2024 NIAC SYMPOSIUM AGENDA

September 10-12, 2024

All Times Pacific Standard Time

DAY 1: Tuesday, September 10

Time (PST)	Event	Speaker
9:00 AM	***Special Address***	***Pam Melroy, NASA Deputy Administrator***
9:10 AM	***Welcome***	***Thomas Cwik, Chief Technologist, NASA JPL***
9:20 AM	***Welcome & Overview***	*John Nelson, NIAC Program Executive*
9:30 AM	***Keynote***	***Paul Sutter, Theoretical Cosmologist, Science Communicator***
10:30 AM	**BREAK & Planetary Radio Interviews**	
10:50 AM	*2024 Phase I (1)*	*Kenneth Carpenter, NASA GSFC* *A Lunar Long-Baseline Optical Imaging Interferometer: Artemis-enabled Stellar Imager (AeSI)*
11:10 AM	*2024 Phase I (2)*	*Matthew McQuinn, University of Washington, Seattle* *Solar System-Scale VLBI to Dramatically Improve Cosmological Distance Measurements*
11:30 AM	*2024 Phase I (3)*	*Ge-Cheng Zha, Coflow Jet, LLC* *Mars Aerial and Ground Global Intelligent Explorer (MAGGIE)*
11:50 AM	**Special Address**	***Walt Engelund, NASA Deputy Associate Administrator for Programs, Space Technology Mission Directorate***
12:10 PM	**LUNCH & Planetary Radio Interviews**	
1:30 PM	*2024 Phase II (1)*	*Mary Knapp, MIT Haystack Observatory* *The Great Observatory for Long Wavelengths (GO-LoW)*
1:50 PM	*2024 Phase II (2)*	*Edward Balaban, NASA ARC* *Fluidic Telescope (FLUTE): Enabling the Next Generation of Large Space Observatories*
2:10 PM	*2024 Phase II (3)*	*Mahmooda Sultana, NASA GSFC* *ScienceCraft for Outer Planet Exploration (SCOPE)*
2:30 PM	**BREAK & Planetary Radio Interviews**	
2:50 PM	*2023 Phase II (1)*	*Ronald Polidan, Lunar Resources, Inc.* *FarView Observatory – A Large, In-Situ Manufactured, Lunar Far Side Radio Array*
3:10 PM	*2023 Phase II (2)*	*Darmindra Arumugam, NASA JPL* *Quantum Rydberg Radar for Surface, Topography, and Vegetation*
3:30 PM	*2023 Phase II (3)*	*Michael Eades, Ultra Safe Nuclear Corporation – Space* *The Nyx Mission to Observe the Universe from Deep Space – Enabled by EmberCore, a High Specific Power RadioisotopeElectric Propulsion System*
3:50 PM	***Poster Session Group A***	
4:50 PM	**ADJOURN**	
6:30 to 8:00 PM	**Informal NIAC Fellows' Meet & Greet Event (Poster Room)**	

2024 NIAC SYMPOSIUM AGENDA

September 10-12, 2024

All Times Pacific Standard Time

DAY 2: Wednesday, September 11

Time (PST)	Event	Speaker
9:00 AM	**Welcome & NIAC Plans**	*NIAC Staff*
9:30 AM	***Keynote***	***Rick Loverd, Program Director, National Academy of Sciences, Science & Entertainment Exchange***
10:30 AM	**BREAK & Planetary Radio Interviews**	
10:50 AM	*2024 Phase I (4)*	*Lynn Rothschild, NASA ARC* *Detoxifying Mars: The Biocatalytic Elimination of Omnipresent Perchlorates*
11:10 AM	*2024 Phase I (5)*	*Steven Benner, Foundation for Applied Molecular Evolution* *Add-on to Large-scale Water Mining Operations on Mars to Screen for Introduced and Alien Life*
11:30 AM	*2024 Phase I (6)*	*Ryan Sprenger, Fauna Bio Inc.* *A Revolutionary Approach to Interplanetary Space Travel: Studying Torpor in Animals for Space-health in Humans (STASH)*
11:50 AM	*2024 Phase I (7)*	*Alvaro Romero-Calvo, Georgia Tech Research Corporation* *Magnetohydrodynamic Drive for Hydrogen and Oxygen Production in Mars Transfer*
12:10 AM	**LUNCH & Planetary Radio Interviews**	
1:30 PM	*2024 Phase II (4)*	*Ethan Schaler, NASA JPL* *FLOAT – Flexible Levitation on a Track*
1:50 PM	*2024 Phase II (5)*	*Brianna Clements, Howe Industries* *Pulsed Plasma Rocket (PPR): Shielded, Fast Transits for Humans to Mars*
2:10 PM	*2024 Phase II (6)*	*Stephen Polly, Rochester Institute of Technology* *Radioisotope Thermoradiative Cell Power Generator*
2:30 PM	**BREAK & Planetary Radio Interviews**	
2:50 PM	*2023 Phase II (4)*	*David Perrault, MIT* *Silent, Solid-State Propulsion for Advanced Air Mobility Vehicles*
3:10 PM	*2023 Phase II (5)*	*Philip Lubin, University of California, Santa Barbara* *PI – Planetary Defense*
3:30 PM	*2023 Phase II (6)*	*Lynn Rothschild, NASA ARC* *A Flexible, Personalized, On-Demand Astropharmacy*
3:50 PM	***Poster Session Group B***	
4:50 PM	**ADJOURN**	
	Free Evening for Fellows' Networking and Collaboration; Women of Science	

2024 NIAC SYMPOSIUM AGENDA

September 10-12, 2024

All Times Pacific Standard Time

DAY 3: Thursday, September 12

Time (PST)	Event	Speaker
9:00 AM	**NIAC Q&A**	*NIAC Staff Q&A*
9:30 AM	***Keynote Panel***	***'Funding Beyond NIAC' Joel Sercel, Panel Chair***
10:30 AM	**BREAK & Planetary Radio Interviews**	
10:50 AM	*2024 Phase I (8)*	*Peter Cabauy,* City Labs, Inc. *Autonomous Tritium Micropowered Sensors*
11:10 AM	*2024 Phase I (9)*	*Marshall Eubanks, Space Initiatives, Inc.* *Swarming Proxima Centauri: Coherent Picospacecraft Swarms Over Interstellar Distances*
11:30 AM	*2024 Phase I (10)*	*Geoffrey Landis, NASA GRC* *Sample Return from the Surface of Venus*
11:50 AM	*2024 Phase I (11)*	*James Bickford, Charles Stark Draper Laboratory* *Thin Film Isotope Nuclear Engine Rocket (TFINER)*
12:10 PM	**LUNCH & Planetary Radio Interviews**	
1:30 PM	***Keynote***	***Denna Lambert, Inclusive Innovation Lead, NASA Early Stage Innovations & Partnerships (ESIP)***
2:30 PM	**BREAK & Planetary Radio Interviews**	
2:50 PM	*2024 Phase I (12)*	*Aaswath Pattabhi Raman, UCLA* *Electro-luminescently Cooled Zero-boil-off Propellant Depots Enabling Crewed Exploration of Mars*
3:10 PM	*2024 Phase I (13)*	*Beijia Zhang, MIT Lincoln Laboratory* *LIFA: Lightweight Fiber-based Antenna for Small Sat-Compatible Radiometry*
3:30 PM	*2024 Phase III (1)*	*Lynn Rothschild, NASA Ames Research Center* *Mycotecture off Planet: En route to the Moon and Mars*
3:50 PM	**ADJOURN**	

2024 NIAC SYMPOSIUM AGENDA

September 10-12, 2024

POSTER SESSION SCHEDULE - GROUP A - Tuesday, September 10, 2024

2024 Phase I Fellows
Kenneth Carpenter, NASA GSFC *A Lunar Long-Baseline Optical Imaging Interferometer: Artemis-enabled Stellar Imager (AeSI)*
Matthew McQuinn, University of Washington, Seattle *Solar System-Scale VLBI to Dramatically Improve Cosmological Distance Measurements*
Ge-Cheng Zha, Coflow Jet, LLC *Mars Aerial and Ground Global Intelligent Explorer (MAGGIE)*
Peter Cabauy, City Labs, Inc. *Autonomous Tritium Micropowered Sensors*
Marshall Eubanks, Space Initiatives, Inc. *Swarming Proxima Centauri: Coherent Picospacecraft Swarms Over Interstellar Distances*
Geoffrey Landis, NASA GRC *Sample Return from the Surface of Venus*
2023 Phase II Fellows
Ronald Polidan, Lunar Resources, Inc. *FarView Observatory – A Large, In-Situ Manufactured, Lunar Far Side Radio Array*
Darmindra Arumugam, NASA JPL *Quantum Rydberg Radar for Surface, Topography, and Vegetation*
Michael Eades, Ultra Safe Nuclear Corporation – Space *The Nyx Mission to Observe the Universe from Deep Space – Enabled by EmberCore, a High Specific Power RadioisotopeElectric Propulsion System*
David Perreault, MIT *Silent, Solid-State Propulsion for Advanced Air Mobility Vehicles*
2024 Phase II Fellows
Mary Knapp, MIT Haystack Observatory *The Great Observatory for Long Wavelengths (GO-LoW)*
Edward Balaban, NASA ARC *Fluidic Telescope (FLUTE): Enabling the Next Generation of Large Space Observatories*
Mahmooda Sultana, NASA GSFC *ScienceCraft for Outer Planet Exploration (SCOPE)*
2024 Phase III Fellow
Lynn Rothschild, NASA ARC *Mycotecture off Planet: En route to the Moon and Mars*

2024 NIAC SYMPOSIUM AGENDA
September 10-12, 2024

POSTER SESSION SCHEDULE – GROUP B - Wednesday, September 11, 2024

2024 Phase I Fellows
Lynn Rothschild, NASA ARC *Detoxifying Mars: The Biocatalytic Elimination of Omnipresent Perchlorates*
Steven Benner, Foundation for Applied Molecular Evolution *Add-on to Large-scale Water Mining Operations on Mars to Screen for Introduced and Alien Life*
Ryan Sprenger, Fauna Bio Inc. *A Revolutionary Approach to Interplanetary Space Travel: Studying Torpor in Animals for Space-health in Humans (STASH)*
Alvaro Romero-Calvo, Georgia Tech Research Corporation *Magnetohydrodynamic Drive for Hydrogen and Oxygen Production in Mars Transfer*
James Bickford, Charles Stark Draper Laboratory *Thin Film Isotope Nuclear Engine Rocket (TFINER)*
Aaswath Pattabhi Raman, UCLA *Electro-luminescently Cooled Zero-boil-off Propellant Depots Enabling Crewed Exploration of Mars*
Beijia Zhang, MIT Lincoln Laboratory *LIFA: Lightweight Fiber-based Antenna for Small Sat-Compatible Radiometry*
2023 Phase II Fellows
Philip Lubin, University of California, Santa Barbara *PI – Planetary Defense*
Lynn Rothschild, NASA ARC *A Flexible, Personalized, On-Demand Astropharmacy*
2024 Phase II Fellows
Ethan Schaler, NASA JPL *FLOAT – Flexible Levitation on a Track*
Brianna Clements, Howe Industries *Pulsed Plasma Rocket (PPR): Shielded, Fast Transits for Humans to Mars*
Stephen Polly, Rochester Institute of Technology *Radioisotope Thermoradiative Cell Power Generator*

2024 NIAC SYMPOSIUM KEYNOTE SPEAKERS

DAY 1, Tuesday, September 10

SPECIAL ADDRESS

PAM MELROY

NASA Deputy Administrator

Col. (USAF, ret) Pam Melroy was sworn in as the NASA deputy administrator on June 21, 2021.

As deputy administrator, Melroy performs the duties and exercises the powers delegated by the administrator, assists the administrator in making final agency decisions, and acts for the administrator in his absence by performing all necessary functions to govern NASA operations. Melroy is also responsible for laying out the agency's vision and representing NASA to the Executive Office of the President, Congress, heads of federal and other appropriate government agencies, international organizations, and external organizations and communities.

Melroy was commissioned through the Air Force Reserve Officers' Training Corps (ROTC) program in 1983. As a co-pilot, aircraft commander, instructor pilot, and test pilot, Melroy logged more than 6,000 flight hours in more than 50 different aircraft before retiring from the Air Force in 2007. She is a veteran of Operation Desert Shield/Desert Storm and Operation Just Cause, with more than 200 combat and combat support hours.

Melroy was selected as an astronaut candidate by NASA in December 1994. Initially assigned to astronaut support duties for launch and landing, she also worked on advanced projects for the Astronaut Office. She also performed Capsule Communicator (CAPCOM) duties in mission control. In addition, she served on the Columbia Reconstruction Team as the lead for the crew module and served as Deputy Project Manager for the Columbia Crew Survival Investigation Team. In her final position, she served as Branch Chief for the Orion branch of the Astronaut Office.

One of only two women to command a space shuttle, Melroy logged more than 38 days (924 hours) in space. She served as pilot on two flights, STS-92 in 2000 and STS-112 in 2002, and was the mission commander on STS-120 in 2007. All three of her missions were assembly missions to build the International Space Station.

After serving more than two decades in the Air Force and as a NASA astronaut, Melroy took on a number of leadership roles, including at Lockheed Martin, the Federal Aviation Administration, the Defense Advanced Research Projects Agency, Nova Systems Pty, Australia, and as an advisor to the Australian Space Agency. She also served as an independent consultant and a member of the National Space Council's Users Advisory Group.

Melroy holds a bachelor's degree in physics and astronomy from Wellesley College and a master's degree in Earth and planetary sciences from the Massachusetts Institute of Technology.

WELCOME

THOMAS CWIK
Chief Technologist
NASA Jet Propulsion Laboratory

Dr. Tom Cwik is Chief Technologist for NASA's Jet Propulsion Laboratory. In this role he provides strategic leadership for research in advanced technology and serves as the focal point for technology interactions with NASA, companies, universities and the external research community. This includes being responsible for management and development of NASA's Space Technology Mission Directorate work at JPL, and directing internal investments across the Lab. He is responsible for guiding the infusion of new technology into the Laboratory mission portfolio.

Tom has been at JPL for over 30 years working as Associate Chief Technologist, managing the Space Technology Office, working in technology development in a number of areas, developing flight systems for a number of missions, and leading formulation of the NASA Aquarius mission. He works with start-up companies and accelerators in the new-space sector. Tom's technical interests include areas of computational electromagnetics using high-performance parallel architectures and the system design of mobile bots that will one day explore ocean worlds.

Tom received his doctorate in electrical engineering from the University of Illinois, Urbana-Champaign. He has been a co-founder of a star-up company, consults and is an Adjunct Professor at University of Washington. He was named a distinguished alum at the University of Illinois, ECE Department and is an Associate Fellow of the AIAA and a Fellow of the IEEE.

PAUL SUTTER
Theoretical Cosmologist, Award-Winning Science Communicator

Paul M. Sutter is a theoretical cosmologist, award-winning science communicator, U.S. Cultural Ambassador, and a globally recognized leader in the intersection of art and science. Paul is a research professor at the Institute for Advanced Computational Science at Stony Brook University and a guest researcher at the Center for Computational Astrophysics with the Flatiron Institute in New York City.

In addition to writing three critically acclaimed books exploring everything from our place in the universe to the ways modern science can improve its relationship with the public, Paul's work also appears in Scientific American, Ars Technica, Nautilus, Undark, Popular Mechanics, and more.

A knowledgeable and enthusiastic presenter, Paul hosts a variety of science shows on TV and digital media, including How the Universe Works on Science Channel, Space Out on Discovery, and Edge of Knowledge on Ars Technica, as well as numerous appearances on other shows. He also writes and hosts his hit Ask a Spaceman podcast, which has been downloaded over 7 million times.Paul earned his PhD in physics in 2011 as a Department of Energy Computational Science Graduate Fellow at the University of Illinois. He then spent three years as a research fellow at the Paris Institute for Astrophysics followed by two years at the Trieste Observatory in Italy. Prior to his current appointment, he held a joint position as the chief scientist at the Center of Science and Industry in Columbus, Ohio and as a cosmological researcher at the Ohio State University.

Paul's areas of research include studying the largest empty regions in the universe, mapping the leftover light from the big bang, and developing new techniques for finding the first stars to appear in the cosmos. He has authored dozens of academic papers and given hundreds of seminars, colloquia, and conference talks at institutions around the world.

You'll often find Paul in national news providing commentary, especially in his role as the Weather Channel's Official Space Specialist. He has consulted on everything from major TV shows, such as Star Trek Discovery and Another Life, to films and comic books and stage plays. He was even given the opportunity to act in one project, UFO, giving him an "Erdős–Bacon number" of 5.

In addition to his mainstream science communication, Paul has spent years exploring the intersection of science and art, working with artists, dancers, filmmakers, poets, directors, and musicians. In 2017 he wrote, produced, and narrated Song of the Stars, a dance performance exploring the history of our universe which aired on PBS member stations nationwide. Paul worked with director Tom Dugdale to create Into the Void, a narrative journey into a black hole backed by a full orchestra. With avant-garde composer and musician Keith Patchel, Paul developed MarsBand, an improvisational exploration of the cosmos. Most recently, Paul has collaborated with Syren Modern Dance of New York City on Ticktock, a stage experience exploring the nature of time through a performance weaving narration, music, and movement. Ticktock has been presented on stages worldwide, including in 2022 at the World Expo in Dubai.

Paul is routinely brought in to speak to diverse audiences, including at the Boston Museum of Science, the Houston Museum of Science, the Griffith Observatory, the Frost Science Center, King Abdullah University, and more. He speaks about physics, astronomy, cosmology, space exploration, the intersection of science and art, and the relationship between science and society.

A native of Ohio, Paul now lives in Connecticut with his wife, Kate, and two boys who enjoy drawing silly aliens on his chalkboard.

WALT ENGELUND
NASA Deputy Associate Administrator for Programs,
Space Technology Mission Directorate

Mr. Walt Engelund serves as the Deputy Associate Administrator for Programs in the Space Technology Mission Directorate (STMD) at NASA Headquarters, and provides executive leadership and execution for a portfolio of 10 space technology programs with an annual investment value of over $1Billion. STMD invests in technologies for NASA and commercial space needs that span the full range of technology readiness levels (TRLs), from fundamental laboratory experiments to full scale space flight demonstrations.

Prior to his appointment with STMD in 2019, Mr. Engelund spent 30 years at NASA's Langley Research Center in Hampton, VA, most recently as the Director of the Space Technology and Exploration Directorate, where he led an organization that was responsible for developing technologies for human spaceflight and robotic exploration. He also previously served as the Chief Engineer at NASA Langley,

and was responsible for technical oversight for Langley's diverse research and development portfolio, spanning aeronautics, human and robotic space technologies, and Earth science and remote sensing systems.

He is a recognized expert, reviewer, and consultant for hypersonic flight and planetary entry systems for NASA and other government agencies. He is a Fellow in the American Institute of Aeronautics and Astronautics, and the recipient of numerous NASA Achievement Awards including NASA's Exceptional Engineering Achievement and the Exceptional Achievement Medals, and the Meritorious Presidential Executive Award.

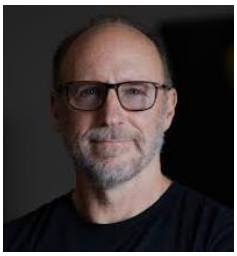
Day 2, Wednesday, September 11

PANEL

RICK LOVERD
Program Director, Science & Entertainment Exchange
National Academy of Sciences

Rick Loverd is the director of The Science & Entertainment Exchange, a program of the National Academy of Sciences. The program's mission is to connect scientists, engineers and doctors with filmmakers to inspire more and better science in mainstream media. Launched in November 2008, the Exchange has helped filmmakers on about 3,500 films and television programs, including The Avengers, Black Panther, Me3an, and Last of Us. Before working at the Exchange, Rick has eight years of entertainment industry experience including positions on television series on NBC, Fox, and The WB. He started his career at the Creative Artists Agency.

DAY 3, Thursday, September 12



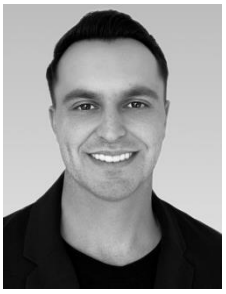
PANEL: FUNDING BEYOND NIAC

JOEL SERCEL
CEO TransAstra Corporation

Dr. Joel Sercel is the founder and CEO of TransAstra Corporation, a pioneering space technology company dedicated to advancing the frontier of asteroid mining and space logistics. With a distinguished career spanning both industry and academia, Joel has been instrumental in developing innovative propulsion systems and space mining technologies that promise to revolutionize the utilization of space resources. Under his leadership, TransAstra has become a Y Combinator-backed company (YC S-21), successfully raising over $10M in private investments and securing more than $10M in grants and contracts from NASA and the U.S. Space Force.

As a seasoned entrepreneur and technologist, Joel has a deep understanding of both the technical and business challenges of space exploration. He has been awarded seven NASA Innovative Advanced Concepts (NIAC) Fellowships, underscoring his role as a thought leader in space innovation. At the NIAC

Symposium, Joel will chair a panel featuring leading voices from the venture capital community and SpaceWERX, focusing on the intersection of cutting-edge space technologies, government support, and private investment. His insights will provide valuable perspectives on the opportunities and challenges of financing space ventures and advancing U.S. leadership in space exploration.



CODY BRONKAR
VC & Strategic Partnerships
SpaceWERX

Cody Bronkar is an active duty Captain managing the VC engagements and strategic partnerships for SpaceWERX. Cody has an active role in merging government stakeholders, companies, and private capital providers to accelerate and scale the initiatives in support of the NDS. A previous graduate of the Air Force Academy and later a cyber professional in both the Air and Space Forces at the operator and headquarters levels, he brings a technical prowess to understanding how tech merges into all levels of the Space Force. Cody works with the Program Executive Officers and Operators throughout the Space Force on how each are wanting to strategically expend their budgets, as well as investors and company's on how to strategically align and deliver capability to government organizations. While managing the strategic partnerships and VC landscape, he has helped source hundreds of millions of private capital dollars to SBIR-funded efforts and companies to deliver at scale. Cody serves as the primary Mentor for various world-class accelerator programs across the US. His role has been to solely consult, guide, and facilitate relationships on behalf of the Space Force with companies and investors - all to fulfill warfighter gaps. His previous experience within both AFWERX and SpaceWERX allows for a unique ability to realize how to connect entities throughout the ecosystem to deliver utility to the warfighter at speed.

LEON ALKALAI
CEO & Founder
Mandala Space Ventures

Dr. Alkalai is the founder of Mandala Space Ventures. Dr. Leon Alkalai is a recently retired Technical Fellow of the NASA Jet Propulsion Laboratory (JPL), California Institute of Technology where he spent 32 years after getting his PhD at UCLA in 1989. During his career at JPL, Dr. Alkalai held numerous leadership positions and was responsible for the capture leadership of both the GRAIL mission to the Moon (2007) and the INSIGHT lander on Mars (2012). For both efforts, Dr. Leon Alkalai received Distinguished Individual Achievement medals from NASA in 2011 and 2019 respectively. Dr. Alkalai was also heading up JPL strategic partnerships and strategic planning for the Laboratory. In early 2021, Dr. Alkalai retired from JPL and created Mandala Space Ventures, a space-focused, Pasadena-based incubator for new start-ups in the emerging space economy. Leon is also the General Partner at the Explorer-1 Venture Fund which is also affiliated with the Mandala space incubator. Recently, Mandala launched its first new venture called Continuum Space Systems, a Software as a Service (SaaS) company for the emerging digital space economy.

DENNA LAMBERT
Inclusive Innovation Lead
NASA Early Stage Innovations & Partnerships (ESIP)

Denna Lambert is the Inclusive Innovation Lead for NASA's Early Stage Innovation & Partnerships (ESIP) portfolio within the Space Technology Mission Directorate located at NASA Headquarters in Washington D.C. She joined NASA in 2004 as a Contract Specialist.

Originally from Little Rock, Arkansas, where she earned a BS in Business from University of Arkansas and a MPA from The George Washington University. Denna resides in Greenbelt, Maryland with her 4-year old son Kaleb and her retired guide dog Angie. She is a member of Delta Sigma Theta Sorority, Inc.

Denna's work in ESIP is to advance research opportunities for innovators in under-represented communities, including small businesses & new entrants. She supports the development of NASA funded research opportunities, outreach efforts, and resources for those seeking to engage in NASA's Technology Pipeline.

In 2023, Denna completed her first research micro-gravity flight with Zero-G as an AstroAccess Ambassador. Her personal passion for making spaceflight more inclusive is leaving an impact on those aspiring to join the expanding space economy.

Understanding and demystifying concepts of diversity, equity, inclusion, and accessibility can be a complicated topic. Join Denna and Krista for a fireside conversation on how we all can integrate these concepts in our research and innovation pursuits that uplifts and benefits all communities. Their knowledge, experiences, and collaborative mindset will be used in this conversation to highlight best practices currently being used in the competitive funding landscape and simplify areas where we can serve as thought-partners in expanding inclusive solutions.