Recent CAA Activities and Decadal Survey Planning

3 May 2018

Marcia Rieke & Steve Ritz CAA Co-Chairs

Disclaimer: These slides represent a personal assessment of the issues discussed by the CAA. This document should not be cited or quoted because the views expressed do not necessarily reflect those of CAA, SSB, BPA, or the NRC.

CAA Roles

- CAA reports to National Academies Board on Physics and Astronomy (BPA) and Space Studies Board (SSB).
- CAA is not the Decadal Survey committee, and it does not set policy for the Survey. It does help the National Academies and the Agencies think through relevant issues as they generate the statement of task, stimulate and gather community inputs in advance of the Survey, and pave the way into the Survey.
  - Taking into account lessons learned from previous surveys and inputs from Mid-decadal Report (Hewitt et al) and the Survey of Surveys Report (Dressler et al).

Most recent meeting:
27-29 March 2018

http://sites.nationalacademies.org/BPA/BPA_048755

CAA Members

Marcia J. Rieke (NAS), Co-Chair, University of Arizona
Steven M. Ritz, Co-Chair, UC Santa Cruz
Jeremiah K. Darling, University of Colorado, Boulder
Megan Donahue, Michigan State University
Thomas Greene, NASA Ames Research Center
Lee W. Hartmann, University of Michigan
Vassiliki Kalogera, Northwestern University
Bruce Macintosh, Stanford University
Christopher F. McKee (NAS), UC Berkeley
Angela V. Olinto, University of Chicago
Mark M. Phillips, Carnegie Institution for Science
James M. Stone, Princeton University
Alexey Vikhlinin, Harvard-Smithsonian CfA
Eric M. Wilcots, University of Wisconsin, Madison
A. Thomas Young (NAE), Lockheed Martin (Ret.)

CAA Meeting Topics

- A jam-packed agenda!
- Meeting was held during a time of much uncertainty
  - Fluctuating budgets for agencies, outcomes mostly very good
  - Another launch delay for JWST was announced during the meeting, with the launch readiness date being confirmed by a special committee (T. Young)
- Anne Kinney, new head of the NSF Math and Physical Sciences Directorate, met with the Committee. Discussed Mid-decadal recommendation 3-2 on operations funding
- Continued Astro2020 preparations, many discussions, including about timing (again).
- WFIRST responses to WIETR, and next steps.
  - KDP-B was scheduled for April 11, 2018, but will now be May 22, 2018.
- An additional focus of the meeting was another Short Report, this time on the NASA Mission Concept Studies in preparation for the next Astronomy & Astrophysics Decadal.

Astro2020 Preparations

- The latest delay in the JWST launch coupled with the WFIRST issues has re-opened the question of when to start the survey
  - Question posed by T. Zurbuchen: move the Astro Decadal after the Planetary Decadal?
  - Further, timely discussions among the three funding agencies, the NAS, and the astronomical community needed
  - CAA is ready to issue a call for Science White Papers and nearly ready for call on Policy, Infrastructure and "State of the Profession"
- Committee discussed the role of State of the Profession in a decadal survey
  - Excellent feedback from the AAS Town Hall.
  - Very helpful discussions with Dara Norman (NOAO) and Alex Rudolph, Chair of the AAS Diversity and Inclusion Task Force. Discussed types of inputs that can be provided and aspects of the call for white papers.
  - Heard about an NAS event, funded by the Heising-Simons Foundation, to occur in October for early career astronomers to learn about the decadal process. Details at *http://sites.nationalacademies.org/SSB/SSB_185166*

AAS Town Hall January 2018. See CAA site for all the slides.

Main Purposes of this Town Hall

- Demystifying the process (see following slides).
- Summarize current plans and to invite feedback:
  - Two categories of feedback and inputs:
    A. additional lessons you care to share from Astro2010/NWNH
    B. thoughts about the possible pre-survey activities, specifically:
       - White paper call
       - CATE discussions/workshops
       - State of the Profession
       - Outreach to younger colleagues
  - What else? All feedback welcome!

Decadal Survey Planning - Jan. 2018 7

Mission Concept Studies Report

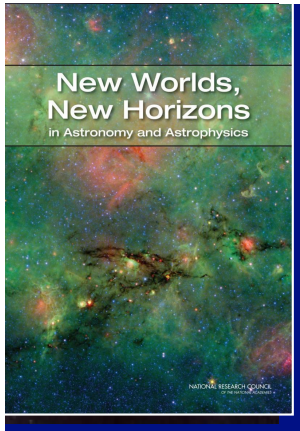
- NASA tasked the CAA to review its planned mission concept studies (large missions and probe-class missions) activities in preparation for the Decadal Survey and to write a short report.
  - Assess the appropriateness of NASA's plans and, if needed, provide findings toward improving the value to the Decadal Survey Committee.
- Four large mission concept studies are underway with final reports due to NASA HQ in June, 2019
  - NASA will conduct Independent Cost Assessments (but not CATEs)
  - Final reports and ICAs will be submitted to Astro2020
- Ten probe-class concept studies are in progress
  - Studies were selected through a peer-review process
  - Final study reports and ICAs will produced and can serve as input to Astro2020

See http://science.nasa.gov/astrophysics/2020-decadal-survey-planning/

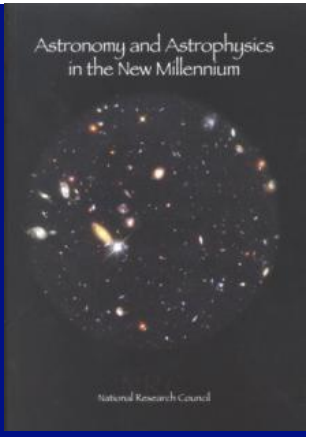
Discussion

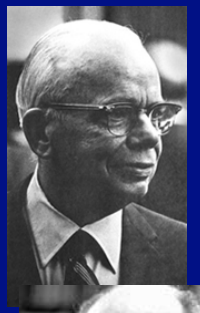
Demystifying the Process

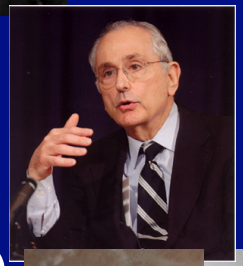
Slides from 2018 January
AAS Town Hall

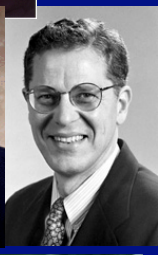


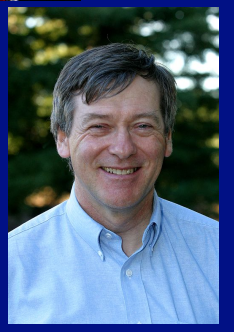
Recall Decadal Survey History











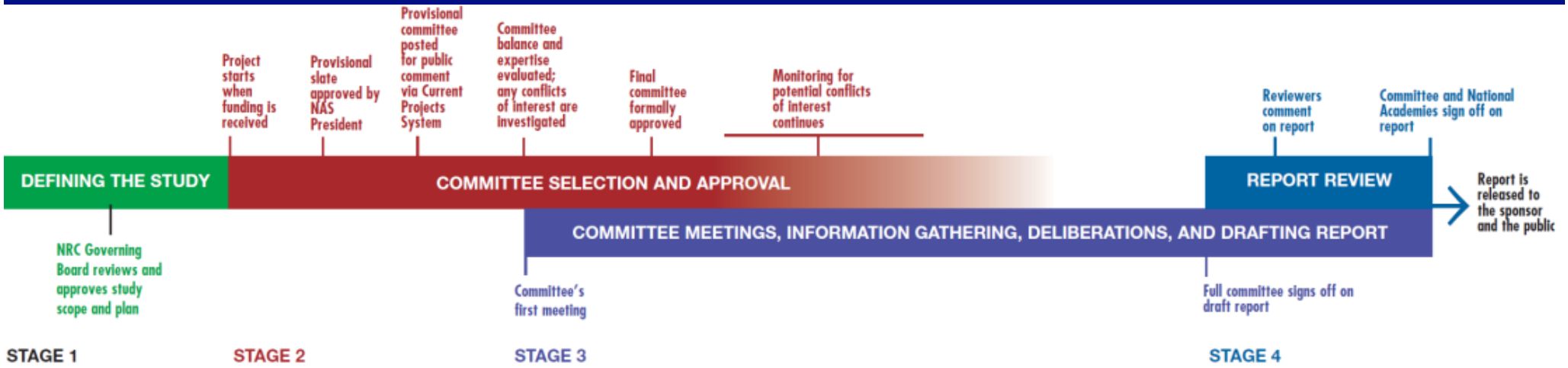
- 1964: Ground-based Astronomy: A Ten Year Program (Whitford)
  - Recommended building more large optical telescopes including one in Chile
  - QSOs had just been discovered
- 1972: Astronomy and Astrophysics for the 1970s (Greenstein)
  - Recommended building the VLA, HST
  - Astronomy satellites used to discover X-ray emission from stars
- 1982: Astronomy and Astrophysics for the 1980s (Field)
  - Recommended building the Chandra X-ray satellite
  - Many galaxies observed to produce large amounts of IR emission
- 1991: The Decade of Discovery in Astronomy and Astrophysics (Bahcall)
  - Recommended building Spitzer and the Gemini telescopes
  - Existence of dark matter demonstrated
- 2001: Astronomy and Astrophysics in the New Millennium (McKee-Taylor)
  - Recommended building JWST, ALMA
  - First exo-planets discovered, first evidence of dark energy seen
- 2010: New Worlds, New Horizons in Astronomy and Astrophysics (Blandford)
  - Recommended WFIRST, LSST

Who Charters and Uses the Survey?

- Congress and three federal agencies that fund astronomy (eg., NASA Astrophysics, NSF Division of Astronomical Sciences, DOE High Energy Physics) are the groups that rely on Decadal Surveys for science and activity guidance
- Congress can (and has) passed laws that define some Survey work such as the requirement for independent cost and technical evaluation
- The three agencies fund the Survey and negotiate the Statement of Task and report due date with the National Academies

A Decadal Survey is a National Academies Report

A survey follows a process designed to ensure independence and objectivity. The review process checks that conclusions and recommendations are supported by the committee's information gathering and deliberations.



from http://www.nationalacademies.org/studyprocess

Reports have been successful because astronomers have made choices and prioritized so federal agencies and Congress have clear guidance.

The National Academies of SCIENCES ENGINEERING MEDICINE

Survey Committee Selection

- First step is selection of the chair who will work with the Academies staff to select an executive committee
- The chair and executive committee define the panel structure followed by selection of survey committee and panel members
- Follow academy procedures to reduce and balance biases
- Ensure the needed expertise across disciplines and diversity, including types and sizes of institutions, geographic distribution, gender, traditionally under-represented groups, career stage, funding sources,….
- Conflicts of interest (not in the financial sense which rarely affect astronomy decisions but in the “promoting a project” sense) considered very carefully

Example from NWNH: Task and Charge

Negotiated by NRC* with Agencies

- The Committee on Astro2010 will survey the field of space- and ground-based astronomy and astrophysics, recommending priorities for the most important scientific and technical activities of the decade 2010-2020. The principal goals of the study will be to carry out an assessment of activities in astronomy and astrophysics, including both new and previously identified concepts, and to prepare a concise report that will be addressed to the agencies supporting the field, the Congressional committees with jurisdiction over those agencies, the scientific community, and the public.

Scope

- NASA, NSF, DOE
- Remote observing of cosmos, theory, physics, computation and simulation, laboratory astrophysics, solar astronomy (excluding space missions), and technology development
- Activities and infrastructure (broadly defined)
- Balance
- Partnerships: international, private, state …..

*Now called the National Academies

NWNH: Survey Overview

Some features of Astro2010

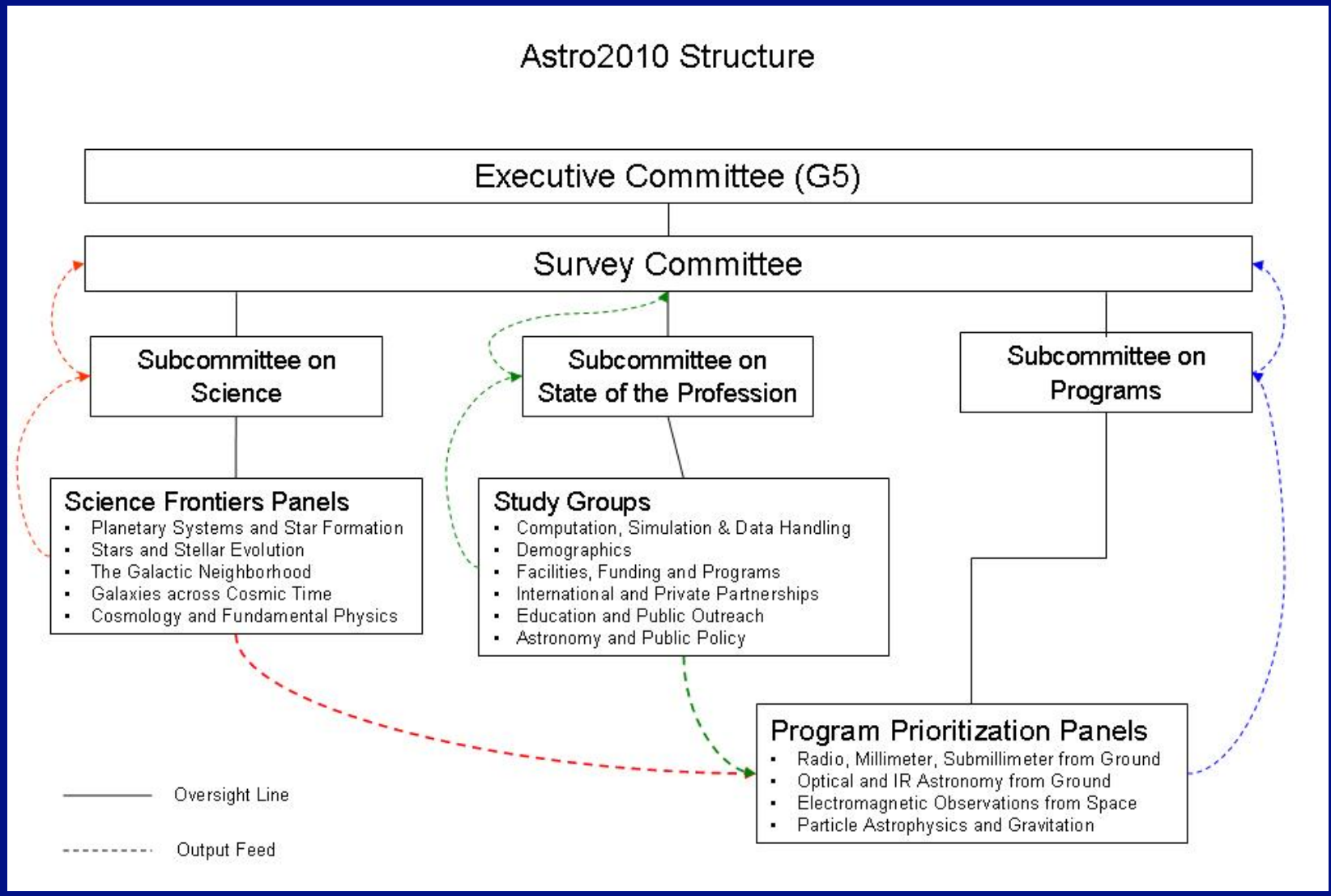
Significant community input to process via white papers and presentations to panels

Include unstarted projects from 2001's AANM

Improved assessment of technical readiness and risk, and cost drivers

Changing economic political background and increased international and private collaboration

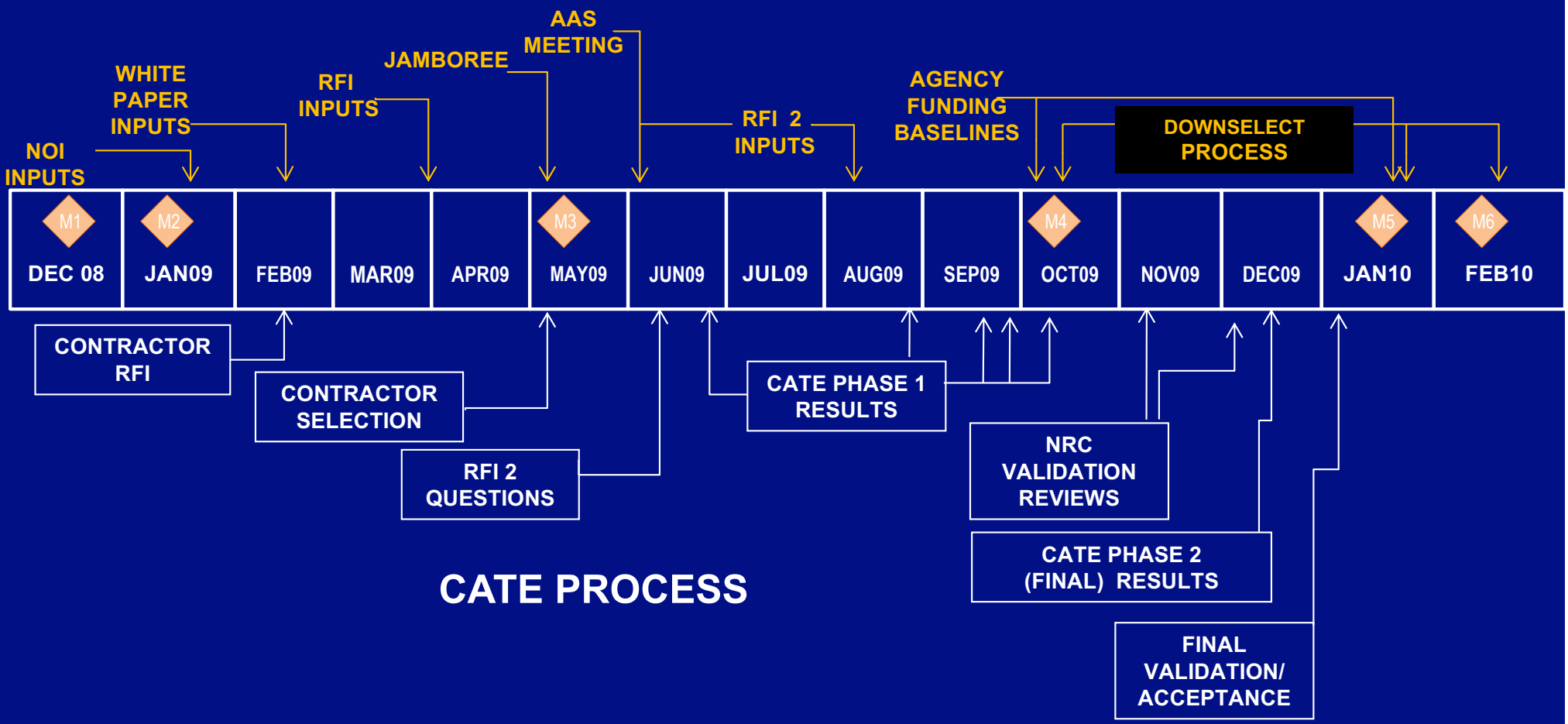
Astro2010 Structure



Astro2020 structure TBD now.

Astro 2010 Committee Process

Astro2020 process not yet defined.



CATE PROCESS

DATA GATHERING AND EVALUATION PROCESS FLOW

Astro2020 Givens

- Adhere to National Academies policies and procedures as well as the negotiated Statement of Task
- A science-driven process that defines priorities for federal funding of astronomy
- Independent, with minimization of biases
- Strive to be inclusive and involve as diverse a population of astronomers as possible consistent with the needs for scientific and technical expertise