

# 2022 ROBOTX



## CHALLENGE

robonation

SYDNEY, AUSTRALIA  
NOVEMBER 11-17, 2022

ROBOTX TEAMTIME  
Thursday, October 27, 2022  
7:00 PM Eastern (US & Canada) Standard Time

# Welcome 2022 RobotX Teams!



## ROBOTX TEAM TIME

LET'S GET  
STARTED



- 1 Edit your name to "Name | Team Name"  
E.g., Aamir | University of RobotX
- 2 Let us know in the chat if you have any questions.  
We ran out of Aussie Fun Facts and animal noises (for now).

### AGENDA

[19:00-19:10]	Welcome & Updates
[19:10-19:15]	Schedule Overview
[19:15-19:20]	Day 1 Expectations
[19:20-19:30]	Prepping for Safety Inspections
[19:30-19:40]	Scoring Summary & Overview // Embedded Judges
[19:40-19:45]	Meet the Sponsors / Partners
[19:45-19:50]	Travel & Packing Tips
[19:50-END]	Questions?



# Welcome to



# Country



[RobotX.org/2022](https://RobotX.org/2022)



**15 DAY  
COUNTDOWN**

 [robotx.org/2022](https://robotx.org/2022)



**November 11 – 17, 2022  
Sydney International Regatta Centre  
20 teams!**



# Resources Now Available

[robotx.org/2022](https://robotx.org/2022)



2022 RobotX  
Team Handbook  
(V3)



Event Schedule



Presentation  
& Assessment  
Schedules



Shuttle Bus  
Map & Schedule



Venue  
Regulations

## Other Resources Available:

- OpenHSI Resources
- TeamTime Recordings & Slides
- Trailer Specifications
- Pilot Flight Test & UAV Demonstration
- Design Documentation Scoring Rubrics
- Technical Design Paper Guidelines
- Shipping Guidelines



RobotX.org/2022

# Schedule Overview

## DAY 1

### 11 November, FRI

0830 - 0900 Team Check-in  
0900 - 1000 Opening Ceremony  
1000 - 1200 Team On-Site Orientation  
1300 - 1800 Safety Inspections  
Pilot Flight Tests  
Courses Open  
1800 - 1830 Mandatory Team Meeting  
1900 Venue Closes

## DAY 2-4

### 12-14 November, SAT-MON

0730 Mandatory Team Meeting  
0800 - 1230 Courses Open  
0900 - 1600 Design Presentations  
1230 - 1330 Break - Courses Closed  
Tech Talks  
1330 - 1800 Courses Open  
1800 - 1830 Mandatory Team Meeting  
1900 Venue Closes

## DAY 5-6

### 15-16 November, TUE-WED

0730 Mandatory Team Meeting  
0800 - 1230 Courses Open  
0900 - 1600 System Assessments  
1230 - 1330 Break - Courses Closed  
Tech Talks  
1330 - 1800 Courses Open  
1800 - 1830 Mandatory Team Meeting  
1900 Venue Closes

## DAY 7

### 17 November, THU

0730 Mandatory Team Meeting  
0800 - 1100 Practice  
1100 - 1200 Yamaha Sky Demo  
1200 - 1700 Finals / Live Webcast  
1900 - 2130 Awards & Dinner

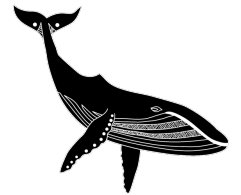
### 18 November, FRI

0900 - 1700 Team Pack-Up  
1500 - 1700 Boat Loading  
1900 Team Departure

## TECH TALKS



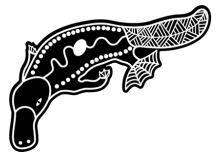
THALES





# What to Expect on Day 1

0700-0800	Morning Shuttle Bus <i>(Day 1 Pick-up Times: 0700, 0715, 0800)</i>
0830-0900	Team Check-In at RoboNation Booth
0900-1000	Opening Ceremony at Grandstand
1000-1200	Team On-Site Orientation // Walking Tour
1300-1800	Team Village Move-In // Safety Inspections
1800-1830	Mandatory Team Meeting <i>(At least 1 Team Member required)</i>
1930 1930)	Last Evening Shuttle Bus <i>(Other Day 1 Pick-up Times: 1700, 1730, 1830, 1900,</i>



# Preparing Your USV & UAV For Safety Inspections

## USV

- ☐ Kill switches on each metal suspension bar
- ☐ Demonstrate On-board Kill Switch Functionality
- ☐ Demonstrate Remote Kill Switch Functionality
- ☐ Verify tele-operation link (remote control)
- ☐ Buoyancy pods
- ☐ Clearly marked tow points forward and aft
- ☐ Forward and aft tow line
- ☐ Safety issues related to propellers
- ☐ Potentially dangerous protrusions
- ☐ Everything properly secured to the system
- ☐ Properly protected from rain (recommended)
- ☐ Kill switch system independent of any other software-controlled functionality of the operator's station

## UAV

- ☐ Propellers
- ☐ Motor mounts
- ☐ General airframe & wiring integrity
- ☐ Battery security
- ☐ Battery capacity checks
- ☐ Range test(s)
- ☐ Integrations tests with autonomous systems
- ☐ Autonomous flight control disconnected to enable manual flight control mode





# Summary of Scoring Approach

Refer to Section 3.1.2 in Team Handbook

## Qualifying Round

- Individual tasks are judged in binary manner. No scores are collected.
- AMS may make multiple attempts on tasks until successful qualification.

**Qualify for Semi-Finals Round:** Demonstrate proficiency on 5 of the 9 tasks.

## Semi-Finals Round

Teams may make multiple attempts to complete tasks on course during run.

In a Semi-Finals Run, the AMS must:

- Operate autonomously throughout entire run.
- Transmit heartbeat message to begin run.
- Enter course through one of gates in Entrance & Exit Gates task.
- Perceive and use light sequence from Scan the Code task to inform execution of other tasks.
- Attempt remaining Tasks 3-8 of their choice in any order.

**Qualify for Finals Round:** The best score earned will be used to determine placement in Finals Round.

## Finals Round

Teams may attempt to complete course as many times in allotted time.

In a Finals Run, the AMS must:

- Operate autonomously throughout entire run.
- Transmit heartbeat message to begin run.
- Enter course through one of gates in Entrance & Exit Gates task – this is considered the start of a new attempt.
- Perceive and use light sequence from Scan the Code task to inform execution of other tasks.
- Attempt remaining Tasks 3-8 of their choice in any order.

**Finals Ranking:** The best run will be used to determine final ranking in Finals Round.



# Scoring Overview

## UAV Launch / Recovery

Launch UAV from USV	1000
Land UAV back on USV	1500
Land UAV in recovery zone, autonomously	500

## Situational Awareness

Sit. Awareness: Send first heartbeat message to TD Network	100
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## Entry/Exit Gates

Entrance/Exit Gates: Enter Any gate, Correct gate	50, +100
Entrance/Exit Gates: Exit Any gate, Correct gate	50, +100
Entrance/Exit Gates: Clean Entrance / Exit	50 / 50 (100 max)
Entrance/Exit Gates: Send Entrance / Exit heartbeat message	100 / 100 (200 max)

## Follow the Path

Follow the Path: Enter / Exit path	100 / 100 (200 max)
Follow the Path: Maneuver through gates, without leaving path	100 / gate (600 max)
Follow the Path: Clean maneuver through full path	200
Follow the Path: Send heartbeat message	100

## Scan the Code

Scan the Code: Send heartbeat message reporting light pattern, Correct light pattern	100, +200
Scan the Code: Build judges' color display, Correct color display	100, +200

## Wildlife Encounter

Wildlife Encounter: Circle any wildlife in any direction	100 / wildlife
Wildlife Encounter: Circle correct wildlife in any direction	100 / wildlife
Wildlife Encounter: Circle correct wildlife in correct direction	500 / wildlife
Wildlife Encounter: Send heartbeat message	100
Wildlife Encounter: Submit map of wildlife	1000

## Detect & Dock

Detect & Dock: Dock in Any bay, Correct bay	100, +500
Detect & Dock: Send heartbeat message	100

## Find & Fling

Find & Fling: Throw ball	100
Find & Fling: Deliver ball in large hole - Any Color, Correct Color	100 / ball, + 100 / ball
Find & Fling: Deliver ball in small hole - Any Color, Correct Color	150 / ball, + 150 / ball
Find & Fling: Send heartbeat message	100

## UAV Replenish

UAV Replenishment: Pick up Any disc, Correct disc	200, +500
UAV Replenishment: Deliver Any disc, Correct disc	200, +500
UAV Replenishment: Send heartbeat message	100


# Embedded Judges

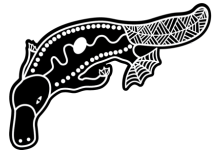
- A team judge is embedded with a team for the entire competition to observe and annotate significant decisions/events including background information and team reasoning.
- Embedded Judge will assist in liaising with the Technical Director staff on the team's behalf.
- During Qualifying Round, Embedded Judge will observe team's attempt and determine task success / failure with the Course Task Judge.
- Embedded Judge will participate in scoring discussions to determine scoring and awards.



# Meet the Sponsors/Partners

## SPONSORS & PARTNERS:

 RobotX 2022 Exhibitor  
Meet these folks in person!



[RobotX.org/2022](https://RobotX.org/2022)

# Travel & Packing Tips

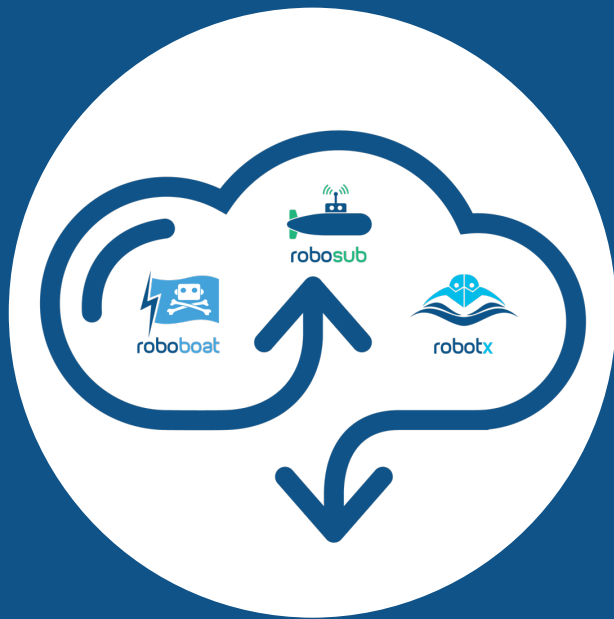
- ❖ Check the weather and pack accordingly.
  - ❑ It's springtime in Sydney and according to Myf, it's been raining on and off. The ground may be a bit soggy so wear shoes that will keep your feet dry and protected. We would not recommend slippers or sandals outdoors. And with rain comes the mosquitos...
  - ❑ There are coin-operated washers/dryers at the dorms and Mercure Hotel.
- ❖ Make a packing list and check it twice!
  - ❑ This includes your vehicle supplies and tools, as well as your personal clothing and toiletries.
  - ❑ DO NOT FORGET SUNBLOCK (AKA SUNSCREEN)!
  - ❑ Be sure you have all essential travel documents before you leave home!
- ❖ Stay hydrated and rested during travel and event.
- ❖ Don't forget power plug adaptors and voltage converters, if needed.
- ❖ Before you leave, figure out how you'll get from the airport to your dorm or hotel in Penrith.



# Last Minute Checklist

- ☐ If you used Myf Austin-Eames as your Australia contact, send your name and contact information to [autonomy@robonation.org](mailto:autonomy@robonation.org).
- ☐ If you have any deliverables outstanding, send ASAP to [autonomy@robonation.org](mailto:autonomy@robonation.org).
- ☐ Send liability waivers and YPP acknowledgement forms to [ycall@robonation.org](mailto:ycall@robonation.org).





# Data Sharing

 [robotx.org/data-sharing](https://robotx.org/data-sharing)

## What is Data Sharing?



DATA FOR ALL  
TEAMS



LARGE DOMAIN  
OF DATASETS



BETTER PLATFORM  
FOR NEW TEAMS



Centralized Repository



Community Driven



Competition  
focused

Vision  
Acoustics  
Mechanical Designs  
Electrical Designs







# RobotX 2022

 [robotx.org/2022](https://robotx.org/2022)

## RobotX TeamTime Meetings

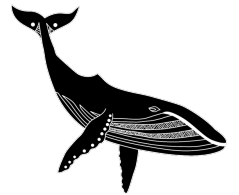
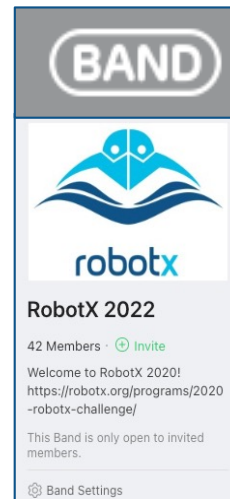
*Thursdays @ 7PM ET (U.S.) / Fridays @ 9AM AET (AU)*

- ~~14 July / 15 July~~
- ~~25 August / 26 August~~
- ~~29 September / 30 September~~
- ~~27 October / 28 October~~
- SEE YOU AT THE SYDNEY INTERNATIONAL REGATTA CENTRE!

## Sign up for the Band App

*Hop on the RobotX Band(wagon)!*

 [robotx.org/2022/band](https://robotx.org/2022/band)





# RobotX 2022

 [robotx.org/2022](https://robotx.org/2022)

## QUESTIONS?

### Thank you RobotX 2022 Organizers!





# robonation



seaperch



seaglide



gosense



roboboat



robosub



robotx



RoboNation is a 501c3 nonprofit organization whose mission is to provide a pathway of hands-on educational experiences that empower students to find innovative solutions to global challenges. Working together with the industry, research and educators, we have grown to include over nine student competitions and programs and engage more than 250,000 students per year.

For more information contact [university-competitions@robonation.org](mailto:university-competitions@robonation.org)