Autonomous Vehicles
Research Studio

QUANSER
INNOVATE·EDUCATE
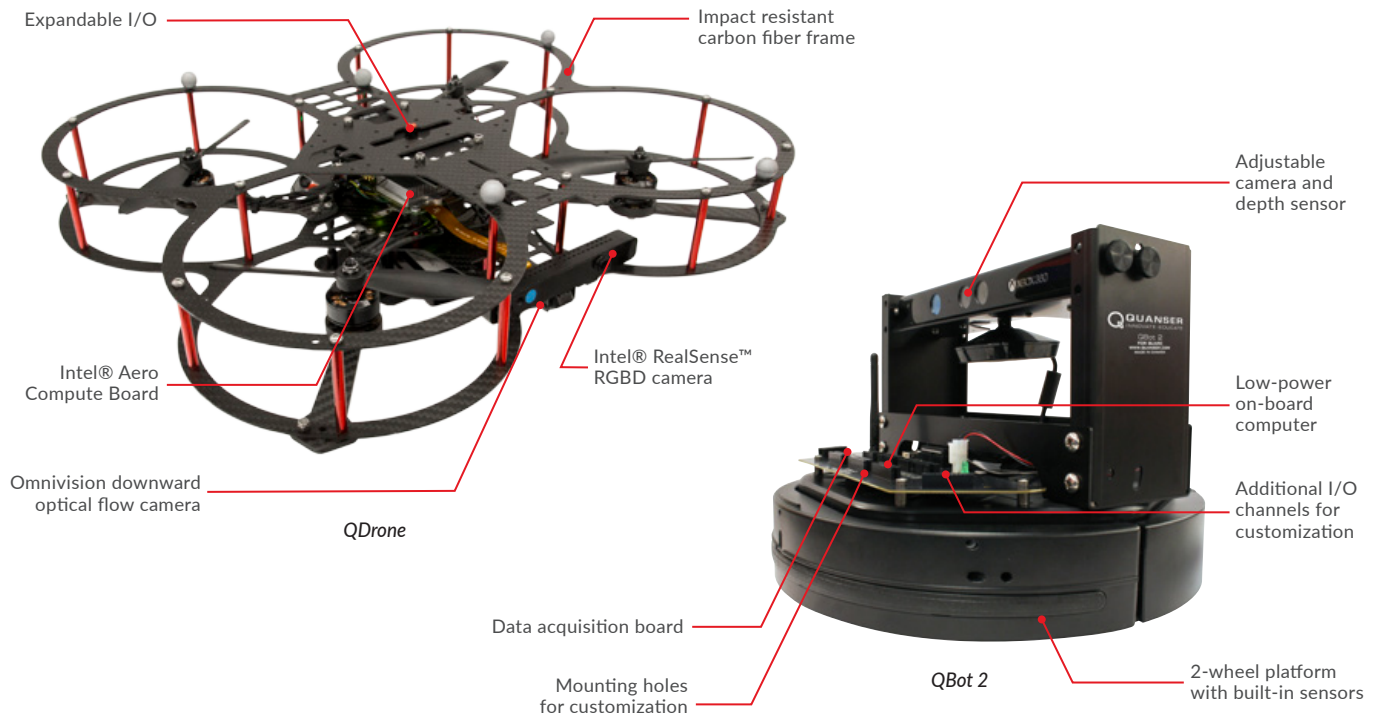
Advancement in technology and innovative applications has led to the proliferation of unmanned vehicle research. Many application areas have emerged that require not only multiple vehicles, but collaboration between multiple vehicle types. The diversity and complexity of these applications present significant challenges to researchers and developers, such as increasing difficulty in setting up and maintaining the evolving and growing drone fleet, as well as the need for standardized validation and verification platform to facilitate development, evaluation and analysis. Quanser's new Autonomous Vehicles Research Studio is the ideal solution for academics looking to build a multi-vehicle research program in a short amount of time.
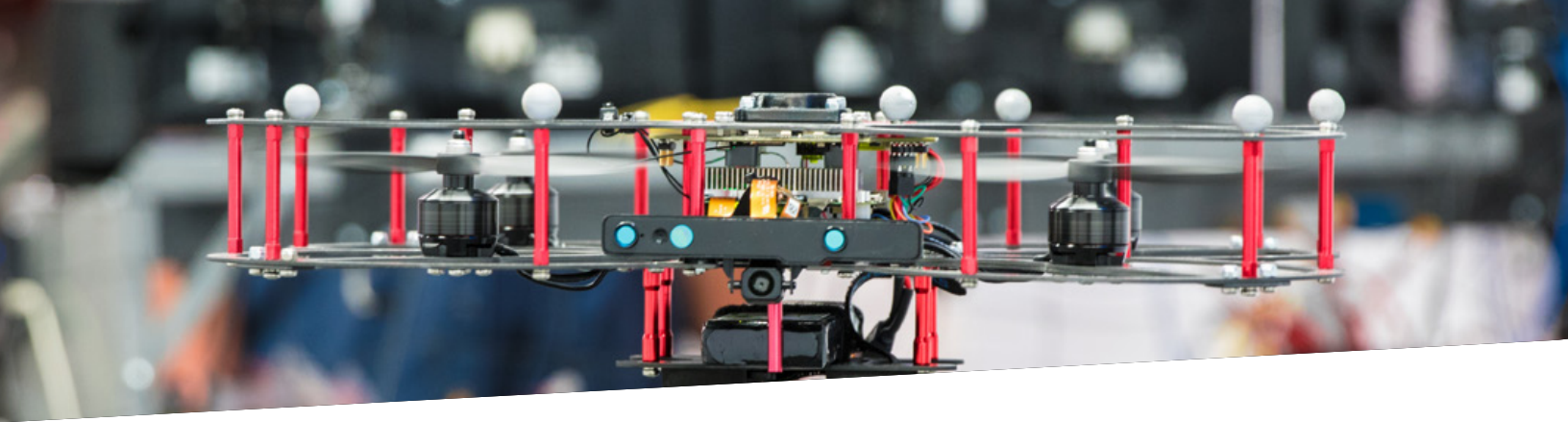
QUANSER INNOVATION UNLEASHED FOR AUTONOMOUS VEHICLES

At the center of the Research studio are two autonomous vehicles for air and ground: the QDrone and QBot 2. The successor of the QBall 2, the QDrone is a quadrotor air vehicle equipped with powerful on-board Intel® Aero Compute Board, multiple high resolution cameras and built-in WiFi capability. On the ground the QBot 2 is an innovative open-architecture autonomous ground robot, equipped with a wide range of built-in sensors and a vision system. Working individually or in a swarm, these are the ideal vehicles for your research applications.
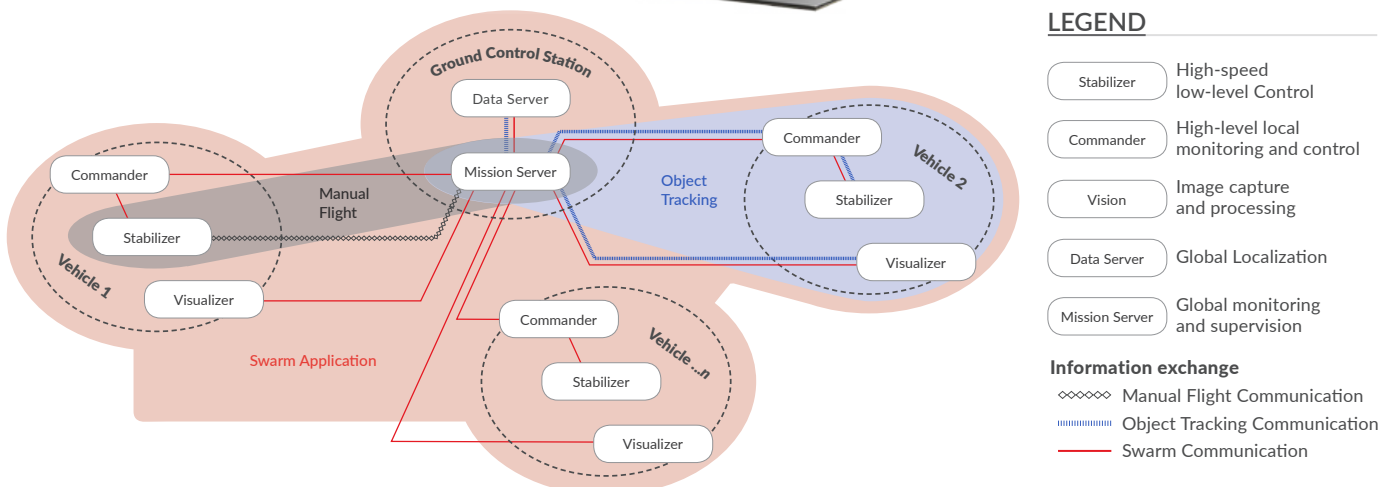

Expandable I/O
Impact resistant carbon fiber frame
Adjustable camera and depth sensor
Intel® Aero Compute Board
Intel® RealSense™ RGBD camera
Low-power on-board computer
Omnivision downward optical flow camera
Additional I/O channels for customization
QDrone
Data acquisition board
Mounting holes for customization
QBot 2
2-wheel platform with built-in sensors

COMPLETE SOLUTION

The Autonomous Vehicles Research Studio comes with everything you need to jumpstart your research.

◎ Vehicles	💻 Ground Station		⬡ Studio Space

▪ QDrone
▪ QBot 2
	▪ High performance computer:
	  Intel® Core i7
	  32 GB DDR4 RAM
	  Three monitors
		▪ USB flight controller
		▪ High performance router
			▪ Natural Point Optitrack Flex 13
			▪ Battery chargers
			▪ Protective net
			▪ Protective floor tiles
			▪ Ground camera

Products pictured are not to scale. Additional workstation components may be required. For full product information and system configurations, visit www.quanser.com

STUDIO ARCHITECTURE

The research studio software architecture is powered by QUARC® for Simulink®, and is designed to provide key functionalities required for multi-vehicle research through a variety of customizable modules. Each module is powered by QUARC's communication framework to be target independent. This enables researchers to build high-level applications and reconfigure low-level processes supported by prebuilt modules and libraries. Using these building blocks you can explore topics in advanced flight control, machine vision, SLAM, autonomy, and more.

LEGEND

Stabilizer	High-speed low-level Control
Commander	High-level local monitoring and control
Vision	Image capture and processing
Data Server	Global Localization
Mission Server	Global monitoring and supervision

Information exchange

◇◇◇◇◇◇ Manual Flight Communication

▥▥▥▥▥ Object Tracking Communication

——— Swarm Communication

QUARC's modular software architecture allows researchers to build high-level applications and reconfigure low-level processes quickly and easily.

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App available on
Android and iOS.