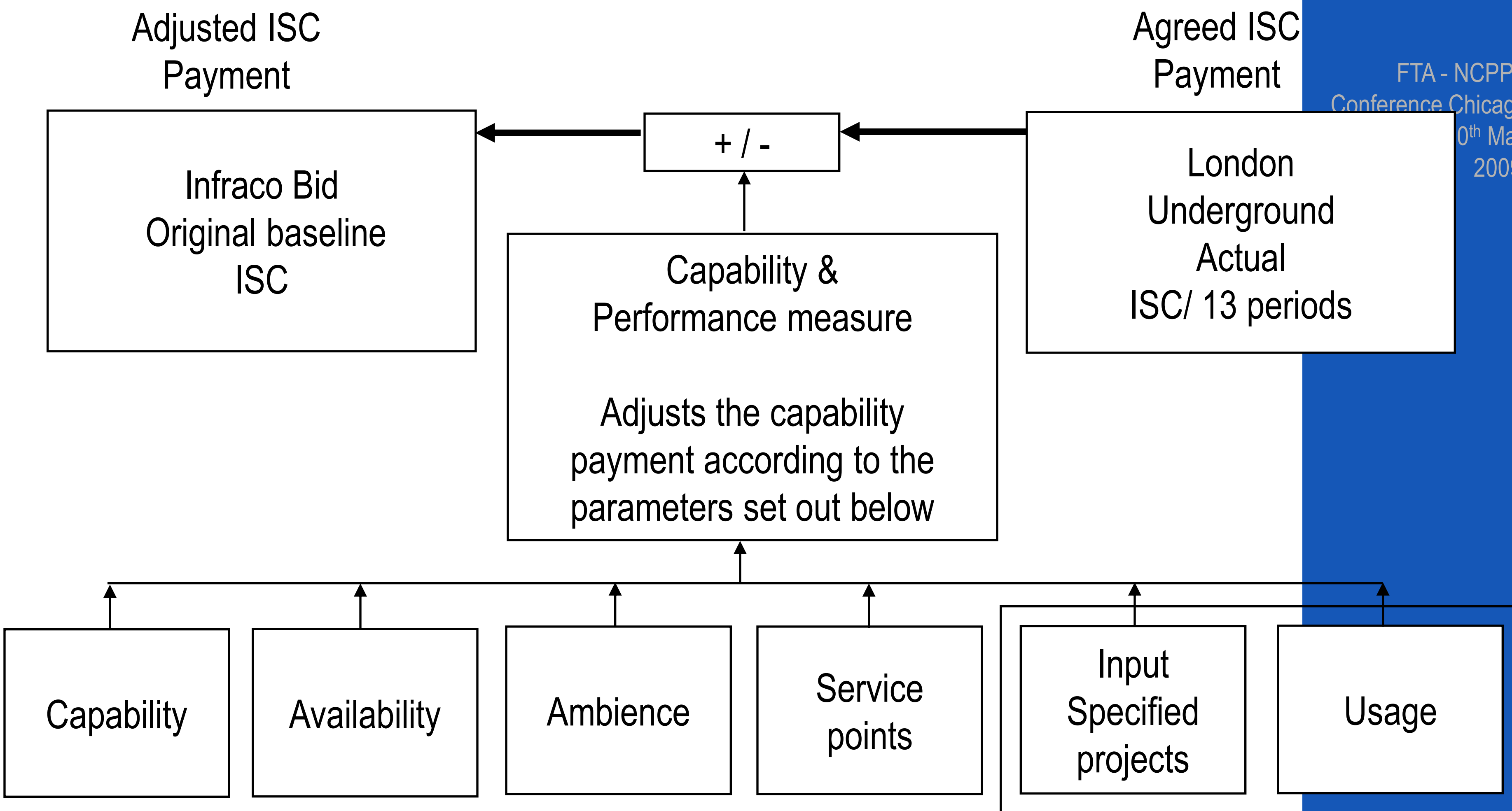
Operational

- Vast engineering assets of every discipline – LU struggled from a resource and skill shortage
- Public sector culture
- Injection of capital project delivery expertise
- Injection of private sector thinking – including whole life asset management

Structure of the PPP…



How the PPP is financed…



- Journey time capability
- Service control
- Service consistency

PPP asset management obligations…

- *In carrying out its duties as a steward, an Infraco should improve asset condition generally, both during the 30 year Contract period and for a reasonable time thereafter to minimise safety and service loss risks.*

Infracos must:

- *adopt efficient and economic whole-life asset management as established by reference to Good Industry Practice.*
- *over time, bring the Assets to an overall state of good condition*
- *provide LUL with assurance in relation to the above.*
- *develop plans to assist LUL and other Infracos with the efficient co-ordination of their respective activities on the Underground Network*
- *promote confidence between the parties as to the way they will discharge their respective obligations in relation to the Delivery into Service of new Assets and Facilities.*

(2). Metronet Rail – Asset Management improvement Program

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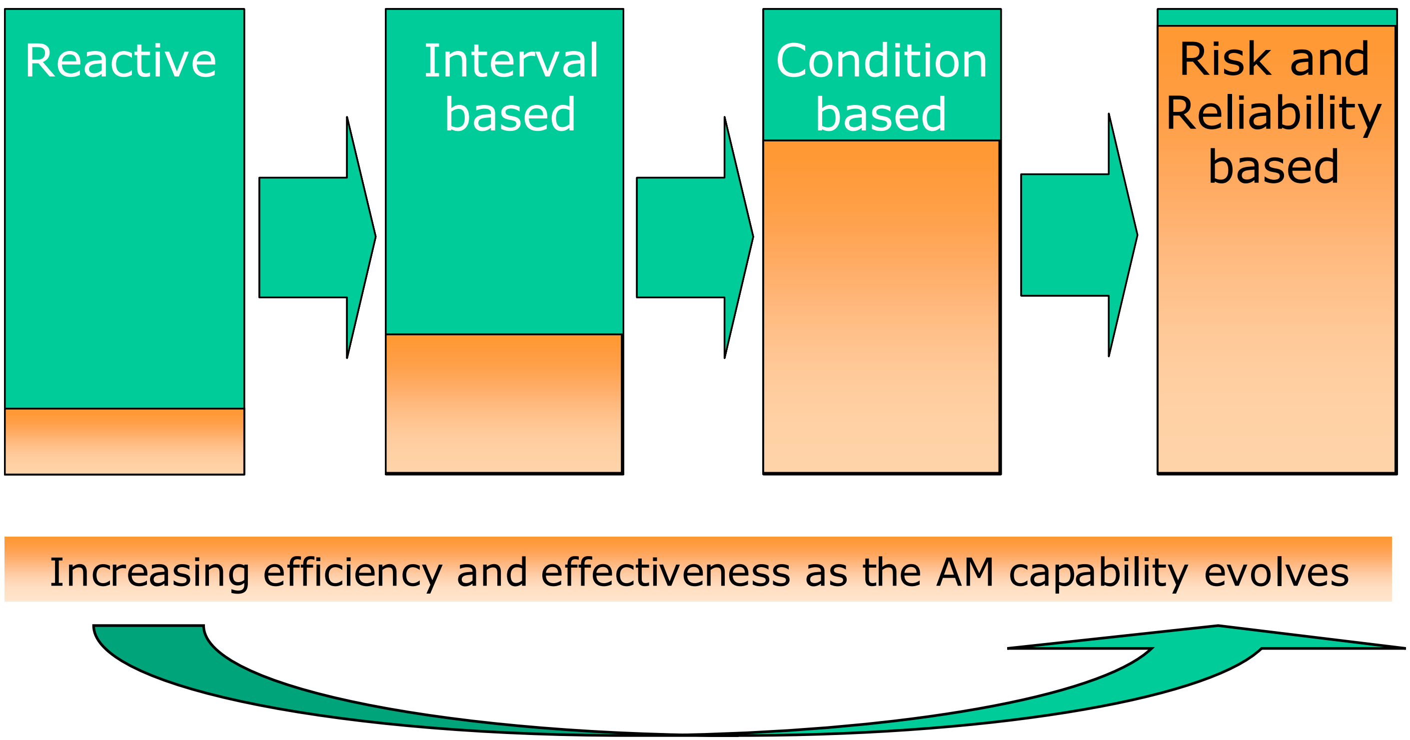
Need for improvement…

Arbiters comments (2005): Asset Management: …In particular, there has so far been limited application of risk based approaches that incorporate a strong understanding and link to underlying costs and serviceability of assets.



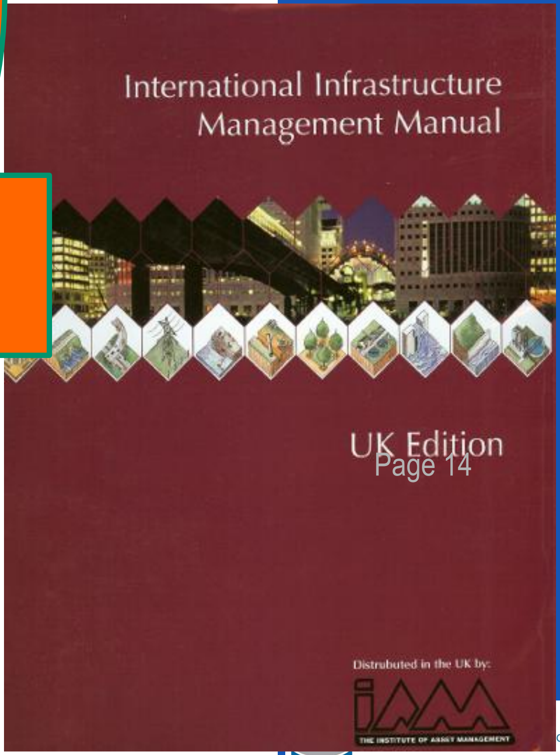
Asset Management Regime – Development Program

Approach taken…

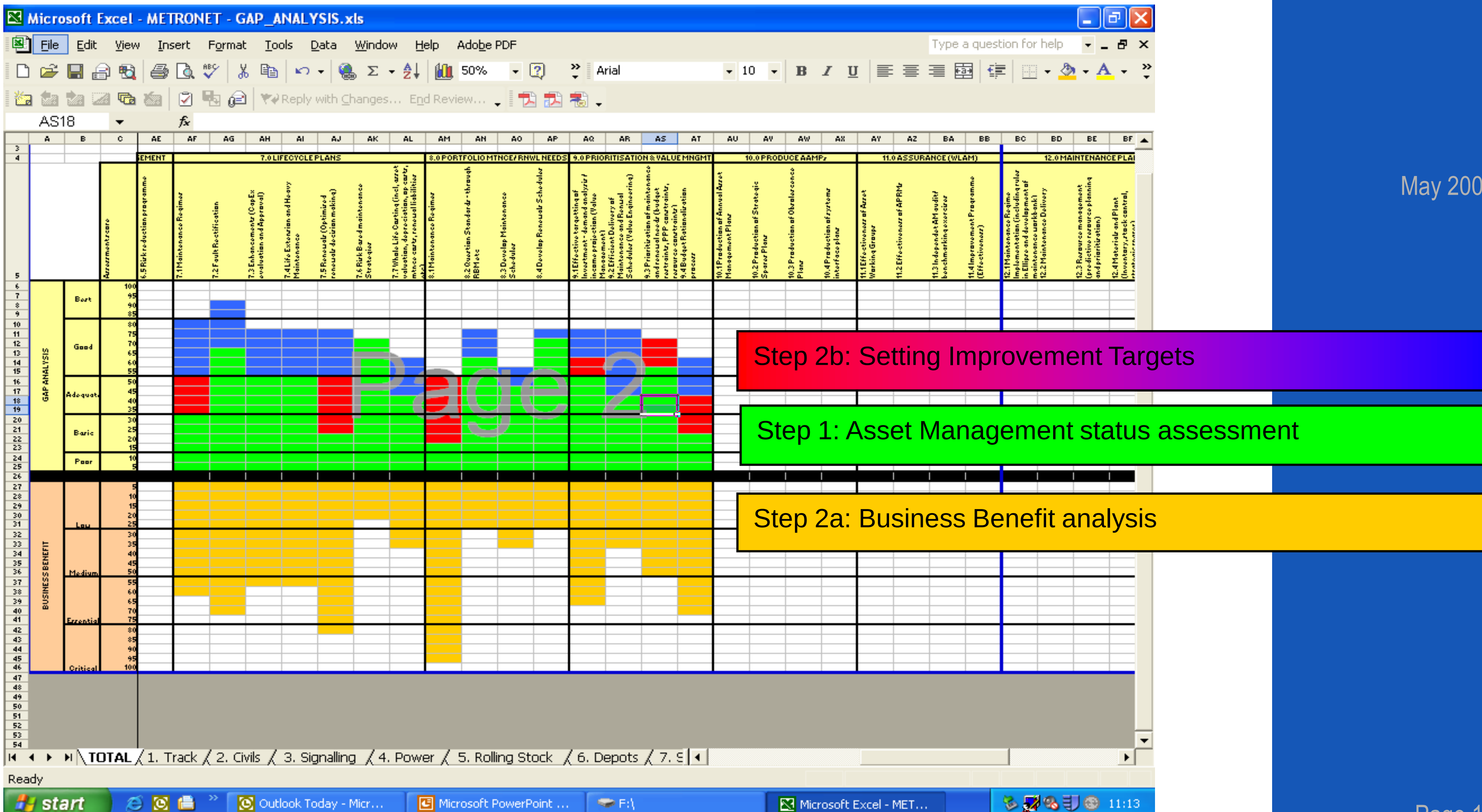
Examine the situation

Expose the problems

Execute the improvements



Assessing capability



Data shown for demonstration purposes only

ROADMAP FOR AMR DEVELOPMENT - FLEET AND DEPOTS ASSETS

Filename:	20060927-AMR_asset_roadmap (v4).vsd
Version no.:	1.4
Status:	Internal review
Author:	Dr Christian Roberts
Date created:	2nd October 2006
Version date:	23rd February 2007

METRONET

2006 | September | 2007 | 2008 | 2009 | 2010 | End P1

Improvement Milestones:

- Reactive & Interval based
- Use of RBM (Planning)
- Lifecycle plans (Delivery)

Key Investment Decisions:

- Victoria Line Upgrade
- Bakerloo Upgrade
- Sub-Surface Line Upgrade
- Victoria Line BTUK Transfer
- SSL BTUK Transfer

NOTE - In this Diagram:
~ Red represents what is considered adequate practice,
~ Green represents what is considered 'GIP'

'Blueprint' Descriptions:

Current state:
Current regime is interval based planned preventative intervention in line with LU standards, with reactive maintenance to deal with faults. Regime is very much focused on meeting safety and availability requirements and compliance with standards.
Renewals are part of Line Upgrade programmes, with some mid-life refurbishment in CP1 to address availability/ reliability problems pending renewals.

Future State:
Regime is predominantly Reliability centred with planned preventative intervention to manage the rolling stock asset to meet performance targets at minimum risk and whole life cost. To enable lifecycle plans to be put in place and agreed with LU from 2008 the train maintenance regimes will be systematically Improved.
To enable risk/reliability based decisions to be made it is necessary to improve our understanding of the relationships between root causes, failure modes, risks and costs. Intelligent event monitoring will be implemented on selected critical assets to provide the information necessary to support Risk/ reliability based decisions. ELLIPSE will be further developed to meet the new requirements for information trend analysis.
For new Assets (notably VLU will impact in CP1), RAMS requirements will be defined at the design stage and managed throughout life-cycle. This will inform a future maintenance regime change following the upgrade programme.
Robust AAMPs will be produced on the above basis.
Obsolescence plans will be put in place to support risk based intervention
Systems Integration and Asset Interface Strategies will be fully implemented.

Improvement Projects (cf AMR Development Programme):

KPA 1
KPA 1: Asset Management Targets:
1.2 Asset Group Strategies
1.3 System Integration Strategies
1.5 Asset Interface Strategies

KPA 2
KPA 2: Asset Condition and Performance Assessment:
2.1 Performance Regime
2.2 Asset Performance KPI's
2.3 ACA Improvement (lessons learnt)
2.4 ACA Replacement

KPA 3
KPA 3: Lifecycle Planning:
3.1 Root Cause Analysis
3.2 Whole Life Cost Models
3.3 WLAMP process
3.4 RBM and Lifecycle plans
3.6 Design for RAM
3.7.1 Route Availability Model (TRAIL)
3.7.8 Fleet DST (APT?)

KPA 4
KPA 4: Produce AAMPs
Annual Asset Management Plan

KPA 5
KPA 5: Risk Assessment and Management:
5.2 Asset Risk Models

KPA 6
KPA6: Maintenance Planning and Delivery:
6.1 Maintenance Delivery Improvements
6.3 Integrated Maintenance Scheduling
6.4 Obsolescence Management

KPA 7
KPA 7: Renewal Planning and Delivery:

KPA 8
KPA 8: Assurance
8.4 Asset Management Assessment Model

KPA 9
KPA 9: Information and Information Systems:
9.2 Asset Catalogue Project
9.3 Condition Data on ELLIPSE
9.4 Cost Data on ELLIPSE
9.5 Other Data to support WLAM

KPA 10
KPA 10: Organisation Effectiveness:
10.1 Competency Assessment
10.2 Training and Recruitment
10.3 Performance journey
10.4 Technology Scanning

Legend:
- Cross Asset initiatives
- Asset specific initiative
- Other Asset specific initiative

ROADMAP FOR AMR DEVELOPMENT - FLEET AND DEPOTS ASSETS

Program scope

- **Asset condition monitoring and recording:**
  - New measures of AC & Health – extended to replace ACAC
  - Embedding of Remote condition Monitoring kit into AP processes
- **Transfer to new maintenance regimes:**
  - Risk models and risk based maintenance
  - Improved analysis capability
  - Revised maintenance scheduled tasks (MSTs)
- **Whole life planning toolset:**
  - WLC analysis standardisation
  - Development of specialist Decision Support Tools
  - Specifying standards for AAMP production
- **Asset management capability:**
  - AM maturity assessment
  - Competence assessment and training

Over and above the implementation of an **Enterprise Asset Management** System

Other examples of this approach…

- Center of capability for railway asset management – working with operators, infrastructure maintainers, financiers, contractors and regulators in the through life management of rail systems

- Current clients include:
- Merseyrail (UK Train Operator) – Fleet Asset Management Improvement Program with US$11M benefits by 2015.
- Queensland Rail (Australia) – Infrastructure Asset Management Improvement Program
- Tube Lines (London Underground) – Technical Advisors to PPP restatement of terms
- Network Rail (UK Infrastructure) – value management of enhancement projects

(3). Lessons Learnt

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Observations of US transit systems

- You face many of the same issues we face in the UK
  - Ridership is on the increase, driven by increasing gas prices, congestion, and awareness of climate change
  - Ageing infrastructure and a backlog of invesment

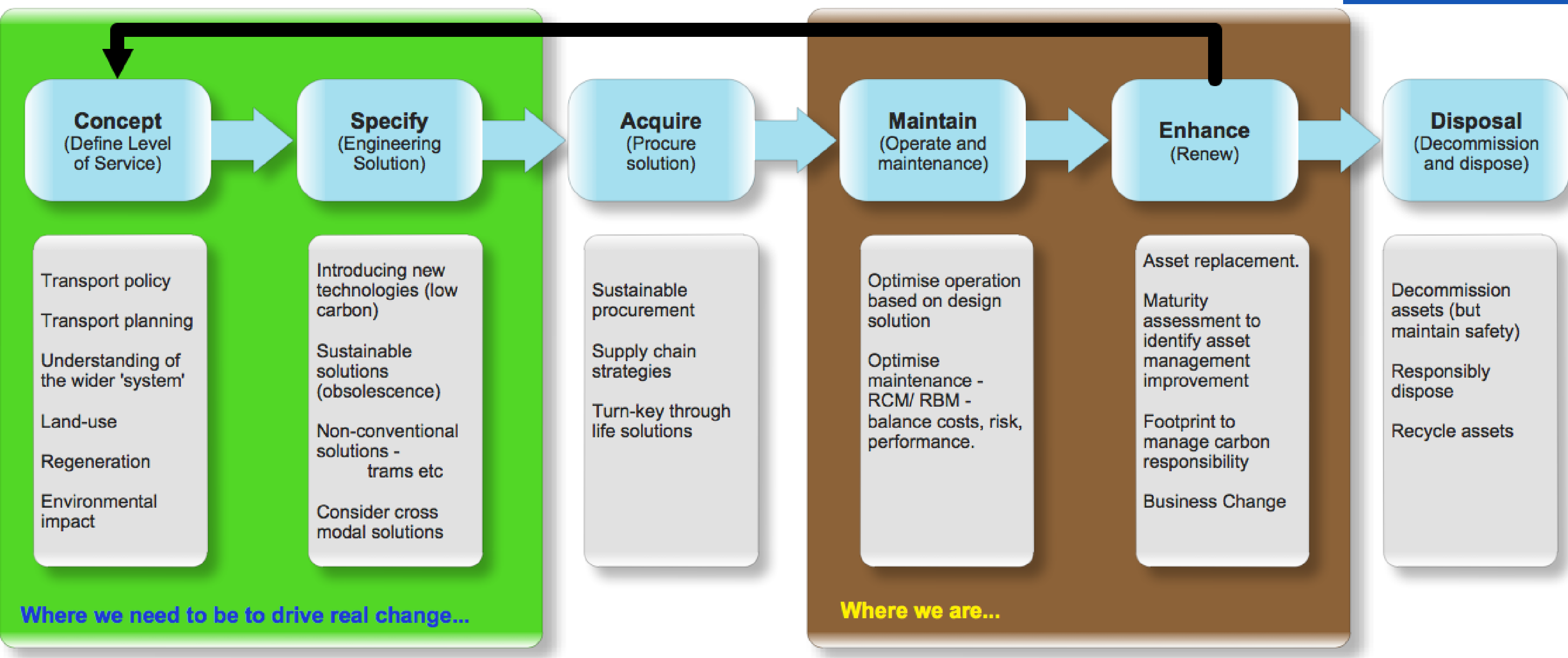
- Rail and transit asset management is still in its infancy – opportunity to embrace lessons from other parts of the globe

Metro Chief Predicts Transit 'Death Spiral' Without Extra Funds

"Budget disputes in Maryland and Virginia and on Capitol Hill threaten to push the region's transit system into a "death spiral" littered with broken-down trains, overcrowded buses, frozen escalators and crumbling parking lots…"

Washington Post Friday, April 2, 2004; Page B01

Managing Transport Asset Lifecycles – moving forward…



Asset Investment…

In general we have found that the relationship between a Regulatory Entity and Managing Entity and the degree of prescription in the contract is heavily related to the maturity of Asset Management across the different regions and industries/ organizations

- Degree of governance/ prescription +

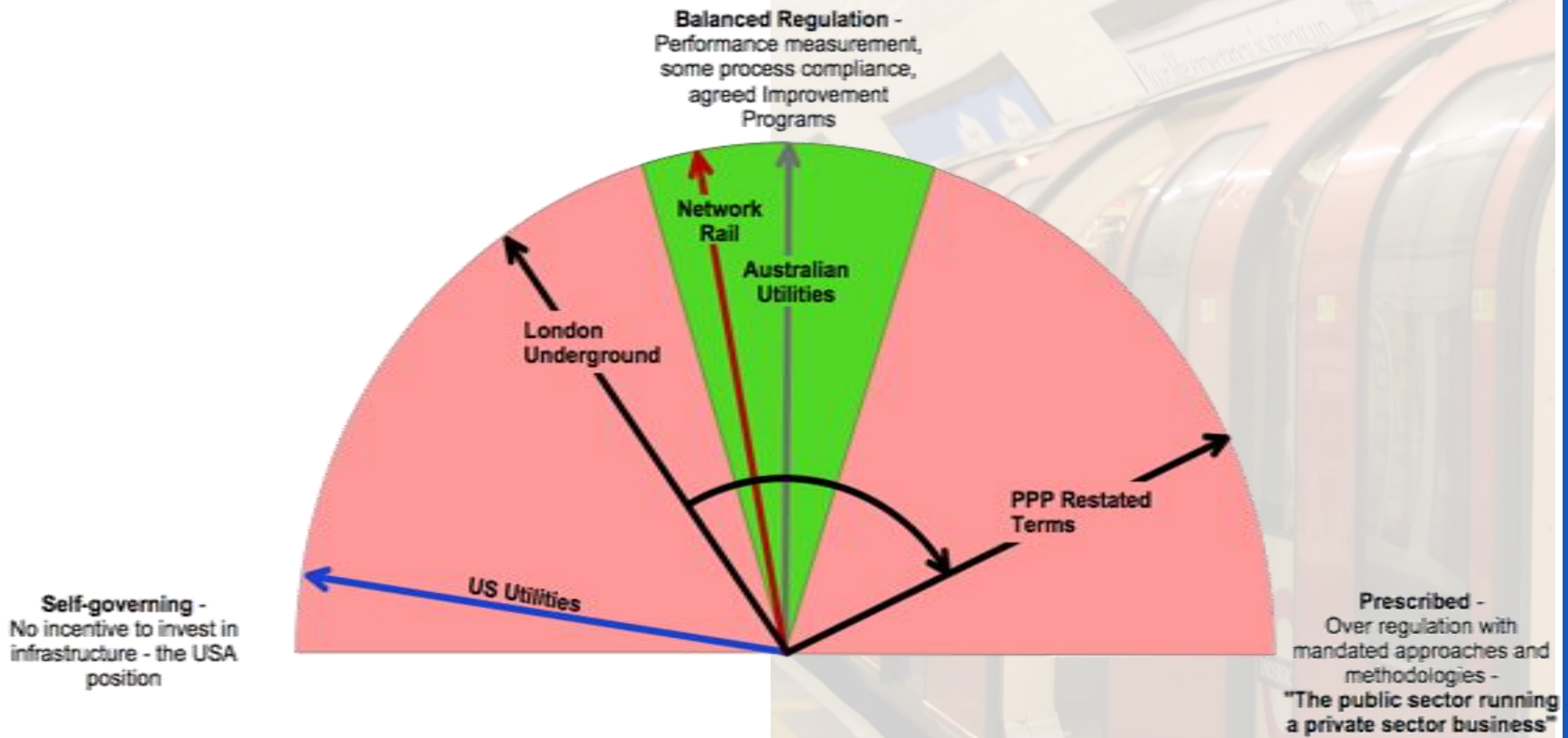
Level of regional maturity (- to +)

	Self - governing	Self-governing with ongoing performance measurement	Some process assurance with ongoing performance measurement	Targeted regime of process assurance with ongoing performance measurement	Highly prescriptive regime - operational direction, high degree of process assurance and performance measurement
United States of America	Privately owned water systems: - - Orange County Sanitation Department - Washington Suburban Sanitation Department	New York City Transit PPP managed water systems: - City of Atlanta* - City of Stockton, California - Seattle Public Utilities PPP - City of Indianapolis, Indiana Denver - RTD (Penta P projects)			
United Kingdom		Manchester Metrolink Highways PFI and MAC (Managing Agent Contractor) contracts Merseyrail - Train Operating Company	London Underground Water and Wasterwater utilities Gas and Electricity utilities	Network Rail	
Australasia		Singapore SMRT Queensland Rail Rail Corp Sydney Hong Kong MTR	Australia Water and wastewater utilities Australia Gas and electricity utilities	New Zealand Water and wastewater utilities New Zealand Gas and electricity utilities	

* Note: Refers to the City of Atlanta PPP - this has since been taken back due to poor performance of the PPP managing entity
Blue text refer to commuter rail and rail transit organisations

Regulatory balance (including PPP oversight)…

- Regulation should reflect an explicit, formal contract between business and society



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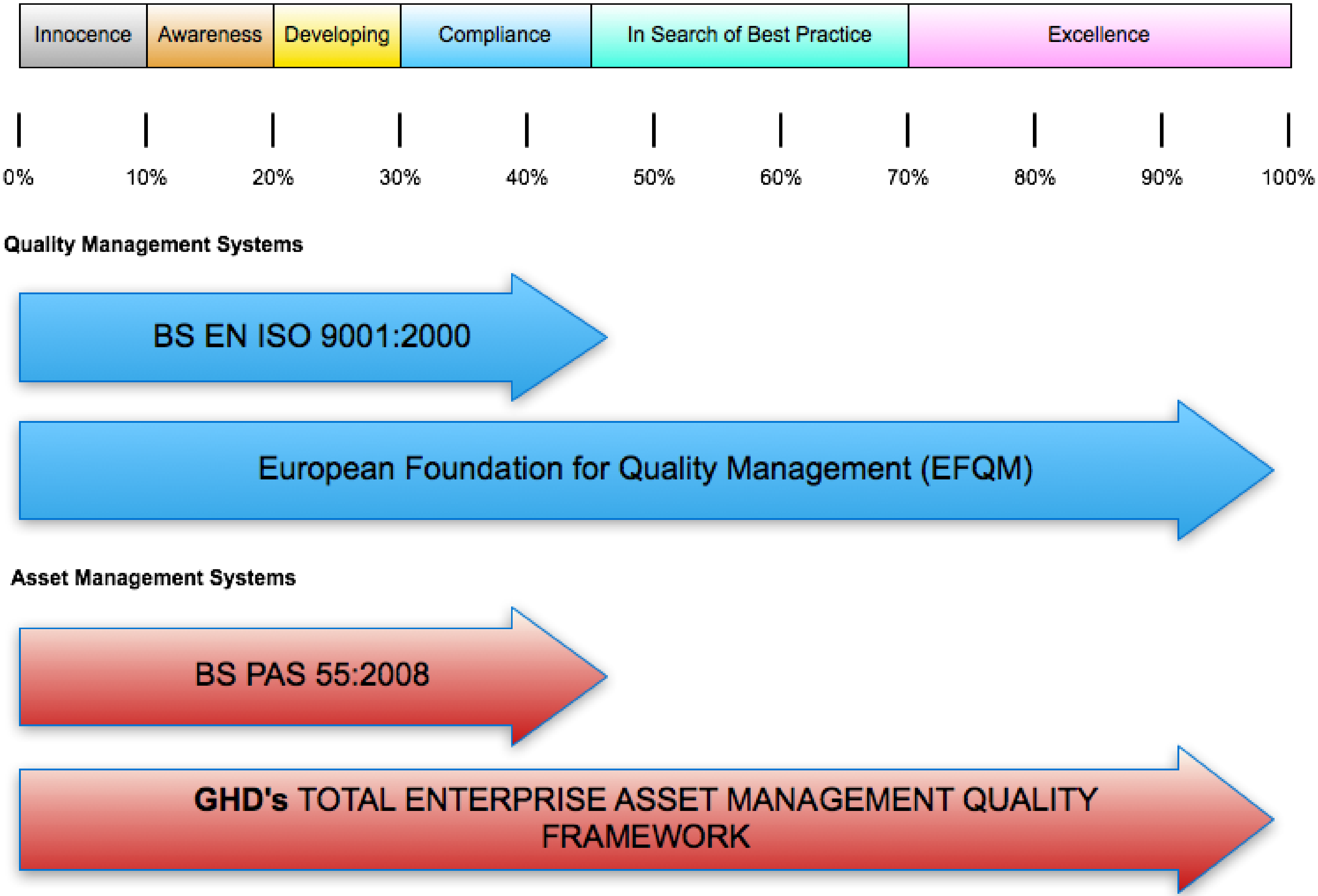
Getting smarter with Asset Management…



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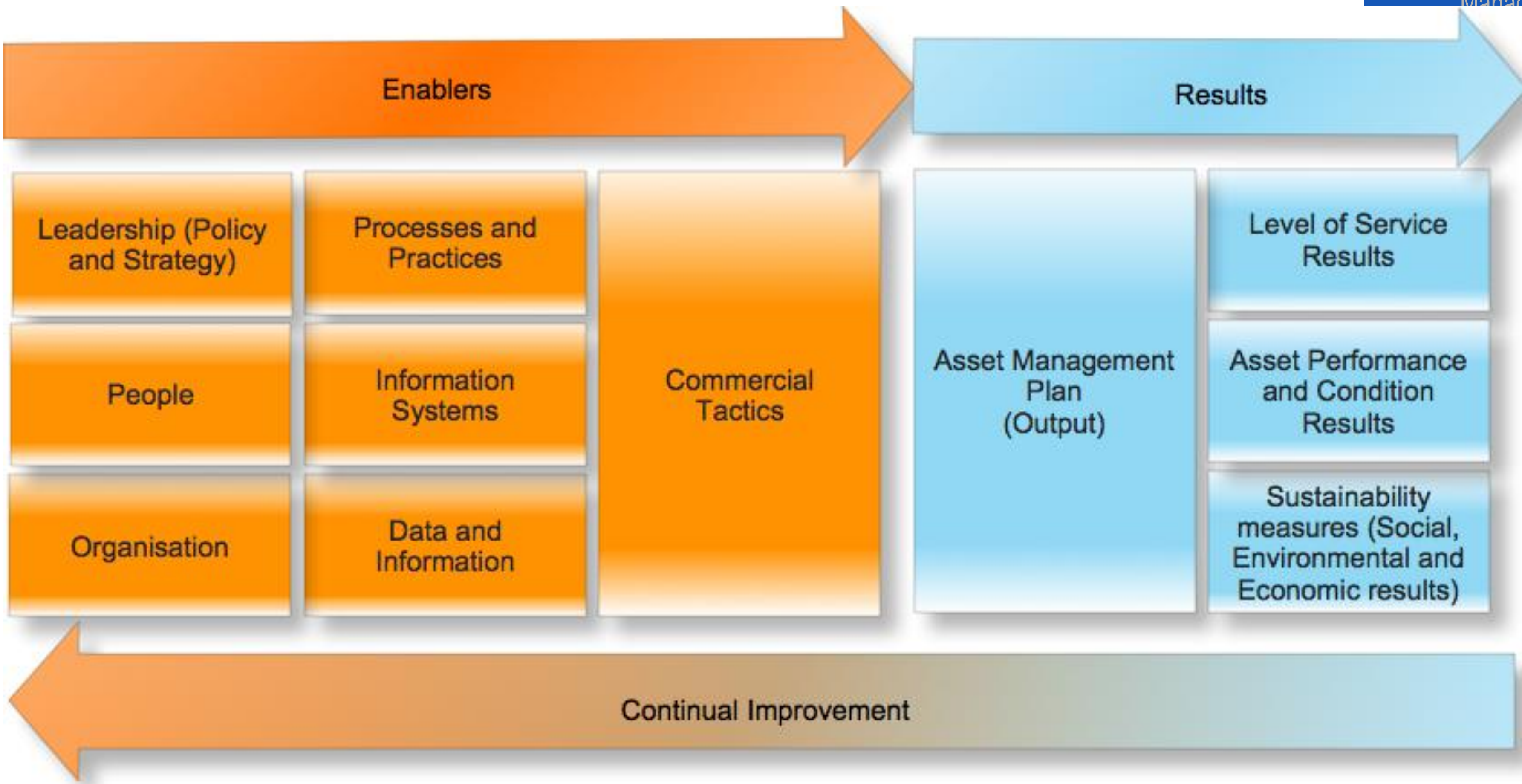
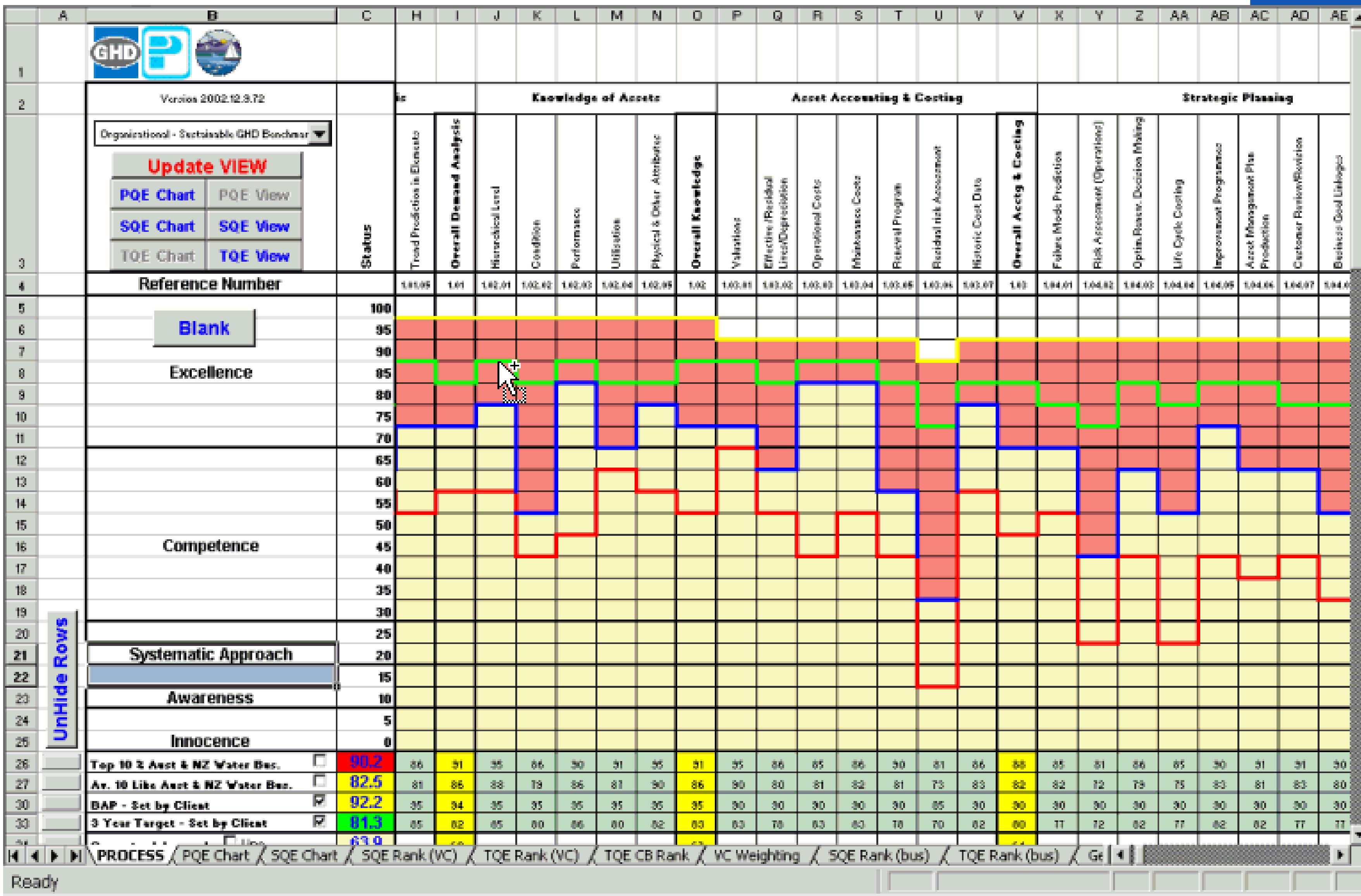
TEAMQF A quality framework for Asset Management…



Opportunity to move forward as a ‘collective’



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Lessons…

1. Know the state of Assets before you outsource delivery.

2. Honeymoon period – where both parties can settle into the relationship, develop working practices etc

3. Put in place recognised Management systems – including ISO 9001 etc but also the new PAS-55:2008 and audit

4. Introduce rigorous Asset Management Planning processes with interaction and contribution from both parties

5. Introduce ongoing Assessment – and continual improvement incentives for the Asset Management Regime.

Some thoughts to take away…

- Better Asset Management makes investment in transport infrastructure more attractive

- Better Asset Management comes from open competition or balance regulated private sector involvement

- There are financial, environmental and societal benefits to had with current asset systems

But

- Working together and embedding a common quality framework should be seen as a priority and needs to be completed at bid stage so both parties have a common expectation.

For further information on GHD Asset Management and Management Support Services to the rail and transit sectors please contact:

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Supporting asset intense industries for over 30 years