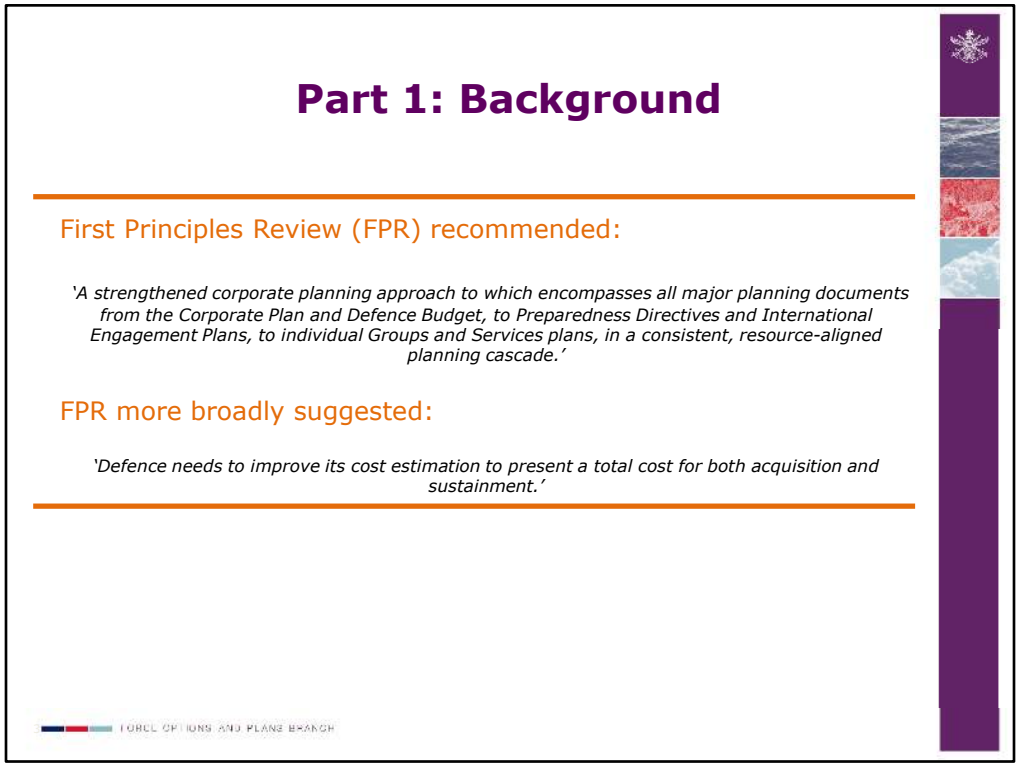
Good afternoon Ladies and Gentlemen,
It is my great pleasure to share with you the experience we had during the Force Structure Plan 2020 or the FSP20.

Outline

- Part 1: Background
- Part 2: FSP20 Cost Estimation and Assurance Approach
- Part 3: Outcome of the Approach
- Part 4: Challenges of Cost Estimation

My presentation includes:
- some background information about costing in Defence,
- The FSP20 costing approach,
- Outcomes of the approach
- Key challenges we faced during the FSP20

And some time for questions and answers

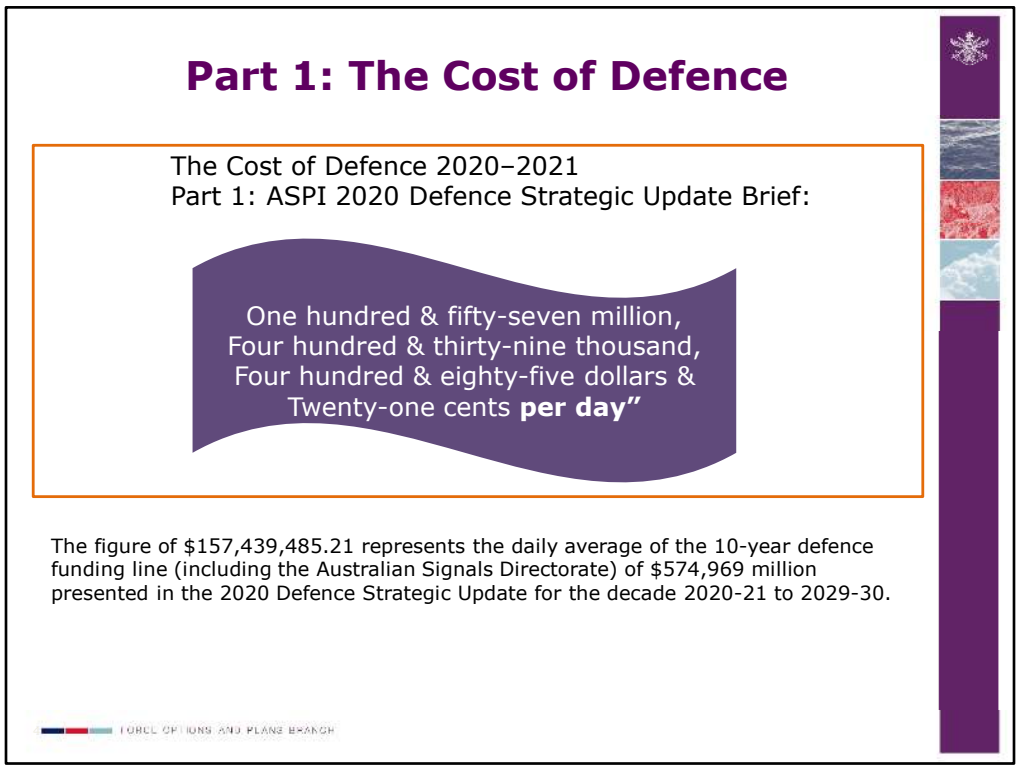


As you might already know, Defence's capability investments makes up a large proportion of government's expenditure. Cost estimation of Defence capability investments therefore is crucial for budget planning and implementation.

Is Defence good at cost estimation?

The First Principle Review in 2015 suggested that Defence needs to improve its cost estimation to present a total cost of ownership, meaning the whole of life cost of capability investments. Yesterday, the 9th of August 2021, Defence made a headline on the Australian newspaper that *we have a rich history of military procurement stuff-ups !*

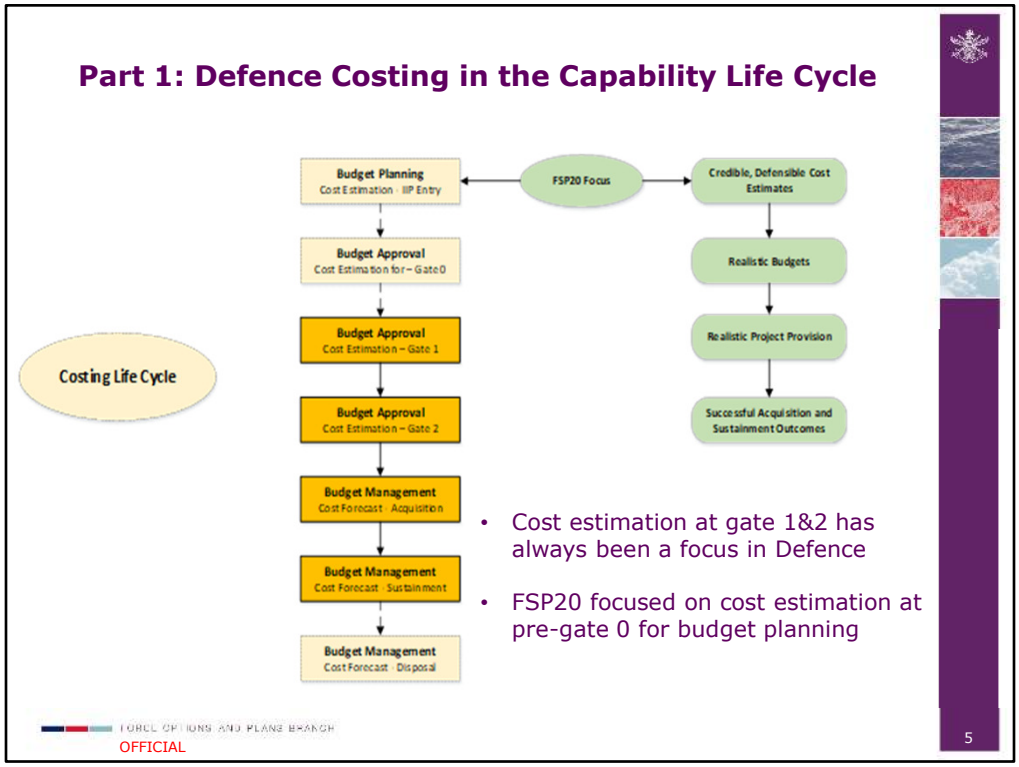
The Australian is right, it is the history! Defence costing has changed since the FSP20 and changed for the better.



As you can see, the cost of defending Australia and its national interest is not cheap.

That is the reason why cost estimation and cost assurance of capability investments in Defence are considered seriously.

Let's look at Defence's costing in the capability life cycle.



As you might already know, every capability investment in Defence has to go through a capability life cycle or the CLC.

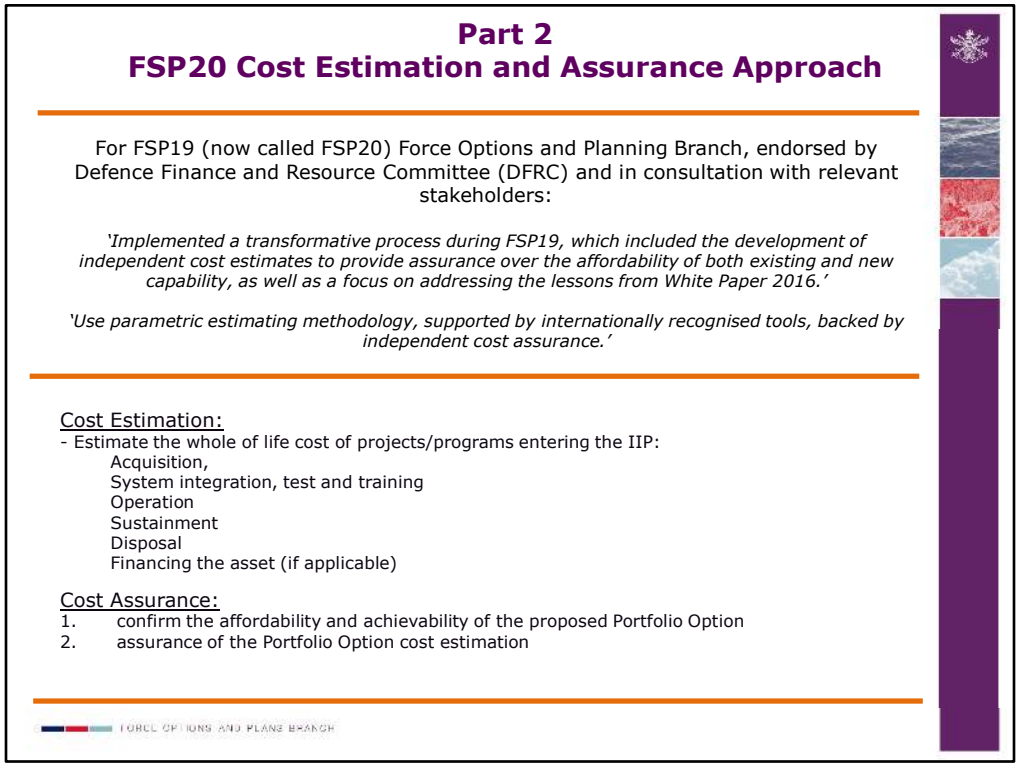
The CLC includes pre-gate 0, gate 0, gate 1 and gate 2 approval and it usually takes a project about 2-3 years to travel from gate 0 to gate 2 approval.

Costing activities happen in every phases of the CLC, from budget planning pre-gate 0 for entry into Defence's integrated investment program or the IIP to budget approval at gate 0, gate 1, gate 2 and budget management during acquisition, sustainment and disposal phases.

In other words, going in parallel with the CLC is the costing life cycle. Cost Estimation at gate 1 and 2 has always been a focus in Defence as at these gates projects need to submit to Government for budget approval. The FSP20 focused on cost estimation at pre-gate 0 as better cost estimation for budget planning would lead to realistic budgets and realistic project provision.

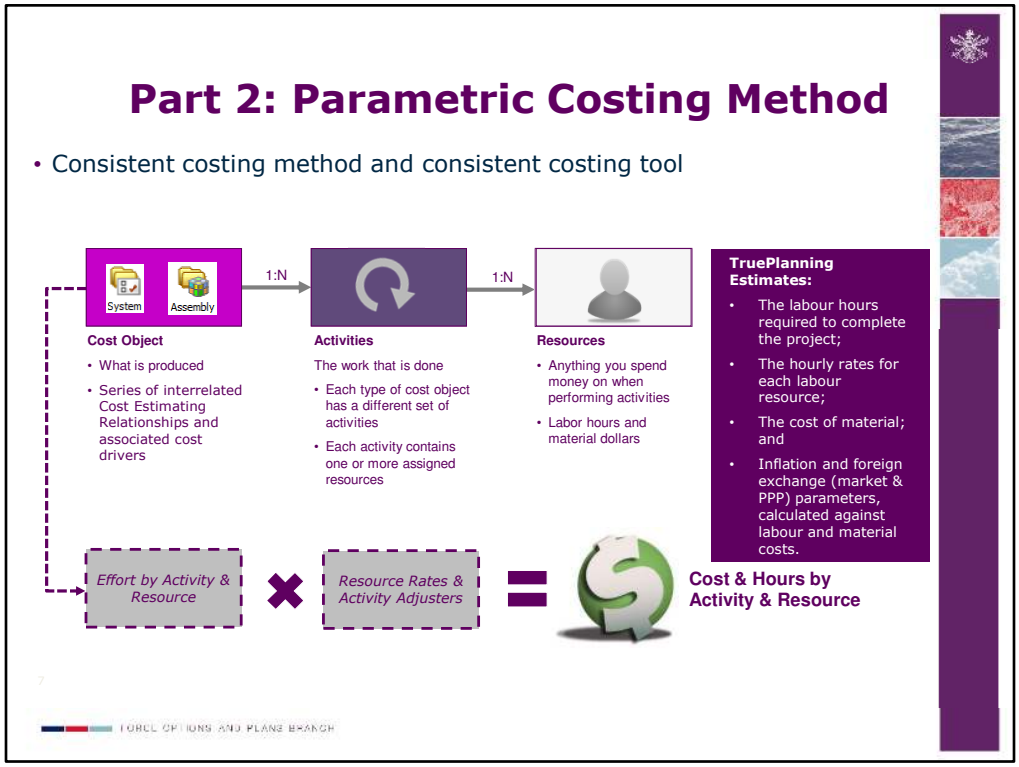
Defence implemented many measures to ensure the consistency and quality of cost estimation during the FSP20 and those include:

1. Central-led baseline cost estimation using parametric costing method
2. Consistent costing process and costing tool
3. Assurance of the completeness, the validity and credibility of the baseline cost estimation
4. Cost risk and uncertainty analysis to visualise the level of risk that Defence was willing to assume; and
5. Assurance of the achievability and affordability of the portfolio option.



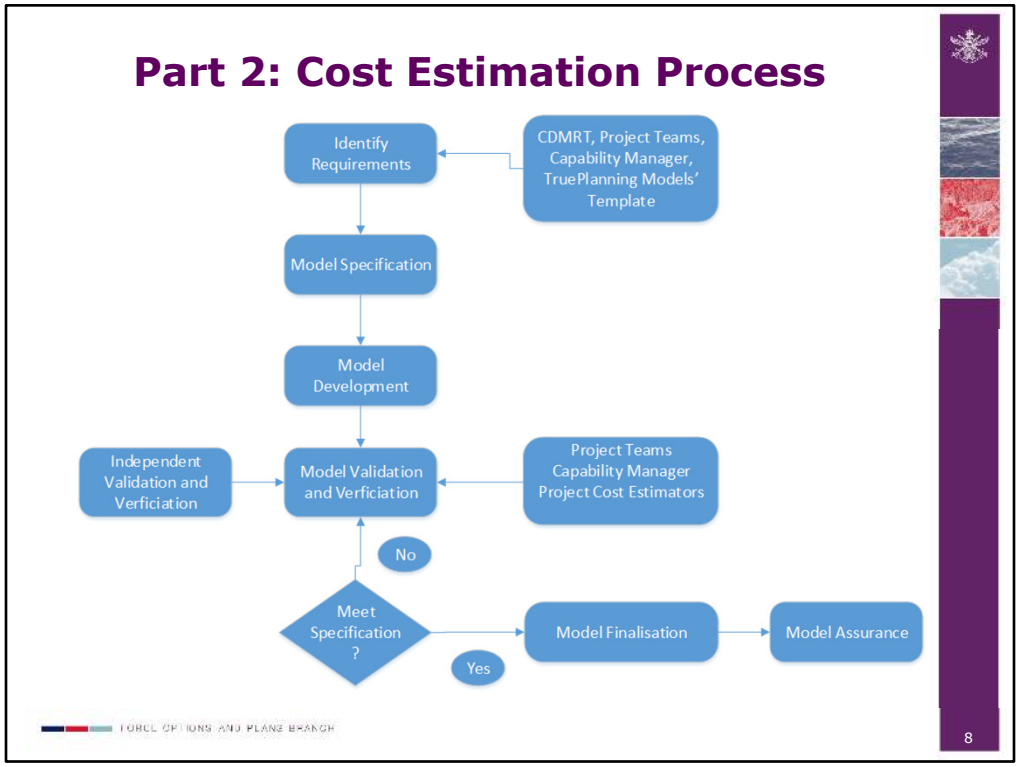
The FSP20 implemented a transformative costing process which included whole of life cost estimations and comprehensive cost assurance activities.

Parametric and analogues costing method was consistently used to cost new projects entering the IIP. A consistent costing tool is also used to ensure the standard and quality of cost estimation across new projects.



For costing tool, the FSP20 mainly employed a commercially available parametric costing tool, which is TruePlanning. The tool came with a defence capability database which is normalised and updated regularly and usual financial treatments such as inflation rate, forex and purchasing power parity (PPP).

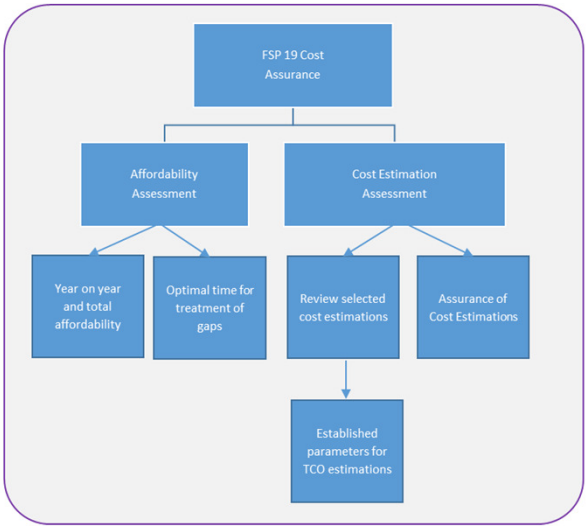
The effectiveness of parametric costing method and TruePlanning costing tool have been proven by the success of the FSP20 cost estimation and cost assurance body of work.



The FSP20 baseline cost estimation process is illustrated by this diagram.

As you can see, consultation with capability managers or project team played an important roles in the cost estimation process. The more specific the assumptions and inputs we received from the capability managers and project team, the more completed and valid our cost estimation.

Cost Assurance Process



FORCE OPTIONS AND PLANS BRANCH

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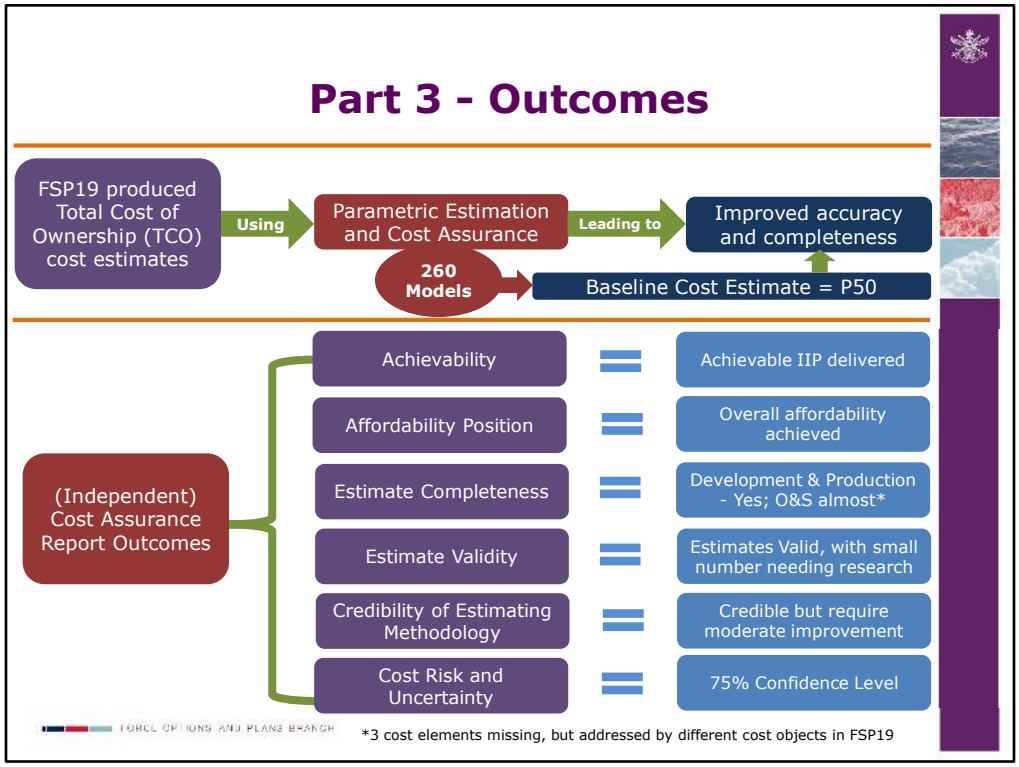
The FSP20 cost assurance process is illustrated by this diagram.

The cost assurance body of work forced on the affordability and achievability of Defence portfolio; the completeness and validity of the baseline cost estimation and the credibility of the costing methodology .

The cost assurance body of work was oversight by a Cost Assurance Review Panel (CARP) which include One Star/Band One representatives from Defence's group and Services and Central Agencies including Department of Finance, Treasury and PM&C.

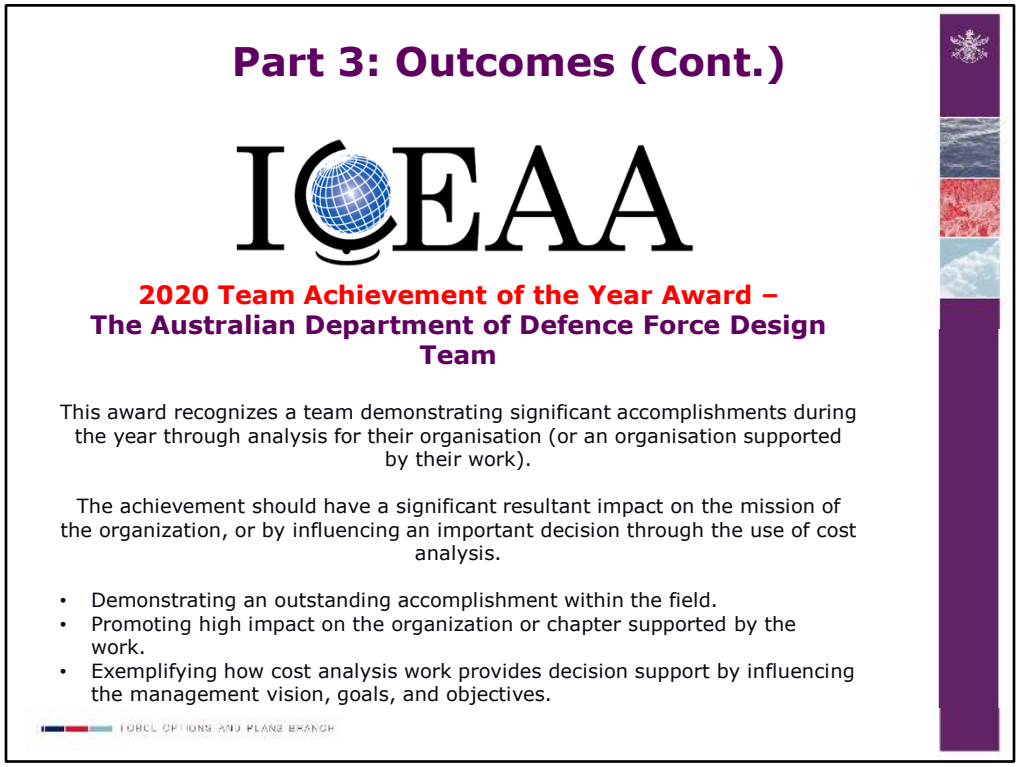
CARP's active involvement through out the process of FSP20 cost assurance played an important role in the success of the FSP20.



The FSP20 costing strategy resulted a landmark achievement with about 260 cost model was built during a 9 month period.

The independent cost assurance report suggested that the FSP20 portfolio option was achievable and affordable; the baseline cost estimates were completed and valid and the costing methodology was credible.

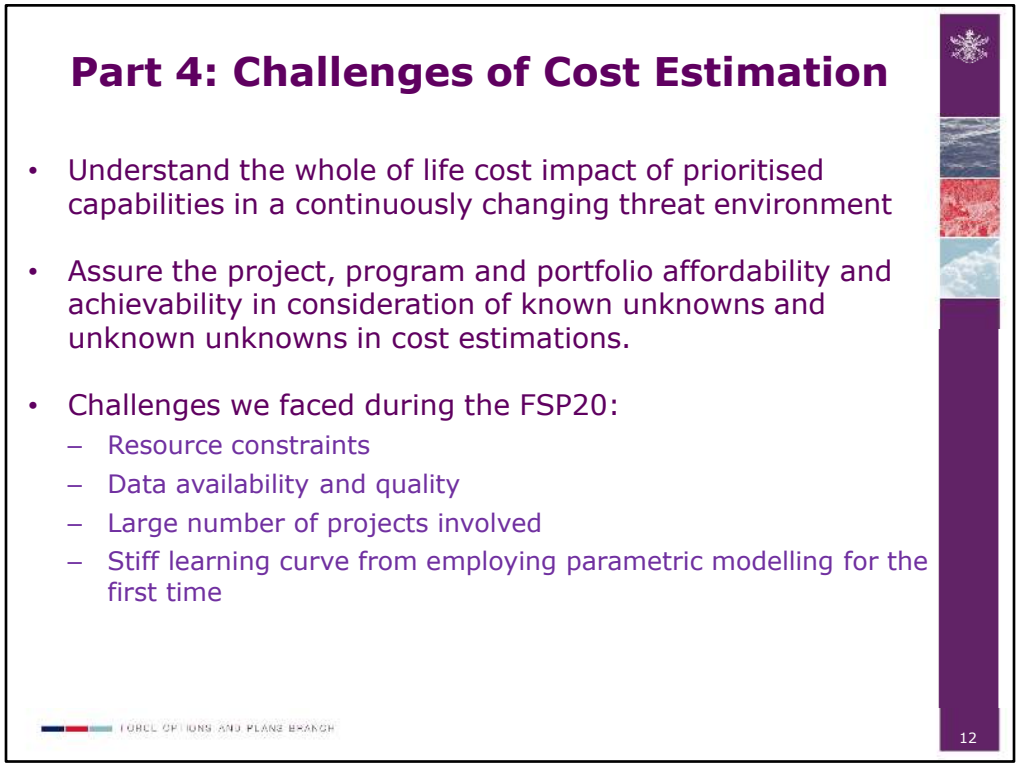
The FSP20 also implemented the first time cost risk and uncertainty analysis to visualise the level of risk that Defence was willing to assume at project, program and portfolio levels.



The FSP20 costing strategy has also helped the Australian Department of Defence Force Design Team to win the International Cost Estimation and Analysis Association 2020 Team Achievement of the year award!

The reward exemplified how our cost estimation and analysis provided decision support in Defence by influencing its capability investment visions and goals.

The reward also acknowledged challenges that we had to overcome during the FSP20.



One of the common challenges in cost estimation is the rapid change in the threat environment leading to changes in the capability prioritisation and therefore the cost. A reasonable decision today might become a bad decision tomorrow if capability prioritisation changes. Deck gun was useful on the German U-boat for sinking small ships but was not very effective for anti aircraft defence. A ballistic missile could be a good choice for a predetermined target; however, if speed and accuracy are both the priority, then hypersonic missile could be a better choice.

Some capability involved a high level of developmental activities and most of those are still unknown. For instance, our 2nd frigate could have some different design in comparison with the lead ship, but we don't know what the differences are at this stage. Cost estimation therefore has to account for both the known unknown and unknown unknown.

There are some specific challenges that we faced during the FSP20 and they include: lack of resource for cost estimation, lack of historical data for cost estimation and cost assurance, a large number of projects we need to cost and stiff learning curve from using parametric costing the first time.