

Systems Thinking in Planning for Project Success

A case for the Metro Tunnel Project and beyond

Edmund Chew

16 August 2022



I wish to acknowledge the traditional custodians of the land we are meeting on, the Ngunnawal people. I acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region

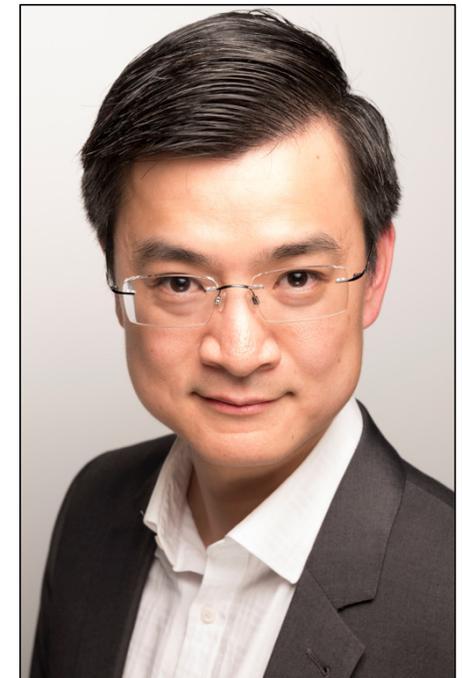


Introductions – Edmund Chew

A quick bio



Qualifications	Bachelor of Engineering (Mechatronics) Bachelor of Business & Commerce (Marketing & Management) Masters of Business Administration Project Management Professional (Project Management Institute)
Exposure in Infrastructure Projects	Water, Roads, Education, Justice, Health and Rail
15+ years Experience	Worked on over 60 projects across all stages from development, delivery and through to handover. Experience working on contractor, consultant, client and operator roles
Diverse Roles	Planning, Cost Control, Project Management, Engineering and Operational Readiness



Menu for today's presentation

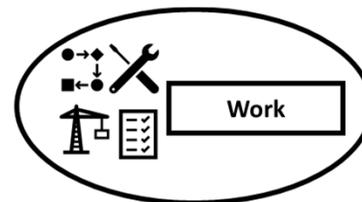
A thought for systems thinking and how it has helped the Metro Tunnel Project



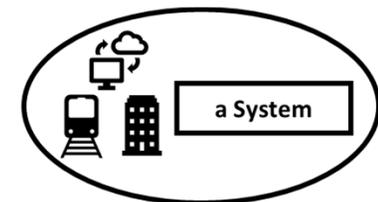
WHAT



does



to produce



WHO/WHEN/WHERE



HOW



*People
Process
Structure*



C@B

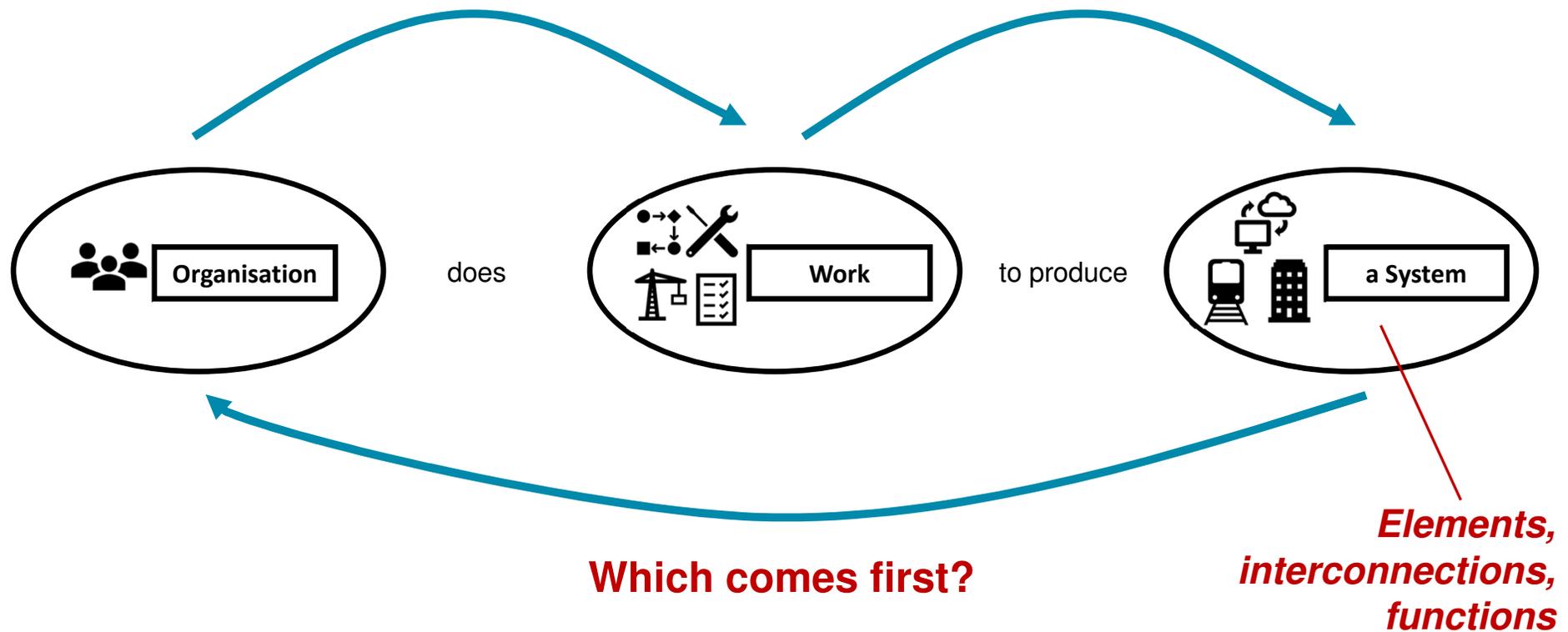
SO WHAT

So that success is no accident

Not a planning/scheduling presentation

A 'simple' concept for systems thinking

Planning and project management has been very much 'linear' thinking (cause & effect)

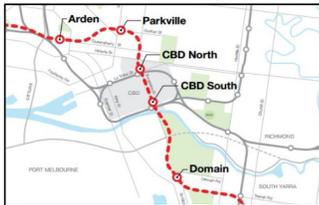


Metro Tunnel Project – Trouble brewing in 2019

There was an impetus for change and so the Integrated Program Team formed



Project Background



New asset since the city loop
- 9km twin tunnel
- 5 new stations



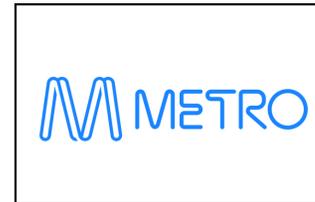
New signalling solution
- Brownfield interface
- Platform Screen Doors



New High Capacity Trains
- 65x trains
- Delivered separately by department



Situation & Challenges



First new underground asset since the city loop to be introduced to the operator



Project packages and delivery of trains focusing on current issues in delivery



Similar projects in Australia and Internationally facing different levels of success

Rail Projects Victoria's leadership was committed to ensure timely delivery of the project

Systems Approach #1 – Integration of Purpose

Metaphor: Achieving Day-1 for the Metro Tunnel Project is like launching a missile



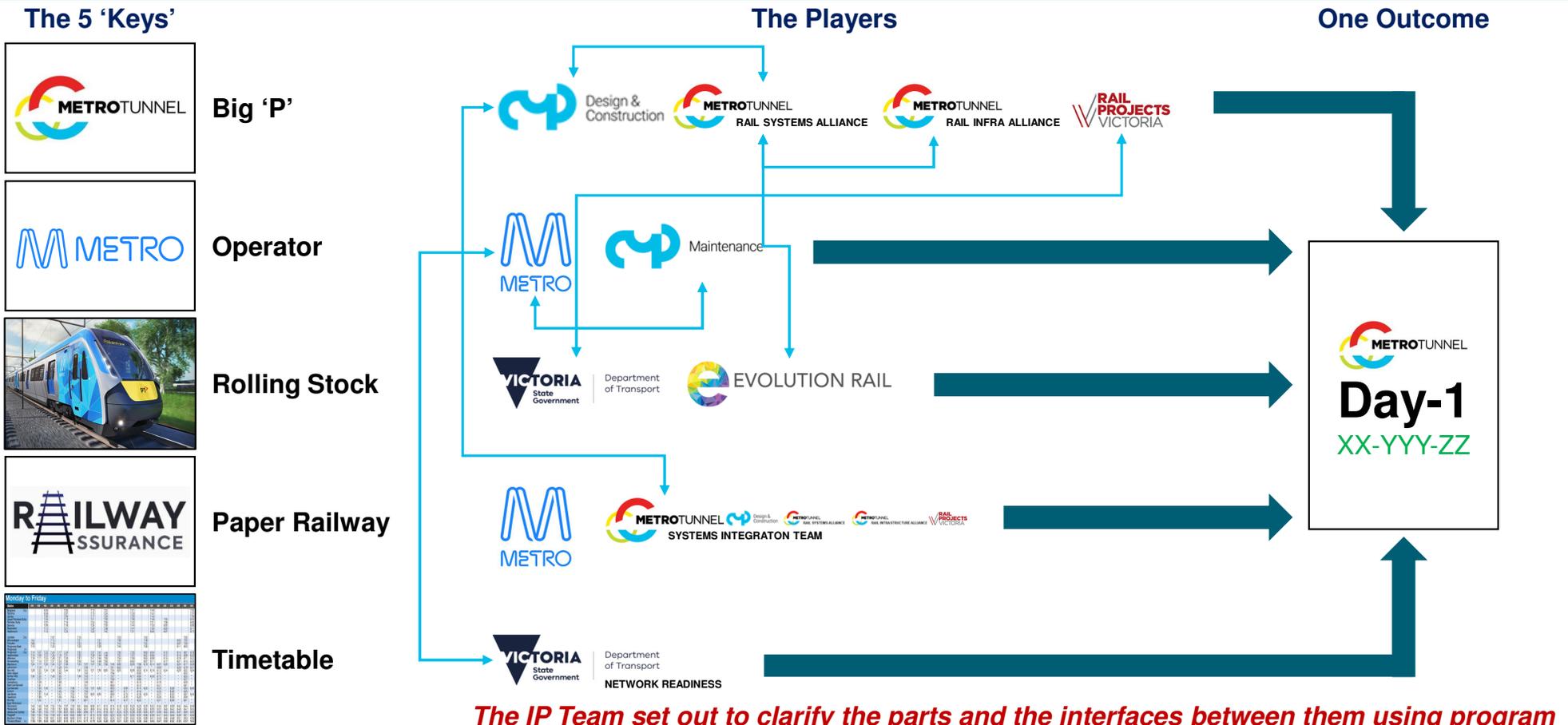
*Everyone needs to play their part
and synchronised with each other*

We are all interconnected



'Who' make up the Integrated Program

We realised that the project was made up of more than just the project packages



Drawing inspiration from Project Apollo

With so many parts, organisations and stakeholders



8 years



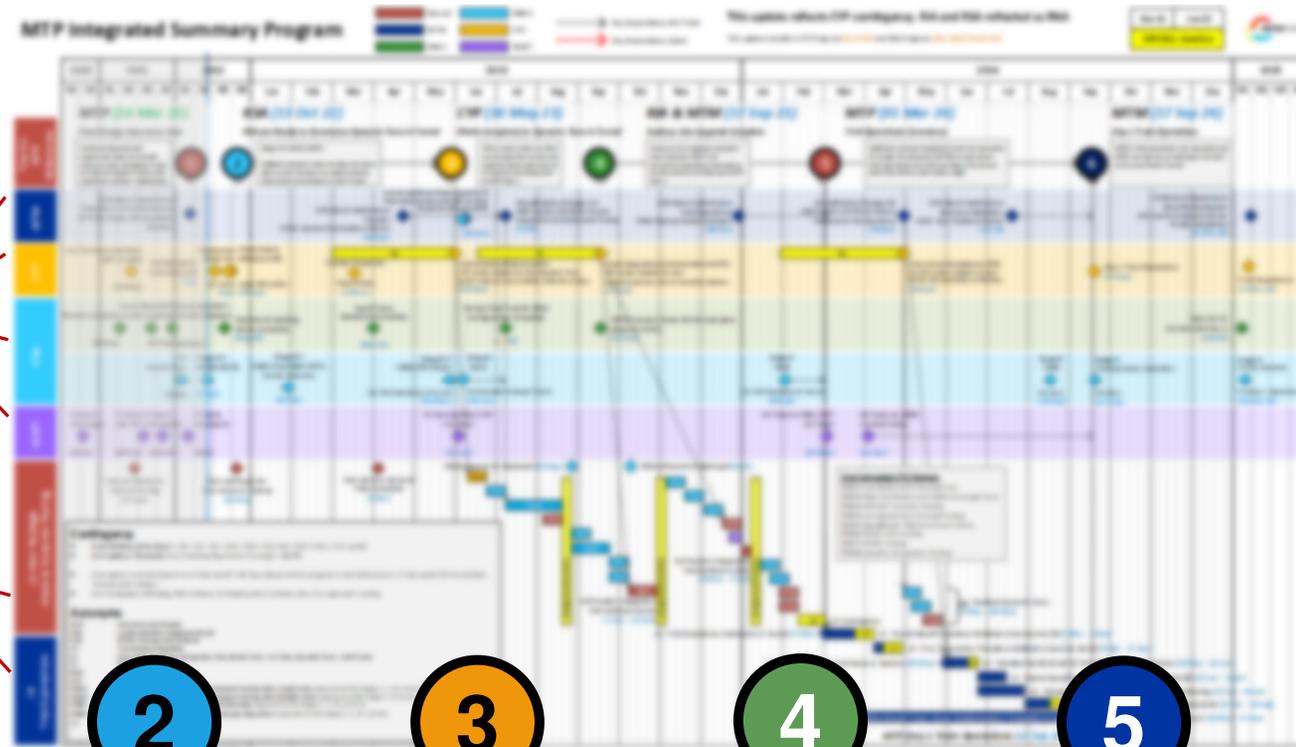
"We choose to go to the moon" May 1961



"One small step for man..." August 1969

Systems Approach #2 – Progressive validation

We now have a top-down view of our works with the Day-1 summary program



Dynamic Testing + Trial Operations
(all in the one same space)



Final Design Assurance Case



Trains running with new signalling on the surface rail



Works Complete for Dynamic Tests



Sunbury Line Upgrade Complete



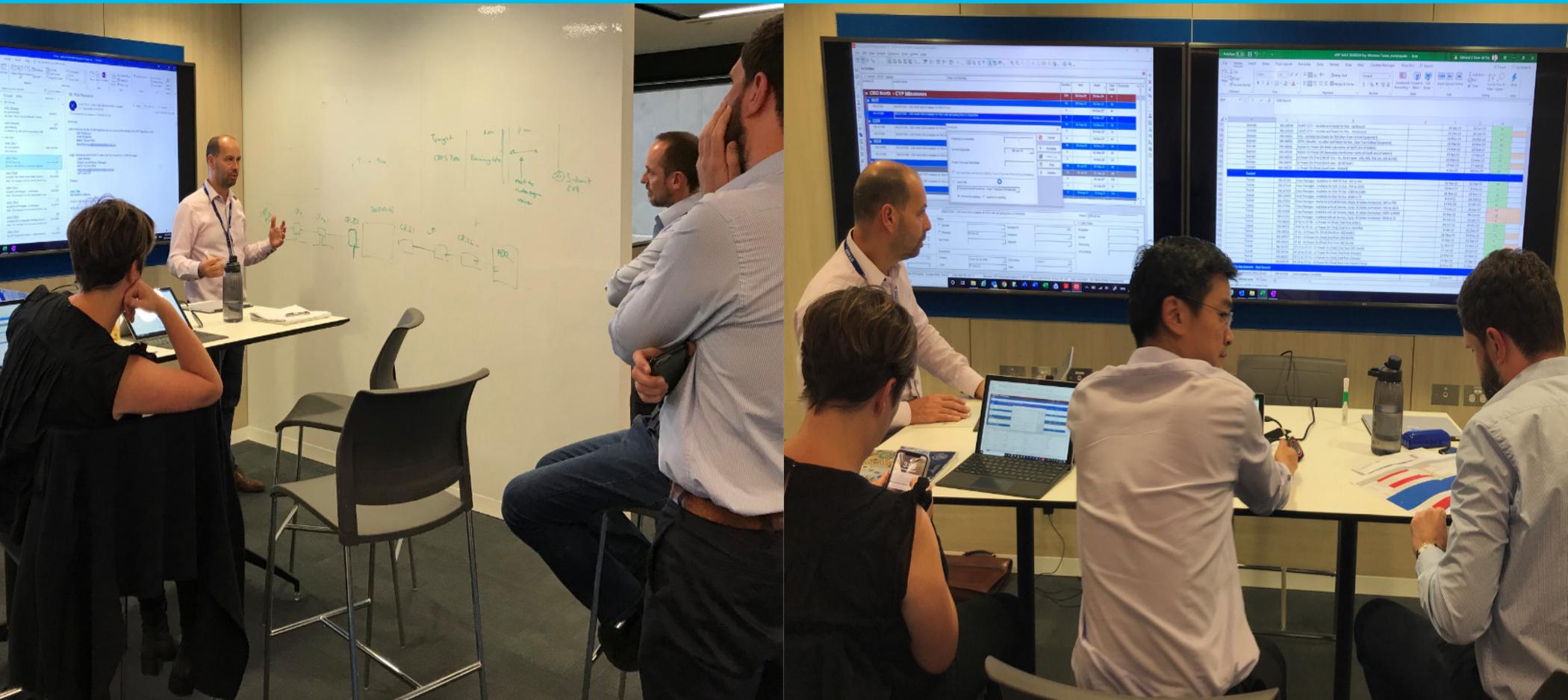
Trials Operations Commence



Day 1 Train Operations

Systems Approach #3 – PEOPLE over process and structure

It is important that all parties involved use have a positive, transparent & collaborative approach



VAGO Report – Stage 2 (Main Works) Review

VAGO’s comprehensive report was complementary of our collective work



2. Is the Metro Tunnel Project progressing as planned?

Conclusion

The tunnels and stations main works are currently progressing as planned and RPV and CYP’s systems for monitoring and achieving project requirements are effective.

However, the overall project is facing time and cost pressures and RPV has also descope some MTP signalling works and wider network agreements with precinct stakeholders to implement EMI mitigations

RPV and CYP need to carefully manage all these risks to achieve RPV’s September 2024 and deliver the project’s intended benefits.

RPV’s monitoring of CYP’s progress

RPV has an effective monitoring process in place to make sure CYP and other contractors are delivering the agreed scope of works.

The MTP reports on a similar basis to the other projects delivered by RPV and other MTIA teams.

This reporting is found in:

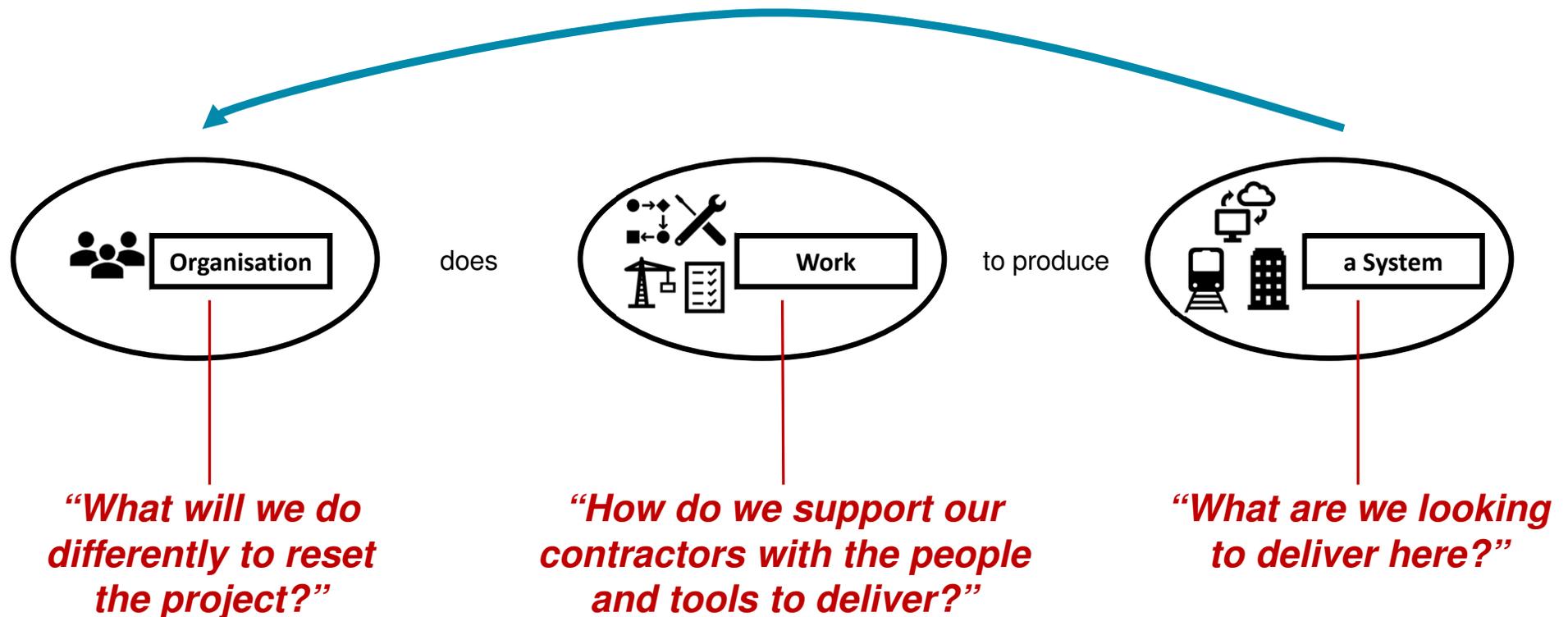
- monthly management and progress dashboards for users at RPV and MTIA
- project progress data embedded in monthly reports for the MTIA Director-General and the Major Transport Infrastructure Board (an MTIA advisory board)
- reporting to the DoT executive, central agencies and ministers’ offices
- the quarterly Major Projects Performance Report, which the Office of Projects Victoria compiles and submits to a subcommittee of Cabinet.

RPV also uses data from CYP’s monthly progress report and monthly reports from the IR and FC. The IR and FC reports assess progress against the approved scope and calculate CYP’s construction effort.

We examined recent examples of each of these levels of reporting, as well as source data. The description of the project’s progress in the higher-level briefings we reviewed is accurate and aligns with the source material.

In Summary – Back to the concept

A change from commercial work packaging to properly understanding how to deliver

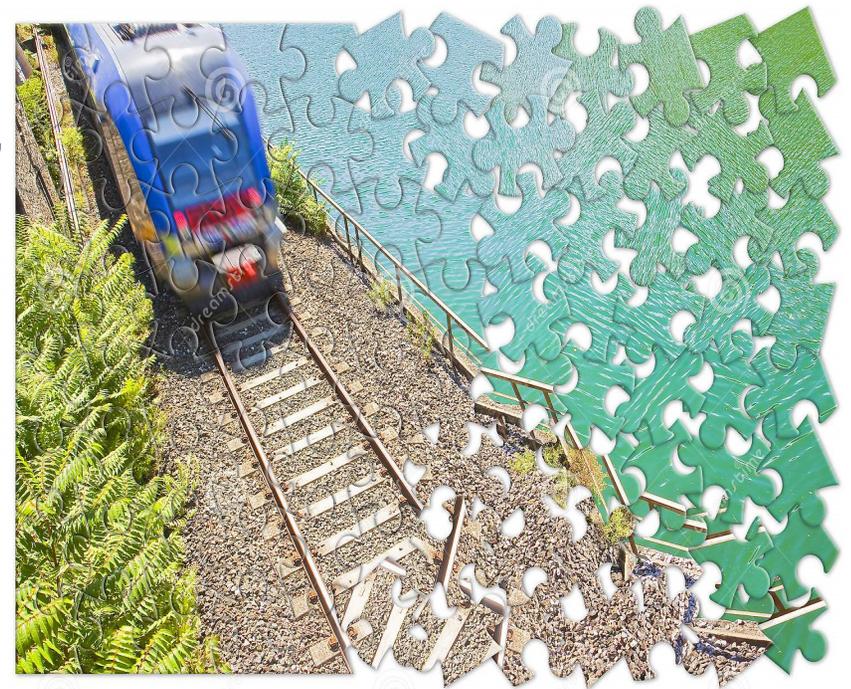


List of Takeaways

If the Metro Tunnel Project is delivered on time, *'its success is not an accident!'*



- Completion @ Beginning – start with the **'End in Mind'**
- Take the approach of an active and informed client
- Everything is **interlinked**, we cannot have silos
- Systems approach is a **iterative** and ongoing process, not a sequential process
- Consider **structure of the organisation** to reflect the works and the system





Systems Approach beyond the Metro Tunnel Project

Systems Approach #4 – Lamb Curry

What are the elements (ingredients) that make this dish?



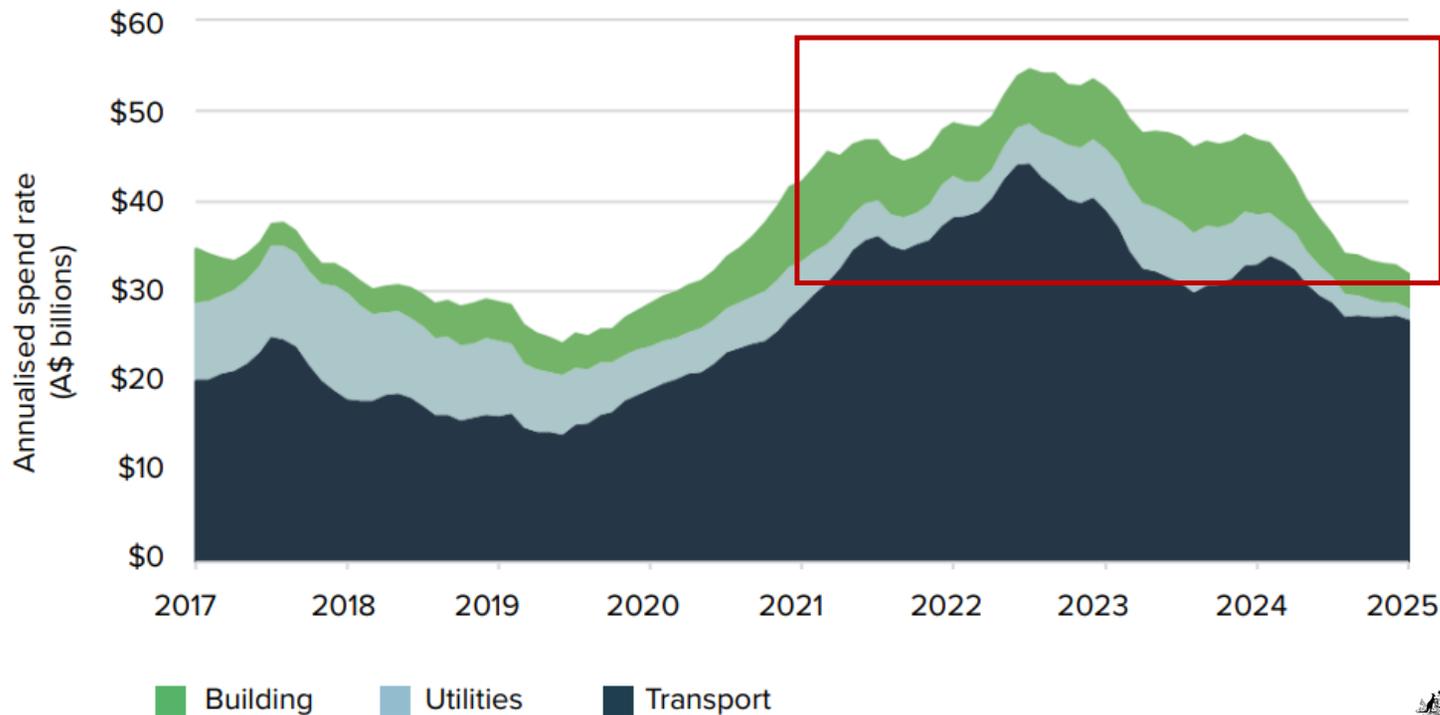
*Ps: my presentation
should have come
before lunch!*

Infrastructure Projects in Australia – Bigger and More

What are the elements (ingredients) that will help deliver these projects?



Figure 3: Major public infrastructure activity will approximately double over the next three years



How to address the 'over and above'?

Professionals Program – Tackling the Resource Issue

The program was set up to attract engineers from other industries into rail and planning



Rail Projects Victoria's Professionals Program offers a unique and rare opportunity for the rapid development of engineers as highly skilled practitioners in the field of planning and scheduling.



RAIL
PROJECTS
VICTORIA



Professionals Program – Training for skill & philosophy

Engineers are trained 'on-the-job' and provided structured training



- Module 1** Introduction to Planning and Programming
- Module 2** Rail Familiarisation
- Module 3** Primavera P6 Training
- Module 4** Top Down and Bottom Up Planning
- Module 5** Effective Communication
- Module 6** Program Reviews
- Module 7** Risk and Contingency
- Module 8** Delay Claims Analysis

Professionals Program – Outcomes has been fantastic

Planners are now working with the operators and contractors on our projects



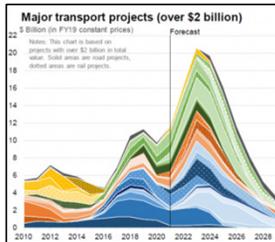
“In the two year program I developed real ‘on the job’ project planning skills on real world projects of a truly global scale.”

“I am grateful to be working on an important infrastructure project with a brilliant team. I have the freedom to make my own judgements and at the same time I have the support and guidance from experienced planners.”



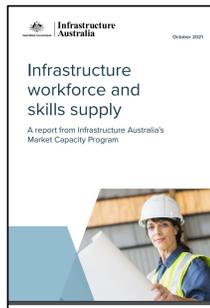
Looking Beyond – Diploma of Project Controls

The diploma aims to address various issues and shortfalls within the discipline



Increased number of projects

- Size of projects getting bigger
- Transport, energy and defence



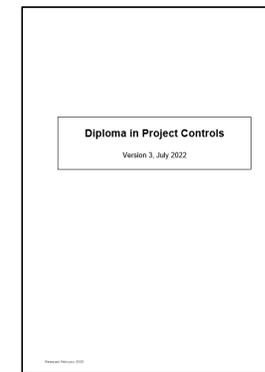
Workforce shortage

- Reports identify resource shortfall
- Organisations hiring same resource in supply chain



Hard to find skilled people

- No means to check for competency
- Years of experience does not always mean proficiency



Diploma of Project Controls

- Means to enter the project controls discipline
- Extra means to increase resource pool
- Provide means to assess competency

Graduates will be **INDUSTRY READY**

As an accredited VET course, the Diploma in Project Controls will help develop the skills and knowledge required to suit our projects and organisations needs

See you in Melbourne!

Project Controls Expo '22 Melbourne Cricket Ground 29-30 November

*“Join like-minded professionals.
Build your network and meet old friends.
New and diverse speakers from a range of industries
will feature in this year’s expo”*



Questions, thoughts, comments?

