

AI in Development Assessment

GUIDANCE NOTE

PURPOSE OF THIS

DOCUMENT

The recent rise of companies like Open AI and its software platform Chat GPT have caused a surge of public interest and concern in the possibilities of Artificial Intelligence (AI). This wave of technological change has proven the ability of software to perform complex creative tasks to a high standard.

PIA recognises that such technologies are no longer a possibility but a reality, with far-reaching implications for government administration and professions including planning. As stewards of the planning profession, PIA's attitude towards AI is positive but cautious.

This document connects the **PIA PlanTech Principles**, adopted in 2021, with the case for using AI to assist with development assessment decisions. It outlines the opportunities and risks of using AI in this context, assisting planners and organisations to make well-informed choices about adopting AI technology.

Whilst this guideline is focused on development assessment, PIA recognises there are a myriad of other applications for AI in planning which are acknowledged briefly at the end of the document.

HOW DO WE DEFINE AI?

It is important to define what we mean by AI. This is an umbrella term which can be broken into two categories involving different computational methods, each with its own risks and opportunities.

1. **Rule-based**, including Rules as Code
2. **Machine learning**, including neural networks and deep learning

Rule-based AI involves decision trees following simple 'yes or no' logic. Decisions are traceable, although the pathways can become complicated. This makes it suitable for queries based on clear parameters like development permissibility or numeric development standards.

On the other hand, machine learning AI is much more computationally intensive. It involves statistical methods that use pre-existing data to produce new content or make predictions. These outputs can be useful for their ability to learn and adapt to new information, but the underlying models are frequently too complex for anyone (even their engineers) to definitively track the factors that influence them.

Differences between these categories are summarised below, and are used to frame discussion throughout this guidance note.

Rule-based

- Often referred to as Rules as Code
- Follows simple "yes or no" decision trees to respond to queries
- Decisions pathways are traceable, although they can become complicated.
- Involves expressing prescriptive aspects of planning regulation in a format that provides for clear-cut interpretation by a computer (machine readable).
- e.g. Automated measurement of prescribed setbacks and height limits based on a digital model of a proposed development.

Machine learning

- Includes machine learning, neural networks, deep learning etc.
- Complex statistical analysis of past data to derive new content or make predictions.
- e.g. Analysis of precedent - using data about past approvals to determine whether a new application is likely to be supportable.
- e.g. Automated generation of application content based on past application documents.

HOW COULD AI ASSIST

PLANNERS?

AI has the potential to perform valuable assistive functions in the development assessment process. Both rule-based and machine learning hold opportunities to improve the speed and reliability with which planning determinations can be made.

Crucially, implementation of AI should not diminish the value of planner's expertise or authority. AI should foremost be used as an assistive tool and emphasise the importance of balanced and values-based human judgement on the things that matter.

Rule-based

- Automated prescriptive decision making:
 - e.g. Check compliance of submitted information against prescriptive planning requirements.
 - e.g. Improve reliability of code-based assessment.
- Automate set procedures:
 - e.g. Check adequacy of submitted documentation
- Provide accurate personalised advice:
 - e.g. Filter out requirements and codes irrelevant to the proposed development

Machine learning

- Generate content:
 - e.g. Reduce time involved in producing written content for an assessment report.
- Adaptive process improvement:
 - e.g. Triage applications based on risk and likely workload
 - e.g. Filter applications for merit-based issues.
- Perform analytics:
 - e.g. Assist with evaluating consistency in application of planning policy and human evaluation of merit-based issues.
- Conversational virtual assistants:
 - e.g. Chatbot to help an applicant find information (if interfaced effectively with rule-based systems and databases of consistent and reliable information).

WHAT RISK DOES AI POSE?

Misuse of AI in development assessment risks damaging the transparency of planning decisions, reinforcing biased or flawed reasoning, and reducing the goal-orientation which lies at the heart of planning.

The primary risks in using AI stem from two related factors:

1. Complexity – Machine learning models become too complicated for anyone (even their engineers) to definitively track or explain the factors that influence them. This undermines trust between planners, governments and the communities they serve.

2. Bias – AI models are based on past data and will reflect the qualities of that data. Biased input data will lead to outdated or inaccurate results, reinforcing past mistakes

There are also risks with reliance on private vendors for the software and computing power needed to build AI models. Probity of planning systems is risked without adequate standards and public sector management of these digital tools.

Reckless adoption of AI to perform a deterministic function in development assessment, rather than an assistive one, will ultimately fail to achieve just development outcomes.

Rule-based

- May increase propensity to codify planning matters that are more appropriately assessed on merit or strategic grounds.
- Complex decision pathways can require effort and expertise to trace and explain.
- Mistakes can be made in translating planning rules into machine-readable formats.

Machine learning

- Repeating outdated or inaccurate preferences in merit-based assessment.
- Output of false or misleading information.
- Difficulty explaining the planning reasons for advice or determinations.
- Infringement of copyright and loss of intellectual property.

All AI Systems

- Over-optimisation for reduction of approval timeframes at the cost of community and environmental outcomes.
- Loss of human accountability for decision-making e.g. “the computer said”.
- Privatisation of planning system administration if reliant on proprietary software and standards.
- Inappropriate data sharing terms and conditions.

HOW DO WE MANAGE

THE RISK?

Responsible use of AI requires clear policies and ethical standards, framing a positive but cautious approach to its use in development assessment.

Key principles which should be built into these policies are transparency with the public, and engagement with planners in development of digital tools. These are emphasised in **PIA's ten PlanTech Principles**, including:

- 2 Planners must be central to the design of digital planning infrastructure.
- 3 Digital planning infrastructure should be public infrastructure built with open technology.
- 6 Ethics, accountability and transparency must be built into digital decision systems.

As a general principle, rule-based methods are preferable to more computationally intensive machine learning methods where similar outcomes are achieved.

Rule-based

- Develop and adopt open standards for the translation of planning rules into a machine-readable format.
- Validate determinations and advice by providing links to relevant planning codes.
- Publish rulesets for public scrutiny and re-use.
- Ensure that contracts with vendors of rule-based systems are subject to conditions:
 - Public ownership and publication of the rulesets used in the software.
 - Require machine-readable rulesets to be presented in a standardised format.

Machine learning

- Use only where Rule-based, or simpler statistical methods, are inadequate.
- Do not use to issue automated approval decisions and advice.
- Allocate time for human review of generated outputs for factual errors.
- Always communicate when and how AI is used e.g. allow applicants to view the risk score generated for their submitted application.
- Establish ongoing procedures to check for bias in training data and outputs e.g. bias towards certain types of development.
- These procedures should include statistical methods.

All AI Systems

- Regularly evaluate performance against desired outcomes for applicants, communities and the environment, and screen for unintended and adverse impacts.
- Provide well-resourced channels for timely appeal and mediation if outcomes are disputed.
- Implement well-resourced channels for continuous feedback and improvement e.g. AI users groups.

OTHER USES OF AI IN

PLANNING

Opportunities for AI in planning extend far beyond the context of development assessment. AI image recognition is used to gather information about the built environment, replacing prohibitively expensive and time-consuming physical surveys. Conversational AI assistants promise to reduce barriers to using software like GIS and programming languages that would otherwise require specialist knowledge or training. Similar assistance can also help community members express themselves fluently when participating in the planning process.

The use of AI in planning practice is still at a nascent stage, with significant risks existing alongside every opportunity. It is important for planners to stay informed about new developments in AI, thoroughly test potential AI technologies before adopting them, and share the lessons learnt.

This guidance note is just one of the resources that are under development by PIA and our sister institutes and associations around the world. PIA is well-positioned as forum to share ideas, concerns and lessons about the use of AI in planning.

OTHER RESOURCES

Potts, R 2023, 'Briefing Note on Risks of AI Generated Content in Community Engagement', <https://www.planning.org.au/documents/item/12517>

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PIA 2021, 'PIA PlanTech Principles', <https://www.planning.org.au/planningresource/new/plantech-pages/pia-plantech-principles>

AWS 2024, 'Artificial Intelligence in the Public Sector', Government Lens: AWS Well-Architected Framework, <https://docs.aws.amazon.com/wellarchitected/latest/government-lens/artificial-intelligence-in-the-public-sector.html>

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About PIA

The Planning Institute of Australia was founded nationally in 1951 to serve the public interest related to planning, promote the professional interests of the membership, establish and administer standards of competency, increase the knowledge of institute members through education, training and research, and to promote the wide exchange of information and views in the community relating to planning issues and the sustainable use of land.



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