Digital Transformation of the Australian Planning System – Opportunities, Barriers and Risks

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Contents

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Acknowledgements

We would like to acknowledge the Australian Aboriginal and Torres Strait Islander peoples as the traditional custodians of the land across Australia. We also pay our respects to Elders past and present.

Executive Summary

Land use planning plays a critical role in tackling major issues facing Australia, including climate resilience, housing affordability, the delivery of major infrastructure programs, and community safety and wellbeing.

The land use planning sector is undergoing digital transformation using a suite of solutions commonly known as PlanTech. PlanTech leverages digital technologies, data analytics, and collaboration platforms to revolutionise how urban planners can address pressing issues across Australia.

Following engagement with the planning sector and it's major stakeholder groups, and in collaboration with core partners the Planning Institute of Australia, University of NSW, and RMIT University, FrontierSI has developed this paper outlining the potential of a strategic and collaborative approach to PlanTech to maximise benefits across Australia's various planning systems and address growing and urgent challenges.

Four thematic areas for PlanTech implementation have been identified:

1. **Supporting data-driven decision making:** Improving the availability, consistency, and quality of data to inform planning decisions, enabling evidence-based policy development and strategic planning.

2. **Building capacity within the planning profession:** Focusing planners on high-value tasks by automating repetitive processes and developing digital skills, and supporting the next generation of planners with digital tools from the start.

3. **Enabling communication, collaboration, and scenario planning:** Utilising online platforms and interactive tools for active community engagement, empowering planners to focus on complex challenges, and enabling better balancing of competing priorities.

4. **Building the right foundations for digital transformation:** Addressing legacy systems, ensuring planning regulations are suitable for digitisation, and promoting interagency collaboration to create a supportive environment for PlanTech adoption.

The aim of this program is to provide coordination, investment, and strategic direction over the somewhat scattered approach to digital transformation and PlanTech investment across the country. This will ensure research innovation activities are targeted and linked directly to planning system needs and focus on the benefits that can be driven across multiple stakeholder groups.

We are seeking expressions of interest from stakeholders who support, and may be willing to co-invest, in initiatives that address some or all of the barriers and opportunities identified in this document.

This initiative offers significant opportunities for progress and sustainable development. By adopting a strategic and collaborative approach, the planning sector can effectively leverage digital transformation to overcome hurdles, enhance efficiency, and create a more inclusive and resilient built environment for all Australians. Through innovation and cooperation, technology and collaboration can drive positive change in communities and shape a brighter future for urban planning in Australia.

The call for partners is now open, and will be receiving feedback, letters of support, and discussing co-investment from interested partners in the near future.

For more information visit **www.plantech.com.au**

Context

Like in other industries, in the world of urban planning digital transformation or 'PlanTech' has emerged as a catalyst for progress, revolutionising the way we tackle critical national challenges. From housing affordability and climate change impacts to growing inequality, digital transformation empowers us to address these issues effectively while enhancing efficiency, transparency, and public participation.

Digital transformation is a broad term that encompasses the use of data and technology, that in the planning space will help us to:

- Speed up labour intensive and manual processes that slow down development applications.
- Understand and communicate complexity.
- Make the most of limited resources, with an already over-stretched planning system that is lacking trained professionals to undertake critical work.
- Increase public participation, with tools for an open and transparent system that enables community involvement.
- Bring together inconsistent, fragmented and siloed data sources that hinder policy development and collaboration.

While digital transformation is already making a positive impact on the planning sector, there is unrealised opportunity that needs a more strategic and collaborative approach to accelerate adoption. Coordinated nationwide efforts in the use of technology in planning can expedite our shared ambitions, avoid duplicating efforts, and establish a coordinated and consistent approach to addressing challenges and managing built environments across Australia.

By embracing digital transformation, we can unlock the potential to overcome hurdles, enhance efficiency, and create a more sustainable, inclusive, and resilient built environment for all Australians. Together, we can shape a future where technology and collaboration drive positive change in our communities.

What is PlanTech?

PlanTech is the overarching term used to encompass a suite of data and technology to support the planning industry. These tools include:

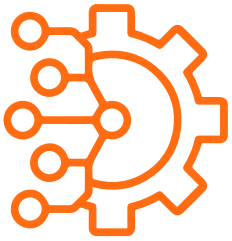
- **Digital technologies –** Hardware and infrastructure to help us collect data and information (e.g. sensors in the environment, crowd sourced feedback).
- **Data analytics –** Software, models and techniques to turn data and information into insights, to support decision making and monitoring (e.g. AI, GIS, cloud computing).
- **Data and collaboration platforms –** Ways to visualise and share information and insights to monitor and make decisions collectively and collaboratively.

Land management and planning has occurred for tens of thousands of years in Australia, PlanTech is just another step in that journey. PlanTech can help urban planners and other built environment professionals enrich the value that they have always provided, and focus their existing professional nous on the problems that really need their expertise, creativity and judgement.

It is also important that planning processes support, and stay aligned with an increasingly digitised world. With digital technology and internet underpinning much of our professional and leisure activities, planning systems have a role to play in ensuring that new and existing places have access to a high standard of digital connectivity as default, and to ensure data plays a key role in the ongoing management of place.

Planning can be specific about analogue requirements, such as the preservation of heritage aspects, or the height of a fence. A modern planning system should also be specific on the digital technology and data collection requirements required to support the management of place, and the planning of future digital services in our built environments.

Why PlanTech Matters



This paper outlines the potential of the digital transformation of planning processes for the built environment sector – informed by conversations with built environment professionals across Australia.

Leaders within departments of planning at all levels of government have the opportunity to embrace this next phase in the planning and management of our built environment, supporting better outcomes for communities. If Australia is to meet its ambitions for climate resilience, affordable housing and addressing the inequality in cities and towns, the planning system must adopt the tools, insights and efficiencies offered by new digital technologies and the swathes of data being collected.

To achieve these changes, the planning system needs to develop clear processes, build practical tools, and support skill development in the profession, which will require time, resources, and a collaborative effort.

This paper is not a critique of the planning profession. Its aim is to illustrate the opportunities that planners have, to further their contribution to addressing Australia's most critical problems and enabling the better use and development of a stretched workforce towards solving higher value planning problems.

PlanTech Principles

Planning Institute of Australia (PIA), the professional body representing planners across Australia, in partnership with leading academics, have taken leadership role in providing direction, guiderails and themes to guide the implementation of PlanTech within the current Australian planning system. These principles aim to ensure appropriate professional development of planners and inform public knowledge of digital planning.

In 2021, PIA published the below **PlanTech Principles**, and continue to lead a cross sectoral working group to guide the adoption and use of PlanTech against these principles. This document acts as a further catalyst for change, understanding the opportunities created by PlanTech, as well as the barriers inhibiting changes in the current system.

1. Planners must be prepared for wide reaching change to their day-to-day work
2. Planners must be central to the design of digital planning infrastructure
3. Digital planning infrastructure should be public infrastructure built with open technology
4. Ambitious programs can be implemented to improve social and environmental outcomes
5. Outcomes for communities and places must be considered alongside efficiency of approval processes in the development of digital planning systems
6. Ethics, accountability and transparency must be built into digital decision systems
7. Digital planning applications should be developed in a human-centric way
8. Communication of planning content and processes to non-planners should be reimagined
9. Collaboration should be prioritised in the development of underlying digital planning infrastructure
10. A culture of innovation and sharing should be promoted

PlanTech Opportunities

A wide variety of stakeholders from across the PlanTech landscape were consulted, covering specialties from the built environment, insurance and technology. Through this consultation, a wide range of opportunities were identified for a PlanTech program to encourage adoption of digital technologies and use of data to improve built environment outcomes. Opportunities for PlanTech fall under the following thematic areas:

1. Supporting data driven decision making (data)
2. Building capacity within the planning profession (skills)
3. Enabling communication, collaboration and scenario planning (tools)
4. Building the right foundations for a digital transformation (governance)

Each of these areas have been expanded below, including the outline of specific opportunities that PlanTech can help address, underpinned by the currently problems being experienced in the sector.

1. Data

Supporting data-driven decision making

Digital transformation enables the collection, analysis, and visualisation of vast amounts of information, enabling more data driven decision making. The application of data analysis and interpretation can complement professional judgement and intuition and can help planners to assess potential impacts and simulate scenarios and outcomes more clearly.

1.1. Robust and consistent data for robust and consistent planning decisions

The whole planning ecosystem shares a challenge in the availability and consistency of required data sets to inform strategic policy, with the quality of available data also a challenge. Fragmented and siloed data management practices impede the seamless integration of data from various sources, with inconsistent data formats, lack of data sharing protocols, the high cost of proprietary data, and privacy concerns hindering effective data-driven decision-making across the planning ecosystem.

Lack of data can make it difficult for councils to implement stricter and specific controls through the planning system, planning decisions must be backed up with evidence to mitigate the risk of costly legal battles. For example, statutory planners need specific content in planning schemes to support them in delivering climate responsive outcomes. Planners need access to granular data that is localised enough to enable suitable insights to be gathered, without impeding on privacy and security concerns.

As an example, many local governments have big ambitions when it comes to addressing the climate emergency, developing environmental policies and implementing mitigation projects. However, a lack of information to set baselines, appraise policy outcomes, and build monitoring and response processes results in these ambitions remaining unrealised. Despite some ambitious policies being approved, some councils have limited avenues to concretely measure success.

Further, inconsistencies in data across most states, and across the country leads to inconsistencies in decision making, particularly in regard to future hazards. As a result, decisions regarding the approval of future land use plans are not made using a consistent base of information and can lead to lengthy disputes, inappropriate development for the future, or the construction of new buildings in areas that are unable to be insured. Home owners and other participants in the planning system then receive different decisions in different councils, which may then differ again from a risk decision made by an insurer.

Case Study: Australian Housing Data Analytics Platform

The Australian Housing Data Analytics Platform (AHDAP) has developed a unique federated platform for the ingestion and management of digital data on housing and the built environment together with a suite of tools that will allow rapid multi-scale complex modelling and simulation to address the pressing questions regarding housing provision and sustainability across Australia. As well as providing access to a variety of local, state and federal government data, it also includes data from open and commercial sources. Finally, to demonstrate the value this data provides in a combined and consistent way, the platform includes tools for precinct identification, buildings analysis, and scenario planning.

www.ahdap.org

1.2. Responding to a quickly changing world

The census is undoubtably one of the most important data sets in strategic planning. However, as it is only collected and released every five years, it can mean that planners are developing policies based on out-dated information. This is a particular issue in high growth areas experiencing rapid change, where data-lag means it is difficult for the planning system to respond to demographic and population changes. Major shocks can also completely change behaviour and up-end expected strategic plans.

As a critical recent example, the covid-19 pandemic led to a sudden increase in population movement to rural areas due to the increase in remote-working, a change which was not anticipated by any peri-urban or regional councils. This led to increasing pressure on housing prices and supply in regional areas, with an associated significant impact on the local community, as well as pressure on state and local governments to rapidly respond to this change.

> ***Planners need access to reliable and consistent data to inform policy development, decision making and public engagement.***

1.3. Measuring the hard to measure

Social infrastructure supports strong community ties and supports early intervention in many population issues, which improves health and resilience within communities. While there are excellent metrics for forecasting the population and demographics, with thresholds for delivery of schools, hospitals and roads, there are limited triggers for less prominent social infrastructure, such as youth centres or swimming pools.

Further, there is no agreed way to measure the social benefits of this social infrastructure, for example understanding how a new swimming pool improves the health, wellbeing and community ties within an area. While this infrastructure likely has positive outcomes across economic, social and environmental measures, the difficulty in simply and consistently measuring these benefits makes it challenging to write a business case for such endeavours.

Further, there may be a substantial opportunity to understand the consequences or impacts from a failure to deliver social infrastructure. While work has started on this though the federal **Measuring What Matters** framework, there is still a large gap between potential and realised benefits.

1.4. Capacity and confidence building

It can be daunting to share data. The media is often full of stories of sensitive information being inadvertently revealed, or political fall-out from data release, so it is entirely understandable that organisations can be reluctant to devote extra resources to collating, processing and sharing information if they don't have to. This is particularly true for local government, who are already over-stretched and under-resourced. Adopting a closed data default position reduces risk of unwittingly sharing personal or contentious data, saves limited resources, and limits reputational risk of data contradicting longstanding practices or investments.

A PlanTech program can illustrate the benefits of sharing information (where appropriate), including cost savings, improved outcomes, and collaboration between organisations. Providing the checks and balances to fully realise the opportunity presented by the ever-increasing data collected on the built environment.

2. Skills

Building capacity within the planning profession

2.1. Focusing planners on complex challenges

Planners help to make difficult decisions about the future of our settlements, and make complex assessments as to whether existing applications for change align to that future strategy and existing planning controls. However, much of the planning decision making process can be comprised of repetitive, time-consuming tasks which do not utilise the judgement and experience of planners, and further exacerbate the lengthy approval times experienced in many councils.

Undertaking a substantial education program on the value of PlanTech to support planners, particularly in areas that remove some of these time consuming, low value tasks from the decision-making cycle, will help make planners feel more valued, more productive, and focus on demonstrating their skills in the complex decisions that require their focus. This will improve retention of planners to the sector, decrease assessment times, and maximise time available for longer term strategic planning.

Planners need to develop the skills to confidently source, apply and share data and adopt digital technology in their day-to-day work practices. The wider industry also needs a safe environment for knowledge and data sharing for governments and the private sector.

2.2. Developing digital skills

The complexity and variety of options for uplifting digital skills was identified as a challenge for the widespread adoption and implementation of PlanTech. Understanding how to best train people to incorporate digital solutions into daily practice, as well as to change internal processes, approvals and practices, requires dedicated education and change management professionals focused on planning as a sector.

A program of digital capacity building would result in skilled planning professionals who can develop, operate, and maintain the technology, as well as champion change inside an organisation. Whilst there are excellent tools and resources (training programs, university courses etc.) already available, urban planners may lack the skills, time, or organisational support to investigate these, let alone incorporate them into daily work.

2.3. Supporting the next generation of planners

One of the best mechanisms to support the digital transformation of a profession, is to ensure that the new generation entering the profession from their tertiary education, are already trained in the value and use of a range of digital tools. Planning graduates will help drive change, entering the profession with fresh capability and approaches, and being able to help to uplift the capacity of their colleagues in digital tools, whilst receiving their practical mentoring in the planning profession from these same colleagues.

As with any transformation, support for this change is required across the profession, and this will provide the catalyst for changes in graduate courses and degrees to prepare the new cohort of planners.

3. Tools

Enabling communication, collaboration and scenario planning

3.1. Enabling active and consistent community engagement

PlanTech offers opportunities to improve collaboration among government agencies, planners, developers, and the community. Online platforms and interactive tools enable richer discussions on the trade-offs necessary in new development, illustrating the compromises that need to be made to achieve collective ambitions and bringing stakeholders along the decision-making journey. Leveraging these opportunities can foster inclusive community engagement, transparency, and a sense of ownership in the planning process.

As an example, there is no national view of hazards or an easy way for the community to understand their expected local risks and then make decisions based on that information. As each hazard has different assumptions, impacts, and modelling techniques, it is unlikely that a 'one stop shop' solution will succeed, instead a connected but customised platform of hazard communications tools will allow each stakeholder to understand and manage risks, underpinned by the same level of data.

3.2 Making the most of professional expertise

As outlined in 2.1, there is substantial opportunity to help enable planners to focus on just the highest value problems requiring their expertise. As well as training in existing options, a range of new PlanTech tools are required to best support planners to leave repetitive, low value tasks behind, and focus on the complex challenges. This automation of simple or manual processes allows planners to dedicate their time and expertise to negotiating complex statutory processes – enabling better environmental and social outcomes, and planning for the long-term future of the community.

3.3 Handling complexity and balancing priorities

A challenge in strategic land use planning is balancing competing demands and requirements to make the best decision for a place. For example, needing to both increase number and density of housing to support a growing population, whilst also controlling for environmental impacts. This is complex and difficult. Artificial Intelligence (AI) systems may be able to be used to untangle this complexity (importantly noting that these systems need to be fed the right information and asked the right questions).

Further, the planning system also needs a way to measure the impact of many cumulative decisions and actions over time. Current tools and practices are poor at capturing the cumulative impact of small decisions against a long-term strategic vision. For example, the eastern region of Melbourne is losing green infrastructure at an alarming rate, but there is no strategic view of the immediate and long-term cumulative impacts.

This is also a consideration when delivering in-fill development, a priority to address Australia's growing housing crisis, where increasing hard stand surfaces, increasing traffic, and loss of vegetation from many small-scale development applications can lead to large cumulative environmental impacts. Planners need information and tools to effectively master-plan and manage development in in-fill areas, providing for denser developments that are accompanied by parks, open spaces and services.

> ***Planners need access to digital tools that help communicate risk, complexity and trade-offs with the community. They also need ways to automate manual or simple planning tasks, freeing up time to focus on complex cases.***

4. Governance

Building the right foundations for digital transformation

4.1. Addressing legacy systems, incompatible systems, and infrastructure

Outdated legacy systems and inadequate technological infrastructure pose a significant challenge to digital transformation. This is a particular challenge for local or state government that may have technical limitations or compatibility issues with existing systems, making their adoption and integration more frustrating and expensive. More consistent approaches can save time and resources, provide certainty for the market to innovate, enable sharing and adoption of effective programs and approaches, and reduce replication of manual processes. The underlying digital infrastructure required to support digital transformation is an area that a coordinated PlanTech project could help to address.

Case Study: SA Planning Digitisation

The South Australian government undertook a full-scale overhaul of their planning system, informed by an 18-month review of the planning system by an independent Expert Panel. This resulted in a report to government that led to the new Planning, Development and Infrastructure Act 2016 (which commenced in April 2017). Two of their main findings were that the planning process was very slow and there was a lack of data tracking. This led to work over approximately 5 years to build the new system and a Planning and development bill that combined 72 separate planning and design codes into one digital code for all of SA, as well as consolidating over 300 residential zones into 9.

PlanningSA has a digital first approach, and are constantly improving and adjusting the system, with quarterly roadmaps for enhancements, constantly taking on feedback and suggestions.

4.2. Developing planning systems that are suitable for digitisation

Planning regulations and policies can be complex and require significant analysis and interpretation. This can make it difficult to automate processes or develop technology platforms that accurately capture regulatory requirements. If a planning system is to be created that is fit for digitisation, the rules and processes underpinning the system require substantial change to facilitate a truly digital system. This includes setting standards, building capability inside government, and making wholesale changes to processes.

In addition, many planning regulations and policies in Australia are still presented in non-digital formats, such as PDFs, making it difficult for software programs to read and interpret them. PlanTech could support the transition to machine readable legislation and help realise the potential benefits of planning technology, such as automation and data analysis.

4.3. Supporting interagency collaboration

Urban planning involves multiple stakeholders, including government agencies, local authorities, developers, and communities. Achieving effective collaboration and information sharing among these stakeholders can be challenging due to varying levels of technological readiness and differing interests.

There is an opportunity to support consistency and coordination of digital technology projects and pilots across multiple jurisdictions. Assisting knowledge sharing amongst dispirit projects with similar objectives, and alignment with long-term strategic plans at the state and federal level.

Collaboration and adoption is also impacted by the legal and regulatory frameworks that guide digital transformation. Issues such as data privacy, intellectual property rights, and liability need to be addressed to provide a clear and supportive environment for digital innovations in urban planning.

State and local governments need to build a regulatory and governance framework that enables all players in the planning system to adopt digital technology and tools.

Barriers and Risks

Privacy and security

The digital transformation of urban planning involves the collection, storage, and analysis of sensitive data. Ensuring privacy protection and data security while maintaining transparency and accessibility is a significant challenge that needs to be addressed.

Community Engagement

Engaging communities in the urban planning process is crucial for inclusive and sustainable outcomes. However, transitioning to digital platforms may exclude certain segments of the population who have limited access to technology or lack digital literacy skills. Ensuring equitable access to the process is important to align to legislative requirements and ensure all voices can be heard.

Pace of Change

The cycle of innovation in technology gets ever faster, with a constant stream of new tools or approaches. In an already stretched system, it is challenging for planners, particularly in local government, to keep up with new tools and techniques. As such, ensuring that the system is set up to work with the innovation ecosystem, rather than hinder it, will be critical to seeing PlanTech adoption increase, and to recognise the most value from the process of change.

Resources

Implementing digital transformation initiatives requires significant investments in technology infrastructure, software, and human resources. Securing adequate funding and resources can be a challenge, especially for smaller councils or regions with limited budgets.

Further, government procurement regulations may limit the ability of planning authorities to source and purchase new technology platforms, as demonstrating value for money in accordance with legislated procurement requirements may conflict with the long-term benefit of paying more to own the data or building internal resources. Planning technology often involves the use of proprietary software or algorithms. This can create legal barriers to the adoption of certain technology platforms, particularly where there are concerns around the ownership or licensing of intellectual property rights, as well as the fear of vendor lock in, tying a government's planning system to a single commercial provider for a substantial period of time.

Being led by private sector developments

If government doesn't act, we are at risk of establishing planning processes focused around particular commercial applications, rather than establishing a system that is best for long term outcomes that can then enable the commercial innovation system. The tools and information that are used to develop strategic plans and make development application decisions need to be flexible to a range of different access mechanisms, open, and government operated or through commercial contracts. Planning decisions can't be made in a black box, the public sector, community and the development sector need to have a shared understanding of process.

Resistance to Change

The cultural and organisational resistance to embracing digital transformation can hinder the successful implementation of PlanTech. Addressing this barrier requires effective change management strategies and a highly compelling business case, as well as stakeholder engagement and communication to ensure buy-in from government agencies, planners, and other stakeholders.

Over-reliance on digital platforms for decision making

Communities are all unique, and while they may share some characteristics, they are rarely the same. A risk in utilising digital only solutions without taking advantage of the expertise of the strategic and statutory planners in Australia could be uniform designs, decisions and outcomes, removing character, uniqueness and other intangible values from communities.

A Call to Action

Developing and investing in a long-term program of change

Strong leadership and governance play a pivotal role in driving digital transformation. Establishing clear goals, developing supportive policies, and allocating adequate resources demonstrate commitment and create an enabling environment for the adoption of PlanTech.

Our stakeholders identified a wide range of novel and innovative ways digital technologies are helping to improve outcomes in the built environment. However, there are limited opportunities to pull these initiatives and approaches together, to learn from each other, build upon existing hardware or software, and develop shared approaches to support better regional coordination. Councils need advice on what to prioritise and how it fits with other initiatives.

This PlanTech partnership is seeking committed partners to support a major funding bid to catalyse this change. While the specific funding program target is not yet set, there are a range of innovation, research and training programs which are highly aligned to a programmatic approach to change and uplift to Australia's planning system. Our funding approach will also be shaped by the types of partners we secure to support our bid for change.

The aim of this Program is to provide coordination, investment and strategic direction over the somewhat scattered approach to digital transformation and PlanTech investment across the country. This will ensure research innovation activities are targeted and linked directly to planning system needs and focus on the benefits that can be driven across multiple stakeholder groups.

We are seeking expressions of interest from stakeholders who support, and may be willing to co-invest, in initiatives that address some or all of the barriers and opportunities identified in this document. In particular, we are seeking partners in the following areas:

- State Government Departments focused on Planning, Infrastructure and/or Environment
- Local councils
- Federal Government Departments focused on Climate, Infrastructure and Cities and Housing
- Universities with a specific and applied focus on the future of Australia's planning system and technologies
- Technology Companies with a focus on planning data and tools
- Insurance Companies
- Consulting and advisory agencies supporting the planning sector
- Developers and other major participants in the planning cycle

This initiative will represent a clear, coordinated effort to invest in digital technology that can improve information capture, flow and use throughout the planning system and deliver substantial training and capacity building initiatives across the sector.

The call for partners is now open, and will be receiving feedback, letters of support and discussing co-investment from interested partners in the near future.

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