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RESEARCH ARTICLE

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Games and gamification projects in the Australian public sector

David Threlfall[1,2] | **Catherine Althaus**[1,3]

[1]School of Business, UNSW Canberra, Canberra, Australian Capital Territory, Australia

[2]Department of Media and Communications, London School of Economics and Political Science, London, UK

[3]Extraordinary Professor, University of Pretoria, Pretoria, South Africa

Correspondence
David Threlfall, Department of Media and Communications, London School of Economics and Political Science, Houghton St, London WC2A 2AE, UK.
Email: d.a.threlfall@lse.ac.uk

Abstract

This article surveys the arrival of *gameful government* into Australian public sector practice. Gameful government is a shorthand, descriptive term denoting the interpenetration of (video)games, and design elements and thinking from them, into public sector work. Knowledge of gameful government is limited, in Australia and internationally, due to localised usage, low visibility, and limited understanding beyond informed observers. Our study partially redresses this under-exploration of public sector games and gamification, both empirically and ethically. To do so, we detail the history of gaming for public sector purposes, a story starting with wargaming. Then, we categorise past and current gameful Australian public sector projects into a typology with five categories: *recruitment*; *training and learning*; *public communication and policy education*; *engagement*; and *implementation and evaluation*. We analyse the typology categories and characteristic cases within them. Finally, we assess the benefits and risks of gameful government for citizens and public sector practice.

Points for practitioners:

- Knowledge, skills, and practices from (video)game play and development are increasingly prevalent

within the Australian public sector. This article descriptively terms this *gameful government*.
- Despite a range of current use cases—for recruitment, training and learning, public communication and policy education, public engagement, implementation, and evaluation—Australian public sector examples are localised, particularly in Defence.
- Realising the potential of games for public sector and societal ends will require broader acknowledgement and understanding of this practice, as part of larger shifts in public sector capability and technological transformation.

KEYWORDS
gameful government, games, gamification, serious games

1 | INTRODUCTION

There are growing signs that a little remarked transformation of the Australian public sector has commenced. It involves the interpenetration of (video)games, and design elements and thinking from them, into public policy, programs, training, engagement, implementation and more. We label this development *gameful government*. Such gameful government has existed in Australia at an applied, project level for over a decade. However, despite numerous possible examples, knowledge of the gameful public sector is limited, in Australia and internationally. Localised usage, low visibility, and limited understanding beyond informed observers mean the role of games and gamification in public sector work remains underexplored, empirically and ethically. No one—at scholarly or practice levels—has yet attempted to comprehensively document or justify whether or why use of gaming provides better outcomes for citizens or more impactful policy processes or innovations. Experimentation has been happening, but no one is measuring or trying to understand the implications for policy and public administration scholarship and practice. Our combination of policy and public administration focus coupled with empirical interest in Australian projects and usage makes for a unique contribution.

Accordingly, this article takes stock of efforts to integrate games and knowledge from them into Australian public sector practice. To do so, we consolidate a non-exhaustive but purposive selection of past and current gameful Australian public sector projects into a typology and analyse the typology categories and characteristic cases within them. We have been deliberate in pursuing a typology. While a listing of cases generates a fascinating glimpse into the world of public sector gaming usage in the Australian setting, we wanted to move beyond description to begin to understand how this usage might be assessed and with what implications (current and future) for policy and public administration theory and action. A typology is a preliminary way to provide such a bridge between scholarship and practice. As such, the research questions driving development of the typology and our subsequent discussion are as follows: What is the usage of games and

gamification in Australian public sector practice and how might we understand or categorise this use? Why is this happening? What does it mean for processes and outcomes of policymaking?

We acknowledge the growing gameful government trend might concern some readers. Yet, as with parallel societal conversations about the role and risks of "AI" (so-called artificial intelligence, i.e. machine learning using natural language processing), on some level the horse already bolted. Our aim is therefore to inform debate, so we might keep sight of the human, while our shared social experience blends further with the technological.

We proceed in four parts. First, we define key terms: *game*, *game-based learning*, *serious games*, *gamification*, and *simulation*. Next, we review literature on games and gamification in relation to the public sector (starting with ancient wargaming). Third, we categorise gameful Australian public sector projects into a typology. Fourth, we assess the benefits and risks of further gameful work in the Australian public sector and internationally. We conclude with next steps for research.

2 | THE BUILDING BLOCKS OF GAMEFUL GOVERNMENT: DEFINITIONS

Fruitful discussion of gameful government requires clarity for five key terms.

The conceptual foundation is a *game*, or 'structured play consisting of rules, goals, and challenges that are undertaken for diversion or amusement' (Cheng et al., 2015, p. 354). Importantly, this includes non-digital as well as digital/videogames: to achieve their potential for broad public sector utility, games should be understood as 'transmedial categories' (Deterding et al., 2011, p. 11). Pokémon Go, an augmented reality mobile game from 2016, is a popular example blurring such media boundaries. The Australian cases presented here likewise include fully fledged videogames, non-digital tabletop games and hybrid cases.

Application of games and game thinking to achieve public sector ends often requires *game-based learning*, 'the achievement of defined learning outcomes through game content and play' thus 'enhancing learning by involving problem-solving spaces and challenges that provide learners, who are also players, with a sense of achievement' (Krath et al., 2021, p. 2; Qian & Clark, 2016). This learning includes internal public sector training and development goals, and public learning in support of policy ends, such as a public communication campaign aimed at promoting behaviour change.

Games focused on game-based learning are often called *serious games*, 'games that have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement' (Abt, 1970, p. 9). Abt's choice of *serious* was unfortunate. It denigrates "non-educational" gaming despite its proven contribution to educational outcomes regardless of focus on "amusement" over education (Boyle et al., 2016; Connolly et al., 2012). Abt (1970, p. 9) may have rejected the 'somewhat Calvinistic notion that serious and virtuous activities cannot be "fun"' but his coinage cemented the opposite association, rhetorically distancing non-"serious" gaming from education. For readers sharing Abt's view, we add that such scepticism ignores gaming's social ubiquity and positive mental health effects (Granic et al., 2014; Threlfall, 2020, pp. 226–227). Finally, financially, gaming is very serious indeed: in 2022, global gaming industry revenue was triple that of the global music and film industries *combined* (Arora, 2023). Thankfully a new term is emerging: *games for impact*.

Beyond games proper, gaming's ubiquity in our digitised present led to a new term gaining precedence from 2010 on: *gamification*. Gamification refers to 'use of game elements in non-game contexts' (Deterding et al., 2011, p. 10). This means understanding what makes fully fledged games

engaging or enjoyable, and applying those lessons to non-game activities. This should be familiar: most readers will have undertaken gamified human resources (HR) training modules with questions, points, badges, progress bars or tests built-in. Beyond such structural game elements, there are conceptual or content elements that can serve public sector interests, such as narrative or storytelling, challenges and timed tasks.

Finally, *simulation* 'mimic[s] real world situations… provid[ing] authentic experiential learning that demonstrates benefits and consequences, in a failure-safe environment' (Woodside, 2019). This may be (video)game based, gamified, or neither, with a focus on creation of compelling 'experi(m)ent(i)al, rule-based, interactive environments' for safe learning (Mayer, 2009, p. 825). Flight simulators are the famous example, but use cases are varied and surprising, in the military and generally.

We draw on all five terms throughout but frequently shorten to *games and gamification* as a catch-all. We use the term *gameful government* as a shorthand descriptor to convey when games or gamification are used by public sector departments and agencies. As such, the terminology is an epithet. We are not attempting to engage in a theoretical analysis of the penetration of gaming into the foundational concept of *government*. This is an area for future research and theoretical elaboration. Instead, our focus is to provide initial awareness and appreciation for what is currently being done with games in the public sector, why they are being taken up in policy initiatives, and with what implications.

3 | THE CULTURAL AND TECHNOLOGICAL PATH TO GAMEFUL GOVERNMENT: LITERATURE REVIEW

3.1 | Play and games in history and culture

Games occupy a longstanding and important—yet conflicted—place in sociocultural history. Huizinga (1933, 1949) and others emphasised the necessity of *play* to the establishment of culture (cf. Nietzsche, 2006; Schiller, 1982). Despite this importance, play in modernity is generally only associated with frivolity and leisure (thus Abt's coinage of "serious" games, critiqued earlier), or creativity and childhood (Deterding, 2015). It is no coincidence that this modern meaning developed alongside capitalism. Leisure, creativity, and childhood sit outside the productive, "serious" realm of *work* (hence the dichotomy *work/play*). Modern understanding of play is therefore a form of moral politics, reproducing a certain social order by demarcating play outside the forces of industry.

This artificial demarcation helps explain the uncertain place of play and gaming in culture today. Allow us three examples. First, the phrase "it's child's play" belittles something as (supposedly) simple. Yet children's play is imaginative, multi-faceted, simultaneously physical and social, and integrates enjoyment with a desire to understand and simulate the practices of a complex world. It is no accident that adults lament their ability to think in as plastic a manner as children. Second, videogames have long been denied status as a serious cultural product, despite their omnipresence and runaway success (thankfully, some cultural institutions challenge this rejection). Relatedly, third: social discomfort exists towards military use of games. Note, for instance, how criticism followed the U.S. Army's recruitment and education first-person shooter videogame America's Army, despite its effectiveness (launched 2002, decommissioned 2022; Singer, 2009). Military planning and training are indeed very serious pursuits—and closely related to the competitive and strategic thinking embedded in games. Unsurprisingly, therefore,

military use of contemporary technologies and media for wargaming is age-old. It includes ancient use of sandtables for military planning or, similarly, use of tabletop miniatures influenced by ancient strategy board games like Go (originating circa 2300 BC) and chaturanga, the precursor to chess (potentially as old as 2000–3000 BC; Parlett, 1999; Smith, 2010, pp. 7–8).

Pre-modern understanding rejected instrumental division of play from serious activities. In addition to wargaming, play featured in important elements of culture such as ritual and ceremony (religious and otherwise) and what we would now term sport or games. Indeed, in ancient and classical civilisations, the line was thin between sport-like physical games and deadly serious physical contests. Caillois (2001, ch. 2) helped solidify this line theoretically for contemporary readers, developing Huizinga's work into a typology that sets play (*paidia*, Ancient Greek, children's play)—'open, free, exploratory'—apart from games (*ludus*, Latin, play/game/sport/training)—'formalized, rule-based, goal-oriented' (Walz & Deterding, 2015a, p. 7). Caillois added a contrasting dimension against paidia–ludus, distinguishing games and play as *competition*, *chance*, *simulation*, and *vertigo* (as in, vertigo-inducing, momentarily destabilising perception). These categories alternate or exist in combination. Although deeper study of game design philosophy is beyond our scope, Caillois' schema should orient readers to some fundamentals of gameful thinking embedded in projects featured in our analysis.

3.2 | The development of public sector gaming

Gaming for public sector purposes starts with wargaming (detailed earlier). Go, chaturanga and chess were considered 'the ultimate test of strategic thinking in a military context' (Smith, 2010, p. 8). From the 1600s wargames diverged, becoming complex and military specific, from intricate chess-type board games to chart- or map-based versions incorporating accurate calculations of logistics and personnel movement (Weiner, 1959, pp. 5–8). Famous amongst these is the Prussian Army's *Kriegsspiel*. Paper boardgames for military use continued until the 1940s and 1950s, when computing advances digitised formerly manual algorithmic calculations. This freed personnel for deeper tactical thought, allowing wargaming to become more complex again.

At this point, experimental operational planning during the second world war—state-of-the-art wargaming in action—coalesced into professional transformation. Mayer (2009, p. 827) observes how the convergence of computational advances with the broader Weberian process of rationalisation in (military) public policymaking 'culminated in the emergence of what came to be known as the decision sciences, which includes operations research (OR), systems analysis (SA), and policy analysis'. In sum, wargaming informed by applied mathematical and engineering insights drove a rational comprehensive shift in military planning and then policymaking generally. Wargaming gave way to 'formal modeling, game theory, decision analysis [and] computer simulation' within OR. Then, it gradually shifted to more complex sociotechnical questions in SA, before culminating in analytical, "rational" public policy analysis (Mayer, 2009, pp. 827–828). This push over the 1950s and 1960s for rational decision-making will be familiar to public administration students. It occurred to varying degrees within government, in think tanks like RAND (Abelson, 2004; Williams & Palmatier, 1992), and also in the academy (Easton, 1953; Lasswell, 1956; Lerner & Lasswell, 1951; Simon, 1945).

The influence of this period of professional-cum-organisational change played out over decades. However, as relates to gaming—now policy- rather than wargaming—advances in understanding about the incremental, human, and political nature of decision-making (Cohen et al., 1972; Kingdon, 1984; Lindblom, 1959) deemphasised strict rationality in gaming's methodological

toolbox. Mayer's comprehensive review details diversification away from formal methods, as qualitative social science instead prioritised scenario planning, interactive tools like the Delphi method, role-playing simulations, and negotiation (sometimes called matrix games). Gradually, two forms of policy gaming evolved in tandem: a formalised, rule-based 'rigid' version informed by computerised modelling and mathematics, and a 'free-form', often seminar-based version emphasising deliberation, contingency, conflict, randomness and incomplete information (Mayer, 2009, pp. 828–830). Rather than resolving the epistemological dispute underlying this qualitative–quantitative division, differing approaches to gaming progressed within different public sector fields.

Within policy sciences and used principally in (environmental) science-adjacent settings, Brewer (1986) and colleagues developed 'policy exercises'. Toth formalised these 'as an interface between academics and policymakers' undertaken 'to synthesize and assess knowledge accumulated in several relevant fields of science for policy purposes in light of complex practical management problems' (Toth, 1988a, p. 237; Toth, 1988b). Exercises involved: a preparation phase with interviews and in-depth scenario development; a workshop where participants deliberated over 'future histories' encompassing policy alternatives and pitfalls; and post-workshop debrief and evaluation. Such exercises resemble role-playing boardgames like Dungeons & Dragons (likewise derived from tabletop wargames): they are interactive, demand creative negotiated reasoning, and involve "neutral" participants guiding the exercise/game (Peterson, 2012). This gaming-track is resource intensive, multi-method and context dependent. Beyond gaming specifically, there are links here to citizen juries and other deliberative policymaking and engagement exercises (Gastil & Broghammer, 2021; Lundström et al., 2016).

Meanwhile, drawing on complex modelling from system dynamics within urban planning, ecological simulation planning games from the 1970s were superseded by hit planning game SimCity from 1989 (Mayer, 2009, pp. 837–838). This was a critical crossover moment for policy gaming and commercial gaming. Advancement of personal computing technology, decreasing cost of game development, and diversification of the gaming industry presented a surprise opportunity for those interested in gaming, simulation and modelling within traditional policymaking communities. Broadening cultural acceptance of gaming (particularly along generational lines) likewise sharpened the use case for policy gaming to draw more heavily from commercial videogaming. Accordingly, serious games for training and public awareness became more prevalent around 2000. Examples include SimHealth, a simulated U.S. healthcare system (released 1993); Virtual U, combining strategy and training in a university management simulation (released 2000; Sawyer, 2002); America's Army, mentioned earlier (Zyda, 2005); Food Force, released in 2005 by the United Nations World Food Programme to raise awareness about aid distribution in famine-affected war zones; and Peacemaker, about decision-making in the Israeli–Palestinian conflict (released 2005; Thompson, 2006). By 2010, interest in gamification spiked rapidly too (Chou, 2019; McGonigal, 2011; Walz & Deterding, 2015b). The promise of increased engagement (often at scale) proved compelling, whether for commercial or education purposes. Nike+, the gamified social running app motivating users to beat fitness goals, was an early example (Asquer, 2013). Around this point, examples become plentiful—and our argument about Australian cases begins.

4 | A TYPOLOGY OF GAMEFUL GOVERNMENT IN AUSTRALIA

Syntheses of public sector games and gamification are limited, in Australia and internationally. This is discordant with widespread growth of gameful government thinking and

projects. For example, the deliberative potential of gamified civic engagement processes through online platforms is well developed (sometimes called 'gamified e-participation'; Hassan, 2017; Hassan & Hamari, 2020; Masser & Mory, 2018; Sgueo, 2017). Relatedly, gamified crowdsourcing (Morschheuser et al., 2017) builds on interest in crowdsourcing for policy development (Surowiecki, 2005; Taeihagh, 2017). Taking up where SimCity left off, gamified urban planning operates similarly to e-participation initiatives (Muehlhaus et al., 2023; Thiel, 2017). Examples abound in medical intervention: 'exergames' for weight loss, rehabilitation, behaviour change, and healthier diets (Damaševičius et al., 2023; Yoshida-Montezuma et al., 2020). In education and training, while motivation and engagement are central (Alsawaier, 2018), examples include virtual surgical training, cognitive training, and game-based learning and gamification in school and university classrooms (DuVernet et al., 2016; Moran et al., 2022; Sanchez et al., 2020; Zou, 2020). Gamification of government service delivery faces ethical and political challenges akin to "nudge" and behavioural economics (Harviainen & Hassan, 2019). Nevertheless, there are documented examples, particularly where gamification assists government efforts at service evaluation and improvement (e.g. corruption monitoring, local dialect translation and citizen feedback in Indonesia; Chin, 2016; Contreras-Espinosa & Blanco-M, 2022). Finally, games show great promise in crisis/disaster training and planning (Dastbaz & Cesta, 2011; Kankanamge et al., 2020). A framework appears from this review: engagement, crowdsourcing, training, planning.

Most classification schemes delineate focus by game not sector. Sector generally only features to help classify games' 'application domain' or 'market' (De Lope & Medina-Medina, 2017). Sawyer and Smith's (2008, p. 29) comprehensive taxonomy holds most insight for our public focus. It includes seven application domains: government & NGO; defence; health care; marketing & communications; education; corporate; and industry. Public sector applications run through most, excepting marketing & communications, corporate, and industry. Closest in overall intent to our work is Mayer et al.'s (2013) analysis of European Union (EU) and EU member state policy discourses about serious games. They identify four key discourses: *technology enhanced learning*; *creative innovation*; *social inclusion and empowerment*; and (managing) *complex systems*.

Methodologically, we combine (1) the typology-adjacent work of Mayer et al. (2013), Sawyer and Smith (2008), and others (De Lope & Medina-Medina, 2017) with (2) insight from the international-centric literature review detailed here and (3) our own empirical research of publicly-available materials, supported by communication with practitioners, to develop a "moment-in-time" typology of games and gamification in the Australian public sector. We offer this typology as an initial foray into a dynamic and complex issue, acknowledging it will require later reconceptualisation, just as the cases will require revision.

We propose a five-category typology of games and gamification in the Australian public sector. Categories are distinguished by use, with order dictated by policy cycle stage where possible (Althaus et al., 2022, p. 37). The categories are: *recruitment*; *training and learning*; *public communication and policy education*; *engagement*; and *implementation and evaluation*. Table 1 presents the typology, with characteristic examples.

Drawing on these cases and our wider research, we develop the typology categories. Our analysis considered the following dimensions for typology development:

- purpose of game/gamification projects. We considered why pursuit of a game or gamification might aid the policymaking or public administration process, and we spoke with practitioners as well as reviewed any information we could find in the literature (admittedly limited). This led us towards the typology categories as one potential way to provide structure to understanding how practitioners made choices to pursue gaming experimentation. Purpose was a

TABLE 1 Typology of Australian public sector games and gamification, with use cases.

Recruitment	• Australian Secret Intelligence Service (ASIS), The Most Interesting Job Interview, online virtual interview videogame for skills testing; 2017 • Departmental graduate program recruitment, online gamified personality and skills testing; current
Training and learning	• Australian Defence Force (ADF), research into utility/effectiveness of games and gaming technology for training; announced 2022 • Department of Prime Minister & Cabinet (DPM&C), gamified in-person graduate training; 2023 • Australian Taxation Office (ATO), Villain Academy, anti-fraud training videogame; 2024 • Services Australia, virtual reality (VR) simulations for dealing with aggressive citizens, and workplace health and safety training; current • Australian Border Force (ABF), VR training for baggage search; current • Department of Agriculture, Fisheries and Forestry (DAFF), VR simulation for biosecurity operations; current • ADF, simulated combat and civilian operations exercises, combining physical and virtual elements; current • ADF, VR training platforms for Air Force medical training, protected mobility vehicle operations, role play and more; current
Public communication and policy education	• Special Broadcasting Service (SBS), Asylum: Exit Australia, online simulation game about asylum seekers' life challenges in Australia (accompanied the television show Go Back to Where You Came From); 2011 • Metro Trains, Dumb Ways to Die, mobile games accompanying behaviour change campaign for train safety; 2012 • Australian Bureau of Statistics (ABS), Run That Town, videogame using Census data to inform citizens about the Census and policy decision-making; 2013 • Australian Electoral Commission (AEC), Democracy Rules, online game and quizzes accompanying education resource about voting; third edition 2016 • ABF, Zero Chance, online flash games and physical playing cards as part of communication campaign discouraging asylum seeking; 2022 • Questacon, games-as-exhibits; ongoing • Commonwealth Scientific and Industrial Research Organisation (CSIRO) Tasmania, Best Kelp Secrets, narrative tabletop game about climate tipping points; 2023
Engagement	• GovHack, competitive open government and open data hackathon; 2009 onwards • Brisbane City Council, Plan your Brisbane, online game to drive engagement in urban planning process and simultaneously provide feedback to local government; 2018 • City of Vincent, North Perth Town Centre planning, tabletop spatial planning game supporting collaborative community co-design workshop; 2023 • Australian Museum, FrogID and other citizen science projects, crowdsourcing data through citizen engagement with game elements; FrogID launched 2017 • CSIRO, Velvet ant mimicry online pattern matching game, crowdsourcing data for digitising collections; 2020 onwards

(Continues)

TABLE 1 (Continued)

Implementation and evaluation	• CSIRO and Department of Human Services (DHS), Next Step, partially gamified online community; trialled 2012–2013 • ADF, testing novel combat management system theories within (commercial) videogame; announced 2022 • Dementia Australia and Deakin University, BrainTrack, cognition testing and monitoring mobile app; 2022 • CSIRO, computer game for mental health disorder diagnosis; announced 2019, ongoing development

dominant theme driving the typology and our selection of its elements. We expect this theme will develop over time as more games and gamification activities are introduced across the policymaking chain. However, we tried in this first typology attempt to build a robust and sustainable categorisation allowing for an additive component in future;

- internal/organisational or external/public application of games/gamification. This category could have followed Sawyer and Smith's (2008) 'application domain'. However, this would have missed the critical organisational/public juxtaposition that became clear as our inductive, iterative categorisation progressed. While recruitment and training are internal/organisational, the final three categories (public communication and policy education, engagement, and implementation and evaluation) are public in focus and application. The only drawback of this category is that projects might be hybrid, internal/external, and therefore hard to place. When assessed alongside purpose, however, we believe the typology withstands such complications;
- organisational/sectoral/cultural reasons behind game/gamification usage. This consideration is less obvious but was used in tandem with purpose and the internal/external theme to determine whether we needed to separate out any typology categories according to broader matters beyond internal/external status. At this point in the maturity of gameful government, we do not see a strong argument to use this categorisation, but we acknowledge that over time sectoral and cultural reasons might become more critical;
- impact of game/gamification projects (where possible). It was difficult for us to determine impact of projects as very little data or evaluation is currently available. We believe this is a particularly important area for future research and also an area where scholars might prompt practitioners to start measuring impact or making current data more publicly available. At the very least, posing the question seems an important task and so we highlight this theme as a future element of the typology that warrants further attention;
- thick/thinness of typology categories. Here, we were cognisant of our currently available dataset of cases. If a typology category was yielding too many cases relative to another, we paused to consider whether distinctions within the category were necessary. Readers might notice the typology category of public communication and policy education is distinct from engagement. This is an example of our analytical approach: a combination of two areas yielded a thin category (in a definitional sense) that needed more clarification and depth in order to give a sense of use purpose and potential impact of gameful government. As a result, we chose to separate out these categories to yield a "thicker" categorisation. As with the other typology categories, we expect time and more use cases might shift the categorisation according to newly achievable thickness. Conversely, we also considered whether a category did not feature enough cases. This is a different sense of "thinness" (in an evidentiary sense). The area of recruitment, for example, is a "thin" category in this way. Relative to other typology categories, however, there is enough "thickness" to allow it to stand, in that recruitment vis-à-vis training provides

distinctive functional difference at an internal organisational level for the public sector in its use of gaming; and
- overlap with parallel technological, capability, or structural developments in the public sector. We did an intellectual pass over the data to determine whether any typology categories might need to particularly attend to contemporary developments happening in the public sector. For example, did it make sense to consider a specific type of game or gamification based on AI? What about co-design? Does it feature as a particular use of gameful government warranting its own typology category? At this point, nothing stood out but, again, this might shift in the future. For now, our typology attempts to provide a sustainable frame with which to consider gaming and gamification activities in order to help scholars and practitioners, at least in a preliminary manner, make sense of gaming use in the public sector.

4.1 | Recruitment

Evidence proved slimmest for this category. The nature of recruitment provides partial explanation: organisations maintain secrecy around the process. We are aware, for instance, of gamified personality and skills testing in federal departmental graduate program recruitment but could not access publishable public evidence for this beyond online forum discussions amongst applicants. Nevertheless, such usage builds on long-established psychometric testing for hiring. Yet, as with parallel AI recruitment selection tools, there are questions of bias and discrimination to consider as usage spreads (Seppälä & Małecka, 2024).

Perhaps surprisingly, spy agency ASIS provides a high-profile exception, with a virtual interview game released in 2017. The game tested perceptiveness, knowledge, interpersonal skills and problem solving under time pressure (Dingwall, 2017). Successful players were invited to apply for employment. As with the affinity between strategic thinking for gaming or military ends, discussed earlier, there is a natural linkage here: quantification within games immediately stratifies participants by ability (Nova, 2015; Whitson, 2015). Careful game design for organisational purposes should therefore produce a novel, additional metric for recruitment decision-making. Thus, ASIS' choice to bring its formerly secretive work into the public domain is less surprising in hindsight—their game's visibility widened the recruitment pool.

At the level of typology categorisation, we know that recruitment purpose exists for gameful government, that it is an internally focused activity, and that it may have some limited connection to cultural shifts in the field more generally but that its impact is currently publicly unclear. While it is a numerically thin category, it is sufficiently distinct from training and learning as to warrant a unique place in considering gameful government initiatives. A potential element to watch over time is whether parallel developments in the nature of work and use of AI might influence the framing of this category as public sectors determine different types of jobs and associated recruitment activities that might be needed to facilitate effective and merit-based appointments.

4.2 | Training and learning

Contra *recruitment*, evidence for *training and learning* use of games and gamification proved thickest, with more potential past and current examples for inclusion than any other category. The examples provided here—and many more besides—are diverse, transmedial and applied to specialised practice contexts. At the purely virtual end, Services Australia, the ABF, ATO, and DAFF

have developed simulations for training, either for skill development, environmental familiarity or experiential desensitisation to challenging workplace experiences (Australian Government Digital Profession, 2022; Australian Public Service Academy, 2024). Conversely, we understand DPM&C gamified some in-person training sessions, for example with graduates trading objects and intermittently rating their satisfaction during macroeconomics discussions.

The ADF's usage appears (unsurprisingly) most advanced and varied. This includes a dedicated Wargaming and Simulation Centre (WSC), which works on (Defence, 2024):

- 'part-task training simulations—e.g. virtual vehicle patrol, avatar-augmented role play
- serious games—e.g. English as a second language
- visualisation and animation content—e.g. virtual video vignettes to support briefings
- wargame constructive simulations to support joint operations training'.

Large, multinational physical wargames such as Exercise Talisman Sabre equally fall into this category (Defence, 2023). ADF desire for continual organisational learning extends to meta-research on games and gaming technology for training purposes, assessing effectiveness (within the Defence Science and Technology Group; Defence, 2022). Defence also maintains a team focused on strategic games and exercises, within the broader Strategic, Policy, and Industry group.

Funding discrepancies between government departments and agencies clearly influence these results. What is possible for the ADF is not for other parts of government. However, culture equally plays an important role: longstanding normalisation of wargaming makes Defence a natural early adopter. And yet, while the range of application remains more limited outside Defence, the agency examples here still operate at scale and required occasional external but also significant internal expertise in development. Where this emphasis on internal public sector gameful expertise can differ is in more dispersed training regimes, for example medical education. In this case, the end point of service delivery may well be public but development of training games (like the VR surgical example mentioned earlier) proceeds privately.

Finally, as a strongly internal/organisational category, we assume many such gameful projects exist but only high-profile cases achieve public dissemination.

4.3 | Public communication and policy education

This category mostly captures public information campaigns. These promote behaviour change and educate citizens about government policy, the operation of democracy, and topics of importance to society. Evidence proved thick, helped by the natural external/public focus of games/gamification within this category. Each example demanded media and engagement expertise in addition to game design knowledge. There is therefore some overlap in purpose here with the next category *engagement*; however, the core distinction is one-way (*public communication and policy education*) or genuine two-way communication (*engagement*). The SBS, Metro Trains and ABF examples all sought public behaviour change but had no in-built deliberative function (Champagne, 2022; D&AD, 2013; Nash, 2015). CSIRO's Best Kelp Secrets sits somewhere between the two categories, educating the public through a tabletop game about public decision-making during climate tipping points, and equally encouraging deliberation about the future a local community might like to imagine for themselves (Dawkins, 2024).

Games (as exhibits) are a natural fit for a creative, educational public institution like Questacon (Questacon, 2024). They also neatly complement broader AEC educational resources, breaking

up learning exercises with applied games and quizzes (AEC, 2024). For the ABS, they are perhaps unexpected. Yet the Census game Run That Town proved an ingenious method for public policy education and creative use of public data (ABS, 2013). Likewise, Metro Trains' Dumb Ways to Die campaign, which achieved immense success ("virality"), prompted a global public transport safety conversation. We should expect such examples to become more common. In the words of then ABS Director of Census Communication and Engagement, Michelle Howe:

> Run That Town [is] the foundation of a future where technology will play an increasingly critical role in the efficient and effective operations of governments and public services, but also as the next wave of citizen-centric, interactive communication channels (Millipede, n.d.; cf. Schrier, 2021).

Lastly, although the large agencies using games/gamification for *training and learning* demonstrated significant internal capability, the public and media-focus within *public communication and policy education* meant significant external contracting in development and campaign execution.

4.4 | Engagement

Engagement covers two distinct subcategories: gamified citizen engagement or e-participation, and gamified crowdsourcing. At this point, as regards consideration of thin/thickness, we chose an overarching typology categorisation of engagement, until further use cases suggest disaggregation. Projects within this category incorporate participatory planning and analysis (particularly of urban policy), and both *inform* and *make* public decisions. This latter distinction goes to the level of genuine co-design involved. Some may provide information to government, whereas deeper participatory projects aim for a higher degree of partnership through partially delegated decision-making (Althaus et al., 2022, p. 95; Arnstein, 1969).

Gamified crowdsourcing examples here include GovHack (2024) and citizen science projects at CSIRO (2024) and the Australian Museum (2023). These ask citizens to create or manipulate public data. By gamifying the experience, public sector organisations increase engagement in policy initiatives and promote policy education and, when successful, improve their organisational capacity.

Our Brisbane and Perth examples illustrate the varying scope for genuine citizen participation through gamified engagement. The Plan your Brisbane game allowed brief written feedback through a survey after game participation (Articulous, 2018). This accompanied other engagement initiatives as part of a broader policy education campaign. Participation was wider yet shallower than the example in North Perth. There, the town centre planning process utilised a tabletop spatial planning game as part of a co-design workshop and multi-stage planning process. Deeper deliberation ensued, and results from six iterations of the game helped inform design principles for future town centre development (Fairplace, 2023). At this stage, experimentation is high within this typology category, but more attention by practitioners to thinking through purpose and impact of gaming may be warranted. Scholarly work on engagement may prove useful to practitioners as they deliberate over use of gaming in their interactions with diverse communities and publics.

4.5 | Implementation and evaluation

Evidence for *implementation and evaluation* games and gamification proved thinner than the previous three categories but not as thin as *recruitment*. We note the challenge to understanding the extent of application in the defence domain. Likewise, we note the dampening effect of a bias against risk more broadly. The novelty of application of games and gamification can be managed more easily internally (*recruitment*, *training and learning*), or even externally where projects impact less directly on citizen outcomes (*public communication and policy education*, *engagement* depending on extent of co-design). Once public projects reach implementation, this risk calculus shifts. Nevertheless, there are examples, adequate to propose a four-part subcategorisation: *service delivery*; *medical treatment*; *operational support*; and *experimentation and evaluation*.

Overhaul of Services Australia digital service delivery incorporates user experience knowledge ported from long-established app and game design principles. Specifically, we identified an Australian trial of a partially gamified (points and badges) online community for transitions between welfare support payments (Bista et al., 2013). The community, called Next Step and jointly designed by CSIRO and the then DHS, operated for 12 months. A cursory OECD review labelled it successful but resource-intensive in planning and operation (Observatory of Public Sector Innovation, 2014).

Medical treatment is most advanced in gameful government. For example, Dementia Australia and Deakin University's BrainTrack game helps patients test and monitor their cognition as it changes (and arguably delay decline through usage, too; Nielson, 2022). Similarly, CSIRO (2019) is developing a computer game to diagnose complex mental health disorders, supported by machine learning analysis of results.

Operational support is a work in progress. Data science research in the ADF utilises the commercial game Artemis: Spaceship Bridge Simulator as an analogue to test theories for improving combat management systems (Defence, 2022). Use of public networked games recognises the capacity for citizen input (on unclassified material) in a manner similar to gamified crowdsourcing. It also acknowledges an economic fact: commercial game development surpassed military/public development in the early 21st century, and both technology and capability need/ed to be brought back in. 'The military has become accustomed to using commercial off-the-shelf (COTS) computer hardware. It must look forward to using COTS software for applications such as training and data analysis' (Smith, 2006, 2010, p. 17).

Finally, as the public service employs more people with games industry skills, use for experimentation and evaluation has developed. Innovative practice includes simulations or experiments within game engines, and the use of game analytics metrics for review of results and finding trends (personal communication, 2024).

Overall, this typology category currently features a combined purpose description of both implementation *and* evaluation because of the numeric thinness of cases. This might shift over time, and we encourage practitioners to consider whether gameful government yields anything particularly new and impactful in either of the policy stages of implementation or evaluation, and to start measuring and assessing such impact with a view to clarifying the helpfulness of gaming to citizen experiences and outcomes.

5 | DISCUSSION

Prediction is a fool's game, yet we feel safe in our assumption that gameful government will increase and diversify. This typology provides a preliminary foray into appreciating usage and

its implications from both scholarly and practitioner perspectives. We acknowledge that more research is needed. We face many gaps in thinking through the issues that prompt use of gaming in policymaking processes—whether it is worth the effort, what theoretical questions might emerge over time as hopefully more impact assessments emerge, and how to encourage practitioners to deliberate more over their use purpose. For now, we argue that our preliminary typology helps move beyond case description and curiosity towards analytically rigorous beginnings that make sense of the use of games and gamification in the Australian public sector.

Besides next research steps, what other issues are critical? In this section, we consider the lack of a coordinated approach to both use and analysis of public sector games; benefits and risks of this practice's development; the role of government investment; and finally, preliminary evaluation of gameful government in Australia.

A first, clear observation arising from categorisation of cases into our typology is the absence of any overarching strategy, assessment, or scrutiny of gameful government. Initiatives are happening all over the country, but other than some specific interested experts we managed to identify ourselves through consideration of practitioner activities and blogposts, no one seems to be monitoring or attempting to shape the deployment of public sector gaming in any systematic manner. This may be a case of letting a thousand flowers bloom, and there is potential merit to such an approach. Alternatively, it may be because no major case of scandal or regulatory failure—yet—means attention is not considered necessary in the area. It seems, however, that some deeper arguments are worth raising. Is Australia missing an opportunity to imagine improved policy options by not paying enough attention to gaming? Could more be done to encourage impact assessments to start an evidence base to scrutinise cost-benefit and impact calculations in gameful government? Could parallel developments be considered more strategically alongside gameful government to render new pathways for Australian policymaking? For example, this might mean consideration of gaming as a means to fulfil place-based policymaking demands, or an avenue to address growing acute and community health and mental health needs? Should Australia be matching its investment in growing its *private*, entertainment-focused digital games industry with incentives to generate calibrated experimentation in *public* (sector) uses, perhaps allowing the nation to grow its innovation and productivity agendas?

Methodologically and empirically, over time, the sample thinness of *recruitment* and *implementation and evaluation* examples in our typology will resolve, and parallel developments likely necessitate new typology categories. Not everyone will welcome this development, in current or future state. This raises our second issue, the potential benefits and risks of gameful government. The rise of gamification in particular has been met with forceful academic and gaming industry scepticism. It has been dismissed—especially in a business context—as 'playbor' or 'exploitationware', incentivising unwilling employees or customers to have more "fun" while completing mundane tasks ever quicker in a self-serving capitalist machine (Bogost, 2015; Rey, 2015). Similarly, the gamification trend is charged with disingenuous use of games/gaming, unconcerned with their sophisticated artistry and cultural history, instead using elements from them to serve business ends. In this version, gamification is an unethical, superficial *rhetoric* sold by gamification evangelists or fly-by-night management consultants, rather than a genuine practice acknowledging the messy complexity of employees or customers (Deterding, 2019).

Yet, there is another version possible for gameful government. It emphasises the deeply human nature of the design processes embedded in game development and the gaming community. It thus avoids shallow, snake oil rhetoric in favour of the democratic, deliberative and sometimes subversive potential of games to drive engaged participation and learning. Although we acknowledge the (economic) reality of the public sector in the (post?) neoliberal, post–new public

management, networked governance era, we maintain there is something different about public sector emphasis on achieving *public value* from public projects (Moore, 1997). And this something gives us hope that gameful government can transcend the superficial if done right. Partially, this requires commitment to viewing citizens *as citizens* (and players) rather than as customers or users (Dutil et al., 2008). Likewise, it demands courage and vision to manage risk and cultural biases against novelty and gaming.

Third, with regard to government investment: evidently effective gameful government requires money and time. Large-scale game development takes years (~2–5) and costs millions. The Digital Games Tax Offset (legislated 2023) and similar state/territory schemes demonstrate Australian governments' multi-million-dollar commitment to the gaming industry (Austrade, 2023). However, this is for private sector, entertainment-focused game development. Attention to games' potential *for government*—not just governments' revenues—has not yet transpired beyond localised cases like those demonstrated here. Even smaller projects can be resource-intensive, particularly where transition into service delivery or HR training (both often at scale) is required. Shifting from such cases as ours to embedded use will take time. It will take effort from committed early adopters. And the risk remains of shallow, tokenistic implementation of gamification. Nevertheless, our typology maps a significant emerging practice—and opportunity, if done right.

Finally, then—how to evaluate Australian gameful government thus far? Our typology, and discussion of its elements, suggests Australian practice is underdeveloped. Practitioners are pursuing laudable innovation and experimentation, but we do not yet know with what impact or, sometimes, why. The purpose of using gameful government is fairly unclear, largely because there is not enough publicly available data to inform a robust assessment or, worse, because this matter has not yet warranted attention. While public engagement, for example, might prove hunch-positive in utilising gaming as a discrete tool to boost take-up or improve citizen perceptions of connection to policy endeavours, we simply do not know. Our typology currently suggests that crowdsourcing via gameful government produces mixed results and, similarly, that authentic engagement initiatives where gaming is meant to assist genuine citizen co-design might involve trade-offs between broad participation and depth of interaction. As such, the overall results of our typology categorisation and analysis suggest that gameful government is happening, with a balance of internal and external deployment, but that the jury is currently out in the Australian context as to clarity of use purpose and degree of impact.

Models for the path forward do exist elsewhere. In their comparative analysis of 'public sector use of serious games', Mayer et al. (2013) observed low usage in the United Kingdom, Germany, Italy, and Norway but more significant use in the Netherlands. Broader Dutch usage in the 2010s grew from multi-decade (1970s on) cultural and organisational commitment to serious games' potential for societal and public sector ends. We assume commitment to game-based learning is wider in Australia than our review suggests, but it lacks the Dutch research, development and application experience at scale (Mayer et al., 2013, pp. 311–312). Time will tell.

6 | CONCLUSION

We have surveyed the increasing prevalence of knowledge, skills and practices from game play and development within the Australian public sector. This trend, which we call *gameful government*, deserves closer research and practice attention. To this end, we proposed a provisional typology to categorise gameful projects in the Australian public sector. Now, to conclude, we set out potential next steps for this research program.

The rise of gameful government overlaps with other developments impacting the public sector. Innovative urban gamified engagement (Duckworth, 2019), for example, intersects with parallel developments like smart cities and digital twins. Games/gamification in training and learning, and in service delivery, underline the massive shift already underway in public sector capability and technological transformation, while simultaneously emphasising how far these processes have to run.

Future research should delve into sectoral usage, for example consolidating the intersection of new technological avenues for (urban) policy development, and for deliberation and co-design. Deeper analysis of usage within typology categories should also follow. This can feed knowledge transfer: for example, financial differences notwithstanding, can longer-term lessons from Defence apply elsewhere?

Importantly, future work should test and develop the typology itself. We reiterate this typology remains provisional, capturing a point in time and demanding further research, because public sector use of games and gamification will accelerate and use cases become more complex. Indeed, partial inspiration for writing this article stems from desire to surface the depth and breadth of gameful government in Australia and more widely. We seek comment and correspondence. A later project could incorporate surveys and interviews with practitioners—and non-academic publications focused on insights for public sector game and gamification development. Theoretical considerations could emerge from empirical scholarship concerning gameful government applications.

Gameful government is established in Australia, if not systematically widespread. Broader acknowledgement of and engagement with this fact would guide further innovative development of games and gamification for public sector ends. The game is on: the question is how far we're willing to take it—as practitioners, academics and citizens.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

No datasets were generated or analysed during the current study. Nevertheless, other than private correspondence, the data that supports the findings of this study are freely available online, through publicly published materials (not within research repositories).

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