

Co-Design Briefing Note

Accelerating the Adoption of On-Farm Digital Irrigation Technologies



Problem Statement

Accelerating the adoption of digital technologies by the irrigated agriculture sector has been identified by the One Basin CRC's partners as a research priority. This is motivated by an apparent 'gap' between possible agricultural output under current technologies and management practices, and actual production both at farm and regional scales. It is understood that if the rates and pace of adoption of proven and sustainable technologies could be boosted, then there should be gains for producers, service industries and regional economies. Whilst there are a multitude of factors limiting adoption and these have been extensively studied, there remain opportunities for more 'action' oriented research activities that generate opportunities for enhanced adoption and pave the way for a more adaptive and responsive agricultural technology ecosystem.

Intended Outcomes

The intended outcome is to foster the uptake of efficient, sustainable, and user-centric digital solutions and increase productivity and profitability for growers, while also contributing to the environmental stewardship and economic resilience of the basin. The aim is to elevate trust and confidence in digital irrigation technologies among growers, their advisors and the broader agricultural technology ecosystem, ensuring these technologies meet user needs. This strategic alignment will lead to better investment decisions and a substantial increase in technology adoption.

Industry Partners

The agricultural technology ecosystem is complex, and the One Basin CRC is fortunate to have partners representing a broad range of perspectives within that value chain, including developers of agricultural technologies, end-users across multiple sectors (e.g. horticulture, cotton, wine, etc), advisory services, investors, education and training providers, and innovation experts. The One Basin CRC also provides opportunities for meaningful connection to Murray-Darling Basin's irrigation communities through the regional hubs and the regional advisory committees (RACs). The following partners contributed to early scoping work: Sensand, Hort Innovation Wine Australia, CRDC, SuniTafe, MRIC, WaterTech, WaterFind and Hydroterra. It is anticipated that broader partner engagement will occur in the next phase of co-design.

Research Themes

Three high-level project areas are proposed to help achieve the **Intended Outcomes**, each based on an underlying 'action research' methodology. These areas align with known factors that can support accelerated adoption, while seeking to align with the interests and capabilities of the One Basin CRC's partners to positively influence the agricultural technology ecosystem.

1) Digital Technology

This area will identify solutions where either digital technologies can be enhanced to support accelerated adoption, and/or where the interface between the technologies and the broader ecosystem can be improved to elevate trust and confidence in digital irrigation technologies among growers, their advisors and broader agricultural technology ecosystem.

2) Education and Training

There is a perceived gap in education and training focusing on using digital technology at all levels of the education sector (e.g. Tafe, short courses and university), as it relates to building capabilities and

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skills for end users (e.g. growers), advisors and other players in the agricultural technology ecosystem. This may include assessing current and potential future education and training opportunities, and the enhanced use of existing infrastructure such as smart farms to give students practical skills and enhance confidence to make investment decisions.

3) Advice and Extension

There are multiple activities that fall under the area of advice and extension. Although extensive research has been conducted into the role of the advisory ecosystem on agricultural technology adoption, there may be opportunities to experiment with alternative advisory and adoption models under an 'action research' methodology. Furthermore, as different agricultural industries are at different stages in the adoption of agricultural technologies, comparisons between industries may help to identify solutions for industries to improve adoption rates.

Related initiatives

There are numerous initiatives that have focused on the adoption of digital technology in agriculture including:

- Farmers2Founders
- Accelerating Precision to Decision Agriculture (P2D) project (CRDC)
- Wine Australia's AgTech adoption program
- Water Sense Project
- AgriFutures AgTech program
- Drought hub funded extension activities

It is vital that the CRC projects draw upon the learnings from these projects and other AgTech projects that fit within the objectives of the CRC. However, many projects have focused on other technologies other than irrigation. It is expected these projects to even consider research and experiences outside of Australia that may be useful in accelerating the adoption of technology.

Research capability requirements

In addition to general capabilities for conducting 'action research', the scoping exercise identified some of the following capabilities required for the project. This list is not intended to be limiting, but may help guide the design of research teams to respond to industry needs.

- Technology development and use analyses;
- Behavioural and cognitive sciences related to choice-making and motivations across industries;
- Agricultural extension design, implementation and management; and
- Implementation and management of action research.

Indicative Resources

The One Basin CRC is considering investing in projects over a three-year period, with total resources (across all projects) to support a team of 3-6 full time postdoctoral researchers or equivalent. This investment envelope applies to a three-year timeframe commencing January 2025, and may be divided into multiple stages as required to manage risks and maximise project outcomes. In addition, there is the expectation for significant in-kind to be provided by both the research and non-research partners, to a total value approximately equal to the total cash contribution.