Policy innovation

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NOVEMBER 2017
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Foreword

We operate in an increasingly complex and fast-paced world with new technologies creating multiple disruptions. Citizens have access to information from many sources, are less trusting of institutions and are challenging government decision-making. We need to consider how the public sector can better manage its policy responsibilities in this environment.

The Department of Agriculture and Water Resources seeks to be innovative—and promote innovation—across its mix of policy, program and regulatory work. We’re using advanced intelligence and forecasting tools to boost our biosecurity preparedness and we’re introducing new approaches to reduce the risk of pest and disease entry, such as the online Maritime Arrivals Reporting System.

We also encourage innovation in our portfolio industries by funding research through programs such as ‘Farming Smarter’.

There is scope to innovate across the entire policy cycle. We will need to work in creative, collaborative and flexible ways as we move into a world of big data and of more fragmented knowledge and perspectives across society.

This report brings together a set of innovative ideas that collectively offer new thinking, new skills and new tools for policy practitioners in my department and across the wider public service.

Innovation in policy and regulatory practice will help us continue to deliver outcomes for Australian agriculture and the community. This report reinforces the department’s commitment to innovation as a core capability for the future.
Summary

The operating environments of governments and their stakeholders are changing rapidly. This threatens to make existing policy practices outdated. Emerging technologies, fluid political preferences and shifting societal attitudes—including a declining level of trust in public institutions—are transforming our world. Ever greater change and a less predictable future create an increasingly complex and highly contested public policy landscape. This particularly affects government policy making on issues affecting agriculture, fishing, forestry, water and rural communities more broadly.

Policymakers will need to adopt fresh ways of thinking, develop new skills and access innovative ideas to succeed in this dynamic environment. Enabling better access to innovative policy ideas can benefit policymakers and stakeholders through:
• providing new ways to frame problems and devise novel and more effective solutions
• improving connectivity between all stages of the policy cycle
• increasing preparedness for developments that warrant government intervention
• allowing greater transparency and robustness of policy processes to meet stakeholder expectations.

We examined innovation against a broad definition of policy—from problem definition, through design, to implementation, regulatory compliance and review. From this comprehensive perspective, we also needed to consider:
• pressures, challenges and opportunities facing our stakeholders in the future
• innovations that are established in some areas of policy and regulatory practice and that could be translated to other areas
• drivers for adoption of innovation.

We scanned numerous sources of innovative thinking, including academic literature, online reports and conference papers, and met with topic and policy experts. Our findings reflect a diverse spectrum of pressures for thinking more strategically and innovatively about the policy and regulatory work of the Department of Agriculture and Water Resources. These pressures include technological change, increasing volumes of information, sustainable development, economic shifts and social issues.

We analysed our scan hits for relevance, novelty and utility for the department. Although applicability to the Australian Government’s agriculture and water portfolio was a key factor, our findings have broad relevance to the core business of government, which is developing and implementing policy and regulation.
Findings from the scan were grouped into three themes that emerged from our analysis of the literature on policy innovation:

- **thinking in new ways**
- **new skills** for our people
- **new tools** for policymakers

**Thinking** in new ways is critical if governments are to improve policy practice. Innovation in this paradigm considers knowledge to be socially created, rather than a set of hard, incontestable facts. Knowledge does not necessarily translate to individual understanding or meaning in the same way for every person. Knowledge and meaning are continuously co-created through social interactions, and mediated through language and cultural practices. Individuals (including policymakers) create meaning based on what they are exposed to in their environment—operational, social or physical. But power and hierarchy—‘where you sit in the grand scheme of things’—will underlie specific community knowledge and understanding.

Innovation in any policy practice benefits from fresh ways of thinking about issues, being open to alternative approaches and identifying unconscious biases. Several useful ideas can serve these aims:

- increased use of social sciences thinking to incorporate alternative perspectives at all stages of our policy and regulatory work
- adoption of additional temporal perspectives to learn from the past and the future
- application of complexity thinking to social systems to provide new ways to think about ‘wicked’ policy problems.

**New skills** in contemporary and innovative practices can increase the range and depth of the existing capabilities of government, including:

- new literacies, especially in data and social licence to operate
- agile approaches to drive overall policy innovation
- additional forms of evidence and analytical expertise, including the use of narrative analysis.

**New tools** and process innovations for policymakers can improve the overall policy process and identify innovative policy instruments to solve specific policy problems. Process innovations include a wide variety of resources for breaking down organisational silos, improving collaboration, providing greater agility and flexibility in design and implementation, shortening traditional development time frames, and improving connections with users and stakeholders. They include:

- design-led tools
- innovation labs
- behavioural and cognitive tools
- foresighting methods
- novel digital and online engagement techniques such as crowdsourcing and deliberative approaches.
We identified some policy instruments that offer novel approaches to fund or finance policy actions with the support of the private sector, including non-government organisations. Finally, we considered how policy instruments or policy choices can become more adaptive to future uncertainties—an approach that builds on the utility of complexity thinking in helping to deal with wicked policy problems.

Our findings are not intended as a one-size-fits-all approach to promoting innovation or building a more innovative culture. Innovation entails change, and this raises challenges that senior managers who are pursuing an innovation agenda need to consider—such as capability, risk and governance.

This report presents an abundance of innovative ideas that could enhance policy and regulatory practice in the future. However, successful adoption of innovative tools and resources requires the concomitant development of innovative thinking, skills and capabilities.

Making policy is at best a very rough process. Neither social scientists, nor politicians, nor public administrators yet know enough about the social world to avoid repeated error in predicting the consequences of policy moves. A wise policymaker consequently expects that his [sic] policies will achieve only part of what he hopes and at the same time will produce unintended consequences he would have preferred to avoid. If he proceeds through a succession of incremental changes, he avoids serious lasting mistakes in several ways (Lindblom 1959).
Rapidly changing operating environments of governments and stakeholders threaten to outdate policy practices. Emerging technologies, fluid political preferences, shifting societal attitudes—including a declining level of trust in public institutions (Edelman 2017)—are transforming our world. Ever greater change and a less predictable future create an increasingly complex and highly contested public policy landscape.

Policymakers need to adopt fresh ways of thinking, develop new skills and access innovative tools to succeed in this dynamic environment. Enabling access to innovative policy ideas can benefit policymakers and stakeholders through:

- providing new ways to frame problems and devise novel solutions
- improving connectivity between all stages of the policy cycle
- increasing preparedness for developments that warrant government intervention
- allowing greater transparency, flexibility and robustness of policy processes to meet stakeholder expectations.

Our report looks globally for innovative approaches that can serve as a resource for policymakers to meet these emerging challenges. It builds on, rather than duplicates, resources already in the public domain, such as the report *Embracing innovation in government: global trends* from the Organisation for Economic Co-operation and Development (OECD 2017). We analysed our findings for their applicability to the Department of Agriculture and Water Resources, the Australian Public Service and policymaking more broadly.

When talking about policy in this report, we do so with its broadest possible meaning—capturing all stages of the policy cycle from agenda setting, analysis and policy design through to implementation, regulation and compliance.

The remainder of this report is structured as follows:

- our future environment and the drivers for innovative policy
- interpreting innovation for policy and government
- approach to the research task
- findings categorised into three themes of new thinking, new skills and new tools
- a discussion on unlocking innovation, through considerations of governance, capability and risk.
Policy innovation has the potential to boost the performance of the Australian economy and arrest its declining productivity position relative to other OECD member countries (OECD 2015). Innovative ideas, tools and resources for policy and regulatory practice are valuable to the extent that they benefit stakeholders and the wider community. Pressures to think more strategically about the way agencies ‘do’ policy and regulation are extraordinarily diverse. These include technological change, increasing volumes of information, sustainable development, economic shifts and social issues.

In the context of agriculture, policymakers need to be particularly responsive to technological change. Issues such as biotechnology and genetic modification challenge established regulatory environments and can influence policies on trade and human health. The adoption of robots and on-farm automation and sensorisation can affect licensing arrangements as well as labour and workplace health and safety policies.

Escalating volumes of data and advanced analytics, such as machine learning, offer significant opportunities to improve policy development and evaluation. However, the emergence of big data also presents challenges for policymakers. These challenges include data ownership, use and transference between individuals, businesses and third parties; and connectivity issues, such as access to reliable communications infrastructure.

Pressure from society to take action on sustainable development, climate change, food security and natural resource management is increasing, with greater coverage of these issues in the mainstream media and increasingly through social media and social activism. While in some instances markets can efficiently respond to changing consumer preferences, in other instances there is a clear role for government to promote socio-economic objectives. In responding to these challenges, policymakers need to consider social licence to operate and declining community trust (Edelman 2017).

Economic shifts, such as the rise of Asia and increasing globalisation, challenge the policy priorities of global governance institutions, such as the United Nations, which can significantly influence domestic policy. In addition, non-state actors, including business groups, aid organisations and environmental protection groups, use social activism to shape domestic and international policy agendas. Box 1 suggests further readings that explore these pressures and drivers in more detail.
Box 1  Further reading on contemporary pressures in agriculture

**Agriculture’s adoption of new technologies**
- digital disruption’s impact on agriculture, positioned as ‘long fuse, big bang’ in nature (Deloitte Access Economics 2016)
- blockchain and agriculture supply chains (Godsiff 2016)

**Big data, and new analytics and tools**
- CSIRO’s global megatrends report (Hajkowicz, Cook & Littleboy 2016)
- disruptive technologies that will transform life, business and the global economy (Manyika et al. 2013)
- identifying science and technology dimensions of emerging public policy issues (Parker et al. 2014)
- future change drivers (Policy Horizons Canada 2013)

**Economic shifts**
- China’s emerging institutional statecraft (Ikenberry & Lim 2017)
- world economic outlook, including rise of Asian economies (International Monetary Fund 2006)

**Social expectations and issues**
- trust in public institutions: business, government, NGOs and the media (Edelman 2017)

**Sustainable development**
- United Nations sustainable development goals (United Nations 2015)
Interpreting innovation for policy

There is no single, widely agreed definition of ‘public policy’. Scholars continue to debate a range of factors that contribute to policy’s ambiguity and complexity—from the influence of politics and the search for objectivity to what constitutes a policy option, including the option of doing nothing (Althaus, Bridgeman & Davis 2013; Stone 2012).

Nevertheless, there is broad agreement that policy emerges from the process by which government objectives and priorities are formulated, implemented and evaluated. The policy development process generally encompasses complex and overlapping phases. These include identifying and defining a policy problem, analysing possible solutions, selecting an option to maximise benefits while minimising costs, implementing the agreed policy option, and evaluating its outcome or impact.

Policy development in practice rarely follows a neat pathway; it is frequently messy, ambiguous and iterative. Nonetheless, governments should be open to improving policy development so they can continue to add value.

Innovations can occur at all phases of policy development. As such, our findings may be beneficial in agenda setting, problem identification, analysis, design, implementation, evaluation and review.

Innovation in government

Innovation in government is a hot topic. The report Embracing innovation in government: global trends observed that ‘the potential of innovation in government is immense … governments are transforming the way they work to ensure this potential is met’ (OECD 2017, p.2).

The desire to innovate presents significant challenges for government. As the OECD (2017, p.103) notes:

[the nature of government] ... provides a unique set of challenges that require government innovators to simultaneously and delicately balance and connect central authority with local autonomy ... In a real sense, government innovators are always on the cusp of failure and the future.
Innovation in government is not the same as private sector innovation (Kay & Goldspink 2016). These sectors differ considerably in their approach to risk, to measuring success and to public accountability. Private sector entities build shareholder value by taking a portfolio approach to innovation; failure of one innovation may be more than offset by success with others.

In contrast, citizens typically judge success in each area of government policy independently. Accordingly, the risk appetite of government reflects the risk appetite of the general public, which typically shows low tolerance for policy failures (Kay & Goldspink 2016).

The OECD (2017, p.103) defines innovation in government as ‘finding new ways to impact the lives of citizens, and new approaches to activating them as partners to shape the future together. It involves overcoming old structures and modes of thinking and embracing new technologies and ideas’.

We adopted this definition because it encompasses ideas and tools that, while not necessarily novel, may still offer incremental or transformative potential. It also allowed us to identify innovations that could be useful at any stage of the policy process.

**Innovation uptake**

One way to look at innovation uptake more systematically is through the lens of ‘diffusion of innovations’. Initially described by Everett M Rogers (1995), diffusion of innovations theory explains why a one-size-fits-all approach doesn’t adequately promote specific innovations or an overall culture of innovation. The theory describes five discrete psychographic user segments: innovators, early adopters, early majority, late majority and laggards. The way in which these groups decide to trial and adopt a specific innovation varies considerably in both timing and the manner in which they obtain and act on relevant information. Innovators and early adopters are more likely to consider and adopt an innovation that they encounter in their general reading and literature scanning. They actively seek out innovations that will improve their work or way of life. In contrast, the other groups are more likely to adopt an innovation in response to someone they know or trust telling them about it or persuading them to try something new.
All diffusion segments have value in assessing innovations. While the role of innovators is often lauded, laggards too may add value by questioning the need for specific innovations and challenging a pro-innovation bias, which implies that all innovation is positive and should be adopted.

The Australian Government’s Digital Transformation Agency recognises that people will adopt innovative practice at different times. Established in 2015 to help government departments at various stages of the transformation process deliver digital services, the DTA has adopted novel approaches to encourage digital uptake. The DTA understands that governments’ readiness to respond to digital trends involves both large and small scale change, and that building digital skills capability across the public service requires long-term support for users and feedback from early adopters (Digital Transformation Agency 2017).
Our approach

Our research approach comprised a literature review and a global scan of innovative policy and regulatory practices, which was undertaken between December 2016 and April 2017. We:

- assessed current policy approaches and potential issues for future policy work in discussion with senior executives
- compiled a list (scan hits) of innovative policy practices from web content, academic literature and conference websites
- discussed key issues with policy innovation experts in agricultural industry groups, other government agencies, international non-government organisations, academia and the private sector
- assessed and shortlisted scan hits for recency, novelty and relevancy to the work of the department. In assessing novelty, we considered whether a hit was widely known or used in the department. Relevancy considered the potential usefulness of the tool or idea, given the department’s responsibilities.
- grouped shortlisted innovations into three emergent themes
  - **New thinking**—paradigms or ways of thinking about policy challenges that governments could face
  - **New skills**—policy capability and skills, including new approaches to policy analysis and the development of ‘new literacies’
  - **New tools**—innovative tools and instruments that policymakers can use to improve policy development and regulatory practice
- asked government policy officers across several departments to review a draft report to test its readability and usability for policy work
- consulted with senior departmental officers twice—to shape the research directions and to test our initial findings.

Although the findings are not exhaustive, they are likely to indicate broad areas where innovation could take place.
Findings

Our analysis identified three key themes emerging from the scan hits we found. We present our findings against these themes in Figure 2.

**FIGURE 2 Three key themes for policy innovation findings**

**NEW THINKING**
- Understanding human behaviour and biases
- Facts and evidence are contestable
- Complexity thinking offers new perspectives on ‘wicked’ problems
- Perspectives on time

**NEW SKILLS**
- New literacies in data and social licence
- New ways of working—agile and collaborative
- New forms of policy evidence—narrative policy framework

**NEW TOOLS**
- Analysing policy problems
- Using design-led tools
- Creating spaces for innovation
- Experimenting and testing with behavioural economics tools
- Foresighting
- Engagement in an era of online connectivity
- Policy instrument innovations

**New policy thinking**
Innovation requires fresh ways of thinking. Being open to innovation means to critically challenge our world views, understand our cognitive or thinking biases, and consider policy issues from the perspectives of others. Our scan identified several ‘thinking hats’ that could promote innovative thinking: understanding human behaviour and biases, seeing facts and evidence as socially contestable, applying complexity theory to social issues, and adopting different perspectives on time. These ideas are complementary—they may overlap at times but, taken collectively, they provide useful and innovative ways to think about policy.
Findings

Understanding human behaviour and biases

People cannot always explain why they do what they do, or what they want. It is normal human behaviour to use thinking or cognitive shortcuts to navigate our daily worlds, but sometimes these shortcuts result in biased thinking (Kahneman 2011). This can lead to poor outcomes.

We are all subject to thinking biases. The key to managing this issue is being aware of the problem in others and in ourselves. It is the difference between thinking fast and thinking slow, as Nobel laureate and psychologist Daniel Kahneman (2011) puts it.

It is important to be aware of biases in those who make policy and in those for whom policy is made. Thinking traps can occur at every stage of the policy process—from defining the nature of the policy problem to delivering the agreed solution. Cognitive biases, which manifest as ‘thinking shortcuts’ or heuristics, mean that policymakers do not always search widely enough for evidence on which to base their recommendations.

Some factors and biases that policymakers need to be aware of are:
- anchoring and default biases
- attention and salience biases
- social norms
- complexity.

Policymakers also need to be aware of the potential for backfire effects—where policy evidence not only fails to overcome biases but magnifies them (Parkhurst 2017).

To mitigate these biases, governments are turning to behavioural economics. Behavioural economics recognises that people are frequently irrational—including the understanding that they do not always have stable, well-ordered preferences. In particular, people often fail to do what is apparently in their best interests, especially if choices are complex or the benefits uncertain. Policy processes and outcomes will benefit greatly from an improved understanding of how unintended outcomes arise and can be mitigated. We expand on the behavioural tools available to policymakers in New tools for policymakers.

Facts and evidence are contestable

Contemporary social researchers consider the ways we think—and what we understand as true and factual—to be conditioned by the interactions we have with those around us: family, friends, work colleagues, and the institutions or groups we are part of. This means that what an individual believes as fact may not be the same as for an individual from a different social group or environment.

The evidence assembled as the basis for policy action is rarely completely objective or values-free, given the bias issues raised earlier. Biases can arise at each stage of creating, selecting or interpreting evidence (Parkhurst 2017). Accepting this means recognising that evidence can not always be treated as something that sits neutrally and influentially outside the policy process.
Complexity thinking offers new perspectives on ‘wicked’ problems

Policy researchers Geyer and Rihan i (2010) argue that policymaking is often an attempt to create order out of complex or disorderly societies. They see traditional policy approaches as striving for order and stability. However, such approaches are generally unsuccessful in responding to scenarios referred to as ‘wicked’ problems—problems that are resistant to straightforward solutions. Figure 3 provides more detail on the features of wicked problems compared with the more traditional ‘tame’ problems that policymakers encounter.

**FIGURE 3** Features of tame and wicked problems

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<th>TAME PROBLEMS</th>
<th>WICKED PROBLEMS</th>
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<tr>
<td><strong>Easily defined and solutions tend to emerge during the problem definition phase</strong></td>
<td><strong>They are difficult to define and each attempt to solve the problem causes more problems and changes the original problem</strong></td>
</tr>
<tr>
<td><strong>Everyone agrees there is a solution and it is easy to reach consensus on the preferred solution</strong></td>
<td><strong>There is seldom agreement on the preferred solution because of wide-ranging stakeholder views and values— the problem is solved when people run out of resources or when a satisfying solution is reached</strong></td>
</tr>
<tr>
<td><strong>What solved it before should solve it again</strong></td>
<td><strong>Each problem is unique, so can’t assume the same solution will work again</strong></td>
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<tr>
<td><strong>Solved using disciplinary knowledge and expertise</strong></td>
<td><strong>Solved using disciplinary expert knowledge and local knowledge from extended peer communities</strong></td>
</tr>
<tr>
<td><strong>Can usually predict the consequences of the solution(s)</strong></td>
<td><strong>Difficult to predict the consequences of a possible solution because every attempt to solve the problem can create new wicked problems</strong></td>
</tr>
<tr>
<td><strong>May be complex, difficult and technically detailed, but there is an assumed solution</strong></td>
<td><strong>They are intricately complex, ill-structured, messy issues with multiple stakeholders—global justice and sustainability are at risk and people and ecosystems can be harmed depending on the solution and its consequences</strong></td>
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Source: Adapted from McGregor 2012, p. 63

Wicked problems are usually found as part of, or arising within, a complex system. Such systems are found and researched in almost every discipline, including economics, ecology, mathematics, biophysical sciences, social sciences and humanities. Researchers differentiate social complex systems from all other forms of complexity because the role of researchers in a social complex system may have an unintended effect on the system itself (see Box 2 for the main features of a social complex system). It is impossible to predict in detail what will happen in a complex system, but patterns can be found and described.
Box 2  Features of social complex systems

Complexity is about systems whose internal structures are not reducible to a mechanical system. Such systems coevolve with their environment, being ‘open’ to flows of energy, matter, and information across whatever boundaries we have chosen to define. These flows do not obey simple, fixed laws, but instead result from the internal ‘sense making’ going on inside them, as experience, conjectures and experiments are used to modify the interpretive frameworks within (Allen, 2010).

Some important features of a social complex system include:

Interaction—the system is comprised of many elements or individuals that react with each other and with their environment.

Local variety and global stability—individual elements of the system are heterogeneous in terms of their information, knowledge, or other characteristics; they interact in many different ways, within an overall state of system stability, often referred to as an ‘attractor’ state.

Emergence—a system behaviour that emerges spontaneously out of the interactions between individual elements in a system, but which is more than the sum of the individual behaviours.

Exchange and learning—interactions between system elements often involve exchanges of information and knowledge as the basis for learning.

Non-linearity—complex systems may suddenly change behaviour or move to another regime; such changes may be referred to as ‘tipping points’. The existence of linear behaviour contributes to system ‘unpredictability’.

Uncertainty—complex adaptive systems are extremely hard to predict in great detail, meaning their future is fundamentally uncertain.

Control—the system has no central control or processing unit.

Source: University of Groningen (2017) and Geyer & Rihani (2010)

Taking these ideas further, McGregor (2012) describes ways of considering wicked problems using complexity economics, a form of analysis based on post-normal science rather than the normal science of mainstream economics. She describes normal science as isolated from society, as ‘puzzle solving within an unquestioned theoretical framework’ and more suited to dealing with tame policy problems. By comparison, post-normal science presumes that facts are uncertain, values are disputed, stakes are high and decisions urgent—characteristics we associate with wicked policy problems.

The main benefit of a complexity perspective is to realise that interventions in complex systems may have unintended consequences that lead to maladaptive outcomes across part or all of the system. The first step is to recognise a policy issue as wicked and complex. Working on wicked problems requires new tools if we are to avoid using normal science inappropriately. We describe some tools and resources for working with the complexity of wicked problems in New tools for policymakers.
Perspectives on time

Today’s policymakers analyse the impact of policy in many different ways—social, regulatory, environmental, financial and economic. To improve the longevity and robustness of intended policy impacts, foresighting is a way to create a set of possible futures and then consider how these may inform the development of strategic policy options.

Foresight is largely a state of mind—a cognitive as well as creative capacity. It is an ability to be open to the future, to see the world through a new lens, to be able to better prepare for the emergent future (Conway 2017). Foresighting practitioners encourage out-of-the-box thinking that avoids linear, business-as-usual perspectives. They allow for disruptive change, which could be desirable or threatening to the current situation. In practice, foresighting is a carefully managed creative process that generates a series of possible, plausible or probable future scenarios (Figure 4). The longer the time frame, the greater the range and diversity of scenarios that might need to be considered.

**FIGURE 4 A range of future scenarios**

[Diagram showing a range of future scenarios with labels: Possible, Plausible, Probable, Preferable, Business as usual.]

Source: Adapted from Conway 2013

History never repeats itself, but the kaleidoscopic combinations of the pictured present often seem to be constructed out of the broken fragments of antique legends (Twain & Warner 1874).
Reflecting on the past can also contribute to developing new innovation competencies. Too often we lose the lessons learned from policy, especially post-implementation. Actively reflecting on the lessons learned and knowledge gained during policy development can yield greater benefits than anticipated. Duijn (2016) reports on public policy innovation in water management in the Netherlands, where regular and structured reflection was incorporated into the project team’s work. The project participants noted that ‘sharing knowledge is the central objective and an open mind is essential to do so’. The author concludes that the reflective practice added value to individual and collective practice. Importantly, project participants said that reflection clearly contributed to developing new innovation competencies.

Taking these contrasting perspectives into account, we argue that innovative policy practice is likely to benefit from considering time as a continuum from the past to the future. Adopting different time perspectives, as shown in Figure 5, allows policymakers to be more open to innovative and dynamic solutions.

**FIGURE 5** The past, present and future affect decisions today

Showing that the past can provide clues to the future, Canadian author Margaret Atwood’s 1985 novel and 2017 teleseries *The handmaid’s tale* presents a dystopian future emerging as a result of breaches in the checks and balances on governments. Atwood says that all her plot scenarios have already occurred at various points in world history and that her novel, offering a satirical view of certain social, political and religious trends in the United States in the 1980s, simply speculated on what would happen if such trends were taken to their logical end. ‘One of my rules was that I would not put any events into the book that had not already happened in what James Joyce called the “nightmare” of history, nor any technology not already available’ (Atwood 2017).
New skills for policymakers

Policymakers operate at the intersection of many disciplines and knowledge domains. This makes it challenging to maintain currency across an ever-evolving knowledge and information base. Policymakers either need to learn more or learn to work in new ways to take into account a broad and appropriate evidence base. They will need to work with new forms and greater volumes of evidence, deal with more contested policy debates and operate within increasingly challenging time frames.

Our research identified three areas where innovation skills and capabilities will help respond to these challenges—new literacies, new ways of working and new forms of policy evidence.

New literacies

Policymakers are increasingly asked to fill the gap between new sources of knowledge (such as university research) and the government processes by which policy is implemented (Newman, Cherney & Head 2016a, 2016b).

Literacy in the context of ‘new literacies’ is having the skills to access knowledge and understanding through technology, and the ability to assess and work with increasingly more complex contexts. These new literacies constitute an increasingly important capability in policy officers—the ability to act as a bridge between new knowledge sources and the work of government.

We illustrate this finding in two emerging areas—data literacy and social licence to operate. These areas can help policymakers better understand the way in which stakeholders create meaning.

Data literacy: relating data, digital and the humanities

The promises and challenges of big data will radically alter the way we make sense of the world around us. According to the Productivity Commission (2017):

> Extraordinary growth in data generation and usability has enabled a kaleidoscope of new business models, products and insights. Data frameworks and protections developed prior to sweeping digitisation need reform. This is a global phenomenon and Australia, to its detriment, is not yet participating.

> Improved data access and use can enable new products and services that transform everyday life, drive efficiency and safety, create productivity gains and allow better decision-making.

Big data are about datasets, characterised as huge in ‘volume, velocity, variety’ (Kitchin 2014). However, the challenges vary. Some sources of big data (such as remote sensing and astronomy) are structured and present challenges that are more logistical in nature, such as storage and upscaling of existing analytical tools. Other sources of big data present problems that will challenge traditional analytical tools, particularly those involving unstructured data streams such as those arising from social media platforms (Kitchin 2014).
In addition to using existing data tools—for example, CSIRO (2017) provides a review of data analytics platform strategies—working with big data will require more creative approaches to analyse, interpret and communicate the meaning derived from the data. For policymakers, this means becoming more literate in new fields of expertise—from data science to digital humanities—to fully appreciate and be capable of using the insights promised by big data.

Box 3 describes the use of corpus linguistics as a way of analysing large amounts of textual data, which may be relatively unstructured.

**Box 3  Corpus linguistics for analysing large textual datasets**

Big data offer proliferation, digitisation and interlinking of a diverse set of analogue and unstructured data. Much of it is new (for example, social media) or previously difficult to access (for example, books, documents, art works and material objects that have now been captured in digital formats.) Opportunities for analysing these newly digitised forms are now available through the emerging field of digital humanities.

Corpus linguistics is a rapidly growing area within this broad field that can help researchers make sense of large volumes of discourse (textual) data. Its proponents say that it complements and augments existing tools and techniques, such as the suite of methods used by (critical) discourse analysts.

Corpus linguistics studies today use extraordinarily large collections of textual data—word counts of the very large corpora (plural form of corpus) are in the billions. Corpora may be collected on a very general cultural basis, such as the British National Corpus, or may be specialised to a particular field of study (such as media stories on race and immigration, or collections of materials from language learners). They may be snapshots in time, allowing studies of change over time, or they may be continuously updated to reflect contemporary language use.

McEnery & Hardie (2012) provide details on corpus linguistics methods and practice.

As an example, digital humanities is an emerging field of academic study that seeks to explain the social meaning and significance of large volumes of digital data and information. Although intuitive, it is wrong to think of big data as being free of ideology—data that speak for themselves without a guiding theory. Any attempt to select specific datasets, mine, analyse and present meanings or knowledge from the data is subject to each researcher’s own assumptions and ideological leanings. Big data are not free of the social context in which they are created. Box 4 describes many areas of research and practice in the digital humanities that may be drawn on to work with big data.

Infovore—a person who craves information, especially one who takes advantage of their ready access to it on digital devices (Macquarie dictionary 2013).
Findings

Box 4  Big data and digital humanities

Digital humanities is a rapidly growing area of academic research that sits at the intersection of digital technologies and the humanities. It involves new ways of researching that are collaborative, transdisciplinary and computationally based. It brings digital tools and methods to the study of the humanities, recognising that the printed word is no longer the main medium for knowledge production and distribution. A distinctive feature is that it cultivates a two-way relationship between the humanities and digital technologies—the field uses technology in pursuit of humanities research and subjects technology to humanistic questioning, often simultaneously (Puschmann & Bastos 2015).

The field is now well established in academic circles and a wide range of digital methods are available. Digital methods are designed to explore natively digital objects—such as website hyperlinks, tags, URLs and robots. They are also available for visual research on digital objects such as memes and gifs, using, for example, digital ethnography or critical cartography. Digital methods include:

• **data presentation architecture (DPA) and data visualisation**—DPA seeks to identify, locate, manipulate, format and present data in a way that optimally communicates meaning and knowledge. Data visualisation (finding the best way to present the selected data) is a subset of DPA. Creative approaches include techniques such as **data walks** (Murray, Falkenburger & Saxena 2015), an innovative approach to sharing data and research findings with stakeholders by physically walking through a location and making the underlying data visible and relevant

• **data sprints**—rapid techniques that produce large datasets very rapidly (often through application programming interfaces of third-party platforms such as Facebook and Twitter) and are amenable to further quantitative or qualitative analysis (Berry et al. 2015)

• **data mining**—extracting patterns and knowledge from large amounts of data, usually by using a complex array of tools from machine learning, statistics and database systems

• **The Wayback Machine**—a digital archive of the World Wide Web. The service enables users to see archived web pages across time, which the archive calls a three-dimensional index. The intent is to capture and archive content that otherwise would be lost whenever a site is changed or closed (or content is deleted for spurious or fraudulent reasons)

• **data activism**—a heuristic tool for studying new forms of political participation and civil engagement in the age of datafication. Data activism is an evolving theoretical construct.

For further information on digital methods in the humanities, see Richards (2015) and Digital Methods Initiative (2017).
Social licence

A social licence to operate (SLO) refers to the implicit social acceptance or approval by a community for major commercial or industry developments, or even ongoing business practices. It cannot be taken for granted. Many large companies and industries have found that ignoring community values when setting up new operations can have a significant negative effect on their businesses. Mining was one of the first sectors to face this challenge. The price paid for subsequent community outrage can be very high.

Although the SLO concept was initially applied to geographically limited communities, the idea of community is becoming increasingly fluid and dispersed, with online forums and networks such as Facebook and Twitter magnifying the effects. For example, the Nebraska Keystone pipeline and the Standing Rock Sioux tribe demonstrations in early 2017 gained international attention and support through the reach of social media (Hodges & Stocking 2016). Such support included people from states or countries that were not directly affected by the pipeline decision.

Arguably, community outrage about new technologies, new policies and issues that conflict with strongly held beliefs cannot be assuaged with rational information and evidence. Policymakers need to consider whether SLOs may exist prior to any policy initiative. Importantly, they will need to anticipate how fragile SLOs can be in the face of major proposed changes.

At first glance, SLOs may appear to be an issue for industry to manage, rather than government, because the industry stands to benefit. However, questions of SLO are often crucial to the work of government, which both relies on and affects public opinion.

Consideration of SLO issues at all stages of policymaking can provide novel and actionable insights for government. For example, the film License to farm (SaskCanola 2016), produced by the Canadian canola industry with support from the Canadian Government, points to a pressing need to assist farmers to navigate SLO issues, particularly around emerging issues such as genetic technologies, and to enable them to take on this role as individuals.

Development of capability in SLO issues will require new skills and techniques in stakeholder engagement. We detail some approaches and tools in New tools for policymakers.

New ways of working

The changing nature of our policy environment is likely to significantly challenge traditional policymaking processes. Greater ambiguity, complexity and uncertainty could make linear, project management–style approaches costly, both in time taken and, often, in suboptimal outcomes.
One approach that could suit this new environment is the agile methodology. ‘Tiger teams’ is a similar and related concept, but we use the term agile to cover both ideas. Proponents of agile say that it is not simply a process, but a set of principles that emphasises:

- individuals and interactions more than processes and tools
- working software more than comprehensive documentation
- customer collaboration more than contract negotiation
- responding to change more than following a plan.

The agile methodology has given rise to different forms or frameworks, the most well-known being the ‘scrum’. Scrum approaches are based on a rugby analogy of a team moving together to carry the ball backwards and forwards as dictated by encounters with the opposition and, ultimately, to get the ball over the line by whatever means it can find. Although the team has a coach on the sidelines, the team itself is responsible for the outcome of its play.

This is where agile differs from other team-based approaches such as taskforces and project teams, which are subject to extensive, slow-to-respond oversight structures. Agile approaches can look chaotic to outsiders—and often insiders—but they also have strong commitments to delivery and working with users or stakeholders. This is a key distinguishing feature of agile approaches.

Although there is considerable literature on ‘how to be agile’ and ‘how to do agile’, agile is above all a philosophy about how to work, guided by overarching principles. Agile team leaders are as much mediators and negotiators as they are project managers. Box 5 describes a case study using this type of approach.

**Box 5  Australian Taxation Office fix-it squads**

To improve the interactions that small business owners have with government agencies, the Australian Taxation Office (ATO) is leading a cross-agency initiative called the Small Business Fix-it Squads. The squads bring together small business owners, government agencies and other stakeholders to look at issues from a small business owner’s perspective, with a focus on identifying and reducing red tape. Small businesses have frequently said it is difficult to find the right part of government to deal with. In many cases, they have to deal with several agencies, which is time-consuming and confusing.

The ATO has convened eight squads and implemented many recommendations together with other government agencies. The squads addressed a range of issues, such as changing from a sole trader to a company, taking on an employee and young adults starting a small business. This whole-of-government collaborative approach is making a real difference for small business owners and reducing red tape. To date, the squads have delivered savings to small businesses in excess of $140 million, returning more than 1.7 million hours to business owners.

Source: Public Sector Innovation Network 2017
New forms of policy evidence

Policy evidence will come in new shapes and forms in the future. The greatest changes and challenges for evidence-based policy practice are likely to arise in the social sciences and cognitive disciplines as we try to unpack 'what makes people tick', and look beyond the traditional view of citizens as being rational and logical in their behaviours and decisions (as previously discussed in New policy thinking).

One area of promise is the use of narrative techniques to examine the policy landscape in more sophisticated and nuanced ways. Research findings that speak to the importance of narrative in public policy can be found across many academic disciplines and, increasingly, in policy practice. Policy research shows that individuals use narrative structures to cognitively organise new information. This has practical implications for policymakers.

The narrative policy framework (NPF) is a way to assess how narratives are used in policymaking by both the proponents and opponents of a particular initiative (Box 6). The NPF uses a variety of tools, such as discourse analysis and critical theory. Such analyses assume that narrative plays a fundamental role in how humans make sense of their world. In plain language, people tell and remember stories (Jones, McBeth & Shanahan 2014).

At a micro level, the NPF is used to refine and test the strength of the relationship between policy narratives and individuals. The framework provides a means of testing the policy details, as well as highlighting incongruences for particular stakeholder groups.
Box 6  Features of the narrative policy framework

The narrative policy framework (NPF) treats individuals as boundedly rational, able to make decisions under conditions of limited time and limited information. Under such conditions, individuals will settle for an acceptable (rather than optimal) alternative.

Individuals rely on information shortcuts to process information and to facilitate decision-making. These shortcuts, known as heuristics, are shaped by available information, experience, expertise and training, and biological biases.

Emotions play a critical role in cognition by highlighting what is important and by setting priorities. This tendency, termed primacy of affect (or emotion) means that emotions precede reason.

The NPF recognises two kinds of cognition that operate simultaneously, but not equally. The first, system 1, refers to unconscious, involuntary and automatic thought processes that we are born with or learn through prolonged practice. Most human cognition is handled by system 1, which informs system 2 via affective cues, such as fear or anger. System 2 is always active but has been evolutionarily primed to run in a low-effort mode to conserve energy unless called upon. When engaged, system 2 focuses attention on cognitively difficult or complex tasks that are beyond the capacity of system 1.

In public policy, all social and political concepts and objects can be understood as affect laden or at least potentially so. If a concept or object is unfamiliar, individuals will perform a mental ‘search’ to assign affect to the new concept or object, based on their existing understanding of the world. This is known as hot cognition.

Individuals typically select sources and information that are congruent with what they already believe. A practical example of this behaviour is found in the media choices we make.

Individuals engage in confirmation bias, where they are likely to treat congruent evidence—that agrees with their prior beliefs and knowledge—as stronger than incongruent evidence. They process congruent stimuli more quickly than incongruent stimuli. Likewise, individuals engage in disconfirmation bias, where incongruent evidence is argued against or ignored because it takes longer to process than evidence that is congruent.

Selective exposure, confirmation bias and disconfirmation bias are conditioned by knowledge and prior beliefs. They are used by individuals to protect their identities or who they already understand themselves to be.

Individuals do not process information in a vacuum. The social, professional, familial and cultural networks and groups they are part of play a vital role in helping them to assign affect to social and political concepts and objects. In short, people look to trusted relationships and associations to help them make sense of the world.

Narrative is the primary means by which humans make sense of, and situate themselves within, the world. In doing so, narrative renders human existence meaningful. In academic terms, narrative is the preferred heuristic for making sense of the world because it provides essential links between system 1 cognition and system 2 cognition.

Source: Adapted from Jones, McBeth & Shanahan (2014)
Findings

New tools for policymakers

This section presents the findings of our search for innovative policy tools. As signalled in the previous sections, there are typically strong links between these tools and the thinking and skilling aspects of policy innovation. Getting the best from innovative policy tools is often conditional on having both the right thinking and the right skills.

The tools we present provide new ways to develop policy, including new methods to improve the process and some ideas for options or instruments that can be incorporated in the final policy.

Analysing policy problems

Policy scholars Bacchi and Goodwin (2016) argue that implicit assumptions and cognitive biases may affect the way policymakers define policy problems and subsequently develop policy. This can make a particular issue problematic when it need not be. For example, proposing additional training for women to increase their numbers in positions of influence, implicitly represents the problem as women’s lack of training.

To avoid this trap, Bacchi and Goodwin suggest that policymakers ask themselves a series of questions (Box 7), an approach they refer to as WPR—what’s the problem represented to be? WPR helps us understand the political and social ideologies that have influenced a policy. It can be used during policy analysis to help ensure problems do not remain disconnected from the policy process.

Box 7  WPR approach to policy analysis

Q 1: What is the problem (for example, gender inequality, market failure, global warming) represented to be in a specific policy or policies?

Q 2: What deep-seated presuppositions or assumptions underlie this representation of the problem?

Q 3: How has this representation of the problem come about?

Q 4: What is left unproblematic in this problem representation? Where are the silences? Can the problem be conceptualised differently?

Q 5: What effects (discursive, subjectification, lived) are produced by this problem representation?

Q 6: How and where has this problem representation been produced, disseminated and defended? How has it been (or how can it be) disrupted and replaced?

Source: Bacchi & Goodwin (2016)
Using design-led tools

Design led tools are characterised by their user-centric perspective as the lens for understanding and solving problems. Empathy for the affected user, customer or stakeholder is foregrounded in these tools. Increasingly, policy scholars are advocating the value of design thinking at the very earliest stages of policy development. The application of design methods during policy problem definition increases stakeholder acceptance and helps make governments more responsive to their concerns, expectations and experiences.

By promoting greater understanding of how citizens experience government services, design thinking can support public managers who desire to enhance mainstream public value (Mintrom & Luetjens 2016, p.391).

Design-led tools and practices use insights from psychology, anthropology, communication and the social sciences more generally. In this section, we consider four different methods, noting that the literature describes many more variants and options:

• environmental scanning
• ethnographic methods such as participant observation
• user journey mapping
• open-to-learning conversations.

Environmental scanning

Environmental scanning involves gathering and analysing information about citizen behaviours to establish a more holistic understanding of an issue. This may involve partnering with other organisations to establish how their methods may be relevant.

Ethnographic methods

Ethnographic methods provide researchers with insights into user behaviour that might not be easily elicited through more traditional techniques such as surveys and focus groups. These methods are used to describe the culture of a group in detail through extensive fieldwork (which can be in an office). Data are collected mainly through interviews, observations, or gathering symbols and artefacts. Ethnographic researchers look for patterns in how groups express ideas and beliefs through language or other means, and what their actions say collectively about group behaviours.

Ethnographic research takes many forms and uses many tools but a common feature is participant observation. This type of research is field based—that is, conducted in the settings in which people actually live or work. The researcher is frequently embedded in the group’s activities, not merely observing from the sidelines. The research is inductive in nature; it aims to accumulate knowledge, not test a prior hypothesis derived from existing theories or models.
User journey mapping

User journey mapping aims to understand the broader engagement process as it unfolds by sketching the user experience for a particular process or activity from beginning to end. Its aim is similar to that of ethnographic methods, but it does not need to be field based. It can reveal duplication and inefficiencies, and help suggest alternative pathways or streamline processes.

For example, in seeking to pinpoint problems in the health system from the patient’s perspective, NSW Health’s Clinical Services Redesign Program mapped the steps required to provide clinical care to a patient; from the patient leaving their house and entering the hospital to discussions with hospital staff. Recording the patient journey demonstrated the complexity of the patient’s experience and provided a catalyst for change. The subsequent redesign of the patient journey led to a 97 per cent reduction in overdue surgeries and a 99 per cent reduction in the number of surgeries overdue by more than a year.

Open-to-learning conversations

Open-to-learning conversations encourage outside-the-box thinking by facilitating dialogue that questions the fundamental basis of existing structures and challenges preconceived ideas. Many service providers limit the choices available to stakeholders to maintain predetermined notions of order. When problems occur, incremental adjustments are made to resolve them. Argyris (1993) introduced a theory of single and double loop learning to explain how problems are resolved. He suggests that single loop learning occurs when a problem arises and people seek to resolve it within existing structures, norms and values. In contrast, double loop learning involves breaking down existing structures to establish alternative pathways for action.

Although the origins are unclear, management and organisational learning scholars now focus on triple loop learning, which is concerned with making corrective changes to the underlying system of alternatives for action or decision (Tosey, Visser & Saunders 2012).

Creating spaces for innovation

Getting people working in a different type of space is one way to signal a pro-innovation cultural change that is intended to stimulate people to think and do things differently.

Innovation labs are a prime example. Their physical design helps to break down traditional organisational hierarchies and barriers, stimulates new perspectives and elicits more creative thinking. They are often sparsely furnished, with informal, movable furniture arranged so as to remove perceptual barriers, such as those found in physical offices. However, the aim is not all about destruction—innovation labs are frequently praised for their capacity to create partnerships and build networks by launching joint initiatives, projects and platforms.

Although governments have not widely embraced such environments, the appearance of innovation labs across the public sector suggests that the organisational and sectoral boundaries of government are becoming blurry. This is a useful step towards fostering a culture of innovation. In seeking a broader view on the likely utility of innovation labs, we identified several sites around the world that were created to develop innovative solutions to pressing policy problems and initiatives (Box 8).
**Box 8  Innovation labs around the world**

**Mindlab**, Copenhagen, Denmark. Established in 2002, Mindlab was one of the first public sector innovation labs. It inspired the creation of many similar labs around the world and is known for pioneering the use of human-centred design to address public sector challenges. This design-led approach helps government agencies redesign their services and make policy decisions that are centred on the experiences of the end user.

**UN Global Pulse**, Jakarta, Indonesia. This lab uses social media data to address social development challenges such as food and fuel prices, employment and urban poverty.

**Laboratorio de Gobierno**, Santiago, Chile. This innovation lab was built to promote relationships between government and citizens. The lab develops, facilitates and promotes innovative processes in public services, with an emphasis on citizen users.

**La 27e Region**, Paris, France. La 27e Region is an independent lab that partners with regional governments to explore new ways to improve services and policies. Methods from humanities, design services and social innovation are used, and service designers, social researchers and urban planners are employed to work with regional civil servants to pilot projects. The lab uses a set of principles known as the ‘friendly hacking’ concept. This includes immersing civil servants in local communities to gain an inside perspective, experimenting and prototyping before scaling up, engaging multiple stakeholders, using design thinking and capturing the learning process for future hacking projects. To change government culture, the La Transfo program works with regional governments to build their own social innovation labs.

For further information on government innovation labs see Nesta (2015) and eGov Innovation (2017).

**Experimenting and testing with behavioural economics tools**

Behavioural economics (BE or behavioural insights) can provide useful insights into the existence and treatment of a behavioural problem. By running and analysing trials in real time, it is possible to ‘nudge’ people’s decisions and choices in ways that improve their welfare and reduce costs. As discussed in the section New policy thinking, studies of human behaviour show that people’s decisions are influenced by a variety of motivations and biases. BE is about altering the ‘choice architecture’, not about taking away freedom of choice. As Thaler and Sunstein (2008, p. 6) explain ‘Placing fruit at eye-level constitutes a nudge. Banning junk food does not’.

Although Australian Government agencies increasingly use BE (Box 9), it has limitations across the policy cycle. For example, the extent to which BE can drive long-term systematic change is not well understood. Notwithstanding, BE has a clear role in enabling more effective individual choices in specific circumstances.
Box 9  Behavioural economics in Australia

With the help of the UK Government’s behavioural economics (BE) team, the NSW Department of Premier and Cabinet established a dedicated BE unit in 2012 (NSW Department of Premier and Cabinet 2017). Since then, it has applied BE tools to a wide range of policy areas, from health care to social housing. Interventions include framing cervical cancer reminder letters in positive outcome terms (which increased screening numbers by 7,500 women) and highlighting the costs of unpaid social housing rent to the broader community when sending rental arrears reminder texts to tenants.

In 2015 the Department of the Prime Minister and Cabinet established the Behavioural Economics Team of the Australian Government (BETA) to support government agencies in applying behavioural insights to policy making. The Department of Agriculture and Water Resources is currently working with BETA to consider areas where BE may prove useful, such as pest and disease reporting, and increasing participation in programs such as farm household assistance.

In practice, using BE usually involves four steps:

1. Applying BE principles to identify and understand behaviours that could benefit from change.
2. Designing an intervention based on behavioural frameworks (see Table 1).
3. Testing the intervention’s effectiveness using a randomised controlled trial (which compares a test group with one that does not have the intervention applied).
4. Reviewing, refining, improving and scaling up.

Table 1 provides a list of BE tools and describes situations in which they may be useful. Box 9 describes some early uses of BE by Australian governments.
**TABLE 1** Behavioural economics tools

<table>
<thead>
<tr>
<th>Intervention idea</th>
<th>Techniques</th>
<th>How it works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change the question being asked</td>
<td>Change the default</td>
<td>People are strongly inclined to go with defaults or preset options. Defaults are generally best used when the target group has substantially consistent preferences and circumstances.</td>
</tr>
<tr>
<td>Introduce a required choice</td>
<td>A required choice</td>
<td>A required choice requires an individual to make a decision to continue with a given process or service (for example, most airlines force customers to say ‘yes’ or ‘no’ to travel insurance when they are booking a ticket).</td>
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<tr>
<td>Reduce the number of options</td>
<td>Reducing the number of options presented can avoid choice overload, which can lead to procrastination, avoidance, dissatisfaction and possibly mistakes.</td>
<td></td>
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<tr>
<td>Simplify decision steps</td>
<td>Providing tools to simplify decisions (including through nesting or sequencing decisions) can help people find the best option, especially when the choice is complex (for example, provide people with retirement income projection tools based on a given contribution rate to superannuation).</td>
<td></td>
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<tr>
<td>Framing choices in terms of loss or gain</td>
<td>People prefer to avoid losses relative to equal-sized gains. So correctly framing choices and describing consequences may be important.</td>
<td></td>
</tr>
<tr>
<td>Change the information provided</td>
<td>New information</td>
<td>Sometimes information can be sufficient to influence behaviour, particularly when the information targets false beliefs.</td>
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<tr>
<td></td>
<td>Personalised information</td>
<td>Personalised information can help improve decisions when the best choice is different for each person.</td>
</tr>
<tr>
<td></td>
<td>Reframe information to be easier to comprehend</td>
<td>For example, Australian credit card statements must now tell consumers not just what their debt is and what the minimum repayment is, but also how long it would take to pay off the balance if paying only the minimum amount.</td>
</tr>
<tr>
<td>Help people follow through on good intentions</td>
<td>Checklists</td>
<td>Checklists can reduce errors due to memory failure. They are best used to help people avoid shortcuts they might be use due to fatigue, high stress or complexity.</td>
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<tr>
<td></td>
<td>Set goals</td>
<td>Goals improve performance by directing attention, prolonging effort and increasing persistence.</td>
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<tr>
<td></td>
<td>Make plans</td>
<td>Plan making is most effective when people intend to follow through, are focused on positive consequences of success and have considered potential obstacles.</td>
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<td></td>
<td>Prompts</td>
<td>Prompts help to overcome procrastination and forgetfulness, and encourage people to plan the specific steps they will take to complete a task (for example, ‘What time will you leave the office to get your flu vaccination?’).</td>
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<td></td>
<td>Deadlines</td>
<td>Deadlines can motivate people to take action. Without them, we are at greater risk of procrastination or myopic planning.</td>
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<td></td>
<td>Reminders</td>
<td>Reminders make it easier to complete a task by providing cues that the task still needs to be completed.</td>
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<tr>
<td></td>
<td>Timing of intervention</td>
<td>People are less likely to make the choice they generally think they ‘should’ make after thinking hard about something, when they have depleted willpower or when evaluating options separately instead of together.</td>
</tr>
</tbody>
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continued...
TABLE 1 Behavioural economics tools  

<table>
<thead>
<tr>
<th>Intervention idea</th>
<th>Techniques</th>
<th>How it works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help people follow through on good intentions</td>
<td>Commitment device</td>
<td>A commitment device allows people to voluntarily have restrictions imposed on them until they have accomplished a goal. For example, Antabuse (an anti-alcohol drug) is a commitment device with serious consequences—if I drink, I become very, very sick. We are strongly inclined to be consistent with pre-existing commitments, even weakly made ones.</td>
</tr>
<tr>
<td></td>
<td>Social accountability</td>
<td>The prospect of being held publicly accountable for actions can be a powerful motivator (for example, to persist with a diet). Accountability can be used in lieu of other policy levers (for example, the Australian Taxation Office published the names of private companies with revenues over $200 million who paid no tax in 2013–14).</td>
</tr>
<tr>
<td>Be more timely</td>
<td>Immediate costs</td>
<td>People are typically more persuaded by immediate costs or benefits than delayed costs or benefits.</td>
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<tr>
<td></td>
<td>or benefits</td>
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<tr>
<td></td>
<td>Fresh starts</td>
<td>People tend to make decisions more in their long-term interest (for example, exercise, diet) during ‘fresh starts’—at New Year, start of the month or a new job.</td>
</tr>
<tr>
<td>Make it easier</td>
<td>Making it easier</td>
<td>Resistance to change is often about perceived difficulty or ambiguity. A task can be made easier by simplifying language and processes; breaking complex tasks into smaller, simpler parts; and reducing the effort required to take up a service or complete a process.</td>
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<tr>
<td></td>
<td>Partitions</td>
<td>When something is divided into smaller units (for example, individually wrapped candy), we confront additional decision points, which prompt further consideration.</td>
</tr>
<tr>
<td>Influence the decision</td>
<td>Describing social</td>
<td>Describing what most people do in a particular situation encourages others to do the same. This works best when there is uncertainty about the norm, similarity with the comparison group and a realistic desired action. It is also important not to reinforce undesirable behaviours by implying they are common or normal.</td>
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<tr>
<td></td>
<td>norms</td>
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<tr>
<td></td>
<td>Encouraging commitment</td>
<td>We often use social commitments to entrench ourselves in our commitment to a given path. In many cases, the more social, the more entrenched.</td>
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<tr>
<td></td>
<td>to others</td>
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<tr>
<td></td>
<td>Seeking reciprocation</td>
<td>We have a tendency to reciprocate the actions of others (for example, mailing a survey with a reward inside as a pre-emptive thank you increases the response rate).</td>
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<tr>
<td></td>
<td>for an offer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Using social influence</td>
<td>We are more likely to be influenced by people we like or by symbols of authority.</td>
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<tr>
<td></td>
<td>Framing an option</td>
<td>People assign more value to opportunities when they are less available.</td>
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<tr>
<td></td>
<td>as scarce</td>
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</table>

Note: Based on Department of the Prime Minister and Cabinet (2016).
Foresighting

Foresighting tools are designed to help shift people from their current world view—seeing the future as an extension of today—to one that actively positions them in the future. Not all of these tools are unique to foresighting. However, a foresighting mindset, which builds on the well-established practice of scenario planning, is what makes using these tools innovative in a policy setting. Among the many tools available to foresighting practitioners are causal layered analysis, horizon scanning, Delphi method and backcasting.

Causal layered analysis

Causal layered analysis is used to learn from the present and past to create alternative futures. It provides a rich and multilayered account of what is being studied—in contrast to the more common empirical or predictive techniques, which tend to ‘skim the surface’ (Inayatullah 1998).

Causal layered analysis consists of four levels—litany, social causes, discourse/world view and myth/metaphor. One of its many benefits is that it allows policy to be grounded in community participation, as it sees community values and world views as an essential aspect of planning and policy. This contrasts with more technical, scientific planning, which focuses on top-down approaches. Causal layered analysis moves the debate and discussion beyond the superficial and obvious to the deeper and more peripheral. This type of analysis can be transformative as it recognises multiple truth claims about the future.

Causal layered analysis also has potential as a tool for analysing wicked problems by helping to deconstruct complex social issues (Bishop & Dzidic 2014).

Horizon scanning

Horizon scanning is increasingly being used by government agencies to capture, make sense of and assess the importance of, emerging issues, trends and developments (for example, Policy Horizons Canada 2013). These emerging issues are often not very obvious at the time but might significantly influence current policy, service delivery and practice.

Horizon scanning is a structured process that considers developments outside immediate cultures and technologies. It analyses information beyond usual planning timescales and data sources, and consults people with different perspectives and expertise. Of particular interest is the search for so-called weak signals or ideas that are not yet mainstream concerns but have disruptive potential. Horizon scanning is as much art as science; a typical process is shown in Figure 6.

FIGURE 6 Example of a horizon-scanning process

Source: Delaney 2014
Findings

Backcasting

Backcasting methods define a desirable future and then work backwards to identify major events and decisions that could create this future. This enables organisations to consider what actions, policies and programs are needed today to connect with that desired future. Backcasting reminds participants that the future is not a linear extrapolation from today but can have many alternative outcomes, depending on decisions made in the near future and the impact of external events on an organisation or society.

More information on foresighting frameworks and additional methods can be found online; for example, Jackson (2013).

Delphi method

The Delphi method is a technique to structure group communication processes to find consensus about complex issues. It is particularly useful when used by experts in a series of iterative learning rounds. Initially, organisers formulate questions about the future. They then present these questions to participants, who respond by adding their rankings and comments. The organisers use these comments to formulate better questions. The process is repeated in a series of rounds until a consensus answer is established.

Participants do not have to meet in person. In some approaches, they can see the results in real time as they add their views anonymously (Box 10).

Box 10  Forecasting with Delphi in the cloud

The department has worked with several agencies, including the Intelligence Advanced Research Projects Activity (IARPA) to develop an online tool called DelphiCloud. This is a prediction and forecasting tool using judgement aggregation. Based on the science of computational philosophy, it uses sophisticated algorithms to combine judgements and evidence from a broad and diverse group of topic experts.

Engagement in an era of online connectivity

Many of the innovations we describe in this report place users and stakeholders at the centre of policy work. However, the processes by which we connect and engage with people are also ripe for innovation.

Engagement can take place in many ways—face to face, at a distance (for example, submissions to an inquiry) and online through a variety of social and digital networks. Traditional models of one-to-one and one-to-many interactions are now being overtaken by many-to-many networks that have considerable collective influence. Such networks are underpinned by user-generated content.
Increased communication among stakeholders is altering the power balance between citizens and institutions. Advocates and activists can bypass traditional media gatekeepers and reach large audiences almost instantaneously with an idea, issue or story. An unfortunate side effect is the rapid transmission of misleading information, inappropriate issue framing, and fake news through the practices of ‘liking’ and ‘sharing’. This reflects the importance of user salience in motivating engagement, and the risk of polarisation of attitudes and beliefs in line with pre-existing worldviews (Sunstein 2016).

This environment provides an impetus for policymakers to connect in new and compelling ways with users and stakeholders. Government needs to do more than just translate traditional engagement practices to online platforms—it needs to use the new platforms in innovative ways. We explore two such approaches: crowdsourcing and deliberative democracy. Shergold (2015) argued:

The public service has a role as a broker of information, perspectives and opinions. It must exercise the leadership of facilitation by consulting, arranging expert discussion, collaborating with business and not-for-profit organisations and crowdsourcing a broad range of community views.

**Crowdsourcing**

Crowdsourcing is an increasingly popular method for organisations to engage with consumers, accelerate their innovation cycles and find new ideas for their brands. It has gained traction with policymakers who seek to apply the ‘wisdom of crowds’ through online platforms to solve problems across a wide range of policy areas (Table 2).

Crowdsourcing can take a number of forms, depending on the nature of the problem a policy practitioner wishes to solve. It is deployed in policy work to increase the knowledge or evidence base or to generate ideas.

One well-known example of crowdsourcing is Wikipedia, written collaboratively by vast numbers of volunteers. Similarly, libraries around the world invite the public to correct digitised analogue records. For example, the Trove project, initiated by the National Library of Australia uses crowdsourcing to enable text corrections for digitised historical collections of newspapers, magazines and manuscripts (National Library of Australia, 2017). Box 11 describes the use of crowdsourcing to map small, independent public transport routes in Mexico City.
**TABLE 2 Examples of government crowdsourcing and tools**

<table>
<thead>
<tr>
<th>Policy challenge</th>
<th>Crowdsourcing solution</th>
<th>Potential tools</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect a large volume of information from outside the organisation, using a common format or location</td>
<td>Invite a crowd to volunteer information</td>
<td>Online platforms or participatory mapping schemes</td>
<td>The ACT Government’s Fix My Street is an online reporting facility that provides direct contact with territory agencies to report and resolve multiple service requests</td>
</tr>
<tr>
<td>Analyse or process a large volume of information owned by an organisation</td>
<td>Invite a crowd to review and analyse information</td>
<td>Online portals and forums</td>
<td>The Australian National University recently asked citizen scientists to search for a new planet in our solar system by releasing large and detailed astronomy photographs online</td>
</tr>
<tr>
<td>Address a problem using specific types of expertise or tools</td>
<td>Invite a crowd to solve a problem</td>
<td>Online portals and forums</td>
<td>The Business and Research Innovation Initiative encourages businesses to develop solutions to government policy and service delivery problems</td>
</tr>
<tr>
<td>Address a problem and canvass public support for the solution</td>
<td>Invite a crowd to create different solutions and choose the best response</td>
<td>Websites and social networking platforms</td>
<td>The NZ Government appealed to the public to design a new national flag</td>
</tr>
</tbody>
</table>

**Box 11 Mapatón—crowd games provide important transport data in Mexico City**

Mexico City’s mobility department, along with a handful of private companies and non-profit organisations, used a crowdsourcing app to map more than 1,000 routes travelled by buses, minibuses and vans. Unlike the larger subway or rapid-bus lines that are controlled by a government agency, minibuses are run by more than 25,000 concessionaires and their more than 1,000 routes pop up in response to local demand, with no central oversight or repository of route, schedule and fare information.

Called Mapatón, the app uses geolocation to track the journey of each bus and to collect other useful information—where a bus stopped or how much a ticket costs. The government provided cash incentives to encourage people to use the app. Data were collected over two weeks, speeding up a process that might have taken years using more conventional methods. The app was inspired by technology created by the Massachusetts Institute of Technology that was used to create a digital map of the bus system in Dhaka, Bangladesh.

Sources: Quartz (2016); OECD (2017)
Deliberative democracy

Deliberative democracy comprises methods that are designed to elicit consensus on a policy issue or initiative from a large and representative sample of people. These methods differ from crowdsourcing in that policymakers may already have significant knowledge about the policy issue, but potential policy options may be polarising or contentious.

Deliberative approaches (see Chambers 2003; Jennstål & Niemeyer 2014) are characterised by:

- information—participants are given access to reasonably accurate information that is relevant to the issue
- substantive balance—arguments offered by one side are answered by those who hold other perspectives
- diversity—the major position in the public is represented by participants in the discussion
- conscientiousness—participants sincerely weigh the merits of the arguments
- equal consideration—arguments offered by all participants are considered on their merits, regardless of which participants offered them.

Deliberative methods include:

- Deliberative polling, which seeks to examine what the public would think if informed of competing arguments and given the opportunity to deliberate with their peers on topics of social and public policy. Participants fill out surveys before and after the deliberation process to ascertain whether the process has changed their opinion on the topic.

- Deliberative workshops, which are similar to deliberative polling but aim to encourage debate on a topic to arrive at some decisions. Deliberative workshops can take between a few hours and several days. They typically involve 20 to 50 participants.

- Consensus conferences, which are events that encourage discussion on contentious and complex issues (often scientific or technical in nature) between the public and experts. Conferences usually last 3 to 4 days and involve 10 to 20 participants. The main difference between consensus conferences and deliberative workshops is that conferences generally seek a consensus opinion on the topic being discussed.

- Deliberative mapping, which combines qualitative and quantitative methods to assess how participants rate different policy options against pre-determined criteria. It emphasises understanding the different perspectives each party offers to a policy process rather than trying to integrate expert and public voices.

- Citizen juries, which are one-off events or processes that enable small groups to make informed decisions on complex issues. Jurors hear from a variety of experts, cross-examine them, deliberate about the topic and present their findings.
Innovation in policy instruments and policy design

Policy design involves identifying the right combination of policy instruments to achieve policy goals. It is at the heart of policymaking. Policy design is frequently rooted in a set of principles developed between the 1950s and the 1990s:

- a tendency to start with less coercive choices before moving to more coercive or regulatory approaches (Figure 7)
- political ideologies, such as the preference of liberal democratic societies to limit state activity
- coherence, consistency and congruency as criteria for assessing whether a policy is optimal. (Howlett & Mukherjee 2015).

In practice, these principles have been broadened through the Australian Government's requirements for regulatory impact statements for significant policy changes. Such requirements also emphasise efficiency, equity and effectiveness.

FIGURE 7 Continuum of government coercion in policy instruments

Our scan identified two key areas of policy design where there is considerable innovation potential—new ways to fund policy initiatives and policy adaptation to meet the challenges of complexity and uncertainty.

New approaches to funding

Policy instrument choices are frequently constrained by budgetary pressures. New ways to offset these pressures include social impact financing and the development of capital markets for social goals. Often referred to as social impact investing, the Australian Government Treasury explains that:

> [social impact] investments are made with the intention of generating measurable social and/or environmental outcomes in addition to a financial return. Social impact investing is an innovative method of financing interventions to address intractable social or environmental problems (Australian Government Treasury 2017, p. 8).
The key elements of social impact investing include leveraging private capital; using a 'try, test, learn' approach to trialling innovative ideas; and increasing the focus on outcomes and evaluation. Social impact investing can take a number of forms, notably:

- social impact bonds—contracts between the government, investors and service providers to trial innovative interventions
- social enterprises—businesses that aim to achieve both financial return and social outcomes
- social impact investment funds—larger-scale funds that invest in social impact investments.

Box 12 describes a case study of the use of a social impact investment fund in water entitlements.

**Box 12  The Murray–Darling Basin Balanced Water Fund**

This water investment fund is Australia’s first to address environmental, agricultural, social and financial outcomes. The fund is a collaboration between Nature Conservancy Australia and Kilter Rural.

The fund invests in water entitlements (permanent water rights) in the southern Murray–Darling Basin and generates financial return for wholesale investors through capital appreciation and annual lease of entitlements, and trade of temporary water allocations.

The fund also supports social and environmental benefits. When water is scarce and demand is higher, more water is made available to agriculture, providing water security for farmers. When water is plentiful and agricultural demand is lower, more water is made available to wetlands, targeting areas of high ecological and Indigenous cultural significance. This has benefits for wetland restoration and supporting threatened freshwater species and helping conserve sites of important cultural and spiritual significance to Indigenous people.

Initial capital raised in 2015 comprised $22 million in equity and $5 million in debt. The second capital raising closed in March 2017.

Source: Australian Government Treasury 2017
Findings

Some government spending decisions are reactive, responding to events and situations as they occur. Consideration of future events is often limited. As the OECD reports (2017, p.93):

Innovative funding models are reversing this concept by allowing funding decisions to be made with an expected future in mind. One area where this is occurring is humanitarian aid, which makes resources available, mainly after disasters.

One new approach in this field is the concept of forecast-based financing (FbF). FbF recognises that despite the presence of emergency forecasts, resources are often unavailable prior to the disaster due to lack of certainty and doubts that the planned action would be of use. However, the window between a forecast and a disaster provides sufficient time to implement a variety of actions, and FbF can help in this regard by releasing funds based on forecast information for planned activities to reduce risks and make risk management more effective. FbF is an automatic system that, once triggered, funds preparedness actions prior to the disaster strikes as soon as a credible warning arrives.

In agriculture, governments are encouraging farmers to better prepare for droughts and manage their business risks, including through new insurance products and other financial instruments.

Policy adaptation

In the section New policy thinking we described how contemporary decision-makers face uncertainties when dealing with wicked problems, including from a myriad of external factors that are further complicated by societal perspectives and preferences that may change over time.

To cope with these intrinsic limits to the predictability of the future, the challenge is to ‘develop plans whose performance is insensitive to the resolution of the various uncertainties’ (Kwakkel et al. 2015). Swanson et al. (2010) say that unpredictability and the presence of ‘unknown unknowns’ are the underlying traits of many policy contexts, particularly those characterised as wicked problems. The system can never be understood or predicted with complete accuracy.

One way to resolve these issues is to design plans that can be adapted over time in response to how the future actually turns out. This means finding a plan that will be successful in a wide variety of plausible futures, through the ability to adapt the plan over time. Such plans have already been developed in other jurisdictions, particularly in water management and climate adaptation policy fields. There are limits to just how many ‘plausible futures’ can be contemplated by such a plan, although Kwakkel et al. (2015) describe how such an approach can be supported computationally.

Swanson et al. (2010) describe seven tools that can be used by policymakers to improve policy adaptability to future uncertainty:

• integrated and forward-looking analysis
• built-in (automatic) policy adjustment
• formal policy review and continuous learning
• multi-stakeholder deliberation
• enabling self-organisation and social networking
• decentralisation of decision-making
• promoting variation.
Figure 8 describes how these tools can be incorporated into the policymaking process.

**FIGURE 8 Tools for the adaptive policymaker**

**Tasks for the adaptive policymaker**
- Understand policy setting
- Enable policy innovation
- Monitor
- Improve and make necessary policy adjustments to ensure performance

**Tools for the adaptive policymaker**
- Integrated and forward-looking analysis
- Multi-stakeholder deliberation
- Enable self-organisation and social networking
- Decentralisation of decision-making
- Promote variation
- Automatic adjustment
- Formal policy review and continuous learning

**Outcomes of adaptive policy**
- Policy that is robust
- Policy that adapts to anticipated conditions
- Broader participation and commitment to 'making it work'
- Enhanced local resilience to unforeseen events
- Experience gained in a variety of policy approaches
- Policy that is ready for what lies around the corner

Source: Adapted from Swanson et al. (2010)

One approach that might provide a useful starting point is adaptive governance, which ‘refers to the evolution of rules and norms that better promote the satisfaction of underlying human needs and preferences, given changes in understanding, objectives, and the social, economic and environmental context’ (Hatfield-Dodds, Nelson & Cook 2007).

Adaptive governance (and the related concept of collaborative governance—for example, Ansell & Gash 2007) approaches are particularly useful when working with complex social systems, such as those comprising large government agencies. Proponents argue that its merit rests in its ability to serve as a reference point for examining the dynamics of institutional change, in much the same way as ‘market failure’ serves as a reference point within the discipline of economics.
Although our report findings are described against three key themes of **New thinking**, **New skills** and **New tools**, we recognise that some ideas are pervasive across these categories. For example, agile approaches comprise a mix of thinking, skills and practical tools.

More generally, the innovations we describe expand rather than replace our current approaches. There may be future opportunities to deliberately remove or retire outdated practices but, for now, we see these new ideas and tools as potentially adding range and nuance to our policy, program and regulatory work.

There is undoubtedly scope to innovate more widely across the department’s policy and regulatory roles, although the way discretionary powers are devolved from legislation to work practices may sometimes constrain such an aim. However, this should not prevent us from looking closely at the areas where we have discretion to pursue innovative options. These are not new issues and the department is already working on ways to reduce internal red tape, broaden citizen engagement approaches and increase policy officer capabilities.

**Governance**

Our review of the academic literature on policy innovation suggests there is merit in considering innovation in policy governance. Although a full exploration is beyond this project, our literature scan found that innovative work practices, especially those that promote devolved decision-making, may require new modes of policy governance within a broader approach to agency governance.

Some innovations, such as design thinking, have important caveats—if design thinking is to become part of the policymaker’s toolkit, serious consideration will need to be given to issues of trust, efficiency, democratic representativeness and effectiveness. Implementing such innovations may raise challenges, such as:
• creating authorising environments—embedding the approach within government
• building and accessing capacity—public organisations need to build expertise in design-led innovation (or use the growing design service industry)
• opening up the bureaucracy for co-production and user-centred approaches—this forces public agencies to take a broader view that includes other organisations playing a role in people’s lives or in business operating environments.

Building new capabilities

A desire for innovative approaches to policy implies the need for new or additional workforce capabilities as part of developing an innovation culture. Opportunity areas for capability development were outlined in New tools for policymakers. Building innovative policy capability will likely need a mix of approaches, given the different innovation segments identified by Rogers (1995).

In practical terms, this will affect both learning materials and communication needs. For innovators and early adopters, broad calls to action using one-to-many communication channels may be sufficient. Late adopters and laggards may need more personalised one-to-one support and permission to try something new.

Building capability is a long-term investment. Innovation commentators talk about ‘long fuse, big bang’ scenarios. Although this concept more generally refers to the technical effort required to develop new technologies that have a large payoff, arguably it also applies to the adoption and diffusion of innovative work practices in large organisations.

Key success factors for this investment include a mix of workforce skills and mindsets. This issue was explored in greater detail in OECD (2017). It presents an innovation skills model (Figure 9), which describes the attributes required to help build an innovation culture. Although many of these skills, such as data literacy, user centricity, iteration and narrative, are explicitly referred to in this report in New tools for policymakers, the model also describes behavioural characteristics typical of innovative policymakers—an innate curiosity and a willingness to challenge the status quo and seek out unusual partners to work with.
Discussion: unlocking innovation

**FIGURE 9** OECD public sector innovation skills model

**Iteration:** incrementally and experimentally developing policies, products and services.

**Data literacy:** ensuring decisions are data-driven and that data are not an afterthought.

**User centricity:** ensuring that public services are focused on solving and servicing user needs.

**Curiosity:** seeking out and trying new ideas or ways of working.

**Storytelling:** explaining change in a way that builds support.

**Insurgency:** challenging the status quo and working with unusual partners.

Source: OECD 2017

**Rethinking risk and failure**

As previously noted, innovation in government differs from innovation in the private sector. This is particularly true when considering its impact on an agency’s risk profile. Government tolerance of risk tends to reflect the risk appetite of its key stakeholders—citizens. Failure, especially in a big and dramatic way, is not generally tolerated by the public. To the extent that such failure is associated with parliamentary or ministerial decision-making, governments may fail politically at the next election, prompting some public sector innovators to be more cautious.

Opposing this view, some senior bureaucrats and advisers argue for an Australian Public Service culture that accepts failure where it is reasonable to do so (for example, Shergold 2015). Although these two viewpoints appear to be at odds, we suggest that innovative approaches can be adopted, provided this is done in a disciplined way. Nowhere is this better demonstrated than in the earlier discussion on the potential of agile methodologies—including a structured approach to learning from failure—which have been described as ‘the engine of innovation cultures’ (Denning 2015).
Figure 10 shows that failing early in a process and learning from that failure is easier to manage than trying to roll back a project or program that is fully committed. The key is to trial ideas quickly and learn from failures, rather than overdesign a project completely from the start. In short, the tension between risk and innovation is manageable, and innovative approaches may serve to reduce risks associated with major policy initiatives.

**FIGURE 10** Costs associated with agile approaches to delivering large and complex projects

<table>
<thead>
<tr>
<th>Cost (in dollars or reputation)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discovery</strong></td>
</tr>
<tr>
<td><strong>Design</strong></td>
</tr>
<tr>
<td><strong>Pilot</strong></td>
</tr>
<tr>
<td><strong>Rollout</strong></td>
</tr>
</tbody>
</table>

Easier and less costly to make changes here using a design process

Expensive and embarrassing to make changes here after rollout

Source: Vanstone (2017). Redrawn with permission from The Australian Centre for Social Innovation, based on an original drawing by Scott Ambler.
Conclusion

Our research identified many innovations that can add value to the department’s policy and regulatory work. This report structures our findings into three emergent themes of new thinking, new skills, and new tools—a schema that reinforces the importance of mindset, capability and practice working together.

The report fills an important gap for policymakers—both in government and elsewhere—by drawing together many different disciplinary ideas and resources into this structured approach to policy innovation.

We go beyond suggesting an approach built on ad hoc experimentation; rather, we argue that innovative approaches to policy are more likely to be successful when integrated into the existing culture and practices of the organisation.

Understanding the way in which innovations are adopted in a community and how individuals respond to different cultural stimuli is a critical aspect of building an innovation culture. Equally influential is the nature of the operating environment: ‘legal authority’ may be necessary but it is not always sufficient to achieve desired objectives, especially for public sector organisations.

While innovative practice in government is generally a good thing, not all innovations will be equally valuable and some may not result in the social and economic outcomes we might hope for. The ability to distinguish and manage these tensions is an important additional policy capability.

This report is offered as a starting point for building innovation in government policy and regulatory practice. Moving forward, we expect that an increasingly volatile and uncertain operating environment will demand ongoing innovative responses to policy and regulatory challenges.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>activism</td>
<td>Actions taking to campaign for political or social change.</td>
</tr>
<tr>
<td>affect</td>
<td>A psychological term meaning the experience of feeling or emotion.</td>
</tr>
<tr>
<td>agenda setting</td>
<td>The ability to influence the matters being considered. In a policy context, the term frequently relates to the ability of the news media or other organisations to influence the salience of topics on the public agenda.</td>
</tr>
<tr>
<td>agile (movement)</td>
<td>An alternative approach to traditional and generally sequential project management, which uses incremental and iterative work phases, and rapid empirical feedback cycles.</td>
</tr>
<tr>
<td>anchoring bias</td>
<td>A tendency to rely more heavily on the first piece of information offered (the ‘anchor’) when making decisions.</td>
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<tr>
<td>application programming interface</td>
<td>A set of subroutine definitions, protocols and tools for building application software.</td>
</tr>
<tr>
<td>artificial intelligence</td>
<td>The simulation of human intelligence by machines, such as the ability to reason, discover meaning, generalise and learn from past experience.</td>
</tr>
<tr>
<td>attention bias</td>
<td>A tendency for people’s perception to be affected by their recurring thoughts at the time of making a decision. Attention biases may explain a person’s failure to consider alternative possibilities because specific thoughts guide their train of thought in a certain manner.</td>
</tr>
<tr>
<td>backfire effects</td>
<td>A response to having one’s belief system challenged by ‘facts’, in which your beliefs get stronger when your deepest convictions are challenged by contradictory evidence.</td>
</tr>
<tr>
<td>behavioural economics</td>
<td>A method of economic analysis that applies psychological insights to human behaviour to explain human decision-making.</td>
</tr>
<tr>
<td>big data</td>
<td>A term for datasets that are so large or complex that traditional data processing application software is often inadequate to deal with them. Big data challenges include data capture, storage, analysis, search, sharing, transfer, visualisation, querying and updating, as well as information privacy.</td>
</tr>
<tr>
<td>blockchain</td>
<td>See ‘digital ledger technologies’.</td>
</tr>
</tbody>
</table>
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>bounded rationality</td>
<td>The idea that, in decision-making, an individual’s rationality is limited by the information they have, their cognitive limitations, and the finite amount of time they have to make a decision. Individuals are said to 'satisfice' their choices, rather than making the optimal choices they might otherwise make.</td>
</tr>
<tr>
<td>choice architecture</td>
<td>The design of different ways of presenting choices to consumers, and the impact of that presentation on consumer decision-making.</td>
</tr>
<tr>
<td>citizen jury</td>
<td>A representative sample of citizens (usually selected in a random or stratified manner) who are briefed in detail on the background and current thinking relating to a particular issue, and asked to discuss possible approaches, usually with the aim at arriving at a consensus on the issue.</td>
</tr>
<tr>
<td>cognitive; cognition</td>
<td>Psychological processes involved in acquisition and understanding of knowledge, formation of beliefs and attitudes, and decision-making and problem solving.</td>
</tr>
<tr>
<td>complexity theory</td>
<td>The study of complex and chaotic systems and how order, pattern and structure can arise from them.</td>
</tr>
<tr>
<td>confirmation bias</td>
<td>The tendency to interpret new evidence as confirmation of one’s existing beliefs or theories; a tendency to search for, interpret, prefer and recall information in a way that confirms one’s existing beliefs or theories.</td>
</tr>
<tr>
<td>consensus conference</td>
<td>A meeting held to represent the average society member’s view on a particular issue. The overriding goal is to connect the average citizen in a community to the ideas and advances in the area under consideration. The meeting seeks to find common ground between diverse individuals on broad and complex issues.</td>
</tr>
<tr>
<td>conspiratorial thinking; conspiracy theory</td>
<td>A pattern of thinking that explains an event or phenomenon as being the result of a plot by a covert group or organisation; the idea that many important political events or economic and social trends are the products of secret plots that are largely unknown to the general public.</td>
</tr>
<tr>
<td>corpus linguistics</td>
<td>The study of language based on large collections of ‘real life’ language use stored in a corpus (plural corpora)—a computerised database, usually with associated analytical tools, created for linguistic research.</td>
</tr>
<tr>
<td>critical cartography</td>
<td>A set of new mapping practices and theoretical critique grounded in critical theory. It differs from traditional cartography in that it links geographic knowledge with political power. The process can bring new ways of being and relating into the world.</td>
</tr>
<tr>
<td>critical theory</td>
<td>An approach to culture, and especially to literature, that considers the social, historical and ideological forces and structures that produce and constrain it.</td>
</tr>
<tr>
<td>crowdfunding</td>
<td>The act of raising funds to finance a new business or personal venture by soliciting small amounts of capital from a large number of individuals. Crowdfunding makes use of the easy accessibility of vast networks of people through social media and specialist crowdfunding websites.</td>
</tr>
<tr>
<td>data activism</td>
<td>A specific type of activism that uses the availability of digital, open data to challenge existing power relations. The culture of data activism emerged from previous forms of media activism, such as hacker movements.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>data mining</td>
<td>The process of sorting through large datasets to identify patterns and establish relationships to solve problems through data analysis.</td>
</tr>
<tr>
<td>data presentation architecture (DPA)</td>
<td>A skill set that seeks to identify, locate, manipulate, format and present data in ways to optimally communicate meaning and proffer knowledge. Data visualisation is one element of DPA.</td>
</tr>
<tr>
<td>data sprints</td>
<td>Intensive (time-limited) research and/or coding workshops where participants coming from different backgrounds convene physically to work together on a set of data and research questions. A data sprint usually involves working with digital tools and methods. Aims of a data sprint may vary from problem solving to exploratory or experimental research.</td>
</tr>
<tr>
<td>data visualisation</td>
<td>Any effort to help people understand the significance of data by placing it in a visual context. Patterns, trends and correlations that might go undetected in text-based data can be exposed and recognised more easily with data visualisation software.</td>
</tr>
</tbody>
</table>
| data walks                    | (1) An interactive way for community stakeholders, officials and service providers to engage in dialogue around research findings about their community. It involves participants rotating through ‘stations’ where data are displayed visually and textually to tell a story for participants to interpret, discuss and reflect on in small groups.  

(2) Guided walks through a location where participants visualise sources of data that are not immediately obvious or visible, such as CCTV cameras, wifi hotspots and sensors. |
| default bias                  | People prefer to carry on behaving as they have always done even when the circumstances that might influence their decisions change. Repeat choices (such as purchases) often become automatic because default choices involve less mental (cognitive) effort. |
| deliberative democracy        | A form of democracy in which public deliberation is central to legitimate lawmaking. It adopts elements of both representative democracy and direct democracy and differs from traditional democratic theory in that deliberation, not voting, is the primary source of a law’s legitimacy. |
| deliberative mapping          | A deliberative technique that uses various approaches to assess how participants rate different policy options against a set of criteria. Often used to understand public preferences, especially when the issue is complicated. |
| diffusion of innovations       | A theory that seeks to explain how, why and at what rate new ideas and technology spread. The categories of adopters are innovators, early adopters, early majority, late majority and laggards. |
| digital ethnography           | The process of doing ethnographic research in a digital space. Online spaces or social networks are often accessed by researchers to observe participants in their own environments. The digital field site may comprise text, video or images, and demonstrate social relations and behaviour patterns across many nations, cities or intellectual ‘geographies’. |
| digital humanities            | An academic field concerned with the application of computational tools and methods to traditional humanities disciplines, such as language, literature, history and philosophy. |
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>digital ledger technologies (blockchains)</strong></td>
<td>Digital technologies that combine cryptographic, data management, networking and incentive mechanisms to support the checking, execution and recording of transactions between parties. A blockchain ledger is a list (‘chain’) of groups (‘blocks’) of transactions. Parties proposing a transaction may add it to a pool of transactions intended to be recorded on the ledger. Processing nodes within that blockchain community take some of these transactions, check their integrity and record them in new blocks on the ledger. The contents of the blockchain ledger are replicated across many geographically distributed processing nodes. These processing nodes jointly operate the blockchain system, without the central control of any single trusted third party.</td>
</tr>
<tr>
<td><strong>disconfirmation bias</strong></td>
<td>When people are faced with evidence for and against their beliefs, they are more likely to accept the evidence that supports their beliefs with little scrutiny, and criticise and reject evidence that disconfirms their beliefs.</td>
</tr>
<tr>
<td><strong>emergent (themes)</strong></td>
<td>In the social sciences, concepts (explanatory ideas) identified from the data in the first stages of analysis and given a label or code that describes them. They arise from the research data rather than a set of theoretical hypotheses.</td>
</tr>
<tr>
<td><strong>ethnography, ethnographic method</strong></td>
<td>Ethnography involves embedding oneself deeply and over the long term in a field site of study, to systematically document the everyday lives, behaviours and interactions of a community of people. Any field site can serve as a setting for ethnographic research, including online social communities and networks.</td>
</tr>
<tr>
<td><strong>exclusion of expertise</strong></td>
<td>Limiting expert input to known and traditional experts; failure to consider all possible relevant knowledge.</td>
</tr>
<tr>
<td><strong>fake news</strong></td>
<td>Also known as ‘hoax news’, refers to false information or propaganda published under the guise of being authentic news. Fake news websites and channels push their content in an attempt to mislead consumers about the content, and spread misinformation via social networks and word of mouth.</td>
</tr>
<tr>
<td><strong>food security</strong></td>
<td>Having reliable access to a sufficient quantity of affordable, nutritious food.</td>
</tr>
<tr>
<td><strong>foresight(ing)</strong></td>
<td>The research-driven practice of exploring expected and alternative futures to inform strategy. Foresighting includes understanding the relevant recent past, having insights about the present environment and describing possible futures. Foresights practitioners are often concerned with possibilities that are outside mainstream trends and thinking.</td>
</tr>
<tr>
<td><strong>frame, framing</strong></td>
<td>In the social sciences, framing comprises a set of concepts and theoretical perspectives (frames) on how individuals, groups and societies organise, perceive and communicate about reality.</td>
</tr>
<tr>
<td><strong>gif</strong></td>
<td>Often a shorthand for animated gif—a graphic image on a web page that moves.</td>
</tr>
<tr>
<td><strong>global scan</strong></td>
<td>Analysis of a global environment, often looking for trends through online sources.</td>
</tr>
<tr>
<td><strong>governance</strong></td>
<td>The institutional arrangements which shape actors’ decisions and behaviour, including the exercise of authority within groups or organisations. Institutional arrangements include matters such as structures, rules and norms. Governance is not synonymous with government or public policy.</td>
</tr>
<tr>
<td><strong>heuristic(s)</strong></td>
<td>A rule or method that helps people solve problems faster than working out a solution from first principles. Often referred to as a ‘rule of thumb’.</td>
</tr>
<tr>
<td><strong>hot cognition</strong></td>
<td>A hypothesis on motivated reasoning in which a person’s thinking is influenced by their emotional state. Hot cognition is cognition coloured by emotion.</td>
</tr>
<tr>
<td><strong>innovation</strong></td>
<td>Finding new ways and new approaches to affect the lives of citizens. It involves overcoming old structures and modes of thinking, and embracing new technologies and ideas.</td>
</tr>
<tr>
<td><strong>innovation lab</strong></td>
<td>A workspace designed to optimise innovation. A unique environment for information sharing, creativity, building new knowledge, creating alignment and developing comprehensive solutions.</td>
</tr>
<tr>
<td><strong>irrational</strong></td>
<td>Not logical or reasonable.</td>
</tr>
<tr>
<td><strong>literacy (new literacy)</strong></td>
<td>Competence or knowledge in a specified area. New literacies are generally, but not exclusively, new forms of literacy made possible by digital technology developments.</td>
</tr>
<tr>
<td><strong>long fuse, big bang (scenario)</strong></td>
<td>One possible scenario of digital disruption, where both the scale of the residual impact of digital (the ‘bang’) and how soon an industry will be affected (the length of the ‘fuse’) are considered.</td>
</tr>
<tr>
<td><strong>machine learning</strong></td>
<td>An application of artificial intelligence that provides systems with the ability to automatically learn and improve from experience without being explicitly programmed.</td>
</tr>
<tr>
<td><strong>memes</strong></td>
<td>In sociocultural studies, an element of culture or a system of behaviour passed from one individual to another by imitation or other non-genetic means. More recently, the term has been applied to the replication of graphic images, videos and phrases via the internet.</td>
</tr>
<tr>
<td><strong>narrative</strong></td>
<td>A spoken or written account of connected events. In policy, narratives are usually the basis for some form of policy analysis.</td>
</tr>
<tr>
<td><strong>narrative policy framework</strong></td>
<td>A systematic approach to narrative policy analysis that allows both qualitative and quantitative methodologies.</td>
</tr>
<tr>
<td><strong>natively digital</strong></td>
<td>Materials or objects that originate in a digital form (may also be referred to as ‘born digital’). A strict definition limits this term to artefacts that exist only because of the digital world, such as websites, hyperlinks and URLs. (Note: not the same as ‘digital native’.)</td>
</tr>
<tr>
<td><strong>policy</strong></td>
<td>The outcome of the process by which government objectives and priorities are formulated, implemented and evaluated.</td>
</tr>
<tr>
<td><strong>policy cycle</strong></td>
<td>The policy process generally encompasses complex and overlapping phases that are necessary for developing a particular policy. These include identifying and defining a policy problem, analysing possible solutions, selecting an option to maximise benefits while minimising costs, implementing the agreed policy option, and evaluating its outcome.</td>
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<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>policy instruments</td>
<td>Interventions made by government authorities that are intended to achieve outcomes that conform to the objectives of public policy.</td>
</tr>
<tr>
<td>policymaker</td>
<td>A person responsible for, or involved in, formulating policies.</td>
</tr>
<tr>
<td>primacy of affect</td>
<td>A hypothesis asserting that the emotional or affective qualities of stimuli can be processed more readily than their cognitive attributes.</td>
</tr>
<tr>
<td>problem definition</td>
<td>The starting point of most policy processes; involves a detailed description of the differences between an existing situation and the desired situation.</td>
</tr>
<tr>
<td>pseudoscience</td>
<td>Statements, beliefs or practices that are claimed to be scientific and factual in the absence of evidence gathered and constrained by appropriate scientific methods.</td>
</tr>
<tr>
<td>remote sensing</td>
<td>The science of obtaining information about objects of phenomena from a distance (typically by satellite or aircraft).</td>
</tr>
<tr>
<td>robotics</td>
<td>The branch of technology dealing with the design, construction, operation and application of robots.</td>
</tr>
<tr>
<td>salience bias</td>
<td>Individuals systematically focus on items or information that are prominent or salient and ignore information or items that are less visible.</td>
</tr>
<tr>
<td>scrum</td>
<td>A technique used in agile development methods; the term is an analogy for a rugby scrum, where a team moves together to carry the ball backwards and forwards as dictated by encounters with the opposition, and, ultimately, to get the ball over the line by whatever means it can find.</td>
</tr>
<tr>
<td>sharing economy</td>
<td>See ‘collaborative consumption’.</td>
</tr>
<tr>
<td>social licence (to operate)</td>
<td>The ongoing acceptance of an organisation’s standard business practices by its employees and stakeholders. The term is also applied to an industry as a whole, not just an individual business operation.</td>
</tr>
<tr>
<td>social network</td>
<td>A dedicated website or other application that enables users to communicate with each other by posting information, comments, messages and images.</td>
</tr>
<tr>
<td>social outrage</td>
<td>Also referred to as public or community outrage, in public policy, social outrage is public opposition to a policy that is not necessarily based on knowledge of the technical details. Outrage factors are the emotional factors that influence perception of risk.</td>
</tr>
<tr>
<td>social science(s)</td>
<td>The scientific study of human society and the relationships among individuals within a society. Within the social sciences, there are a number of paradigms, including positivist, interpretivist and post-positivist/post-structuralist. The latter paradigms consider knowledge and meaning as socially ‘constructed’ through interaction and therefore ‘contestable’.</td>
</tr>
<tr>
<td>sustainable development</td>
<td>Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.</td>
</tr>
<tr>
<td>system 1, system 2 cognition</td>
<td>A dichotomy between two modes of thought: ‘system 1’ is fast, instinctive and emotional; ‘system 2’ is slower, more deliberative and more logical. There are cognitive biases associated with each type of thinking.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>unconscious bias</td>
<td>Social stereotypes about certain groups of people that individuals form outside their conscious awareness.</td>
</tr>
<tr>
<td>Wayback Machine</td>
<td>A digital archive of the World Wide Web and other information on the internet created by the Internet Archive, a non-profit organisation based in San Francisco.</td>
</tr>
<tr>
<td>weak signals</td>
<td>An ambiguous concept relating to observations of past or current developments that may warn us of possible or probable future events. Weak signals are generally outside mainstream knowledge and rely more on individual interpretation than traditional trend analyses.</td>
</tr>
<tr>
<td>wicked problem</td>
<td>A problem that is difficult or impossible to solve because of incomplete, contradictory and changing requirements that are often difficult to recognise.</td>
</tr>
<tr>
<td>WPR</td>
<td>What’s the problem represented to be?—a form of policy analysis that critically analyses the underlying issues and ideologies found in a policy. It is premised on the idea that the policy process itself shapes the meaning and way we understand a particular policy problem.</td>
</tr>
</tbody>
</table>


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The ‘Biosphere’ Graphic Element
The biosphere is a key part of the department’s visual identity. Individual biospheres are used to visually describe the diverse nature of the work we do as a department, in Australia and internationally.