



**5 WAYS
TO DESIGN AND DEVELOP A
WORLD-CLASS RESEARCH
FACILITY**



It's no secret that quality and cutting edge research is a defining characteristic of Australia's Universities. And while state-of-the-art infrastructure has long been recognised as the engine fuelling research development, the fast pace of innovation is driving increased competition in this area.

As a result, many universities are focusing on how to leverage partnerships and new technology to design, construct, operate and maintain innovative and flexible research facilities.

But what actually makes a research facility 'innovative? And more importantly, what strategies can universities use to avoid mistakes in planning and development stages to ensure they create a collaborative, flexible and leading facility for the future?

Ahead of the **4th Annual Research Facilities Design and Development Summit**, here are 5 strategies Universities can use to design and develop flexible research facilities for the future.

Below, influencers from La Trobe University, Woods Bagot, Southern Cross University, The University of Adelaide and the German Max Planck Institute share the strategies they are each using in their own research facility projects to ensure project success.



1. Set a clear vision

Jussi Helppi, Head of Biomedical Services – Speaker of Facilities & Services, Max Planck Institute of Molecular Cell Biology and Genetics (MPI-CBG) (Germany)

Designing the Institute's facilities wasn't much of a struggle. We were lucky to have right architects (Heikkinen & Komonen, together with HENN Architects) for the building, where the directors basically had the luxury of finding who understood what we wanted to do before they even started drawing the schematics.

While the architects focused on the architecture, the interior laboratory planning was mostly done – in close collaboration with the scientists – by another company based here in Germany: Dr Heinekamp Labor und Institutsplanung. The building was finished in early 2001.

As in every planning process, there were challenges to manage. Our building was financed mostly by the Max Planck Society, but as the future users of the building we, the institute, managed at the end to maintain good control of the process.

Although the balancing act between us (the users), the central building headquarters of the Society in Munich, and the planners and architects was not always easy, at the end we got the building built according to our ideas and visions.

The main reason for our success in the building process was the clear mandate our founding directors gave the architects – to provide a building on the highest level in technical and practical terms in laboratory design that also promotes synergy, cooperation and community. Thus, the institute's building has been carefully designed to force scientists to come together, to create the critical mass necessary for new discoveries.

2. Consider future adaptability and expansion

Russell Hoyer, Pro Vice Chancellor of Research and Director of La Trobe Sport, at La Trobe University

“Located on 60 hectares in the southwest corner of the La Trobe University campus in Bundoora, the Sports Park will provide a unique environment for play, performance training, teaching and research in sport.

The Sports Park initial designs will include an eight-court indoor multisport stadium for netball and basketball. Other infrastructure planned to be built include a strength and conditioning training facility, teaching and research space, synthetic hockey and football pitches and upgrades to existing ovals and pavilions. All these facilities will be available for community use – for teaching and coaching purposes,” says Russell.

As part of La Trobe University’s Master Plan 2014 the Sports Park has been designed with a flexible base infrastructure that allows for multi-disciplinary collaboration and future expansion. With the University Town Neighbourhoods Master Plan in place we’re future-proofing our investment by designing the Sports Park’s physical layout to allow for future expansion and room to include more pitches.

Additionally, we’ve worked with architects and engineers who have identified underlying infrastructure requirements, so as new application and technologies are developed over time, we can simply plug that into our base infrastructure without needing to do additional core work – the sports facility has a very flexible base infrastructure making it suitable for multiple uses and adaptable for future technologies.”





3. Foster collaboration

Milos Milutinovic, Senior Associate at architecture firm Woods Bagot

Tonsley is a mixed-use facility that encompasses two key facilities – the TAFE and Flinders University – while still allowing space for researchers, start-ups, PhD students and developers.

To aid creativity and knowledge we created an agile facility with open relaxation and communal spaces.

“Tonsley is all about increasing knowledge through innovation and collaboration. The MAB, a series of streets and interconnected nodes creates a community where we provide the base infrastructure for companies to come in and collaborate and thrive.

Tonsley is quite a complex project, and one of our biggest challenges was encouraging people to break away from the ‘norm’ and embrace a facility with so many uses that was so interconnected with the surrounding environment.

We knew we needed to take South Australia from a manufacturing economy to a knowledge-based economy – and you can't do that using old ideas.

The government is really invested in attracting quality tenants and people that would want to come to Tonsley to collaborate. We don't want people to be locked away in their offices from 8.30 till 5pm, we want to create a community that would expose experts to other experts in their field or even in a field that they could collaborate with.

We want people out of their cubicle and actually sharing their ideas. So, if there's someone developing chips for solar panels and another person is developing some wireless technology, the potential to collaborate easily is increased infinitely simply by being on the same precinct.

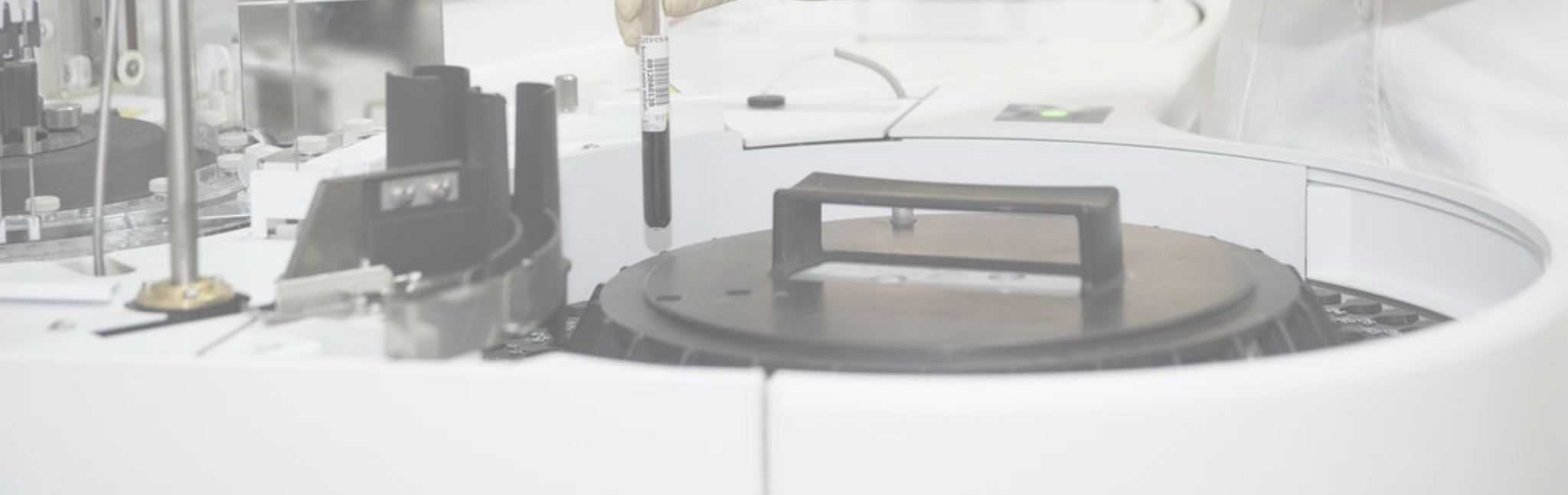
So simply by providing the facilities to allow collaboration, innovation and knowledge growth more and more industry research leaders will come onsite and create a snowball effect.”

4. Design with different disciplines in mind

Harald Baulis, Manager of Space Planning at the University of Adelaide

One issue that we need to address, however, relates to the limitations of a flexible or interdisciplinary approach. Some research disciplines have very specific requirements. A generic lab will not support these specialist requirements.

We recently built a generic lab, but when the selection was made for the final two groups to move in, there was a significant amount of additional work required for the equipment they brought. To make a facility more flexible can be more expensive, which is why we need to continually assess where we're going in the context of flexibility.



The University of Adelaide has an archive that comprises space plans, live space occupancy plans, space charging information, and timetable utilisation stats related to some of the teaching labs. And what we've done is consolidate all of this data into one source, which we can utilise for ongoing planning work.

KPI tracking and the amount of designated office space to each group have also been integrated into this source. We have a blog that relates to this on the space system page, which updates stakeholders on the latest happenings and where we're going with the use of space.

One of the advantages in our effort to manage space more effectively is we're a relatively small and tight campus – much more an urban campus than a suburban spread-out design. So, we have much more of an opportunity for co-location of equipment and labs. In terms of key lessons learned when it comes to conducting a space review, it's very important to have an accurate space data system as the foundation. Is everything up to date for both the building plans and occupancy?

5. Stakeholder engagement

Geraldine Mackenzie, Deputy Vice Chancellor, Research at Southern Cross University

"Southern Cross, with its strong emphasis on research and research facilities has recently set up three new research institutes, namely the Institute for Development, Environment, and Sustainability, or IDEAS; the Institute for Regional Futures; and the third one, of which the Centre for Organics Research is a part, is the Institute for Innovative Agriculture.

We see organics as being far more than just the science and agriculture. Leading from the absolute pre-requisite in science for building a strong evidence base, there are business aspects, there are legal aspects, there's an educational aspect; it really goes across the whole spectrum, so we're not talking just a straight scientific approach.

In fact, we take a multi-disciplinary approach to problems at Southern Cross. I like to say there's no such thing as a discipline-specific problem, it takes lots of different minds and different discipline areas to solve problems. However, what distinguishes university scholarships from other industry-led R&D is the transparency of methodology and outcomes, subject to peer review and challenge.

So, whether it's climate change, or food security, or other areas, it takes lots of minds working together, and this is where, as a small university, we can excel, because we have the ability to work together easily and quickly, and organics is just one example of that," says Geraldine.

By focusing on industry specific and highly relevant areas such as crop and plant science, the Institute for Innovative Agriculture, along with other Southern Cross research centres like the Centre for Coastal Biogeochemistry and the Marine Ecology Research Centre, have successfully garnered government and industry interest.

Southern Cross University already has well-established relationships with our stakeholders and we were able to capitalise on that."

Interested in learning more?

Join industry representatives at the **4th Annual Research Facilities Design and Development Summit** to learn more about how to:

- Address innovation regarding the best designs for research facilities
- Analyse construction strategies to boost operational efficacy
- Review the development of facilities to maximise space utilisation
- Provide you with the best management advices to prevent a loss in ROI

For more information visit <https://researchfacilities.iqpc.com.au> or call +61 2 9229 1000 or email enquire@iqpc.com.au

