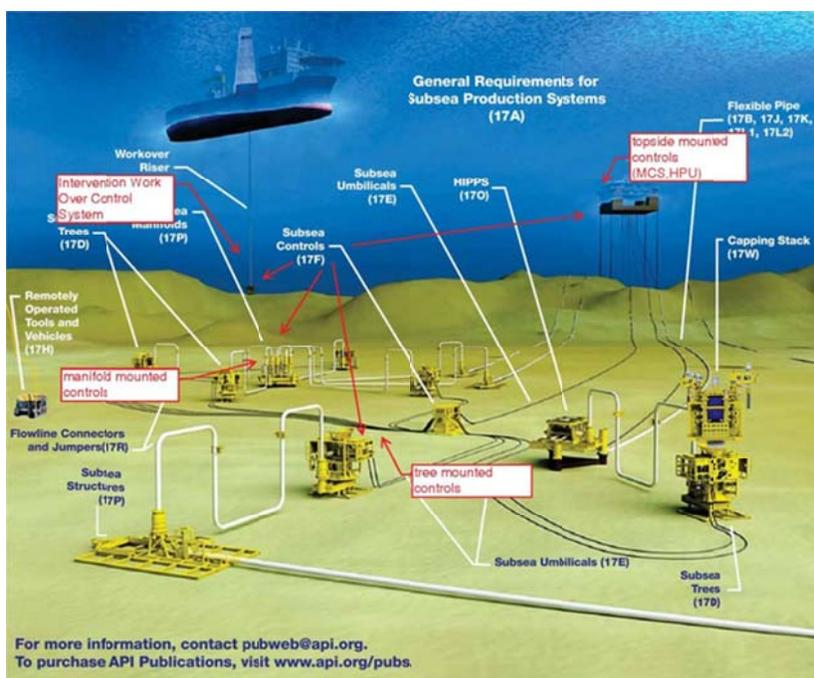


Competitive Research Program Request for Applications

**COLLABORATIVE, MULTI-INSTITUTIONAL RESEARCH GRANT OPPORTUNITY**

The Subsea Systems Institute (SSI) is a Center of Excellence formed under the RESTORE Act and represents a collaboration between the University of Houston, Rice University and NASA/Johnson Space Center. The SSI mission is to pursue applied science and engineering in order to implement sound practices and technologies for hydrocarbon development of deep and ultra-deep water assets in the Gulf of Mexico and other regions.

The scope of the SSI activities includes the offshore deepwater technologies shown below:



**Hardware:**

- Drilling:
    - Risers
    - BOPs
    - Well Control
  - Wellbore:
    - Integrity
    - Monitoring
  - Robotics/AUVs
- Systems:**
- Integrated Systems
    - Water
    - Subsea Power
    - Automation
      - Digitalization
      - Sensors
    - Human Factors
  - Flow Assurance
  - Enhanced Oil Recovery
  - Materials
  - Decommissioning

**OBJECTIVE**

The SSI Collaborative Research Grants are designed for teams (existing or new) to develop innovative research which can positively impact safe and reliable exploration and production from the deepwater Gulf of Mexico reservoirs. Successful applications will be cross-disciplinary, inter-institutional collaborations among investigators and institutions that incorporate technology advancement consistent with the mission objectives of the SSI. The support of industry partners is strongly encouraged.

**PROGRAM DESCRIPTION**

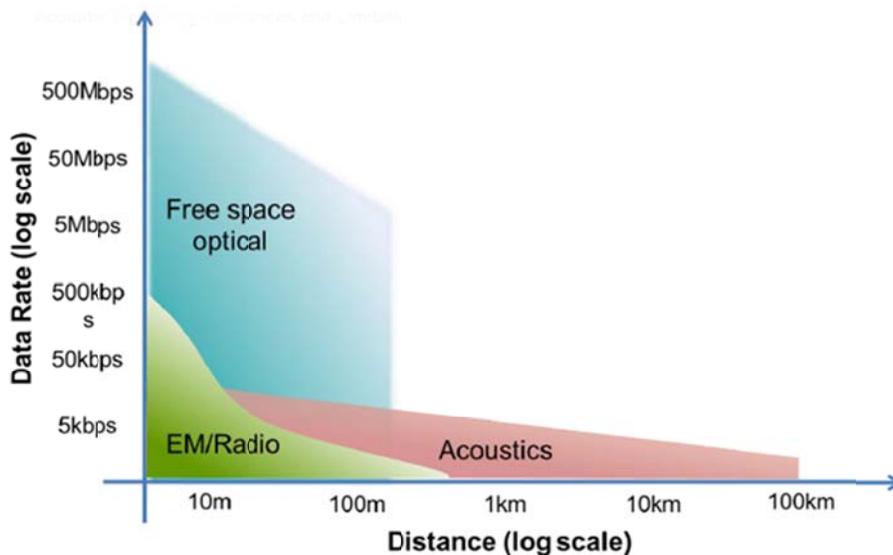
*Subsea Communications - Wireless*

SSI, through its Technical Advisory Committee, has identified subsea communications as one of the key focus areas within the Institute’s overall mission and objectives. Subsea communications is critical to safe and efficient offshore drilling and production operations. The increased requirement for real time monitoring together with the digitalization of subsea operations results in a concomitant need for improved

reliability, range and bandwidth for subsea communications.

The research program is aimed at developing subsea communication technology beyond current commercial development and deployment levels with an expected focus within technology readiness levels TRL 1 - 4 (API 17N). Successful applications will be cross-disciplinary, inter-institutional collaborations among investigators and institutions that incorporate technology advancement consistent with the mission objectives of the SSI.

This research program will be restricted to subsea wireless communication technologies applied to offshore deepwater operations. These can include both exploration drilling, completions and production operations operating in water depths up to 10,000ft (3,000m). The program objective is to focus on holistic solutions which could improve data rate, range or both, beyond current commercial capabilities, for individual technologies, combination of technology types or other techniques for optimizing information transfer. Typical commercial communications capabilities are summarized in the figure below.



Source: Subsea Wireless Group

Communication technologies can include:

- Acoustics
- Radio Frequencies
- Magnetic Induction
- Optical – Free Space
- Hybrid
- Other

The research program can include multiple elements of the communications chain:

- Technology hardware
- Associated communications algorithms and protocols
- Data / Information Management/ Data Compression techniques

The program outcome should target TRL3 where feasible within the program budget and timeline.

## AWARD INFORMATION

The SSI Collaborative Research Grant funding is made possible through RESTORE Act Center of

# SUBSEA SYSTEMS INSTITUTE

January 2017

Excellence (COE) funds made available to SSI through the Texas Commission on Environmental Quality (TCEQ) and the U.S. Department of the Treasury.

Type of award: SSI Collaborative Research Center Grants with at least two Collaborators from two different not for profit research institutions.

Estimated Number of Awards: 1

Anticipated funding amount Up to \$300k total funding for 18 months expiring on 8/31/2018  
No extensions possible

## ELIGIBILITY INFORMATION

The SSI is pleased to invite applications from non-profit organizations as described below. The objective is to bring together multidisciplinary subject matter experts from across our institutions and those in research (not for profit) institutions along the Gulf Coast (Texas, Louisiana, Alabama, Mississippi and Florida) to collaborate and create new solutions to complex challenges, furthering the goals of safe and reliable exploration and production in the deepwater Gulf of Mexico. Industry (for profit) organizations may participate as collaborators in the research program.

## BUDGETARY INFORMATION

The duration of grants should be a maximum of eighteen (18) months (with an expiration date no later than 8/31/2018) and for a total maximum budget of \$300,000, including direct and indirect costs. A mid-project review will be held to assess progress. Approximately one (1) award is anticipated. Cost-sharing is strongly encouraged.

## GRANT APPLICATION REQUIREMENTS AND SUBMISSION INFORMATION

Grant applications must be prepared under the following guidelines. The grant application should utilize 12-point font with at least one inch margins. Submit applications as a single computer file, preferably in PDF format. Applications that do not adhere to these guidelines will be returned without review.

1. **Title and Affiliations:** Page 1 will include the title, names and affiliations of the Principal Investigator and Co-Investigators involved in the project.
2. **Abstract:** Page 2 will be a one-paragraph abstract (limit 500 words) that clearly includes a description of the area(s) of research that will be the focus of the grant application, the planned multi-disciplinary approach, and the specific goals of the project, including the potential impact(s).
  - a. Grant applications are expected to describe the relevance to deepwater Gulf of Mexico exploration and production
  - b. The Collaborative Research Center Grant Application will require cross-disciplinary collaboration between at least two (2) investigators from a minimum of two (2) different not for profit research institutions across the five Gulf Coast States.
  - c. Industry collaboration and participation including cost-sharing is strongly encouraged.
3. **Research Plan: (Maximum 8 pages + References).** The following elements are required:
  - a. Specific Goals
  - b. Background and Significance
  - c. Preliminary Studies and Rationale
  - d. Approach and Research Envisioned (include timetable and milestones)
  - e. Industry Collaborations and Partnerships
  - f. Strategy for Future Funding and Technology Impact

g. References (Not Included in eight (8) page limit)

4. **Budget and Budget Justification:** Key budget items and justification should be identified detailing travel and consumables. Equipment over \$5000 will require approval.
5. **Biographical Sketches.** Provide a biographical sketch of the Principal Investigator and all Co-Investigators. Limit to two (2) pages each with relevant publications using the standard NSF format.
6. **Resources:** Please list equipment and facilities available for the project at each institution including shared resources and major equipment.
7. **Institutional Approval:** Approval and sign off by the appropriate institutional representative will be required after selection. Other compliance documents may also be required.

Please submit grant applications via email by 5:00pm (CST), February 24, 2017 to Bill Maddock. ([bmaddock@uh.edu](mailto:bmaddock@uh.edu)).

## KEY DATES

**Full Grant Applications:**

**Firm Deadline: February 24, 2017- 5 PM CST**

**Planned Start Dates:**

**April 1, 2017**

## REVIEW AND SELECTION PROCESS

A grant review team from the SSI Technical Advisory Committee will review submissions and provide their recommendations to the SSI Director. This team will include industry subject matter experts who will evaluate the submissions against the prepared evaluation criteria. These criteria will include:

- Relevance to SSI Objectives: *Is the project relevant to SSI objectives at an appropriate TRL level?*
- Cross-disciplinary, inter-institutional collaboration: *Is the actual work cross-disciplinary and truly collaborative?*
- Significance: *Does the project address an important need for the oil and gas industry? Is there evidence of industry support?*
- Innovation: *Can the project provide original and innovative technology?*
- Approach and Work Plan: *Is there a well developed work plan with a schedule and outcomes/deliverables?*
- Quality of Investigators: *Do the investigators have the necessary research background and experience to carry out this work?*
- Cost Effectiveness: *Is the project cost effective including the impact of any leveraged contributions?*

## AWARD ADMINISTRATION INFORMATION

### 1. REPORTING REQUIREMENTS

Successful Applicants are advised of the following requirements for post-award reporting:

- Concise, quarterly reports on scientific progress at dates as advised by the SSI Director;
- Annual scientific reports;
- Further reporting instructions will be disseminated to awardees.

## 2. AWARD TERMS AND CONDITIONS

- In addition to the terms and conditions in the notice of award, the projects selected will be subject to Federal Terms and Conditions applicable to the original funding provided to the SSI COE and are described in Appendix 1 of this Request For Grant Applications

## RELEVANT LINKS

- Subsea Systems Institute <http://www.subseasystems.institute>
- NASA Chief Technologist roadmaps: <http://www.nasa.gov/offices/oct/home/roadmaps/index.html>
- NASA Software catalog: <https://software.nasa.gov>
- ISS Research opportunities: <http://www.iss-casis.org>
- NASA Technology Transfer Program: <http://technology.nasa.gov>
- NASA (TechPort): [http://www.nasa.gov/centers/johnson/external\\_relations/university/index.html](http://www.nasa.gov/centers/johnson/external_relations/university/index.html)

## CONTACT INFORMATION

Please direct any questions or concerns regarding this Request for Grant Applications to Bill Maddock, Director, Subsea Systems Institute. [bmaddock@uh.edu](mailto:bmaddock@uh.edu), (713) 743-0578.