Design Robotics

Developing new ways to use robots for design-led manufacturing

Dr Jared Donovan & Dr Glenda Amayo Caldwell

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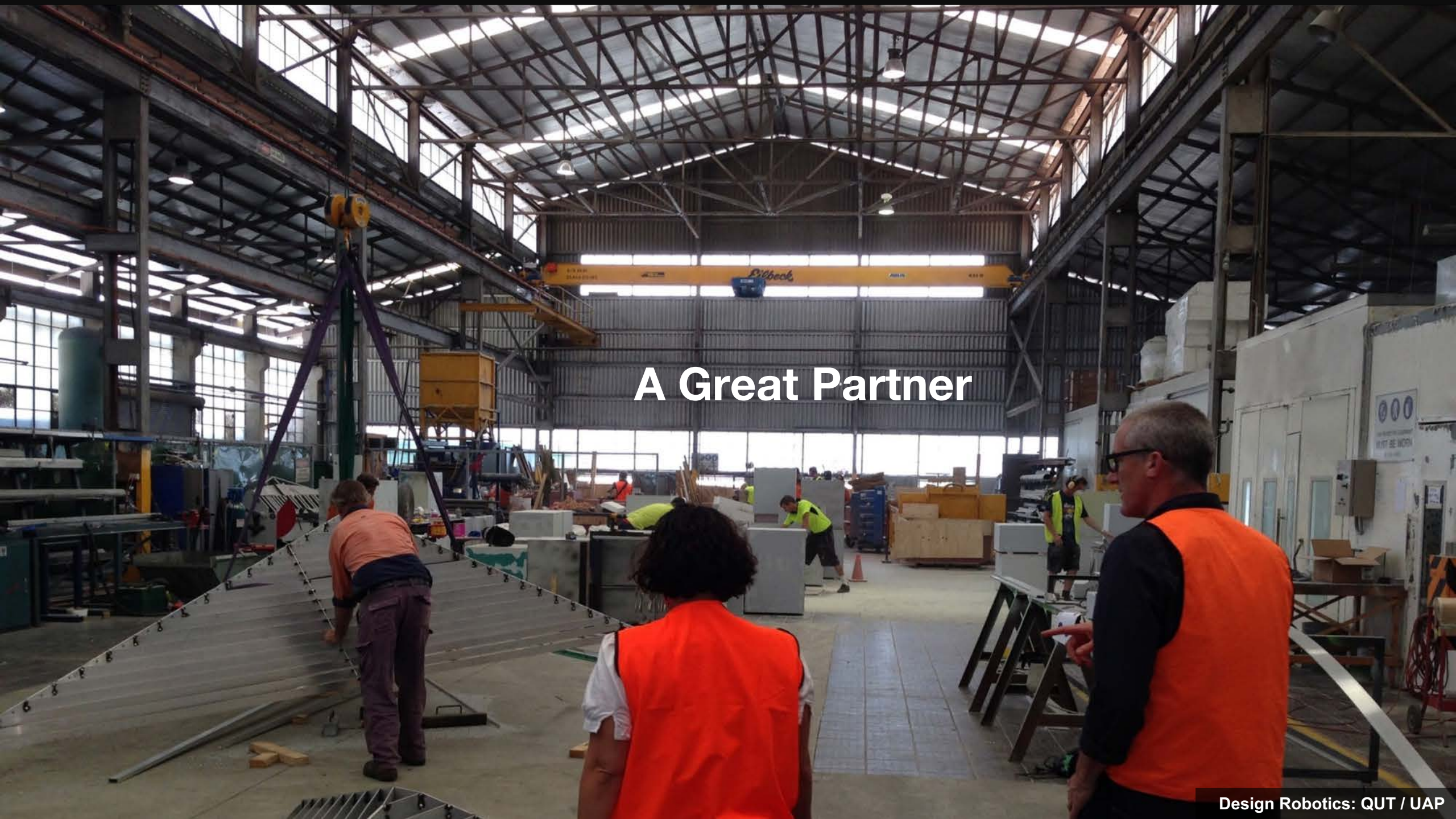
A Great Partner
Design Robotics: QUT / UAP

AUSTRALIAN CENTRE FOR ROBOTIC VISION

imcrc

QUT

RMIT UNIVERSITY

UAP

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Staircase UTS Sydney, Gehry Partners, 2014

GEHRY PARTNERS
UTS GEHRY STARICASE

UAP

uapcompany.com

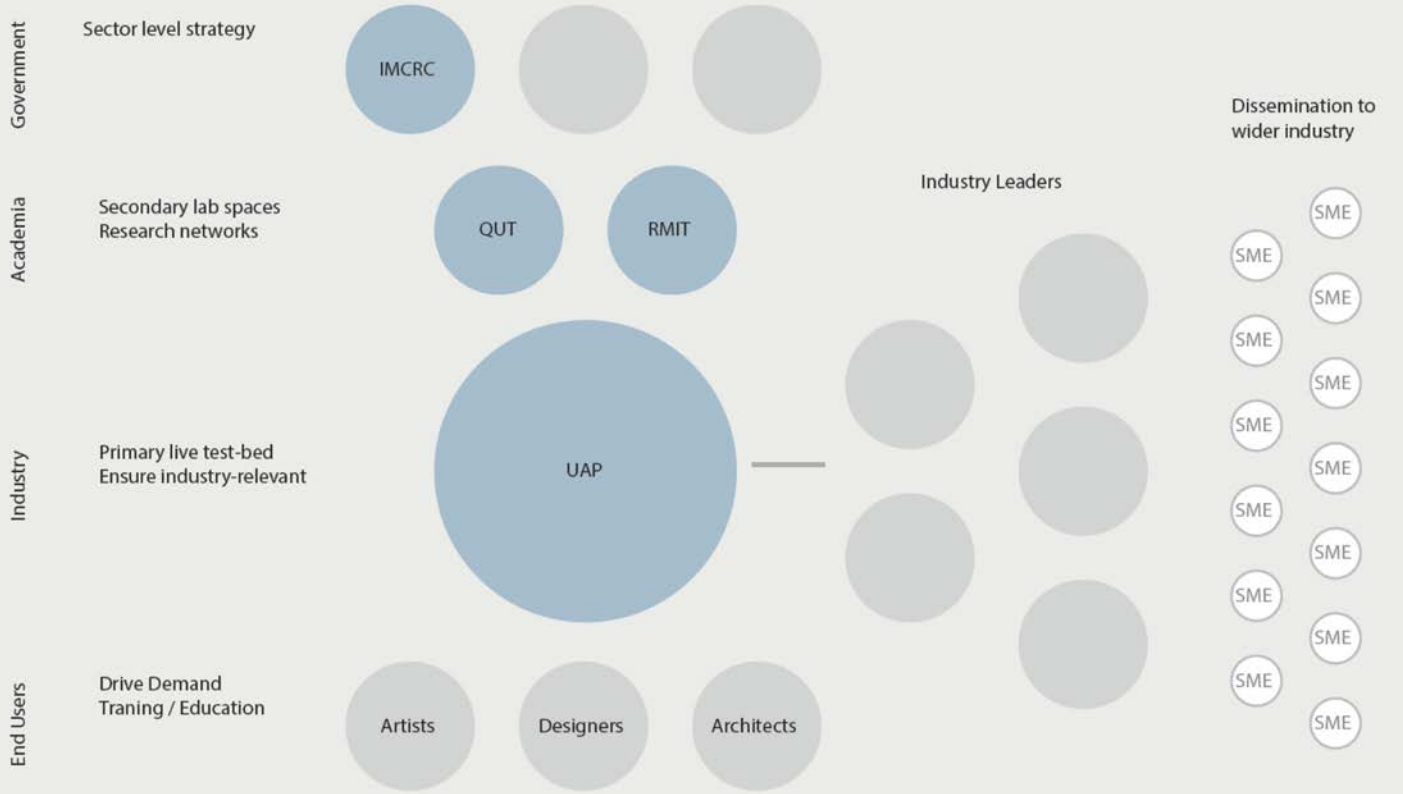
Robotic Linishing

Mass Customized Façade Project

https://www.uapcompany.com/news/the-evolution-of-facades

Open Innovation Network

LIVING LAB NETWORK



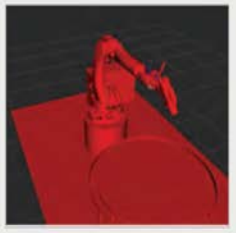
LIVING LAB COMPONENTS

Physical space

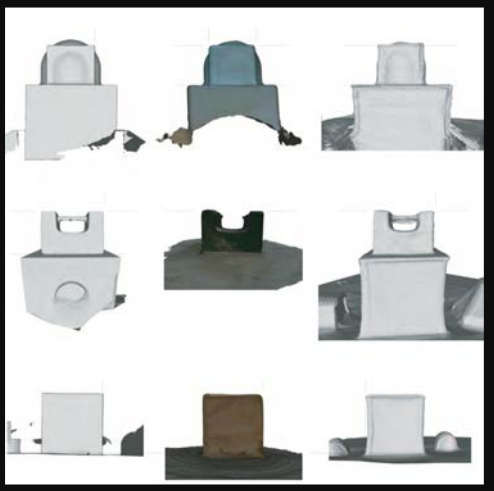
Projects

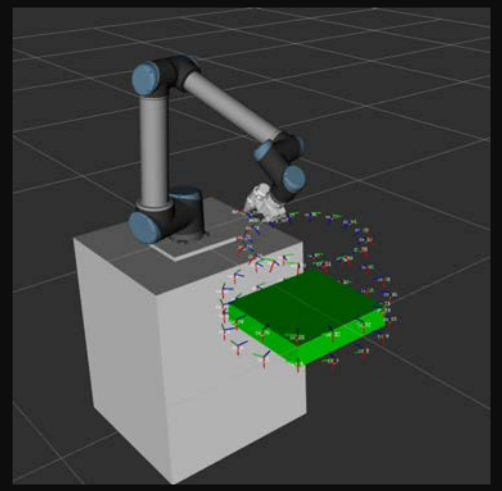
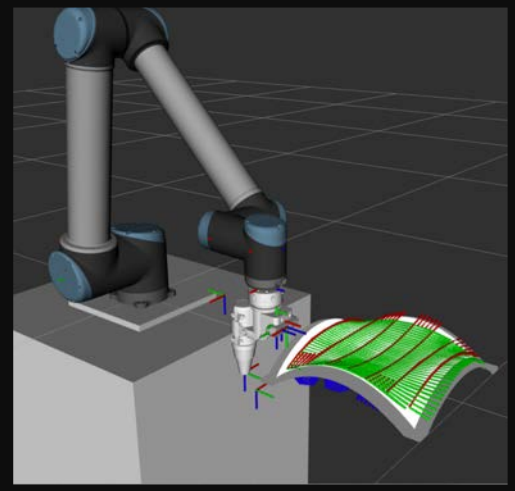
Events

Resources



Surveys



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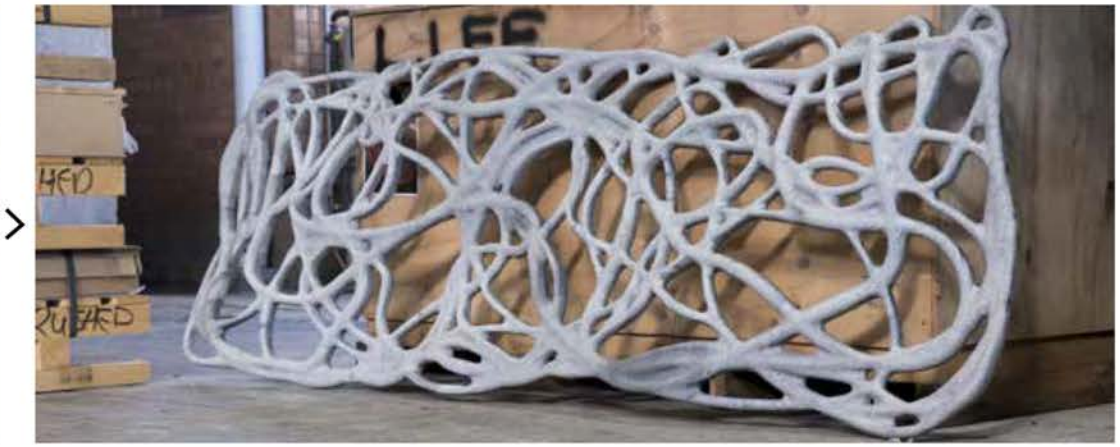
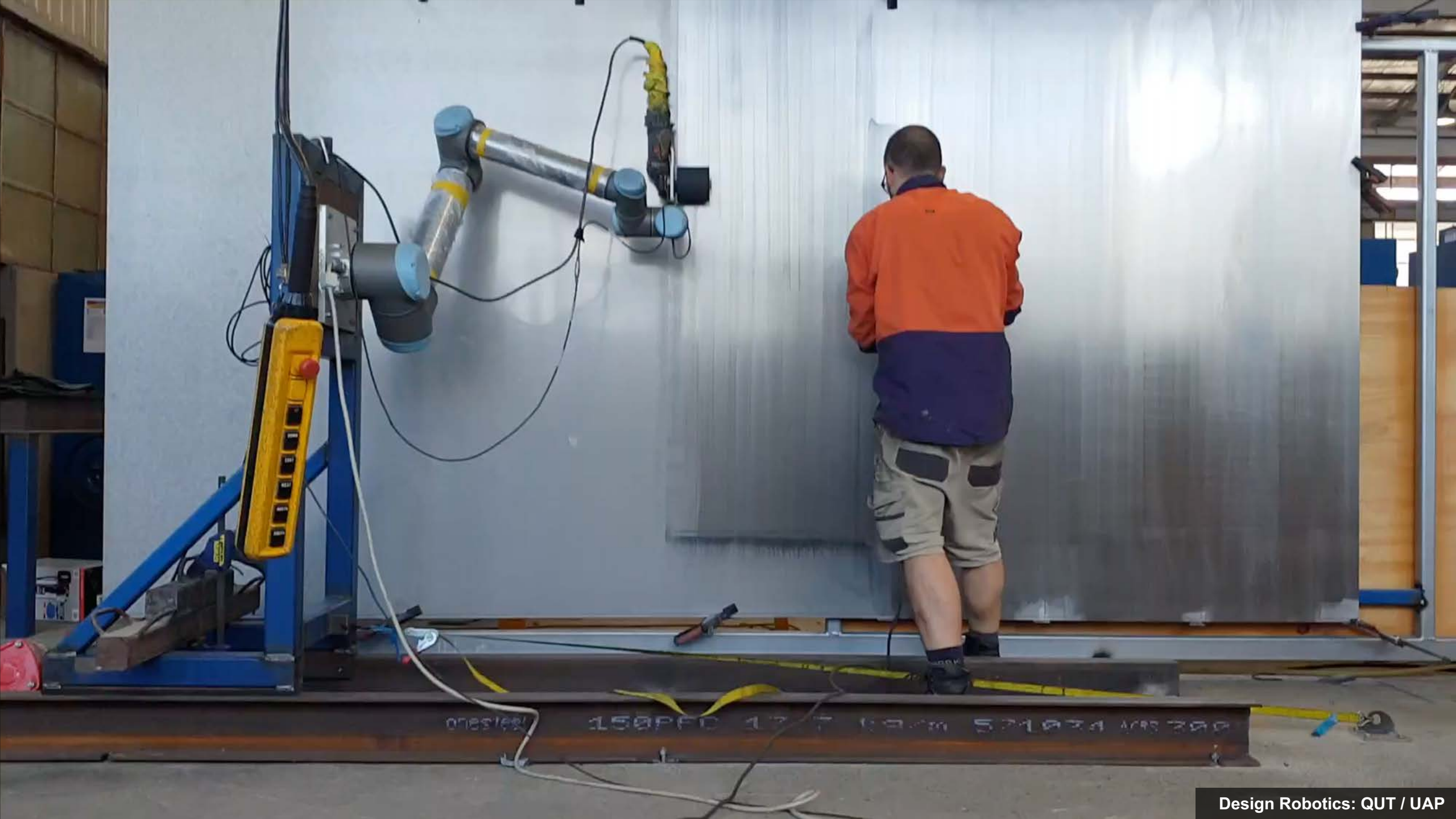
Sculpting ‘patterns’ entirely in **VIRTUAL SPACE** provides enormous creative flexibility, shorter delivery program and reduces waste.



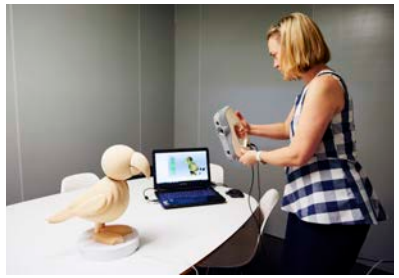


Design Robotics: QUT / UAP

Open Innovation Network: Website / Projects

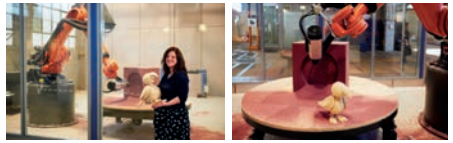
http://designrobotics.net

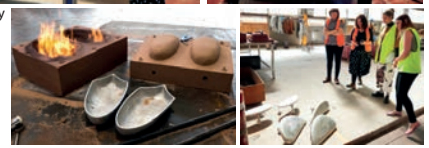

Artist Maquette


3D Scanning and Virtual Reality


3D scan scaled the digital model up to actual size and the artist was able to visualize the model in UAP's virtual reality system prior to works commencing.

3D Model & Robotic Milling Sand Moulds


Foundry Pour



Artist Project: Emily Floyd

'Very high production, perfect...I've done well. It's a real achievement...I'm very proud of it."- Emily Floyd


Finishing

Assembly and Painting

Opportunities:

- Can remove pattern making from the process, which can be the most costly part;
- Once something is prototyped more can be easily reproduced and refined;
- Potential for replication and/or re-scaling;
- 3D scan provides accurate representation of the final outcome prior to casting; and
- Produce accurate replication of forms as required by the artist and the project.

Thoughts for Next Time:

- Cut the patterns directly into polystyrene or wood for the foundry to use in a traditional manner;
- Work out a more efficient way to make and position the sand blocks;
- Improve extraction of loose material to allow tool path to run without stopping to clear away material. This would also improve wear on tools;
- Longer cutting tools would allow better access to recessed areas;
- More hands on time with the artist during the process; and
- More time is required to perfect the digital 3D model before sending to robotic milling.


Completion

Artist Project: Emily Flloyd


Arrange the *RoboBlox* on
the table to create a pattern.
The only rule is that similar
edges must be touching.
Solid edges must match up,
and open edges must match up.

Jared Donovan
PROJECT LEADER

Glenda Amayo Caldwell
CHIEF INVESTIGATOR

Jonathan Roberts
CHIEF INVESTIGATOR

Rune Rasmussen
SENIOR SOFTWARE ENGINEER

Alan Burden
PHD STUDENT

Matthew Tobin
FOUNDER AND MANAGING DIRECTOR (UAP COMPANY)

Peter Corke
CHIEF INVESTIGATOR

Muge Belek Fialho Teixeira
LECTURER (INTERIOR ARCHITECTURE)

Helen Hou
RESEARCH FELLOW (ROBOTICS)

Amanda Harris
PRINCIPAL ART + DESIGN

Bruce Blundell
DESIGN DOCUMENTATION LEAD (UAP COMPANY)

Mike Xie
CHIEF INVESTIGATOR

Cori Stewart
CHEIF INVESTIGATOR

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CHIEF INVESTIGATOR

Amelia Luu
MECHATRONICS ENGINEE

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PHD STUDENT

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Post Doc RMIT

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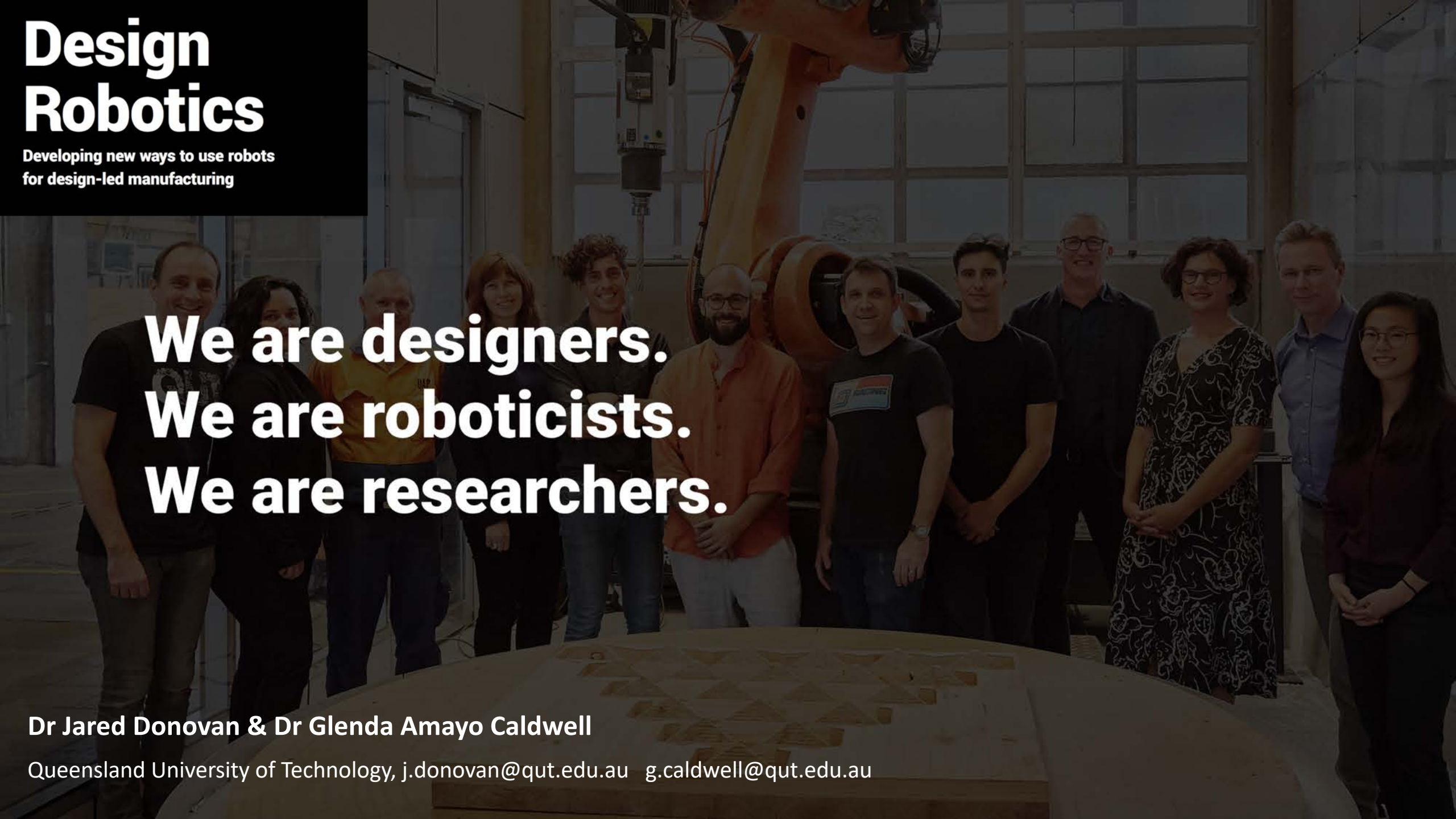

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