



## Off World Robotics

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BLUESat is a collection of undergraduate students the UNSW Australia dedicated to creating easy-to-access space technology. The Off World Robotics (OWR) team provides opportunities for students interested in the development of robotics systems, with a particular interest in the design of rovers for extra-terrestrial exploration. The team has been developing rover platforms for international competitions since 2014.

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### BLUESat's Mission

*"To take on practical space engineering projects and in doing so, give undergraduate engineering students hands-on experience with space technology."*

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## Facts About Us

-  OWR consists of around 20 undergraduates from UNSW Australia.
-  OWR runs with support and supervision from 3 prominent academics at UNSW
-  We are a multidisciplinary society, with students studying for degrees in Mechatronics Engineering, Computer Science, Mechanical Engineering and Electrical Engineering.
-  OWR exists under the umbrella of BLUESat - UNSW's society for Student Space Projects
-  Our BLUEtongue Rover traveled to Poland in September 2015 to compete in the European Rover Challenge and achieved 15<sup>th</sup> place out of the 40 teams there.
-  We were the first Australian team to take part in the European Rover Challenge.
-  Off World Robotics regularly does outreach events - taking the BLUEtongue rover to Primary and Secondary Schools to get kids interested in space and robotics.
-  The group receives ongoing mentorship from alumni, who currently hold positions at the European Space Agency, Google and Optiver amongst other prominent tech companies.

## Our Rovers

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### The BLUEtongue Rover

The Off World Robotics' BLUEtongue rover was designed as a prototype to rovers that may one day accompany a manned mission to Mars. It has been in development since mid 2014, and competed in the European Rover Challenge in September 2015, achieving 15<sup>th</sup> place out of the 40 competing teams. In this competition the rover was required to manipulate a mock-up of a reactor control panel, retrieve tools, navigate rough "Martian" terrain and take soil and rock samples. The rover itself cost \$15,000 AUD, excluding the cost of transport and accommodation for the competition.

BLUEtongue is a battery powered wireless platform, operated over WiFi using camera feeds and on-board sensors. The rover uses a rocker-bogie suspension system, similar to that of NASA's Curiosity rover currently operating on Mars. It features a robotics arm and claw able to manipulate and lift objects up to 5kg, with interchangeable attachments for sample collection and larger object manipulation. At the heart of BLUEtongue is a control and power board, designed and constructed in house. It controls incoming and outgoing signal, communicates with the on board computer and handles power distribution to the various motors and sensors.

The OWR team is currently in the process of upgrading and improving the rover, both as a testing platform for the future NUMBAT rover and with the aim to re-compete in the European Rover Challenge in 2016.

### The NUMBAT Rover

The planned NUMBAT rover is a continuation of what OWR has learnt from the BLUEtongue Rover. The OWR team plans to utilise a modular design for this new rover, increasing its versatility and allowing for easy addition of features.

The body of the NUMBAT rover will be constructed from Devlon® plastic rather than aluminum, reducing weight and allowing for more in-house machining. We will be changing to an off-road style suspension system to allow for faster navigation of rougher terrain. Our software team plan to combine sensor and camera data to create a real-time 3D third person view of the rover and its surroundings, allowing for better viewing and control of the rover as well as facilitating a more advanced autonomous driving system.

The cost of this new rover is estimated between \$16,000 and \$23,000 AUD. With our planned two year design cycle NUMBAT will be ready to compete in international competitions in 2017

## Sponsorship Levels

BLUESat Off World Robotics offers four levels of annual sponsorship benefits: Bronze, Silver, Gold, and Platinum. Bronze level sponsorship benefits are received by sponsors who have donated less than 1,500 AUD. Silver, and Gold level benefits are provided at sponsorship milestones of 1,500 AUD, 3,000 AUD respectively. Platinum level benefits are obtained through a 7,500 AUD cash or in-kind support, which can be directed to a project of your choosing. The benefits of each level are outlined below.

BENEFITS	BRONZE < \$1,500	SILVER \$1,500+	GOLD \$3,000+	PLATINUM \$7,500+
Monthly updates on the project's progress and invitations to BLUESat events	✓	✓	✓	✓
Company name and logo on BLUESat website and Facebook page.	✓	✓	✓	✓
Company logo on BLUESat posters and flyers		✓	✓	✓
Visible branding and verbal acknowledgement at BLUESat presentations		✓	✓	✓
Company logo displayed on all BLUESat clothing and merchandise			✓	✓
Visible signage on one side of the rover			✓	✓
Dedicated space on promotional material			✓	✓
Joint events with BLUESat				✓
Branding on top surface of rover				✓

## Sponsorship Levels

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### BRONZE - < \$1,500 AUD

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- You will receive monthly progress updates and invitations to BLUEsat events.
- Your company logo and name on the BLUEsat Website and Facebook Page

### SILVER - \$1,500+ AUD

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- Bronze level benefits
- Your company logo on all BLUEsat promotional materials, such as posters and flyers. These are commonly distributed at UNSW Engineering Events, University Open Days, and lectures.
- Visible branding and verbal acknowledgement at BLUEsat presentations. These include technical workshops attended by students, as well as academic presentations.

### GOLD - \$3,000+ AUD

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- Bronze and Silver level benefits
- Your company logo displayed on all BLUEsat clothing and merchandise, such as hoodies and shirts. These act as a uniform for BLUEsat members and are commonly worn about campus.
- Visible signage on one side of the rover. The rover will attend all BLUEsat promotional events and will also compete in international competitions, increasing your company's public exposure.
- Sponsored informational content in BLUEsat promotional events. This provides your company its own dedicated promotional space on promotional material

### PLATINUM - \$7,500+ AUD

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- Bronze, Silver and Gold level benefits
- Joint events with BLUEsat, offering direct access to UNSW's engineering student body.
- Branding on the top surface of the rover. This is the most visible surface of the rover, maximising your company's exposure at university events and International competitions

## Contact Us

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If you have any questions about BLUESat or would like become a sponsor please visit our website and Facebook page, or contact us directly via email.

Website	<a href="http://www.bluesat.com.au/">http://www.bluesat.com.au/</a>
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