

**FAQ for the Large Mission Concept Studies
July 2018**

Q1. Will the STDTs submit a single report with both architectures, or two separate reports? !Do we submit everything to the Decadal or just architecture B (<\$5B)?

A1. As specified in the memo released by Paul Hertz on June 8, 2018, both mission options (the original one and the less costly option) should be submitted. Also each team can determine whether it makes more sense, depending on that team’s circumstances, to submit a !single report including both options or to submit two reports.

Q2. Will the schedule (delivery date of report, of ICA [Independent Cost Assessment], etc) be modified?

A2. TBD. Paul will ask the National Academy of Sciences when the latest allowed date for !submission of the reports is.

Q3. Do we commission two Independent Cost Assessments (ICAs) – one for each of the two concepts – or only one (which one)?

A3. HQ will commission the ICAs. HQ is working on an ICA plan, now that Aerospace is no longer available. That plan is not yet in hand. However, HQ intends to do an ICA of all options intended for submission to the Decadal Survey.

Q4. In which FY \$ is the cost of the less expensive design?

A4. All mission costs should be in RY\$ with a stated start date for Phase A. For the earliest start date, assume a start for Phase A in 2025. Use RY\$ with inflation factors consistent with the !latest NASA Office of Chief Financial Officer guidance:

Year	2019	2020	2021	2022	2023	2024	2025	2026	Future Years
Inflation relative to previous year	2.5%	2.6%	2.7%	2.7%	2.7%	2.6%	2.6%	2.6%	2.6%

One can also assume a later start for Phase A, e.g. to advance technology development before starting Phase A. Spending during Phase A costs against the LCC and, more importantly, risk during Phase A gets monetized during a CATE. We established at an earlier P&L that a team can plan on developing technology to TRL-4 or TRL-5 before KDP-A, as long as they have a plan with a schedule. This removes the cost and schedule uncertainty of technology

development from the cost of the mission. Aerospace endorsed this strategy at the previous P&L (the one at the SI Ripley Center).

Q5. Does the <\$5B cost target for the second mission concept include LV?

A5. Yes. Mission cost for any option should be LCC in RY\$ (specify assumed Phase A start date). LCC is Phase A-E costs. LV is included. It also includes prime operations (5 years for flagships) and GO programs.

Q6. Does the mission cost include the cost of technology development?

A6. It does not include any technology development cost before start of Phase A. However, it includes all technology maturation costs after the start of Phase A.

Q8. What's the best strategy on what to submit to the Astro2020 Decadal? One mission concept at Tailored Concept Maturity Level (CML) 4, the other at best effort? Or two mission concepts at roughly equal levels of maturity?

A8. Both concepts should be at least at CML 3 at time of submission, as the content will be sufficient for a cost estimate (as per LRT feedback). We are explicitly removing the requirement that any mission concept needs to be at CML 4. Going beyond this is up to the Teams' discretion.

Q9. Will the Interim Reports be public? Will the LRT report be public?

A9: Yes, the Interim Reports will be made public by August 15, 2018 (see updated schedule in the Management Plan). Preferred way: each STDT places their report on their website, and NASA Astrophysics links to them from its Decadal website. The LRT report will not be public, but will be shared with all four STDTs. NASA Astrophysics will not post the LRT report on the Decadal website. The final LRT will be marked to specify that it is meant solely for the use of NASA and the STDTs/Teams.

Q10. Will additional funds be released to the Teams?

A10. We'll let you know as soon as possible. Depends on higher-level Agency and Congressional budget actions.

Q11: NASA will identify an entity to perform an independent cost assessment of the final reports. Will the STDTs/Teams be allowed to interact with this entity?

A11: The entity performing the independent cost assessment will be authorized to interact with the STDTs/Teams in order to ask for clarifications and to ensure that the ICA entity fully understands the STDT's architecture (this process is often called "reconciliation"). The STDTs/Teams will have the opportunity to update their final report (M6a, in the revised Management Plan) to fix mistakes and add needed clarifications as identified by the entity. We do not envision teams making any substantial changes to their designs during or after the reconciliation process. Teams may explain trade studies that would be undertaken if the mission became real, in order to reduce cost and risk.

Q12a: Will the independent cost assessment be shared with the Teams at some point?

A12a: Yes, during the reconciliation process.

Q12b: Will all Teams see each other's reconciliation/cost numbers?

A12b: No. However, everything submitted to the Decadal Survey becomes public.

Q13: What is the value for NASA to do an independent estimate if it doesn't actually help the teams?

A13: The value of the independent estimate to NASA is so that NASA can stand behind a non-advocate cost estimate when submitting the mission concept report to the Decadal Survey. The whole idea of the Decadal Survey doing ICAs (e.g. CATE) came from the experience in 2000 when GSFC submitted (what is now) JWST and assigned a cost of \$1B to it. After that, it was reported that "NASA said JWST would cost \$1B;" but this was an advocacy optimistic cost, not an Agency cost. In response, Congress wrote a law that said the Decadal Survey had to do a cost estimate independent of the advocate's claim. In 2010 there was a very reasonable rule: any NASA cost estimate comes from HQ, not from the advocates. The value is to NASA's reputation, and possibly to the Decadal Survey, not to the STDT.

Q14: Can the Teams interact with Aerospace?

A14: Yes. However, the Teams cannot ask Aerospace to perform a cost assessment for their mission concept. Teams are encouraged to use up their remaining allocation of Aerospace hours as the phase-II task will be ending the by end of the calendar year. We may not be able to extend the task, even with a no-cost extension because FY-17 dollars are used and they are only good for two years.

Q15: Please clarify whether there is an expectation of how far the STDTs should get through the project life cycle by 2030.

A15: There is no expectation. Phase A should start no earlier than 2025; but a technology development plan can be described with a later KDP-A.

Q16: Given the Webb delay and possible WFIRST delay, is 2025 as a start date still valid?

A16: There is no answer to this question at this time. We will know more 8 months from now. Today we say NET 2025 so you can have an answer. Everybody knows that a later start will cost more (because of inflation). And everybody can calculate an inflationary increase, if needed.

Q17: The Teams are concerned that if a given mission is recommended by the 2020 Decadal Survey, but is not confirmed before the start of the 2030 Decadal Survey, then the mission would have to be re-evaluated in the 2030 Decadal Survey.

A17: NASA has no requirement that the missions reach KDP-C before 2030 Decadal Survey. Also, re-evaluation is not to be feared – compelling missions remain compelling. This is a feature of the Decadal Survey process.

Q18: Can the teams see the SOW to the Academy for the 2020 Decadal Survey?

A18: It is unclear how this could be useful. The Statement of Task does not contain anything that would impact the Large scale studies (take Paul's word for it). However, once it is finalized it will be made public.

Q19: What are the guidelines regarding how to handle international or private partnerships? Are teams allowed to consider possible NASA cost savings due to external contributions? Or should they assume the missions are all-NASA with potential savings from contributions to be considered later?

A19: There is no downside to assuming mission optional enhancing contributions from international or private partners. In that case, there would be the cost for the NASA mission and a "free" up-scope if there is a contribution. It is also okay to include a required mission enabling contribution (like an instrument required to meet science goals), but then the risk of not having the contribution mature is a legitimate risk for the mission cost. If teams want to assume a mission enabling contribution, the STDT should discuss with HQ what kind of Letter of Intent foreign partner(s) working on their STDT might be willing to include in their final reports.

Q20: How do we classify the four mission concepts: class A or class B?

A20: All 4 missions should be treated as Class-A. If your work to date has assumed a Class-B mission then you need to provide a WAG of additional cost to be Class A, assuming a reasonable tailoring of Class-A requirements (just like WFIRST tailored the Class A requirements, e.g., no flight spare mirror).