ROMAN
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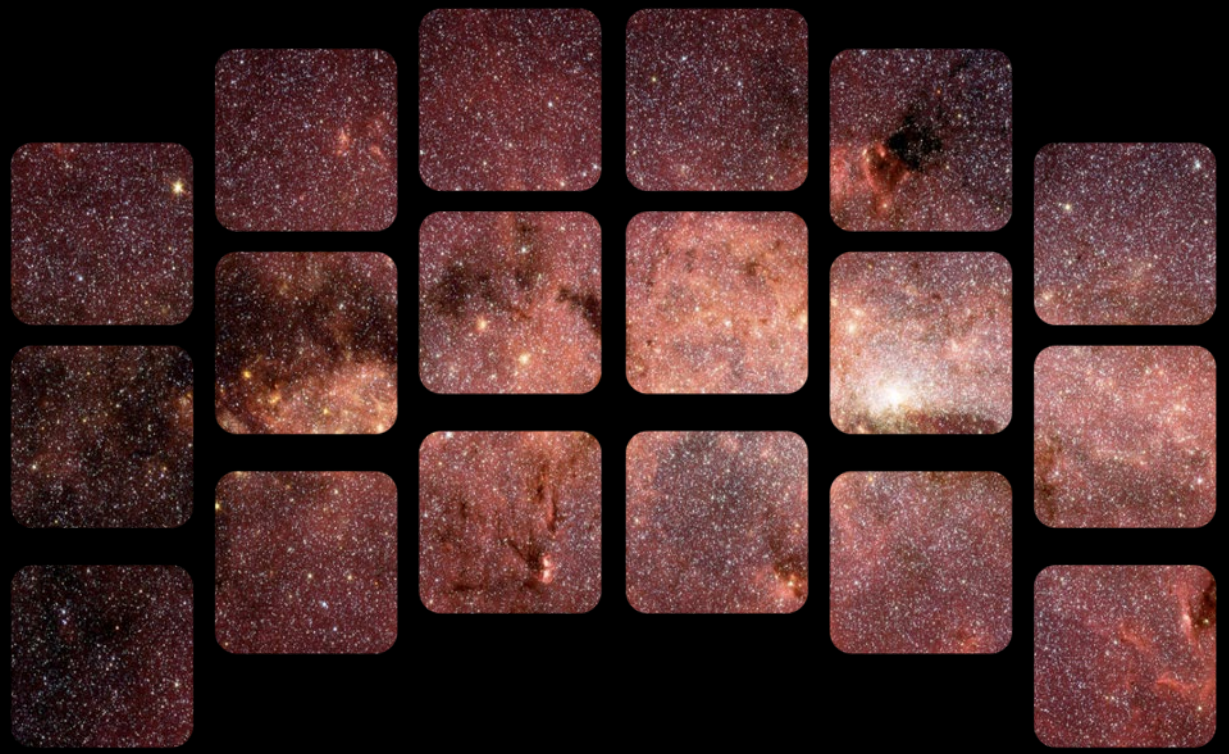
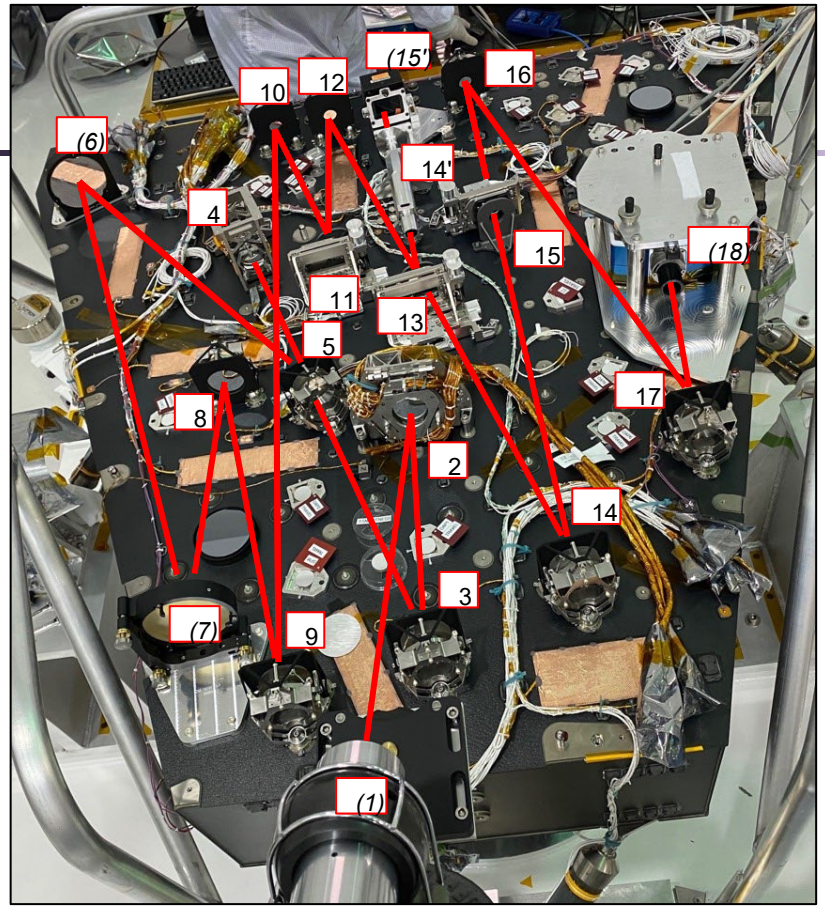
# Project Science Status

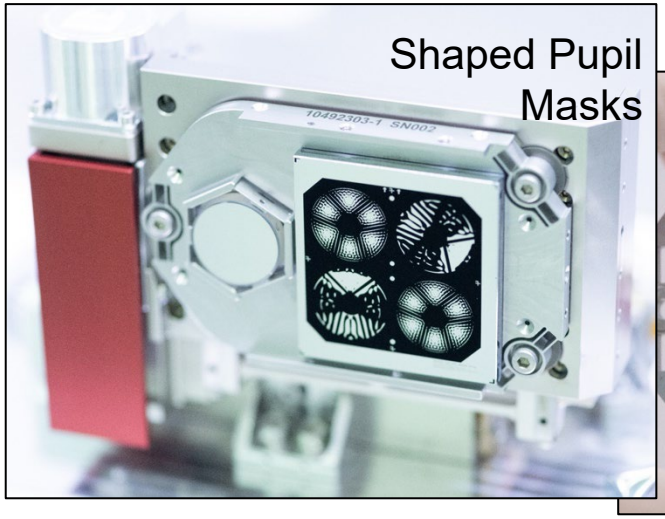
Julie McEnery
Roman Senior Project Scientist

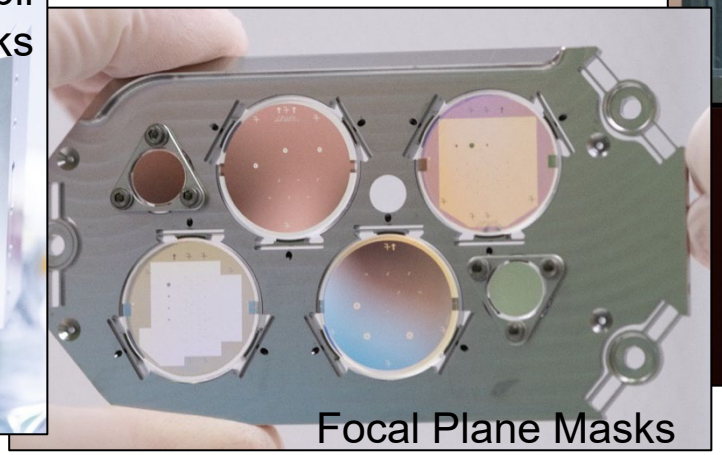


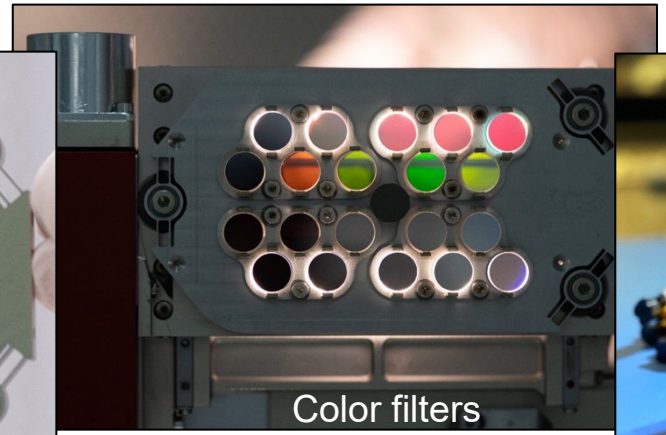
# Roman Coronagraph Instrument Status

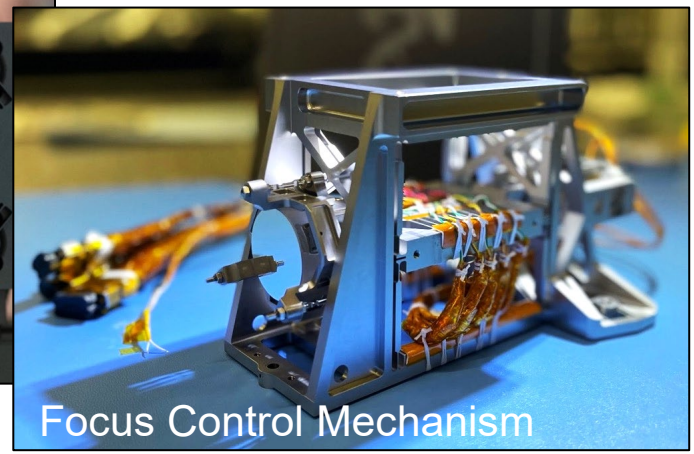
- All flight hardware is at JPL
  - except for warm radiator, being painted at GSFC now
- Performance margin against L1 req ~80%
- Optical Bench is nearly fully populated
  - Only deformable mirrors and detectors left
- Both flight DMs are assembled. Vibe and TVAC thermal cycling tests completed successfully. Performance tests still on-going to characterize long-term stability.
- Both flight cameras (ExCam and LoCam) completed vibe and TVAC tests; delivered to II&T shortly



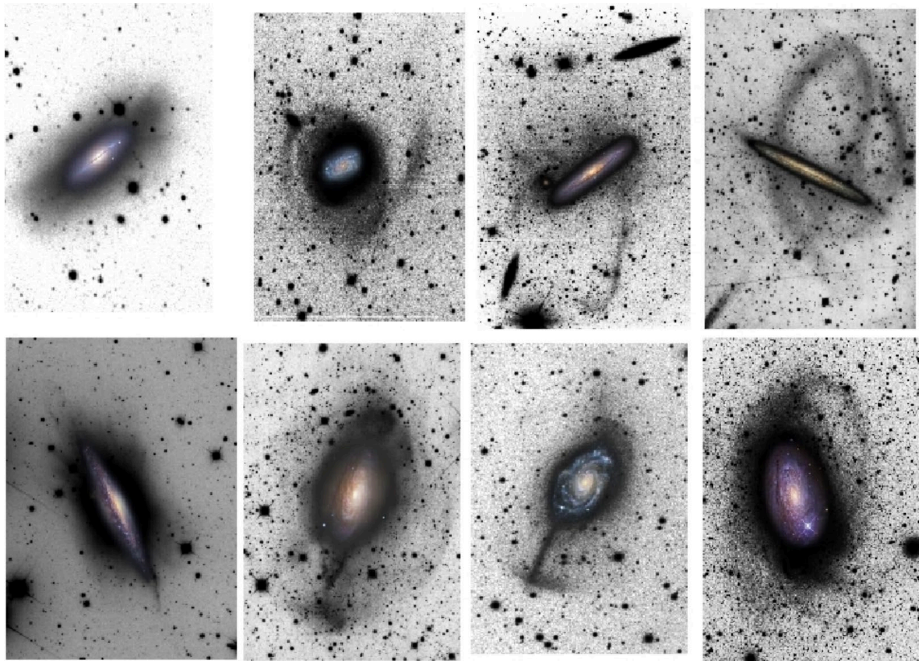



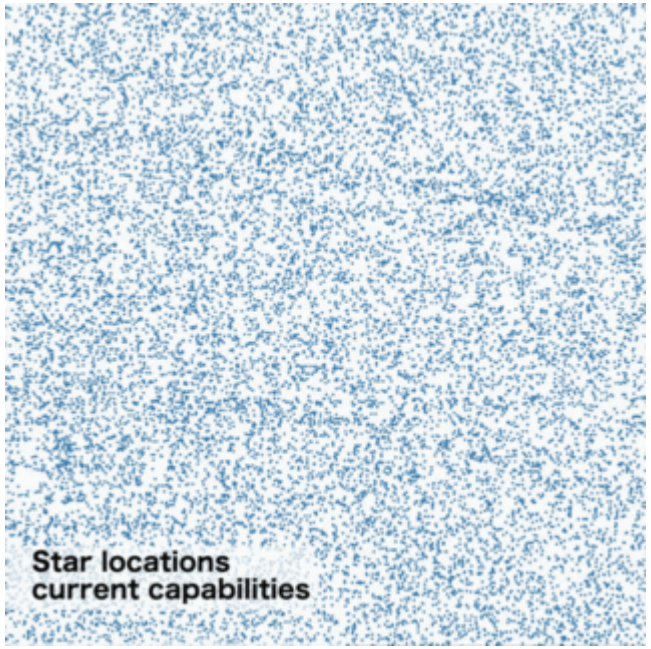



# AAS Meeting plans

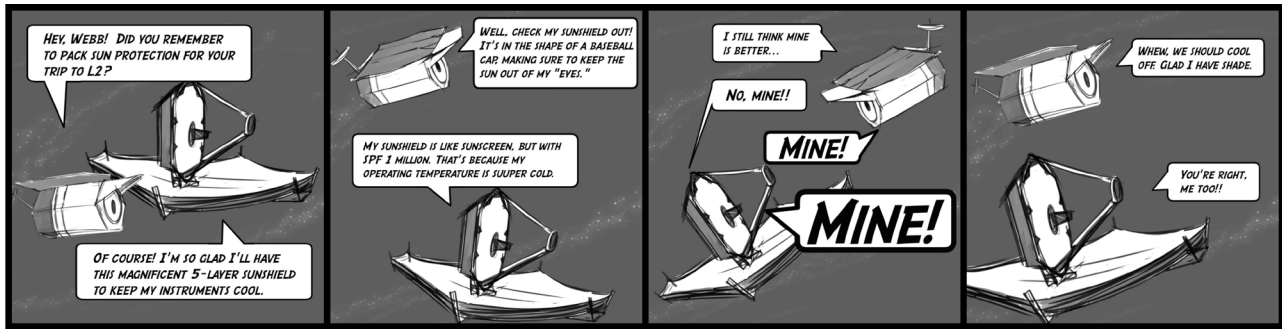
- Winter American Astronomical Society meeting
  - Town Hall
  - Special session for kickoff/information session for Core Community Survey definition
    - Will be followed by a virtual meeting covering the same topics
  - Special session on “Nearby Galaxies under a New Light with Roman”



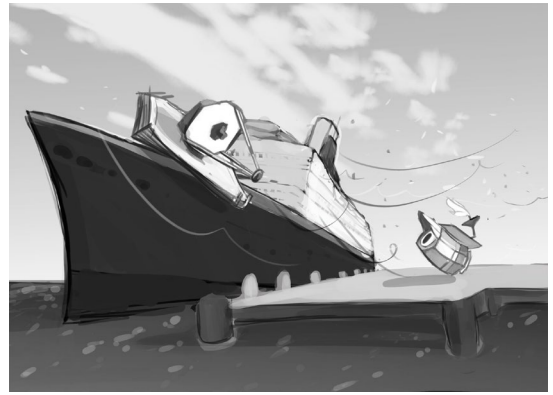


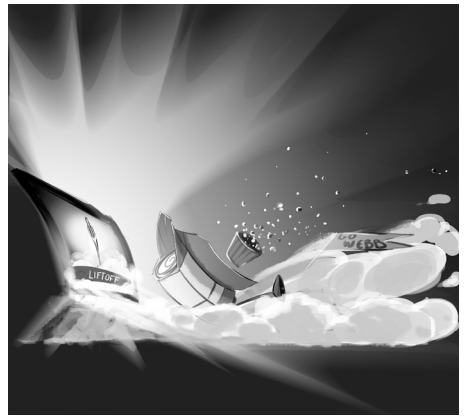
# Roman Science Inspired by Emerging JWST Results

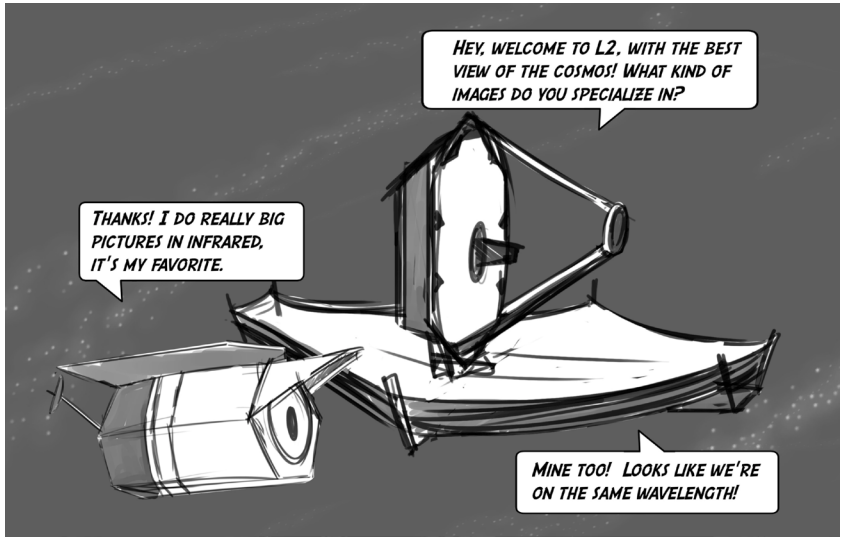
- **Science conference hosted by STScI, June 19-23**
- The first year of science from the James Webb Space Telescope is providing exciting scientific results on a wide range of topics that are relevant for the Nancy Grace Roman Space Telescope, to be launched in late 2026.. Roman has the potential to complement and expand on such studies by using its imaging and spectroscopic capabilities over a 100 times larger field. Moreover, Roman and Webb can also be used synergistically during the time when they are both operational, and while other exciting new ground-based and space-based facilities of the 2020s become operational as well. Hence, we expect this conference to cover a wide range of topics, including but not limited to studies of solar system objects, exoplanets, star formation and stellar populations, galaxy formation and evolution, distance-scale calibrations and the distribution of matter, structure formation, dark matter and dark energy, gravitational lenses, etc.
- **https://www.stsci.edu/contents/events/stsci/2023/june/roman-science-inspired-by-emerging-jwst-results**







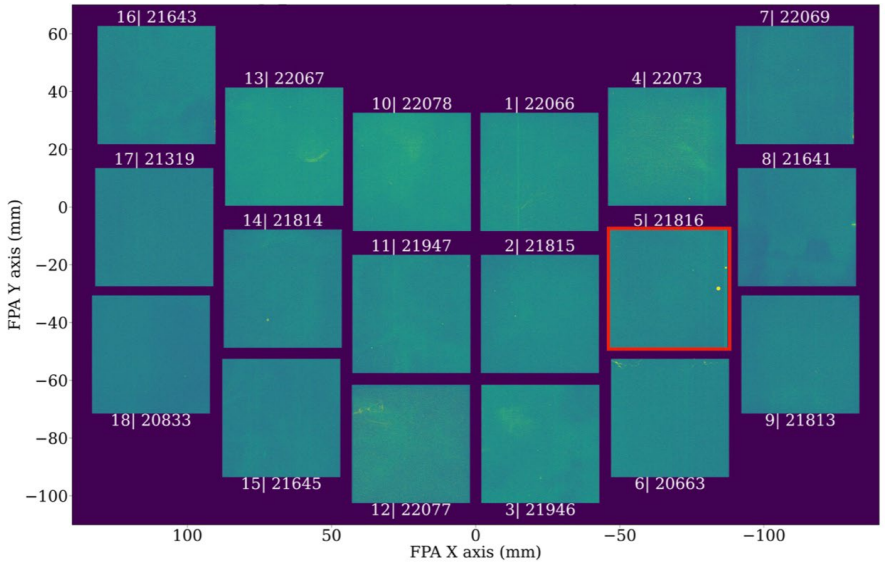



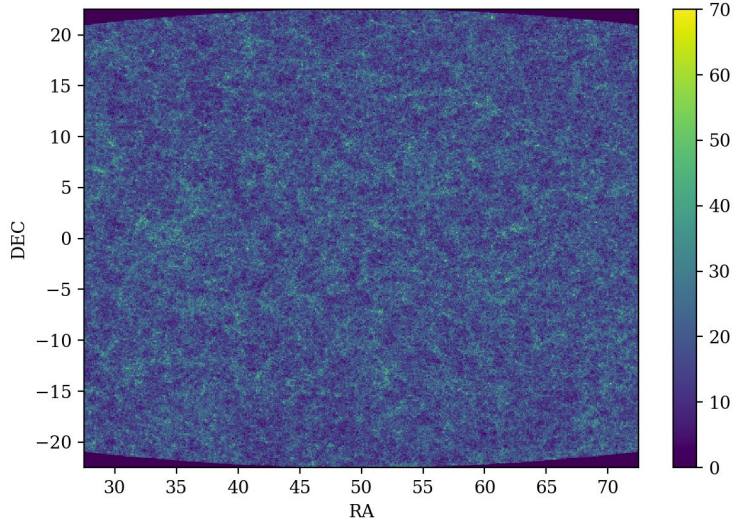



# Data Releases

- **DCL triplet test data public**
  - In addition to data and documentation, also providing software (jupyter notebook) to demonstrate how to interact with the data
  - Release likely to happen within next week or so

- **Roman galaxy redshift survey mock catalog**
  - realistic 2000 square degree H-alpha galaxy mock catalogue with 1<z<2 for the Nancy Grace Roman Space Telescope
  - created using Galacticus, a semi-analytical galaxy formation model, and high-resolution cosmological N-body simulations.
  - https://irsa.ipac.caltech.edu/data/theory/Roman/Zhai2021/
  - https://arxiv.org/abs/2008.09746




Distribution of mock galaxies 1.0< z <1.2

# Roman Community Forum

- **Monthly virtual meetings to provide Roman updates/status to the science community**

- **First meeting on 9/14**
  - Mission overview/status
  - WFI update
  - Early definition survey white paper status
  - Community engagement opportunities

- **Next meeting on 10/26 (and 4$^{th}$ Wed of each month thereafter)**

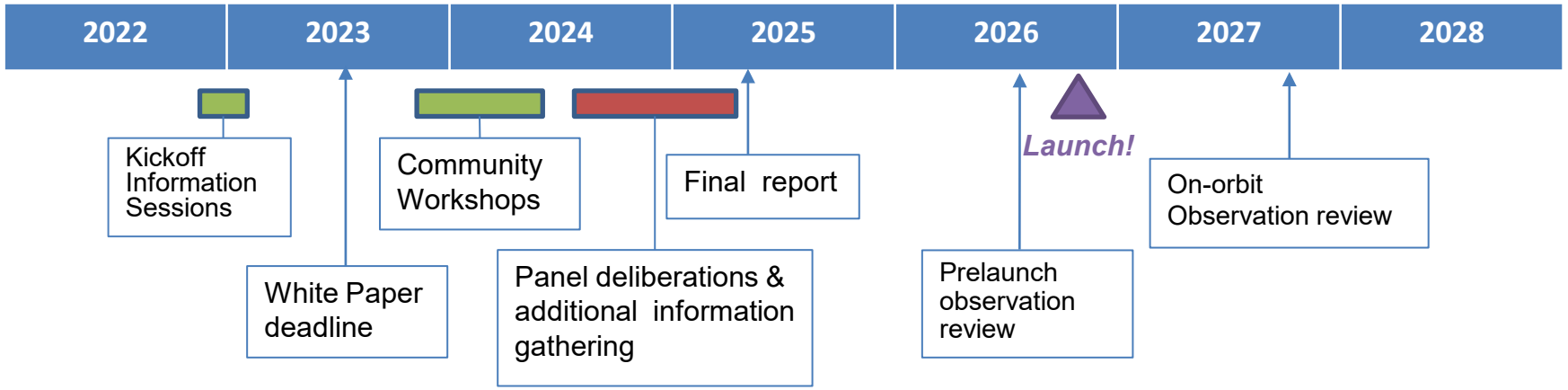
- **https://asd.gsfc.nasa.gov/roman_forum/ for details, including how to join Roman-news mailing list**

# ROSES Solicitation

- **Gap with no funding going to science community**
  - Significant impacts to development of high-level pipelines (which rely on input/guidance from science teams)
  - Lack of science team input to calibration planning etc
- **Comment period closed on May 31**
  - No significant issues, most of the questions/comments requested clarification of the language and intent
  - Final text and FAQ done
- **Decided to hold release of call until after the CAA report was out**
  - Report released Oct 7, so we are proceeding towards release of solicitation very soon

# Community Definition of Core Surveys – starting now!

- **White paper call for papers detailing science that can be done with the survey – call release in Nov/Dec 2022**
  - Main goal is to get all the science ideas on the table for what can be done with the Core Surveys
  - Secondary goal: obtain qualitative needs for observing, quantitative metrics and figures of merit as possible
  - This is the beginning of an extensive community-wide discussion
- **Information sessions to inform community about Roman capabilities – Jan 2023**
  - Outline available parameter space for each survey
  - Constraints are that each survey provides data needed to meet the science requirements, and at least 25% time is retained for General Astrophysics Surveys
- **Additional workshops to enable community cooperation and consensus**
  - Provides a forum for iterative development of survey concepts



# CAA report on Roman Observations released

- **Still digesting recommendations**

- **Some takeaways include**
  - Endorses community led approach to setting Roman observation program
  - Emphasizes importance of competitively balancing/awarding time between each of the three CCS and GA Surveys
  - Suggested combined evaluation of GA surveys with CCS
    - To implement this, the report proposes including large unique GA surveys as part of the definition of the initial observing plan (via a similar process to defining the CCS)
    - Plan to discuss options for this with our advisory committee (Roman Science Interest Group)

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# The Road Ahead

- **Successful Mission Critical Design Review, Sept 2021**
  - Observatory design is complete, proceeding with building flight hardware

- **Opportunities to engage with Roman**
  - Monthly lecture series: https://roman.ipac.caltech.edu/Lectures.html
  - Roman Forum - monthly project status updates
  - Final ROSES proposal call out in few weeks
  - Community process to define Core Community Surveys kicking off late 2022/2023

- **Exciting to see things coming together**

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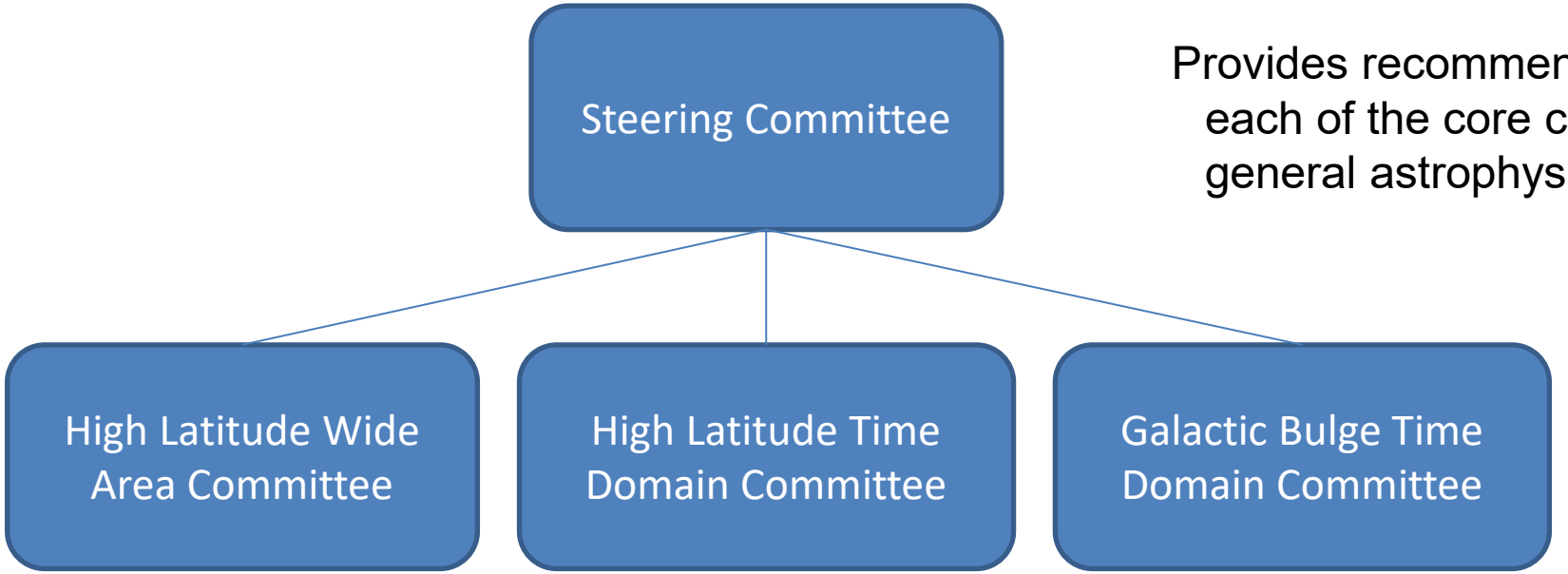
# Backup

# Baseline plan for Survey Definition

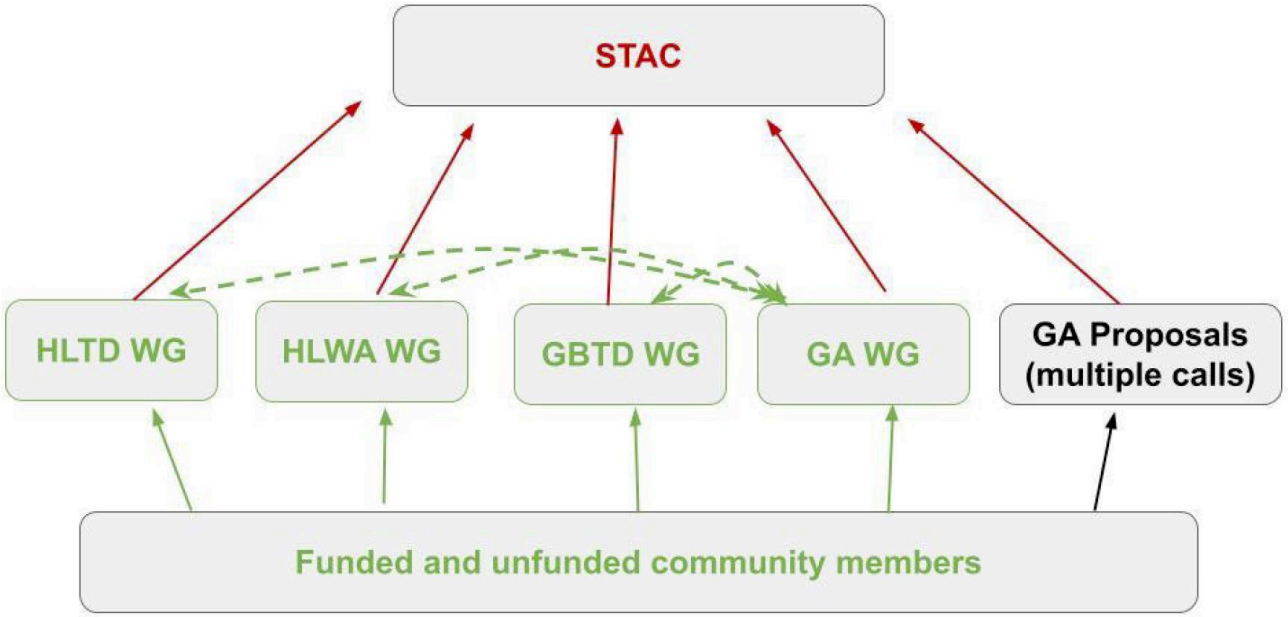
- **Set up and charter a tiered committee structure to do the work of recommending survey definitions based on community input**
  - Committees include representatives of all science areas to be addressed by each survey (determined from white paper submissions etc)




Provides recommendations on balance between each of the core community surveys, and the general astrophysics survey allocation above 25%

Evaluate white papers, solicit additional community input, evaluate survey options against science metrics, produce recommendations for survey with options for enhancements/descopes

# CAA committee suggestion




- **Similar to existing baseline**
  - Key addition is option for large ambitious GA surveys as part of the community process
  - Agree that later calls for observing time in GI proposals should be competitive and selected via an independent committee/TAC, this was already in place via the existing General Investigator program plans