

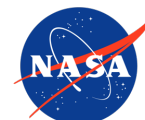


Integrating Architecture, Programmatic, and Affordability Viewpoints: The Programmatic Cost Tool (PCT)

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Background

- 2018 NASA Cost and Schedule Symposium
 - We presented a new methodology and tools to integrate human spaceflight architectures and programmatic schedules with affordability assessments.
 - Tools included the Human Spaceflight Architecture Model* (HSFAM) and the Programmatic Cost Tool (PCT).
- PCT does an affordability assessment by generating a layered “sand chart” along with other outputs.
 - PCT methodology is based on the same Aerospace methodology employed initially in the NRC “Pathways to Exploration” study** released in 2014.
- Working with JSC/Code XB over the past four years, PCT has undergone many upgrades including new graphical outputs and simpler user interfaces.

* HSFAM captures human spaceflight architectures in a form similar to that used in DoDAF. HSFAM Version 1.0 is documented in <http://hdl.handle.net/2014/45707>

** NRC, 2014. “Pathways to Exploration: Rationales and Approaches for a U.S. Program of Human Space Exploration.” Washington, DC: The National Academies Press. <https://doi.org/10.17226/18801>

Recent Motivation

- PCT can help NASA address criticisms in the recent OIG report:

NASA

National Aeronautics and Space Administration

Office of Inspector General

Office of Audits

NASA'S COST ESTIMATING AND REPORTING PRACTICES FOR MULTI-MISSION PROGRAMS

April 7, 2022

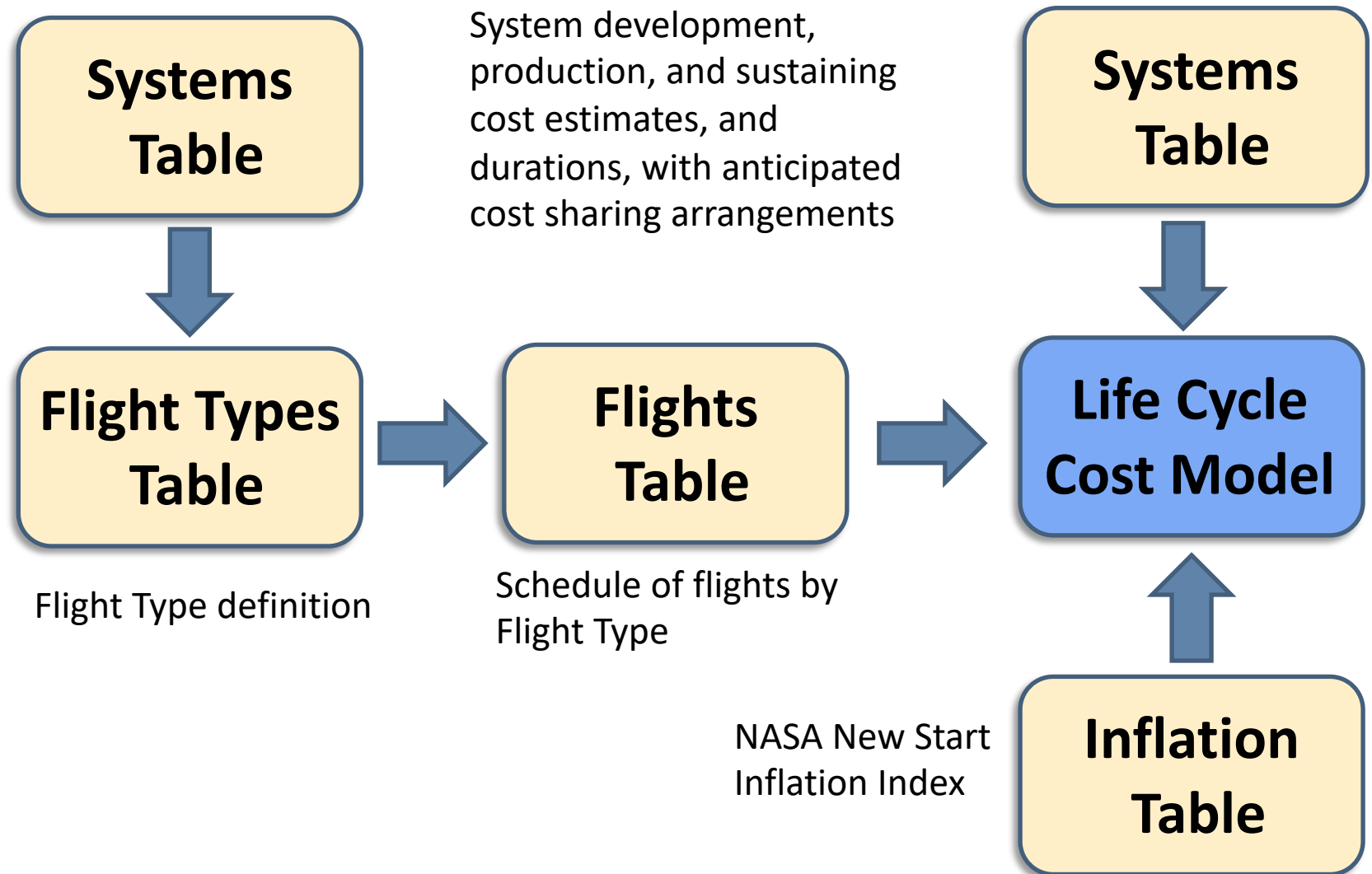
Report No. IG-22-011



Recent Motivation

- Relevant excerpts from the OIG report:
 - “Even though NASA chose to develop and manage its human exploration programs and projects separately, they still must come together to accomplish the Artemis missions.” (p.15)
 - “NASA has made improvements but continues to struggle with estimating and external reporting, in particular with large programs and missions comprised of multiple programs and projects that have multiple deliverables. (. . .) By adhering to sound cost estimating and reporting practices, NASA and its stakeholders can better assess the affordability and sustainability of its long-term programs and goals.” (p.24)

Overview of the Main Elements of PCT



Demonstration of PCT

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Key Takeaways

- The capability to integrate system-of-systems architecting, programmatic, and affordability assessments could significantly benefit NASA architecture teams and strategic planning.
 - Enables affordability to be part of the trade space exploration
 - Allows NASA architecture teams to see the effects on affordability of adding/removing missions, re-phasing missions, and/or including P-P-P and International Partner contributions.
- This capability is intended for long-range planning purposes (>5 years).
 - Useful for architecture and pathway comparisons, not for budget decisions.
- This capability is available now and can be more generally applied by appropriately trained embedded personnel.
- Final thought.

Questions?

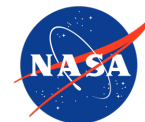
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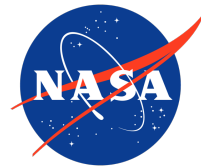
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