

Indigenous knowledge meets contemporary innovation and technology: Learning co-design and spinning an unbreakable partnership

PIONEERING A PATH FOR CO-DESIGN

In a groundbreaking collaboration, the Advanced Spinifex Biofuture Materials Centre, part of the National Indigenous Science Translation Centre (NISTC) has emerged as Australia's pioneering initiative and operational model to bridge the gap between Indigenous knowledge and contemporary innovation and technological advancements.

The partnership behind the NISTC, forged between The Australian Institute of Bioengineering and Nanotechnology (AIBN) at The University of Queensland (UQ) and Indigenous-owned partner, Myuma Group, embodies the transformative potential inherent in co-design pathways. This partnership also demonstrates the vital role of higher education institutions in removing barriers and cultivating frameworks that foster Indigenous economic prosperity in Australia. This unique partnership not only signals a shift away from the exploitation of cultural knowledge but also sets the stage for authentic cross-cultural collaborations aimed at uplifting historically marginalised and exploited communities.

ORIGINS OF THE COLLABORATION

The seeds of the partnership that culminated in establishing the NISTC were sown in 2007, when the AIBN and Indjalandji-Dhidhanu Elder and now Managing Director of The Myuma Group, Associate Professor, Colin Saltmere AM, in collaboration with Dugalunji Aboriginal Corporation (DAC), set off to explore the properties of Spinifex grass. This research endeavour led to groundbreaking discoveries and marked the inception of a profound journey of relationship-building. One which paved the way towards social and economic advancements for Indigenous Australians.

Associate Professor Colin Saltmere emphasised the importance of nurturing these relationships over time, recognising that trust and commitment are the cornerstones upon which successful collaborations are built.

Indeed, the NISTC stands as an advanced demonstration of the transformative power of relationship-building, serving as a catalyst for holistic community engagement and empowerment.

As Associate Professor Saltmere explained, the journey towards reconciliation requires continuous investment and commitment from all parties involved. UQ is improving its dedication to advancing Indigenous relationships and is starting to foster trust, transparency, and consent among all stakeholders, and has financially invested in the partnership. Through the establishment of stringent policies and frameworks, the NISTC provides a roadmap for navigating the complexities of Indigenous partnerships, ensuring that collaboration is rooted in respect, reciprocity, and shared goals.

You've gotta work with knowledge not against it.

ASSOCIATE PROFESSOR SALTMERE

In essence, the origins of the collaboration that led to the creation of the NISTC exemplify the transformative potential inherent in authentic, reciprocal relationships. By fostering trust, mutual understanding, and shared purpose, the AIBN and Myuma Group have laid the groundwork for a journey towards reconciliation and empowerment that transcends boundaries and fosters meaningful social and economic advancements for Indigenous communities across Australia.

**UNVEILING NATURE'S
TREASURE AND REVIVING
INDIGENOUS PRACTICES FOR
CONTEMPORARY SOLUTIONS**

It all started with Spinifex, a native grass that is found across more than two-thirds of Australia's desert and is deeply intertwined with Australian Indigenous cultures, including the Indjalandji-Dhidhanu people, who have used the material for thousands of years to build shelter and other materials, including medicines.

Director of AIBN at UQ, Professor Alan Rowan explained that the grass is incredibly resilient, surviving in temperatures of up to 60 degrees celsius and putting down roots 30 metres below ground to find water. Under a microscope, strands of Spinifex reveal cellulose nanofibres with tensile strength (maximum stress that a material can withstand while being stretched or pulled before breaking) that is eight times greater than steel.

Collaborating closely with representatives from the Indjalandji-Dhidhanu community, researchers from AIBN discovered the transformative potential of Spinifex nanofibers which unveiled many industrial applications. With cellulose nanofibers being highly sought-after on a global scale for purposes ranging from medical gels to flexible electronic components, the commercial potential of this hardy grass became abundantly clear. This pivotal discovery not only signifies the convergence of Indigenous knowledge and contemporary scientific expertise but also ignites a new frontier of innovation and collaboration for the partnership.



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ASSOCIATE PROFESSOR COLIN SALTMERE

**FORGING A SUSTAINABLE
FUTURE AND EMPOWERING
INDIGENOUS COMMUNITIES**

At the heart of the partnership's success lies a deep commitment to ethical collaboration and knowledge exchange. Professor Saltmere explained that Indigenous knowledge and Indigenous intellectual property (IP) are uncharted territories that Australia must navigate. In this context, UQ has a significant opportunity to leverage the principles outlined in its Reconciliation Action Plan (RAP) to foster equitable partnerships, particularly within initiatives like the NISTC, that promise mutual benefits for both the university and Indigenous communities.

However, Professor Alan Rowan emphasised that while important, true equity goes beyond equal custodianship. It demands a shift in focus away from personal gain towards a collective pursuit of Indigenous, and wider societal well-being.

From the university's standpoint, aiding the establishment and operation of the NISTC exemplifies an altruistic endeavour – a commitment driven not by individual interests but by a genuine belief in the transformative potential of Indigenous knowledge and collaboration.

As Professor Rowan articulated, "It's not just a cosmetic professional relationship... you go into this because you genuinely believe in it... The equal partnership is an equal desire to make it work... The goal is to create a framework for Indigenous economic benefit for the whole of Australia."

In 2014, a collaborative research agreement between the AIBN and Myuma Group laid the foundation for ongoing equity and involvement in commercialising Spinifex nanofiber technology. This agreement, informed by principles of equitable IP ownership and regulatory compliance, serves as a blueprint for future initiatives. The subsequent mandate agreement signed in September 2021 between DAC, UQ, and the Australian National Fabrication Facility marked a significant milestone – the birth of Trioda Willingi Pty Ltd, the first Indigenous-owned biomaterials company. This landmark achievement not only promises economic prosperity but also safeguards Indigenous intellectual property rights, reinforcing the partnership's commitment to ethical and equitable collaboration.





Beyond the economic gains, the partnership heralds a profound shift in the landscape of Indigenous engagement. Through the NISTC, traditional Indigenous knowledge finds validation and integration into contemporary scientific endeavours, offering Indigenous communities a pathway to empowerment and self-determination.

As Professor Saltmere affirmed, "The Spinifex Centre and NISTC would be a huge turnaround in relationship and capacity building for Indigenous communities... it gives them an avenue to take when they've got nowhere else to turn to."

In essence, the journey of NISTC epitomises the evolutionary potential of collaborative research models rooted in cultural sensitivity and respect. By intertwining Indigenous knowledge with contemporary innovation, the partnership not only generates economic benefits but also fosters a sense of pride and agency within Indigenous communities.

As Professor Saltmere aptly noted, "There's a lot of opportunities out there... and the way the world is heading, we need all hands-on deck."

**CHARTING NEW HORIZONS
TOWARD INCLUSIVE PROSPERITY**

Whether it is the partnerships forged between institutions like AIBN and Myuma Group, or the strong bonds between individuals such as Associate Professor Colin Saltmere and Professor Alan Rowan, therein lies the promise of transformative change and reconciliation. These relationships demonstrate the power of co-design in unlocking the full potential of Indigenous knowledge systems. As the NISTC continues to chart new frontiers, it serves as a testament to the resilience, ingenuity, and unwavering spirit of collaboration that defines the Australian landscape.

From biomedicine to packaging, the applications are vast, promising economic prosperity while safeguarding Indigenous intellectual property rights.

Yet, reconciliation is a rough, tough old road that does not come easy. It requires a concerted effort from all stakeholders, including universities and other institutions, to recognise and support individuals making positive changes. Instead of putting obstacles in the road, we must strive to remove barriers and facilitate progress.

In the words of Professor Saltmere, "You've gotta work with knowledge not against it."

This ethos encapsulates the essence of collaborative partnership - embracing Indigenous wisdom as a guiding force and leveraging modern technology to chart a course towards inclusive prosperity for all. As we navigate this journey together, let us remain steadfast in our commitment to fostering meaningful change, empowering Indigenous communities, and creating a future where mutual respect and collaboration are the cornerstones of progress.



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