International Transport Forum

The Procurement Design Assessment System: The roadmap towards it

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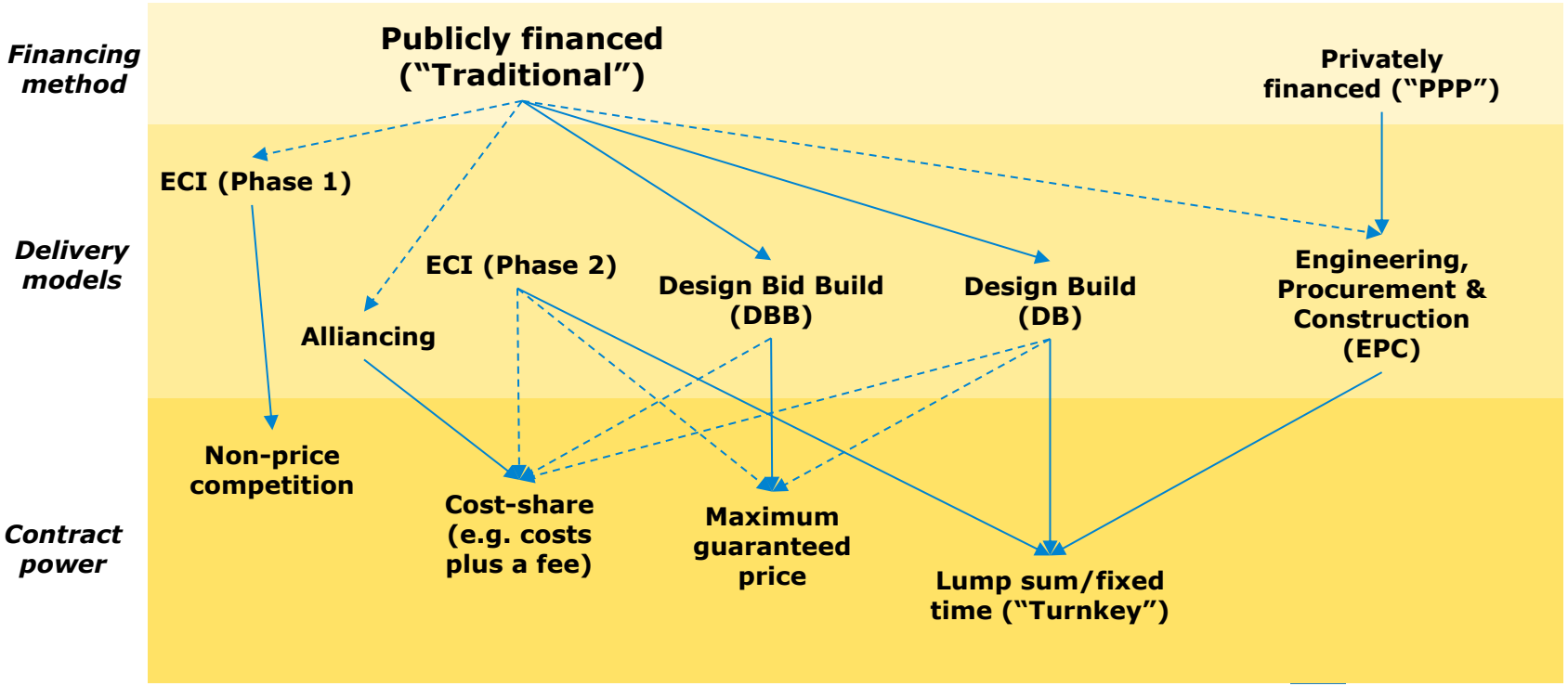
Two challenges to advancing procurement

A lack of:

- Data on procurement performance
- Evidence based approach (including operational data) to procurement design

Contract formats are many



Note – Solid lines denote predominant choice, with dashed lines representing less common but observed options

… and only a little evidence on performance

Most evidence is about on cost (and time) performance of low powered contracts for example

Source	Reference estimate	Project type	Time period[1]	Observ.	Average Cost overrun (%)	Area
Cantarelli et al.2012b, Flyvbjerg et al. 2003	Decision to build	Roads	1927-2009	278	21.2	NW Europe
		Bridges, tunnels		39	25.3	
Cantarelli et al. 2012a	Decision to build	Roads	1980-2009	37	18.9	Netherlands
		Bridges, tunnels		15	21.7	
Makovšek et al. 2012	Decision to build	Roads	1995-2007	36	19.19	Slovenia
Lundberg et al. 2011	Decision to build	Roads	1997–2009	102	21.2	Sweden
Lee et al. 2008	Decision to build	Roads	1985-2005	138	11.0	South Korea
Ellis et al. 2007	Detailed design	Roads & bridges	1998–2006	1847	-13.40	USA
Odeck, 2004	Detailed design	Roads	1992-1995	620	7.88	Norway
Cantarelli et al. 2012c	Detailed design	Roads	1980–2009	23	-2.9	Netherlands
Ellis et al., 2007	Contract value	Roads & bridges	1998–2006	1908	9.36	USA
Bordat et al. 2004	Contract value	Roads	1996-2001	599	5.6	USA
Hintze and Selstead 1991	Contract value	Roads	1985–1989	110	9.2	USA

Many opinions on how contracts and concepts should perform…

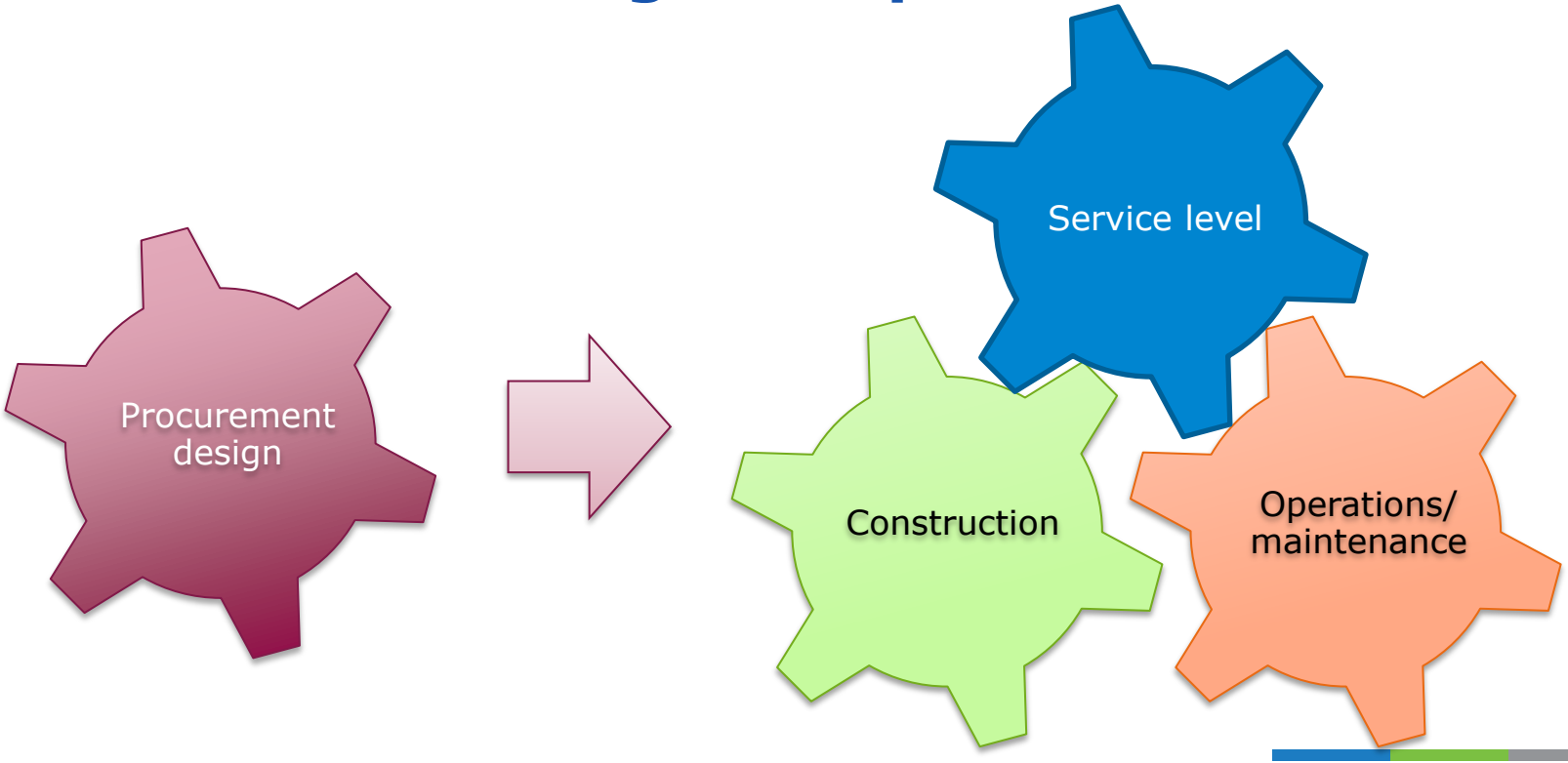
Some examples:

- Bundling design & build will reduce variation claims due to errors and omissions in design and lead to better project outcomes.
- Stronger enforcement package (e.g. performance bonds) leads to overall better contract performance.
- In PPPs bundling DB with OM will lead to life-cycle cost optimisation.
- …

… actually very little evidence

- Just looking at on-time/on-budget performance is insufficient, a view on end cost is necessary as well!
- E.g. evidence on superior on-time/on-budget of D&B vs DBB for transport infrastructure potentially available, but no view on end cost.
- What about quality/service levels?
- In-house transaction cost?
- …

Procurement design and performance?

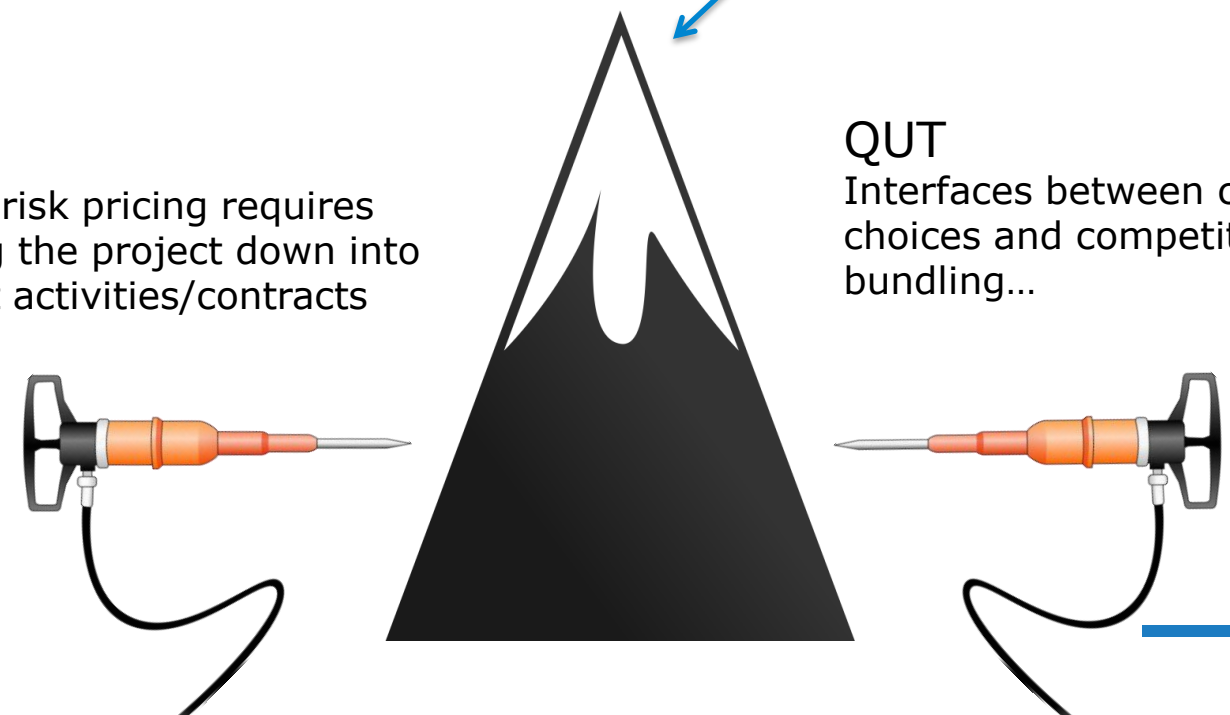


Towards evidence based procurement design

Optimising procurement

ITF
Optimal risk pricing requires breaking the project down into different activities/contracts

QUT
Interfaces between contract choices and competition, bundling…



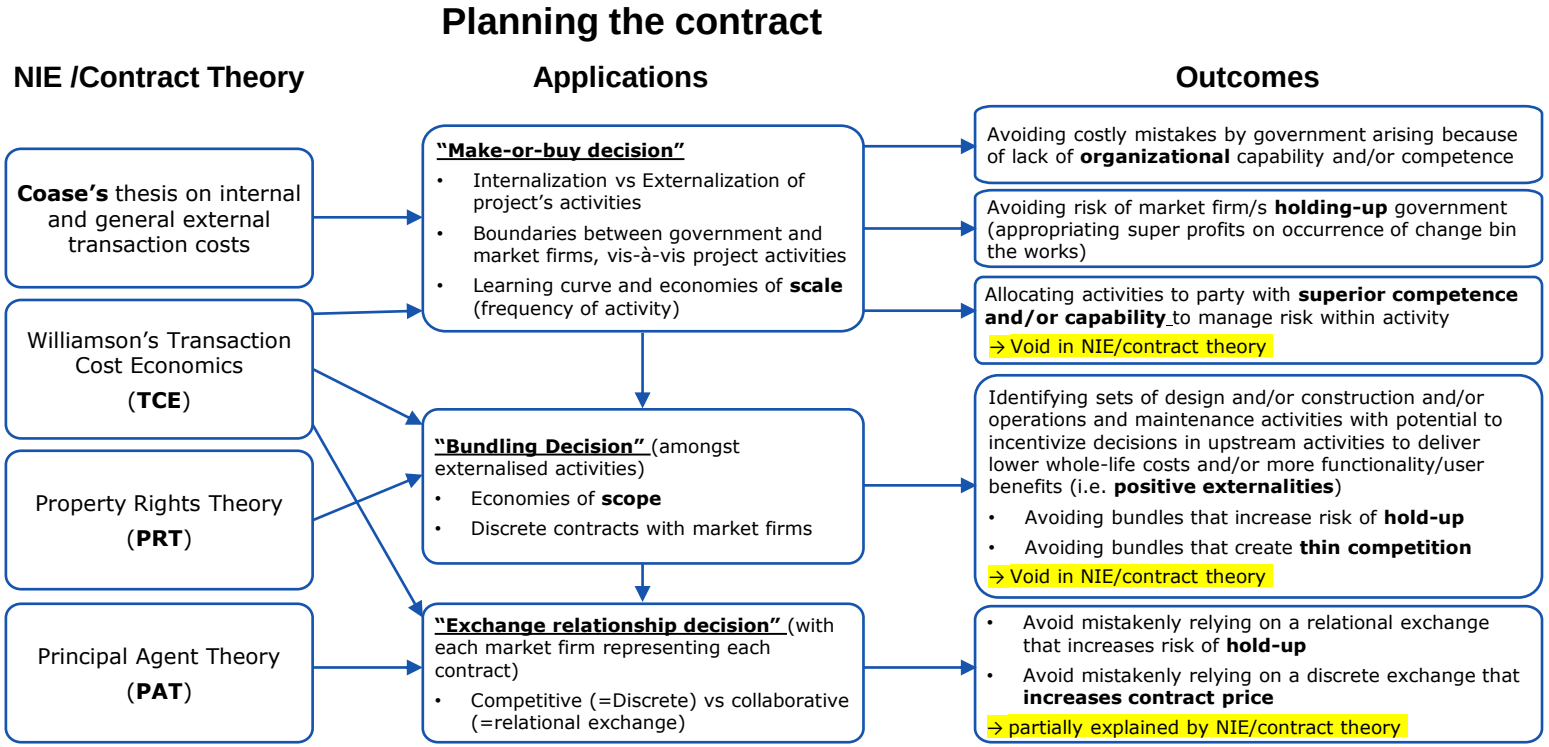
Economics about procurement…

- Procurement, or planning the contract, is like a hurdle race with key decision-points that need to be cleared, or optimised:
  - **make-or-buy decision** (given current capacities or long-term prospects);
  - **bundling activities** (bundling decision/LCC);
  - based on **competition** or **collaboration**.

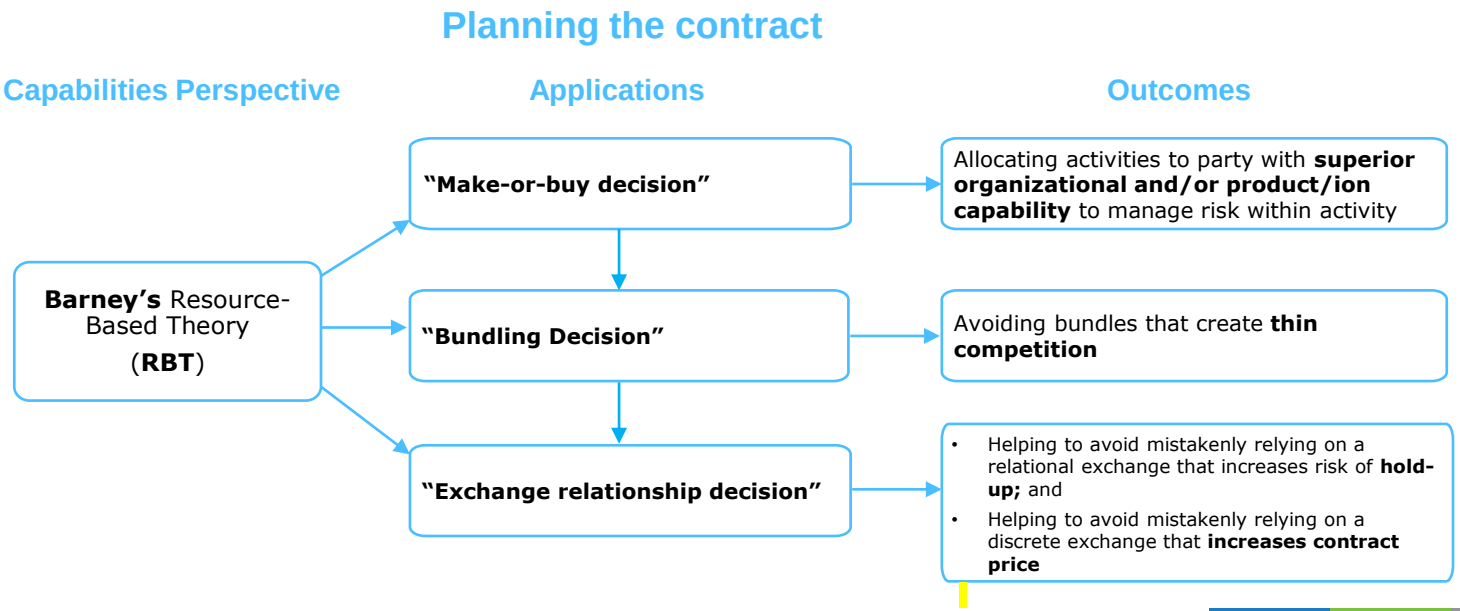
vs.

vs.

Contract theory increases our understanding



… adding a capabilities perspective to address incompleted explanations from, NIE/contract theory i.e. adding Barney's Resource-Based Theory to advance our understanding…



Infrastructure procurement in practice?

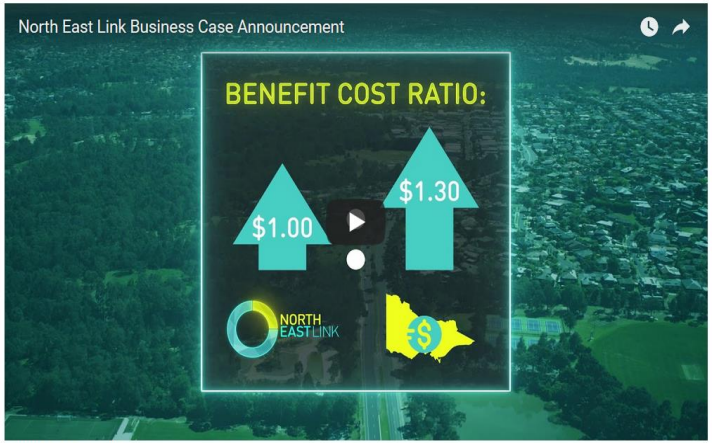
An example of an advanced economy (Australia; similar to UK):

- Step 1: Data gathering (objectives, risks; agency's and market sounding/capability, unique project characteristics)
- Step 2: Shortlist delivery models (consider suitability of PPP, Alliancing, Managing contractor model)
- Step 3: Validation (what precedents exist for this project? What does the market think?)
- Step 4: Delivery model options analysis (Which model best achieves objectives and reduces risk?)
- Step 5: Preferred delivery model (structure preferred delivery model, consider risk; approve; execute gateway review)

How is infrastructure procurement informed in practice?

Business Case

North East Link Business Case Announcement



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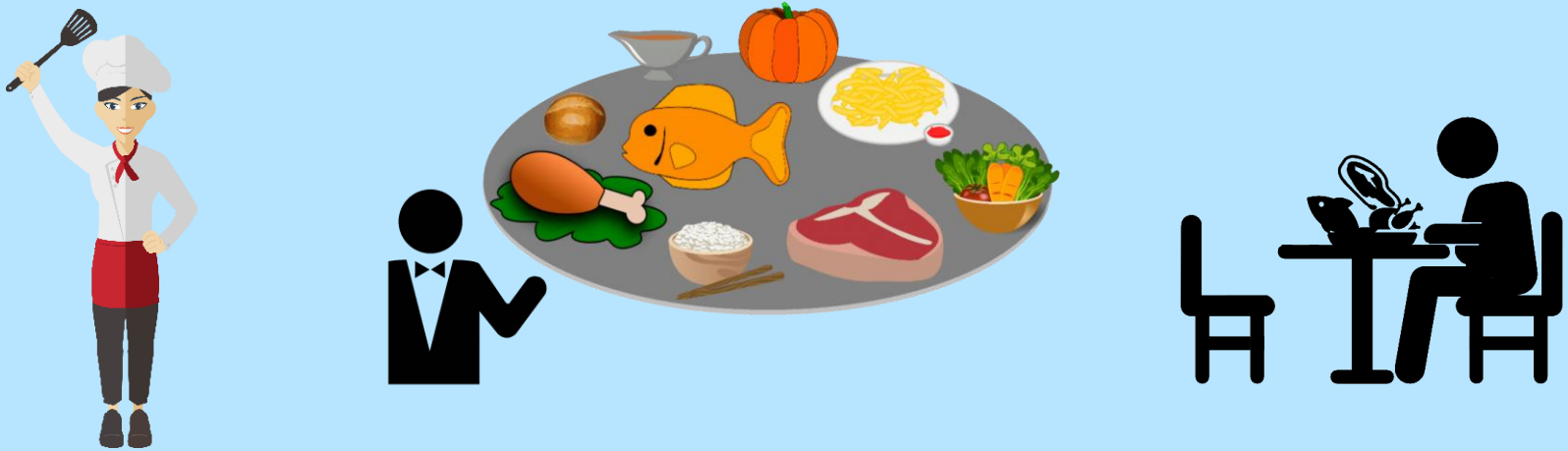
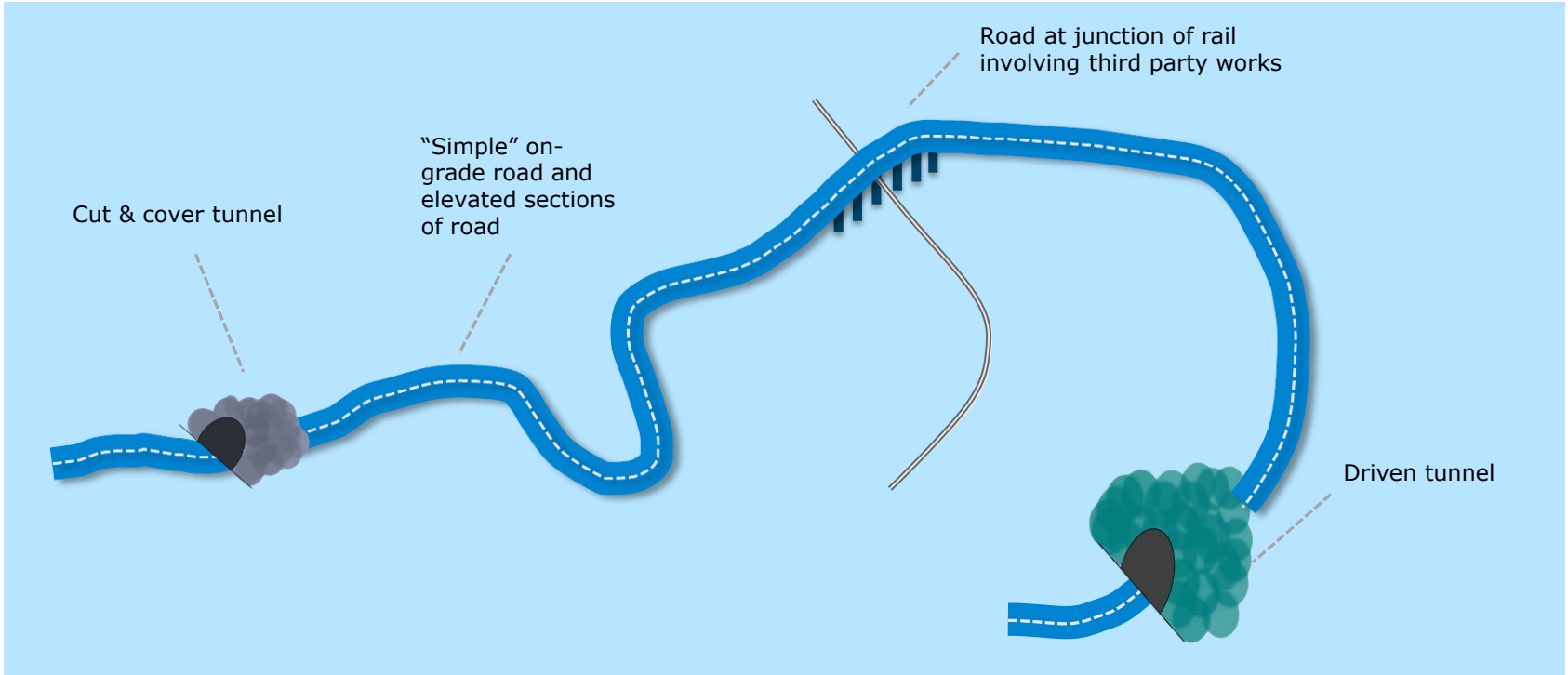
North East Link will be the biggest transport project in Victoria's history - finally fixing the missing link in Melbourne's freeway network.

An example of an advanced economy e.g. Melbourne's North-East Link project, Australia (business case at: https://northeastlink.vic.gov.au/project/businesscase)

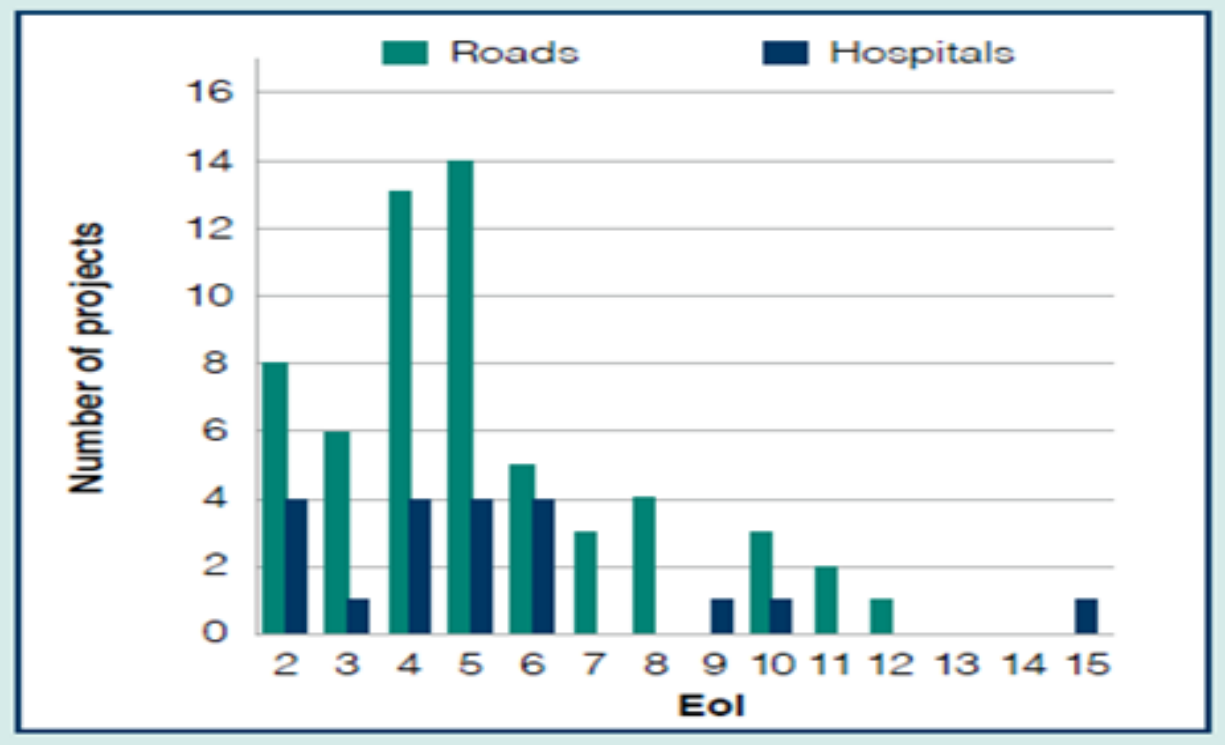
How is infrastructure procurement informed in practice?



Infrastructure procurement in practice?



How is infrastructure procurement informed in practice?



Towards PDAS

PDAS= Procurement Design Assessment System: QUT have developed the core…

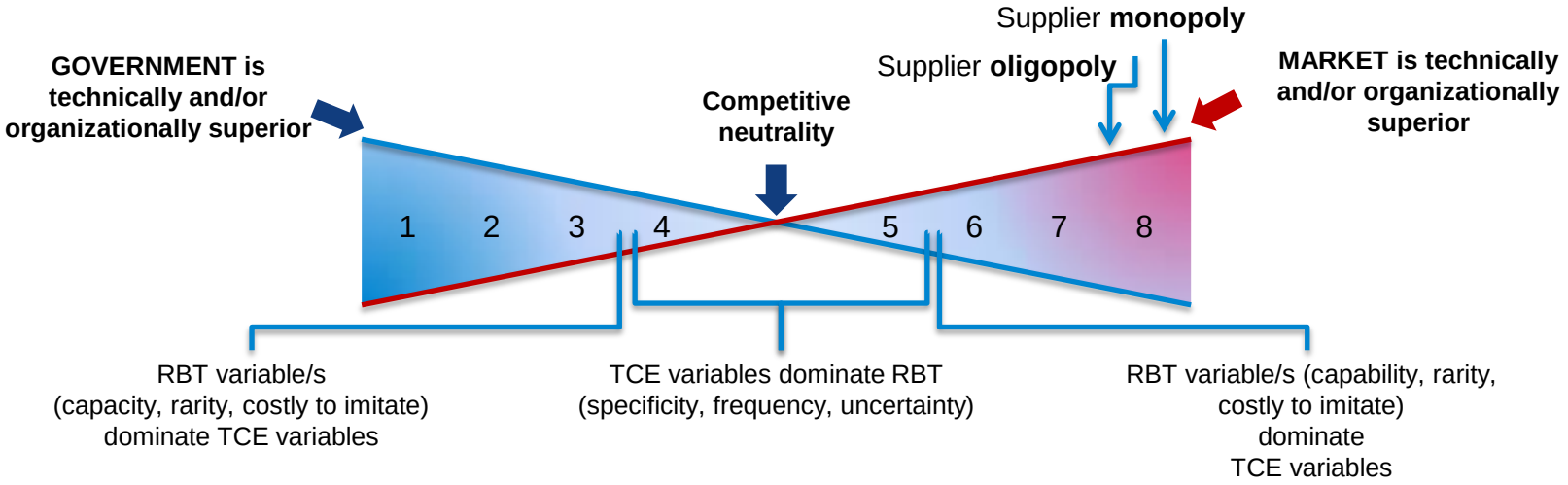
Step 1. **Activity** Analysis (splitting the project into activities/highest level of specialization on the market)

Step 2. **Make-or-Buy** Analysis

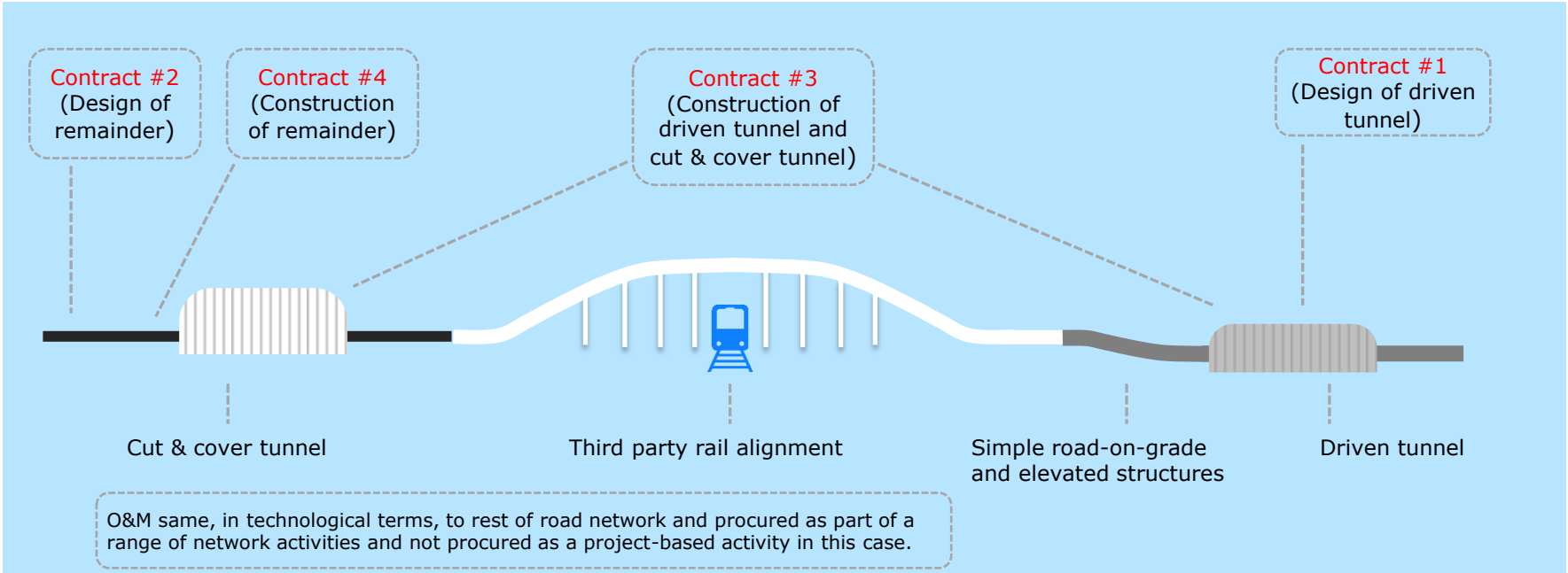
Step 3. **Bundling** Analysis (chasing LCC optimisation)

Step 4. **Exchange Relationship** Analysis (what contract type/power for each bundle)

The aim in bundling and make or buy



How it should have been done



Pieces to be developed to get to PDAS

Aspects to be developed/expanded the current model

- **Consolidation** of multiple contract bundles/packages using multiple risk treatment (multiple exchange types in one contract) in conjunction with multiple sources of finance
- Consideration of activities in **network settings**
- Integrating insights from our **WG Synthesis report and current model**
- Inputs from **ex-post analysis** lacking at the moment (i.e. the first challenge of procurement)

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Thank you!

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