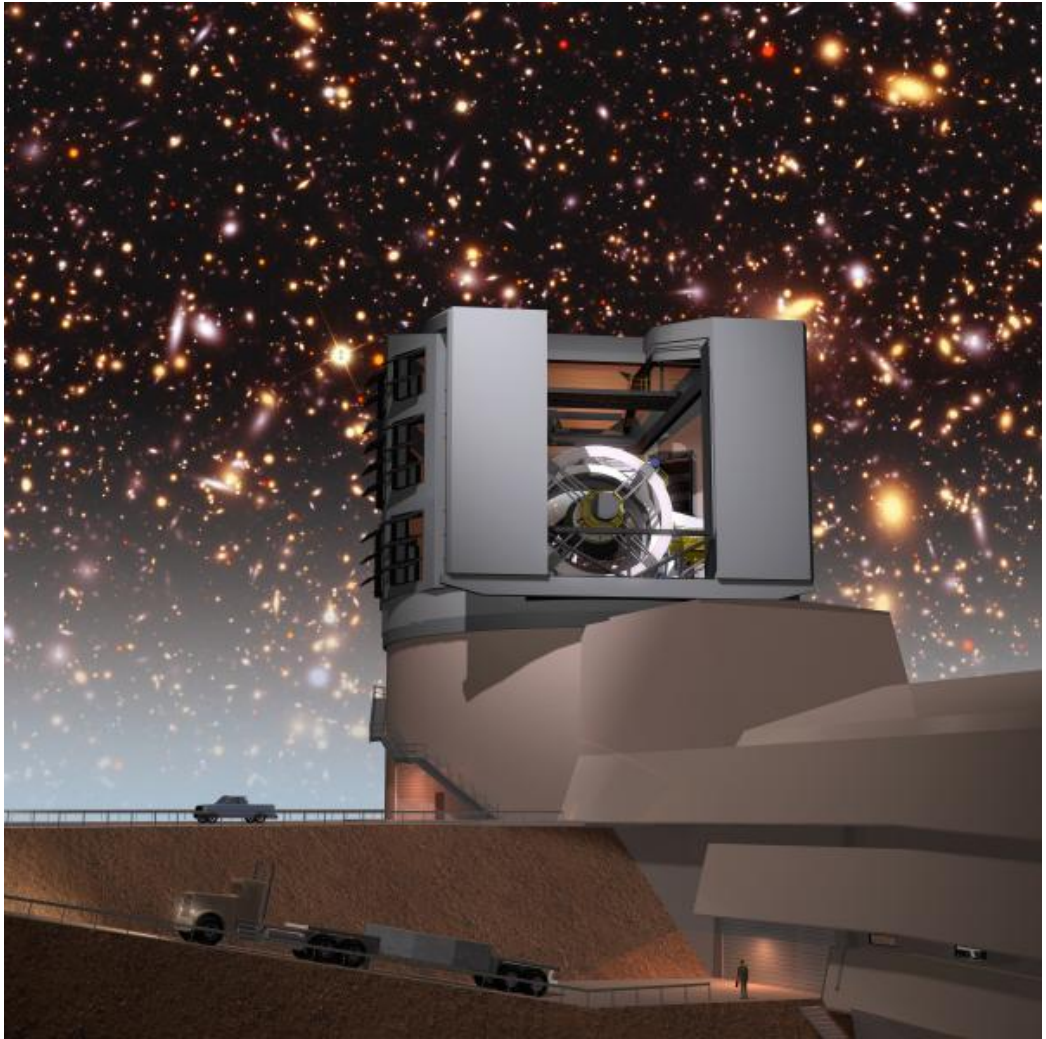
Supporting Scientific Excellence and Those Who Animate It

Dara Norman

Deputy Director
Community Science Data Center

*All comments and opinions expressed here are my own and are not necessarily those of my employer.

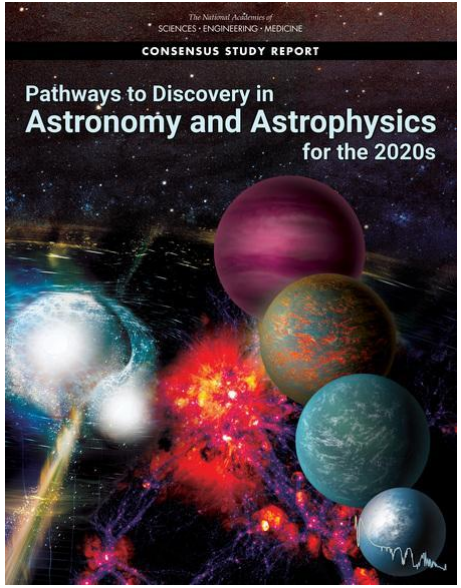


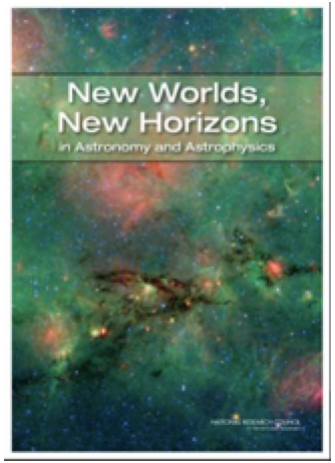
Facilities Building with simulated night sky

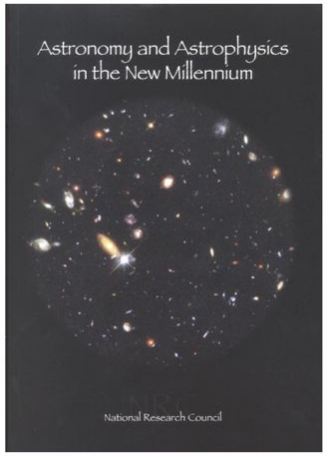
A simulated night sky provides a background for the LSST facilities building on Cerro Pachón.
Todd Mason, Mason Productions Inc. / LSST Corporation

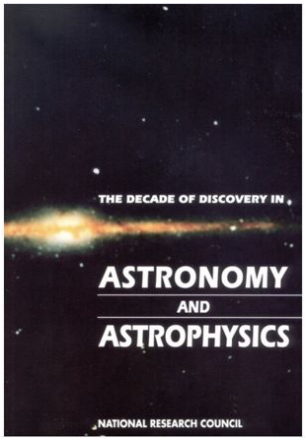
Astronomy and Astrophysics Decadal Surveys 1964-2023

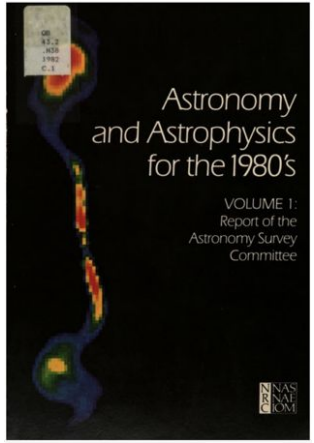
Consensus document of the community that highlights the science as well as the needs (and wants) to do that science into the next decade.

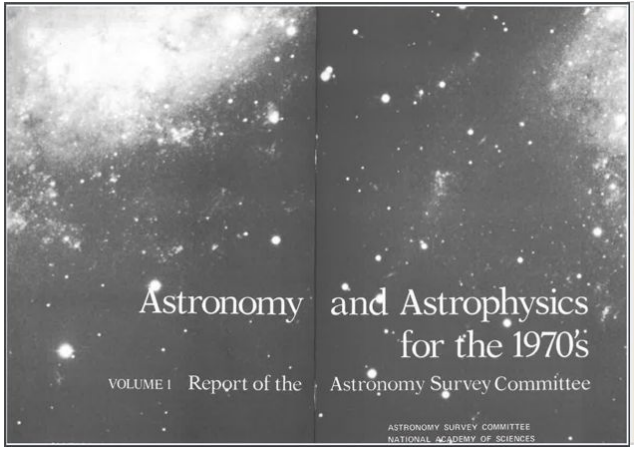


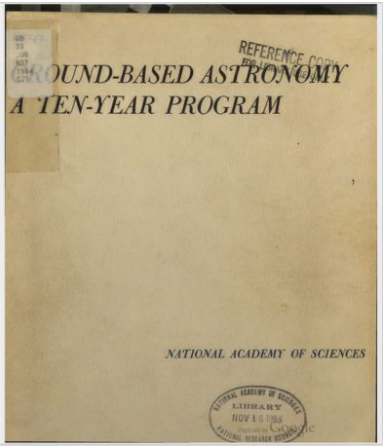




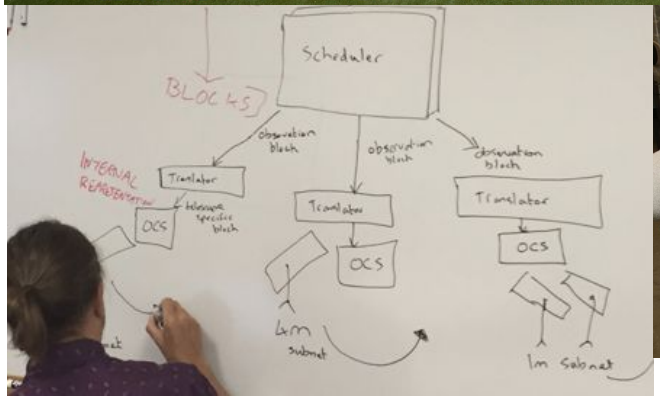








We need PEOPLE to make any of the science happen.



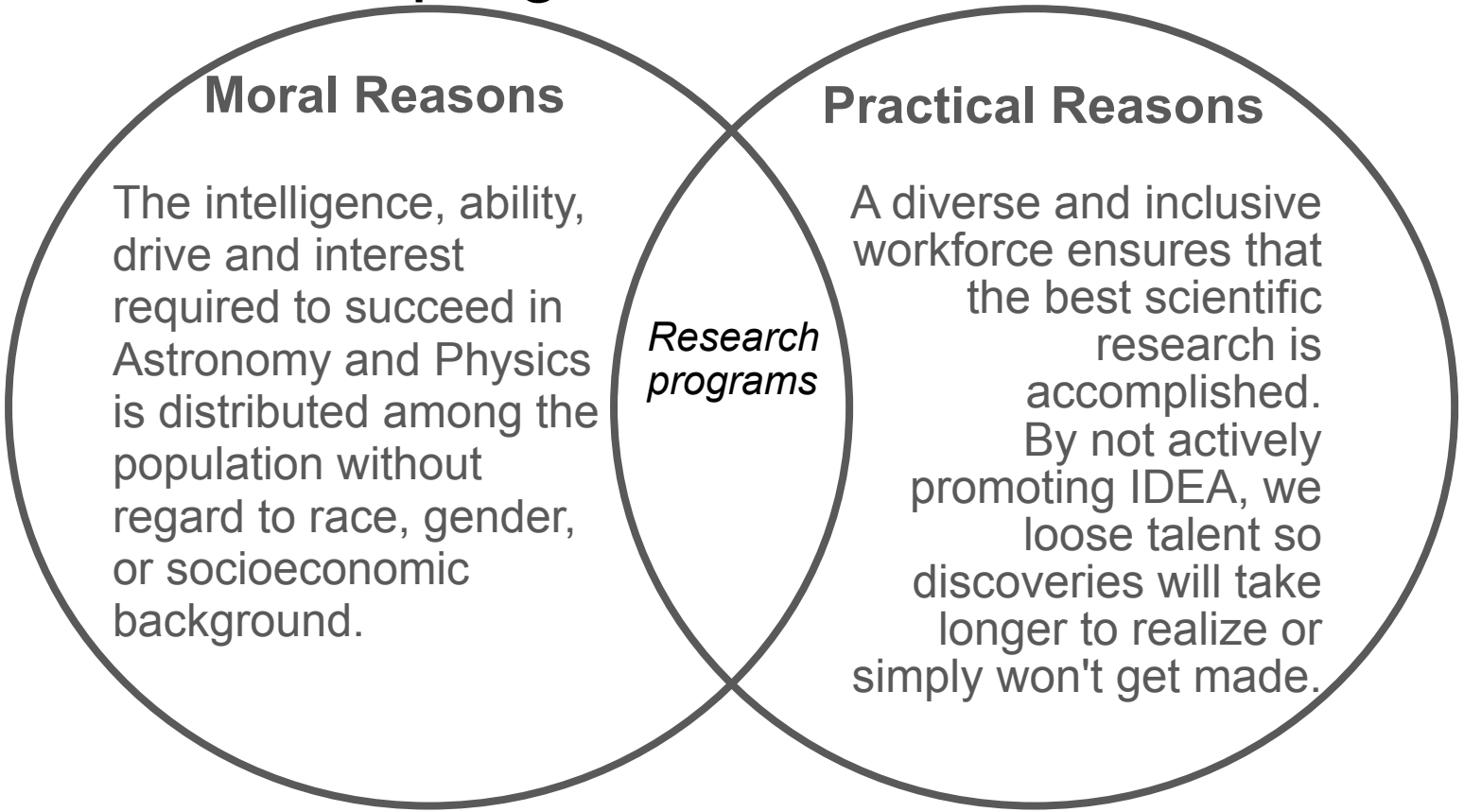
Pathways to Discovery from *Foundational Activities:*

"The **people who make up the profession are the most fundamental component of the research enterprise**, without whom the ambitious facilities, instruments, and experiments, as well as the promised transformative discoveries, would lie unfulfilled."

"...the astronomy and astrophysics enterprise can be at its most innovative only when it maximizes and **fully utilizes the broadest range of human talent**, the survey forwards several crucial programs … to support early-career entrants, with **a strong emphasis on broadening access, removing barriers to participation, and creating an environment that eschews harassment and discrimination** of all kinds…"

Recommendation: "span the career stages from undergraduate to faculty and beyond, with **targeted programs to improve diversity at each level;** bridge critical transitions in the pipeline; and work to i**mprove diversity of project teams, participants, and beneficiaries**."

Why build inclusion, diversity, equity and access into research programs



Inclusion, Diversity, **Equity**, and Access

Equity ≠ **Equality**

The quality of being fair;
To provide all with the support they need to reach and exceed goals;

The focus is on outcomes.

The state of being equal.

As policies and practices to promote IDEA are implemented, this difference must be kept in mind.

Policies & Practice must support IDEA

Encourage students with previously little Physics Background to move toward careers in Physics

Bridge programs

- **Pros:** Opportunity to bring students with other STEM interests and backgrounds to Physics as a career
- **Cons:** Can promote deficit-minded thinking about minority students
- **Mitigation:** Focus on implementation and regular assessment, revision

Anonymized proposals Reviewed by Anonymous Panel Members.

Dual Anonymous Review

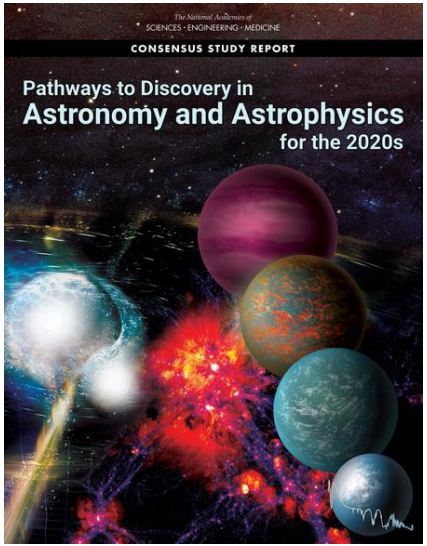
- **Pros:** Better focus on the science of the proposal
- **Cons:** Can conflict with other science mission priorities
- **Mitigation:** Focus on implementation and regular assessment, revision

Similarly, research plans and practices should include regular evaluation.

We are Ready

The Astro community recognizes the need to include topics of Inclusion, Diversity, Equity, and Accessibility (IDEA) in research.

Inclusive Astronomy 2015



***Pathways to Discovery*, 2020**
from *Foundational Activities:*
"Develop and diversify the Scientific Workforce"

"The pursuit of science, and scientific excellence, is inseparable from the humans who animate it."

Why so optimistic?

At the President's Council of Advisors on Science and Technology 2016

Leadership

Discussions around 'inclusion in science' are challenging and often shunned. We must normalize the discussion of IDEA goals as part of Scientific Merit.

Incentives

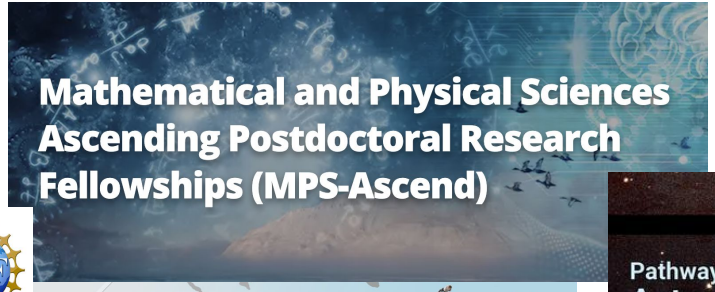
Research funding (e.g., grants) is currently not tied to metrics or progress on the inclusion of underrepresented and disenfranchised groups. "Broadening Participation" must be about **workforce and research participation**, not just public outreach and education.

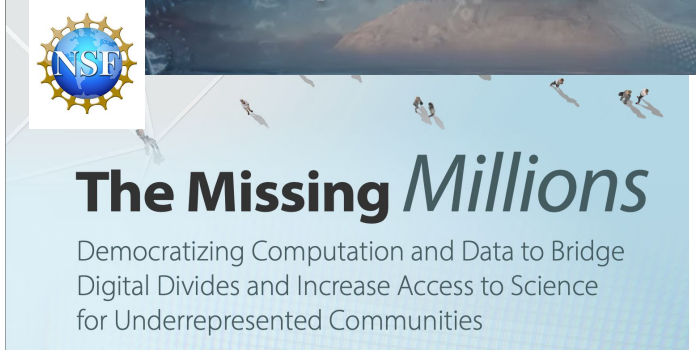
Advisory Access

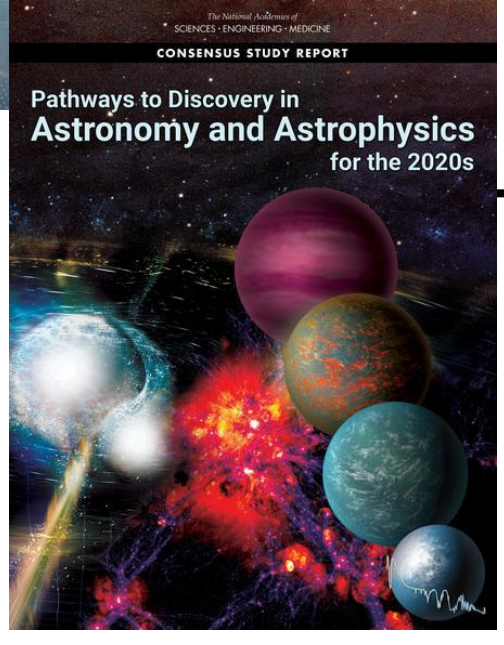
Science leadership and policy making activities (e.g., committee membership and *input* to committees) often come from too narrow a group of scientists. Those in privileged positions often underestimate barriers to access

We must be deliberate about **HOW** we embrace and practice Diversity, **Equity** and Inclusion to advance cultural change in Astronomy and Astrophysics.

Leadership providing Incentives:







NASA ATP Inclusion Criterion Pilot Program

U.S. DEPARTMENT OF ENERGY | Office of Science

Promoting Inclusive and Equitable Research (PIER) Plans

Funding for Accelerated, Inclusive Research (FAIR)

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From THE INCLUSION REVOLUTION (AAS 2020 Plenary)
The Anecdote :

Big Astronomy Project

Cutting Edge Technology

Great Science

New Areas of Science

Innovative Methods

Community Collaboration

Education

Public Outreach

Broadening Participation

- Pipeline Building
- Professors at HBCUs
- And their Students
- Partnered with Big Astronomy Project Staff
- Modelled on a successful program

From THE INCLUSION REVOLUTION (AAS 2020 Plenary)

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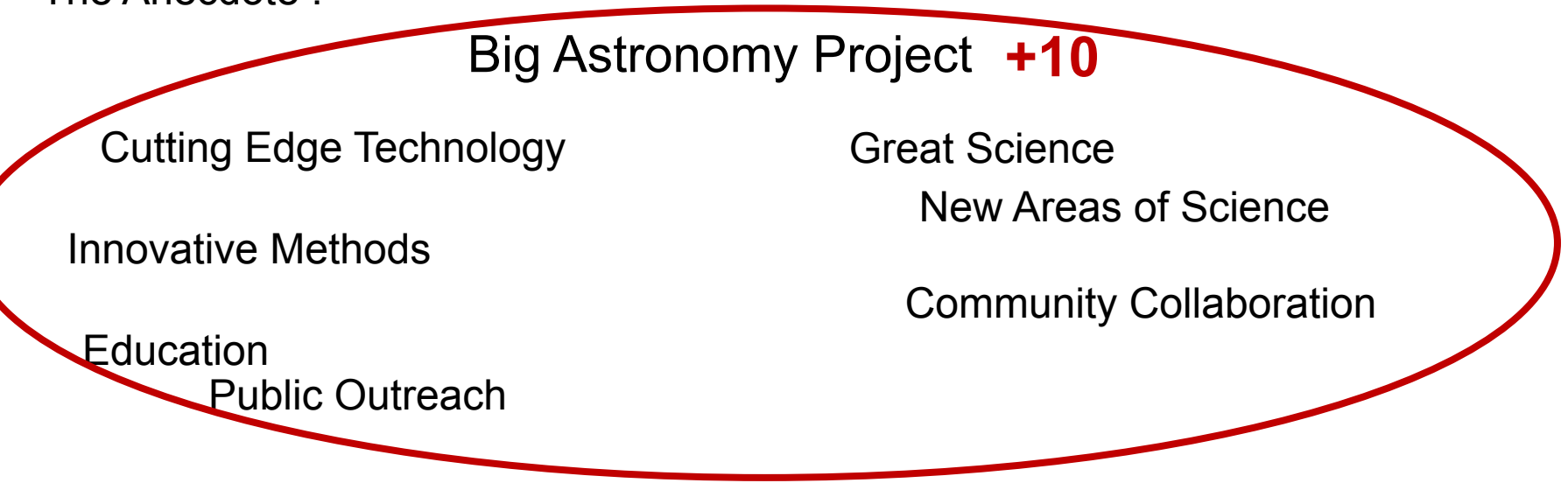

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The Anecdote :

Big Astronomy Project **+18**

Cutting Edge Technology

Great Science

New Areas of Science

Innovative Methods

Research Inclusion

Community Collaboration

Education

Public Outreach

Broadening Participation

Valued as part of how we assess scientific merit

RESEARCH INCLUSION

- Policies and procedures that support mutually beneficial partnerships

Policies for the Allocation of Observing Time

- Opportunities for scientific networking and collaboration building

- Technical infrastructure that enables participation

ASTRO DATALAB

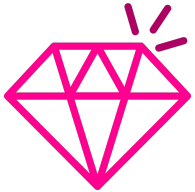
ANTARES

- Provide science platform/tools training

Research Inclusion Development: Toolkit of Collaborative Practice

NSF Development funding to **prepare community for research inclusion proposal requirements** (PIs and Reviewers)

- Create a toolkit of inclusive collaborative practice as a guide, seeded by current community practices (e.g., DEI governance best practice, conduct codes, communication, journal clubs and mutually beneficial partnership practice, etc.)
- Provide information on the efficacy of practices (including metrics)
- Provide recommendations and guidelines for the assessment of proposed research inclusion practices in proposals
- Recommend policies for long-term observing programs to report on research inclusion metrics and activities as part of scientific review.



Values

Norms

Traditions

Review of NASA's Inclusion Criteria Pilot

Bulletin of the AAS • Vol. 54, Issue 1 (Obituaries, News & Commentaries, Community Reports)

Report on the Review of ATP Inclusion Plans by DEI Expert and Science Expert Panels

Tim Sacco[1], Dara Norman[1]

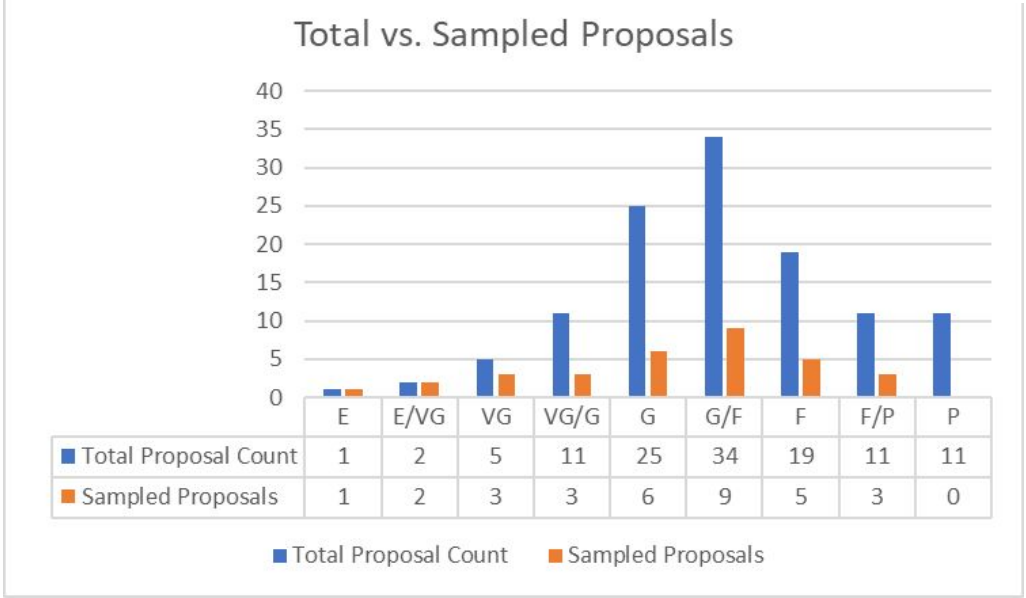
[1]NOIRLab

Published on: Mar 03, 2022

DOI: 10.3847/25c2cfeb.19262acc

https://baas.aas.org/pub/2022i028/release/1

Blue: Distribution of DEI expert grades of the Inclusion Plans for 119 ATP proposals



	E	E/VG	VG	VG/G	G	G/F	F	F/P	P
Total Proposal Count	1	2	5	11	25	34	19	11	11
Sampled Proposals	1	2	3	3	6	9	5	3	0

A Brief Summary of Findings

1) **Inclusion of a good practice did not necessarily translate into a good grade (e.g. distribution of grades for 'Code of Conduct' inclusion)**

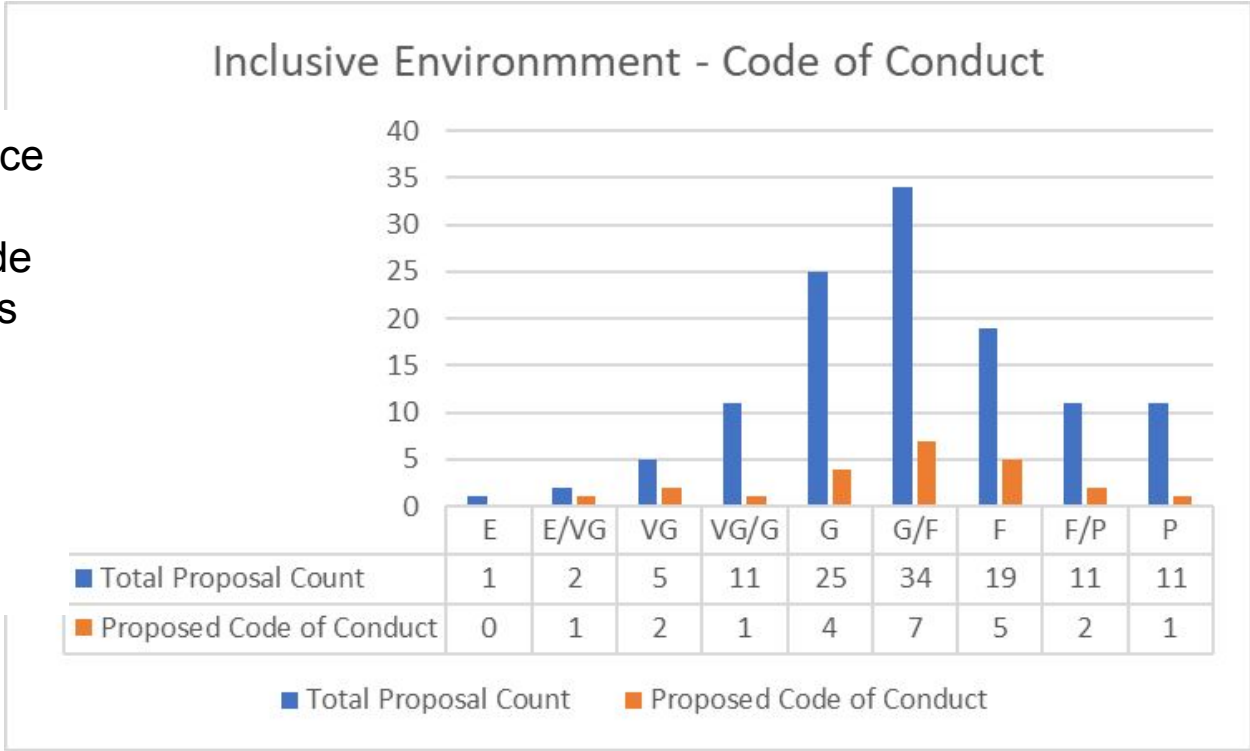
2) Themes that might have the highest impact (e.g., leveraging partnerships to support DEI and substantial evaluation of partnerships) were implemented less often in the plans.

3) In their evaluations, Science Expert panels did not identify the same critiques as DEI expert panels although overall positive vs negative ranks were similar. There is a need to educate science experts on good practices in evaluating inclusion plans.

Implementation matters for success

Inclusion of a good practice did not necessarily translate into a good grade (e.g. distribution of grades for ‘Code of Conduct’ inclusion)

How a practice is Implemented matters!



	E	E/VG	VG	VG/G	G	G/F	F	F/P	P
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Proposed Code of Conduct	0	1	2	1	4	7	5	2	1

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Themes from ATP proposals

DEI credentialing - 53%

Code of Conduct - 18%

Normal Mentoring - 23%

Substantial evaluation plans - 3%

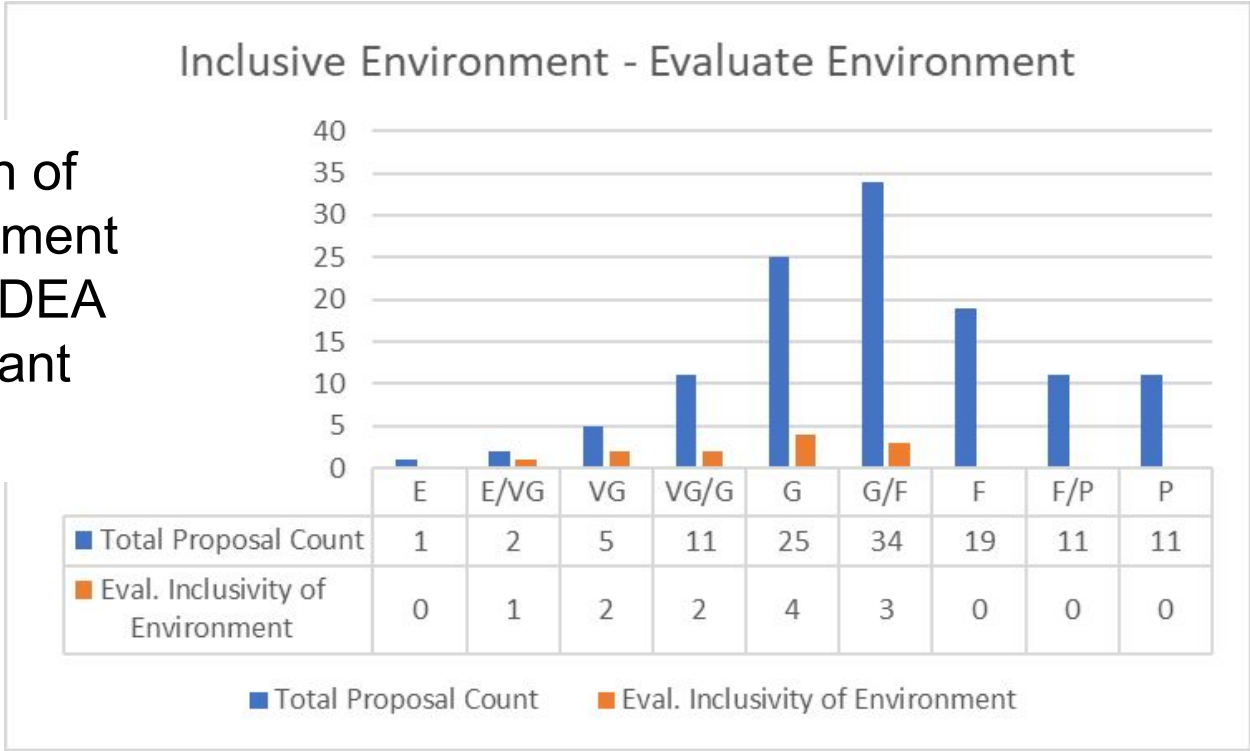
Cross Institutional Partnership - 11%

Leveraging Partnership for DEI - 4%

Theme	Sub-theme	# of proposals	% of Total proposals
DEI Credentialling		64	53%
	History with DEI work	44	37%
	Instiurion DEI Credentials	30	25%
	Department DEI Credntials	22	18%
Leveraging Institutional Resources		68	57%
	Bridge programs	9	8%
Fostering an inclusive Environment/Climate		84	70%
	Code of Conduct	22	18%
	Normal mentoring practice	27	23%
	Evaluation of inclusivity	12	10%
	Substantial Evaluation plans	4	3%
	Open Communication	15	13%
	Regular Meetings	23	19%
	Equitable Recruitment	13	11%
	DEI training	13	11%
Cross Institutional Partnerships		13	11%
	Credentialling	8	7%
	Leverage partnership for DEI	5	4%

Attention to the Evaluation

Building in evaluation of the research environment and how to monitor IDEA success is an important component.

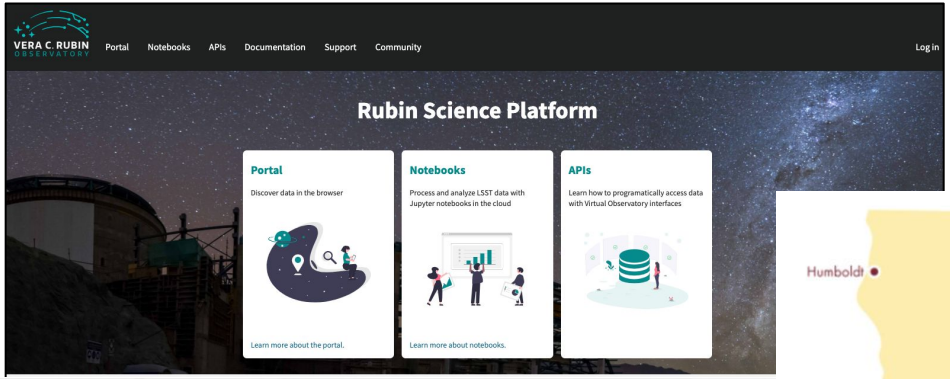


	E	E/VG	VG	VG/G	G	G/F	F	F/P	P
Total Proposal Count	1	2	5	11	25	34	19	11	11
Eval. Inclusivity of Environment	0	1	2	2	4	3	0	0	0

NSF PAARE: Establishing a diverse community of expert Rubin Observatory users throughout the California State University System

Louise Edwards (Cal Poly, San Luis Obispo)

Leverages DP0 Delegate status to build an innovative partnership across PUIs to use Rubin data.



VERA C. RUBIN OBSERVATORY

Kickstarter Grants Program

HEISING-SIMONS FOUNDATION

https://drive.google.com/file/d/19ANWUIzssXGPZF14GFqr50iGo45aeJw_/view

Managed by: LCO

Building a Diverse Generation of Rubin Scientists: a pilot program

by Antonino Cucchiara (College of Marin/NASA/UVI)

- Decrease the funding barrier
- Facilitate the “Entrance” Into Rubin Science
- Faculty-center focus
- Promote sustainability

https://lsst-sci-prep.github.io/kickstarter_colloquia.html

- Binary Neutron Star Mergers: Detectability with Vera C. Rubin Observatory By Luis Salazar-Manzano, UT, Rio Grande Valley (HSI)
- RR Lyrae in Local Group Dwarf Galaxies By Kenneth Carrell, Angelo State University (HSI)

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3) **In their evaluations, Science Expert panels did not identify the same critiques as DEI expert panels although overall positive vs negative ranks were similar. There is a need to educate science experts on good practices in evaluating inclusion plans.**

Inclusion Plan Evaluation by Science Experts - more work to do

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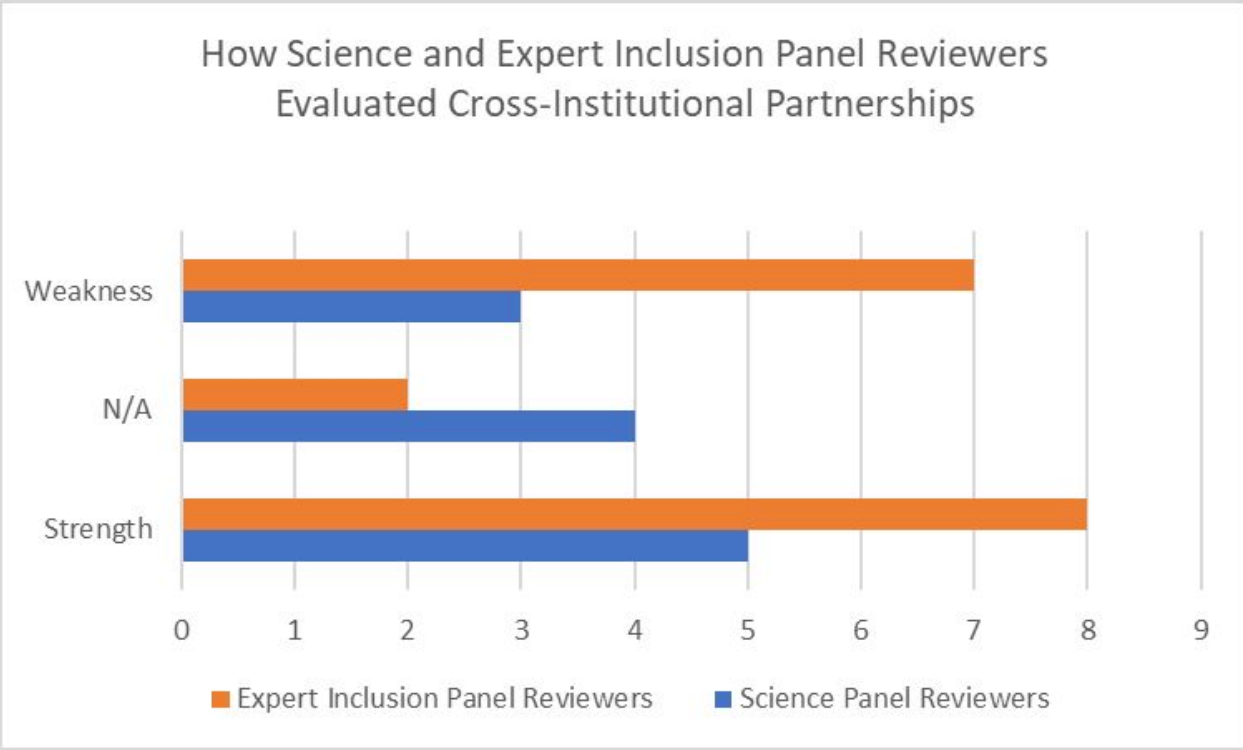


From Data to Software to Science with the Rubin Observatory LSST Workshop: https://arxiv.org/abs/2208.02781

Goal: Enable interactive development of exciting scientific use cases for early LSST data, and identifying the common computational/technical challenges and enabling technologies associated with them.

LSST Discovery Alliance

4 Inclusive collaboration

4.1 Challenges in research collaborations

4.2 Recommendations

4.3 Conclusion

D Scenarios used for the inclusive collaboration breakouts

D.1 Scenario 1 – Institutional Pressures

D.2 Scenario 2 – Allocation of Credit

D.3 Scenario 3 – Inclusive Team Environment

D.4 Scenario 4 – Student Contributions to Open-Source Software

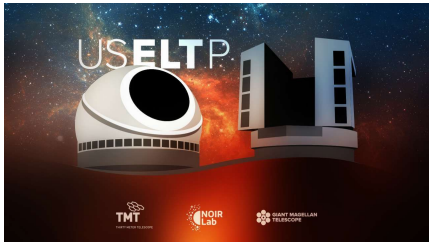
Toolkit of Collaborative Practice

We've used the findings from the report, seeded by current community practices to build our Toolkit (database).

More than just a list of papers and websites

Vetted by social scientists, the Toolkit provides:

a. An inventory of resources
b. Resources are curated and organized
c. Resources can be filtered to focus on specific interests/needs



Research Inclusion Toolkit of Collaborative Practice V 1.0

Welcome to the US-ELTP Toolkit of Collaborative Practice!
The Toolkit has been designed to provide descriptions and best practices for a number of themes that support inclusive practice within scientific partnerships and collaborations. The Toolkit is organized as a curated database where the user can search for the subjects that are of interest in reviewing and/or adding to a proposal or inclusion plan.

Organization of the Toolkit:
Each row represents an activity, practice, or policy that can be added to an inclusion plan.
Within each row, columns provide the following information:
Title

Provide Feedback

Topic | Theme | Suggestions for...

Title	Description	Best Practices	Resour
Workload Equity Plan	Underrepresented researchers, including women scientists and scientists of color, may be disproportionately assigned tasks that are not considered as valuable as others within a research team. This unequal distribution of workload can lead to greater dissatisfaction and a higher likelihood of underrepresented team members leaving the team. To address this issue, it is important for collaborators to develop a plan for evenly distributing workload, including both valued tasks such as research and devalued tasks such as teaching and outreach. This will help create an inclusive environment where underrepresented groups, including women and scientists of color, are not disproportionately responsible for these tasks and have the same opportunities to engage in research as their colleagues.	Develop a plan for how work will be distributed on the collaboration. This plan should clearly define roles and responsibilities; it is important that everyone knows what is expected of them early in the collaboration. Have a fair and transparent process for how tasks will be assigned amongst team members. Consider individual workload of each member on the collaboration. It is of other commitments individuals may have, their current workload, and additional tasks. Have a plan for how tasks like mentoring or outreach will be assigned a Seek input from the team on how work should be allocated among ther Collect metrics that allow you to track whether the workload allocation the team. It is important to review and adjust as needed to ensure that	null

https://tinyurl.com/ToolkitCollaborativePractice

Summary: We are ready to advance cultural change in Astronomy and Astrophysics.

- We are Ready to recognize the need to embrace topics of Inclusion, Diversity, Equity, and Accessibility (IDEA) in research.
- We have leadership that is willing to provide incentives for making IDEA an integral part of how we do the business of reaching our science goals.
- But we are not there yet, and we need to be vigilant about how we assess, evaluate and revise our policies to support IDEA

We must continue the support of, not only scientific excellence, but also those who animate it!

END

RI Toolkit V 1.0_Final

lookerstudio.google.com/reporting/78a43cf9-565e-469a-8fbe-15efee9fee6f/page/tMCED?s=vy8VeaZ-xig

Update

RI Toolkit V 1.0_Final

Reset Share

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1 - 35 / 35

USE Cases - D.1. Scenario 1 – Institutional Pressures

Zahra is part of a large research team at an Doctoral Universities – Very high research activity (R1) (research intensive) institution developing a Research Inclusion plan for their research proposal. The team approaches Carl, a teaching institution astronomer that Zahra knows from a past AAS meeting to join the team. Zahra thought Carl would be a good fit for the team because his dissertation research was on a similar topic as the topic they will study should their proposal get accepted. Zahra emails Carl asking if he is interested in joining their team. Carl realizes this could be a good opportunity, as he is expected to publish (albeit minimally relative to an R1 institution) to qualify for tenure. However, Carl is apprehensive about joining the team because he doesn't have much experience in large collaborations. He is also worried about the different institutional pressures they face as they work for different types of institutions.

Questions: 1. What are some different pressures that researchers from research-intensive and teaching institutions may face?
2. What are some steps that Zahra's collaborative team can take to make Carl's participation on the team valuable for him?
3. What conversations could Zahra and Carl have during these early stages to better understand different institutional contexts, collaboration expectations, and collaborator capacities?
4. What questions might Zahra or Carl ask each other to begin laying a foundation for a successful collaboration?
5. Have you ever participated in a collaboration that spans multiple institutions of different sizes or types? What worked well in those collaborations? What was challenging? If tensions arose based on different institution types, how were these tensions settled or resolved (if at all)?

High Impact Themes Implemented Less Often

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