



SDP

Cost and Schedule Interest Group

May 17, 2018

CSRA Interest Group Agenda Meeting #1 May 17, 2018



- Introductions to Purpose
- Introduction of members participating today
- Topics for discussion in future meeting
- When to have the next meeting
 - ✓ Day of week
 - ✓ Time of day
- Volunteer for next meeting



Original CSRA Suggested Topics

- Examples why Cost and Schedule Risk Analysis (CSRA) is valuable
- What sorts of opportunities or decisions justify a CSRA?
- When should a CSRA be conducted?
- How to organize and conduct a CSRA?
- How to reduce or mitigate biases?
- Methods to model and analyze the CSRA?
- Graphics and presentation methods that enable analysis and mitigation of cost and schedule
- Methods to incorporate mitigation
- Value measures other than cost and schedule.
- Rescuing a Project – dealing with critical path issues
- AACE Organization

Member Composition



| Time Zone | # Participants | Time | Delta PDT | Adjusted Ti |
|-------------------------|----------------|----------|-----------|-------------|
| Norway / Johannesburg | 3 | 7:00 PM | 9.00 | 9:00 PM |
| London | 1 | 6:00 PM | 8.00 | 8:00 PM |
| US East Coast | 1 | 1:00 PM | 3.00 | 3:00 PM |
| US Central Time | 8 | 12:00 PM | 2.00 | 2:00 PM |
| US Mountain / Saskatoon | 1 | 11:00 AM | 1.00 | 1:00 PM |
| US West Coast | 5 | 10:00 AM | - | 12:00 PM |
| Melbourne Australia | 1 | 3:00 AM | (7.00) | 5:00 AM |
| Total Reflected | 20 | | | |
| Adjust? | | | | 2 |
| Total Respondants | 25 | | | |

CSRA Interest Group Meeting June 21, 2018 Agenda



- Round robin of who is on the webinar
- Ground rules for webinar
- Discussion Lead by Brian Putt
 - Why CSRA is important,
 - What sorts of opportunities or decisions justify a CSRA
 - When should a CSRA be conducted
- Discussion of next webinar date & topics
- Adjourn

Ground Rules for Webinar



- All participants are encouraged to contribute during the meeting with comments
 - Preferably they comment on the phone although questions can be raised with the Chat. Possibility that Chats comments may not be seen right away.
- Participants are responsible for managing background noise. If your location might be noisy, please mute until you wish to speak.
- Session is being recorded and will be available to the CSRA Interest Group
- We will finish on time!



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Why is a Cost and Schedule Risk Analysis Important?

“Cost overrun is common in [infrastructure](#), [building](#), and [technology](#) projects.

For [IT projects](#), a 2004 industry study by the [Standish Group](#) found an average cost overrun of 43 percent; 71 percent of projects came in over budget, exceeded time estimates, and had estimated too narrow a [scope](#);

and total waste was estimated at \$55 billion per year in the US alone.^{[\[1\]](#)} (Wikipedia -- Cost Overruns)



¹ Standish Group (2004). *CHAOS Report (Report)*. West Yarmouth, Massachusetts: Standish Group



Why is it important

Rio Olympic Games: “As cost overruns mounted, local organizers scrambled to cut expenses on everything from venue seating to the types of food served in VIP areas.” (WSJ 8/1/2016)

What is the cost or impact of changing the plan to meet the cost or schedule targets



Why is it important

In recent years, many federal projects have had large cost overruns.

- The cost to create the Healthcare.gov website launched in 2013 grew from \$464 million to \$824 million.⁵
- A Veterans Affairs hospital currently being constructed in Orlando has more than doubled in cost from \$254 million to \$616 million.⁷ (Downsizinggovernment.org – September 2015)
- The International Space Station more than quadrupled in cost from \$17 billion to \$74 billion.⁶

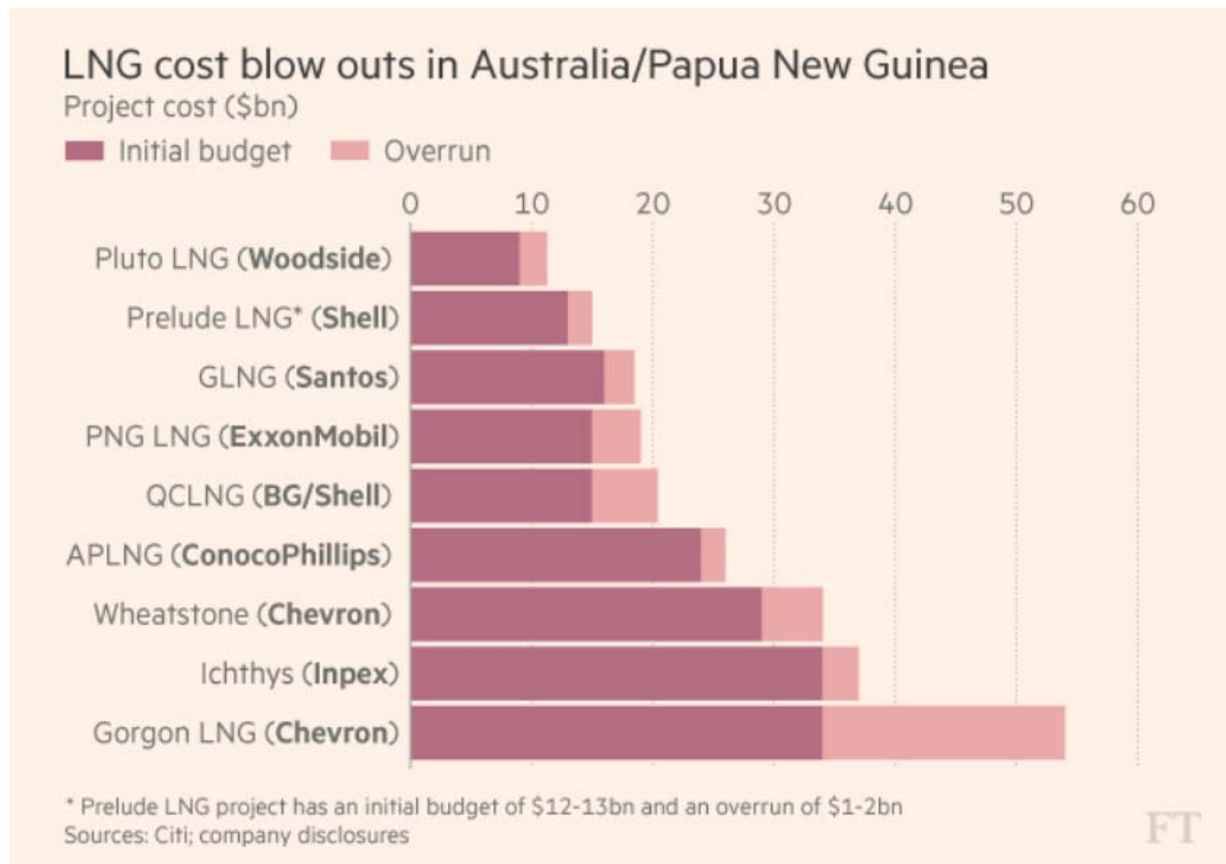




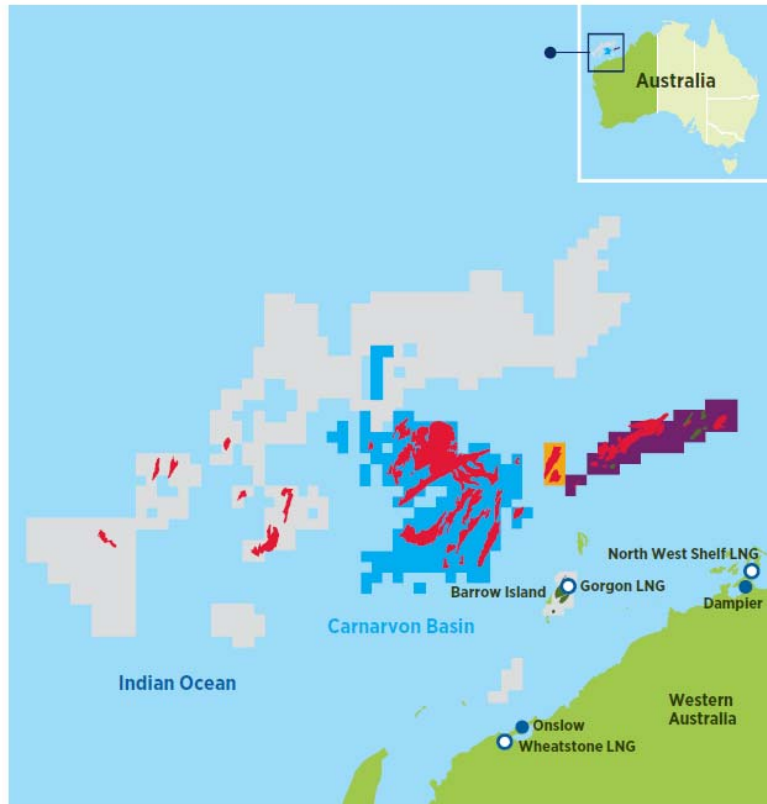
NASA Cost Over Runs (June 15, 2018)

- Cost and schedule problems with major NASA programs pointed blame at a wide variety of sources, from the tools used to track programs to the agency's mindset to Congress itself.
- Problem with such overruns might be linked to the use of an approach called joint confidence level (JCL) for cost and schedule estimates
- The biggest challenges to cost and schedule include a “culture of optimism” at the agency and underestimating technical complexity.

Recent large LNG projects in Australia show significant cost over runs



Wheatstone LNG Project



- In October 2016, Chevron Vice President and Chief Financial Officer Pat Yarrington told investors the total project cost for Wheatstone had risen to about US\$34 billion, 17% above the estimate given when an investment decision was made in 2011 by the company and its partners.
 - First Wheatstone train started up Oct 2017
 - Second Wheatstone train came on line in June 2018

Why was Wheatstone LNG Over Cost



- The first few years of the project took place in a "heated market"
- Costs were inflated by delays in components being delivered to the project
- The contractor was unable to effectively manage the size and the scale of the work scope that was given
- The project also underestimated the quantity of materials required



Source: Chevron 2017 Security Analyst Presentation

Schedule Delays at Gorgon LNG



- The project was initially budgeted at **\$US37 billion** and was due to begin production at the end of the **third quarter of 2014**, 60 months after the investment was sanctioned, but both the budget and timing have gradually slid.
- **May 19, 2016** -- After mechanical shutdowns in the immediate aftermath of its debut shipment of liquefied natural gas (LNG), Chevron is preparing to restart its US\$54-billion Gorgon export facility in western Australia.



Photo: Start-up of Gorgon's LNG Train 3 was achieved in March 2017.

Photo: Start-up of Gorgon's LNG Train 3 was achieved in March 2017. Source: Chevron 2017 Annual Supplement.

HMAS Hobart destroyer delivery delayed



HMAS Hobart destroyer was ordered in 2007 by the Royal Australian Navy, but errors and delays in construction caused extensive schedule slippage. Despite commissioning initially planned for December 2014, the ship was not laid down until September 2012, and launched in May 2015. [Department of Defence](#) accepted delivery of *HMAS Hobart* on 16 June 2017.^[1] The ship was commissioned on 23 September 2017.^[2]



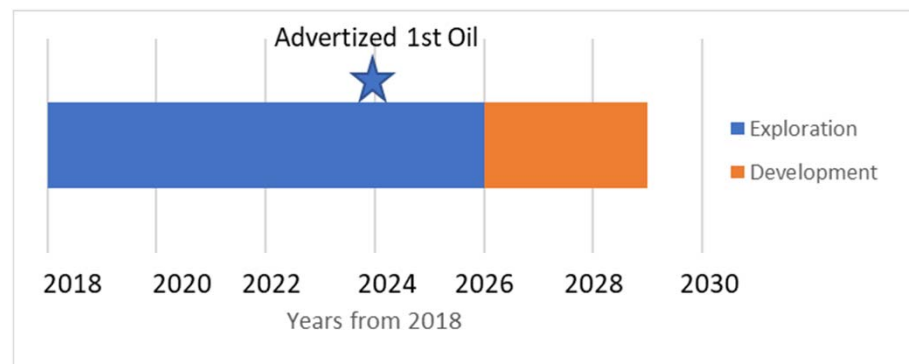
Delivered nearly 3 years late!

Source: [https://en.wikipedia.org/wiki/HMAS_Hobart_\(DDG_39\)](https://en.wikipedia.org/wiki/HMAS_Hobart_(DDG_39))

ExxonMobil recent acquisition



- (June 6, 2018) ExxonMobil purchased 50% of Equinor’s interest in the BM-S-8 block offshore Brazil which contains part of the 2 Billion barrels of pre-salt Carcara oil field. Production is expected to start in 2023 or 2024. Exploration drilling began on the Guanxuma prospect on April 25. 2018.
- (June 7, 2018) Referring to Brazil O&G, “The exploration cycle can last two governments,” or eight years, said Helder Queiroz Pinto Junior, an economics professor and former oil regulator. “The companies focus on the geological conditions, and these are promising areas.”





Why Do Projects Fail - Frame

- Poor communication
- Inadequate initial scoping
- Requirements are unclear
- Planning based on insufficient data
- Poor project management
- Expectation too high or unrealistic
- Failure to understand who is the “customer”.
- Conscious and Unconscious biases
- Clear project milestones
- Ambiguous contract
- Failure to understand the total process flow across departments / organization / other companies
- Failure to consider needs of the business side
- Unaligned expectations
- Failure to get signoff from impacted organizations after framing.



Why Do Projects Fail - Execution

- Commencing work too early
- No time for Project Management
- Inexperienced project managers
- Lack of resource or turnover of key people
- Temporary team
- Untrained resources / quality of resources
- Poor estimates
- Supplier skills over-stretched
- Risks shared with other elements
- Contingent Risks
- Risk unidentified and/or not managed
- Lack of involvement by customer
- Scope creep
- Lack of change management or change control system
- Lack of a change control board
- Re-baseline when changes occur in the project
- Over optimism
- Measured again unrealistic time schedule and budget allowance



Why Do Projects Fail – Implementation

- Lack of testing
- Poor testing
- Failure to get signoff from impacted organizations before implementing new system
- Lack of training
- Lack of documentation



Other Impacts of Poor Cost and Schedule Estimation

- Top management's expectations are unrealistic
- Strategic Plan incorporates an accelerated schedule for capital budget that defers other projects
- Public statements made about the future that the company cannot achieve
- Project Manager cuts corners to achieve the earlier advertised cost and schedule "promises".



What should be considered in a CSRA?

- Known Knowns
- Known Unknowns
 - no basis upon which to estimate the likelihood of the event occurring or the impact on the costs of the project if it did
 - Conduct sensitivity to likelihood and consequence
- Unknown unknowns
 - Utilize benchmarking from previous projects that are similar

CSRA Interest Group Meeting July 19, 2018 Agenda



- Round robin of who is on the webinar
- Ground rules for webinar
- Discussion Lead by Brian Putt and Quinton van Eeden
 - Types of CSRAs
 - What sorts of projects justify a CSRA
 - When should a CSRA be conducted
- Discussion of next webinar date & topics
- Adjourn



Types of CSRAs

- PERT (Program Evaluation & Review Technique)
 - Expert Judgement
- Friedman (Economist)
 - 30% Probability of unplanned event
- Quantify Everything
- JCL-PC (Joint Confidence Level – Probabilistic Calculator)
 - <https://www.youtube.com/watch?v=bWnepq8vPJ8> (see @ 20 minutes)

What sorts of opportunities or decisions justify a CSRA

- Project Size
- Length of project
- Importance to Company

Not discussed. We will pick it up at the next meeting.





When should a CSRA be conducted?

- Multiple Phases of the Project
 - Vision of the project, scoping economics
 - Project selection
 - Front End Engineering & Design (FEED)
 - FID and project execution
- Pharmaceutical
 - Pre-clinical
 - Clinical
 - Phase I Trials
 - Phase II Trials (initial reading of efficacy and explore safety)
 - Phase III Trials (large trials possibly lasting years)

Not discussed. We will pick it up at the next meeting.



When Should a CSRA be Conducted?

Brian's View

- CSRA is appropriate at any time and is applicable to all projects when “Right Sized” to the activity
- Conducting a CSRA early in project conception and updating from time to time will provide perspective to the project.
- Ability for a project team to do a self assessment will promote early assessment and augment the CSRA as the project develops.

Not discussed. We will pick it up at the next meeting.

Next Meeting?

- Feedback on today's Meeting Time
- Topics for next meeting
 - How to organize and conduct a CSRA?
 - ????
- Possible Dates for the next meeting





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- Examples why Cost and Schedule Risk Analysis (CSRA) is valuable
- What sorts of opportunities or decisions justify a CSRA?
- When should a CSRA be conducted?
- How to organize and conduct a CSRA?
- What is contingency and how is it used
- How to reduce or mitigate biases?
- Methods to model and analyze the CSRA?
- Graphics and presentation methods that enable analysis and mitigation of cost and schedule
- Methods to incorporate mitigation
- Value measures other than cost and schedule.
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June 21, 2018 Agenda

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- Presentation & Discussion by Brian Putt
 - Why CSRA is important,
 - What sorts of opportunities or decisions justify a CSRA, and
 - When should a CSRA be conducted
- Discussion of next webinar date
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