

House District _____
Senate District Statewide

THE TWENTY-EIGHTH LEGISLATURE
APPLICATION FOR GRANTS
CHAPTER 42F, HAWAII REVISED STATUTES

Log No: _____

For Legislature's Use Only

Type of Grant Request:

GRANT REQUEST – OPERATING

GRANT REQUEST – CAPITAL

"Grant" means an award of state funds by the legislature, by an appropriation to a specified recipient, to support the activities of the recipient and permit the community to benefit from those activities.

"Recipient" means any organization or person receiving a grant.

STATE DEPARTMENT OR AGENCY RELATED TO THIS REQUEST (LEAVE BLANK IF UNKNOWN): _____

STATE PROGRAM I.D. NO. (LEAVE BLANK IF UNKNOWN): _____

1. APPLICANT INFORMATION:

Legal Name of Requesting Organization or Individual:

HAWAII SCIENCE AND TECHNOLOGY EDUCATION, LLC.

Db/a:

Street Address:

841 Bishop St., Suite 1110, Honolulu, HI 96813

Mailing Address:

841 Bishop St., Suite 1110, Honolulu, HI 96813

2. CONTACT PERSON FOR MATTERS INVOLVING THIS APPLICATION:

Name ERIC SCHIFF

Title President

Phone # 808-478-7014

Fax # 808-523-7668

E-mail eschiff5@gmail.com

3. TYPE OF BUSINESS ENTITY:

- NON PROFIT CORPORATION INCORPORATED IN HAWAII
- FOR PROFIT CORPORATION INCORPORATED IN HAWAII
- LIMITED LIABILITY COMPANY
- SOLE PROPRIETORSHIP/INDIVIDUAL
- OTHER

6. DESCRIPTIVE TITLE OF APPLICANT'S REQUEST:

SUPPORT FOR STEM EDUCATION BY PLANNING, COORDINATING, CONDUCTING THE ROBOTX 2016 – HAWAII INTERNATIONAL ROBOTICS CHALLENGE COMPETITION IN HONOLULU, HI TO INCLUDE OUTREACH STATEWIDE TO SCHOOLS, COLLEGES AND STUDENT ROBOTICS GROUPS.

4. FEDERAL TAX ID #: _____

5. STATE TAX ID #: _____

7. AMOUNT OF STATE FUNDS REQUESTED:

FISCAL YEAR 2017: \$498,299

8. STATUS OF SERVICE DESCRIBED IN THIS REQUEST:

- NEW SERVICE (PRESENTLY DOES NOT EXIST)
- EXISTING SERVICE (PRESENTLY IN OPERATION)

SPECIFY THE AMOUNT BY SOURCES OF FUNDS AVAILABLE AT THE TIME OF THIS REQUEST:

STATE \$498,299

FEDERAL \$ _____

COUNTY \$ _____

PRIVATE/OTHER \$ _____

ERIC SCHIFF, PRESIDENT
NAME & TITLE

JANUARY 21, 2016
DATE SIGNED



RECEIVED

1/22/16

Handwritten signature/initials

I. Background and Summary

1. Applicant's Background;

Hawaii Science and Technology Education, LLC (HSATE) is organized in the State of Hawaii with the mission to advance Science, Technology, Engineering and Math (STEM) education and disciplines in Hawaii. With the future becoming ever more dependent on high-tech including the rapid rise in robotics, the challenge of developing solid technical exposure and valuable real-world experience is limited in Hawaii. HSATE provides programmatic support, thematic guidance, event planning, and logistics coordination for STEM competitions and robotics challenges in Hawaii.

Having and affiliation with the Office of Naval Research (ONR) and other companies in Hawaii who have contracted with ONR, provides HSATE the resources to tap the existing community of science and engineering talent to support its mission. Further, HSATE is associated with the Association for Unmanned Vehicle Systems International Foundation (AUVSI Foundation). The AUVSI Foundation is a 501(c)(3) charitable organization that uses hands-on robotic programs to engage students of all ages and encourage them to pursue a career in robotics, engineering or any similar technological field. The Foundation has programs for K-12 and University students. The Foundation's robotic competitions challenge students to apply engineering skills in the development of robotic ground, air and maritime vehicles. Since 1991, the AUVSI Foundation has awarded nearly \$1 million in prize money to participating schools.

2. The goals and objectives related to the request;

The requested funding is for Hawaii to host a robotic competition in December 2016. "RobotX 2016 – Hawaii" is a follow-on competition to the very successful, inaugural "RobotX 2014 – Singapore". RobotX participants, which include select teams from around the Pacific Rim, are provided a 15' long catamaran that they are required to fully equip with sensors and onboard computing systems to make the boat into a fully autonomous robotic vehicle. The competitors' boats are required to complete a series of tasks that are comparable to what commercially developed robotics boats are being designed to do. Given the marine surroundings of Hawaii, it is expected that robotic boats could become an important technological and economic component for the Hawaiian Islands. The exposure to this event and the technology would introduce and excite Hawaiian students to the marine aspect and the general robotics field.

The RobotX 2016 competition will require competing teams to; field and compete their robotic vehicle (existing basic craft provided), conduct a formal design presentation to judges, establish and maintain a team website, and produce a formal journal paper to be published on the RobotX website.

3. The public purpose and need to be served;

This competition will showcase Hawaii as a prime resource for robotics excellence and all the benefits of the Hawaii ocean environment for technical development of unmanned marine vehicles. RobotX could become a catalyst for Hawaiian students to consider and pursue studies and careers in robotics. In addition to exposure to the competition, students will be introduced to a robotic kit called SeaPerch. We will incorporate hands-on activities for students and the public into the implementation of RobotX 2016. With media coverage, promotion in schools and

spectator-friendly support, we intend to make RobotX a major event in Hawaii and globally in 2016.

RobotX 2016 will reach out for coordination with Hawaii State Department of Education STEM activities, school robotics clubs and groups, and include the non-profit Hawaii Society for Technology in Education – a local supporter of robotics competitions and conferences.

4. Describe the target population to be served;

The target population to be served includes; Hawaii state K-12 and college students. The competition in RobotX 2016 is primarily for college students given the sophistication of the robotic systems. With robotics growing in popularity and interest, we will reach out to students of all ages to learn from and share in this event. The ultimate objective is to interest students in education and careers related to robotics and to also make maritime related industries aware of the capabilities and efficiencies of using robotic boats for new science and technical support tasks. STEM educators, school robotics clubs and similar groups will be notified and invited to; witness the competition, attend seminars, meet and interact with the competing teams, and meet and interact with AUSVI Foundation leadership.

5. Describe the geographic coverage:

Pacific Rim, State of Hawaii, Honolulu:

- The competition will be hosted in Hawaii and will be open to teams of students from countries around the Pacific Rim. The first RobotX held in Singapore included teams from; U.S.A., Australia, Singapore, Japan and S. Korea. We expect the list of competing countries to increase for 2016.
- Outreach and invitations to K-12 and college students State-wide will be extended.
- The event will be held in Honolulu and include a calm water location (likely near Honolulu town) and a rough water location (likely windward side).

Further, the event will be featured and accessible world-wide via the RobotX web site <http://www.robotx.org> .

II. Service Summary and Outcomes

1. Describe the scope of work, tasks and responsibilities;

RobotX 2016 - Hawaii will consist of the following major Tasks and Sub-tasks:

- a. Designing the challenges for the Competition:
 1. Courses including: the competition area, the practice area, and course boundaries
 2. Vehicle set-up and service area for teams
 3. Obstacles/Avoidance
 4. Recognition
 5. Common design requirements for competitors
 6. Common material and equipment requirements for competitors
 7. There will be land-based and in-water tasks, with evaluation and judging provided by an international panel of subject matter experts. Tasks rules will need to be established. Judges recruited.
- b. Publicizing the event including: local, national and international press, media PSAs, social media, and the RobotX website.

- c. Procuring and building the objects and elements of the event including: Course marks, obstacles, buoys, anchoring materials, sensor recognition schemes, other.
- d. Securing local vendors to provide the logistical items that will be required:
 - 1. Support docks, floats and other on-water equipment.
 - 2. Tents, tables, audio/visual equipment.
 - 3. Storage
 - 4. Hoists
- e. Working with local Hawaii firms for ancillary capabilities, i.e. hotels, catering, transportation, etc.
- f. Working with the students to ensure shipping, travel and transportation needs and a successful Competition.
- g. Conducting the Competition over a one week period including: actual on-water competition, auxiliary learning venue and sessions, logistics support including site security, judging, website maintenance and updates, public relations support, opening and closing ceremonies support.
- h. Demobilizing from the Competition including: competition site breakdown, vehicle breakdown and packing, shipping/storage of vehicles and equipment, and an event review and lessons-learned session with the Competition leadership team.

2. Provide a projected annual timeline for accomplishing the results or outcomes of the service;

Planning for RobotX 2016 - Hawaii:

- Q1 7/1-9/31: - Initial planning, prospective site visits
 - Finalization of tasks and rules; Initial PR and release; Solicitation of participating teams
 - Selection of RobotX 2016 teams; securing local support and vendors
- Q2 10/1-12/31: - Fab and shipping of boats to competitors; coordination with local support
 - Fab and shipping of boats to competitors; coordination with local support
 - Continued site refinement and planning; consultation and support of teams
 - Increasing PR efforts in advance of the competition
 - Heightened PR and local publicity; finalization of outstanding support issues, final site and course issues resolved
 - RobotX 2016 – Hawaii occurs; post-event publicity ongoing,
- Q3 1/1-3/31: - Demobilize, Review, Lessons learned, Report

The project work will commence upon award and continue for up to 12 months. The following timeline details the activity:

Planning for RobotX 2016 - Hawaii:	Q1 7/1-9/31	Q2 10/1-12/31	Q3 1/1-3/31	Q4 4/1-6/30
Initial planning, prospective site visits				
Final tasks & rules; Initial PR; Solic. Teams				
Sel. RobotX 2016 teams; ID local support and vendors				
Fab & ship boats; Continue planning				
Continue site plan; Consult & support of teams				
Ramp up PR to prior competition, Monitor/support teams				
High PR; Final coord/support; Final site & course plan				
RobotX 2016 Hawaii occurs; PR ongoing; Demob, review				
Demobilize site, Return equipment, Review and report				

3. Describe its quality assurance and evaluation plans for the request. Specify how the applicant plans to monitor, evaluate, and improve their results;

Each step of the process will be closely monitored by an Oversight Committee consisting of representatives from the AUVSI Foundation, the U.S. Office of Naval Research, local engineering/marine companies, and (as available) State of Hawaii personnel from the University of Hawaii and/or the Department of Education. We will develop a detailed timeline and task matrix with regular status meetings and calls to ensure timeliness and progress. Significant experience was obtained from RobotX 2014 held in Singapore and will be invaluable in producing a quality competition with valuable educational outcomes.

4. List the measure(s) of effectiveness that will be reported to the State agency through which grant funds are appropriated (the expending agency). The measure(s) will provide a standard and objective way for the State to assess the program's achievement or accomplishment. Please note that if the level of appropriation differs from the amount included in this application that the measure(s) of effectiveness will need to be updated and transmitted to the expending agency.

The measures of effectiveness and accomplishment that will be reported to the expending agency or other as necessary will include:

- Teams signed up with names, country, university affiliation
- Progress by teams in planning, readiness, schedule compliance
- Progress by Competition Committee including status of all tasks listed in II.1. above.
- Successful completion of the Competition
- Publication of each teams journal paper at the RobotX website
- Feedback/Lessons Learned reports from competing teams at the conclusion of the competition.
- Report of students, parents, teachers who are involved and participate from State of Hawaii K-12 schools, the University of Hawaii, and other educational institutions.

III. Financial

Budget

1. The applicant shall submit a budget utilizing the enclosed budget forms as applicable, to detail the cost of the request.

Please see attached completed budget forms following this section.

2. The applicant shall provide its anticipated quarterly funding requests for the fiscal year 2017.

Quarterly Funding Request

Q1 7/1-9/31	Q2 10/1-12/31	Q3 1/1-3/31	Q4 4/1-6/30	Total Grant
\$ 298,980	\$ 99,660	\$ 99,660	\$ -	\$ 498,299

3. The applicant shall provide a listing of all other sources of funding that they are trying to obtain for fiscal year 2017.

None. No other funds are being requested for 2017.

4. The applicant shall provide a listing of all state and federal tax credits that have been granted within the prior three years. Additionally, the applicant shall provide a listing of all state and federal tax credits they have applied for or anticipate applying for pertaining to any capital project, if applicable.

HSATE lists the following tax credits and capitol project tax credits:

Tax Credits	2014	2015	2016
State of Hawaii	\$0	\$0	\$0
Federal	\$0	\$0	\$0
Research & Development	\$0	\$0	\$0

Capitol Project Tax Credits	2014	2015	2016
State of Hawaii	\$0	\$0	\$0
Federal	\$0	\$0	\$0

5. The applicant shall provide a listing of all government contracts and grants it has been and will be receiving for program funding.

None. No other contracts or grants have been or will be awarded for the program funding.

6. The applicant shall provide the balance of its unrestricted current assets as of December 31, 2015.

Other than access to limited non-monetized non-proprietary intellectual property from AUVSI Foundation, ONR, and local engineering/marine companies, the unrestricted current assets are \$0.00.

IV. Experience and Capability

A. Necessary Skills and Experience

The applicant shall demonstrate that it has the necessary skills, abilities, knowledge of, and experience relating to the request. State your experience and appropriateness for providing the service proposed in this application. The applicant shall also provide a listing of verifiable experience of related projects or contracts for the most recent three years that are pertinent to the request.

HSATE draws its support and experience from the AUVSI Foundation which has organized robotic competitions in many forms and from small to large scale dating back to 1991. These competitions have given us significant experience in planning, coordinating and running these events. Having just completed the first RobotX event in October of 2014, we have added to our existing experience and fully understand the unique complexities of the RobotX competition. That international event was managed in conjunction with the U.S. Office of Naval Research and the Singapore Ministry of Defence and, thus, was a multi-agency event. We are comfortable with having diverse stakeholders participate in our events and being able to meet the needs of each stakeholder.

B. Facilities

The applicant shall provide a description of its facilities and demonstrate its adequacy in relation to the request. If facilities are not presently available, describe plans to secure facilities.

The facilities to be used for the Competition and all logistics leading up to and immediately following the Competition will be temporary. No permanent/long term facilities are being acquired, rented or leased.

- A calm water competition area is anticipated Keehi Lagoon. The Marine Education and Training Center (METC) will be the temporary site for storing, servicing and supporting the competition. Applications have been made to DLNR/DOBOR for shore side and harbor access and to Honolulu Community College for METC access.
- Facilities for storage of team boats, challenge course materials and related equipment is expected to be donated by local engineering/marine companies. Outreach with positive feedback for commitments has been completed to date.
- Other logistics facilities such as lodging, meeting rooms, gathering sites will be booked in advance at best group/conference or government rates. Use of meeting rooms, work spaces and other sites will be solicited and may be offered by local companies.

V. Personnel: Project Organization and Staffing

A. Proposed Staffing, Staff Qualifications, Supervision and Training

The applicant shall describe the proposed staffing pattern and proposed service capacity appropriate for the viability of the request. The applicant shall provide the qualifications and experience of personnel for the request and shall describe its ability to supervise, train and provide administrative direction relative to the request.

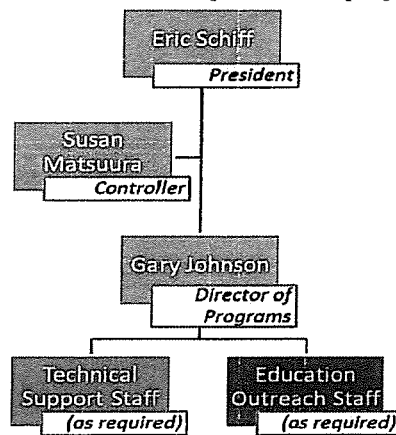
The staffing will be allocated over the term of project consistent with the Scope of Work and the tasks. Technical and program staff will be involved from the first month establishing the plan and procedures. Staff will continue with planning, coordination, logistics, PR and reporting. Finally, program staff will oversee the project and support all phases of task activity.

- Please see Appendix I for detail the staff experience and qualification.

B. Organization Chart

The applicant shall illustrate the position of each staff and line of responsibility/supervision. If the request is part of a large, multi-purpose organization, include an organizational chart that illustrates the placement of this request.

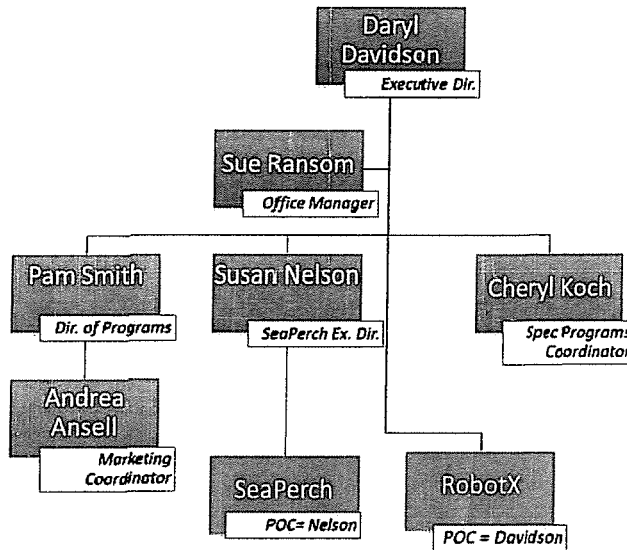
HSATE Staff include Eric Schiff, President; Gary Johnson, Program Director; Susan Matsuura, Controller and technical and outreach staff as required on a project basis (similar to the request).



AUVSI Foundation staff (Exec. Director, Director of Programs, Special Programs Coordinator, Marketing Coordinator, and Office Manager). On-site staff will include:

- 1 Technical Director
- 3 Assistant Technical Directors
- 1 Logistics Director
- 5 Assistant Logistics Assistants
- 3 Competition Support Staff
- U.S. Navy Reservists are expected to play a significant role in the operation of RobotX 2016.

AUSVI Foundation



C. Compensation

The applicant shall provide annual salaries paid by the applicant to the three highest paid officers, directors, or employees of the organization by position.

HSATE Salaries.

POSITION TITLE	ANNUAL SALARY
President	\$104,000.00
Program Director	\$83,200.00
Controls Engineer	\$93,600.00

VI. Other

A. Litigation

The applicant shall disclose any pending litigation to which they are a party, including the disclosure of any outstanding judgment. If applicable, please explain.

There is no litigation pending with Hawaii Science and Technology Education LLC.

B. Licensure or Accreditation

The applicant shall specify any special qualifications, including but not limited to licensure or accreditation that applicant possesses relevant to this request.

Please also refer to experience descriptions in Appendix I.

Staff includes personnel with the following licensure/accreditation:

- Hawaii State Professional Engineer (PE)
- USCG Ocean Operator's License (captain's/master's license)
- Honolulu City & County Lifeguard Certification
- CPR
- PADI Scuba Certifications including; Master Diver and Rescue Diver

C. Private Educational Institutions

The applicant shall specify whether the grant will be used to support or benefit a sectarian or non-sectarian private educational institution. Please see Article X, Section 1, of the State Constitution for the relevance of this question.

The grant will not be used to support any private educational institutions.

E. Future Sustainability Plan

The applicant shall provide a plan for sustaining after fiscal year 2016-17 the activity funded by the grant if the grant of this application is:

- (1) Received by the applicant for fiscal year 2016-17, but
- (2) Not received by the applicant thereafter.

The RobotX 2018 Challenge will be held in another country or state. The funding to support that next effort will be requested from that country or state's granting authority. As part of the next and future challenges, outreach will continue via HSATE, RobotX and AUVIS Foundation to Hawaii schools, colleges, robotics clubs and others who participate in RobotX 2016 - Hawaii.

F. Certificate of Good Standing (If the Applicant is an Organization)

If the applicant is an organization, the applicant shall submit one (1) copy of a certificate of good standing from the Director of Commerce and Consumer Affairs that is dated no earlier than December 1, 2015.

The Certificate of Good Standing follows as Appendix II.

BUDGET REQUEST BY SOURCE OF FUNDS

Period: July 1, 2016 to June 30, 2017

Applicant: Hawaii Science and Technology Education LLC

BUDGET CATEGORIES	Total State Funds Requested (a)	Total Federal Funds Requested (b)	Total County Funds Requested (c)	Total Private/Other Funds Requested (d)
A. PERSONNEL COST				
1. Salaries	\$175,776			
2. Payroll Taxes & Assessments				
Payroll Taxes	\$15,820			
DCAA Overhead/Assessments	\$161,714			
3. Fringe Benefits	\$54,490			
TOTAL PERSONNEL COST	\$407,799			
B. OTHER CURRENT EXPENSES				
1 Airfare, Inter-Island	\$0			
2 Insurance	\$5,000			
3 Lease/Rental of Equipment	\$10,000			
4 Lease/Rental of Space	\$0			
5 Staff Training	\$5,000			
6 Supplies (shirts, lanyards, signs, site)	\$5,000			
7 Telecommunication (wi-fi, apps, phone exp)	\$2,500			
8 Utilities	\$500			
9 Lodging	\$2,500			
10 Audio Visual - video production/streaming	\$5,000			
11 Shipping - competition boats & course equip	\$5,000			
12 Technology	\$10,000			
13 Outreach	\$25,000			
14 Vehicular Transportation	\$5,000			
15				
16				
17				
18				
19				
20				
TOTAL OTHER CURRENT EXPENSES	\$80,500			
C. EQUIPMENT				
D. MOTOR VEHICLE PURCHASES				
E. CAPITAL				
TOTAL (A+B+C+D+E)	\$498,299			
SOURCES OF FUNDING		Budget Prepared By:		
(a) Total State Funds Requested	\$498,299	Susan Matsuura [REDACTED] 5-6654		
(b) Total Federal Funds Requested		[REDACTED] Phone		
(c) Total County Funds Requested		[REDACTED] y 21, 2016		
(d) Total Private/Other Funds Requested		[REDACTED] Date		
TOTAL BUDGET	\$498,299	Name and Title (Please type or print)		

BUDGET JUSTIFICATION - PERSONNEL SALARIES AND WAGES

Period: December July 1, 2016 to June 30, 2017

Applicant: Hawaii Science and Technology Education LLC

POSITION TITLE	FULL TIME EQUIVALENT	ANNUAL SALARY A	% OF TIME ALLOCATED TO GRANT REQUEST B	TOTAL STATE FUNDS REQUESTED (A x B)
President		\$104,000	15.0%	\$ 15,600
Program Director		\$83,200	25.0%	\$ 20,800
Controller		\$72,509	10.0%	\$ 7,251
Mechanical Engineer/Technical Coordinator		\$68,286	30.0%	\$ 20,486
Mechanical Engineer/Logistics Coordinator		\$62,483	30.0%	\$ 18,745
Small Vessel Maintenance Manager		\$52,000	15.0%	\$ 7,800
Marine Mechanic III		\$81,827	15.0%	\$ 12,274
Marine Mechanic II		\$68,494	15.0%	\$ 10,274
Marine Mechanic I/Laborer		\$52,520	15.0%	\$ 7,878
Electrician		\$69,784	15.0%	\$ 10,468
Controls Engineer		\$93,600	25.0%	\$ 23,400
Outreach Coordinator		\$83,200	25.0%	\$ 20,800
				\$ -
				\$ -
TOTAL:				\$ 175,776

JUSTIFICATION/COMMENTS:
The budget listed above is based on estimates as available and previous experience with RobotX 2014 competition conducted in Singapore.

BUDGET JUSTIFICATION - EQUIPMENT AND MOTOR VEHICLES

Period: July 1, 2016 to June 30, 2017

Applicant: Hawaii Science and Technology Education LLC

DESCRIPTION EQUIPMENT	NO. OF ITEMS	COST PER ITEM	TOTAL COST	TOTAL BUDGETED
			\$0.00	
		\$		
		\$		
		\$		
		\$		
TOTAL:				
JUSTIFICATION/COMMENTS:				

DESCRIPTION OF MOTOR VEHICLE	NO. OF VEHICLES	COST PER VEHICLE	TOTAL COST	TOTAL BUDGETED
				0
		\$		
		\$		0
		\$		0
		\$		0
TOTAL:			\$0.00	0
JUSTIFICATION/COMMENTS:				

BUDGET JUSTIFICATION - CAPITAL PROJECT DETAILS

Period: July 1, 2016 to June 30, 2017

Applicant: Hawaii Science and Technology Education LLC

FUNDING AMOUNT REQUESTED									
TOTAL PROJECT COST	ALL SOURCES OF FUNDS RECEIVED IN PRIOR YEARS		STATE FUNDS REQUESTED FY: 2016-2017	OF REQUESTED FY: 2016-2017	FUNDING REQUIRED IN SUCCEEDING YEARS				
	FY: 2014-2015	FY: 2014-2015			FY: 2017-2018	FY: 2018-2019			
PLANS	0	\$0	0.0%	\$ -	0	0			
LAND ACQUISITION	0	\$0	0.0%	\$ -	0	0			
DESIGN	0	\$0	0.0%	\$ -	0	0			
CONSTRUCTION	0	\$0	0.0%	\$ -	0	0			
EQUIPMENT	0	\$0	0.0%	\$ -	0	0			
TOTAL:	0	\$0	0.0%	\$ -	0	0			
JUSTIFICATION/COMMENTS:									

GOVERNMENT CONTRACTS AND / OR GRANTS

Applicant: Hawaii Science and Technology Education LLC

Contracts Total: \$

	CONTRACT DESCRIPTION	EFFECTIVE DATES	AGENCY	GOVERNMENT ENTITY (U.S / State / Haw / Hon / Kau / Mau)	CONTRACT VALUE
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**DECLARATION STATEMENT OF
APPLICANTS FOR GRANTS PURSUANT TO
CHAPTER 42F, HAWAII REVISIED STATUTES**

The undersigned authorized representative of the applicant certifies the following:

- 1) The applicant meets and will comply with all of the following standards for the award of grants pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is licensed or accredited, in accordance with federal, state, or county statutes, rules, or ordinances, to conduct the activities or provide the services for which a grant is awarded;
 - b) Complies with all applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, sexual orientation, or disability;
 - c) Agrees not to use state funds for entertainment or lobbying activities; and
 - d) Allows the state agency to which funds for the grant were appropriated for expenditure, legislative committees and their staff, and the auditor full access to their records, reports, files, and other related documents and information for purposes of monitoring, measuring the effectiveness, and ensuring the proper expenditure of the grant.

- 2) If the applicant is an organization, the applicant meets the following requirements pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is incorporated under the laws of the State; and
 - b) Has bylaws or policies that describe the manner in which the activities or services for which a grant is awarded shall be conducted or provided.

- 3) If the applicant is a non-profit organization, it meets the following requirements pursuant to Section 42F-103, Hawaii Revised Statutes:
 - a) Is determined and designated to be a non-profit organization by the Internal Revenue Service; and
 - b) Has a governing board whose members have no material conflict of interest and serve without compensation.

Pursuant to Section 42F-103, Hawaii Revised Statutes, for grants used for the acquisition of land, when the organization discontinues the activities or services on the land acquired for which the grant was awarded and disposes of the land in fee simple or by lease, the organization shall negotiate with the expending agency for a lump sum or installment repayment to the State of the amount of the grant used for the acquisition of the land.

Further, the undersigned authorized representative certifies that this statement is true and correct to the best of the applicant's knowledge.

Hawaii Science and Technology Education LLC

(Type Name)

(Signature)

(Typed Name)

January 21, 2016
(Date)

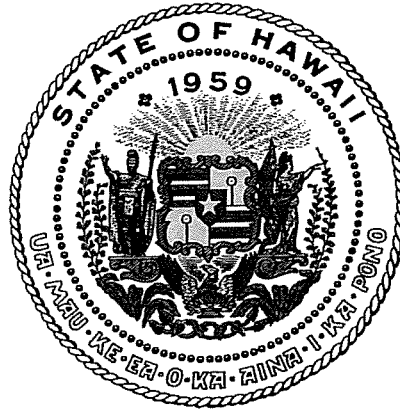
President
(Title)

Appendix I

Eric Schiff, *President*, has served as senior project manager for the past 25 years involved in maritime projects including ship construction, vessel operations and marine surveying and inspections. His responsibilities have also included negotiating subcontractor agreements and supervising all contractor activities, including work with national and international equipment suppliers. He serves on the Board of Trustees of Hanahauoli School and has provided marine career guidance and lectures to local high school students and the Kanehunamoku Voyaging Academy.

Gary Kahaleiwai Johnson, *Program Director*, earned a B.S.E. in Mechanical Engineering from the University of California at Santa Barbara in 2006 and a M.S. in Naval Architecture from the University of Southampton in 2011. He is a superb organizer and executes large and complex projects with efficiency and dedication. He spends the majority of his free time on boats and in the ocean. Gary is an avid fisherman, and he also paddles one and six-man canoes, surfs, kayaks, free-dives, and loves to stand-up paddle. He has paddled and escorted canoe races between Molokai and Oahu numerous times.

Brian J. Kays, P.E., *Controls Engineer* manages the Advanced Ride Enhancement Systems (ARES) Group. Mr. Kays holds a B.S. in Mechanical Engineering from the University of Washington and is a licensed Professional Engineer with the State of Hawaii. As a community volunteer, Mr. Kays has been involved with First Robotics since 2008. Initially, as an assistant coach and mentor to a First Lego League (FLL) team. That team qualified for and competed in the First Robotics World Championships in 2010 at Atlanta, Ga and in 2012 at St. Louis, Mo. Starting in 2012, Mr. Kays was a mentor for a First Tech Challenge (FCT) team which competed in the Southern California Regional FTC Tournament. At the Hawaii State Regional FLL and FTC Tournaments from 2009 to 2014, Mr. Kays has served as a Tournament Hardware Inspector in 2013 and as a Tournament Software Inspector in 2014.



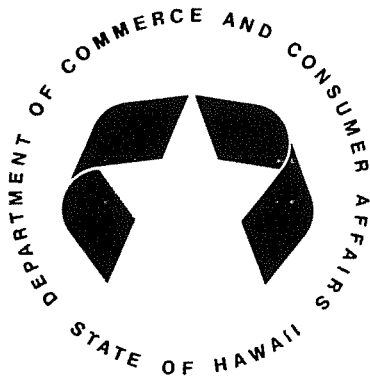
Department of Commerce and Consumer Affairs

CERTIFICATE OF GOOD STANDING

I, the undersigned Director of Commerce and Consumer Affairs of the State of Hawaii, do hereby certify that according to the records of this Department,

HAWAII SCIENCE AND TECHNOLOGY EDUCATION LLC

was organized under the laws of the State of Hawaii on 01/15/2015 ; that it is an existing limited liability company in good standing and is duly authorized to transact business.

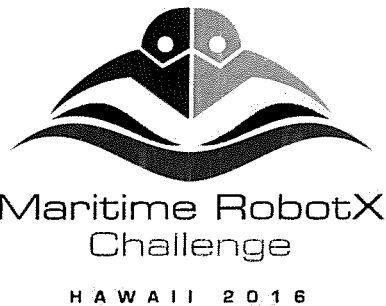


IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Department of Commerce and Consumer Affairs, at Honolulu, Hawaii.

Dated: January 20, 2016



Director of Commerce and Consumer Affairs



Maritime RobotX Challenge
December 11 – 18
Oahu, Hawaii

The AUVSI Foundation and the U.S. Office of Naval Research are proud to announce that the Maritime RobotX Challenge (RobotX) 2016 will be held in Oahu, Hawaii December 11 – 18, 2016. The following information may help in your planning and preparation.

Team Eligibility

- Student teams from anywhere in the world are eligible to participate.
- Interested teams should apply to:
https://auvsi.formstack.com/forms/robotx_2016_interest_form by 23 October 2015. Based on the competition venue space, the number of teams may be limited.

RobotX Official Boat

- All teams will be required to use the WAM-V surface craft manufactured by Marine Advanced Research (MAR) (www.wam-v.com) as their competition boat.
- Previous entrants may use their original WAM-V from RobotX 2014.
- New Teams will be required to acquire the WAM-V and other equipment.
- An industry partner, university, or government agency may provide the boat for the teams.

Industry and Student Participation

- All teams must have an active member of the team from industry.
- The industry participant may provide both technical and financial support.
- Former students and team members who have graduated and joined industry are encouraged to continue as team members and would fulfill the above requirement.

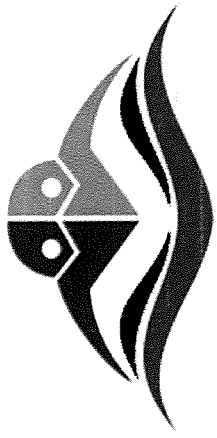
Tasks and rules

- RobotX 2016 will include tasks that require unmanned systems operating in multiple domains.
- Preliminary 2016 RobotX task ideas are available for your information.
- Along with the boat-related tasks, there may be tasks best suited for unmanned underwater vehicles (UUV) and/or unmanned aerial vehicles (UAV).

We are continuing to finalize other details about RobotX 2016 and will be posting updates on the website (www.robotx.org). If you'd like to receive future RobotX communications, please fill out the interest form located here:

https://auvsi.formstack.com/forms/robotx_2016_interest_form

Thank you for your interest in RobotX!



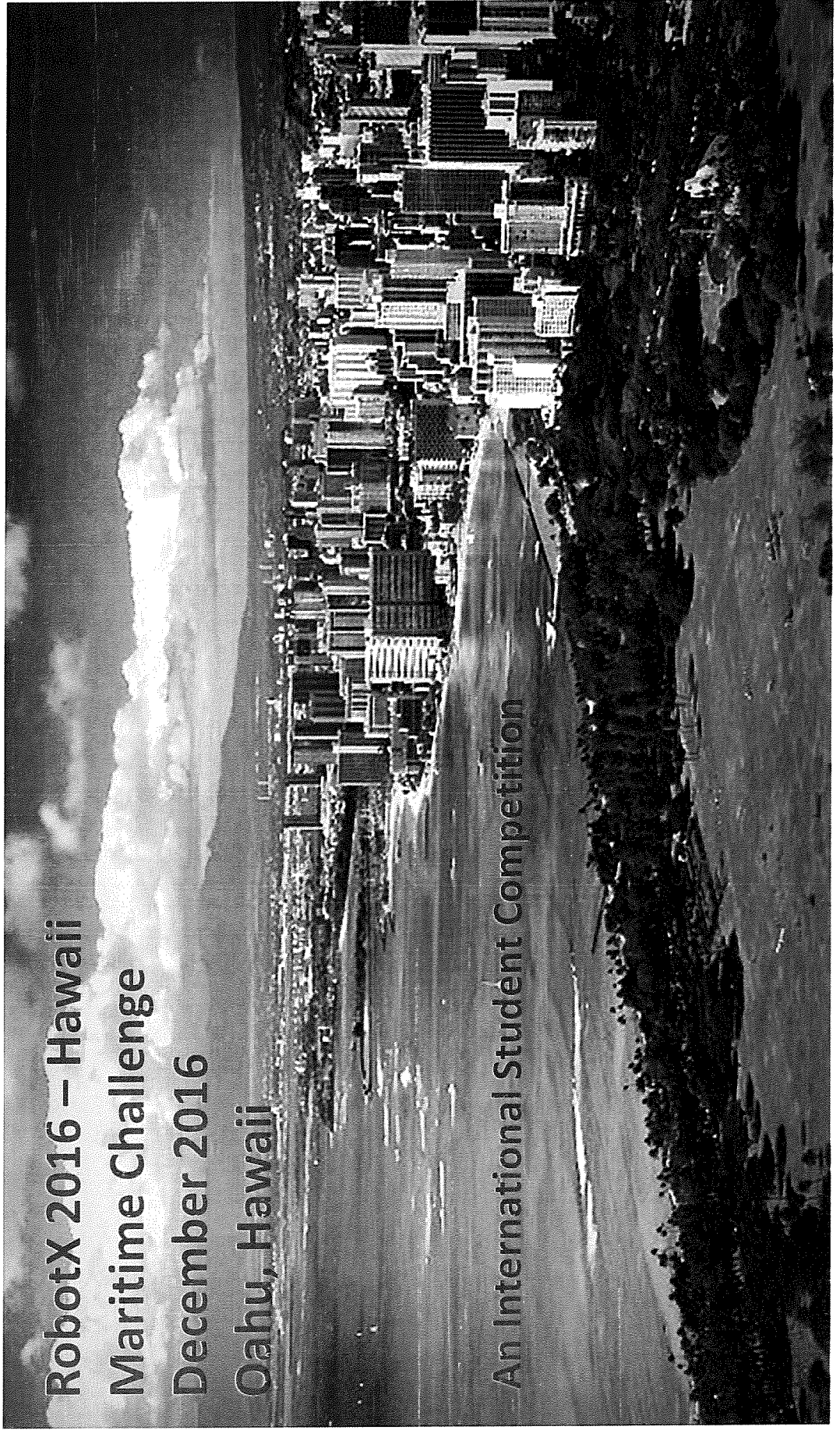
Maritime RobotX
Challenge

HAWAII 2016



RobotX 2016 – Hawaii Maritime Challenge December 2016 Oahu, Hawaii

An International Student Competition





Maritime RobotX
Challenge

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RobotX Background

- Conceived as a Pacific-Rim-focused event to promote maritime robotics and international engagement
- Primary sponsors were the US Office of Naval Research and the Singapore Ministry of Defence
- Inaugural Competition was held in October 2014 in Singapore
- 5 countries – US, Singapore, Japan, S. Korea and Australia – each designated three teams of university students. 15 teams competed in the first competition.
- 2nd Biennial event will occur in Hawaii in Dec 2016



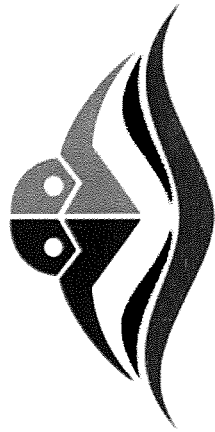
Maritime RobotX
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RobotX Objectives

- Create a successful International Student competition for autonomous surface vessels to
 - Promote STEM outreach
 - Promote interest in autonomous systems including power and energy, systems integration, and modeling and simulation
- Build on the successes of RoboBoat and RoboSub events
- Integrate multi-domain (Air, Ground, Underwater and Surface) in student competitions



Maritime RobotX Challenge

HAWAII 2016

ABOUT THE BOAT

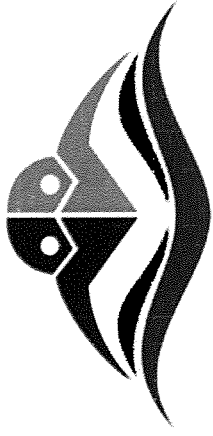


MAJOR DIMENSIONS AND PAYLOAD SPECIFICATIONS

- Beam: 96" (244 cm) [outside to outside]
- Overall Hull Length: 154" (391 cm)
- Ski Length: 112" (284 cm)
- Hull Diameter: 16.75" (42.6 cm)
- Payload: 300 lbs. (136 kg) maximum
- Full Load Displacement: 547 lbs. (255 kg) (estimated)
- Draft: 6.5" (16.5 cm) (estimated)

www.robotx.org





Maritime RobotX
Challenge

HAWAII 2016



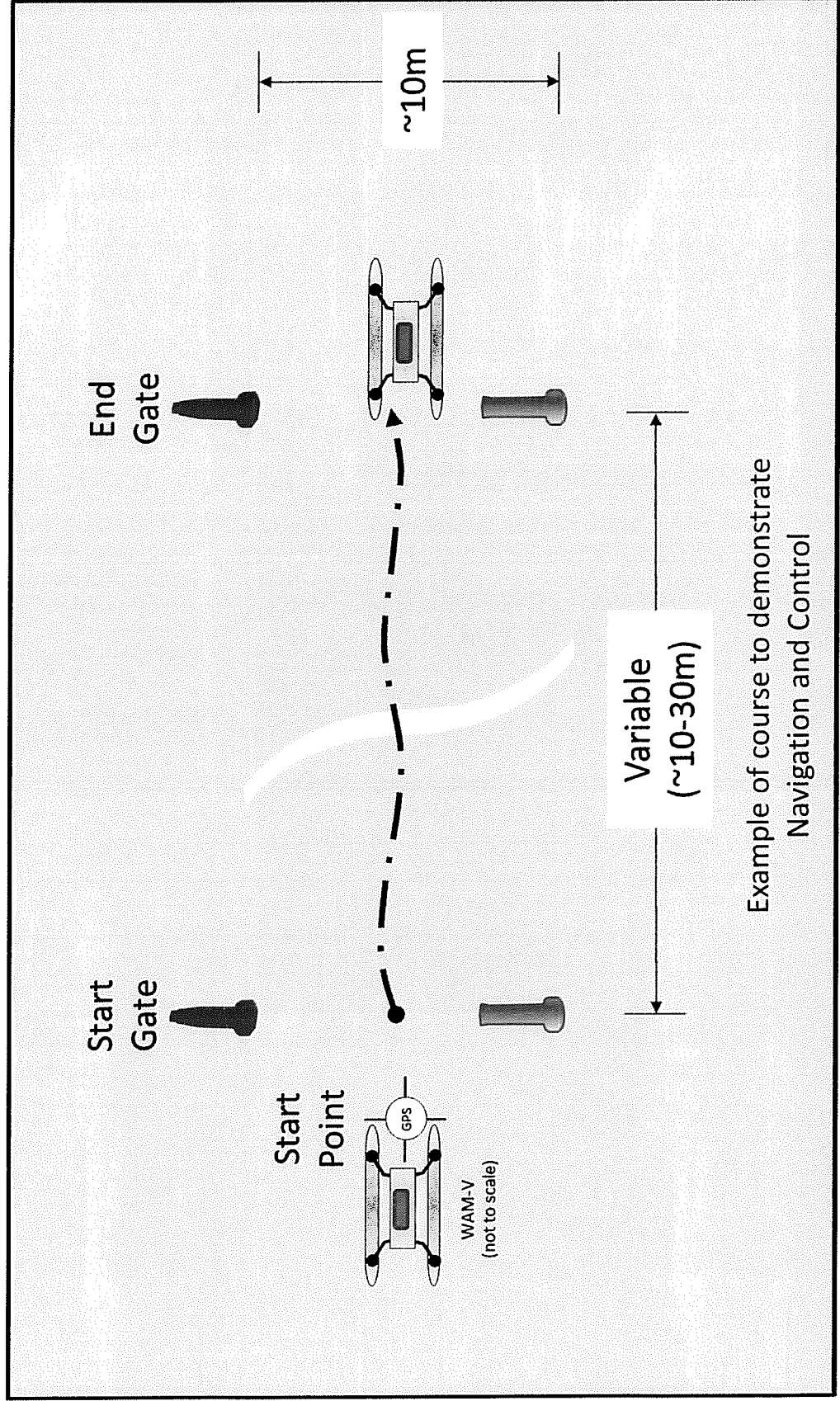
RobotX 2016 – Hawaii Maritime Challenge

Hawaii 2016 Organization

- US ONR – Primary Sponsor
- AUVSI Foundation – funded by ONR to act as overall Program Management
 - Planning
 - Marketing
 - Logistics
- Hawaii Science and Technology Education, LLC – Planning and Local Support
 - *Onsite Manpower*
 - *STEM Outreach*
 - *Other Cultural Integrated Aspects*
- U. of Hawaii, Manoa – Host Organization

www.robotx.org

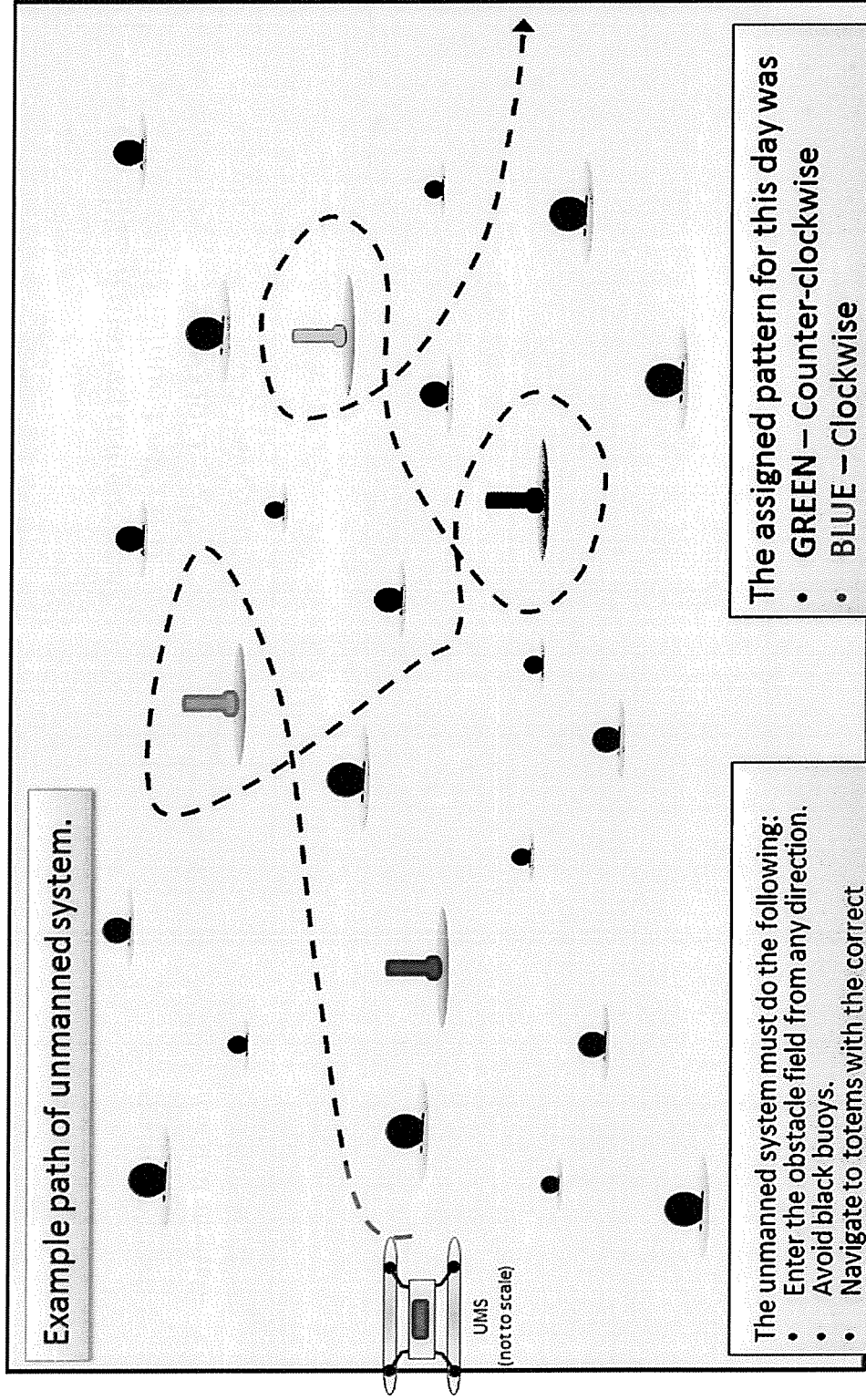
In-Water Tasks



Example of course to demonstrate
Navigation and Control

In-Water Tasks

Example of course to
 Find Totems and Avoid
 Obstacles



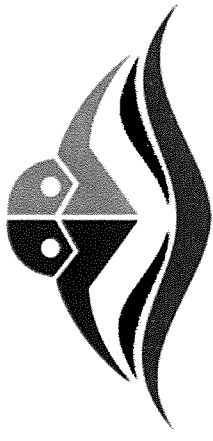
Example path of unmanned system.

The unmanned system must do the following:

- Enter the obstacle field from any direction.
- Avoid black buoys.
- Navigate to totems with the correct markings and circle them.

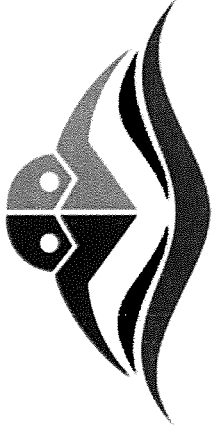
The assigned pattern for this day was

- GREEN – Counter-clockwise
- BLUE – Clockwise
- YELLOW – Counter-clockwise



Venue Selection: Key Considerations

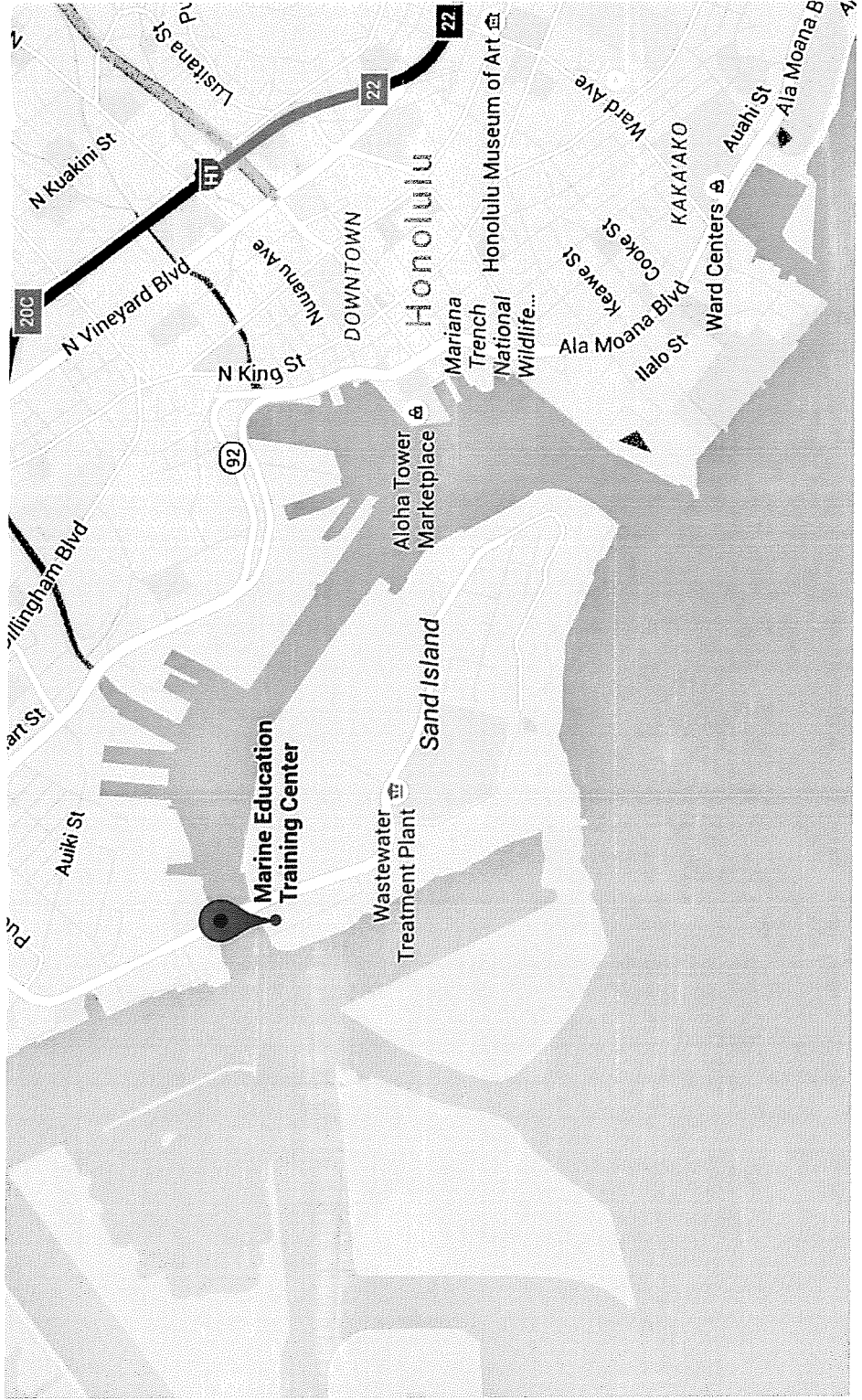
- Water Conditions – Calm option and Open option
- Boat Launch and Recovery
 - Ramp, crane or beach access
- Workspace for Teams Onsite
- Nearby, Affordable Lodging
- Power Supply
- Security (including overnight)
- Ease of Public Access
- Proximity to Supply Stores
- STEM Expo and Spectator Considerations



Maritime RobotX
Challenge

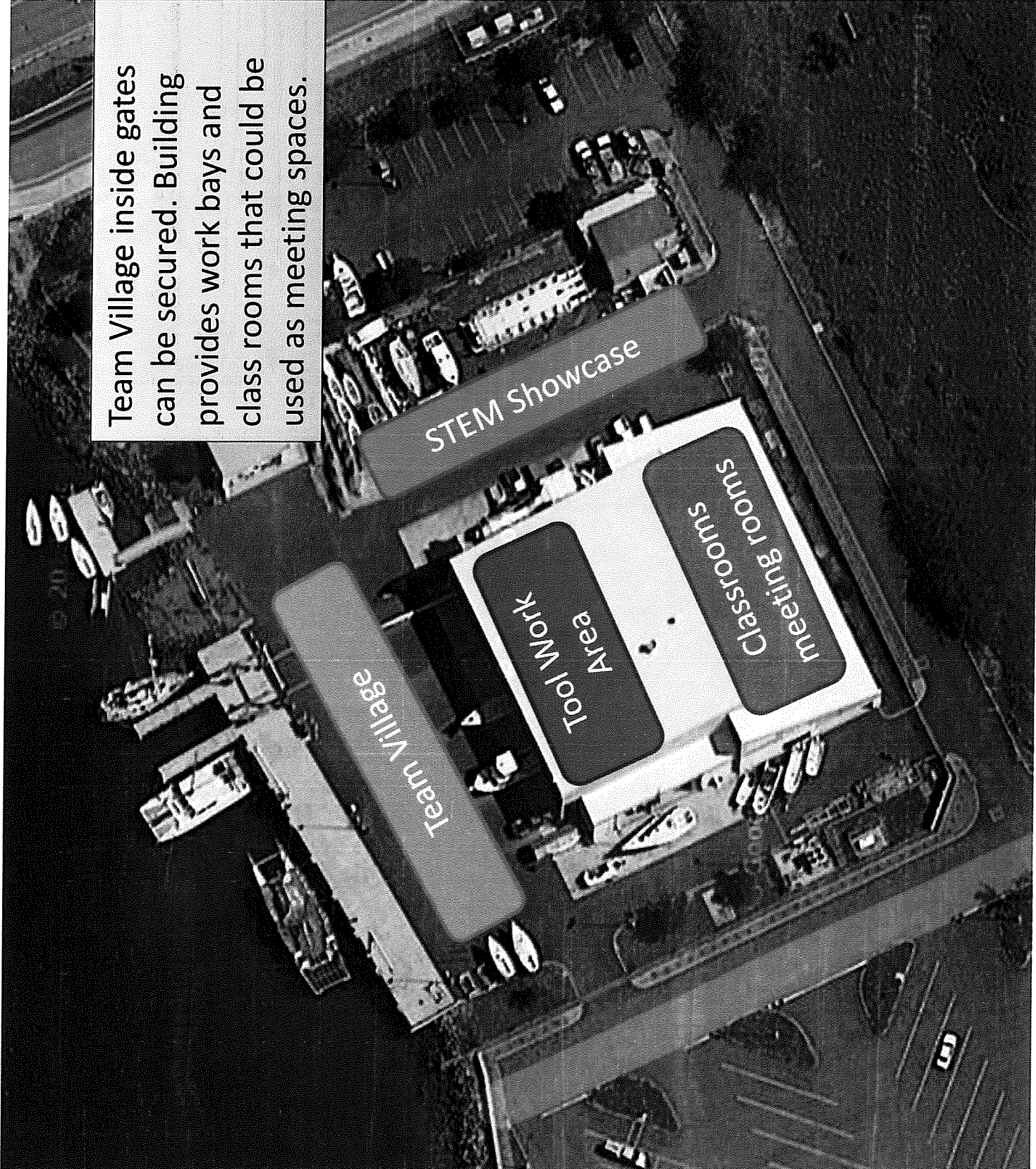
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Venue – Sand Island (METC)



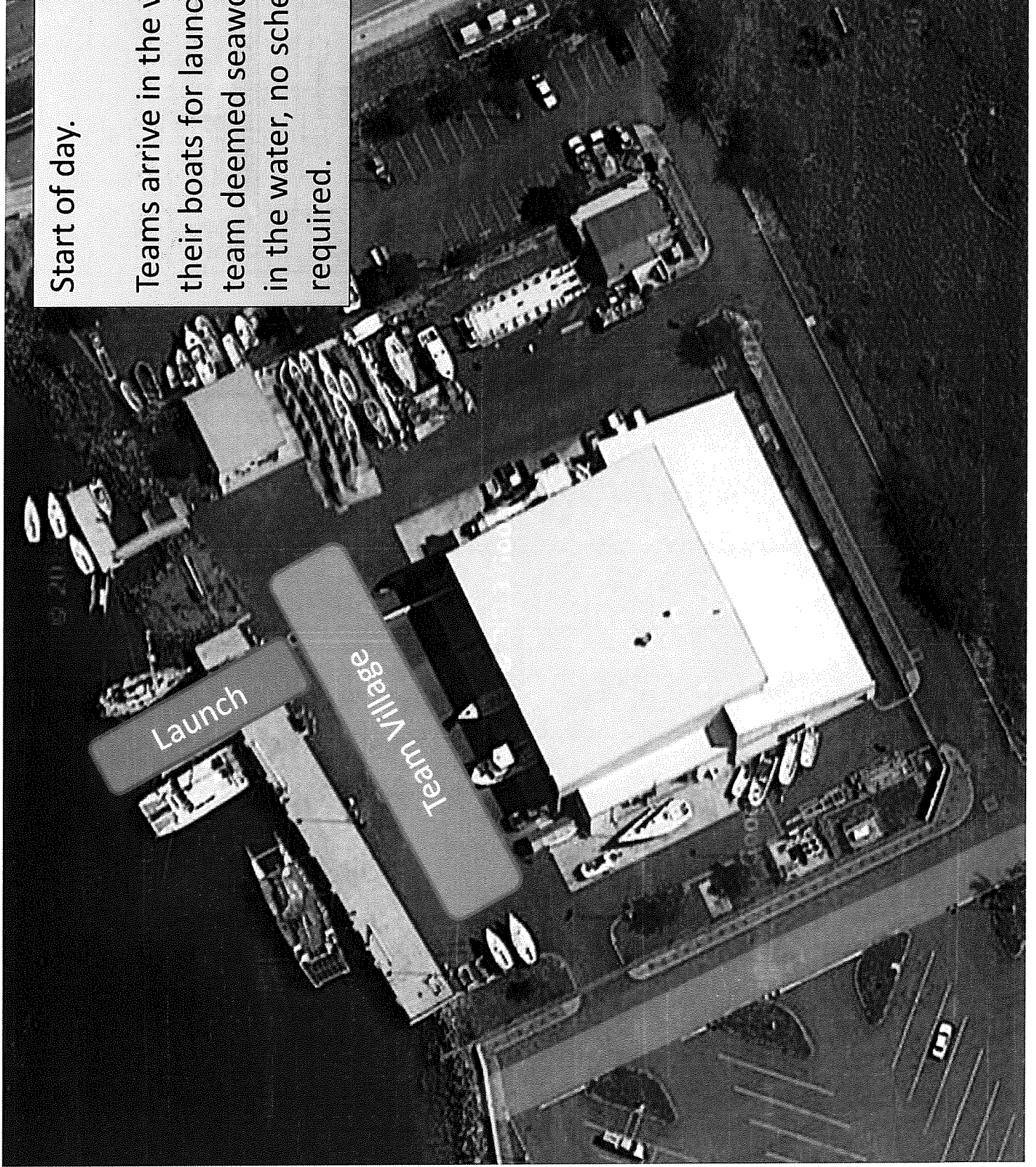


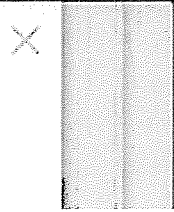
Team Village inside gates can be secured. Building provides work bays and class rooms that could be used as meeting spaces.



Start of day.

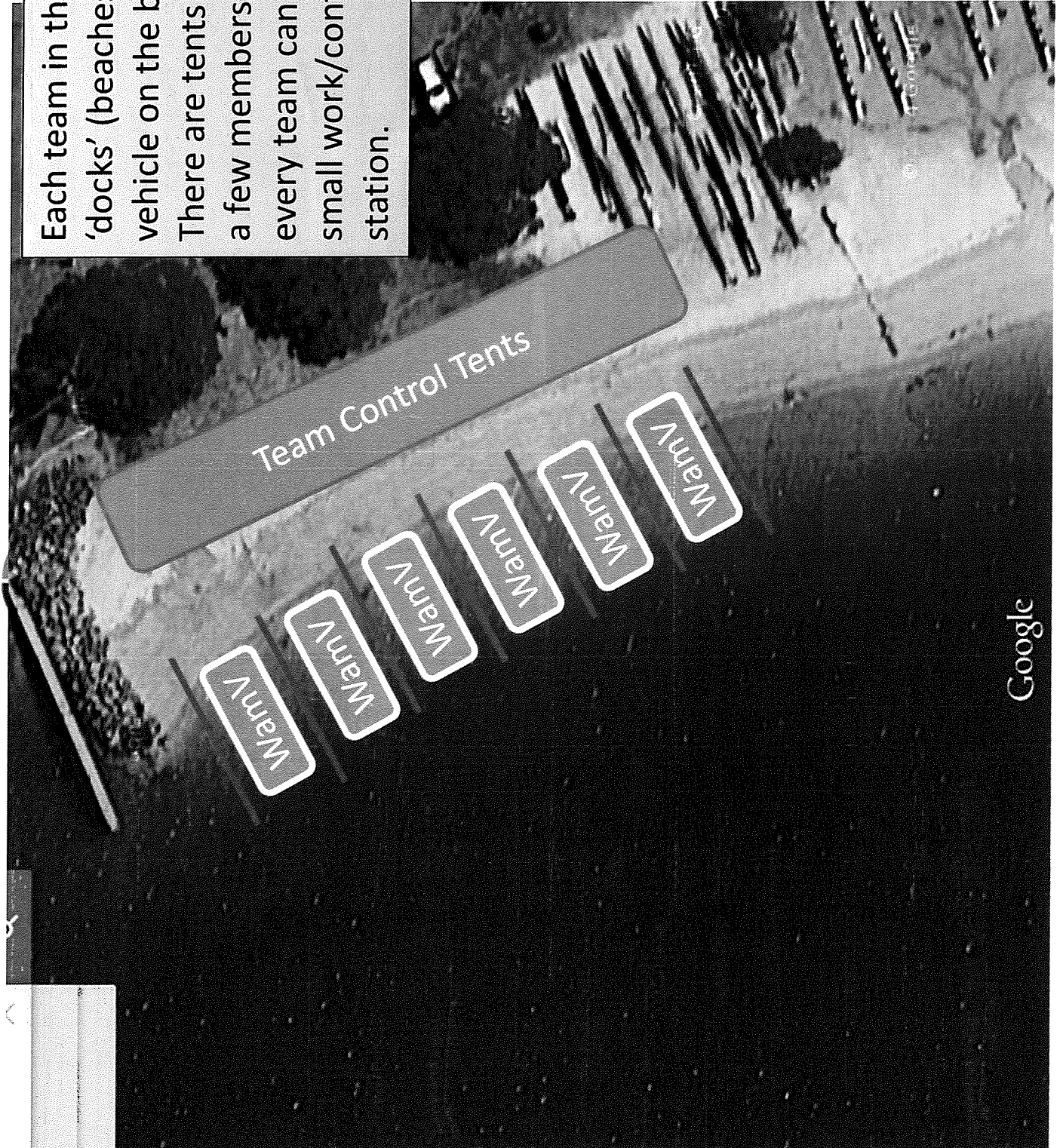
Teams arrive in the village, prep their boats for launch and any team deemed seaworthy can get in the water, no schedule required.





Teams remotely pilot their vehicles around corner and to the beach

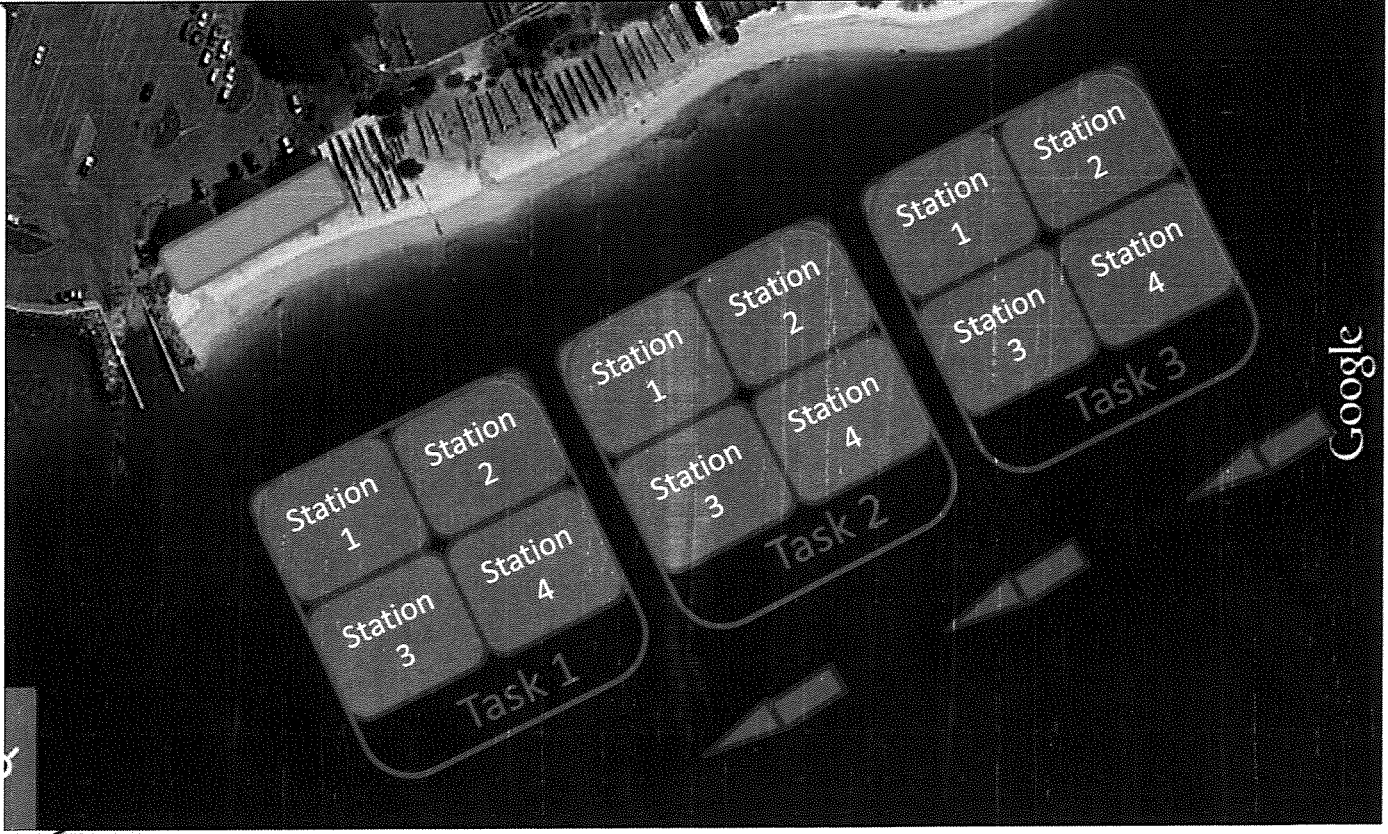
Each team in the water 'docks' (beaches) their vehicle on the beach. There are tents setup so a few members from every team can setup a small work/control station.



With ample water room, multiple copies (stations) of each task can be deployed. Any team that wants to 'launch' off beach to go test against a task ask the TD staff for a push-off request to a certain task and gets a station assignment and time allotment. If they want to continue to tweak code, they just come back to the beach and 'land' their craft.

Staff boats stand ready to wrangle any craft but aren't assigned to any one WAM-V.

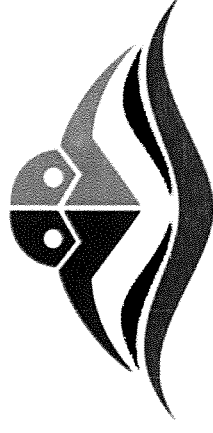
By allowing the teams to in essence remain in the water as long as they want maximizes their ability to tweak and test code rapidly. This venue allows us to operate in such a logistics reduced fashion.





Venue gives us a very multiple large swaths of water that are away from commercial and most pleasure craft traffic.





Maritime RobotX
Challenge

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RobotX 2016 - Hawaii

1. Will create a pinnacle STEM student outreach event.
2. Will promote interest among Pacific national partners in the science and technology of autonomous systems.
3. Will create a public-oriented STEM outreach event that will include university students, high school and middle school students, and provide opportunities for general public involvement in the event and co-located displays.