

Arch_Man ITTC Press Release

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Arch_Man launches its Hackathon program, bringing together international participants to address critical industry challenges in architecture and engineering

Arch_Man, in collaboration with industry partners Architectus, Bollinger+Grohmann, Cox Architecture, Grimshaw, and Tzannes Architecture, has launched its hackathon program to develop solutions for critical challenges in the architecture and engineering industries.

The inaugural Arch_Man hackathon took place on June 18th-19th 2024, bringing together participants from Sydney, Melbourne, and Adelaide, as well as international locations including London, Frankfurt, Paris, and New York. The 20 participants representing both industry and academia were divided into four teams to explore the two chosen topics:

- *Post-classification of BIM Elements:* Two teams tackled the challenges posed by the inconsistent parameters and values used to describe and classify BIM elements across the AEC sector. These inconsistencies hinder interoperability and reduce the value of legacy data. The teams proposed developing tools and workflows leveraging artificial intelligence and natural language processing to align industry classification schemes, enhancing consistency and utility.
- *Digitising Kits of Rules:* Two teams examined the digital implications of 'kits of parts' methodologies being used in industrialised construction and developed solutions that address the need to digitally describe the rules governing these parts, specifically around adjacencies, size constraints, and dependencies. One team proposed a schema-led approach using graph theory, while the other developed a schema designed to better connect designers and fabricators. The two solutions have the potential to be combined in the future development of tool to streamline design-to-production workflows.

Arch_Man, or the ARC Centre for Next-Gen Architectural Manufacturing, has been funded by the Australian Research Council's Industrial Transformation Training Centre scheme to leverage industry-academic collaboration in researching and developing solutions to the urgent productivity and sustainability issues facing the Architecture, Engineering, and Construction sector today. Arch_Man's 5-year program includes:

- research projects involving 25 PhD candidates, 3 postdoctoral fellows, and 25 senior academics spread across 3 Australian universities (UNSW Sydney, Swinburne University of Technology, University of Adelaide); supported by
- national and international industry placements with partnering organisations (Architectus, Bollinger+Grohmann, Cox Architecture, Grimshaw, and Tzannes Architecture); and
- the development of sector-specific training content in conjunction with peak body partners (Australian Institute of Architects, Association of Consulting Architects Australia, Architects Accreditation Council of Australia, NSW Registration Board) aimed at preparing and upskilling industry professionals for the transition to digital sustainability.

Arch_Man officially commenced in February 2024, and this hackathon marked the first occasion for partnering organisations and the PhD cohort to collaborate in an intensive development sprint. "It's quite rare in architectural practice to get the chance to openly collaborate, free of intellectual property hurdles," noted hackathon participant Gavin Crump (National Computation Lead, Architectus). Ljuba Tascheva (Head of Design Technology, Bollinger+Grohmann) described the hack project as "not only a learning experience, but also a fusion of interdisciplinary expertise, leading to innovative concepts and fresh perspectives."

"This first hackathon was a highly successful trial, showcasing the collaborative potential of industry, academia, and PhD students in developing solutions to the industry's current challenges through computational means," said A/Prof M. Hank Haeusler, Director of Arch_Man. Dr Ivana Kuzmanovska, Arch_Man Manager added, "The event's success highlights the importance of joint efforts in advancing our field."

Andy Watts (Director of Design Technology, Grimshaw) commented that "Sitting in London, watching future-facing presentations from teams across Europe and Australia really brought home the reach and ambition of this program. With one hackathon complete, and many more to come, I'm excited to see the innovative solutions our teams will develop for the challenges our industry faces."

Arch_Manu is excited to announce a second hackathon towards the end of 2024. Updates will be shared on Arch_Manu's website (<http://archmanu.com/>) and LinkedIn (<https://www.linkedin.com/company/archmanu/>).