

Create It Comp – information and resources

If anything is possible and you had unlimited time, money, help, and skill, what would you engineer?

The 'Create It Comp' is a competition in which students (and teachers!) can draw, paint, or build their idea and share it with Engineers Australia for their chance to win an iPad Pro and Apple Pencil.

Competition details

Entrants (students, teachers, or parents) need to create an original idea and a visual representation to meet the following question:

“If anything is possible, what will you create? If you had unlimited time, money, help, or skill, what would you invent, build, create, or engineer?”

Please refer to the [Create It Competition Terms and Conditions](#) for full terms and conditions, including eligibility to enter, competition dates, and full prize details.

Represent the idea as a pencil drawing, painting, or other 2D artwork of some kind; a photograph of a 3D item built to represent the idea; or a technical drawing. The visual representation must meet the following conditions for entry:

- It must be a high-quality scan of the original artwork, a high-resolution photograph (3508 pixels x 4961 pixels), or a high-quality file, that can be printed at A3 size.
- It must be in landscape format and one page only.
- Write a description of the idea to accompany the visual representation that tells us what you designed and why you designed it. This written description must be 100 words or less.

If you are a teacher, to submit students' entries, you must:

- Ensure the student is an Australian resident.
- Seek parental/guardian permission before entering the student. We have created a permission form to make things easy (see the website to download this).

- Complete the online entry form at <http://100yearsea.com.au/create-it-comp>. You do not need to submit the permission form with the entry, but we will ask to see this if your student wins. Please enter your information in the parent/guardian section in the entry form.

There are six prizes to be won in the following categories:

- Primary school students
- High school students
- Engineering university students and graduates (up to three years into their career)
- Engineering professionals (engineers with more than three years' experience)
- Adults (people more than 18 years of age) who aren't in engineering, including university students
- People's Choice award. The People's Choice award winner will be chosen through voting for your favourite entry.

The competition is open to anyone of any skill level. While the artwork is somewhat important to show us your idea, it is the idea itself that's important, along with the 100-word blurb to explain why you've created what you did.

Some tips for entries:

- Make sure you're thinking about your idea to truly meet the idea of 'anything is possible'. Don't think about how much it would cost to build, or how long it would take, or how much help you'd need to get it built. We want to see your idea, not the real-world requirements to make it happen.
- Make sure (as much as you can) that your idea is original. Do a Google search to see if anyone has come up with a similar idea. We will be checking when the competition closes, and this will factor into our judging.
- Make sure you've checked your 100-word blurb for grammatical and spelling errors.
- Re-read your 100-word blurb before submitting to make sure it makes sense.

General rules for the competition:

- Keep your entry respectful. This means that your comments/materials must not be inappropriate, abusive or otherwise offensive, and must not contain, discuss, depict or involve, without limitation, any of the following: profanity or otherwise crude, vulgar or offensive language; derogatory characterisations of any ethnic, racial, sexual or religious groups; content that endorses, condones or discusses any illegal, inappropriate or risky activity, behaviour or conduct.
- Engineers Australia respects intellectual property laws. By entering, you represent that you have the right to share the material in your entry, including, without limitation, trademarks and copyrighted material.
- You must assume personal responsibility for your entry and any information provided. If you are under 18 years of age, you must have parental consent to enter and they will take responsibility for your entry.
- A parent/guardian entry permission form has been provided and will only be required to be sent to Engineers Australia if a student's entry is shortlisted for a prize.

Pre-competition information and resource materials for classroom teachers

This year at Engineers Australia we are celebrating our Centenary.

The work of engineers touches every part of our lives, so this year is a celebration of Australian engineers who pushed boundaries, defied odds, and came up with innovations that no-one could have imagined 100 years ago.

These innovations include things like the Sydney Harbour Bridge, the Black Box Flight Recorder, Wi-Fi, 3D printed bones, and the Parkes Radio Telescope that helped televise the first moon walk.

Your students should enjoy watching this video about 100 years of engineering, and below there is some information about our Centenary Heroes.

WATCH: [100 years of engineering – Engineers Australia's Centenary](#)

CENTENARY HEROES

To showcase the amazing work of engineers, we're sharing the inspiring stories of five Centenary Heroes and their work to change the lives of Australians for the better.

We have produced an app that shares these stories. The app includes augmented reality experiences, facial recognition, games, articles and videos about each of the Centenary Heroes. Visit the [App Store](#) or [Google Play](#) to download it – search for '100 Years EA'.

Below you will find details of three of the Centenary Heroes for your students.

1. **Wheelchair Tennis Champion Dylan Alcott and Senior Sports Engineer Matt Crawford**

WATCH: [Dylan Alcott's story](#)

For professional athletes, any advantage over their opponents helps. For Dylan Alcott, a Paralympic champion in basketball and tennis and the winner of nine Grand Slam titles in tennis, that advantage is a custom-designed wheelchair.

Dylan's wheelchair was designed by the Australian Institute of Sport (AIS) Senior Sport Engineer Matt Crawford.

They had to start from scratch to make sure that Alcott's wheelchair tennis chair made sure it gave Alcott the best results, while also looking after his body. It was a challenge to create a seat that minimised pressure injuries, which could put Alcott out of competition for several months.

So, Crawford and his team created a custom carbon fibre seat for Alcott, moulding it to his body shape. Even the cushioning is different in the chair, so he gets support where he needs it.

Crawford worked with the wheelchair frame to improve it. For example, the team moved the centre of gravity up and down to get the best speed and agility. They had to get this just right – if the wheelchair turned too fast, it actually took speed off when changing direction to get to the ball in wheelchair tennis.

They also worked with the height and angle of the seat, so now when Alcott turns his upper body, the chair moves with him, meaning he uses less energy moving his chair when competing.

SEE WHOLE ARTICLE: <https://www.createdigital.org.au/sport-engineers-tennis-star-dylan-alcott-dominate-court/>

2. Professor Salah Sukkarieh and his farm bots

WATCH: [Salah's story](#)

Agricultural robots could make sure farmers have all the help they need on their properties, and help them operate more sustainably.

Professor Salah Sukkarieh (Suk-ah-ry-ah) works at the University of Sydney's Australian Centre for Field Robotics. He is best known for his work on agricultural robotics.

Professor Sukkarieh started working on 'agbots' almost 20 years ago, when he was designing drones that could identify weeds in a field.

The Australian farming sector has a lot of difficulties to overcome. Farm workers are getting older – the average age is 56 in Australia. Customers and supermarkets are demanding perfect fruit, and there are not enough people to work on the farms.

There's also a need to operate more sustainably – sustainably grown food is one of Professor Sukkarieh's passions.

So, he creates robots that can help. SwagBot is a four-wheeled, solar-powered robot able to navigate tough terrain and obstacles. It can be remote-controlled by a person or go through a pre-set route – it uses algorithms (computer coding) and GPS to avoid obstacles.

SwagBot also weeds as it goes, so farmers can cut down on chemicals like herbicides – now they don't have to spray a whole field.

SEE WHOLE ARTICLE: <https://www.createdigital.org.au/agricultural-robots-help-farmers-feed-world-sustainably/>

WATCH: [Catalyst episode on Professor Sukkarieh's work](#)

3. Dr Milan Brandt: 3D printed bone

WATCH: [Milan and Amanda's story](#)

While developments in 3D printing coming along in leaps and bounds, 3D printing a bone still sounds like a thing of the future.

Not for Dr Milan Brandt, who led the team that created Australia's first 3D printed spinal implant.

Amanda Gorvin was born with a rare spinal defect that stopped a vertebra from fully forming. Her quality of life was very low and her pain was '11 out of 10'. Commercially available implants didn't fit the gap in Gorvin's spine, and could have caused more problems.

Dr Brandt worked with neurosurgeon Dr Marc Coughlan to print and insert the custom designed implant.

They produced a lattice titanium cage to perfectly fit in Gorvin's spine. It was printed using software tools and 3D laser printers to build the implant, layer by layer, from titanium metal powder.

Just days into rehabilitation, Gorvin started walking. A few weeks after the surgery, she was almost completely pain free.

The surgeons and engineers had to work closely together to create the implant, so it was perfect down to the millimetre.

Dr Brandt is now looking at other ways to help people with his 3D printed bones. At the moment, he is working to 3D print custom bone replacements where bone cancer tumours have been removed, allowing as much as possible of the limb to be saved.

SEE ARTICLE on other biomedical engineering from Australia: [Australian biomedical marvels – the bionic eye, the pacemaker, and a 3D printed ribcage](#)

For more information about the Centenary Heroes and to take a look at our other two Heroes, visit our website:

https://100yearsea.com.au/centenary_heroes/