Engineering for Society Capstone Showcase

2025 Final Report

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Event Impact

The inaugural *Engineering for Society Capstone Showcase* was convened as a featured component of the 36th Australasian Association for Engineering Education (AAEE) Conference, hosted at the University of Queensland on Monday, 8 December 2025. Recognising the significance of the initiative, the AAEE organising committee scheduled the Showcase at 5:30 pm as an exclusive session, ensuring it did not compete with concurrent papers and workshops.

Justine Lawson, A/Prof. Benjamin Taylor, and A/Prof. Scott Daniel coordinated the Showcase. The hybrid format was managed with Justine joining through Zoom, Scott providing local Zoom and live audience support, and Ben presenting. Following the screening of selected student projects and Q&A sessions, an expert panel facilitated a reflective discussion, offering diverse perspectives to conclude the program.

Six projects representing 22 students from institutions across Australia were selected for presentation (Table 1). These exemplars demonstrated both technical proficiency and sociotechnical integration, highlighting engineering's capacity to deliver tangible human and community impact.

Over 60 people attended the event in person, with an additional 14 students online. Four students attended in person due to financial support from their university. The event showcased six projects by 22 students and facilitated discussions for each project between the students and conference delegates.

The informal feedback about the event was overwhelmingly positive, with students sending many delightful comments:

> *Thanks again from all of our team for all of your help and support for the showcase, it was a really great experience we all thoroughly enjoyed!*
>
> *Thank you so much. It was an absolute honour and privilege to be able to attend. I also really enjoyed getting to see all the other fascinating projects. Thank you so much for this memorable experience.*
>
> *Thank you so much for everything you've done for tonight! I love seeing how engineering is shifting and being a part of that.*

Conference delegates also expressed their support for continuing to highlight the social dimensions of engineering by showcasing outstanding student projects at AAEE. Delegates also offered to promote the initiative at their institutions to ensure future events shared new projects and celebrated the excellent work of other students and institutions.

Table 1: Projects Showcased

University	Students	Project	Video Link
CQUniversity (CQU)	Rylee Donald	Integrating community perspectives into WSUD: Enhancing concept design for social sustainability	
Australian National University (ANU)	Sam Eckton, Callum Edmiston, Harriet Furphy, Holly Jacob, Sarah Turner, Andrej Videnovic	Project Ver (Vision assist)	
University of New South Wales (UNSW)	Ina Nickel, Natalie So, Khushi Gupta	Assistive Tech Hub (Solomon Islands)	
UNSW (Canberra)	Patrick Phillips, Ashley Frater, Will Baird, David Darnell, Daniel Jensen, Muhammad Talha Yasin	Cessna 208 Caravan - Search and Rescue Conversion with Deployable Life Raft	
Macquarie University	Nathan Kernick, Shawn Welschinger, Aaron Luzaic, Laith Hillawi, Guney Yilmaz	SafeStep Modular walking cane	
University of Technology Sydney (UTS)	Cooper Crellin	Atoll Island Coastal Protection Framework	

The AAEE organisers for the 2026 conference, hosted by UNSW, have already confirmed their enthusiasm to embed the Showcase as a prominent feature of next year's program.

Project Delivery

Planning and delivery of the Showcase engaged universities across Australia and New Zealand. All 38 institutions offering engineering programs were invited to participate. The core organising team comprised A/Prof. Benjamin Taylor (CQUniversity), A/Prof. Scott Daniel (UTS), Dr Xi Jin (UTS), and independent coordinator Justine Lawson. Aaron Choong (Monash University) was instrumental in establishing the YouTube channel, which now serves as a permanent platform for disseminating student projects.

Justine, as the program coordinator, contacted the AAEE organising committee and negotiated inclusion in the conference program. Engineers Australia was also contacted, but they declined to provide formal sponsorship for the student prizes.

Promotion of the event and encouragement for coordinators to nominate projects occurred primarily via the ADTLN and emails from the program coordinator. Ultimately, 13 project submissions were received from nine universities, with six selected for presentation (Table 2).

The nomination process was designed and agreed upon by the participating universities with inclusivity in mind:

- All universities were permitted to nominate two projects, with the nomination process coordinated at a local level.
- A review panel consisting of the core working group evaluated the submissions according to the nomination criteria.

Selected for the Showcase were two individual projects and four group projects, collectively representing the work of 22 undergraduate engineers.

Unsuccessful projects did not meet all the mandatory criteria (Appendix A). In each case, students had not incorporated social considerations or community engagement as a deliberate and essential element of their project methodology. The timing of the inaugural program likely influenced this shortfall, as many projects were already underway before the criteria were disseminated. Nevertheless, several unselected projects achieved notable societal and environmental outcomes, though these were realised through technical innovations isolated mainly from broader social contexts. The fact that more than half of the submissions were unsuccessful underscores the continuing need for the Showcase to lead the establishment of a shared understanding of sociotechnical engineering practice. It also highlights the importance of facilitating institutional transition to ensure that future cohorts of engineering graduates cultivate a human-centred mindset and a genuine commitment to engaging with their communities.

Table 2: Outcomes of Submitted Projects

University	Project	Outcome
CQU	Integrating community perspectives into WSUD: Enhancing concept design for social sustainability	**Successful**
ANU	Project Ver (Vision assist)	
UNSW	Assistive Tech Hub (Solomon Islands)	
UNSW (Canberra)	Cessna 208 Caravan - Search and Rescue Conversion with Deployable Life Raft	
Macquarie	SafeStep Modular walking cane	
UTS	Atoll Island Coastal Protection Framework	
UNSW	AI4Everyone	**Unsuccessful**
University of Adelaide	Noise-Reducing Motorcycle Helmets	
University of Canberra	LUMI – Health Robot	
University of Canberra	SmartGate	
Murdoch University	Water Quality Monitoring	
University of Adelaide	The use of Fine Recycled Aggregate in Ultra High-Performance Concrete	
UTS	Unsupervised Fall Detection Using Hybrid Motion Anomaly Modelling*	

*Ineligible without institutional support

Australasian Reach

The overall project design facilitated opportunities to engage academics at key milestones. Twelve universities and 36 academics collaborated to design the nomination criteria, ensuring alignment with sociotechnical principles (Table 3). Capstone coordinators across participating institutions then provided feedback, strengthening the criteria's applicability and rigour. This is considered a high level of engagement for the inaugural event. The nature of the showcase, which includes all Australasian universities, enables institutions to be involved at a variety of levels, from simply promoting student nominations to participating in workshops and other key activities.

All non-participating institutions were contacted several times. Many deferred involvement until 2026 after seeing the event at AAEE.

Table 3: Universities and Academics Support (Design Phase)

University	Location	Academics
CQU	QLD	Ben Taylor (ADTL) and Raj Sharma
UTS	NSW	Xi Jin and Scott Daniel
CSU	NSW	Miao Li (ADTL) and Lala Senevirathana
ANU	ACT	Jeremy Smith (ADTL) and Jenny Simmons
Murdoch	WA	Keal Byrne
Monash	VIC	Joanne Tanner, Anand Mohan, Aaron Choong, Liz Ratnam and Ajay Mohanan (Malaysia)
UniSQ	QLD	Toan Dinh
UNSW	NSW	Neda Aboutorab, Chi King Lee, Damith Mohotti, David Powell, Haroldo Hattori. Hemant Singh, Keith Joiner, Jisheng Zhao, David Lyons, Warren Smith and Jianfeng Xue
UniSA	SA	Peta Lush
La Trobe	VIC	Matt Felicetti, Kurt Ambrose and Elsuida Kondo
University of Canterbury	NZ	Shayne Crimp, Digby Symons and Etienne Borde
Deakin	Vic	Siva Krishnan, Tim Hilditch and Ellen Moon

ACED Alignment

The Showcase was conceived as a direct response to the urgent calls articulated in the ACED2035 reports, which emphasise the imperative for engineering graduates to practise in ways that foreground human dimensions and societal needs. By highlighting innovative and impactful student projects, the Showcase advances ACED's strategic goal of positioning engineering as a powerful lever for societal change. The program provides a national stage for sociotechnical excellence, enabling students and institutions to demonstrate how engineering can directly address human challenges, with people and communities at the centre of design and practice.

The Showcase redefines how engineering achievements are recognised and perceived within the academic sector and the broader community. The core goal is to shift the conversation away from technical prowess alone toward celebrating projects that demonstrate excellence in sociotechnical design. This transition will take time. The mechanism to achieve this is for the Showcase to become a mainstay event at the AAEE conference. As noted above, the hosts for AAEE2026 (UNSW) have already indicated their commitment to elevating student engagement at the conference through leveraging this event as a prominent part of the conference program.

A crucial outcome is the creation of a dedicated YouTube channel, conceived as a "Change-the-Conversation" platform (Figure 1). Entitled *Engineering: Social Dimensions and Human Impact*, the channel simultaneously disseminates selected projects and provides promotional collateral for universities across Australia and New Zealand. By broadcasting student work to public, school, academic, and industry audiences, the platform enables engineering to be reimagined as a human-centred, socially impactful and technical profession. The channel will be formally launched as part of the 2026 invitation to participate and will be supported by the social media handle **@Eng4Humanity**.

The ACED Executive Committee approved funding of up to $20,000 (ex GST) for the 2025 Capstone Showcase, which was crucial to delivering the inaugural event. This financial commitment was used to secure the coordinator role, support the coordinator's attendance at AAEE2025, and provide prizes for students.

The event was delivered under budget because, due to personal reasons, the coordinator could only attend via Zoom. Engineers Australia declined to offer membership prizes. Instead, $100 online gift cards were arranged for each of the 22 students for the successful projects.

The total expenditure in 2025 for the project was $14,817.71, comprising $12,600 for coordination and $2,217.71 for prizes.

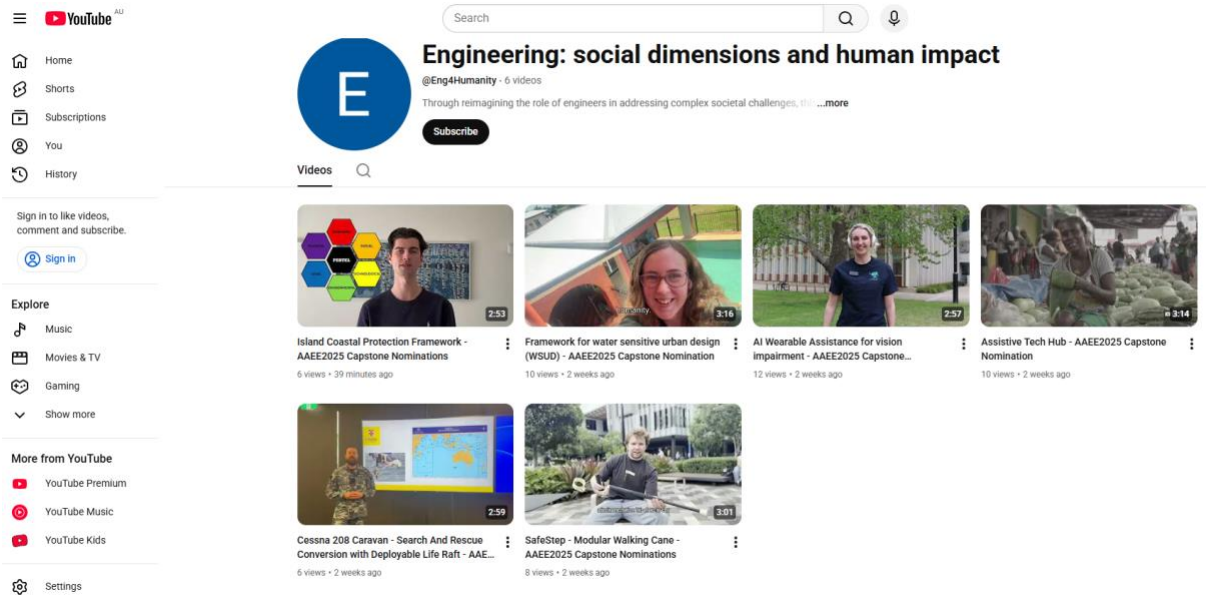

Figure 1: The Change-the-Conversation Platform

Conclusions and Recommendations

The inaugural Engineering for Society Capstone Showcase successfully adopted a low-risk model, employing an independent coordinator to engage a broad university network, underpinned by established platforms including the AAEE Conference and YouTube. Strong initial engagement—12 universities and 13 submissions—demonstrates both national reach and significant interest. The proportion of unsuccessful submissions (over 50%) highlights the ongoing need for the Showcase to facilitate institutional transition towards ACED's vision. The event's successful integration into AAEE2025, coupled with its confirmed inclusion in AAEE2026, demonstrates a solid foundation for sustained momentum.

Collectively, the inaugural Showcase has demonstrated both the viability and necessity of this initiative. It has established ACED as the founding institution supporting a program that champions excellence in sociotechnical design. Continued investment will ensure ACED maintains leadership of this scalable program, further advancing ACED2035 goals of diversity, social impact, and graduate readiness.

The success of the inaugural Showcase provides a strong foundation for expansion in 2026. Initial ideas for future improvements include:

- Broadening the communication strategy to increase institutional, academic, and student participation
- Refining the event to be more student-focused and interactive through innovative delivery methods
- Encouraging free one-day registration to AAEE for students whose projects are selected
- Providing financial support to enable student attendance at AAEE
- Revisiting prize sponsorship arrangements

The core working group respectfully recommends that ACED consider a separate proposal in early 2026 to continue supporting the Engineering for Society Capstone Showcase.

Appendix A – Capstone Project Nomination Criteria

Projects must demonstrate **all mandatory criteria 1-5** and **at least one optional criterion**.

Criteria	Explanation	Level
Clear communication and presentation	Strong communication skills are essential for presenting the project's significance. The “elevator pitch” should succinctly explain the project's value and the problems it addresses, with a focus on the social impact rather than just technical details.	**Mandatory**
Sociotechnical problem definition	The project is grounded in a clear understanding of the social elements and/or social context it addresses and how the technology interacts with it.	
Community engagement and human impact	The project employs intentional community engagement to understand the human impact and deliver tangible, positive outcomes for local communities or the broader society, while clearly showing the social contexts and goals.	
Sociotechnical integration	The project contributes to addressing real-world problems by purposefully integrating technical solutions with their social, ethical, and cultural implications.	
Real-world impact, readiness and application	The project investigates real-world impacts and demonstrates readiness for use by non-engineers.	
Scalability and accessibility	The project is scalable and considers all groups of society, ensuring that solutions are accessible and beneficial to diverse communities.	**Optional**
Multidisciplinary collaboration	The project includes diverse perspectives through collaborating across disciplines, not only within engineering but also with other relevant non-engineering experts.	
Creativity and innovation	The project showcases responsible innovation through creative approaches that address real-world issues to improve quality of life, skill development, or environmental sustainability.	
Ethical considerations	The project demonstrates a thoughtful approach to societal challenges and the potential impacts on communities.	
Assessment of impact	The project reflects contributions to addressing the social issue it targets, with clear evidence of achieving its goals and understanding the technical outcomes.	
Excellence in Engineering	Projects should exhibit high standards of engineering and technical output while ensuring the focus remains on the broader societal and environmental impacts.	