

GUAM NSF EPSCoR

E-CORE

OPTIMIZING RESEARCH INFRASTRUCTURE ON GUAM



2025 - 2029 STRATEGIC PLAN

PROJECT DIRECTOR: Dr. Terry Donaldson

JURISDICTION: Guam AWARD NUMBER: 2438132

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TABLE OF CONTENTS

VISION STATEMENT	1
MISSION STATEMENT	1
PREFACE	1
PROJECT IMPLEMENTATION	2
Primary Project Partners.....	2
Overview Of Project Cores.....	3
Administrative Core (AC).....	4
AC: Activities and Milestones.....	8
Research Support Core (RSC).....	12
RSC: Activities and Milestones.....	14
Academic Infrastructure and Research Facilities Core (AIRFC).....	16
AIRFC: Activities and Milestones.....	18
Higher Education Pathways Core (HEC).....	20
HEC: Activities and Milestones.....	22
External Evaluation.....	25
RISK MANAGEMENT PLAN	26
Overview.....	26
Risk Mitigation – Administrative Core (AC).....	26
Risk Mitigation – Research Support Core (RSC).....	27
Risk Mitigation – Academic Infrastructure and Research Facilities Core (AIRFC).....	27
Risk Mitigation – Higher Education Pathways Core (HEC).....	28
Risk Mitigation – Science and Technology Steering Committee (STSC).....	28
Integration of Risk Management Strategy.....	28
Succession Plan.....	29
APPENDIX A – SWOT ANALYSIS	30
SWOT Analysis – Administrative Core.....	30
SWOT Analysis – Research Support Core.....	33
SWOT Analysis – Academic Infrastructure and Research Facilities Core.....	34
SWOT Analysis – Higher Education Pathways Core.....	35
SWOT Analysis – Science and Technology Steering Committee.....	37

VISION STATEMENT

The vision of the Guam E-CORE RII project, “Optimizing Research Infrastructure on Guam (ORIG)”, is a robust Guam research ecosystem that benefits the economy and livelihoods.

MISSION STATEMENT

ORIG will build networks among federal, territorial, and higher education institutions that grow, strengthen, and sustain research and STEM capacity in Guam’s research ecosystem.

PREFACE

The E-CORE RII project, “Optimizing Research Infrastructure on Guam (ORIG)”, will build sustainable networks within Guam’s research ecosystem that promote and support development of competitive scientific research aligned with jurisdictional and national priorities, and develop higher education STEM pathways through collaborations between academic and primary partners, the University of Guam (UOG) and Guam Community College (GCC), and territorial (Government of Guam) and federal agencies, and the private sector. Increasing capacity for conducting scientific research and connecting the research enterprise to higher education pathways to build a STEM-prepared workforce will be key to economic diversification and a STEM-based economy for Guam, priorities identified in Guam’s Science and Technology Economic Diversification plan (S&T Plan).

Table 1. E-CORE RII ORIG project team overview by core and component.

<p>Program Leadership Terry Donaldson (PI) Michael Chan (Co-PI) Bastian Bentlage (Co-PI) Cheryl Sangueza (Co-PI) Rachael Leon Guerrero (Co-PI)</p>	<p>Academic Infrastructure & Research Facilities Core (AIRFC) Terry Donaldson Bastian Bentlage Rachael Leon Guerrero Hark Galarion Vincent Dela Cruz</p>	<p>Science & Technology Steering Committee (STSC) Robert Underwood Melanie Mendiola Sylvia Calvo Mike Gawel Andrew Gayle Gary Hiles Leah Naholowaa Laurie Tumaneng Albert Valentine Ross Miller Tanisha Aflague Lola Leon Guerrero Michael Chan (ex officio) Terry Donaldson (ex officio) Bastian Bentlage (ex officio) Axel Defngin (STSC Coordinator)</p>
<p>Administrative Core (AC) Terry Donaldson Janet Dirige (PA) Annalyn Bansil Glenn Meno Axel Defngin Christian Sumalpong Matt Wilson Zapata</p>	<p>Higher Education Pathways Core (HEC) Cheryl Sangueza (Co-PI) Michael Chan (Co-PI) Theresa Magpuri-Lavell Franki Gianna Guerrero</p>	
<p>Research Support Core (RSC) Terry Donaldson Bastian Bentlage Janet Dirige (PA) Analyn Baslin Glenn Meno</p>	<p>External Advisory Board Additional Members (3-5) TBD</p>	

ORIG has four goals that will be addressed by corresponding cores (Table 1) in this E-CORE RII project: (1) Increase Guam’s competitiveness and effectively manage research ecosystem growth (Administrative Core); (2) Coordinate Guam’s research ecosystem (Research Support

Core); (3) Support facilities and infrastructure improvements (Academic Infrastructure and Research Facilities Core); (4) Develop STEM pathways to broaden participation (Higher Education Pathways Core). Together, these cores will grow, strengthen, and sustain research and STEM capacity in partnership with Guam’s Science and Technology Steering Committee and other stakeholders in Guam’s research ecosystem.

PROJECT IMPLEMENTATION

ORIG will be a catalyst for the growth of Guam’s research ecosystem, including infrastructural and STEM capacity, and will support transforming Guam’s largely tourism-based economy to a STEM-based economy while supporting innovation and economic opportunities. Increasing capacity for conducting scientific research and connecting the research enterprise to higher education pathways in STEM fields through research opportunities for students will be foundational to achieve these goals and develop Guam’s STEM-prepared workforce. ORIG has four cores, an (1) Administrative Core, a (2) Research Support Core, an (3) Academic Infrastructure and Research Facilities Core, and a (4) Higher Education Pathways Core (Table 2). The four cores will leverage territorial strengths and prior NSF investments to overcome barriers inherent in Guam’s research ecosystem to develop a STEM-ready workforce. Among those barriers are low capacity for coordinating large multi-disciplinary research teams, a limited number of research facilities compared to larger jurisdictions, and few opportunities for students to participate in research experiences.

Table 2. Summary of ORIG cores, goals, initiatives, actions and outcomes.

Vision: A robust Guam research ecosystem that benefits the economy and livelihoods.			
Mission: Grow, strengthen, and sustain research and STEM capacity in Guam’s research ecosystem.			
Cores and Goals			
Administrative Core Increase Guam’s competitiveness and effectively manage research ecosystem growth	Research Support Core Coordinate Guam’s research ecosystem	Academic Infrastructure and Research Facilities Core Support facilities and infrastructure improvements	Higher Education Pathways Core Develop STEM pathways to broaden participation
Initiatives and Actions			
Management & Coordination AC-1 / RSC-1,2 / AIRFC1,3 - Support project administration - Facilitate collaborations - Identify funding opportunities	Conferences & Workshops AC-4,5 / AIRFC-1,3 / HEC-3 - Connect researchers & institutions - Increase number of proposals - Track growing researcher network	Seed Funding AC-7 - Accelerate proof-of-concept phase - Support early career researchers - Increase research competitiveness	STEM Training & Education HEC-1,2,3 - Foster pathways from GCC to UOG - Create STEM research experiences - Provide mentorship for students
STSC & S&T Plan AC-2,3 / RSC-3 - Identify emerging opportunities - Update data captured in S&T Plan - Revise and disseminate S&T Plan	Communication AC-6 - Disseminate project outcomes - Promote funding opportunities - Engage stakeholders	Infrastructure Improvement AIRFC-1,2,3 - Assess status of facilities and needs - Engage in strategic planning - Provide professional development	Outcomes 1. Expanded collaborative networks 2. Increased number of funding proposals 3. Improved facilities and infrastructure 4. Increased number of students from GCC continue into UOG STEM programs

Primary Project Partners

The University of Guam (UOG), the jurisdiction’s premier Land, Sea, and Space Grant institution, serves as the lead partner for this E-CORE RII project, leveraging its established research and education infrastructure to strengthen Guam’s STEM and workforce capacity. As a primarily undergraduate institution with a growing research portfolio, managing NSF and federal awards, UOG provides the institutional foundation for integrating basic and applied research

with higher education in Guam. The collaboration with Guam Community College (GCC), an institution of higher education dedicated to technical and workforce development in Guam, ensures that the impact of student research experiences and workforce development activities fostered by this E-CORE RII project will have lasting impacts. Through existing articulation agreements and 2+2 programs, and mentorship models implemented through this project, the UOG / GCC partnership creates bridges from two-year to four-year degrees and embeds undergraduate research experiences into student learning. Together, UOG and GCC, working in synergy with stakeholder communities represented by the STSC, will expand Guam's research ecosystem, diversify its STEM workforce, and advance science and technology initiatives that align with the jurisdiction's strategic priorities. With an emphasis in career and technical education, research opportunities for GCC students in partnership with UOG have been rare, a gap this project specifically addresses. The UOG / GCC partnership in this E-CORE RII project increases opportunities for students at GCC to engage in meaningful research with UOG faculty and students to prepare them for eventual transfer. Research opportunities for GCC students with UOG align with course articulation agreements that have already been established over the years between the two institutions.

To make research experiences meaningful and impactful for GCC students, a support system needs to be in place to effectively manage project implementation. UOG has an established system for managing research funds through its research corporation. The administration of project funds at GCC will take place under the School of Technology & Student Services with oversight by the Dean (coPI Chan). A staff member will be hired and receive training from experienced staff of the project's Administrative Core so that assistance may be provided to the Dean for the procurement of supplies, equipment, contractual services if needed, and the disbursement of student stipends. Training will also be provided in payroll and time sheet processes, travel authorizations, budget monitoring, and assistance with annual report writing. Training may also include presentations on protocols, timelines, and description of supporting documentation needed for fiscal reporting. Training in soft skills and customer service will ensure services and assistance are efficient and effective. These activities will grow GCC's capacity to engage in research projects. Through the Higher Education Pathways Core, students will be recruited from UOG and GCC, receiving mentorship by project staff and UOG faculty engaged in research. GCC faculty will work with Dean Chan to assist in recruitment efforts and data collection to evaluate project programming impacts. The involvement of GCC faculty will be part of their regular duties at GCC, but it is expected that building a joint student research experiences program between UOG and GCC will, over time, lead to increased involvement of GCC faculty in student research activities, which are anticipated to expand during a renewal phase of the project after year 4.

Overview Of Project Cores

ORIG has four project cores with goals that are designed to address key areas of opportunity for increasing Guam's research and development competitiveness by leveraging strengths in Guam's research ecosystem. The ORIG cores are:

1. Administrative Core - Increase Guam's competitiveness and effectively manage research ecosystem growth.
2. Research Support Core - Coordinate Guam's research ecosystem.

3. Academic Infrastructure and Research Facilities - Support facilities and infrastructure improvements.
4. Higher Education Pathways Core - Develop STEM pathways to broaden participation.

In partnership with Guam's Science and Technology Steering Committee (STSC) and other stakeholders in Guam's research ecosystem, ORIG will engage in workshops and strategic planning activities to assess the current state of the jurisdictional research enterprise, identify areas and opportunities for growth, develop partnerships within and beyond the jurisdiction, and seek funding opportunities to strengthen capacity for scientific research. ORIG will provide project development, management and administrative support for other NSF investments in the jurisdiction, acting as a grant clearinghouse for Guam's research ecosystem. Seed funding awards to researchers in the ecosystem, in particular early career researchers, will be employed strategically to accelerate innovation and increase Guam's competitiveness. ORIG will provide students with research experiences in STEM fields and use a mentorship program to develop Guam's STEM-ready workforce to engage with economic opportunities identified by Guam's STSC. These activities will be conducted collaboratively by UOG and GCC, strengthening pathways from 2-year to 4-year institutions in the jurisdiction.

Administrative Core (AC)

Goal: Increase Guam's competitiveness and effectively manage research ecosystem growth.

The Administrative Core will enhance Guam's research and development competitiveness by providing ORIG with coordinated leadership, project management, and institutional support to expand research participation and infrastructure, accompanied by regular meetings and events with ongoing monitoring and annual review of progress. The STSC will collaborate with ORIG to shape science and technology priorities that are aligned with advancing Guam's economic diversification, workforce development, and STEM education. The STSC will provide strategic guidance and provide regular assessments of Guam's S&T Plan with the support of a coordinator who will facilitate STSC meetings and communications. Guam's S&T Plan establishes a strategic framework to strengthen STEM research capacity, infrastructure, innovation, and entrepreneurship to diversify Guam's economy and expand workforce readiness, with Year 1 analysis and iterative evaluation informing a formal S&T Plan update in Year 3 of the ORIG project. The Administrative Core will convene an annual research symposium integrated with the UOG Conference on Island Sustainability (CIS) to strengthen collaboration among territorial and federally funded initiatives, share project outcomes, and disseminate funding and training opportunities, with post-event feedback informing project improvements. Annual and on-demand collaborative research workshops will be conducted to support research teams aligned with S&T Plan priorities and to support competitive proposal preparation for submission to NSF funding opportunities and other agencies. Participant feedback will be used to refine future workshop themes and formats. Within the first six months, ORIG will develop and implement a comprehensive communications plan to amplify project objectives, opportunities, and outcomes to stakeholders through multiple outreach platforms, with periodic assessment of engagement strategies to improve reach and effectiveness.

Beginning in Year 2, ORIG will award competitive Seed Funding to stimulate innovative and collaborative research aligned with S&T Plan priorities and to support early-career and multidisciplinary team development, with awardee reporting enabling annual evaluation of outputs and future opportunities to leverage funding. Table 3 summarizes the objectives, outcomes and expected impacts of the Administrative Core.

Table 3. Summary the Administrative Core objectives, outputs, outcomes and impacts.

Administrative Core (AC): Increase Guam’s competitiveness and effectively manage research ecosystem growth			
Objectives	Outputs	Outcomes (Years 1 – 4)	Impacts (Years 5 – 8)
AC-1 Administration	- Annual workshops and quarterly open houses to facilitate networking and promote RFPs	- Office that actively engages research ecosystem members - Manages operations of cores and other NSF investments	- Increased connections among members of Guam’s research ecosystem (network analysis)
AC-2 STSC	- Quarterly committee meetings - Annual data collection	- Promotion of a STEM-oriented economy and workforce - Development of Guam’s research capacity / infrastructure	- STEM-based economic incubators implemented
AC-3 S&T Plan	- Annual plan review/update - Revision of plan in yr 3		
AC-4 Research Ecosystem Conferences	- Annual symposium	- Collaboration and integration of research efforts to develop research ecosystem	- Establishment of research centers and incubators - STEM workforce opportunities
AC-5 Collaborative Research Workshops	- Annual workshop - At least one competitive proposal annually	- Stimulate collaborations - Acquisition of funding to conduct research in emerging areas	- Established culture for cross-cutting team science - Utilization of diverse funding opportunities
AC-6 Communication Plan	- Establishment of science communications team (Yr1) - Written communication plan (Yr1) - Monthly newsletters / weekly media releases	- Effective communication between STSC, E-CORE, E-RISE, other NSF-funded projects - Outreach to Guam’s research ecosystem and the public (locally, nationally, and globally)	- Effective coordination of efforts across the research ecosystem - STEM-informed stakeholders and public
AC-7 Seed Funding	- At least two awards / year - Up to \$50K per award	- Acceleration of proof-of-concept phase for priority research areas	- Competitive grant proposals to NSF or other federal agencies

AC-1: Administration. The Administrative Core’s goal is to improve the competitiveness of Guam’s research and development capacity. This core provides ORIG with project management and leadership, support for the STSC, and facilitation of the review and implementation of Guam’s S&T Plan. This will be done through regular meetings, annual and on-demand

workshops and quarterly open houses that function to increase participation, build infrastructure, and promote development within Guam's research ecosystem. This core will facilitate collaborations in research and research infrastructure development through initiatives (e.g., proposals for NSF, other governmental agencies, industry, foundations, etc.) and promote research and development (R&D) opportunities and outcomes using a dedicated communications team. In addition, the Administrative Core will also support activities of the Research Support, the Academic Infrastructure and Research Facilities, and Higher Education Pathways cores.

AC-2: Science and Technology Steering Committee (STSC). The STSC shapes S&T policy to promote economic and workforce development in Guam and is a partner with ORIG. The STSC will work with ORIG to develop and promote policies that will increase the impact of R&D efforts upon Guam's economy, workforce development, and STEM education. The STSC will provide advice to Guam NSF EPSCoR and will also be responsible for the development, promotion and assessment of the Guam S&T Plan. A Coordinator will be hired to serve as liaison between ORIG and the STSC, and will work closely with the STSC leadership to achieve its goals and objectives.

AC-3: Guam Science and Technology Economic Diversity Plan (S&T Plan). The S&T Plan describes Guam's vision of improving STEM research and development capacity. The plan promotes economic diversification by building four core pillars of support. They are: 1) the development of a Micronesian / International Research Collaboratorium; 2) STEM capacity building; 3) development of STEM infrastructure; and 4) promotion of entrepreneurship and innovation across industries. The plan recognizes five areas of opportunity for Guam and the region that are supported by these pillars. They are 1) aquaculture, 2) information technology and cybersecurity, 3) renewable energy, 4) natural resources, sustainable development and cultivating a green economy. To succeed, there must be greater support for STEM education in Guam with an island-wide STEM support structure based upon the four pillars named above. This structure should: 1) build STEM capacity in educational institutions that prepares students for engaging in professions, the workplace and life in general using science and technology for personal and community advancement; 2) develop STEM infrastructure that is used in government-generated economic activities and private sector that prepares the island for a STEM-infused economic future; 3) create pathways for entrepreneurship and innovative industries through incubation activities and projects that engage in use-inspired research; 4) develop a STEM-aware workforce and promote a STEM-focused economic infrastructure; and 5) engage in a cycle of economic activities, and research and local support networks through the regional and international networks generated by an ORIG-sponsored Collaboratorium. ORIG, working through the STSC Coordinator, will support the STSC in an analysis of Guam's research and development strengths, opportunities and challenges, as well as monitor federal and territorial investments in these areas, and examine research directions that promote the goals of the S&T Plan. The analysis will begin in Year 1 with preparation of a plan update in Year 3.

AC-4: Research Ecosystem Conferences. The Administrative Core will organize an annual research symposium to increase connectivity between territorial and federally funded research

and STEM education projects in Guam. Participants will present project updates, initiate and develop collaborations, and provide information on funding and training opportunities. This symposium will be integrated in the annual UOG Conference on Island Sustainability (CIS).

AC-5: Collaborative Research Workshops. The Administrative Core will organize at least one workshop per year to bring faculty members, post-doctoral fellows, research associates, students and collaborators together to identify emerging research areas, potential collaborative research projects and potential funding sources, and develop plans for proposal preparation and submission. One or more smaller “on-demand” subject-specific workshops will also be organized. Workshop proposals will be solicited during each half of Year 1 through Year 4. Emphasis will be placed upon supporting teams capable of addressing S&T Plan priorities while submitting proposals to NSF.

AC-6: Communications Plan. A comprehensive communications plan will be developed for ORIG that emphasizes the project’s vision, mission, goals, messaging, opportunities, networking and connectivity, and annual reports. The plan will address diverse audiences and will utilize a variety of strategies and platforms to convey content to reach individuals in each sector. The communications plan will also provide information on upcoming conferences, workshops and seed funding proposal requests, as well as grant programs and opportunities. ORIG’s science communication team will engage diverse stakeholders and disseminate project information through frequent social media and press releases, and monthly newsletters. The E-CORE RII Communications Plan will be developed and implemented within the first six months of Year 1 of the project.

AC-7: Seed Funding. ORIG will provide Seed Funding Awards to individuals and teams across Guam’s research ecosystem. The maximum award amount for a single project will be \$75,000 for a duration of up to one year, but smaller proposals will be encouraged, thus allowing ORIG to support at least two projects annually beginning in Year 2. Seed funding awards are expected to support collaboration and innovation in emerging areas of research and priority areas identified in the S&T Plan. Priority will be given to proposals in the following areas: 1) opportunities for early career research scientists, 2) connecting individuals or laboratories on the project with networks of researchers conducting relevant research outside of Guam, 3) connecting individuals on Guam to form partnerships that address new areas of multidisciplinary research. Seed awards will be made through a competitive process conducted by a selection committee drawn from members of Guam’s research ecosystem, including the ORIG leadership team. Calls for proposals will be made annually prior to the beginning of each project year to allow for expenditures of allocated funds by the end of that year. Seed Funding Award review criteria will be developed with Awardees expected to submit quarterly reports on project progress and a final report at the end of the year. Expected outcomes of awards are peer-reviewed publications, white papers, or technical reports to disseminate knowledge to Guam’s stakeholder community. The intent is that awardees leverage the outcomes of seed funding activities to develop grant proposals for which support will be provided by ORIG.

AC: Activities and Milestones

Administrative Core	ACTIVITIES & MILESTONES				
AC-1: Administration	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Establish and staff ORIG Admin Team at Guam EPSCoR	Established				Donaldson; Dirige
Identify researchers on Guam and establish and maintain network	List updated; invite to networking meeting; network established	List updated; invite to networking meeting; network established	List updated; invite to networking meeting; network established	List updated; invite to networking meeting; network established	Donaldson; Bentlage; Chan; Leon Guerrero; Defngin
Promote collaborative efforts to develop competitive and inclusive proposal submissions	Schedule one general workshop at CIS and 1-2 smaller workshops in specialist area	Schedule one general workshop at CIS and 1-2 smaller workshops in specialist area	Schedule one general workshop at CIS and 1-2 smaller workshops in specialist area	Schedule one general workshop at CIS and 1-2 smaller workshops in specialist area	Donaldson
Establish a common, safe, student tracking mechanism for STEM Research Programs at UOG	A workshop to assess research program tracking needs has been implemented		A student tracking system has been designed and implemented, and available to research programs across EPSCoR Programs and other STEM programs at UOG		Donaldson; Leon Guerrero
Establish and regularly evaluate effectiveness of communication channels	Internal communications between various team members will utilize a variety of platforms that promote information transfer and connectivity. These include email, WhatsApp, and Zoom conferencing.				Donaldson; Dirige
Evaluation: Timely onboarding of staff, Network Analysis, increasing number of proposals submitted/accepted. Increasing amounts of funding.					
AC-2: Guam Science and Technology Steering Committee (GSTSC)	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Convene STSC, review membership, update bylaws	STSC meetings convened bimonthly; membership reviewed	STSC meetings convened bimonthly;	STSC meetings convened bimonthly;	STSC meetings convened bimonthly; membership	Defngin

	and clarified; bylaws updated	membership reviewed annually or as needed	membership reviewed annually or as needed	reviewed annually or as needed	
Identify emerging new areas of interest	Areas of Opportunities (AOs) reviewed, and updated if needed		Comprehensive review of AOs completed		Donaldson; Defngin
Develop connection / relationship between STSC, ECORE, ERISE	Develop communication plan	Disseminate information between stakeholders/partners	Disseminate information between stakeholders/partners	Disseminate information between stakeholders/partners	Donaldson; Bentlage; Defngin
Evaluation: Attendance at STSC Meetings, timely member recruitment, retention and replacement. Annual review and updates.					
AC-3: Guam Science and Technology Plan (GSTP)	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Devise analysis measures to evaluate GSTP	GSTP analysis measures devised			GSTP analysis completed by end of award year 2029	Donaldson; Defngin
Review R&D investments in Guam	R&D investment indexes reviewed and updated annually	Defngin			
Revise and issue S&T Plan		Potential updates to GSTP identified		S&T plan revisions have been collected by end of award year 2029	STSC; Defngin
Evaluation: Timely annual data gathering, analysis and revisions.					
AC-4: Guam Research Ecosystem Conference	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Organize research ecosystem conference	Staff and organize meeting held; venue and logistics set; agenda set; abstract review committee established; abstracts called and reviewed	Staff and organize meeting held; venue and logistics set; agenda set; abstract review committee established; abstracts called and reviewed	Staff and organize meeting held; venue and logistics set; agenda set; abstract review committee established; abstracts called and reviewed	Staff and organize meeting held; venue and logistics set; agenda set; abstract review committee established; abstracts called and reviewed	Donaldson; Dirige
Conduct research ecosystem conference		Symposia at CIS		Symposia at CIS	Donaldson

Prepare and publish conference report	Editorial board established; guidelines distributed; draft report based upon extended abstracts prepared; draft edited; report published digitally and distributed	Editorial board established; guidelines distributed; draft report based upon extended abstracts prepared; draft edited; report published digitally and distributed	Editorial board established; guidelines distributed; draft report based upon extended abstracts prepared; draft edited; report published digitally and distributed	Editorial board established; guidelines distributed; draft report based upon extended abstracts prepared; draft edited; report published digitally and distributed	Donaldson; Dirige
Evaluation: Overall / Student ORIG attendance and presentations.					
AC-5: Guam Collaborative Research Workshops	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Request proposals for workshop	Research theme(s) and funding opportunities identified; proposals requested and assessed; researchers invited	Research theme(s) and funding opportunities identified; proposals requested and assessed; researchers invited	Research theme(s) and funding opportunities identified; proposals requested and assessed; researchers invited	Research theme(s) and funding opportunities identified; proposals requested and assessed; researchers invited	Donaldson; Leon Guerrero; Bentlage
Support and conduct workshop	Workshop organized; facilitator identified and recruited; workshop held	Workshop organized; facilitator identified and recruited; workshop held	Workshop organized; facilitator identified and recruited; workshop held	Workshop organized; facilitator identified and recruited; workshop held	Donaldson; Dirige
Prepare and publish workshop report	Report prepared, published digitally, and distributed	Review board established; report prepared, published digitally, and distributed	Review board established; report prepared, published digitally, and distributed	Review board established; report prepared, published digitally, and distributed	Workshop participants
Evaluation: Increasing number of proposals submitted/accepted and presented.					
AC-6: Guam ORIG Communication Plan	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Communications plan	Development and implementation				Donaldson; Bentlage
E-CORE website		Create and post content online followed by regular updates; host content for other NSF EPSCoR investments in the jurisdiction			Sumalpong; Zapata
STSC annual briefing	STSC annual briefing submitted in conjunction with CIS conference	STSC annual briefing submitted in conjunction with CIS conference	STSC annual briefing submitted in conjunction with CIS conference	STSC annual briefing submitted in conjunction with CIS conference	Defngin

Disseminate outcomes and impacts to stakeholders and public		Present at CIS conference		Present at CIS conference		Present at CIS conference		Present at CIS conference	Donaldson; Bentlage
Evaluation: Increasing social media views, hits. Dissemination of Annual Report and Briefing. ORIG attendance (Lead/GSTSC/Student) at CIS.									
AC-7: Seed Funding Awards	Year 1		Year 2		Year 3		Year 4		Responsible Parties
Request for proposals for seed awards	Criteria determined; review committee established; RFP prepared and advertised		RFP reviewed and updated		RFP reviewed and updated		RFP reviewed and updated		Donaldson; Dirige; Bentlage
Review proposals		Proposals reviewed and recommendation made		Proposals reviewed and recommendation made		Proposals reviewed and recommendation made			Donaldson
Fund proposals		Awardees notified; funds transferred		Awardees notified; funds transferred		Awardees notified; funds transferred			Dirige
Annual seed grant reports				Annual progress report provided by awardee; reviewed by E-CORE team		Annual progress report provided by awardee; reviewed by E-CORE team		Annual progress report provided by awardee; reviewed by E-CORE team	Donaldson
Evaluation: Number and amount of Seed Funding. Timely completion of projects. SEED research published.									

Research Support Core (RSC)

Goal: Coordinate Guam’s research ecosystem.

The overarching goal of the Research Support Core is to coordinate, facilitate, and manage activities across Guam’s research ecosystem by providing administrative support to sponsored projects (e.g., E-RISE RII) within the jurisdiction, and addressing bottlenecks in current awards management support infrastructure that create barriers to growing the research enterprise in Guam. The core’s objectives are designed to increase the number of awards and funding, especially from NSF, made to researchers in Guam and to ensure that these awards are managed efficiently. To do so, pre-award guidance will be provided to researchers, especially early career researchers. Guidance in grantsmanship will be provided and will include post-award activities (implementation and management). Alignment of research activities with jurisdictional and national priorities will be promoted and prioritized. Table 4 summarizes the objectives, outcomes and expected impacts of the Research Support Core.

Table 4. Summary of Research Support Core objectives, outputs, outcomes, and impacts.

Research Support Core (RSC): Coordinate Guam’s research ecosystem			
Objectives	Outputs	Outcomes (Years 1 – 4)	Impacts (Years 5 – 8)
RSC-1 Grant Management	- Manage E-RISE RII and other NSF awards in Guam	- Increased number of multidisciplinary proposals	- Funding for the establishment of centers or incubators identified in the S&T Plan is secured
RSC-2 Grant Coordination	- Support 2-3 research teams annually	- Increased number of proposals that address newly identified areas of research relevant to Guam	- Optimized research ecosystem that is growing, cutting edge and inclusive
RSC-3 STSC-Coordination	- Annual update of STEM indicators in S&T Plan - Support data collection and reporting across NSF funded projects	- NSF funding in UOG’s annual research awards portfolio grows from 20 / 25% to 30 / 35%	

RSC-1: Grant Management – Administrative, Fiscal, and Scientific Operations. The Guam NSF EPSCoR administrative office at UOG will be responsible for the management of all administrative, fiscal and scientific operations of ORIG. The administrative office will also provide similar services for E-RISE RII projects, and to members of Guam’s research ecosystem who submit proposals to or receive grant awards from NSF. ORIG will partner with RCUOG and the UOG Center for Research and Innovation (CRI) to ensure rapid and efficient responses to the needs of grants management. Activities will be coordinated with annual Guam Research Ecosystem Conferences and Guam Collaborative Research Workshops.

RSC-2: NSF Research Award Coordination. The Guam NSF EPSCoR Administrative Office will act as a grant clearinghouse for the development and submission of proposals to NSF from members of Guam’s research ecosystem. It will also provide knowledge of career development opportunities for early career researchers and support training in effective grantsmanship.

Partnering with UOG CRI, ORIG will provide information on NSF programs and proposal announcements that will be disseminated across Guam's research ecosystem by the ORIG communications team. Post-award, project implementation, financial management, and reporting will be supported as well. Expected outcomes include a demonstrable increase in proposal submissions and awards within the research ecosystem.

RSC-3: Coordination of ORIG with the Guam Science and Technology Steering Committee. As indicated in AC-2, above, a Coordinator will be hired to serve as a link between the STSC and ORIG. The Coordinator will provide support to both the STSC and E-RISE RII research team for project management, regular S&T Plan reviews and revisions, as well as scheduling and assisting STSC leaders in the conduct of meetings, and in the performance of STSC administrative duties. Outcomes include increased capacity in handling research projects and furtherance of development that grows a STEM-oriented economy.

RSC: Activities and Milestones

Research Support Core	ACTIVITIES & MILESTONES				
RSC-1: Grant Management-Administrative, Fiscal, and Scientific Operations	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Onboard E-CORE funds with RCUOG	Funds placed on account		Second allotment funds placed on account		Dirige; Donaldson
Hire staff	Staff hired at onset of project				Janet Dirige Terry Donaldson
Perform operational tasks	Recruitment, payroll, procurement, accounting, travel requests, reviews, etc., performed in a timely manner	Recruitment, payroll, procurement, accounting, travel requests, reviews, etc., performed in a timely manner	Recruitment, payroll, procurement, accounting, travel requests, reviews, etc., performed in a timely manner	Recruitment, payroll, procurement, accounting, travel requests, reviews, etc., performed in a timely manner	Dirige; Donaldson
Provide data to Project Evaluator	Project data collected, organized and submitted to Project Evaluator by deadline	Project data collected, organized and submitted to Project Evaluator by deadline	Project data collected, organized and submitted to Project Evaluator by deadline	Project data collected, organized and submitted to Project Evaluator by deadline	Dirige; Donaldson
Annual report	Report data solicited with deadline given, received, and processed; report prepared by PI, co-PIs, PA, and staff; report submitted to NSF; evaluator's report received, reviewed and submitted to NSF with annual report	Report data solicited with deadline given, received, and processed; report prepared by PI, co-PIs, PA, and staff; report submitted to NSF; evaluator's report received, reviewed and submitted to NSF with annual report	Report data solicited with deadline given, received, and processed; report prepared by PI, co-PIs, PA, and staff; report submitted to NSF; evaluator's report received, reviewed and submitted to NSF with annual report	Report data solicited with deadline given, received, and processed; report prepared by PI, co-PIs, PA, and staff; report submitted to NSF; evaluator's report received, reviewed and submitted to NSF with annual report	Dirige; Donaldson
Evaluation: Timely staff onboarding. Effective funds management, and purchase orders.					

RSC-2: NSF Research Grant Coordination	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Promote funding opportunities	Prepare and distribute announcements of opportunities to the research community	Prepare and distribute announcements of opportunities to the research community	Prepare and distribute announcements of opportunities to the research community	Prepare and distribute announcements of opportunities to the research community	Donaldson; Bentlage
Assist in grant proposal preparation	Assist PIs in proposal preparation (budgets, understanding of RFPs, logistics for grant submission)	Assist PIs in proposal preparation (budgets, understanding of RFPs, logistics for grant submission)	Assist PIs in proposal preparation (budgets, understanding of RFPs, logistics for grant submission)	Assist PIs in proposal preparation (budgets, understanding of RFPs, logistics for grant submission)	Bentlage; Dirige
Coordinate grant support services	Co-develop E-CORE grant support services with UOG Research Corporation and Center for Research and Innovation				Dirige; Bentlage
Evaluation: Increasing number of proposals submitted and awarded.					
RSC-3: Coordination of ORIG with the Guam Science and Technology Steering Committee	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Hire S&T Coordinator	Has been hired (Y1)				Dirige; Donaldson
Assist STSC with tasks	STSC tasks identified, and acted on	STSC task workflow created, and tasks acted on	STSC tasks acted on	STSC tasks acted on	Defngin
Schedule, coordinate and conduct STSC meetings	STSC schedules identified; six (6) meetings coordinated and conducted	STSC schedules reviewed; six (6) meetings coordinated and conducted	STSC schedules reviewed; six (6) meetings coordinated and conducted	STSC schedules reviewed; six (6) meetings coordinated and conducted	Defngin
Evaluation: Timely staff onboarding, number of new partners submitting proposals/number of proposals submitted.					

Academic Infrastructure and Research Facilities Core (AIRFC)

Goal: Support facilities and infrastructure improvements.

Guam’s S&T Plan identified priority areas for research to support economic diversification in the jurisdiction, but a thorough assessment of facilities and infrastructure supporting priority research areas identified by the STSC is lacking. ORIG will assess research facility needs and generate white papers and strategic planning documents that will inform leadership of UOG/GCC and the STSC about the state of Guam’s research ecosystem capacity. Outcomes of these activities will be NSF planning grants and proposals to secure funding for facility renovation or construction to lay the foundation for growing research capacity aligned with jurisdictional priorities. To address Guam’s gaps in research cyberinfrastructure support, ORIG will expand professional development opportunities for UOG’s Office of Information Technology (OIT) through training, certification, and strategic partnership opportunities. OIT leadership will receive support to participate in a workshop or conference annually and OIT staff will receive support to earn 1–2 relevant technical certificates annually. ORIG will broaden access to research computing resources across Guam’s STEM community by conducting a Year 1 cyberinfrastructure capacity and needs assessment, followed by annual assessment reviews to inform development of a cyberinfrastructure strategic plan by Year 3. The key outcomes of this core will include strategic planning documents, planning grant proposals, and white papers to address gaps in Guam research ecosystem capacity. Table 5 summarizes the objectives, outcomes and expected impacts of the Academic Infrastructure and Research Facilities Core.

Table 5. Summary of Academic Infrastructure and Research Facilities Core objectives, outputs, outcomes, and impacts.

Academic Infrastructure and Research Facilities Core (AIRFC): Support facilities and infrastructure improvements			
Objectives	Outputs	Outcomes (Years 1 – 4)	Impacts (Years 5 – 8)
AIRFC-1 New and Improved Facilities	<ul style="list-style-type: none"> - 1 planning grant proposal annually - 1 white paper per grant 	<ul style="list-style-type: none"> - Assessment of status of facilities and identification of needs to support STEM growth 	<ul style="list-style-type: none"> - Development and submission of proposals to fund facility improvements
AIRFC-2 Cyber-infrastructure	<ul style="list-style-type: none"> - Support attendance of 1 conference for CIO annually - Access to online certificate programs for UOG OIT staff 	<ul style="list-style-type: none"> - Cyberinfrastructure strategic plan for support of STEM research in place is developed in Year 1 - MOAs in place for strategic partnerships - Submission of 2 proposals 	<ul style="list-style-type: none"> - Increased institutional awareness and support for STEM cyberinfrastructure - Annual submissions of at least 1 proposal to seek funding
AIRFC-3 Research Computing	<ul style="list-style-type: none"> - Quantitative assessment of cyberinfrastructure - Quarterly meetings in Year 1 		

AIRFC-1: Leveraging resources to create new and improve existing research facilities.

ORIG will conduct an inventory assessment of research facilities at UOG, GCC, and the broader research ecosystem. The goal is to identify opportunities for developing shared usage

agreements and identify areas for strategic investment in facilities and equipment. Two deans are part of the project leadership team which will facilitate identification of research facility needs and opportunities in collaboration with the UOG and GCC campus communities. Assessment outcomes will be communicated to the STSC and summarized in a white paper for dissemination to the STSC and other stakeholders. The outcomes will also be used to develop full proposals for submission to NSF or other funders. These proposals will leverage existing assets to obtain funding for renovation of existing facilities through alteration and renovation, or the construction of new facilities. Outcomes include planning grants and/or full proposals.

AIRFC-2: Strengthening a cyberinfrastructure workforce through training and partnerships. Like other EPSCoR jurisdictions, Guam has traditionally invested less in cyberinfrastructure than other institutions in non-EPSCoR jurisdictions. This has led to a gap in networking capacity, computer infrastructure, data storage and transfer capacity, and technical support. ORIG will provide professional development opportunities for personnel working in support of campus IT and research computing by providing access to training and certification courses. As a small jurisdiction with limited resources, strategic partnerships play a crucial role in growing STEM capacity. To address this, funding will be provided by ORIG for attendance of one (1) workshop or conference annually by UOG OIT leadership. In addition, online course access will be provided to allow each member of OIT technical staff to earn 1 or 2 certificates with relevant IT skills annually.

AIRFC-3: Growing research computing capacity. At present, users of research computing resources at UOG are largely limited to faculty, students, and postdocs in the biological sciences working with large-scale genomics datasets. ORIG will expand this user base to the broader STEM research community on Guam. Faculty members across STEM disciplines from UOG and GCC, and the UOG OIT leadership team will be invited to participate in planning meetings to evaluate needs for cyberinfrastructure and identify shortcomings in currently available systems. To facilitate this assessment, the Campus Research Computing Consortium (CaRCC) Research Computing and Data (RCD) Capabilities Model will be used to evaluate the state of research computing cyberinfrastructure in Year 1 followed by annual reviews and updates as necessary. The goal will be to develop a strategic plan for cyberinfrastructure in support of research by Year 3. Outcomes from these planning meetings will lay the foundation for identification of existing and new partnerships to be developed under AIRFC-2 and identification of funding opportunities (e.g., NSF CC*) to seek support for improvement and sustainability of STEM-related cyberinfrastructure activities in Guam.

AIRFC: Activities and Milestones

Academic Infrastructure and Research Support Core	ACTIVITES & MILESTONES				
AIRFC-1: Leveraging resources to create new and improve existing research facilities	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Conduct an inventory assessment for all research units	UOG facilities assessed	GCC facilities assessed	Ecosystem wide assessment		Leo Guerrero; Bentlage
Disseminate assessment outcomes to STSC		UOG assessment provided to S&T committee	UOG+GCC assessment provided to S&T Committee	Ecosystem-wide assessment provided to STSC	Leo Guerrero; Bentlage
Write reports and develop memoranda of understanding for shared use of facilities / equipment			Whitepaper covers existing facilities, identifies shared resources, needs, opportunities for development of shared usage agreements	at least 1 shared resource agreement in place	Leo Guerrero; Bentlage
Conduct strategic planning workshop(s)			Identify priority areas for funding and funders; develop proposal outlines		Donaldson; Leon Guerrero; Bentlage
Submit proposals			At least one (1) proposal submitted	At least one (1) proposal submitted	Leon Guerrero; Bentlage
Evaluation: Needs assessment conducted; strategy developed for shared use of existing facilities and funding opportunities for new infrastructure identified.					

AIRFC-2: Strengthening a cyberinfrastructure workforce through training and partnerships	Year 1		Year 2		Year 3		Year 4		Responsible Parties
Provide access to online training and certification courses for OIT staff		Access to third-party training provider supported							Bentlage; Dela Cruz
Support travel to conference or workshop by OIT leadership	One (1) trip supported		One (1) trip supported		One (1) trip supported		One (1) trip supported		Bentlage; Dela Cruz; Dirige
Evaluation: Increased competencies of staff and new collaborations.									
AIRFC-3: Growing research computing capacity	Year 1		Year 2		Year 3		Year 4		Responsible Parties
Evaluate state of research computing capacity		Conduct inventory audit		Conduct inventory audit		Conduct inventory audit		Conduct inventory audit	Dela Cruz; Bentlage
Develop a research computing strategic plan		Meet with UOG leadership and stakeholders to seek input on plan			Finalize plan				Dela Cruz; Bentlage
Identify funding sources and apply for funding opportunities					1 collaborative proposal		1 collaborative proposal		Dela Cruz; Bentlage
Evaluation: Cyberinfrastructure strategic plan in place and mechanism for regular capacity assessment in place.									

Higher Education Pathways Core (HEC)

Goal: Develop STEM pathways to broaden participation.

The Higher Education Pathways Core (HEC) will strengthen STEM talent pathways by providing structured research training, mentoring, and professional development for undergraduate and graduate students. Objectives and activities of the HEC are designed to increase degree completion and grow a skilled workforce that contributes to the island’s economic diversification and growth. Each year, eight UOG and GCC undergraduates will engage in a year-long mentored fellowship program that provides structured research training and dissemination of research outcomes by fellows at conferences that will provide professional development opportunities for participants. Ongoing programming review will be used to improve STEM pathway development and accountability of participants to achieve the long-term goal of increasing STEM degree completion at Guam’s institutions of higher education. In addition to supporting undergraduate students, each year, four UOG STEM graduate students will receive up to two years of financial and professional development support. This support includes stipends, tuition waivers, and opportunities for conference attendances. Undergraduate and graduate fellows will participate in a structured Research Mentoring Ecosystem with monthly seminars, skill-building in research, communication training, and career development. An integrated near-peer mentoring system will improve student professional preparedness and retention in STEM pathways. Table 6 summarizes the objectives, outcomes and expected impacts of the Higher Education Pathways Core.

Table 6. Summary of Higher Education Pathways Core (HEC) activities, outputs, outcomes, and impacts.

Higher Education Pathways Core (HEC): Develop STEM Pathways for Workforce Development			
Objectives	Outputs	Outcomes (Years 1 – 4)	Impacts (Years 5 – 8)
HEC 1 Undergraduate research experience (SRE)	<ul style="list-style-type: none"> - 8 year-long research experiences for undergraduate students - Attendance of at least 1 conference per participant 	<ul style="list-style-type: none"> - STEM student participation and graduation rates increase compared to pre-award baseline - Transfers from GCC to UOG, BS to MS, BS/MS to PhD increase compared to pre-award baseline 	<ul style="list-style-type: none"> - More STEM research environments - Increased local expertise in Guam’s research ecosystem - Increased number of students in STEM fields and research - Increased number of students considering / entering STEM Careers
HEC 2 Graduate research experience (GRA)	<ul style="list-style-type: none"> - 4 graduate students supported annually - Attendance of at least 1 conference per participant 	<ul style="list-style-type: none"> - Increase understanding value of self in science spaces 	
HEC 3 Research Mentor Ecosystem (RME)	<ul style="list-style-type: none"> - Monthly mentoring and professional development seminars 	<ul style="list-style-type: none"> - Increase understanding value of self in science spaces 	

HEC-1: Undergraduate Research Experiences (SRE). Each year, eight (8) total UOG and GCC undergraduates will start their year-long (Jan – Dec) research fellowship. The year-long fellowship includes placement in a research lab with a UOG faculty research mentor for guidance toward an independent research study. Fellow's studies are proposed via a poster presentation at a local/regional island sustainability conference in April and submitted to present their full study at a national conference in October. Lastly, the HEC leads and program associate team will engage in an ongoing review of program design and documents. This review will assist in monitoring and refining the GCC-UOG pathway as well as program efficiency and participant accountability. The long-term impact of HEC-1 is to increase GCC-UOG matriculation and graduation rates to support workforce development.

HEC-2: Graduate Research Experiences (GRA). Each year, four (4) UOG graduate students will be selected for up to two years of financial support. This support includes tuition assistance and a stipend for the duration of their ORIG fellowship. Additionally, graduate fellows will receive guidance and mentoring to include support for local and regional, and national conference attendance and presentation. Lastly, the HEC leads and program associate team will engage in an ongoing review of the program design and documents. This review will assist in monitoring and refining documents for efficiency and participant accountability. The long-term impact of HEC-2 is to increase graduation rates to support workforce development.

HEC-3: Research Mentor Ecosystem (RME). In addition to research experience, the eight (8) year-long undergraduate fellows will engage in a monthly Research Mentoring Ecosystem Seminar (RME). Seminars start with a family orientation in January. This is designed to celebrate participant selection and to inform families of the expectations, so they understand the value and magnitude of this opportunity. Another orientation includes a pre-conference travel orientation which also includes families. This is designed to discuss travel and conference planning, safety, and accountability. Undergraduate fellows also attend monthly RME seminars. These are designed to build connections within and across research experiences and build an understanding of their value in science spaces, academia, and careers in STEM. Seminars also guide students with poster design, science communication in social media and conference presentation, and how to network and conference.

Graduate RME seminars are designed to timely meet the needs of graduate students as they progress through their program. For example, deliberately scheduling topics such as proposal support, networking skills, interviewing skills, conference presentation, and grant writing contributes to the design of each semester's seminar agendas. Graduate seminars also leverage undergraduate seminars and early career seminars to support near peer mentoring and to maximize student experience. Graduate seminars will include the 4 ORIG graduate fellows 8-10 graduate research assistants supported by Guam's E-RISE RII project. Designed into the undergraduate and graduate seminars is impacting fellow awareness in their value in science spaces, academia, and the workforce.

HEC: Activities and Milestones

Higher Education Pathways Core	ACTIVITIES & MILESTONES				
HEC-1: Undergraduate Research Experiences (SRE)	Year 1	Year 2	Year 3	Year 4	Responsible Parties
Draft / review / refine programming	Implement SRE programming / review processes Draft pathway plans for GCC-UOG What already exists; how can we improve? Develop mechanism to track GCC-UOG matriculation in STEM	Refine programming Refine GCC-UOG pathways Investigate roadblocks to student matriculation Monitor GCC-UOG matriculation rates in STEM	Explore expanding other GCC program matriculation to UOG Record of participant continuation in the STEM Pathway (additional REU, fellowships, leadership roles, etc) Monitored GCC-UOG matriculation rates		Sangueza; Chan; Magpuri-Lavell
Draft / review / refine programming documents.	Draft ECORE participant documents (onboarding, surveys, plans, etc)	Review and refine participant documents	Record of participant continuation in the STEM Pathway (additional REU, fellowships, leadership roles, etc)		Sangueza; Chan; Magpuri-Lavell
Recruit and place 8 students in research labs annually	Recruit Cohort 1	Recruit Cohort 2	Recruit Cohort 3	Recruit Cohort 4 (pending 3-year renewal)	Sangueza; Chan; Magpuri-Lavell
Engage students in year-long research projects with a mentor		Cohort 1 Engaged in yearlong research project with faculty mentor	Cohort 2 Engaged in yearlong research project with faculty mentor	Cohort 3 Engaged in yearlong research project with faculty mentor	

Support student presentations at regional conferences		Cohort 1 Conference support as seen in HEC 3 seminars		Cohort 2 Conference support as seen in HEC 3 seminars		Cohort 3 Conference support as seen in HEC 3 seminars		Sangueza; Chan; Magpuri-Lavell
Support student presentation/attendance at a national conference		Cohort 1 Conference support as seen in HEC 3 seminars Over 50% accepted presentation rates		Cohort 2 Conference support as seen in HEC 3 seminars Over 50% accepted presentation rates		Cohort 3 Conference support as seen in HEC 3 seminars Over 50% accepted presentation rates		Sangueza; Chan; Magpuri-Lavell
Evaluation: Increasing graduation and matriculation rates, fit of mentor/mentee match, participation and presentations at conferences.								
HEC-2: Graduate Research Experiences (GRA)	Year 1	Year 2	Year 3	Year 4	Responsible Parties			
Recruit 4 graduate students annually	Recruit 4 GRA students who need 1-2 years of support to complete their graduate program	Recruit 4 GRA students who need 1-2 years of support to complete their graduate program	Recruit 4 GRA students who need 1-2 years of support to complete their graduate program		Cheryl Sangueza- Lead Michael Chan Theresa Magpuri-Lavell			
Draft/review of Individual Development and Mentoring Plans	Annual review of Individual Development and Mentoring Plans							Cheryl Sangueza- Lead Michael Chan Theresa Magpuri-Lavell
Support student presentations/attendance at Regional Conferences		Conference support as seen in HEC 3 seminars	Conference support as seen in HEC 3 seminars	Conference support as seen in HEC 3 seminars		Cheryl Sangueza- Lead Michael Chan Theresa Magpuri-Lavell		
Support student presentations/attendance at national conferences		Conference support as seen in HEC 3 seminars	Conference support as seen in HEC 3 seminars	Conference support as seen in HEC 3 seminars		Cheryl Sangueza- Lead Michael Chan Theresa Magpuri-Lavell		

Evaluation: Increasing graduation and matriculation rates, fit of mentor/mentee match, participation and presentations at conferences.

HEC-3: Research Mentor Ecosystem (RME)	Year 1	Year 2	Year 3	Year 4	Responsible Parties	
Facilitate Orientations for SRE participants		Cohort 1 Beginning program orientations, family orientations, and conferencing orientations	Cohort 2 Beginning program orientations, family orientations, and conferencing orientations	Cohort 3 Beginning program orientations, family orientations, and conferencing orientations		Sangueza; Chan; Magpuri-Lavell
Engage SRE in RME seminars		Monthly RME seminars and Near Peer engagement that offer training and professional development	Monthly RME seminars and Near Peer engagement that offer training and professional development	Monthly RME seminars and Near Peer engagement that offer training and professional development		Sangueza; Chan; Magpuri-Lavell
Engage GRA in RME seminars		Regularly scheduled graduate RME seminars and Near Peer mentoring training and professional development Opportunities include connecting with SRE seminars and early career seminars	Regularly scheduled graduate RME seminars and Near Peer mentoring training and professional development Opportunities include connecting with SRE seminars and early career seminars	Regularly scheduled graduate RME seminars and Near Peer mentoring training and professional development Opportunities include connecting with SRE seminars and early career seminars		Sangueza; Chan; Magpuri-Lavell
Increase understanding value of self in science spaces		Increase understanding of science spaces as per design of RME seminar design	Increase understanding of science spaces as per design of RME seminar design	Increase understanding of science spaces as per design of RME seminar design		Sangueza; Chan; Magpuri-Lavell

Evaluation: Increase understanding of science spaces, academia, and careers in STEM.

External Evaluation

Sara Bolduc Planning and Evaluation, LLC (SBPE) has been retained as an independent evaluator for the University of Guam's E-CORE RII: Optimizing Research Infrastructure in Guam (ORIG) Award. Sara Bolduc, Ph.D., president of SBPE, is a Professional Evaluation Specialist with over 15 years of experience leading program evaluations in the United States, Territories and US-Affiliated Pacific Islands. Dr. Bolduc and her team have worked as research and evaluation consultants on a range of projects throughout the Pacific region since 2009 including external evaluation services for the two RII Track-1 awards in Guam, two active EPSCoR Awards in Hawai'i (Track 2 RII-FEC program, and RII BEC), an NSF RISE~ Collaborative Implementation Grant, an NSF INCLUDES Design and Development Launch Pilot, a National Cancer Institute U54 CPACHE Award, and several other federally-funded research awards (CDC, USAID). Dr. Bolduc also serves on the American Evaluation Association STEM Topical Interest Group (TIG) Leadership Committee and is currently Vice President of the Hawai'i-Pacific Evaluation Association (H-PEA). She and her team have expertise in programming and policy evaluation, STEM evaluation, survey design and implementation, qualitative and quantitative methods, culturally responsive evaluation, facilitation, community outreach, and strategic and environmental planning.

The external evaluation of ORIG will consist of a formative (process) component, examining the project's development to suggest adjustments towards improvement. The formative assessment will include regular remote and in-person participant interviews and listening sessions. The evaluation will also include a summative component, tracking quantifiable output/outcome data to assess the degree to which the Guam E-CORE project is meeting its stated goals over the entire 4-year award period (July 1, 2025 to June 30, 2029). Together, the formative and summative evaluation components will ensure an unbiased, rigorous, expert assessment of progress towards expected long-term goals, namely, the extent to which E-CORE has successfully endeavored toward galvanizing Guam's research ecosystem to the benefit of Guam's economy and livelihoods. SBPE will share the findings that emerge from the formative and summative assessments and provide recommendations to E-CORE leadership via in-person and remote meetings, frequent emails and phone conversations, and the delivery of an Annual External Evaluation Report. The Evaluation team will also work closely with ORIG to compile and report program data in the EPSCoR Data Outcomes Collection System (EDOCS).

SBPE will assess each of the Outcomes outlined in Tables 3-5 and tables summarizing activities and milestones above, for each of ORIG's Cores. The core evaluation questions for ORIG are as follows:

- To what extent has Guam's research ecosystem been strengthened, and expanded by an interconnected regional network that extends beyond the jurisdiction?
- How has the STEM research capacity been enhanced through the development of advanced facilities and improved cyberinfrastructure?
- To what extent has ORIG developed STEM Pathways for Workforce Development?

RISK MANAGEMENT PLAN

ORIG's complexity and scale over the next four years has the potential to encounter various degrees of risk that could pose difficulties in meeting project goals. The ORIG Risk Mitigation Plan, derived from a SWOT analysis (Appendix A), addresses likely risks and threats faced by the project and provides strategies towards mitigating problems caused by these risks. A succession plan is provided also that addresses steps necessary to deal with vacancies in key leadership and other positions) should they arise.

Overview

This ORIG risk mitigation plan provides a strategy for addressing internal weaknesses and external threats identified across all four cores of the project and the S&T Committee: AC, RSC, AIRFC, HEC, and STSC. The risk mitigation strategies described here address internal weaknesses and external threats identified in the project's SWOT analysis that have medium to high potential impacts on the project. The approach emphasizes flexibility, adaptability, and resilience in the face of operational, logistical, and environmental challenges.

Risk Mitigation – Administrative Core (AC)

Guam's relatively small population, economy, and workforce (compared to other EPSCoR jurisdictions) create staffing challenges that can affect the success of the project. The potential for staff turnover exists because of migration off-island or competition with the private sector or federal government for experienced employees. This challenge can be mitigated by reliance upon a pool of highly experienced administrative employees within the system developed by UOG and its Research Corporation. Expertise within the private sector can also be tapped thanks to formal and informal relationships and networks developed within the business and educational sectors, and by recommendations from members of the Guam STSC. Opportunities for training exist and provide pathways for career development that promote employee retention as well. Challenges within Guam's Research Ecosystem can include the reluctance to participate in the development of collaborative or multidisciplinary research projects. This reluctance may result from official policy or personal preferences. Conducting smaller, single focus workshops, in addition to larger events, all meant to address specific research questions or logistical problems for different groups of researchers, can overcome barriers by negotiation. These can lead to the development of team grant proposals that, if funded, can be managed effectively by ORIG to the benefit of all participants. The potential for poor communication between different players internal and external to the project can be met by reliance upon effective methods developed for previous EPSCoR projects coupled with the utilization of new methods. The threat of funding cuts and environmental impacts (e.g., typhoons, pandemics) exists but can be offset by utilization of effective past practices and the utilization of alternative resources that allow for navigation around barriers created by these impacts.

Risk Mitigation – Research Support Core (RSC)

Guam's unique geographical location (relative to most EPSCoR jurisdictions) in relation to transportation costs, the unintended but difficult barriers to procurement imposed by vendors with a poor grasp of US territorial affiliation, create logistical problems that can negatively impact the project. In addition, various internal challenges that affect timely processing of purchase or other requests may affect the project as well. Expertise gained from previous NSF EPSCoR projects, plus closer coordination with RCUOG and UOG's Business Office, will be utilized to facilitate procurement and other requests and thus reduce delivery times so that ORIG, Guam E-RISE RII and other projects can effectively meet their goals and objectives. The availability and amounts of funding offered by NSF and other agencies, the reluctance of some researchers to apply for funding from sources outside of their normal experience, and the reluctance of some to participate in collaborative or multidisciplinary projects, can weaken Guam's Research Ecosystem. These can be offset by ORIG's assessment of potential resources, the conduct of planning workshops, and the provision of training and assistance in proposal preparation to researchers. Because the availability of federal funds may be constrained, emphasis will also be placed upon helping researchers to seek funding from non-federal sources. Project start-up times for ORIG but also for new projects being stimulated within Guam's Research Ecosystem by ORIG, may be delayed because of the need to incorporate new processes into project management. The use of effective planning, training, communication and one-to-one relationships will avoid delays that impact project success. Education and effective communication within the Ecosystem will dispel the belief that collaboration is competition for resources. The impact of natural disasters can be mitigated by reliance upon practices that have been effective previously. Losses of skilled researchers from the Research Ecosystem can be offset by collaboration with the Guam STSC in promoting opportunities for career advancement coupled with increased levels of funding as a result of increased grant proposal submissions. Shifts in political priorities that can negatively impact the Research Ecosystem can be offset by assessment of award availability and dissemination of information with a focus upon alternative sources of funding.

Risk Mitigation – Academic Infrastructure and Research Facilities Core (AIRFC)

Participation in ORIG workshops (one large annually, plus smaller targeted workshops) will provide researchers with the tools they need to produce competitive collaborative or multidisciplinary proposals. Some researchers may be reluctant to participate, however, because they prefer individual projects or they are reluctant to seek funding outside of their normal experience. ORIG will seek to assist everyone by using a large workshop to focus upon the mechanics of proposal preparation and smaller workshops focusing on specific funding targets. Education and effective communication are instrumental in these efforts. Failure to secure funding or support from the broader community will be met by leveraging or seeking other sources of support coupled with education and emphasis upon prior successes and their positive contributions to Guam's Research Ecosystem. UOG's Office of Information Technology must compete with the private, government and other sectors for qualified personnel. Competitive salaries and the opportunity for career advancement are often the drivers that promote personnel turnover. ORIG will promote within UOG the necessity of providing

competitive salary packages for qualified personnel but also the need for the provision of additional training opportunities that increase expertise at OIT and employee satisfaction. ORIG can provide grant preparation training, guidance and assistance, even in a climate of reduced funding opportunities, to help meet these needs. The promotion of cyberinfrastructure development in UOG and in Guam's research and STEM community, may not have full buy-in by all players because competition rather than collaboration may be a barrier. Education, communication and negotiation are important tools that ORIG will employ to promote collaborative efforts to meet Guam's needs. Again, loss of or reduction of federal funds are obstacles that ORIG will address by promoting alternative strategies and prioritization of effort.

Risk Mitigation – Higher Education Pathways Core (HEC)

The HEC faces several moderate to high operational and external risks that could impact program continuity and student outcomes. Primary internal weaknesses include the sustainability of student enrollment and timely completion of degree programs. To mitigate this challenge, the HEC team proactively monitors recruitment strategies, strengthens academic advising and mentoring, and coordinates closely with faculty mentors to ensure student progression and retention. Externally, the HEC faces medium-to-high risks from natural disasters and potential future pandemics, which may disrupt academic schedules and program delivery. Drawing on prior experience during the COVID-19 pandemic, contingency strategies include flexible program delivery, virtual learning infrastructure, and adaptive communication plans that maintain engagement with students and partner institutions. Together, these measures ensure that workforce development and higher education pathway objectives remain resilient, aligned with Guam's S&T Plan, and responsive to evolving conditions.

Risk Mitigation – Science and Technology Steering Committee (STSC)

The Science & Technology Steering Committee Coordinator identified several high and medium risks that may affect coordination and operational continuity. The potential for the four project cores to operate independently rather than in synergy is a risk to cohesion and strategic alignment. To mitigate this, the Coordinator will promote structured communication through shared project management tools, routine meetings, and cross-core accountability measures. Externally, natural disasters such as typhoons, cybersecurity threats, and the ongoing challenge of retaining skilled graduates and researchers in Guam pose risks to long-term program resilience. To address these threats, the project will develop contingency plans, secure data infrastructure, and maintain a talent database for connection with career opportunities to strengthen talent retention. Collectively, these proactive measures ensure program continuity and protect institutional knowledge.

Integration of Risk Management Strategy

Risk migration in all of ORIG's cores emphasizes education, communication, coordination, flexibility, planning, and negotiation to achieve optimization in the increased development and management of Guam's Research Ecosystem. Identified vulnerabilities and threats that can impede project success are common throughout all of the project's components and thus can be addressed from a common perspective rather than in response to isolated issues. This ability

creates efficiencies that can maximize resources while overcoming barriers effectively, thus promoting the success of ORIG but also of researchers within the Research Ecosystem that it serves.

Succession Plan

Principal Investigator/Project Director: Should this position become vacant, co-Principal Investigator Dr. Rachael Leon Guerrero will assume this role pending approval by NSF in accordance with the programmatic terms and conditions.

Project Administrator: Should this position become vacant, the PI/PD will conduct a search for a successor in consultation with the co-Principal Investigators. The NSF program officer will be notified in accordance with the programmatic terms and conditions.

Co-Principal Investigators: Should either of these positions become vacant, the PI/PD will determine a successor in consultation with the remaining co-PIs. NSF will be notified in accordance with the programmatic terms and conditions.

APPENDIX A – SWOT ANALYSIS

SWOT Analysis – Administrative Core		
Internal Strengths	Significance (Hi / Med / Lo)	Leveraging Strategy
Experienced and cohesive Guam NSF EPSCoR Administrative Team with years of collective institutional knowledge	Hi	Provide advancement opportunities and professional development; maintain continuity by documenting administrative processes and sharing best practices.
Strong collaboration across EPSCoR admin, faculty, and partners that fosters coordinated program delivery	Hi	Encourage open communication; seek support and guidance from colleagues; maintain strong feedback loops with all cores.
Four-core structure provides a robust framework for coordination, accountability, and interdisciplinary collaboration	Hi	Regularly refer to the core model during meetings and reporting; ensure balanced participation and shared decision-making.
E-CORE project associate acts as a liaison connecting STSC and other cores, improving coordination and communication	Hi	Establish efficient systems linking internal and external communication channels; maintain updated contact networks.
Integration with Guam Science & Technology Economic Diversification Plan enhances alignment with jurisdictional priorities	Hi	Maintain consistent reference to S&T plan goals; align grant writing and reporting to Guam's innovation and sustainability priorities.
Administrative infrastructure supports efficient reporting and compliance for complex federal programs	Hi	Continue refining documentation workflows and reporting templates to ensure consistency across cores.
Institutional reputation and experience with NSF programs provide a foundation for future proposals	Hi	Leverage prior success in funding and reporting to strengthen competitiveness in new submissions.
Internal Weaknesses	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Risk of losing administrative personnel to other opportunities	Hi / Med	Identify potential replacements in advance; develop staff retention and succession plans.
Possible difficulty coordinating meetings, communications, and decision-making among four cores	Med / Hi	Implement shared project management tools and standardized communication protocols.
Early-stage projects may face startup and coordination challenges	Med / Hi	Conduct one-on-one meetings to establish rapport and clarify responsibilities.
Cross-core independence could lead to siloed operations	Med / Hi	Maintain shared reporting formats; reinforce collaborative expectations during regular meetings.

Inconsistent engagement of some committee or STSC members	Lo / Med	Increase accountability; encourage participation through targeted reminders and direct involvement in planning activities.
Heavy reliance on a small number of key staff members for continuity	Hi / Med	Broaden cross-training and ensure backup coverage for essential administrative functions.
External Opportunities	Significance (Hi / Med / Lo)	Leveraging Strategy
Provision of additional training for administrative staff that promotes career development and retention in critical positions	Hi	Utilize UOG, GCC, and local training programs; engage in off-island workshops; coordinate with Admin & Research Support cores; promote through SciComm and STSC.
Build new generation of STEM leadership in the jurisdiction	Hi	Develop targeted training and mentorship; align with EPSCoR and Space Grant programs; leverage existing institutional leadership pathways.
Strong potential to secure additional federal funding	Hi	Enhance proposal coordination; align with Guam's S&T plan; emphasize cross-core collaboration in submissions.
Five Areas of Opportunity (S&T Plan) enable public-private partnerships and industry-driven innovation	Hi	Use AOs to structure collaboration; integrate partner needs into planning and grant development.
Adoption of emerging technologies for improved research management	Hi	Collaborate with infrastructure cores to integrate data systems, AI, and digital communication platforms.
Broaden collaboration scope with regional and underrepresented partners	Hi	Strengthen regional engagement and communication channels to increase inclusivity.
Diversify funding sources beyond NSF	Hi	Pursue federal and philanthropic opportunities aligned with EPSCoR's mission and Guam's sustainability priorities.
Promote ECORE activities through integrated communication	Hi	Use SciComm channels and public events to share outcomes and opportunities.
Build and expand public-private partnerships	Hi	Leverage STSC networks to develop mutually beneficial collaborations supporting workforce and innovation.
External Threats	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Loss of NSF or other federal funding due to shifts in priorities	Med / Hi	Develop contingency plans; pursue alternative funding sources
Natural disasters and climate change affecting program operations	Hi / Hi	Create emergency communication and continuity plans; ensure data and administrative backups.
Brain drain of skilled staff and researchers	Hi / Hi	Build retention programs and clear career advancement pathways.

Shifting political priorities at local or federal levels	Hi / Hi	Maintain consistent engagement with government stakeholders; align activities with jurisdictional goals.
Cybersecurity vulnerabilities in research and administration systems	Hi / Med	Collaborate with UOG IT for regular updates, training, and implementation of secure digital infrastructure.
Economic instability impacting university and research operations	Hi / Hi	Diversify funding and strengthen financial management systems; prepare alternative budgets and resource-sharing plans.

SWOT Analysis – Research Support Core		
Internal Strengths	Significance (Hi / Med / Lo)	Leveraging Strategy
Effective management of all administrative, fiscal and scientific operations of ORIG	Hi	Utilization of effective management structures, processes and personnel from previous NSF EPSCoR awards
Partner with Research Corporation of the University of Guam	Hi	Utilization of fiscal and personnel management protocols and services
Experienced administrative team that can support grants through their lifecycle from proposal submission to project implementation	Hi	Other researchers in the ecosystem will be able to seek assistance from the administrative team
Internal Weaknesses	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Reliance upon external vendors and companies for timely delivery of goods and services	Med / HI	Rely upon expertise gained from previous NSF EPSCoR projects to facilitate deliveries
Reliance upon UOG to process payments approved through RCUOG	Med / HI	Closer coordination with RCUOG and UOG to eliminate roadblocks
External Opportunities	Significance (Hi / Med / Lo)	Leveraging Strategy
Expand focus of services to include other NSF research awards to UOG or participants in Guam's research ecosystem	Hi	Apply lessons learned in award management to non-EPSCoR NSF and other awards
External Threats	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Future pandemics.	Hi /Med	Apply lessons learned from previous COVID pandemic
Natural disaster	Hi / Med	Apply lessons learned from Typhoon Mawar and other storms
Interruption of funding	Hi / Hi	Prioritize project objectives for completion with funds at hand

SWOT Analysis – Academic Infrastructure and Research Facilities Core

Internal Strengths	Significance (Hi / Med / Lo)	Leveraging Strategy
Deans are part of the project's leadership team ensuring buy-in by UOG and GCC administrations	Hi	Use access of leadership personnel to facilitate infrastructure inventories and development of shared usage agreements
CIS conference can be leveraged to host Infrastructure and Facilities Workshop annual beginning in Year 2	Hi	Coordinate with conference organizers
Information transfer of outcomes facilitated by STSC that provides conduit to stakeholder community	Hi	White Papers developed to inform STSC and University research and administrative communities
Workforce development and career advancement mechanisms for UOG cyber personnel were identified in prior EPSCoR award	Med	Build on lessons learned previously and use feedback for improvement cycle
Cyberinfrastructure leadership developed strategic collaborations already	Hi	Financial support for OIT leadership to attend one conference or workshop annually to expand and strengthen collaborative network
Internal Weaknesses	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Participation in workshops may be variable	Med / Hi	Identify and recruit participants with strong interest and buy-in
Personnel in the research ecosystem is limited which may impact capacity for developing funding proposals in a timely fashion	Med / Hi	Provide support throughout grant development cycle by leveraging administrative core and research support core
Turnover of OIT personnel	Med / Hi	Provide career incentives to keep senior personnel
External Opportunities	Significance (Hi / Med / Lo)	Leveraging Strategy
Existing support from partnerships, agencies and community	Hi	Include partners and community in planning for growth of research capabilities, facilities, and economic and workforce development
Interest by Guam's private sector in cyber development	Hi / Hi	Promote establishment of networks, business opportunities, and training
Increased interest in supporting research computing capacity across EPSCoR jurisdictions	Hi	Campus Research Computing Consortium (CaRCC) can be engaged to help evaluate the state of research computing
External Threats	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Failure to secure planning grant funding	Med / Hi	Leverage existing resources
Loss of project funding	Med / Hi	Seek support from non-federal government sectors

SWOT Analysis – Higher Education Pathways Core		
Internal Strengths	Significance (Hi / Med / Lo)	Leveraging Strategy
Alignment with the STSC to build workforce development	Hi	Routine check-ins with Defngin for S&T discussions/actions connected to HEC efforts; map out similar workforce development needs such as identify high demand sectors
Continues on the successes of similar student research program	Hi	Utilize/modify documents and program design
Strengthens UOG-GCC collaboration	Hi	Partner with Mike Chan, Co-PI on refining grant efforts that build recruitment and matriculation efforts. map out similar needs & existing educational assets
Internal Weaknesses	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Sustainability of enrollment from off-island is dependent upon interest in UOG programs.	Hi / Med	Proactive and monitoring of recruitment strategies and profile of applicants
Sustainability of enrollment from UOG students is dependent upon UOG graduate numbers	Hi / Med	Proactive and monitoring of recruitment strategies and profile of applicants
Timely completion of program	Med / Med	Practice mentoring and monitoring
Infrastructure and resources at UOG.	Lo / Lo	Collaboration with departments and faculty mentors with needs
External Opportunities	Significance (Hi / Med / Lo)	Leveraging Strategy
Build new generation of STEM leadership in Jurisdiction.	Hi	active engagement with the community, and have a pulse in workforce needs
Opportunities for other funding and grants	Hi	Continuing efforts in funding awareness for sustainability and scalability
Partnering with Jurisdiction community colleges and other related academic programs to build career and academic pathways for STEM and recruiting.	Hi	continue collaboration with GCC other related academic programs
Broad policy shifts in education, STEM, research etc.	Hi	collaborate efforts with S&T
Opportunities to share/scalability of HEC design for implementation across institutions	Hi	packaging our processes, documents, curriculum, mentoring designsother funding that leverages E-CORE to build out
External Threats	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>

Current and future pandemics.	Hi / Med	Prior experience helps us with a pivot plan.
Natural disaster	Hi / Med	Prior experience helps us with a pivot plan.
Not enough faculty mentors, lab space, material support	Med / Med	Recruit interested faculty mentors across the campus.
Competing student programs that impact potential participants	Hi / Med	Assess what programs exist to refine recruitment strategy

SWOT Analysis – Science and Technology Steering Committee		
Internal Strengths	Significance (Hi / Med / Lo)	Leveraging Strategy
Guam NSF EPSCoR admin team, faculty, and all partners and stakeholders provide strong support for project goals and implementation	Hi	seek support and guidance from team as needed
The four-core structure provides a framework for action	Hi	promote and refer back to model in STSC meetings and grant proposals
The E-CORE project associate serves as a liaison between the STSC and stakeholders from academia, government, and the private sector	Hi	establish system to connect STSC internally, and with E-CORE / E-RISE
Guam Science & Technology Economic Diversity Plan (2024-2029) provides strategic guidance	Hi	fill out data tables, and refer back to plan as needed; update plan as needed
Internal Weaknesses	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Four cores could operate independently leading to duplicate efforts or missed opportunities	Med / Hi	implement shared project management tools and schedule regular meetings with core leads to ensure alignment
ORIG project may face initial challenges in establishing workflows, and building trust among stakeholders	Med / Hi	meet one-on-one as needed to establish personal connection with stakeholders; refine workflow as needed
Possible difficulty coordinating meetings, committee membership & input, and abiding by bylaws	Med / Hi	develop and refine communications plan; meet one-on-one as needed; update bylaws as needed
External Opportunities	Significance (Hi / Med / Lo)	Leveraging Strategy
Strong potential to secure further funding from federal agencies such as NSF	Hi	work with respective cores (Admin & Research Support) to identify and disseminate relevant federal funding opportunities to those whose work aligns with S&T plan
Five Area of Opportunity (AO) allow public-private partnerships which can provide additional resources, expertise, and real-world applications for research	Hi	refer back to AOs in meetings and grant proposals; update AOs as needed based on STSC feedback

Emerging technologies such as data science, AI, and additive manufacturing	Hi	work with Academic Infrastructure core to capitalize on emerging technologies in alignment with STSC feedback
External Threats	Risk Assessment: <i>Likelihood / Impact</i>	Mitigation Strategy <i>(for all Hi & Med risks)</i>
Natural disasters (e.g. typhoons)	Hi / Hi	develop contingency plan for events and meetings; backup data regularly
Brain drain (skilled graduates and researchers leaving Guam for other opportunities)	Hi / Hi	work with STSC to develop database / job board for NSF EPSCoR students and graduates
Shifting political priorities at local and national levels	Hi / Hi	work with Admin core to disseminate regular updates on any relevant impacts to STSC, or vice versa
Cybersecurity risks from regional geopolitical tensions	Hi / Med	work with UOG OIT to receive updates and training if needed
Economic fluctuations at local and national levels could impact willingness of private industry to invest in research and partnerships	Hi / Hi	develop contingency plan; consult with STSC vice chair to see if STSC membership reflects research partners from diverse sectors, as outlined in S&T plan



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