TRIUMPH GULF COAST, INC. PRE-APPLICATION FORM

Triumph Gulf Coast, Inc. ("Triumph Gulf Coast") has created a pre-application process to provide initial consideration of potential ideas for projects or programs that may seek an award of funding. Applicants are required to participate in the pre-application process. Notwithstanding the response from Triumph Gulf Coast on the pre-application form, an Applicant may still elect to submit an Application.

APPLICANT INFORMATION:

Name of Individual/Entity/Organization: **The Seaside School, Inc.**

Brief Description of Background of Individual/Entity/Organization: **The Seaside School, Inc. is one of the oldest and longest lasting public charter schools in the state of Florida and consistently ranks among the top performing schools in the state. The Seaside School has been in operation since 1996 and currently educates students in fifth through twelfth grades.**

Contact Information:

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Names of co-applicants, partners or other entities, organizations that will have a role in the proposed project or program:

REQUIRED EXECUTIVE SUMMARY: In a maximum of three (3) pages, please describe the proposed project or program, including (i) the amount of funds being sought from Triumph Gulf Coast; (ii) the amount and identity of other sources of funds for the proposed project or program; (iii) the location of the project or program; (iv) summary description of the proposed program, including how the program will be transformational and promote economic recovery, diversification, and enhancement of the disproportionately affected counties, and (v) a summary timeline for the proposed project or program.

IMPORTANT NOTICE

This pre-application process will **not** result in an award of funding by Triumph Gulf Coast. Rather, this process is designed to facilitate submission of ideas for potential projects or programs before the Applicant expends time and/or resources to complete a full Application. All Applicants for funding are required to complete an Application, which will be scored, and then considered for award in the discretion of Triumph Gulf Coast Board.

Introduction.

The Seaside School, Inc. was one of the first charter schools in the state of Florida, opening its doors in Seaside, FL in 1996. Seaside charter school is high achieving and in 2007 it received the Blue Ribbons School Award, one of only eight charter to do so that year in the United States. In addition to a general curriculum focusing on whole-child development, Seaside students participate in a full STEM focused robotics program. This inclusive program allows students to apply skills from across the curriculum and it is designed to support students from robot novices to engineering experts. Students work on these projects in class and in the robotics lab. The 5th and 6th graders voluntarily participate in FIRST LEGO League Robotics. As an essential part of the 7th and 8th curriculum all students participate in the Boosting Engineering, Science, and Technology (BEST) Robotics Program. Seaside Neighborhood School has participated in the BEST Robotics, a nationally recognized robotics program, at the Emerald Coast Hub since its inception in 2007. Seaside has advanced to the South's BEST Regional finals in 9 of the 11 years. High School students serve as mentors for the BEST competition and compete in the FIRST Robotics competition. In addition to these foundational programs, students in multi-grade level groups, build an underwater Remotely Operated Vehicle as a part of the SeaPerch Underwater Robotics Program.

The proposal is to build on a well-established, successful robotics program at Seaside School and develop a STEM Center of Excellence utilizing high-end mechanical engineering, state of the art robotics construction and testing, multiple language computer programming, collaborative CubeSat construction, Artificial Intelligence design and 3-D construction through modeling, animation and simulation. Workforce training is one of the primary components for this project long-term. The projected outcome is to become a regional and global STEM education center for advanced work force training focusing on STEM curriculum inter-connected through robotics. Our intent is to coordinate with academic programs and institutions such as Choctawhatchee Basin Alliance, Florida State University Panama City Campus, University of West Florida, and Northwest Florida State College for inter-collegiate education, research, and training. The Center of Excellence would provide the opportunity and structure for collaboration between students, private sector professionals, and governmental entities including the US Military and the Department of Defense.

(i) Funds being sought from Triumph Gulf Coast over a 5-year period.

We request funding for the STEM focused robotics Center of Excellence in the amount of $5,000,000 distributed over 5 years. These funds will be utilized for teacher and staff salaries, 3-D printers, CubeSat components, computer hardware and software, drones, sensors, and microscopes.

(ii) Other sources of funding for the 10-year duration of the proposed effort.

Other funding sources include private funding through the Seaside School Foundation and partnerships with private industry.

(iii) The location of the project or program.

The Robotics Center of Excellence will be located on the campuses of Seaside School, Inc. The program will exist along all grade levels. Currently, Seaside School, Inc. consists of grades 5^{th} – 12^{th} with plans to expand to include K – 12^{th}. The Robotics Center of Excellence would integrate STEM curriculum into the existing grade levels while also collaborating with surrounding state colleges, universities, military and the private sector.

(iv) Summary description of the proposed program, including how the program will be transformational and promote economic recovery, diversification, and enhancement of the disproportionately affected counties.

Robotics curriculum introduces students to knowledge, concepts, and skills that are needed for understanding the intelligent information-based technology of the future: technology that is highly interactive, multi-modal, adaptive and autonomous.

Robotics engages students in complex, strategic problem-solving and higher-order thinking—a set of skills that is a high priority for 21st century education. This kind of problem-solving can be introduced in a gradual, self-motivated way, so beginner students can experience satisfying achievements right away and can quickly move on to new challenges in a continuous progression toward greater levels of sophistication.

The robotics Center of Excellence would focus in three areas: 1) drones 2) drones equipped with sensors 3) CubeSat.

Advanced sensor technologies for imaging the Gulf of Mexico electro-optical, radiofrequency, spectral, and hyperspectral imaging are all very useful sensing modalities for imaging large areas of interest such as coastal upland areas, large bodies of water such as the Gulf of Mexico, and the regions in-between. Data gathered from these types of sensors – when deployed from either airborne (drones) or space-borne platforms (CubeSat), are extremely useful in monitoring water quality and ecosystems such as harmful algal blooms (HABs) and hypoxia (low dissolved oxygen) which negatively impact water quality and, consequently, ecosystems, public health, and commerce.

Early warning of harmful algal blooms (HABs) enable individuals and communities to make informed decisions and support the coordination of bloom response efforts to minimize impacts. NOAA's Harmful Algal Bloom Operational Forecast System (HAB-OFS) provides information and operational forecasts regarding the potential development, intensification, transport, and associated impacts of red algae blooms.

NASA’s CubeSat Launch Initiative (CSLI) provides opportunities for small satellite payloads to fly on rockets planned for upcoming launches. These CubeSats are flown as auxiliary payloads on previously planned missions. High Schools around the United States are currently involved in these programs. One unique application specific for the Gulf Coast region would be to equip a CubeSat with the technology to monitor Red Algae blooms. Currently,

NOAA has limited coverage for the Gulf coast region of Florida for red algae. The need for purposeful and diligent monitoring of The Gulf of Mexico through the CubeSat launches exists.

To participate in the CSLI program, CubeSat investigations should address research in science, exploration, technology, or education consistent with NASA's Strategic Plan and the Education Strategic Coordination Framework.

CSLI provides educational opportunities that attract and retain students, teachers, and faculty in STEM disciplines. This strengthens the nation's future workforce and promotes and innovative partnerships among NASA, U.S. industry, and other sectors for the benefit of agency programs and projects.

Specific certifications, skills, and research include:

- Computer-Numerical-Controlled Equipment Operator Certifications
- Certified Educational Robot Training
- Professional Certifications
- Microsoft Certified Solutions Expert
- Private Cloud Certification
- Sharepoint
- Enterprise Devices and Apps
- Sensory adaptation for aerial data of biological occurrences in the Gulf of Mexico
- Optic experimentation for flora, fauna and coast erosion
- Integrated sensory and optic models through the use of low altitude unmanned vehicle
- Intercollegiate Data Sharing
- Comparison of Aerial Imaging with collected water samples
- Comparison of dune lake erosion and gulf shoreline augmentation

The Robotics Center of Excellence can be the foundation for all aspects of design, manufacturing, testing, deployment and innovation for robotics software and hardware. The Center of Excellence could create the platform for collaboration among various groups which include middle school and high school students, college and university students, university researchers, biomedical researchers, meteorological researchers, local fire and sheriff divisions, Department of Defense sub-contractors such as Applied Research Associates (ARA), Department of Defense groups from Tyndall, Eglin and Hurlburt Field and local private industries.

(v) Summary timeline for the proposed project or program.

This project is a proposed Center of Excellence for advanced workforce education development, with an emphasis on robotics. The measurable objectives for this project range from research University collaboration to technical skill job training to international data analysis of the Gulf of Mexico and ultimately the creation of low earth orbit satellites. After testing, qualifications, software throughout and 3rd party testing the 5 year goal is to create low earth orbiting satellites (CubeSat) in coordination with NOAA and NASA for obtaining vital environmental data of the Gulf coast region.