National Aeronautics and Space Administration



EXPLORE SOLAR SYSTEM&BEYOND

Great Observatories Maturation Program - Interfaces to PAGs

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Astro2020: Great Observatories Mission & Technology Maturation PROCESS: Great Observatories Mission & Technology M

- "Output" evaluated by External Review prior to entering Formulation (NASA Phase A)
- NASA response: the GOMaP
 - Great Observatories Maturation Program
 - Easier to pronounce!

An **External Review**, either by a mid-decadal or decadal survey, or some other process external to NASA's usual program reviews, would decide whether the mission science capabilities and programmatic implementation is consistent with the decadal evaluation.

Fig 7.3 Astro2020



Future Great Observatories

Large observatories are a critical component of NASA's astrophysics portfolio

• The Decadal Survey recommends a compelling, feasible, timely portfolio of future great observatories that is part of a balanced Astrophysics program

Today NASA's priority is ensuring mission success for Webb and Roman

- Webb completed telescope commissioning; science instrument commissioning is progressing well; preparations are underway for science to commence in July 2022.
- Roman is progressing well in Mission Phase C "Final Design and Fabrication" and is on track for a mid-2027 launch (7 month delay due to COVID)

Now is not the time to start a Future Great Observatory; now is the time to prepare

NASA will take a deliberate, multi-stage planning and strategy approach to the next large observatory mission

- Stage 1 Begin the Decadal Survey recommended "Great Observatories Maturation Program". Focus on enabling science and technology; begin Stage 1 now
- Stage 2 Conduct Analysis of Alternatives (AoA) and science / technology / architecture trades; begin Stage 2 in a few years (driven by planning and budget availability)
- Stage 3 Pre-formulation and decision to start the next Great Observatory; begin after Stage 2 AoA complete (Decadal Survey estimates 6 years for Stages 2 and 3)

STAGE 1 ACTIVITIES

Science	Workshops - compile metrics and science gaps	Update ROSES Call	Determine efforts beyond ROSES	ROSES Selected	Science Gaps Identified for 3 Great Observatories	Begin Precursor Science Funded activities
	SCIENTIFIC ASSESSMENT					
Science Evaluation	Stand up Team	Develop initial Metrics	Develop input parameters	Sensitivity study of key parameters	Iterate with SST and TST	Update sensitivity study with new parameters
TECHNOLOGY DEVELOPMENT						ENT
Technology	Stand up Team	ID Tech Gaps	Develop high level Tech Dev plans	ID tech studies. Trades & study groups	ID long lead tech investments	Begin tech studies

Note: This is not a timeline; some activities within each lane occur in parallel

There is cross-communication and cross-participation between activities in different rows ROSES call for presursor science investigations anticipated for January 2023

Next Steps for Stage 1

SST

Science Precursor Science Workshop I Apr 20 22, 2022 Joint PAG EC meeting Apr 27, 2022 Precursor Science Workshop II August 2 4, 2022 Science Gaps identified for 3 FGO's Oct 1 Precursor Science added to ROSES Nov 1

Community Participation via

- PAGs, e.g. SIGs and SAGsWorkshops
 - Propose for R&A and SAT funding through ROSES

SET

Science Evaluation

ExoSET at Precursor Science Workshop I (**Apr 20 22)** as example of science evaluation, building on prior efforts

- Document ExoSET science metrics from PAGs Sept 30
- AstroSETs for IROUV, X Ray, Far IR being formulated
- Anticipate SETs community workshop(s) next year

Technology

TST

- Update Gap lists: present at
 June AAS PAG meetings
- SAT proposals due **Dec 15**
- A TST will begin technology activities in CY22; numerous community Task Groups are expected to be stood up to help in CY23.
- Community technology workshop(s) in CY 2023

Great Observatories Mission and Technology Maturation Program (GOMaP)

Objectives

- The purpose of GOMaP is to co-develop and mature the science, mission architecture, and technologies for NASA flagships identified as high priority by decadal surveys.
- Engage the stakeholders and leverage the entire multi-sector community: industry, academia, NASA centers, other agencies, and international partners.
 - Solicit trade studies, technology development, integrated modelling, and other feedback via openly competed procurement mechanisms (ROSES, etc.)
 - Host open, hybrid workshops with published outcomes and asynchronous options
 - Majority (>80%) of funding will be competed
- Intentionally seek out, build upon, and leverage the IDEA community to enable an inclusive culture and broad participation by all as the missions evolve.
 - Adopt affirmative codes of conduct
- Engage community groups for all mission phases for developing science requirements and priorities; thereafter, prevent late science requirement changes that may have ripple effects on the mission schedule and cost.
 - Continually engage new science community members as the activities evolve
- Communicate broadly to community for transparency and confidence in the process

Interfaces to PAGs

- Please tell us how you'd like us to work with you, and for how you'd like to work with us
- Possibilities:
 - How would the PAGs self-organize to work with the GOMaP NASA teams?
 - Community GOMaP teams
 - Science Strategy (Curating Requirements, Precursor Science)
 - Technology Strategy (gap lists, key technology trades to enable science)
 - Science Evaluation (yields, figures of merit, vs the requirements)
 - Would there be any joint PAG activities? e.g., a joint PAG SIG for each of the 3 FGOs, umbrella for interface to NASA GOMaP, each SIG to initiate subgroups as necessary
 - What forums of engagement would be most effective?
- How would you organize to maximize inclusion from multi-sector community?
 - Industry, academia, NASA Centers, OGAs, international partners, ...
- Let's acknowledge Conflicts of Interest as solicitations are being prepared
- You are the customer be the source of requirements, provide feedback to NASA

