

Lessons Learned from Light Rail Projects

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Agenda

- Introduction
- Our Lessons Learned Projects
- Lessons Learned Part 1: Structuring – Key Drivers
- Lessons Learned Part 2: The Book Ends – P3 v Traditional Procurement
- Lessons Learned Part 3: P3 in a Brownfield Environment
- Lessons Learned Part 4: Optimizing Value in Operations



Your Speaker



Lee McDonald

Key experience:

- Honolulu Rail Transit Project
- Sydney Metro
- Sydney Light Rail PPP
- New Generation Rolling Stock PPP
- Crossrail (UK)
- Dubai Metro
- Docklands Light Railway (London)
- Luas Tram (Dublin)
- KL-Singapore High Speed Rail

Ashurst US P3 Team Transit Experience

- West Santa Ana Branch LA Metro
- Purple Line P3 Project
- LAX APM P3
- Denver Fastracks "Eagle P3"
- NYC Subway Cellular

Our Lessons Learned Projects

European Union

- Luas tram, Dublin
- Dublin Metro PPP
- Perpignan-Figueras High Speed Rail PPP
- Florence LRT
- Rome Metro PPP
- Madrid Metro
- Liefkenshoek Rail Tunnel, Belgium
- Hamburg S Bahn Rolling Stock

United Kingdom

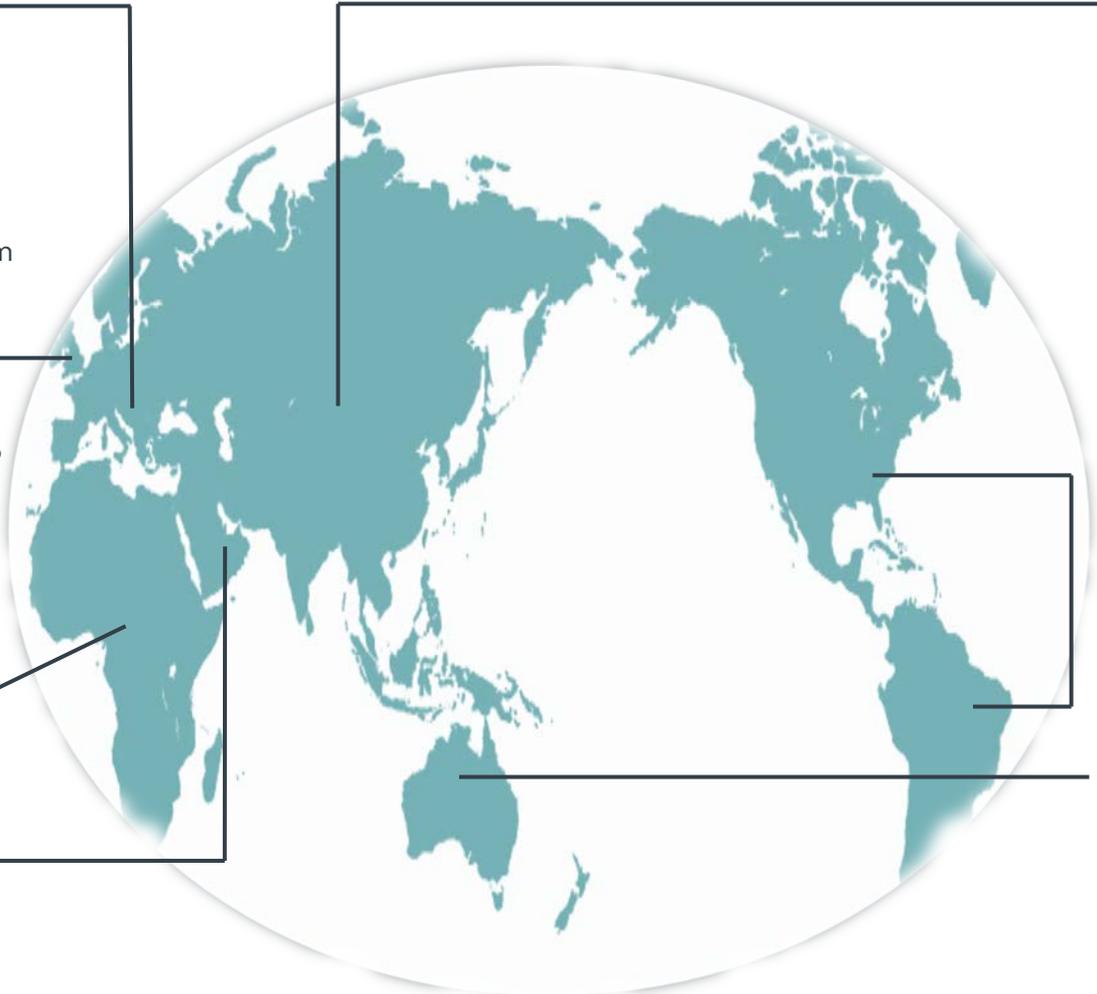
- Docklands Light Railway
- Crossrail
- Intercity Express Programme PPP
- Croydon Tramlink
- National rail franchises
- Nottingham Tram
- Thameslink Rolling Stock PPP
- Edinburgh Tram

Africa

- Algiers Metro (Algeria)
- Gautrain (South Africa)
- Saida-Moullay Slissen Railway (Algeria)

Middle East

- Dubai metro
- Kuwait Metro PPP
- Riyadh Metro
- Mecca Metro
- Palm Jumeriah Monorail
- Haramain High Speed Rail Link



Asia

- KL-Singapore High Speed Rail
- Jakarta-Bandung High Speed Rail
- Delhi Metro
- Indian Government Rolling Stock Procurement
- Freight corridor PPP, India

Americas

- West Santa Ana Branch LA Metro
- Honolulu Rail Transit Project
- Mexico City Metro
- Lima Underground PPP
- SunRail (USA)
- Maryland Purple Line (USA)
- All Aboard Florida (USA)

Australia

- Sydney Metro
- Sydney Light Rail PPP
- QLD New Generation Rolling Stock PPP
- North West Rail Link PPP
- Canberra Light Rail PPP
- Surat Basin Rail
- Alpha Coal Project
- Moorebank Intermodal Terminal
- Alice Springs to Darwin Railway
- Reliance Rail – Rollingstock Project
- Gold Coast Rapid Transit PPP

Advising: governments, contractors, operators, rolling stock, systems and signalling providers and financiers.

Lessons Learned Part 1: Structuring – Key Drivers

- 1 Projects and structures are complex
- 2 Many different structures/allocation of risk
- 3 Best structures are different for each jurisdiction and each project

Lessons Learned Part 1: Structuring – Key Drivers (cont'd)

Operations / Maintenance

- vertical integration or horizontal separation?
- can State be shadow operator?
- optimum length for operations
- "best in class" – is this important?

Procurement

- are extensions likely?
- how is flexibility for extensions preserved?
- is speed of procurement important?

Interfaces

- does State want control?
- does State want to minimize interfaces?
- one stop completion?

Existing infrastructure

- greenfield/brownfield?
- interface with existing contracts
- status of existing infrastructure
- position within existing transit system

Experience

- preconceptions?
- previous issues?
- have done it a certain way before
- keen to follow another "successful" system

The Market

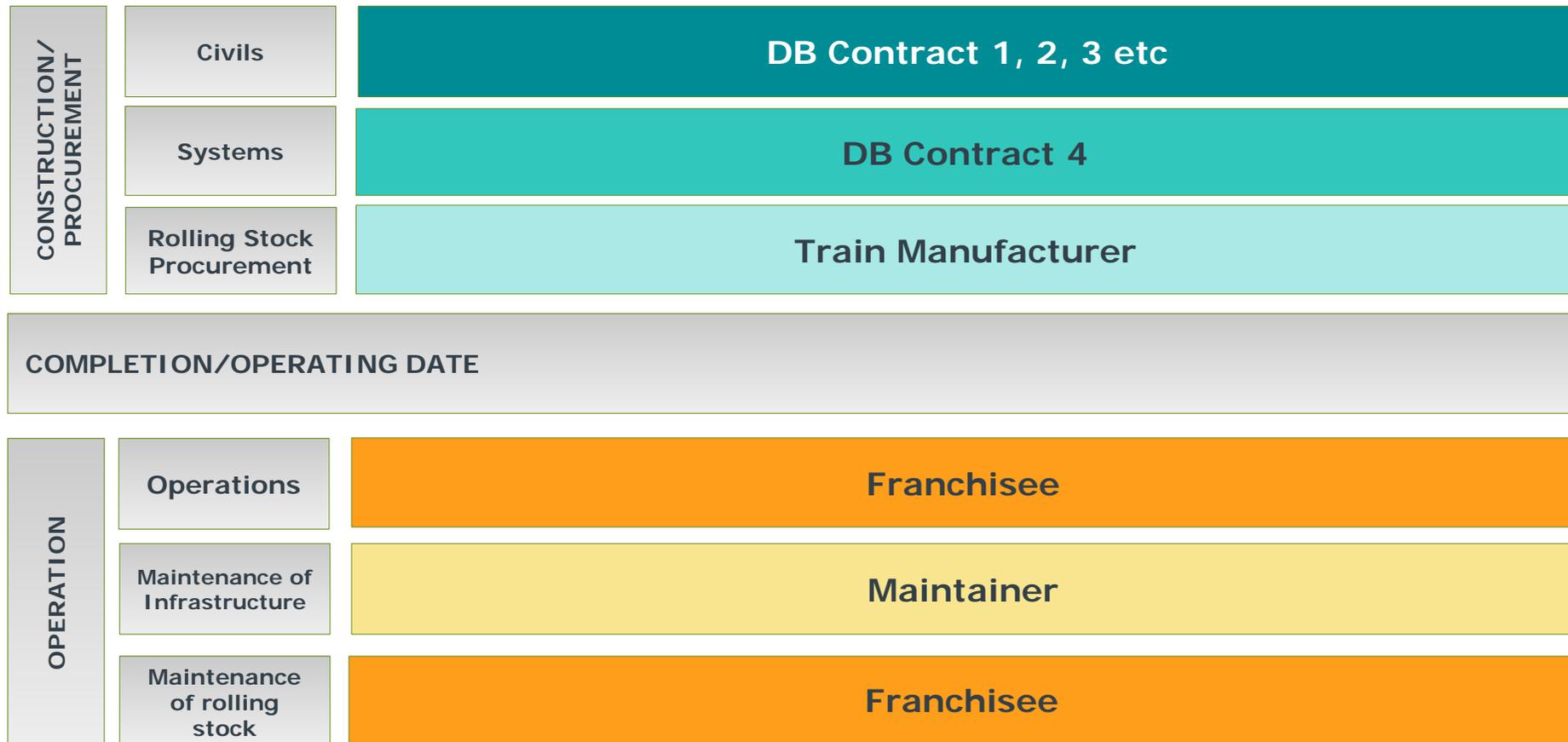
- what does market want?
- likely bidders?
- risk appetite?
- how will the procurement fit with other competitions?
- size of contracts?
- timetable

Finance

- public sector resources
- value for money
- market liquidity

Lessons Learned Part 2: The Book Ends – P3 v Traditional Procurement

Option 1: Fully Public Sector Light Rail Project – Like Luas Tram, Dublin



Analysis: The public sector is separately responsible for directly procuring (or undertaking itself) all aspects of each and every element of the project.

Other Rail Examples: Crossrail (UK), Jubilee Line Extension (UK), Queensland Rail (Australia).

Option 1: Fully Public Sector Light Rail Project (cont'd)

Perceived Benefits	Challenges
<ul style="list-style-type: none">• Total control for public sector.• Flexibility for change.• Extensions are easier.• No need to access private commercial debt.• Quicker procurement?• Understood by contractors.• Best in class?	<ul style="list-style-type: none">• Maximises interface risk for public sector.• The public sector must directly fund the costs of all aspects of the deal – and do so "up front".• Short term maintenance approach.• Minimal risk transfer.• Requires extensive management by public sector.• Minimises private sector efficiencies and innovations.• Empirical evidence of increased chance of cost overruns and time delays compared to a P3-based structure.• Ultimately more expensive than other solutions.

Lessons Learned Part 2: The Book Ends – P3 v Traditional Procurement (cont'd)

Option 2: Full P3 – like Sydney Light Rail

CONSTRUCTION/ PROCUREMENT	Civils	P3 Co
	Systems	P3 Co
	Rolling Stock Procurement	P3 Co
COMPLETION/OPERATING DATE		
OPERATION	Operations	P3 Co
	Maintenance of Infrastructure	P3 Co
	Maintenance of Rolling Stock	P3 Co

Analysis: A full P3 by which all of the design, construction, financing, operation and maintenance is passed to a private sector vehicle which raises third party commercial debt to realise the project. Again, rolling stock may be delivered by the P3 Developer or separately procured by the public sector.

Examples: Gold Coast Rapid Transit (Australia), Canberra Light Rail (Australia), Eagle P3 (US), Nottingham Tram (UK), Croydon Tram (UK).

Option 2: Full P3 Structure (cont'd)

Perceived Benefits	Challenges
<ul style="list-style-type: none">• Maximises risk transfer.• SPV responsible for delays in completion and defects in the railway.• Operator is incentivised to operate in the most efficient manner possible.• Upfront funding requirement moved from the public sector to the private sector.• Interfaces are minimised and entirely transferred to the private sector.• Public sector management burden is minimised.	<ul style="list-style-type: none">• P3 agreements can take longer to structure and procure than traditional models.• Can end up with best builder but worst rolling stock or operator (or vice versa).• Lack of flexibility particularly in operations where best practice changes quickly.• Extensions are more challenging within structure.

Lessons Learned Part 3: P3 in a Brownfield Environment

It is not as unusual as you might think

Deal	Structure
Sydney Metro	<ul style="list-style-type: none"> • P3 for certain systems • Tunnels, stations, line-wide systems delivered traditionally and handed to P3
Sydney Light Rail	<ul style="list-style-type: none"> • P3 for railway but also had to integrate with existing light rail
Docklands Light Rail, London	<ul style="list-style-type: none"> • Railway extended 5 times in 15 years <ul style="list-style-type: none"> • x 2 by traditional procurement • x 3 by P3 • Franchisee is operator
Liefkenshoek Rail Tunnel, Belgium	<ul style="list-style-type: none"> • Tunnel delivered by P3 • Fit out and systems by traditional procurement
Dutch High Speed Rail Link	<ul style="list-style-type: none"> • Tunnel by traditional procurement • P3 for track and systems
KL – Singapore High Speed Rail	<ul style="list-style-type: none"> • Civil works (including stations) built by individual Governments under traditional procurement • P3 for track, systems and operations
Denver Eagle P3	<ul style="list-style-type: none"> • P3 took on existing infrastructure which was part of the long-term maintenance requirements

Lessons Learned Part 3: P3 in a Brownfield Environment (cont'd)

Challenges and solutions / mitigants

Challenge	Solutions / mitigants
P3 Developer acceptance of infrastructure built by others	<ul style="list-style-type: none">• Due diligence by P3 Developer, confirmation that if DB contractor builds in accordance with terms, P3 contractor can deliver output specification (<i>Sydney Metro</i>)
Requirement to use existing systems contractor	<ul style="list-style-type: none">• State negotiates terms with systems contractor and nominates systems contractor and terms to P3 Developer (<i>DLR, Alcatel</i>)
Defects in existing infrastructure	<ul style="list-style-type: none">• Due diligence by P3 Developer• Collateral warranty/novation/ability to claim in public sector's name (<i>Sydney Metro, Sydney Light Rail</i>)

Lessons Learned Part 4: Optimizing Value in Operations

Issue	Considerations	Observations from other light rail deals
1. Flexibility re extensions	<ul style="list-style-type: none">• very likely that extensions will happen• how to undertake in the context of P3?• role of funders, especially if re-introducing construction risk into an operating project	<p>This is a really key issue in light rail. From other systems, need to consider:</p> <ul style="list-style-type: none">• pre-priced options (eg. trains)• variation mechanics – assume they will happen• may need to collapse existing concessions (Nottingham)• augmentation provisions (eg. NWRL, Sydney Light Rail)• fixed equity buy out at fixed points (eg. year 10) or specific events
2. Flexibility for Operations	<ul style="list-style-type: none">• P3 locks in long term operations costs <u>but</u> 30 years is a long time for operations	<ul style="list-style-type: none">• Consider operational review mechanism• Benchmarking/ market testing• Ability to flip DBFOM to DBFM?

Lessons Learned Part 4: Optimizing Value in Operations (cont'd)

	Issue	Considerations	Observations from other light rail deals
3.	Payment Mechanism	<ul style="list-style-type: none">• how to incentivise performance?• how to get operator involved in revenue protection?• ability to request service level changes within parameters	<ul style="list-style-type: none">• fees related to provision of services – "no service no fee"• abatements around:<ul style="list-style-type: none">• availability• timeliness (journey time, headway)• service quality (eg. cleanliness etc)• asset functionality• mechanics have become very sophisticated over time• operators need to be able to control revenue protection if they have some risk in this area

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