

Indiana Space Grant Consortium  
Lead Institution: Purdue University  
Director: Barrett Caldwell, PhD  
Telephone Number: 765-494-5092  
Consortium URL: [insgc.org](http://insgc.org)  
Grant Number: NNX15AI07H

Lines of Business (LOBs): NASA Internships, Fellowships, and Scholarships;  
Stem Engagement; Institutional Engagement; Educator Professional Development

#### A. PROGRAM DESCRIPTION

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The Indiana Space Grant Consortium is a Designated Consortium funded at a level of \$760,000 for fiscal year 2016.

#### B. PROGRAM GOALS

INSGC Goals are as follows:

- *be a preferred source of information, materials, and opportunities for inspiring, preparing, and supporting individuals for NASA-related STEM education/careers.*
- *be an effective and preferred vehicle for enhancing the engagement of K-20 educators and students in NASA-related STEM activities and opportunities.*
- *raise awareness of and access to NASA-related activities, events, and opportunities for the government, institutions, and residents of the State of Indiana.*

We have also devised clear SMART Objectives in order to measure the attainment of the INSGC goals and ensure alignment with NASA PART measures. The construction of SMART objectives assures that there is a clear connection between INSGC funded activities and Consortium goals in quantifiable, measureable outcomes.

The SMART objectives for 2015-18 include:

- 1) All doctoral fellows who receive INSGC funding will report increased research capacity and competency as a result of their awards.

- 2) Students who participate in INSGC higher education programs will demonstrate an increased: a) interest in STEM study and careers, b) understanding of NASA programs, and c) perception of leadership skills.
- 3) At least 65% of student participants who graduate after participation in INSGC higher-education programs will seek employment with NASA, aerospace contractors, universities, and other educational institutions.
- 4) At least 30% of undergraduate students who graduate after participation in NASA higher-education programs will move on to advanced education in NASA-related fields.
- 5) At least 35 underrepresented and underserved students (minimum 25% of total students participating in funded programs) will participate in INSGC-funded higher education programs in each year of the three-year program.
- 6) At least 3 new or revised STEM courses targeting STEM skills relevant to NASA research areas will be created through INSGC support in 2015-18.

INSGC is on track to meet or exceed all 6 objectives.

### C. PROGRAM/PROJECT BENEFITS TO PROGRAM AREAS

INSGC has awarded funding to projects within the targeted outcomes in alignment with our proposed allocation percentages (Outcome 1: Current 74%, Proposed 74%; Outcome 2: Current 25%, Proposed 25%; Outcome 3: Current 1%, Proposed 1%).

#### *NASA Outcome 1*

**Scholarship/Fellowships/Internships:** The competitive award mechanism for scholarship/fellowship support includes students at institutions across the State. Awardees for FY 2016 were 46% female and 60% underrepresented minority (URM). NASA internships are placed and supported based on selections by NASA Centers.

#### **Higher Education Anecdote:**

Engaging Undergraduates in the Multi-disciplinary Art and Science of Fermentation at Saint Joseph's College was an exciting undergraduate program touching a large number of participants with many activities. The vision of this project is to engage as many undergraduate students as possible from multiple disciplines in the beneficial process of fermentation. From its historical and cultural significance and the health benefits of fermented foods and beverages, to biofuels and pharmaceuticals, the study and process of fermentation offers a wide range of opportunities for research and hands-on learning for undergraduate students that will build skills and knowledge for NASA-related STEM workforce development.

There have been a variety of activities completed so far that meet INSGC goals: Two field trips for students and faculty: 1) Carpenter Creek Cellars winery, and 2) Fair Oaks Dairy to see commercial cheese and yogurt production. Three professional development activities were completed: a full-day seminar in dairy fermentation, a National Science Teachers Association seminar in bio-fuel production and fermentation, and a seminar on the Chemistry of Beer sponsored by the Indiana Chemical Society at Triton Brewery in Indianapolis.

Curriculum development: Fermentation was incorporated into the Core Curriculum in Food and Society, four pre-service elementary teachers designed unit plans on microbes and fermentation

for students in grades 2 through 5 (60 students), faculty have developed curriculum for biochemistry, science education, general chemistry 121 and 122, sustainability (vegetable production for fermentation trials), and Core lectures. Two students have been funded to grow vegetables for labs, which have been utilized in multiple courses.

The expected outcomes include: 1) students gaining experience in scientific inquiry and learning broadly transferrable skills and knowledge applicable to the STEM workforce as a result of their experiences with fermentation science, 2) new STEM curriculum development and implementation in the natural sciences, sustainability, education, and Core, and 3) students gaining awareness of the many practical applications and benefits that fermentation science and the STEM fields contribute to society and to the workforce.

#### ***NASA Outcome 2: Pre-College Anecdote:***

The ETHOS Science Center's Inquiry Institute utilized a highly regarded professional workshop staff composed of members from ETHOS, the Smithsonian, the Exploratorium and Notre Dame to present an 80-hour workshop for 70 area educators. Designed for teachers of grades K-12, the Inquiry Institute has enabled learners to reach conceptual understanding of scientific ideas that were new to them. The INSGC portion of the workshop was focused on supplies to train teachers in the area of programming, designing and building robotics as well as understanding team dynamics and in-depth CODING. This aligns with NASA's goals of Strengthening the Nation's future work force (which is becoming more and more STEM focused); attract and retain students in STEM disciplines. It aligns with INSGC goal #2 to provide educational opportunities for K-12 students and teachers. Coaching and feedback to teachers continues through the end of the 2016-2017 schools year. In addition, ETHOS will conduct a post assessment for teachers, collect data and report the summer of 2017. Initial reports from teachers have been overwhelming positive and the final report will demonstrate that goals were indeed reached. The number of robotic teams has dramatically increased.

#### ***NASA Outcome 3: Informal Education Anecdote:***

The Paper Airplane Contest at the Evansville Museum is a localized and intensive off-shoot of the brand new National Paper Airplane Contest. Designed to engage the Evansville community with the science of aerodynamics, the Paper Airplane Contest was designed to encourage family-based, inquiry-style STEM learning through contest challenges. The Paper Airplane Contest is an event resulting from the Evansville's community's response to a previous event at the Evansville Museum in July, 2016. Due to the popularity of this event, as well as its potential to encourage interest and careers in aerodynamics, the Evansville Museum hosted the National Paper Airplane Contest for our community. There were approximately 60 participants in three different paper airplane categories. In addition, participants enjoyed a showing of the film "Flight Adventures" in the Museum's Koch Immersive Theater. Data from this event is being analyzed, and a blueprint for future events is being written by Museum staff in order to advise and guide other education institutions in creating their own Paper Airplane Event. The Museum completed this blueprint and began sharing it with other institutions at the end of January 2017.

#### **D. PROGRAM ACCOMPLISHMENTS**

- NASA Internships, Fellowships, and Scholarships (NIFS):

Eight internships, 40 undergraduate scholarships, six Master's fellowships, and four PhD fellowships were awarded by INSGC. Additional scholarships were provided to community college students to continue our partnerships. Based on longitudinal tracking (INSGC has over 90% reporting in our longitudinal tracking over the years) 78% of our awardees with Significant Awards are now employed in a STEM field, and 72% of our URM awardees with Significant Awards are now employed in a STEM field.

- Higher Education projects, with accomplishments:
  - Foundations in Science and Math*, led by an undergraduate and graduate student team, provided intensive sessions to over 100 high school students including Introduction to the Universe, Astrophysics for Beginners, Algebra I and II, Mathematical Topics, Trigonometry, Standardized Math Tests Review, Introduction to Physics, Introduction to Chemistry, Chemistry in Food, Introduction to Biology, Accelerated Biology, Zoology, and Computer Programming. Each course is designed to prepare students for their upcoming STEM courses by providing a strong foundation in the concepts and skills.
  - Analyzing Unnatural Amino Acids* is a project at Valparaiso University involving three 4-year college students and two community college students investigating the degradation patterns of natural vs. unnatural amino acids exposed to conditions that might exist on extraterrestrial bodies. The project provides research training and mentoring.
  - INSGC was a proud supporter of three STEM programming events through Purdue Convos: ArcAttack, Earth's Dino Zoo Live!, and Shimon Robotics. INSGC also sponsored the Galactic Gathering at the Virgil Grissom Memorial, enabling 8 faculty, staff and students to attend this historic celebration.
  - Taylor University's project on the *Nanosatellite Space Tether* trains engineering students on the techniques of systems design. The team has performed literature searches, detailed technical analyses, and held discussions with scientists from Naval Research Labs, the University of Michigan, and Tethers Unlimited, Inc., providing workforce development.
  - The *AIAA Design, Build, Fly Program* provided real-world aircraft design experience for 11 engineering students at Trine University, building increased interest in aerospace programs, increasing retention, and better preparing them for STEM employment.
  - Conservation of Local Drinking Water through Better Soil Study* at Ball State University is designed to prepare three students to work in environmental consulting, soil testing, and soil conservationist positions at the local, state, and national levels. The knowledge gained will also be shared with local farmers, providing information about the effectiveness of conservation efforts.
  - Observational Astronomy for Research and STEM Engagement* involved training three undergraduate STEM majors to carry out scientific research and provide hands-on science engagement for 100 non-STEM students, with the goal of creating STEM-literate citizens.
  - Hands-on Multi-Physics Simulation Training for Solar Energy Applications* enhanced the skills and proficiency of 100 post-secondary students in solar energy technology, strengthening the nation's future workforce.
  - Funding for *To Space and Back* at the Ball State University Planetarium provided the planetarium team of faculty, staff, undergraduate and graduate students with a new program about space exploration and technology. This program will impact >20,000 people per year.

*Purdue Space Day* provides professional development to approximately 275 university student volunteers. They are an integrated mix of multidisciplinary freshman through graduate students who promote the interdisciplinary nature of space exploration. These students work with approximately 675 3<sup>rd</sup>-8<sup>th</sup> grade students to learn about engineering and space exploration.

*Increasing STEM Retention through a Forensic Science Theme-Based Summer Academic Bridge Program and Coordinated Freshman Research Experience Program* at Saint Joseph's College is an opportunity for 15 freshman majoring in Biology, Biochemistry, Chemistry, Computer Science, and Mathematics. The four key areas covered are introducing specific skills necessary for academic success specific to STEM fields, fostering general academic skills necessary for success in any major, increasing the social support network that has an important impact on success, and investigating career opportunities in STEM fields. There were 9 faculty contributing to the design of the program, and two upperclassmen mentors.

The *STEM Immersion Summer Camp* at Anderson University informs high school freshman and undergraduates about STEM subjects and STEM careers, increasing enrollment in STEM courses and majors. Undergraduate students act as mentors, improving student confidence and understanding. Topics include chemistry, mechanical design, electrical design, computer science, and manufacturing.

*MURI* at IUPUI is a 9-week summer research program for 8 undergraduates that builds core research skills, research professionalism, academic/professional success skills, and discipline-specific methods and techniques.

*Building Competency in Geospatial and Environmental Sciences for Undergraduate Students* at Valparaiso University and Taltree Arboretum and Gardens facilitated hands-on learning for students in geography, environmental science, and biology to develop competency in field-based and computer-based handling of geographically referenced environmental data. Participants included 4 undergraduate students, an arborist, education specialist, program manager, faculty member, and over 30,000 arboretum/garden visitors who engaged through maps produced by the program.

*Engaging Undergraduates in the Multi-disciplinary Art and Science of Fermentation for Sustainable Food, BioFuel, and Pharmaceuticals* at Saint Joseph's College provided a many opportunities for research and hands-on learning to build skills and knowledge for NASA-related STEM workforce development. The project was incorporated into the curriculum of courses in the natural sciences, sustainability, and the college's general education Core program. Three faculty members created new modules for 10 courses, over 250 undergraduate students and over 100 elementary school students participated, and 10 presentations were made at the undergraduate colloquium.

*Expanded Screening for Cold Acclimatization Genes in Neurospora crassa* at Valparaiso University provides two undergraduates and one community college student with hands-on research experience. Students and faculty will prepare a poster of results at VU's Celebration of Undergraduate Scholarship and the spring meeting of the Indiana Academy of Science. Goals are increased involvement in research, improved retention, and conversion of community college students to 4-year programs.

*Advancing STEM Undergraduate Student Research* at Purdue Northwest funded 75 undergraduate students to participate in high-quality, faculty mentored research projects

in STEM. There was a strong emphasis on URM participation. Over 330 students participated in the associated Student Research Day.

Purdue University hosted the *Students for the Exploration and Development of Space (SEDS) Space Vision Conference*, the largest student-led space conference. There were over 300 attendees, with more than 25 panelists and speakers.

Ball State's Brown Planetarium, Department of Geography, and Department of Physics and Astronomy collaborated in the "*GIS Data to Planetarium Dome*" project. The team of faculty and undergraduate students transformed spatial datasets from the Geographic Information Science lab to the planetarium, expanding the power of the planetarium to inspire by integrating earth-based spatial data with the digital dome, and creating movies that use NASA and NOAA data as a primary data source.

Purdue University's *MATE ROV* team includes over 40 members from various majors, simulating real world design projects. They design, construct, and test an innovative underwater vehicle. A significant portion of the score is from professional presentations given to industry leaders such as Oceaneering, NASA, and more.

The goal of the *Improving STEM Student Retention via Early Research Engagement* project at Valparaiso University is involving freshman in ongoing research, promoting student growth, stimulating curiosity, preparation for STEM careers, and improving retention. Students receive mentorship from faculty and upperclassmen. Six faculty and 12 students participated in the program.

*GPS Flight and Test Units for UNITE CubeSat* at University of Southern Indiana builds on a highly successful project underway as part of the USIP program. This additional funding allows the USI CubeSat team to track the orbit of the UNITE CubeSat more precisely below 180 km by using an onboard GPS, rather than the Two Line Element, and check that portion of the orbit against the drag model prediction. Approximately 10 students and three faculty participated.

*Multi-disciplinary Outreach and Research Eclipse Experiment* with Near Space Launch utilizes the upcoming solar eclipse for STEM education. NSL is working with local community college, university, and K-12 schools to develop new hands-on STEM technology for imaging the sun, make baseline eclipse measurements to improve quality and reduce operations risk, and produce documentation and a paper for INSGC and Indiana's public, promoting a STEM literate population. Another related project titled *STEM Outreach with Superpressure Tetrahedron Eclipse Balloon Manufacture* enables students to manufacture their own balloons and launch them to experience flight and ground winds. A STEM curriculum will be tested and assessed.

University of Evansville's *Student Launch Initiative* provides undergraduate engineering students the exciting challenge of designing, building, and flight testing their own high powered rocket for competition in the 2016-17 NASA University Student Launch Initiative at Marshall Space Flight Center.

Purdue Northwest will be participating in the *Human Exploration Rover Challenge*, allowing students to fulfill their Experiential Learning requirements for graduation. PNW has promoted STEM education throughout the State using the Rover and Moonbuggy in displays including the PNW Fall Student Convocation, Senior design presentations, freshman seminars, engineering recruitment dinner for HS students, NWI Space Camp, halftime of a PNW basketball game, and many more resulting in over 10,000 people interacting with the vehicles.

SARA program at Valparaiso and Ball State Universities provides access to two research-quality telescopes for faculty and student research and used in general education, outreach, and research programs. Four undergraduates travel to Arizona to use the telescope, and the data is also used for science education (Astronomy 101 – 90 students) and outreach (Public Open House programs – 100+ participants).

Science Central hosted two community college student interns. One intern is dedicated to the “Science on a Sphere” exhibit (learning how to operate the SOS exhibit; present current scientific data on SOS utilizing NASA and NOAA datasets; and develop new presentations of the data), and the other is working in the Exhibits and Facilities Department (working with the Executive Director and Exhibit & Facilities Director to determine which new exhibits are needed, assisting with researching alternatives for creating new exhibits, design and construct the exhibits and help install them). This is providing STEM workforce development.

- Research Infrastructure project, with accomplishments:  
Indiana State University is completing *A Regional Assessment of Heavy Metal Contaminants in Bats of the Eastern United States* assessing heavy metal concentrations in bat fur from areas with a history of mining and with varying degrees of urban development. They will identify heavy metal contaminants in bats’ environments and quantify contaminant loads in different bat species and sexes, as well as across a range of environmental and geographic conditions. This study has significant implications for bat conservation, and is providing research experience and workforce development.
- Precollege projects, with accomplishments:  
The *STEM Inquiry Institute* at ETHOS Science Center used the professional development inquiry program from the Exploratorium in San Francisco and the Smithsonian’s Science Education Centers LASER model. The 80-hour STEM program coached 70 area educators and will impact 2100 students every year.  
Purdue Northwest’s *Robotics World Discovery and Adventures Camp* hosted 30 high school URM students, engaging them in real-world, hands-on robotics and virtual reality experiences to inspire interest in STEM disciplines and careers.  
*STEAM Academy* is a hands on learning environment for 3-5 year old preschool students focusing on Science, Technology, Engineering, Arts and Mathematics. The curriculum uses Indiana preschool and kindergarten readiness standards as a starting point. INSGC funding provided teacher development and enabled them to build a community of support, and provided hands on opportunities working with local manufacturers and various student groups from Purdue University.  
*Raspberry Pi Summer Camp* at IPFW impacted 20 middle school students attending the camp plus >200 students at middle-school Career Days using hands-on projects on the fundamentals of computer programming and electronics. Students learned about technical careers including computer and electrical engineering. The projects will also be used for demonstrations at local middle school science classrooms.  
*FLEXHIBITS* at the Terre Haute Children’s Museum includes Air Rockets, Bernoulli Bench, Circuit Bench, Ring Launcher and Air Cars, and all of the exhibits provide perfect opportunities to support NASA’s three major education goals: Strengthening NASA and the Nation’s future workforce, attracting and retaining students in science, technology,

engineering and mathematics, or STEM, disciplines, and engaging Americans in NASA's mission. This project will help the state of Indiana develop a more scientifically-literate population and provide educational opportunities for K-12 students and teachers in order to inspire students to STEM disciplines. Approximately 7,500 students will be participating in this content per year.

IPFW's Development of a *Junior Space Agency for Middle School Students* established an afterschool STEM program stationed at the Department of Electrical and Computer Engineering. 6<sup>th</sup>-8<sup>th</sup> grade students gained hands-on experience in electromagnetics, mechanics, and engineering design principles. IPFW students also act as mentors for the middle school students.

Purdue Northwest presented *Programming Skills: From Teachers to Young Students*. Ten pre-service elementary education majors received training on teaching computer programming to K-5 students, focused on including females and children who attend under-resourced schools. They were encouraged to integrate computer science education into their instruction. Module development and one-on-one support was provided by 3 undergraduate technology majors.

*Digital Discoveries* is a distance-learning program created by the Challenger Learning Center of Northwest Indiana. The program is comprised of a classroom based lesson plan and video connection session, and an optional learning extension activity. These activities are utilized by classroom teachers to meet content and engineering standards and excite students about STEM. This new Digital Discovery module focused on the primary grades and integrated a new topic and related NASA technology.

- **Informal Education projects, with accomplishments:**  
*A Paper Airplane Contest* was held at the Evansville Museum to encourage interest in careers in aerodynamics with approximately 60 participants. Participants enjoyed a showing of "Flight Adventures" in the Museum's Immersive Theater. Data from this event is being analyzed, and a blueprint for future events is being written by staff to guide other education institutions in creating their own Paper Airplane Event. The Museum completed the blueprint and began sharing with other institutions in January 2017.

#### E. PROGRAM CONTRIBUTIONS TO NASA EDUCATION PERFORMANCE GOALS

*Include summary data for the bulleted list below:*

- **Diversity:** 48% of INSGC's scholarship and fellowship students were female, and 60% were URM.
- **Minority Serving Institution Collaborations:** No Historically Black or Hispanic Serving Institutions with a focus on STEM degrees exist in the state. However, both Purdue and Indiana University have strong relationships with minority serving institutions in other states and there has been continued significant partnering with the Minority Engineering Program at Purdue University.
- **Office of Education Annual Performance Indicators:**

- API 2.4.1: ED-16-1 19 out of 40 scholarship awardees were female, and 4 out of 10 fellowship awardees were female. 30 out of 50 scholarship and fellowship awardees were URM. Data on project participants is forthcoming.
- API 2.4.2: ED-16-2 >200 educators in the State participated in professional development, internships, or research
- API 2.4.4: ED-16-4 Indiana has 9 museum and science center affiliates
- API 2.4.5: ED-16-5 >65,500 K-12 student participants

#### F. IMPROVEMENTS MADE IN THE PAST YEAR

As part of an effort toward improving the business processes at Purdue, the INSGC office created an extensive set of process models, involving all business processes internal to our office and including all steps through Purdue University. Meetings have been held with all parties to ensure buy-in and improve follow-through.

To further improve relations with affiliates and add value to our annual affiliate meeting, the INSGC office improved plans for the affiliate meeting (set for April 21, 2017), and anticipate improved collaboration with affiliates and enhanced results. We have increased efforts at engaging with affiliate institutions as a whole, including encouraging affiliate directors to expand their reach at their institutions. INSGC has encouraged all affiliates to participate in team efforts on the upcoming eclipse, and has gathered and disseminated information on all activities consortium-wide. Additional Space Grant knowledge and ideas were gained this year by the attendance of Angie Verissimo at the Western Regional Meeting.

We have created an improved presentation binder to use as a tool in meetings with stakeholders, new affiliates and affiliate directors, government interactions, etc. This binder will lead discussions and ensure a professional image is presented. Individual content-specific binders will be provided to audiences based on need as ‘take-home’ information. The INSGC website is under a complete redesign, and is anticipated to launch in March. INSGC has continued strengthening our relationships with the local offices of our representatives and senators, and are expanding efforts at collaboration and integration of our affiliates in these relationships. INSGC staff have continued participation in space and STEM engagement efforts throughout the State. Angie Verissimo has been nominated for the Purdue University Staff Engagement Award (announcement end of March), and has been attending staff development training at Purdue. Dawn Whitaker has been selected for the Purdue Engineering Staff Leadership Academy, and continues to serve on the College of Engineering Engagement Committee.

#### G. CURRENT AND PROJECTED CHALLENGES

The lead institution of INSGC, Purdue University, is undergoing an overhaul of all business processes to streamline and improve performance. Titled Business Processes Re-engineering, the project is anticipated to reduce the amount of time required for all business processes, and reduce the layers of involvement and approvals, thereby improving efficiency. Although these improvements are exciting and most eagerly anticipated, the restructuring involves a few challenges along the way, in some cases resulting in temporary delays as plans are developed and changes are enacted. The INSGC office is working closely with the project personnel and our current business office colleagues to ensure the smoothest transitions possible.

This year has seen an unusually large number of new affiliate directors, due to both exciting future opportunities for some of our existing directors and some sad events such as the unexpected death of one of our longest serving and highly valued affiliate directors. We have

begun screening new affiliate directors and anticipate voting on their approval at our April affiliate meeting, and have held in-person meetings with new confirmed affiliate directors to ensure they have the proper knowledge and tools to continue the success of the INSGC at their institutions.

Since August 2016, INSGC Director Barrett Caldwell has been on temporary reassignment at the U.S. Department of State as a Jefferson Science Fellow (Bureau of East Asian Affairs, Office of Japanese Affairs). In response to this potential administrative challenge, Dr. Dawn Whitaker has been promoted to Associate Director, with increasing leadership responsibilities and oversight roles. Due to her performance in this enhanced role, INSGC Director Caldwell is completing paperwork to have this new role formalized, with a revised position description, as of April 10, 2017. Upon his return in August 2017, INSGC Director Caldwell and Associate Director Whitaker will continue together in these roles as the Indiana Space Grant leadership team.

#### H. PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

The INSGC office engages the Affiliates to discuss and contribute to the strategies of the consortium. All Affiliates have voting rights and responsibilities approving strategic directions and Consortium program decisions discussed at Affiliate Meetings.

##### **Academic Affiliates**

Purdue University – <i>Lead Institution</i>	Purdue University Northwest
Purdue University College of Tech at Columbus	Anderson University
Ball State University	Saint Joseph’s College
Indiana State University	Taylor University
Indiana University – Bloomington	Trine University
Indiana University Purdue University Ft, Wayne	University of Evansville
Indiana University Purdue University Indianapolis	University of Southern Indiana
Valparaiso University	

##### **Outreach Affiliates**

Children’s Museum of Indianapolis	IMAX Theater
Challenger Learning Center of Northwest Indiana	Indiana State Museum
Ethos, Incorporated	Evansville Museum
Science Central	Terre Haute Children’s Museum
Conner Prairie	

##### **Corporate Affiliates and Partners**

StratoStar Systems	Near Space Launch
ISTEM-Purdue University	Indianapolis Symphony Orchestra

Below is a valid signature from Barrett S. Caldwell indicating submission of this report.



Barrett S. Caldwell, PhD, Director, Indiana Space Grant Consortium