Gambling Harm Minimisation Technology Assessment Project

Office of Responsible Gambling – NSW
Department of Customer Service

Final Report

30 June 2020

Executive summary

Research indicates that more than half (53%) of NSW adults participate in some form of gambling annually.[1] Australians have the highest rates of gambling expenditure per capita and NSW has the largest gambling expenditure of all states and territories. While gambling is part of the Australian culture and considered socially acceptable by most of our population, approximately 7.5% of the Australian adult population experience some form of harm related to gambling[2] and in NSW, one percent of the population are problem gamblers, a slight but not statistically significant increase from 0.8% in 2011, and 2.8% are moderate-risk gamblers (2.9% in 2011).[3]

Technology is increasingly playing a role in this space and the gambling industry has utilised rapid developments in technology to innovate their product offerings and use highly sophisticated marketing techniques to influence customer choices. Governments and the gambling industry are already responding by investing in programs and initiatives to reduce risk of harm related to gambling and to educate the community on responsible gambling.

Despite widespread industry discussion on responsible gambling and the potential to use technology for harm minimisation outcomes, there is little known about what solutions the industry has invested and could invest in and their effectiveness.

Project Scope

The Project Team was engaged by ORG to undertake an assessment of the current and emerging landscape of harm minimisation technology both locally and internationally. The key objectives of this engagement were to:

- Provide clarity on the technological innovations to reduce gambling harm that are currently in use or planned across the gambling industry in NSW, Australia and Internationally, including their perceived efficiency
- Identify how technology could be used to reduce gambling harm and operator and regulator areas of interest
- And based on the above analysis, recommend a prioritised list of research and development opportunities to guide future ORG and RGF investments.

The project ran from April 2020 to June 2020 and involved desktop research and interviews with local and international stakeholders including regulators, peak bodies, research organisations, gaming operators and technology providers.

Current state in NSW

The gambling industry in NSW is diverse, extending across both online and land-based channels. In 2016–17 a total of $9.53 billion was spent on gambling in NSW, which was split over multiple forms of gambling including, Lotteries, Gaming Machines, Instant Scratchies, Race Betting, Keno and Sports Betting.[4]

While gambling is a lawful activity in NSW, it can cause harm to some people and can have severe impacts on individuals and our community.

States and territories hold primary responsibility for the regulation of gambling and requirements differ for each of the segments and providers. The regulatory framework that governs each of the gambling channels and types in NSW is made up of a number of legislations. The Commonwealth also plays an active role with respect to online gambling and a National Self-Exclusion Register is under development.

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[1] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019

[2] Australian National University 2018, 'More Australians affected by gambling and for longer', *Australian National University*, 5 November, viewed 18 April 2017, < https://www.anu.edu.au/news/all-news/more-australians-affected-by-gambling-and-for-longer>.

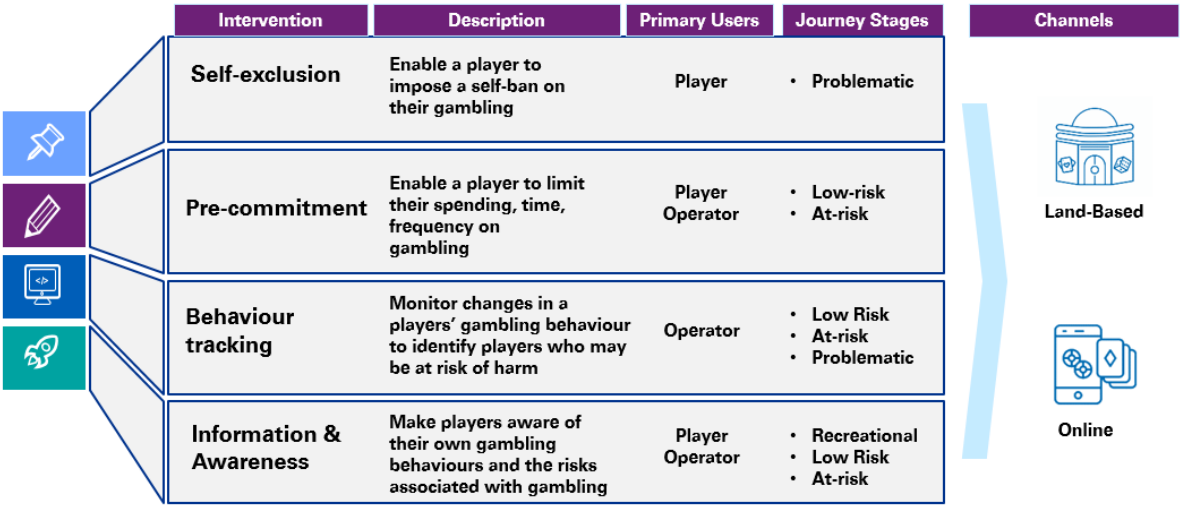
[3] Office of Responsible Gambling. (2019). NSW Gambling Survey 2019, https://www.responsiblegambling.nsw.gov.au/research2/nsw-gambling-survey-2019.

[4] Queensland Government Statistician's Office (2018), Queensland Treasury, Australian Gambling Statistics, 34th edition.

Harm minimisation technology landscape

There are a range of technology-enabled interventions across land-based and online channels. They can be classified into four main types; self-exclusion, pre-commitment, behaviour tracking and information and awareness. The end user for each type may be the player, the operator or both. Figure 1 illustrates the four harm minimisation domains, a description of each of their primary users and the stages of the gambling journey they target.

Figure 1: Overview of types of harm minimisation interventions in the gambling industry



Source: The Project Team

A number of products exist around the globe and in Australia across all these intervention types, targeted at different stages of the journey. Generally we have seen greater investment in technology overseas, particularly in the Nordics.

In NSW, the response to gambling harm varies across different segments of the industry. The majority of interventions available in NSW are targeted at the problem gambling end of the journey and are aimed at helping players to self-exclude and to accurately detect players that self-exclude. The industry is now in the early stages of introducing other forms of technology-based interventions focused on prevention and reduction of risk which are targeted at the earlier stages of the customer journey.

However, technology is only one component of a holistic response to gambling harm with a number of other interventions employed by operators across NSW.

The regulatory landscape also plays a role in the adoption of technology interventions. In the Nordics, government is able to play a greater role in the regulation and operation of the industry, including with setting limits on spend, and government operators have invested in underpinning technology to support these regulatory requirements.

Effectiveness of technology interventions

While there have been some studies on the effectiveness of different interventions, the evidence base is still emerging and this is where ORG has an opportunity to play a significant role. There is limited independent, peer reviewed and publicly available evidence on the majority of interventions. In addition, longitudinal studies on the impact of different interventions are in their infancy and predominantly being conducted at an operator level.

However, strengths and limitations across the different types of interventions have been observed and reported on, such as increased ability to identify risk and reductions in risky behaviour by players.

As part of this work, a range of additional observations and insights were provided by the industry representatives interviewed regarding responding to gambling harm through use of technology, such as; the need to look at technology in the context of a range of responses to address the issue, the impact of stigma on

take up of responsible gambling interventions and the need for a good quality evidence base to support interventions.

Consultations highlighted the importance of considering data control and privacy in the use of behavioural analytics platforms, the intersection between regulation/policy and technology interventions, the importance of personalised customer engagement and the changing landscape from land-based to online channels.

Options for ORG

Based on the analysis conducted, seven options have been identified that ORG could pursue. It is important to note that while opportunities were identified to invest further in technologies related to community education and awareness, these were out of scope for this project. A prioritisation exercise was conducted on the technology related options to understand their desirability (level of interest from industry, ORG and customers), viability (likely benefits, available evidence, inherent risks) and feasibility (data/privacy concerns, implementation complexity, resource/costing needs). This analysis provided a view of the relative priorities of these options and was used to inform the roadmap.

A high-level overview of the options and their relative prioritisation is presented on the following page.

1 **NSW self-exclusion e-register:** ORG could invest in establishing a self-exclusion e-Register for all gambling operators in NSW (both online and land-based). This would require early buy-in from industry, co-design and testing with industry, and likely require policy and regulatory change.

2 **Gambling blocking software:** ORG could explore subsidising the use of an existing gambling blocking software for customers in NSW. The gambling blocking software could be accessible through ORG's Gambling Help website. Prior to entering into an agreement with a gambling blocking software provider, ORG should test the technical effectiveness of different products.

3 **Digital wallets:** ORG could be actively involved in oversight of the digital wallet trials as part of the Liquor and Gaming NSW's Regulatory Sandbox to feed into the design and delivery of the trials. There may also be a need for ORG to conduct additional research on digital wallets and responsible gambling interventions as the trials progress to supplement activities being conducted in the trials.

4a **Automated Risk Monitoring (ARM) for the online setting:** ORG could partner with an online operator in NSW and a research organisation to trial the use of ARM. The trial could focus on testing different scenarios of interventions to build the evidence base for what interventions are most effective at different stages of the customer journey in an online context. The online environment is data-rich and a number of operators have already invested in technologies that underpin ARM.

4b **Automated Risk Monitoring (ARM) for the land-based setting:** ORG could partner with a land-based operator in NSW and a research organisation to trial the use of ARM. The trial could focus on testing different scenarios of interventions to build the evidence base for what interventions are most effective at different stages of the customer journey in a land-based context. These technologies are at an early stage in the land-based context and generally limited to larger operators.

5 **Facial recognition:** ORG could invest in research to understand the effectiveness of this technology in preventing self-excluded players from entering venues. If the evidence base provides a view that this technology is effective and does not present a significant cost barrier to the industry, ORG could consider subsidising facial recognition software for smaller operators in the industry who lack the economies of scale to invest.

6 **Bank-led RG intervention:** ORG could actively influence the adoption and use of technology-enabled gambling harm minimisation interventions through engaging with industry peaks and establishing a dialogue one-on-one with banks that are already active in this space to understand these features and to inform the sector about what approaches work well.

Next steps

The findings and opportunities outlined in this report will be used by ORG and the RGF Trust for internal planning purposes. A number of steps need to be undertaken to translate the opportunities outlined here into executable pieces of work:

- A prioritisation framework has been used to evaluate relative priority of the opportunities described here, but they will need to be considered within the context of the broader strategic agendas of ORG and RGF to determine which ones should be pursued.
- The options presented here are at the early stage of development and will require detailed analysis and design to allow specific costs and timings to be determined.
- A high-level roadmap has been provided, however this will need to be revisited once priorities have been agreed within the broader strategic context and more precise costs and timeframes are known.
- Once the relevant opportunities are incorporated into the ORGs strategic plans and approved, the activities outlined in the accepted opportunities could begin.

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Glossary

Term	Definition
Active monitoring	When staff of a club maintain a close watch on a patron who is at risk of being a problem gambler. Active monitoring may include collection of data and keeping of written records and may only be done with the patron's written consent.
ARM (Automated risk monitoring)	A software program, which monitors activity and triggers alerts when a gambler reaches a certain thresholds, such as spend amount or time continuously gambling.
Artificial intelligence	It is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing (NLP), and speech recognition and machine vision.
CALD	Australia's population includes many people who were born overseas, have a parent born overseas or speak a variety of languages. Together, these groups of people are known as culturally and linguistically diverse (CALD) populations.
Channel	A channel is a pathway to access a service or information. For example, a website or mobile application are channels through which people can access online gambling. Examples of channels for accessing information include flyers, posters, face-to-face, online, phone calls, TV, radio etc.
Customer Relationship Management (CRM) system	A technology used in many organisations to provide a centralised way to manage their relationship with customers throughout many varied interactions. In the gambling industry, these are used to manage an operator's ongoing interactions with a current or potential player.
Customised solution	A collection of components that have been packaged together to provide solution to a specific customer problem.
Data analytics	Data analytics is a process of inspecting, cleansing, transforming and modelling data with the goal of discovering useful information, informing conclusions and supporting decision-making.
Digital Wallets	Financial accounts that allow users to store funds, make transactions, and track payment histories using digital technologies.
Economies of scale	A proportionate saving in costs gained by an increased level of production.
Electronic Gaming Machines (EGMs)	Devices that use mechanical stops to arrest the spin of reels in order, usually from left to right. When the winning symbols lined up, a prize was delivered, usually via a coin dump into the tray at the bottom of the machine.
Exclusion	A prohibition against a patron from specific gambling products, services or gambling areas of gambling providers.

Gambling blocking software (e.g. Gamban)	A form of self-exclusion found internationally, gambling blocking software restricts access to gambling apps and websites.
GAMSTOP	A national online self-exclusion scheme in the UK that restricts online access to gambling activities for individuals that register through the central scheme.
Harm	The adverse financial, personal and social consequences to individuals, their families and wider social networks that can be caused by excessive gambling.
Machine learning	An application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.
Nordics	The region covering countries such as Sweden, Norway, Denmark, Finland & Iceland.
Operator identified problem gambler	In this context we mean a customer where an operator has completed sufficiently through investigations (which often means manual processes) that a player is 'frozen' or the account is closed. There is no commonly accepted means of proving someone is a problem gambler by operators.
Problem gambling	Difficulties in limiting money and/or time spent on gambling which leads to adverse consequences for the individual, others, or for the community.
Responsible Gambling	A broad concept which comprises several policies and requirements that apply to gambling stakeholders to make sure they offer a safe user experience that protects people from the potential negative consequences.
Risk score	A problem gambling risk score is calculated for each customer using the predicted probability of being at-risk of experiencing gambling problems from the predictive modelling.
State-owned operator	A legal entity that is created/owned by a government in order to partake in commercial activities on the government's behalf.
Stigma	Negative perceptions towards self or others because of a particular characteristic or attribute, such as mental illness.
Technology intervention	Application of technology to modify behaviour to either, prevent or minimise harm from gambling.
Venue	A generic term to refer to the type of outlet for gambling activities, such as hotel, club or casino.

1 Introduction

1.1 Project context

Research indicates that more than half (53%) of NSW adults participate in some form of gambling annually.[5] Australians have the highest rates of gambling losses per capita and NSW has the largest gambling expenditure of all states and territories. While gambling is part of the Australian culture and considered socially acceptable by most of our population, approximately 7.5% of the Australian adult population experience some form of harm related to gambling[6] and in NSW one percent of the population are problem gamblers, a slight but not statistically significant increase from 0.8% in 2011, and 2.8% are moderate-risk gamblers (2.9% in 2011).[7] The consequences of harmful gambling are significant and can result in:

- Financial loss and resulting financial pressures for low-income individuals or those that make high value financial commitments
- Personal harm, including stress and anxiety, depression, suicidal ideation/attempts, substance abuse, and homelessness
- Family and marital issues, including domestic and family violence
- Employment problems, including workplace conflict, absenteeism and termination of employment
- Poor academic results
- Criminal offences related to gambling
- Social isolation and interpersonal conflicts.[8]

The Office of Responsible Gambling (ORG) and Responsible Gambling Fund (RGF) contribute to policy development, regulation and programs to address the complex balance between informed, personal entertainment choices and protecting consumers from gambling harm.

1.1.1 Technology in the gambling industry

Technology is increasingly playing a role in this space and the industry has utilised rapid developments in technology to innovate their product offerings and use highly sophisticated marketing techniques to influence customer choices. It is also making gambling more accessible, customers can simply use their phone devices anytime and anywhere to access gambling sites and apps. Use of these technologies to shape consumer decision-making, and encourage intensive consumption for a longer period, raises valid concerns about riskier behaviour contributing to increased gambling harm.

Governments and the gambling industry are already responding by investing in programs and initiatives to reduce risk of harm related to gambling and to educate the community on responsible gambling. While technology can be used to influence gambling habits and improve profit maximisation, there are also opportunities to leverage technology to significantly improve the outcomes of programs that prevent and reduce gambling harm, including through technological applications of behavioural economics and AI. For example, the RGF has already funded mobile apps, chatbots, a self-exclusion website and data projects aimed at reducing the incidence of gambling harm in addition to their research and education agenda.

Despite widespread industry discussion on responsible gambling and the potential to use technology for harm minimisation outcomes, there is little known about what solutions the industry has invested and could invest in and their effectiveness. In considering changes and solutions, the complex Australian gambling industry ecosystem needs to be considered, including the variety of channels that are available and the stakeholders that

[5] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019

[6] Australian National University 2018, 'More Australians affected by gambling and for longer', *Australian National University*, 5 November, viewed 18 April 2017, < https://www.anu.edu.au/news/all-news/more-australians-affected-by-gambling-and-for-longer>.

[7] Office of Responsible Gambling. (2019). NSW Gambling Survey 2019, https://www.responsiblegambling.nsw.gov.au/research2/nsw-gambling-survey-2019.

[8] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019; and Langham, E, Thorne, H, Micek, A, Browne, M, Donaldson, P & Rose J 2016, 'Understanding gambling related harm: a proposed definition, conceptual framework, and taxonomy of harms', BMC Public Health, no. 80 (2015), pp. 11., 27 January, viewed on 28 MAY 2020, <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-016-2747-0>.

need to be coordinated to effect change. The range of gambling products accessible to Australians that need to be considered when designing responses include:

- Gaming machines
- Horse and greyhound races
- Lottery tickets and instant scratchies
- Keno
- Bingo and Housie
- Table games at the casino
- Sports betting and betting on non-sporting events
- Casino or poker machine style games on the internet.

Stakeholder landscape

The stakeholder landscape within the gambling industry is diverse. People from across different customer segments and profiles engage in gambling, and have differing motivations and/or co-morbidities that may influence their behaviour and risk of experiencing harm. A range of gambling companies, vendors and associations operate in the industry, and a number of government agencies are responsible for regulating the industry and protecting users. Each stakeholder must not only be considered in designing responses, but must actively participate and contribute to the solution.

A key goal in the ORG Strategic Plan is to "leverage technology to drive innovation to prevent and reduce gambling harm". The ORG and RGF Trust are committed to working more closely with industry on new and emerging innovations to trial and implement responsible gambling practices. To support this, ORG commissioned this project to undertake an assessment of the current technology landscape and 'what is possible' and to provide recommendations on research and development opportunities, moving forwards.

1.2 Scope

The Project Team was engaged by ORG to undertake an assessment of the current and emerging landscape of harm minimisation technology both locally and internationally. The key objectives of this engagement were to:

- Provide clarity on the technological innovations to reduce gambling harm that are currently in use or planned across the gambling industry in NSW, Australia and internationally, including their perceived efficiency
- Identify how technology could be used to reduce gambling harm and operator and regulator areas of interest
- And based on the above analysis, recommend a prioritised list of research and development opportunities to guide future ORG and RGF investments.

1.3 Project methodology

The project ran from April 2020 to June 2020. The key stages of the project and the associated timeframes of these stages are summarised in Table 1 below.

Table 1: Summary of key stages for the Gambling Harm Minimisation Technology Assessment Project

Stage	Detail	Timeframe
1: Rapid project initiation	An approach to stakeholder consultation was designed in consultation with the ORG, components of the approach included the purpose, mode and process. This stage also involved the development and refinement of a detailed project plan and drafting early views of consumer journeys and personas.	April 2020
2: Analysis of the gambling eco-system	Analysis of the gambling eco-system involved the following key activities: • Researching the gambling industry and relevant technology • Consultations with key stakeholders in the gambling industry, in other relevant industries and in selected jurisdictions outside Australia.	April to May 2020
3: Analysis and final reporting	Data collected during Stage 2 of the project was analysed and synthesised to develop a final report (this report) for the ORG. This included the validation of findings with the ORG and the RGF to inform recommended actions presented in this report.	May to June 2020

Source: The Project Team

1.3.1 Rapid project initiation

The purpose of this stage was to ensure that the work undertaken by The Project Team was efficient and the desired project outcomes were achieved. Rapid project initiation involved the following key steps, the development and refinement of:

a) Detailed project plan
b) Stakeholder engagement approach
c) Draft customer journey and personas.

Detailed project plan

The project initiation meeting and subsequent development of the project plan was critical to the success of the project as it established an open and collaborative working relationship between The Project Team and ORG and confirmed the expectations of all parties. The project plan detailed project activities, timing and key milestones, project governance, and the risk management approach (including a risk and issues register). The detailed project plan can be found at **Appendix A**.

Stakeholder engagement approach

As part of this engagement, The Project Team conducted consultations with key stakeholders in the industry on behalf of ORG, to gain a detailed understanding of the current and emerging technology landscape in the gambling sector (explained in section 1.3.2). To support this process a detailed stakeholder engagement approach was developed during this phase. The approach detailed the purpose, mode and process for engaging stakeholders. The approach also proposed a list of stakeholders to engage across the following groups:

- Gambling owners/operators
- Technology providers
- Industry experts and research organisations
- Regulators and policy agencies in the gambling industry
- Regulators in the gambling industry

- Industry peaks.

The detailed stakeholder engagement approach can be found at **Appendix B**.

Customer journey and personas

Customer journey personas and maps were drafted to understand the common stages customers go through in developing gambling problems and provide a frame to highlight what technology-enabled interventions are available along the journey. The detailed customer journey personas and map can be found at **Appendix C**.

A diverse range of customers experience gambling harm, influenced by a range personal characteristics, previous learning and social experiences. We have mapped two customer personas to provide illustrative cases of how individuals differ in their experience of gambling problems. We varied the customer personas by gender, age, CALD status, and type of gambling activities used and created personas that fit the profile of the highest number of harms for each gender.

Most people who experience gambling problems engage in multiple different gambling activities, however there is often one type of gambling that has played the primary role in their problems. Therefore we crafted two customer journeys to examine the steps customers take through each stage, the touch points where they interact with gambling products/material/people or even non-gambling stakeholders, what harms or pains may impact them and the gains that motivate them to continue.

1.3.2 Analysis of the gambling eco-system

The purpose of this stage was to gain a robust understanding of the current and emerging technological landscape, vendors and products, as well as the underpinning regulatory, policy and operational landscape in the gambling industry in Australia and in selected jurisdictions overseas. Analysis of the gambling eco-system involved the following key steps:

- Research of the literature, recent reviews or reports, vendor and gambling operator websites, legislation and policy
- Consultations with key stakeholders in the gambling industry.

Desktop research

To understand the current and emerging technological landscape as well as the underpinning regulatory, policy and operational landscape in the gambling industry locally and internationally, a desktop research was undertaken. Desktop research focused on understanding:

- What technology-enabled interventions are being used, developed or trialled by the industry to prevent and reduce gambling harm
- What other technologies or non-technology based practices or solutions (e.g. education programs, communications to customers) are the interventions supported by
- How effective are these technology-enabled interventions in preventing or minimising gambling harm
- What is the current landscape of other gambling harm minimisation responses in NSW.

To guide the research a research strategy was developed. The research strategy detailed research questions, search terms, scope, indicative sources, databases and search engines, and outputs. The strategy also detailed the research sub-questions and additional focus areas. The research strategy can be found at **Appendix D**.

Stakeholder interviews

Interviews with stakeholders in the industry were conducted to gain a more detailed understanding of the current landscape and to validate findings from the analysis of documentation.

Interviews were undertaken with 38 stakeholders. These included representatives from different Australian and international stakeholder groups, namely; gambling operators, industry peaks, technology providers, gambling regulators and policy agencies, as well as industry experts and research organisations. Interviews were undertaken via teleconference and were led by senior members of the Project Team. The consultations were semi-structured to guide participants whilst allowing for broad exploration of questions and observations, and tailored for each type of stakeholder group. The stakeholder interview guides can be found at **Appendix E**.

1.3.3 Analysis and final reporting

This phase involved analysing and synthesising the findings from the previous phases, determining potential options for consideration, and presenting these to ORG and RGF to test and validate. Analysis and final reporting involved the following key steps:

- Synthesis of findings and conducting workshops with the ORG and RGF
- Reporting.

Synthesis and workshops

Data collected through research and consultations was analysed to present a view on the emerging technological landscape, vendors and products, and future options, as well as the underpinning regulatory, policy and operational landscape in the gambling industry in Australia and internationally. Findings from this analysis were presented and refined with ORG during a two-hour workshop. The project team then refined these options and prepared an updated view to test with the RGF. These were then tested and validated with the RGF during their June 2020 session.

Reporting

Findings, insights and the prioritised list of options were encapsulated in a final report (this report) for the ORG which describes:

- The current gambling landscape in NSW
- The gambling harm minimisation technology landscape including the types of technology interventions and where they influence the customer journey, how technology is used across the globe to minimise gambling harm, what is known about the effectiveness of different technology interventions
- A prioritised list of research and development options for ORG and RGF.

1.4 Limitations

When interpreting the findings in this report, it is important to note the following limitations:

- A representative sample of 38 local and international gambling industry stakeholders across gambling authorities, gambling technology providers, gambling owners/operators and industry peaks and research organisations were able to participate in consultations through May 2020 as part of this project. This means the stakeholder views expressed in this report may not represent the views of all stakeholders across the industry.
- Gambling and the harm it can cause is a sensitive topic and different industry stakeholder groups can have quite different perspectives on the practical use of technology for harm minimisation though there was general consensus on key themes. This means specific responses provided to interview questions should be considered opinion-based and are subject to variability between stakeholders.
- Interviewees were happy to share their insights, however information that was considered commercially sensitive (e.g. costs, some new innovations) was necessarily restrained. Some peak bodies, for example, were only able to speak generally about interventions their members had in place or were working on.
- Though a few interviewees shared some additional presentations or reports referred to in the consultations, research resources were limited to internal ORG documentation and publicly available material through May and April 2020. This means insights from research projects that are currently in progress and may contribute to the current evidence-base were not able to be included.
- To encourage participation by industry stakeholders, all input has been anonymised in this report and summarised into themes so detail on specific products or interventions is not referenced here unless sourced from publicly available content. This means a comprehensive view of industry products is not provided here.

- The options outlined in this report are based on the findings from research activities and consultations which are subject to the limitations described above. Though there are many potential opportunities to leverage technology for harm minimisation purposes, to arrive at a prioritised set relevant to NSW ORG, the project team considered what was reported to be working well in other jurisdictions against the local industry environment and the evidence base available at the time.

1.5 Purpose and structure of the report

The purpose of this report is to provide a summary of current and emerging harm minimisation technology, to discuss the key findings and insights from desktop research and consultations, and to provide recommendations for future research and investment opportunities by ORG.

The report is structured in the following key sections:

- **Section 1 (this section):** Provides an overview of the project, including the background, context and objectives and methodology.
- **Section 2:** Provides a detailed overview of the current landscape of gambling harm minimisation responses in NSW.
- **Section 3:** Presents an overview of the technology-based interventions identified in the project.
- **Section 4:** Presents research and technology options for ORG to consider pursuing, including a range of options, both short-term and longer term.

2 Current state in NSW

2.1 Gambling participation

Research indicates that more than half (53%) of Australian adults participate in some form of gambling annually.[9] In 2016–17 a total of $9.53 billion was spent on gambling in NSW, which was split over multiple forms of gambling including, Lotteries, Gaming Machines, Instant Scratchies, Race Betting, Keno and Sports Betting.[10] Of the total expenditure the majority (73%) was spent on Electronic Gaming Machines (EGMs), followed by Race Betting and Sports Betting,[11] but the preferred channel varies by cohort, for example in 2018-19:

- Lottery tickets were the most popular with people aged 45-64 (46%)
- Race betting was the most common with people aged 45-54 (16%)
- Sports betting was most common with people aged 18-24 (11%)
- Gaming machines are most popular with people aged 18-24 (25%).[12]

The overall proportion of Australians (18+) who have gambled has declined by 12% between 2011 and 2019. The decline between 2011 and 2019 has occurred across all major types of gambling in NSW, Lotteries declined by 4% to 37%, Race Betting declined by 11% to 13%, Sports Betting declined by 1% to 6% and EGM gambling declined by 11% to 16%. The survey showed the least prevalent forms of gambling were betting on fantasy sports (0.3%), online poker (0.3%), and online casino games (0.5%).[13]

2.2 Operator landscape

Gambling is conducted through two channels, online and land based operators. There are a range of different operator types, including, hotels, clubs, casinos, TAB, independent bookmakers, wagering companies, newsagents and petrol stations. These operators are owned both locally and internationally. The number of operator licences in NSW varies between gambling types, as at 30 June 2018:

- There were 174 active bookmakers licences
- There were 2,514 venues licensed to have gaming machines
- There were 197 active race club licences
- There were 41 active sports betting licences
- There was 1 active casino licence
- There was 1 active public lotteries licence.[14]

There are a number of different types of technology providers active in the gambling market. These include gaming machine manufacturers, self-service betting terminal manufacturers and animated gambling manufacturers. The total number of technology manufacturers varies between gambling types, there are over 10 gaming machine manufacturers, over 8 self-service betting terminal manufacturers and over 15 animated gambling manufactures.

[9] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019
[10] Queensland Government Statistician's Office (2018), Queensland Treasury, Australian Gambling Statistics, 34th edition.
[11] Queensland Government Statistician's Office (2018), Queensland Treasury, Australian Gambling Statistics, 34th edition.
[12] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019
[13] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019
[14] Queensland Government Statistician's Office (2018), Queensland Treasury, Australian Gambling Statistics, 34th edition.

2.3 Impact and risk associated with gambling

Australians have the highest rates of gambling expenditure per capita globally and NSW has the largest gambling expenditure of all states and territories. While gambling is part of Australian culture and considered socially acceptable by most of our population, approximately 7.5% of the Australian adult population experience some form of harm related to gambling[15] and as much as nearly 10% of the adult population who gamble are at a risk of problem gambling.

Gambling-related harm is not restricted to the player. Harm from gambling can also affect families and the community in a number of ways. The consequences of harmful gambling are significant. The NSW Gambling Survey (2019) asked about 21 types of harm associated with gambling. The types of harm can be grouped into six domains:

- **Emotional/psychological harm:** Personal harm, including stress and anxiety, depression, substance abuse, and homelessness
- **Health harm:** Loss of sleep and suicidal ideation/attempts.
- **Relationship harms:** Family and marital issues, including domestic arguments and violence
- **Work study harm:** Employment problems, including workplace conflict, absenteeism and termination of employment, and poor academic results.
- **Social devaluation:** Social isolation and interpersonal conflicts.
- **Financial harm:** Financial loss and resulting financial pressures for low-income individuals or those that make high value financial commitments.[16]

Overall, the NSW Gambling Survey (2019) found that 6.34% of gamblers reported experiencing at least one form of harm, the most widely reported harm was feeling depressed (2.93%), distress about their gambling (2.70%) and loss of sleep (2.21%).[17]

Although the severity of each individual harm varies greatly, an individual experiencing greater general impact is likely to report more harm across all harm domains. Additional harms that have been identified include:

- **Cultural harm:** The dissonance between engaging with gambling where it was against cultural beliefs, the impact of the time spent gambling on the ability to participate in cultural practices and roles, reduction in the ability to contribute or meet the expectations of a cultural community, and the subsequent reduction of connection to the cultural community
- **Criminal activity:** Criminal offences related to gambling
- **Life course and intergenerational harm:** The experience of generational loss normally relating to financial security or expected stages of financial achievement, such as the inability to secure, or the loss of, a major financial asset such as a house or superannuation.[18]

[15] Australian National University 2018, 'More Australians affected by gambling and for longer', *Australian National University*, 5 November, viewed 18 April 2017, < https://www.anu.edu.au/news/all-news/more-australians-affected-by-gambling-and-for-longer>.

[16] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019

[17] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019

[18] Langham, E, Thorne, H, Micek, A, Browne, M, Donaldson, P & Rose J 2016, 'Understanding gambling related harm: a proposed definition, conceptual framework, and taxonomy of harms', *BMC Public Health*, no. 80 (2015), pp. 11., 27 January, viewed on 28 MAY 2020, <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-016-2747-0>.

Potential harm from gambling can also extend beyond the player and their families to the community. These types of harm represent the cumulative impact of harm to individuals within a community, or more direct harm experienced by the community.[19]

Most people who experience gambling problems engage in multiple different gambling activities, however there is often one type of gambling that has played the primary role in their problems. Within NSW, EGMs are the most likely gambling activity to be associated with gambling problems.[20] Online gambling, although less common, is also associated with problems. Land-based gambling and online gambling provides very different experiences and ability to interact with technology-based interventions.[21]

2.4 Regulatory landscape for responsible gambling in NSW

States and territories hold primary responsibility for the regulation of gambling and the development of relating policy. In NSW there are four primary bodies that are responsible for monitoring, and developing policy for, the gambling industry. These include:

1) **Liquor and Gaming NSW** – Liquor and Gaming NSW sits within the NSW Department of Customer Service and is responsible for the implementation of government policies designed to balance sustainable business development with the need to reduce harm associated with problem gambling.
2) **Independent Liquor & Gaming Authority** – The Independent Liquor & Gaming Authority is a statutory decision-maker responsible for a range of casino, liquor, registered club and gaming machine regulatory functions including determining licensing and disciplinary matters under the gaming and liquor legislation.
3) **Office of Responsible Gambling (ORG)** – The ORG leads the development of responsible gambling strategy and public policy advice to the NSW Government and supports and manages the Responsible Gambling Fund, Clubgrants Category 3 and Community Development Fund.
4) **Australian Communications and Media Authority** (ACMA) – The ACMA is an independent Commonwealth statutory authority that regulates communications and media services, including in relation to gambling, in all states and territories across Australia. ACMA enforces the Interactive Gambling Act and is therefore responsible for certain online gambling matters.

The regulatory framework that governs each of the gambling channels and types in NSW is made up of a number of legislations, in particular for:

- **Gambling Machines** the Gaming Machines Act 2001, Casino Control Act 1992 and Interactive Gambling Act 2001 (Cth) apply.
- **Race and Sports Betting** the Betting and Racing Act 1998, Totalizator Act 1997, and Interactive Gambling Act 2001 (Cth) apply.
- **Keno and Instant Scratchies** the Public Lotteries Act 1996 applies.
- **Lotteries the Public** Lotteries Act 1996, Lotteries and Arts Union Act 1901, and Interactive Gambling Act 2001 (Cth).

[19] Whitty, M & Paterson, M 2019, 'Gambling Support Study: understanding gambling harm experienced by female affected others', *Centre for Gambling Research*, viewed 10 June 2020, <https://csrm.cass.anu.edu.au/sites/default/files/docs/2020/3/ANU_Gambling_Support_Study.pdf>.

[20] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019

[21] Research Report NSW Gambling Survey 2019, Commissioned by the NSW Responsible Gambling Fund, September 2019

While the regulatory requirements differ for each of the gambling types and providers, key regulatory requirements related to responsible gambling include:

- A range of prohibitions are in place related to **advertising**, including where advertising can be displayed in land based venues and prohibitions on gambling advertising during a sporting event.
- Operators must not offer or supply specific **incentives** to gamble, e.g. free or discounted alcohol as an incentive to gamble or other inducements for opening an account, inviting someone to open an account or to not close an account
- There are a range of requirements (depending on the channel) about displaying **information about responsible gambling** and how to seek help.
- In relation to **pre-commitment**, online betting and lottery providers must offer a voluntary pre-commitment scheme that is easily accessible and must offer a player the ability to set a deposit limit.
- **Self-exclusion** options are required at an operator level across a number of types of gambling including online wagering, hotels, clubs and casinos.
- There are a range of restrictions related to credit lending, where **cash dispensing facilities** are able to be located and how wins are paid out. The amount of money that can be paid out on the spot also differs between channels.

The Commonwealth also plays an active role with respect to online gambling. The Commonwealth prohibits interactive online gambling, has developed a National Consumer Protection Framework for online wagering and sets restrictions on gambling advertising. A number of inquiries have also been conducted to explore the economic and social impacts of gambling, and the nature, extent and impact of online gambling.

3 Harm minimisation technology landscape

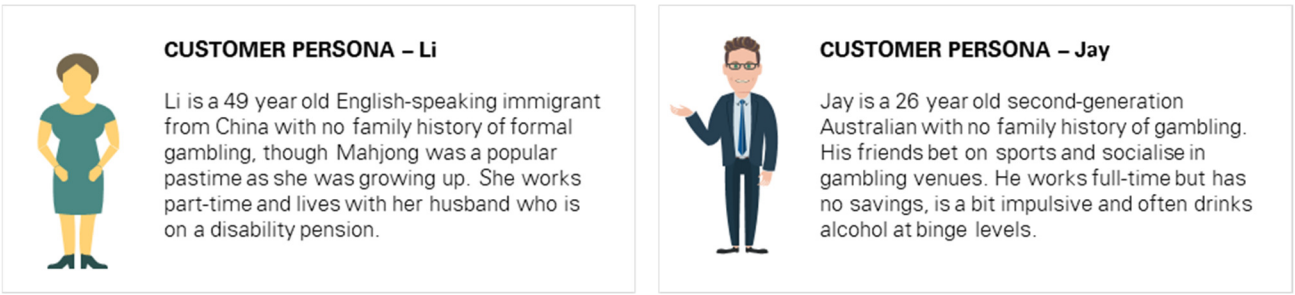
3.1 Customer-centric approach to understand technology interventions

Given the importance to individuals and society of reducing gambling harm, a customer-centric approach has been taken to understand how gambling can affect people and where technology can be used to reduce harm caused by gambling. Customer journey mapping allows for an understanding of the common stages customers go through in developing gambling problems and provides a frame to highlight what technology-enabled interventions are available at different stages along that journey.

Customer Personas

There are many different pathways to developing a gambling problem. Although risk factors have been identified, gambling-related harm can be experienced by a diverse range of people, making it impossible to identify a single set of circumstances people pass through. The personal characteristics, previous learning and social experiences all impact a person's journey through stages of gambling harm and the potential effectiveness of interventions. The diversity of customers who experience harm is difficult to capture adequately. As such, two customer personas have been developed to provide illustrative cases of how individuals differ in their experience of gambling problems. These two personas are outlined in Figure 22 below. Detailed customer personas can be found at **Appendix C**.

Figure 2: Customer Personas



Source: Project Team

The customer personas were varied by gender, age, CALD status, and type of gambling activities used. Customer profiles were created to fit the profile of the highest level of harm for each gender (i.e., for males 25-34 years, for females 45-54 years) and were matched with illustrative gambling activities (i.e., males more likely to play 'skill' games and younger people more likely to gamble online compared to older adults and females playing EGMs). For non-CALD individuals, greater harm is experienced among those with a university degree. Although harm is greater among those from CALD backgrounds with greater educational attainment, lower educational attainment is more strongly associated with gambling problems, so diversity was retained.

Journey Stages

The four stages a person would typically progress through in developing a gambling problem are outlined below. Throughout their journey, people can cycle between these stages in a non-linear manner. Interventions to minimise harm can target people at different points in their journey to prevent, divert, and minimise gambling harm. Transitions between stages are gradual and generally highly related to personal events and experiences. These four stages are outlined in Table 2.

Table 2: Gambling Journey Stages

Stage 1 Recreational Gambling	• No harm is experienced at this stage (no specific pains) • Gambling may occur on different products • Gambling is infrequent • Gambling usually motivated by or related to social and recreational activities • Focus is on entertainment rather than money staked, won and lost
Stage 2 Low-risk Gambling	• Minimal harm experienced. Harm is infrequent, of low consequence and primarily related to the 'cost' of gambling at the expense of other opportunities (e.g., small regret, reduced discretionary spending, reduced savings, time away from other activities) • Gambling may be a regular activity and provides a benefit including social interactions, recreation, and be part of a larger activity (e.g., visiting a venue, day at the races, watching sports) • Gambling engagement may vary over time, including gambling activities and methods of betting over the lifetime and may increase or decrease in relation to discretionary expenditure and time
Stage 3 At-risk Gambling	• Gambling is likely to be regular to an extent, which may include 'binging' with breaks in gambling • Gambling may occur on multiple products, one may be dominant and primarily related to harm experienced • Money and winning becomes central to gambling, used as a way to increase 'time on device' and to justify continued gambling • Gambling may be variable (changes relative to previous spend patterns) and include chasing losses (and wins) and indicators of outlier behaviour (e.g., gambling longer than average or more money than average, unpopular times, more frequent than average) • May include breaks in play and attempts to cut-back or reduce gambling • Harm is experienced related to gambling including psychological (stress, guilt, worry), physical (sleep or eating disruption, reduced physical activity), financial (some financial hardships), relationships, work or study disruption, reduced engagement with recreational activities.
Stage 4 Problematic Gambling	• High intensity gambling • Severe harm in psychological, relationship, work or study, activity, physical, financial, legal domains • Crisis point may be reached

Sources: Project Team

Customer Journeys: Land-based and Online

Most people who experience gambling problems engage in multiple different gambling activities, however there is often one type of gambling that has played the primary role in their problems. Within NSW, poker machines (electronic gaming machines, EGMs) are the most likely gambling activity to be associated with gambling problems. Online gambling, although less common, is also associated with problems.

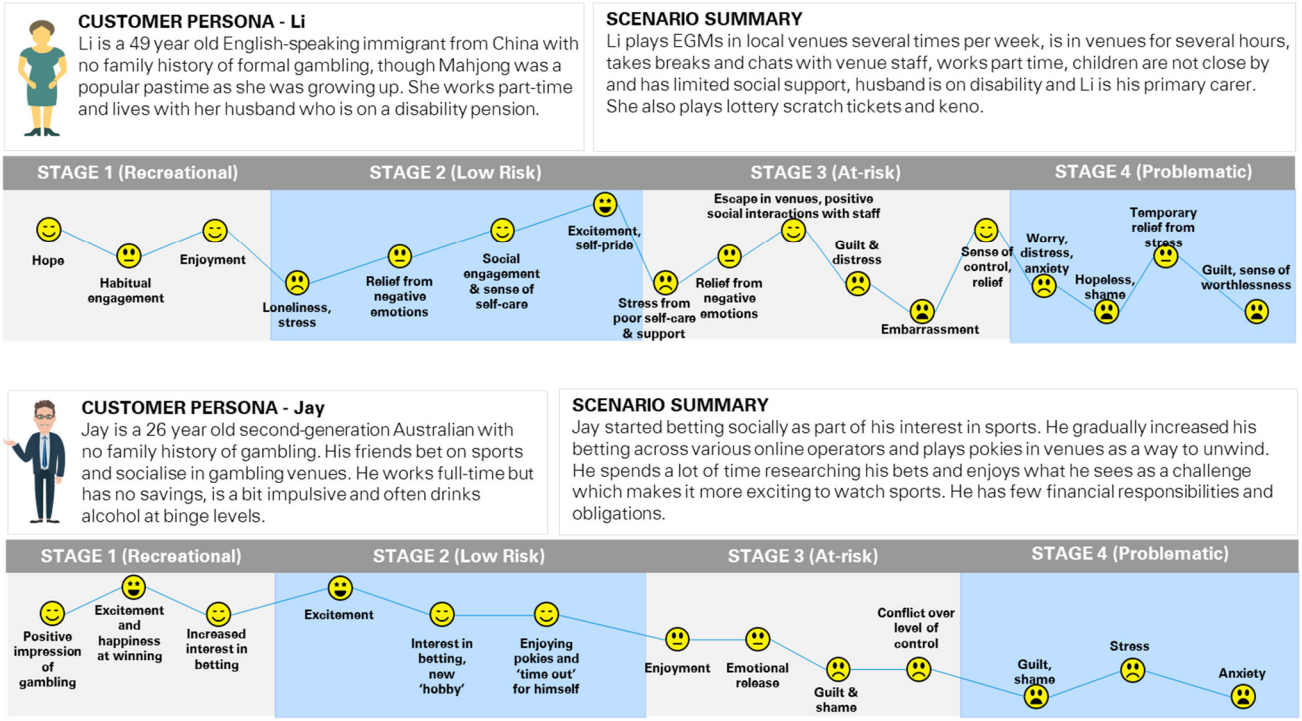
Land-based gambling and online gambling provides very different experiences and ability to interact with technology-based interventions. Mapping customer journeys across these two access points is important to illustrate the different touch points for interventions. Therefore two illustrative customer journeys have been developed, one for land-based gambling and one for online gambling, to examine the steps customers take

through each stage, the touch points where they interact with gambling products, material, people or even non-gambling stakeholders, what harm or pain may impact them and the gains that motivate them to continue.

Detailed customer journeys for both Li and Jay can be found at **Appendix C**. The customer journeys also illustrate the emotions people go through over time. Typically, emotions fluctuate across all the stages but there is an overall trend towards more negative emotions as the person develops a gambling problem, as illustrated in Figure 3.

Note that whilst the customer journeys are illustrative they are based on and can be very effective in understanding where and how interventions can be targeted.

Figure 3: Customer emotions over the journey

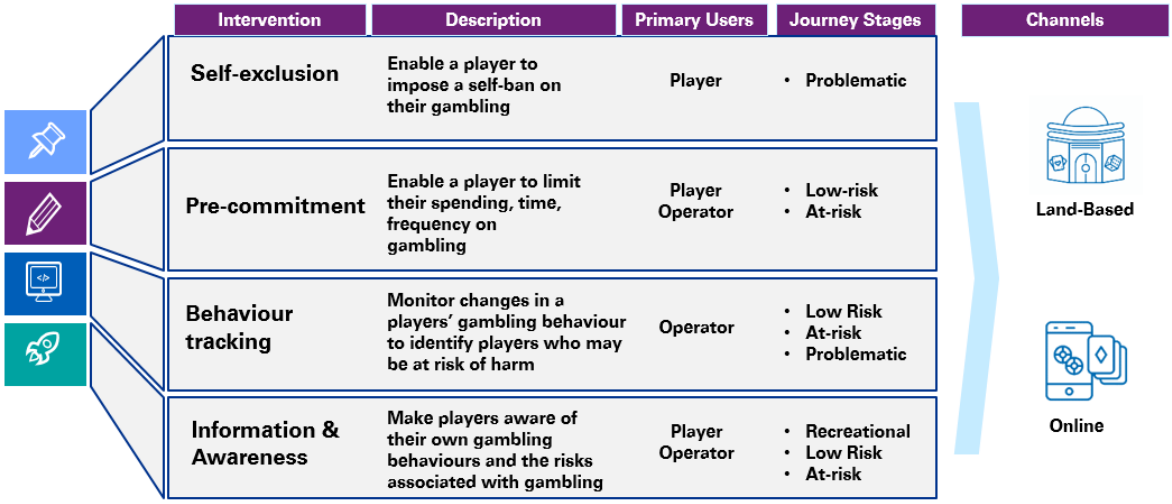


Source: Project Team

3.2 Gambling harm minimisation technology intervention types

There is a range of technology-enabled interventions across land-based and online channels. They can be classified into four main types; self-exclusion, pre-commitment, behaviour tracking and information and awareness. The end user for each type may be the player, the operator or both. Figure 4 illustrates the four harm minimisation domains, a description of each of their primary users and the stages of the gambling journey they target.

Figure 4: Overview of types of harm minimisation interventions in the gambling industry



Source: The Project Team

Each of the four categories are explored below including information on the steps or processes involved in implementing each intervention.

3.2.1 Self-exclusion

Self-exclusion practices typically refer to the possibility for players to voluntarily ban themselves from playing all (or a selection of) games over a predetermined period. The period of exclusion can typically be chosen by the player although some operators have non-negotiable self-exclusion periods. Self-exclusion in both online sites and physical venues has become an important responsible gambling practice that is widely used by socially responsible operators and is required by law in most of the countries. Self-exclusion involves two key components:

- **Registration** – The underpinning technology requires a central platform to enable and manage self-exclusion from gambling temporarily or permanently. The player voluntarily subscribes to a self-exclusion scheme, though exclusion can be imposed by an operator in some circumstances. Land based venues offer self-exclusion schemes which range from multi-venue self-exclusion systems offered by some casinos and clubs, for example, to single venue self-exclusion offered by smaller operators. In some venues, paper based forms are used to capture and manage a player's self-exclusion information. This means that, in

many countries, players have to approach numerous operators if they want to exclude themselves from all gambling activities which requires them to fill in multiple forms. For the online channel, players can register for self-exclusion through a central e-register in some countries, or on individual wagering websites by self-excluding via their individual accounts. Across both land-based and online, self-exclusion may be permanent or temporary. For temporary exclusion, the player may be able to choose the self-exclusion period (e.g. 24 hrs for some online sites, weeks, months, years etc). Some banks are also providing their customers the capability to block gambling related transactions from their accounts/credit cards etc.

- **Detection** – Online wagering self-exclusion detection is quite straight forward, access to the account is blocked and no bets can be placed. It is limited to the extent that a consumer can open an account with another set of identifying information on some sites. For land-based gambling, detection is limited by whether an operator is able to or requires a player to identify themselves at the point of entry into their venue or to access EGMs.

3.2.2 Pre-commitment

Pre-commitment refers to a system that enables players to set money and time limits prior to the commencement of a session of play or upon opening an account. It is based on the principle that decisions relating to expenditure must be made in a state of non-emotional arousal, and once made, must be adhered to for the remainder of the session. The intervention works in two phases:

- **Identification –** approaches include:

– Voluntary offerings generally through a Loyalty Program or card (mainly for land based) or offered as part of setting up an online account

– Scheme regulated by government (mainly online)

- **Limit Setting –** options include:

– Frequency: Players can generally set up daily, weekly or monthly limits.

– Types of spend limits: Transfer limits – the maximum amount that players can transfer into their account; Bet limits – the maximum amount players can bet at any one time; Loss limits – the maximum amount players can lose per day, week or month.

– Time limits – the maximum time a player wants to spend gambling.

3.2.3 Behaviour tracking

Behaviour tracking is a process which tracks player data to detect risk patterns, behavioural changes and signs of problem gambling. This works in three stages:

- **Identification –** Usually through voluntary Loyalty Program (mainly land based) or mandatory registration scheme (mainly online).
- **Monitoring –** Collection of a range of data points and modelling using regression analysis. Key parameters include financial (chasing wins/losses, deposit failure), behavioural (e.g. times a player refreshes their bonus page or looks at a RG page), demographics (e.g. player depositing larger sums of money proportionate to the spending capacity of individuals in that country), risky time periods (e.g. night-time or gambling after receiving pay check). etc.
- **Intervention –** Depends on channel; messaging (either automated or manual) to check in, providing information to make a player aware of their behaviour, contact either over the phone, in person or online, provision of advice or referral to treatment services, or temporary pause on an account. Some operators both locally and internationally also limit marketing activity to customers for harm minimisation purposes where they are considered at risk or likely to be experiencing problem gambling.

3.2.4 Information and Awareness

Information and awareness services generally offer knowledge about the policies and procedures of casinos and venues, education programmes for operators as well as for customers, and data around playing behaviour in order to support responsible gambling. It consists of different types of offerings such as:

- **Gambling activity feedback** – Providing players with information about their own overall gambling activity or their gambling activity in a single session. Requires player spending to be captured in a centralised (venue, loyalty or online account) system or is limited to a player's activity on a single machine.
- **Responsible gambling information** – Providing general information about responsible gambling, how games work and the chances of winning etc. These can be built into a platform without being attached to the gambling habits of an individual.
- **Education** – Helping players understand their own behaviour, identify risks of gambling, and develop positive play habits. Also includes tools to train and educate staff in identifying and helping at-risk or problem gamblers.

3.3 Global landscape of harm minimisation technology

There are a number of technology-enabled interventions that are being used internationally across the four categories of interventions described above. This section explores the interventions being used internationally, comparing land-based and online interventions across the Nordics, the United Kingdom (UK) and Australia. It is important to note that while interventions are presented under a specific category, some technologies have multiple applications, for example a technology could be used for both self-exclusion and pre-commitment.

3.3.1 Self-Exclusion

Generally targeted at individuals that have experienced gambling harm, self-exclusion products are found to be easier to implement online where customers must set up an account, than in the land-based context. There are three main types of self-exclusion approaches found internationally:

- Self-exclusion registers or schemes
- Gambling blocking software
- Bank-led self-exclusion.

As noted previously, in a land-based context, detection is limited by whether an operator is able to, or requires a player to identify themselves at the point of entry into the venue or to access games. Some detection approaches used by operators are supported by technology such as facial recognition.

Figure 5 provides a comparison of how self-exclusion is used across the globe, highlighting key products available. The approaches identified, as well as an overview of detection mechanisms, are detailed further below.

Figure 5: Global self-exclusion usage summary

	Product	Targeted Channel	Product Ownership	Gambling Journey Stage
	Gamban	Online	Technology Company	Problematic
	ROFUS	Both (Land-based and Online)	Danish Gambling Authority	Problematic
	Gamstop	Online	The National Online Self-Exclusion Scheme Limited	Problematic
	Veikkaus self-exclusion	Both (Land-based and Online)	Finland Government owned operator	At Risk
	GamBlock	Online	Technology Company	Problematic
	GameCare	Land-based	Association	Problematic

Source: The Project Team

Self-exclusion registers or schemes

Self-exclusion registers or schemes in jurisdictions including Sweden, Denmark, and Norway are implemented as integrated digital solutions across the full spectrum of channels and operators. This means players only have to register once for all their self-exclusion requirements. However, in most other jurisdictions, players can only self-exclude from a particular operator or group of operators. Each of the respective registers are owned and managed separately and are not integrated together.

Australia has self-exclusion schemes and tools owned by private companies and associations with the customer database retained by the operator. Gamecare, an Australian Hotels Association initiated program, enables players to self-ban from all or part of a venue where gambling is available. This intervention targets land-based gambling. Whereas, in Norway, the state owned operator has a monopoly in the gambling industry and through a single point of identification is able to apply self-exclusion for players across all its channels. In Denmark, self-exclusion is provided through a state-owned register called ROFUS, where a player registers on the ROFUS.nu website when they wish to self-exclude from gambling temporarily or permanently. At the same time, Veikkaus, Finland's state-owned monopoly gambling operator, offers the option of gaming self-exclusion in their digital channel and entry bans in Veikkaus' arcades. Additionally, Veikkaus also offers players a chance to be contacted by Gambling helpline Peluuri.

In the UK, it is mandatory for all online gambling operators to participate in the multi-operator self-exclusion scheme GAMSTOP, which is operated by the not for profit organisation, The National Online Self-Exclusion Scheme Limited. It restricts online gambling activities through a sign-up register working across online operators.

Gambling blocking software

Another form of self-exclusion found internationally is gambling blocking software. Gambling blocking software has been developed to restrict access to gambling apps and websites, and can be useful to tackle the unregulated online gambling industry. These products are developed and owned by independent technology companies and are offered as downloadable applications for mobile and desktops/laptops to help those with a gambling problem exclude themselves from online gambling sites.

In the UK, Gamban is a widely used gambling blocking software, which blocks online gambling on all installed devices, offering a secure, reliable and affordable option to stay away from all global gambling sites and apps on the 'blocklist', for a period of the user's choosing. It is available for residents within the United Kingdom (Great Britain and Northern Ireland) only.

In Australia, the GamBlock blocking software blocks access to online gambling (e.g. apps and websites) and is being used in Victoria.

Bank-led interventions

While an emerging space, there are also a range of responsible gambling interventions being led by banks based on the premise that banks have a unique view of an individual's total gambling spend relative to their levels of affordability and financial wellbeing. Banks can block payments to gambling based on the merchant code category. Banks can also build the ability for customers to set limits and time-outs on gambling. Banks could monitor accounts for risk indicators and have interventions such as messages, check-ins, or forced blocks on spend. Some financial institutions in Australia have introduced this offering, including NAB, Commonwealth Bank and several banks in the UK, including Monzo Bank, have implemented various interventions. Banks have an increasingly strong focus on identifying and protecting vulnerable customers.

Detection

While some operators such as those in the Nordics require individuals to identify themselves at the point of entry into a land-based venue, some operators are using technology such as facial recognition to detect self-excluded players. The technologies are connected to a central self-exclusion database. The facial recognition software checks the face of a customer as they enter a venue, or while at a venue, against the central database. Examples of products found as part of this project included:

- Torutek and COMS Systems[22]
- NEC Australia[23]

Studies conducted on self-exclusion schemes have found that a key challenge with the effectiveness of schemes is the issue of players breaching their self-exclusion agreement. Technologies such as facial recognition are increasingly being used to assist staff to better identify and remove self-excluded players from venues. These technologies also have other applications for operators, including identifying underage customers in restricted areas or customers that have been banned from venues.

Internationally, examples were found of casinos in North America and Japan adopting the use of facial recognition software. While in the Nordics and Singapore, self-exclusion enforcement approaches in larger venues are predominantly focused on the use of personal identification checks (both manual and technology-based) to confirm if an individual has been self-excluded.

In Australia, Crown Casino in Melbourne is using facial-recognition to identify banned guests[24]. In South Australia, the SA Government has mandated the use of facial recognition in venues with more than 30 machines[25] which also have note acceptor capability.

3.3.2 Pre-commitment

Pre-commitment products are primarily voluntary and are focused on minimising harm by limiting financial losses and encouraging responsible play. There are diverse approaches for pre-commitment interventions across the globe. Pre-commitment approaches are typically centred on the identification of the individual, through a single customer identifier or account based system. In Norway, the government regulates how much money players can spend on gambling. This is applied through the state owned operator and monopoly. Players are also required to set personal limits on spend prior to beginning play. Whereas, regions such as UK and Australia (specifically SA) have varied ownership of pre-commitment interventions, ranging from private to government bodies.

The three main types of pre-commitment approaches found internationally are:

[22] Torutek 2019, '*We build solutions that make a difference*', Torutek, viewed 28 May 2020, <https://torutek.com/>.

[23] NEC 2020, *Facial Recognition*, NEC, viewed 9 June 2020, <https://www.nec.com.au/expertise/safety-security/identity-access/facial-recognition>.

[24] Ben Grubb 2018, 'Facial recognition's ominous rise: are we going too far too fast?',<https://www.smh.com.au/technology/facial-recognition-s-ominous-rise-are-we-going-too-far-too-fast-20180103-p4yy7d.html>

[25] Chapman, V 2019, 'Gambling reforms to deliver more money for people at risk', *Premier of South Australia*, 13 November, viewed on 9 June 2020, <https://www.premier.sa.gov.au/news/media-releases/news/gambling-reforms-to-deliver-more-money-for-people-at-risk>.

- Accounts based systems or Loyalty programs
- Pre-commitment applications or tools
- Digital wallets.

Figure 6 provides a comparison of how pre-commitment is used across the globe highlighting key products available.

Figure 6: Global pre-commitment usage summary

	Product	Targeted Channel	Product Ownership	Gambling Journey Stage
	Norsk Tipping pre-commitment	Both (Land-based and Online)	State-owned Operator	At Risk
	GambleWise	Land-based	Technology Company	Low Risk
	Veikkaus pre-commitment	Both (Land-based and Online)	State-owned Operator	Problematic
	YourPlay	Both (Land-based and Online)	Victorian Commission for Gambling and Liquor Regulation	At Risk
	Maxetag	Land-based	Technology Company	At Risk

Source: The Project Team

Account based systems or loyalty programs

Loyalty programs which offer pre-commitment are common internationally, particularly in the land-based context. Loyalty programs are generally available at an operator or group of operators level. For example, Maxetag[26] (primarily used for EGMs), is a loyalty card offered in Australia that contains partial pre-commitment features.

From an online perspective, a number of online operators consulted during this project identified that they offer a range of pre-commitment interventions to enable individuals to set limits on their gambling activities. In Australia, licensed online operators are required to offer a voluntary pre-commitment scheme that is easily accessible and effectively promoted to consumers.

A key challenge for a holistic pre-commitment program is the ability to build a unified view of customer spending across all online and land-based channels, and to enable a customer to limit gambling spend across all channels and operators.

Some jurisdictions, such as the Nordics, have implemented or are working on innovative ways to provide a single view of customer, allowing them to set global limits and manage their gambling activity more holistically. These interventions are primarily used in a land based context in jurisdictions where the main operator within a jurisdiction is state-owned.

[26] Maxetag 2020, 'Max ⓔ tag – Total Venue Marketing System', viewed 28 May 2020, <https://www.globalgaming.com.au/products/max-e-tag/>.

In Norway, Norsk-tipping, a Norwegian state gambling operator has introduced a new limit setting rule that will automatically stop customers from gambling with winnings of over NOK20,000 (£1,800/€2,080/$2,360) per month.[27] The UK has also recently started to explore early concepts of what may work in that jurisdiction.

Capturing a single unique identifier for each player can support a range of harm minimisation functions, including: setting limits on play (i.e. pre-commitment), self-exclusion and behaviour tracking. The underpinning technology to support this is using external national identity services directly or for verification purposes or establishing a single unique identifier for gambling and integrating this with the front and back end of the operator technology setup through the use of APIs. The unique identifier is then used across all systems to build a customer profile. Norsk Tipping in Norway uses this approach.

Pre-commitment applications or tools

Several examples were found of tools or applications that are specifically for setting limits on spend. In the UK, GambleWise, a pre-commitment tool, uses proximity technology to help players stay aware and in control of the amount of time they spend gambling. The consumer app provides time and frequency controls that allow players to monitor and manage their behaviour and is useful in early prevention.[28] The basis of these developments is the use of a single customer identifier (e.g. social security number) for gambling activities across channels – both land-based and online.

In Australia, the product YourPlay[29], is an initiative introduced by the Victorian Government, which allows players to make informed decisions about their gaming machine play, allowing them to set limits of time or money spent. However a recent evaluation conducted by the Victorian Government found that usage of YourPlay in Victorian hotels and clubs has been low, only 31% of venues have complied with the requirement to offer YourPlay in their venue, and based on the current usage rates the cost effectiveness of the initiative is poor[30].

Digital wallets

Digital Wallets are a payment method whereby a customer creates a registered and verified account to make payments for their gambling activities. Customers register for an account and have their identity verified. They make a deposit using cash or electronic funds transfer (noting this not currently approved by regulators in Australia for land based gambling). The customer then uses a card, app or other (e.g. Bluetooth technology) to attach their account to a specific gambling opportunity and specify the bet size. The bet is placed directly from the digital wallet and any winnings returned to the digital wallet. Currently digital wallets are used in the industry in a number of formats, as follows:

- Casinos offer digital wallets for players to use their account at the machine
- Online operators accept credit and debit cards to fund digital wallets.

Digital wallets can present a range of opportunities with regards to responsible gambling, including the opportunity to track and monitor play, time and spend, provide activity statements, real time notifications, delay expenditure, allow time/money limits, and the identification of risk indicators using play monitoring.

The digital wallet also provides an opportunity to interact with customers, including customised interactions based on gambling involvement. A broader suite of responsible gambling interventions can also be integrated into digital wallets such as self-exclusion or time-outs, deposit limits, and play monitoring. There may be an opportunity for an individual to share their digital wallet with others, such as treatment providers, for the opportunity to demonstrate the impact of their gambling losses.

Examples found internationally included:

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[27] iGaming Business 2019, *'Norsk Tipping sets winnings spending limit*', iGaming Business , 12 April, viewed 13 May 2020, <https://www.igamingbusiness.com/news/norsk-tipping-sets-winnings-spending-limit>.

[28] Gamblewise 2020, *Inform, Interact and Protect the Customer*, Gamblewise, viewed 13 May 2020, <https://www.gamblewise.org/>.

[29] South Australian Centre for Economic Studies 2019, Evaluation of YourPlay Final Report, *Justice and Community Safety(Victoria State Government)*, viewed 13 May 2020, <https://www.justice.vic.gov.au/sites/default/files/embridge_cache/emshare/original/public/2020/02/96/5d2b83376/Evaluation-of-YourPlay-Final-Report.pdf>.

[30] Victorian Department of Justice and Community Safety 2019, 'Evaluation of YourPlan Final Report', viewed 28 May 2020, <https://www.justice.vic.gov.au/sites/default/files/embridge_cache/emshare/original/public/2020/06/71/350d63893/Evaluation-of-YourPlay-Final-Report.pdf>.

- Okto.Wallet[31]
- Paysafe[32]
- IGTPay[33]

3.3.3 Behaviour tracking

Automated risk monitoring (ARM) technologies or 'behaviour tracking' are increasingly being used internationally by operators in the gambling industry to identify risk amongst players. Behaviour tracking seeks to identify potential at-risk players earlier in the customer journey using activity and behavioural parameters, machine-based learning and advanced analytics. Where risky or problematic behaviours are identified, messages to customers and operators can be automated and are becoming more personalised as data and technology evolves.

The underpinning technology requires a central mechanism that captures play at a customer level (generally through a CRM) and that is configured to AI based algorithms. Other interventions are then integrated with this solution to intervene when risk is identified, such as messaging (either automated or manual) to staff (alert apps), messaging direct to players (through gaming machines, text, etc.) or referrals to treatment services. The algorithms and data analytics which are incorporated into these systems are generally developed and configured at an operator level.

Figure 7 provides a comparison of how behaviour tracking is used across the globe highlighting key products available.

Figure 7: Global behaviour tracking usage summary

	Product	Targeted Channel	Product Ownership	Gambling Journey Stage
	Playscan	Both (Land-based and Online)	State-owned Operator	At Risk
	Mentor	Online	Technology Company	At Risk
	Player Safety – Early Detection System (PS-EDS)	Online	Operator	Problem Gambling
	GameScanner	Both (Land-based and Online)	Technology Company	Problem Gambling
	ARM (Automated risk monitoring)	Land-based	Association	At Risk

Source: Project Team

With the advancement of machine learning and artificial intelligence, behaviour tracking tools are gaining lot of consideration from operators as well as gambling authorities. In the Nordics, Svenska Spa, a Swedish state-owned operator, developed and commercialised PlayScan, a behaviour tracking tool which performs risk profiling for players and aims to predict if a player has, or will experience, problem gambling. The technological parameters behind PlayScan are financial, time consumption and risky behaviours.[34] Denmark is using GameScanner, which is an artificial intelligence solution, harvesting knowledge in neuroscience to identify problem gambling

[31] OctoWallet 2020, 'OctoWallet', viewed 15 May 2020, <https://www.oktopay.eu/okto-wallet-personal/>.
[32] Paysafe 2018, 'Cashless gaming: a new era for how we pay to play', accessed 25 May 2020, <https://www.paysafe.com/blog/cashless-gaming-a-new-era-for-how-we-pay-to-play/>.
[33] IGT 2020, 'IGT Pay', viewed 15 May 2020, <https://www.igt.com/products-and-services/playdigital/playplatform/playcommand>.
[34] Katja, 2014, 'Responsible gambling-tools in e-gaming machines', *Playscan*, 27 March, viewed 13 May 2020, <http://playscan.com/articles/responsible-gambling-tools-in-e-gaming-machines/>.

behaviour. It learns by observing real human experts as they assess and compare aspects of the individual customer's gambling history.[35]

A key success factor in applying this technology are the risk settings defined by an operator to predict and detect risky behaviour amongst players and the interventions used by operators when a risk threshold is met. Examples internationally found during consultations suggest the level of complexity of these systems varies, some systems purely focus on financial 'triggers' for determining risk, such as chasing wins/losses or deposit failures. While other operators increasingly focus on combining a range of data sets to predict harm before it occurs including behavioural data such as time of day for play, demographic data such as location and age, as well as the results of self-assessment tools completed by players. Some operators also include details of customer interactions as additional variables.

For instance, a behaviour tracking tool, Mentor, developed by Neccton, headquartered in Austria, tracks player data, detects risk patterns and changes in behaviour, and flags any signs of problem gambling. Products such as PS-EDS (Player Safety – Early Detection System) owned by Kindred Group in Malta, map customer events/actions to a customer profile. The mapping is mostly based on financial parameters, but more behavioural attributes are being configured to detect problem gamblers such as how many times a player refreshes their bonus page etc.

In Australia, an ARM (Automated Risk Monitoring) system is mandated by the South Australian government and used across all clubs and pubs in SA. The software is triggered when players reach a specified spend amount or time continuously playing a machine. The gaming room operator is notified via a discrete alarm, and a staffer is prompted to act on their training to mindfully approach as they have a duty of care to check in with the customer.[36]

3.3.4 Information and awareness

Products in this intervention group are targeted at customers before they reach the problematic gambling stage at which point awareness alone is unlikely to change behaviour. Their focus is to make players aware of their own gambling behaviour and the risks associated with gambling rather than detecting and responding to issues as they arise. Figure 8 provides a comparison of how information and awareness as an intervention is used across the globe highlighting key products available.

[35] 'Mindway AI 2020, *GameScanner*, Mindway AI, viewed 13 May 2020, < https://mindway-ai.com/products/gamescanner/>.

[36] Mooney, C 2018, 'Risk monitoring system rolled out ahead of time in SA Pubs' , *Pubtic*, 14 May, viewed 13 May 2020, < https://pubtic.com.au/risk-monitoring-system-rolled-out-ahead-of-time-in-sa-pubs/>

Figure 8: Global information and awareness usage summary

	Product	Targeted Channel	Product Ownership	Gambling Journey Stage
	Slotguru	Both (Land-based and Online)	Technology Company	Low Risk
	PlaySmart	Both (Land-based and Online)	Operator	At Risk
	PlayersEdge	Land-based	Operator	Low Risk
	The RGC Reaction Lab	Both (Land-based and Online)	Responsible Gambling Council (Ontario)	Low Risk
	PROJECT 21	Both (Land-based and Online)	Operator	Recreational

Source: The Project Team

In the USA, operators have widely adopted technology-enabled information and awareness tools to align with responsible gambling. For instance, PlayersEdge, owned by Hard Rock International, is a gambling education program which provides game facts and casino etiquette, helps players understand their own behaviour, identify risks of gambling, and develop positive play habits. Similarly, PROJECT 21, Owned by Caesar's Entertainment, is an industry-wide program that encompasses employee training and public awareness about underage gambling. In Canada, the Ontario Lottery and Gaming Corporation, rolled out an information and awareness tool called PlaySmart, which is a virtual encyclopaedia filled with facts, tools and advice to help customers make smart choices that keep gambling fun. Also, the Responsible Gambling Council (Ontario) introduced RGC Reaction Lab, an interactive game experience that simulates the body's reaction when gaming or gambling. The game helps players understand how easy it can be to get carried away when gambling, making informed decisions about play difficult when in a heightened emotional state.

In the Nordics, Iceland's two Slot Machine operators, the University of Iceland (UIL) and Islandsspil, combined forces to jointly deploy a unique slot database mobile application called SlotGuru. The application provides key information, including volatility levels, on over 2,600 casino slot games directly to a players' mobile phone helping Icelandic players better understand the likely impact of their gameplay choices before committing any money.

3.4 NSW landscape of harm minimisation technology

Responses to gambling harm in NSW vary across different segments of the industry. The majority of interventions available in NSW are targeted at the problem gambling end of the journey and are aimed at helping players to self-exclude and accurately detect players that self-exclude. Each of the interventions used in NSW in relation to self-exclusion, voluntary pre-commitment, behaviour tracking and information and awareness are discussed below. This section also describes a number of other interventions that are not technology-enabled but are used by operators in NSW. Further information gathered from the interviews are presented in section 3.7.

Self-Exclusion

There are several self-exclusion products available in the NSW context. Self-exclusion schemes in NSW are offered across all settings, however not all arrangements are technology enabled. Clubs NSW has established a

multi-venue online self-exclusion scheme and the Australian Hotels Association NSW offers GameCare. However self-exclusion approaches are not available in an integrated way. They typically sit at an operator or group of operators level. On the other hand, industry is progressing with a national self-exclusion scheme (as prescribed by Commonwealth government) to target the online channel, though all major online operators already offer an operator specific self-exclusion scheme.

While there is not direct investment by industry in NSW in this space, GamBlock and Gamban are both currently available to players in the NSW context. As noted previously, some financial institutions in Australia have also introduced responsible gambling interventions, including self-exclusion such as NAB and Commonwealth Bank.

In Australia, some larger operators in NSW are adopting or trialling facial recognition technologies to help staff detect self-excluded customers.

Pre-commitment

Both account based and loyalty program pre-commitment offerings are found in NSW. The main form of pre-commitment offered in the land-based setting in NSW is through loyalty programs. A number of operators offer pre-commitment on a voluntary basis through Loyalty Programs across clubs, hotels and casinos. However, it is not offered through all clubs and hotels. In the online context, operators are required to offer deposit limits on a voluntary basis when an account is established. Several operators also offer bet limits.

While not currently being used widely in the industry, cashless payments have been flagged by industry as a key area of interest, initially driven by moves towards a cashless society but now accelerated by COVID. There is recognition that cashless payment methods are relevant and will be progressed at some stage and in some form in the future in NSW. However, with the exception of the depositing arrangement offered by the casino through its loyalty program, NSW land-based operators only offer cash deposits to gamble in NSW at this point in time (with ticket-based systems to withdraw and re-deposit).

Behaviour tracking

Behaviour tracking intervention in land-based channels is mostly unexplored in NSW with tools being used by a small number of operators. Most of the operators that offer Loyalty Programs can review account history information through their systems to identify risky behaviour as well, however this is typically done manually (i.e. not using analytics of algorithms to identify risky behaviour). Online channels have better control of customer data, and as such are using behaviour tracking for responsible gambling more than land-based channels. The behaviour tracking implementation and technology is owned by operators and the customer data is used for both responsible gambling and marketing purposes. During consultations, some operators indicated they are limiting marketing activity to vulnerable customers for harm minimisation purposes.

Information and awareness

Some operators in NSW have developed e-Learning training programs for staff. However, most information and awareness activities are not technology based. In the online environment, operators have dedicated responsible gambling pages presenting information about responsible gambling and how to access support. Operators generally offer account history summaries, however what is presented varies.

Other non-technology-based interventions

Technology is only one component of a holistic response to gambling harm. While out of scope for this project, a range of other interventions were identified as being employed by operators in NSW and are presented below. These include:

- **Staff training:** In addition to requiring staff members to obtain a Responsible Conduct of Gambling licence in NSW, some operators have either developed or procured training to enhance the skills and capabilities of staff to identify and respond to gambling harm.
- **Intervention post-identification of risk:** The majority of stakeholders commented that a critical component of their response to gambling harm is the human intervention that works alongside a technology. Some operators reported they have invested in developing their response process for when gambling problems are identified. For example, one operator reported introducing a “welfare check” which all staff are trained to conduct when a customer displays signs of gambling harm. The welfare check enables staff to determine if gambling harm is occurring and to escalate to a team leader to respond to. Some online operators have

developed a matrix for their intervention pathways. If a customer is flagged through behaviour tracking, a range of responses may be taken, including temporary suspension of an account, a call being made to the customer or escalation to a governance committee or management.

- **Responsible Gambling officers:** Some operators employ staff members that are trained in and responsible for providing information and support to customers when they observe problem gambling.
- **Chaplaincy program/ officers:** Clubs NSW offers a Chaplaincy program that involves Salvation Army chaplains being placed in clubs to respond to the needs of patrons, including stress, anxiety, physical and mental health problems, bereavement divorce and problem gambling. One club identified they refer patrons to the club Chaplain following a welfare check.
- **Private spaces:** Some operators have established Guest Support Centres and/or dedicated, confidential spaces where responsible gambling officers can have private conversations with players.
- **Restrictions on staff access to venues for the purpose of gambling:** Some operators restrict the ability of staff to gamble in their venues and provide support through, for example Employee Assistance Programs, to staff who may experience gambling harm.
- **Excluding certain cohorts from marketing events:** Some operators identified that they have excluded certain cohorts from advertising or marketing events, for example customers who are under 25.

3.5 Comparison of land-based gambling harm minimisation technology across jurisdictions

The policy and regulatory landscapes of several jurisdictions are major drivers of the adoption and advancement of technology interventions. Regions with state owned gambling facilities have better control and management of customer data. This helps to drive an analytics-based approach to responsible gambling. The operator landscape also influences the effectiveness of responses and markets with a smaller number of operators able to integrate responses more readily. This section explores the land-based responsible gambling landscape across the Nordics, the UK, North America and Australia. Figure 9 provides a comparison of the global gambling regulatory landscape and technology prevalence for each of the identified intervention categories across land-based gambling.

Figure 9: Jurisdictional comparison – Land-based gambling harm minimisation technology

	Australia	Nordics	UK	North America

Regulatory Landscape	• Licences issued by states and territories for gaming machines in Hotels and Clubs.
	• Casino licences are issued separately.
	• Wagering on sport, racing and declared betting events licensed to betting service providers.
	• Licences issued for lottery operators.
		• The majority of operators in the Nordics region are state-owned monopolies run through the following organisations:
		  • Norway – Norsk Tipping and Norsk Rikstoto
		  • Sweden – Svenska
		  • Denmark - Danske Spil
		  • Finland - Veikkaus
			• The UK Gambling Commission oversees gaming laws in Wales, Scotland and England. It is responsible for regulating arcades, betting, bingo, casinos, slot machines and lotteries, as well as remote gambling.
			• Licences issued to operators
				• Gambling regulatory landscape is state based in North America with each state free to regulate the practice within its border
				• In Canada, licences are issued by most states. In British Columbia, a Crown agency conducts and manages all land-based and online gambling activity.

Technology Prevalence*	Self-exclusion Pre-commitment Behaviour Tracking Information & Awareness	Self-exclusion Pre-commitment Behaviour Tracking Information & Awareness	Self-exclusion Pre-commitment Behaviour Tracking Information & Awareness	Self-exclusion Pre-commitment Behaviour Tracking Information & Awareness
Key Products	• YourPlay • Maxetag • PlaySmart (Worldsmart Technology Pty Ltd)	• GameScanner (Denmark) • Playscan (Sweden) • ROFUS (Denmark)	• PowerCrunch	• PlaySmart • PlayersEdge • Optimove

Source: Project Team

**This is relative measure of technology advancement and adoption of the intervention, where a full circle means fully adopted and well advanced. For example – self-exclusion in Australia is relatively less advanced and adopted than the Nordics, but as equally adopted and advanced as UK and North America.*

Nordics region

Operators, including casinos, in the majority of Nordic countries are state-owned monopolies run through organisations such as Norsk Tipping (Norway), Svenska (Sweden), Danske Spil (Denmark), Veikkaus (Finland).

The region is considered to be relatively advanced in the use of technology to address problem gambling. Interventions such as behaviour tracking with the use of artificial intelligence and machine learning are widely adopted among countries such as Finland, Denmark and Sweden. Most of the self-exclusion programs are state-owned resulting in one integrated register, thus making self-exclusion more effective compared to jurisdictions with disconnected self-exclusion registers which are operator owned.

While operators in the Nordics region have adopted various technology-enabled interventions to address gambling harm, both regulated and non-regulated interventions can limit customer choice in what they are able to spend and how they are able to spend it. As a result, many customers choose to visit international sites with more competitive odds and attractive games.

UK

The UK Gambling Commission oversees gaming laws in Wales, Scotland and England. It is responsible for regulating arcades, betting, bingo, casinos, slot machines and lotteries, as well as remote gambling. The UK Gambling Commission is also responsible for issuing licences to operators.

The region is considered to be partially well-equipped with technological interventions in land-based channels. In 2017, Playtech acquired the UK based company BetBuddy, which utilises AI and focuses on player protection and harm minimisation. BetBuddy has developed a Responsible Gambling analytics platform, built around data mining and predictive analytics. It builds segment-specific risk models to support players across retail and online play[37]. It is aimed at helping operators better identify at-risk players at an early stage, assess their behaviour and use this insight for targeted interactions with players. This technology is gradually being rolled out to Playtech's customers or directly to operators.

North America

The gambling regulatory landscape is state based in North America with each state free to regulate the practice within its border. In Canada, licences are issued by most states. In British Columbia, a Crown agency conducts and manages all land-based and online gambling activity.

In the US, the majority of responsible gambling interventions are 'information and awareness' based. Operator owned products such as Operation Bet-Smart and PlayersEdge are widely used, providing knowledge and information about gambling machines and helping players understand their own behaviour, identify risks of gambling, and develop positive play habits. The North American region also holds state-owned information and awareness interventions such as GameSense (developed and licensed to MGM Resorts by the British Columbia Lottery Corporation) and PlaySmart (developed by Ontario Lottery and Gaming Corporation).

Australia

Licences in Australia are issued by state and territory governments for gaming machines in Hotels and Clubs while casino licences are issued separately. Wagering on sport, racing and declared betting events is licensed to betting service providers.

Technology-enabled interventions focused on addressing gambling harm differ from one state to another. Victoria has introduced YourPlay, a pre-commitment scheme which enables players to make informed decisions about their gaming machine play. It is available in all Victorian venues with electronic gaming machines. South Australia actively uses interventions such as basic behaviour tracking and state-based self-exclusion. For example, the ARM (Automated Risk Monitoring) system is mandated by the SA government and used across all clubs and pubs. It is a machine based system tracking un-carded play and issues alerts based on turnover and time spent on a machine in a single session. South Australia also provides a state based self-exclusion system called Barring and Online Employee Notification (BOEN) which applies across both land-based and online operators. Players can contact the Consumer and Business Services (CBS) government agency and request to be barred from gambling venues within their local area. This can include hotels and clubs with gaming machines, and the Adelaide Casino.

In NSW, individual operators and operator groups have implemented a number of technology-enabled interventions such as individual and multi-venue self-exclusion systems, some with supporting facial recognition capabilities in the larger clubs and casino, and voluntary pre-commitment options on EGM loyalty programs. Some operators have also indicated they are starting to explore analytical behaviour tracking interventions.

However it appears that other global jurisdictions have invested in more innovative 'information and awareness' technology-enabled interventions compared to Australia. The majority of technology-based information and awareness activities identified as part of this project appear to focus on publishing information on operator websites or are not technology-based.

[37] *Products*, Betbuddy, viewed 26 June 2020, < http://bet-buddy.com/>

3.6 Comparison of online gambling harm minimisation technology across jurisdictions

Online gambling has seen an increase across the globe, accompanied by the introduction of challenges such as unregulated websites but also opportunities to manage and share customer data. Research indicates that responsible gambling initiatives utilising analytics, AI and personalisation are more advanced in some countries. This section explores the online responsible gambling landscape across the Nordic regions, the UK, North America and Australia. Figure 10 provides a comparison of the global gambling regulatory landscape and technology prevalence for each of the identified intervention categories across online gambling.

Figure 10: Jurisdictional comparison – Online gambling harm minimisation technology

	Australia	Nordics	UK	North America
Regulatory Landscape	The Department of Social Services (DSS) has developed a National Consumer Protection Framework for online wagering in Australia. Licences for online wagering on sport, racing and declared betting events are issued by different state based authorities (predominantly Northern Territory Racing Commission).	The majority of operators in the Nordics are state-owned such as Finland, Norway and Sweden. Sweden has recently introduced new legislation which has opened up online gambling to private enterprises.	Online gambling is regulated in the United Kingdom by the Gambling Commission, which itself was formed by the Gambling Act 2005. Online poker, sports betting, casino games, bingo, and lottery-style games all fall under the purview of the Gambling Commission.	In the USA, each state can now set its own rules for online sports betting. Some have rules that allow online and mobile gaming (casino, poker, sports betting) anywhere within state lines, while others require all bets to be placed inside a casino.
Technology Prevalence*	Self-exclusion Pre-commitment Behaviour Tracking Information & Awareness	Self-exclusion Pre-commitment Behaviour Tracking Information & Awareness	Self-exclusion Pre-commitment Behaviour Tracking Information & Awareness	Self-exclusion Pre-commitment Behaviour Tracking Information & Awareness
Key Products	• BetEasy • GamBlock	• Playscan • SlotGuru	• GAMSTOP • Mentor	• PlaySmart • GameSense • iGap

Source: Project Team

** This is relative measure of technology advancement and adoption of the intervention, where a full circle means fully adopted and well advanced. For example – Pre-commitment in Australia is relatively less advanced and adopted than the Nordics, but as equally adopted and advanced as UK and North America.*

Nordics region

The Nordics are well-equipped with responsible gambling initiatives in online gambling. Products such as SlotGuru (Information and awareness) and Gamelyze (Behaviour tracking) have shown positive results and are continuing to be adopted.

UK

Online gambling is regulated in the United Kingdom by the Gambling Commission, which itself was formed by the Gambling Act 2005. Online poker, sports betting, casino games, bingo, and lottery-style games, all fall under the purview of the Gambling Commission. It is mandatory for all online gambling operators to participate in the multi-operator self-exclusion scheme GAMSTOP. The region also has online gambling blocking software, such as Gamban, which allow customers to block online gambling on all installed devices. This offers a secure, reliable, and affordable option to stay away from gambling sites and apps, helping those with a gambling problem to fight the urge. However, online interventions such as behaviour tracking are still in the early stages, with testing currently being carried out by Featurespace, a corporate spin-off of a University of Cambridge engineering department project.

North America

In the USA, each state sets its own rules for online sports betting. Some have rules that allow online and mobile gaming (casino, poker, sports betting) anywhere within state lines, while others require all bets to be placed inside a casino. The region has a major focus on 'information and awareness' technology-enabled interventions such as PlaySmart, owned by state governments as well as operators. By contrast, interventions related to behaviour tracking still require focus.

Australia

Licences for online wagering on sport, racing and declared betting events are issued by different state based authorities (predominantly Northern Territory Racing Commission). Online operators are required to offer deposit limits on a voluntary basis when an account is established. A number of operators also offer bet limits. The industry is progressing with a national self-exclusion scheme (as prescribed by Commonwealth government), though all major operators already offer an operator specific self-exclusion scheme.

Online channels have better control of customer data, and as such are using behaviour tracking for responsible gambling more than land-based channels. The behaviour tracking implementation and technology is owned by operators and the customer data is used for both responsible gambling and marketing purposes. In our consultations during this project, some operators indicated they are limiting marketing activity to vulnerable customers for harm minimisation purposes. Information and awareness technology-enabled interventions are provided by responsible gambling state owned portals and some operators and peak bodies. Other global jurisdictions have more interactive online tools developed by independent companies than does Australia.

3.7 Effectiveness of responses

As part of this Project, the Project Team explored the effectiveness of the technology interventions found. This section explores the effectiveness of each of the four intervention categories including related strengths and weaknesses based on both the desktop review and stakeholder consultations. In particular:

- Publicly available peer review journals, operator and provider commissioned industry reports, conference presentations and summaries, media releases by technology companies in the industry and trade publications.

- Thirty eight stakeholder consultations with gambling owners/operators, technology providers, Industry experts and research organisations, regulators and policy agencies in the gambling industry, regulators in the gambling industry and industry peaks.

The criteria that has been used to determine the effectiveness of each intervention includes:

1. The extent to which the intervention achieved, or is expected to achieve, its objectives
2. Long-term sustainability of outcomes
3. Reach of the intervention

It is also important to note that while there have been some studies on the effectiveness of different interventions, the evidence base is still emerging. There is limited independent, peer reviewed and publicly available evidence on the majority of interventions. In addition, longitudinal studies on the impact of different interventions are in their infancy and predominantly being conducted at an operator level.

3.7.1 Self-exclusion

As discussed in Section 3.1, self-exclusion is an intervention, in some cases enabled by technology, in which people can voluntarily limit or stop themselves from engaging in gambling activities in venues or from gambling online.[38] Technology enhances manual self-exclusion schemes by digitising mechanisms to register for (e.g. digitally recording against a membership profile) and enforcing self-exclusion (e.g. disallowing excluded people from accessing their online gambling account, detecting self-excluded people when they enter a venue or attempt to play games). These interventions are widely available and their take-up is reportedly steady[39] [40] or increasing in some jurisdictions[41] [42], though their uptake in Australia is difficult to ascertain given the multi-operator landscape. They are easier to implement in the online environment, however options are available for the land-based gambling context. Though technology can assist self-exclusion, challenges remain for these technology-enabled interventions around barriers to take-up, the breadth of gambling options covered and difficulty detecting breaches. The strengths and weaknesses of technology-enabled self-exclusion interventions have been identified below as well as the overall effectiveness of the intervention.

Strengths and weaknesses

Self-exclusion is widely considered to be a fundamental intervention for harm minimisation and prevention and a number of strengths were identified in relation to technology-enabled self-exclusion interventions through research and consultations. They are widely available both locally and internationally across both online and land-based channels. The digitised nature of online gambling lends itself to providing self-exclusion options as all customers must register an account to be able to play and this becomes the mechanism to register for and enforce adherence to self-exclusion. For land-based venues, technology-enabled self-exclusion interventions linked to registered membership programs can provide an effective way for people to register for self-exclusion and enforcement can be supported when access to venues or games is dependent on membership status. According to research conducted, the number of players choosing to exclude themselves from gambling is increasing each year in some jurisdictions with self-excluded players benefiting from reduced problem gambling symptoms and reduced gambling harms.[43] These interventions are offered to players through various modes such as state-owned self-exclusion registers (e.g. ROFUS in Denmark) and operator owned programs.[44]

Players may be reluctant to register for technology-enabled self-exclusion if it is difficult to access or they feel it will restrict other social activities. It was reported during consultations that some land-based schemes still require paper based applications and/or the player to present at a venue. This can reduce the likelihood of

[38] Gainsbury, S 2013, Review of Self-exclusion from Gambling Venues as an Intervention for Problem Gambling', *Journal of Gambling Studies*, viewed 28 May 2020, < https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4016676/ >.

[39] https://www.gamblingcommission.gov.uk/PDF/survey-data/Gambling-participation-in-2018-behaviour-awareness-and-attitudes.pdf

[40] https://www.msf.gov.sg/media-room/Pages/Statistics-on-casino-exclusion-orders-.aspx

[41] https://www.ggrasia.com/self-exclusions-from-macau-casinos-up-26pct-in-1h/

[42] https://www.igamingbusiness.com/news/swedish-self-exclusion-register-surpasses-30000

[43] Hing, N, Tolchard, B, Nuske, E & Russel A 2014, 'The effectiveness of self-exclusion programs in Queensland', *ResearchGate*, February, viewed on 28 May 2020, <https://www.researchgate.net/publication/270717613_The_effectiveness_of_self-exclusion_programs_in_Queensland>.

[44] Spillemyndigheden. (accessed, 2020). Rofus. Retrieved from, https://www.spillemyndigheden.dk/en/rofus#rofus-

players signing up because the stigma associated with problem gambling[45] can make it difficult for a person to disclose that they have a gambling problem and want to self-exclude, particularly when they have to do this with people they don't know. Self-exclusion from online channels can be less daunting where confidential options exist for players to choose to exclude. Stakeholders also reported that some players experiencing harm are hesitant to utilise self-exclusion schemes which restrict them from accessing other non-gambling parts of a venue as not all operator offerings allow people to choose to exclude from just gambling sections.

The breadth of gambling opportunities covered by a technology-enabled self-exclusion scheme can also influence its effectiveness. Literature identified that most solutions on the market are not integrated across the full spectrum of channels and operators, meaning customers can only self-exclude from a particular operator or group of operators. Stakeholders highlighted that this exacerbates the issue of a player's reluctance to register for self-exclusion if they have to do it multiple times, and was a driver behind some technology-enabled self-exclusion interventions that allow people to restrict from a group of operators. Interventions that don't allow people to self-exclude widely mean people can still access gambling through other operators or channels. Some stakeholders thought technology-enabled interventions that apply across all operators will be a natural evolution of self-exclusion. It is also worth noting that full integration across licensed operators will not address access to unregulated online markets.

Another challenge in providing effective technology-enabled self-exclusion interventions is the ability to enforce the player's choice to self-exclude by detecting and responding to breaches. For regulated online channels where identity needs to be validated in order to establish an account, enforcement can be applied at the account level. However, when identity validation is not stringently applied, these self-exclusion interventions may be bypassed. Stakeholders reported that in the land-based context self-exclusion interventions rely on mechanisms to identify individuals that have self-excluded, for example identification checks at point of entry or facial recognition technologies. Both local and international operators and peak bodies highlighted the benefits of facial recognition technology as a powerful tool to assist staff to identify breaches and enforce a player's self-exclusion choice. International stakeholders highlighted that it is not 100% accurate and requires the right balance between ensuring true breaches are detected and the effort to resolve false positives. They also noted the importance of reviewing the system regularly to maintain optimal performance, as well as customer privacy and trust concerns, particularly in the UK. A number of local operators indicated they are currently trialing this technology to support self-exclusion. Some were also circumspect about its ability to reliably detect a self-excluded player and how feasible the cost is for smaller venues.

Effectiveness

Self-exclusion is generally regarded as an effective method to assist problem gamblers, though little independent research was available that specifically examined technology-enabled self-exclusion interventions for either land-based or online channels. The majority of studies found appear to have been conducted in-house or commercially. There are also limited longitudinal studies that have been completed to demonstrate the long-term effectiveness of technology-enabled self-exclusion, though some local operators have indicated they are investing in such studies with research organisations. In Australia, the current disconnected nature of disparate technology-enabled self-exclusion interventions, limits their potential effectiveness for a person struggling to control their gambling. It is worth acknowledging though, that even national interventions can be subject to design flaws that limit their effectiveness. In the UK, GAMSTOP[46], a widely accepted technology-enabled self-exclusion tool for online gambling, witnessed 50,000 sign-ups in a short span of less than a year post its launch. However, a BBC study (2019) revealed that self-excluded players were able to place bets online by simply changing their user data and GAMSTOP was not effective in stopping them.[47]

The overall effectiveness of technology-enabled self-exclusion interventions based on the evidence uncovered and criteria outlined above is presented below:

[45] National Centre for Responsible Gambling. (2010). Evaluation Self-Exclusion as an Intervention for Disordered Gambling. Retrieved from, https://www.icrg.org/sites/default/files/uploads/docs/monographs/self_exclusion_monograph_final.pdf

[46] https://www.gamstop.co.uk/

[47] Tucker, M 2019, Gambling addiction: 'Flaws exposed in online self-exclusion scheme', *BBC*, 13 January, viewed 28 May 2020, < https://www.bbc.com/news/uk-46830810>.

- There is **limited independent evidence** to suggest whether or not the intervention is **achieving** its **intended objectives**
- The ability of the intervention to produce **long-term outcomes** is currently **unknown**
- The intervention is currently reaching players but **uptake** levels are **unclear**.

3.7.2 Pre-commitment

The majority of people who gamble make some attempt to control their gambling, such as attempting to limit their spending. However, some find it difficult to stick to these self-imposed limits, particularly when in the middle of an intense gambling experience.[48] As discussed in Section 3.1, pre-commitment is a tool to help a player stick to their limits. It is a system enabling a player to set limits on how much they will spend or how long they will play, before they start gambling. Strengths and weaknesses of pre-commitment schemes have been identified below as well as their overall effectiveness.

Strengths and weaknesses

Pre-commitment primarily focuses on reducing risk before harm is experienced and helps players to plan their gambling better and prevent unintended and/or excessive use.[49] Stakeholders reported that the majority of players are positively predisposed to the concept of pre-commitment and find it especially effective when they are required to set limits and those limits are binding.

However, analysis of consultation responses revealed that most arrangements in pre-commitment are offered on a voluntary basis and therefore rely on the player to initiate limit setting. The intervention is similar to self-exclusion in the respect that operators typically implement individual approaches as opposed to an endorsed single industry approach. It requires an account-based system to deploy, which is suitable for the online context but limited to those who subscribe to a loyalty program in the land-based context.[50] In addition, low levels of flexibility were observed in the NSW market with regards to the types of limits that can be set.

Effectiveness

Pre-commitment is widely adopted as a potential tool to address problem gambling across the globe. According to a report commissioned by Victorian Department of Justice and Community Safety, YourPlay (a pre-commitment tool) witnessed that 28 percent of respondents felt "a great deal" or "quite a lot" better informed about their gaming machine spending, and 29 percent reported that using YourPlay meant that it was "a great deal" or "quite a lot" easier for them to stick to the limits that they set for themselves.[51] However, usage of YourPlay in Victorian hotels and clubs has been very low. Recent evaluations of voluntary responsible gambling measures (including pre-commitment) have seen usage of 0.8 per cent, 1.2 per cent and 13 per cent of total turnover across the whole system, suggesting usage of 1 to 5 per cent should have been achievable for YourPlay.[52] According to research conducted on Norsk Tipping, (state-owned gambling operator, Norway)

[48] Parliamentary Joint Select Committee on Gambling Reform 2011, 'The design and implementation of a mandatory pre-commitment system for electronic gaming machines', *Parliamentary Joint Select Committee on Gambling Reform*, May. viewed 28 May 2020, <https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Former_Committees/gamblingreform/completedinquires/2010-13/precommitmentscheme/report/index>.

[49] Parliamentary Joint Select Committee on Gambling Reform 2011, 'The design and implementation of a mandatory pre-commitment system for electronic gaming machines', *Parliamentary Joint Select Committee on Gambling Reform*, May. viewed 28 May 2020, <https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Former_Committees/gamblingreform/completedinquires/2010-13/precommitmentscheme/report/index>.

[50] Australian Institute of Family Studies. (2017). Full pokies 'pre-commitment systems' needed. Retrieved from, https://aifs.gov.au/media-releases/full-pokies-pre-commitment-systems-needed

[51] South Australian Centre for Economic Studies 2019, 'Evaluation of YourPlay Final Report', *Justice and Community Safety(Victoria State Government)*, viewed 13 May 2020, <https://www.justice.vic.gov.au/sites/default/files/embridge_cache/emshare/original/public/2020/02/96/5d2b83376/Evaluation-of-YourPlay-Final-Report.pdf>.

[52] South Australian Centre for Economic Studies 2019, 'Evaluation of YourPlay Final Report', *Justice and Community Safety(Victoria State Government)*, viewed 13 May 2020, <https://www.justice.vic.gov.au/sites/default/files/embridge_cache/emshare/original/public/2020/02/96/5d2b83376/Evaluation-of-YourPlay-Final-Report.pdf>.

introduction of financial loss limits resulted in 94 percent of high-risk players being aware of and positive about limit setting.[53]

Conversely, a report published by the UK Gambling Commission specified that higher limit uptake rates do not necessarily result in higher levels of protection, due to the fact that levels may be set inappropriately high. In addition, there appears to be a lack of awareness amongst consumers of both the availability and benefits of setting limits.[54] Nova Scotia Gaming Corporation (NSGC), Canada, piloted the use of a pre-commitment smart card (My-Play) between 2005 and 2007. However, despite efforts to promote the responsible gambling features, only a small percentage of players used the tool and as a result Government decided to remove the My-Play system from the province's video lottery terminals (VLTs).[55] [56]

The overall effectiveness of pre-commitment schemes based on the evidence uncovered and criteria outlined above is presented below:

- There is **mixed evidence** suggesting that the intervention is **achieving some** but **not all** of its **intended objectives**
- The ability of the intervention to produce **long-term outcomes** is currently **unknown**
- The intervention is currently reaching players, and there are **mixed levels** of intervention **uptake**.

3.7.3 Behaviour tracking

As discussed in section 3.1, behaviour tracking detects emerging gambling patterns indicative of harm and, once detected, is used to prompt players (directly or indirectly) to the potential for harm and/or ways to avoid it.[57] Strengths and weaknesses of behaviour tracking interventions have been identified below as well as their overall effectiveness.

Strengths and weaknesses

Behaviour tracking provides increased ability for operators to identify risk and intervene to prevent harm. However, research identified that a critical component of the success of the product is the action taken by an operator following identification and the threshold set for acting. It was observed, that this intervention is likely to be more effective within an environment where operators have access to registered players account with known identification of players and demographic details and in which all play is captured, that is, there is no opportunity to play without being tracked.[58]

Behaviour tracking provides the capability to detect 'potential' at-risk and/or problem gamblers through analysis based not only on financial but also behavioural parameters, depending on the system. Stakeholders reported that behavioural tracking systems are only as useful as the risk indicators they can detect, the accuracy of these, and the extent to which at-risk players can be detected.

The use of behaviour tracking software is in its exploratory stage and there has been limited longitudinal research conducted or agreement on thresholds of risk and what accompanying interventions should be. Many diagnostic

[53] Auer, M, Reiestad,S & Griffiths M 2018, 'Global Limit Setting as a Responsible Gambling Tool: What Do Players Think?', *International Journal of Mental Health and Addiction*, 26 March, viewed on 28 May 2020, <https://link.springer.com/article/10.1007/s11469-018-9892-x#article-info>.

[54] UK Gambling Commission 2018, 'Review of online gambling', *UK Gambling Commission*, March, viewed 28 May 2020, < http://www.gamblingcommission.gov.uk/PDF/Online-review-March-2018.pdf>.

[55] Williams, R 2010, 'Pre-commitment as a strategy for minimizing gambling-related harm', *Alberta Gaming Research Institute*, 8 July, viewed on 28 May 2020, <https://www.semanticscholar.org/paper/Pre-commitment-as-a-strategy-for-minimizing-harm-Williams/11415d50aea76007c52f9e5717dd6134922d5a07>.

[56] Nova Scotia 2014, 'Government to Remove My-Play System from VLTs', Nova Scotia, 20 August, viewed on 28 May 2020, <https://novascotia.ca/news/release/?id=20140820003>.

[57] Rintoul, A, Deblaquiere, J & Thomas A 2017, 'Responsible gambling codes of conduct: lack of harm minimisation intervention in the context of venue self-regulation', Addiction Research & Theory, 25:6, 451-461, 13 April, viewed on 28 May 2020, < https://www.tandfonline.com/doi/pdf/10.1080/16066359.2017.1314465?needAccess=true>.

[58] Australian National University. (2018). Information Targeted Interventions for People Experiencing Gambling Harms in the ACT. Retrieved from, https://www.gamblingandracing.act.gov.au/__data/assets/pdf_file/0009/1222695/Informing-Targeted-Interventions-for-People-Experiencing-Gambling-Harms-in-the-ACT-ANU-Research-Report.pdf

tools focus on financial markers but pay little attention to emotional, social and physiological markers which are also relevant to identifying potential problem gamblers. Most importantly, the introduction of any behaviour tracking tool would need to be accompanied by a range of data and privacy considerations.

Effectiveness

For many operators, behaviour tracking is the latest technological intervention to be adopted to tackle problem gambling. Research uncovered effectiveness data in relation to PlayScan, a UK based behaviour analytics platform, and facial recognition. In Sweden, a survey conducted on the experiences of PlayScan which involved interviews with users of the tool, identified that the majority of players had positive experiences using the tool. However, they do not always use the tool on an ongoing basis.[59] According to an article, BetBuddy, a UK based responsible gambling analytics platform company is conducting research on behaviour analytics to detect problem players. Testing of the behaviour analytics platform across the UK and Canada has shown that nine out of 10 players found the software helpful in managing their personal playing.[60]

The overall effectiveness of behaviour tracking based on the evidence uncovered and criteria outlined above is presented below:

- There is **mixed evidence** suggesting that the intervention is **achieving some** but **not all** of its **intended objectives**
- The ability of the intervention to produce **long-term outcomes** is currently **unknown**
- The intervention is currently reaching players but **uptake levels** are **unknown.**

3.7.4 Information and awareness

Information and awareness schemes involve the provision of education to both gambling operators and customers on gambling behaviours and the risk factors that result in harm. Strengths and weaknesses of information and awareness schemes have been identified below as well as their overall effectiveness.

Strengths and weaknesses

Information and awareness interventions are disseminated broadly and at the early stages of the customer journey. It provides key information, including volatility levels, on games directly to a player so that they can better understand the likely impact of gameplay choices before committing any money. Stakeholders confirmed that the intervention can also provide players with greater visibility of gambling activity and awareness of risks associated with gambling.

There is limited evidence on the extent to which information and awareness interventions are successful in preventing recreational/low risk players from becoming problem gamblers. Stakeholders highlighted that messaging tends to focus on problem gambling meaning players in earlier stages of the journey and are less likely to relate to the message and reflect on their behaviour.

Effectiveness

Information and awareness interventions are highly variable, with practice ranging from information provided to the player on his/her respective gambling activity, to providing data on slot machines. In the Nordics, Iceland slot-machine operators have adopted SlotGuru, which is a slot database mobile application that provides key information, including volatility levels, on over 2,600 casino slot games directly to a players' mobile phones. Icelandic casino operators believe that players who use SlotGuru will have a better understanding of the likely impacts of their playing choices. The same database has also been successfully adopted by Genting UK and Swiss Casinos.[61] Additionally, information service tools have been widely adopted by private casinos in the US. One

[59] Forsstrom, D, Jansson-Frojmark, M, Hesser, H & Carlbring P 2017, 'Experiences of Playscan: Interviews with users of a responsible gambling tool', *Elsevier*, vol. 8, 26 March, viewed on 28 May 2020, <https://link.springer.com/article/10.1007/s11469-018-9892-x#article-info>.

[60] Woodie, A 2016, 'Using Big Data Analytics to Fight Gambling Addiction', *datanami*, 10 March, viewed 13 May 2020, <https://www.datanami.com/2016/03/10/using-big-data-analytics-to-fight-gambling-addiction/>.

[61] SlotGuru 2017, 'Iceland implements nationwide SlotGuru roll-out to drive greater Responsible Gambling', SlotGuru, September, viewed 13 May 2020, <http://slotguru.net/iceland-implements-nationwide-slotguru-roll-out-to-drive-greater-responsible-gambling/>.

such tool by the name of GameSense by MGM resorts has surpassed 1.25 million customer interactions with positive feedback.[62] However ultimately, there is limited evidence to verify the extent to which these interventions change gambling behaviour.

The overall effectiveness of information and awareness schemes based on the evidence uncovered and criteria outlined above is presented below:

- There is **limited evidence** to suggest whether or not the intervention is **achieving** its **intended objectives**
- The ability of the intervention to produce **long-term outcomes** is currently **unknown**
- The intervention is currently reaching players but **uptake** levels are **unknown**.

3.8 Other stakeholder observations

A range of additional observations and insights regarding issues around responding to gambling harm through use of technology, were provided by participants from stakeholder groups across gambling operators, industry peaks, technology providers, gambling regulators and policy agencies, industry experts and research organisations. The section below highlights the key insights from the interviews and includes anonymised quotes from interviewees.

- **The evidence base is in its infancy:** While there are positive signs that a number of these technologies contribute to a reduction in risky gambling behaviours, addressing the issue of problem gambling is a complex one and requires a range of responses, including early intervention and awareness raising through to remediation activities such as self-exclusion and treatment services. There is limited evidence and research on the effectiveness of different interventions, as they work together along a continuum for an individual player. This was a consistent view reflected across all stakeholder groups, with some operators, peak bodies and tech providers indicating they are investing in research activities.
- **Technology is only one component in addressing the issue of problem gambling:** While technology can assist identification, the human intervention by an operator following identification and the staff training (and other interventions) that support it, are at the core of preventing and responding to gambling harm. Staff training was a consistent topic for operators and peak bodies, some of whom have developed their own training programs. *'Industry and government should focus on how to connect people who show up in the gambling environment and display risky behaviour, and ensure they are connected with the treatment sector'.* This need for more evidence and guidance on what a good intervention looks like once a player is identified was also recognised by tech providers and experts.
- **There is a need to look at responding to gambling as an integrated program**: *'There's limited sustainable evidence that points to one solution being a knock out performer'.* A number of participants across the stakeholder groups commented that responses must be highly integrated and supportive. The issue of problem gambling requires involvement from a range of stakeholders across the industry, including government, operators, manufactures/technology providers, financial institutions, counselling services, and other health and community services. Any interventions introduced must consider the broader context and be integrated with this context.

[62] Yogonet Gaming News 2016, 'MGM Resorts' responsible gambling program hits 1 million customer interactions in the U.S', *Yogonet Gaming News*, 9 December, viewed 13 May 2020, <https://www.yogonet.com/international/noticias/2019/09/12/50933-mgm-resorts-responsible-gambling-program-hits-1-million-customer-interactions-in-the-us>.

- **The stigma of problem gambling can impact the effectiveness of interventions:** Stigma associated with having a problem with gambling remains in our society and inhibits individuals from seeking help and therefore limits the effectiveness of certain products which require a player-initiated intervention. This view was noted across gambling operators, industry peaks, technology providers, and industry experts and research organisations.
- **Any policy response must be supported by a good quality evidence base:** There is a need for more research and evidence on the efficacy of interventions prior to investment in more technology. Peak bodies and researchers highlighted this in a number of consultations and it was also commented on by some technology providers and regulators.
- **Certain technologies rely on economies of scale at an operator level to implement:** For example, some technologies such as facial recognition are able to be employed for larger operators but would not be cost effective in venues that lack scale, such as a bowling club with less than 20 EGMs.
- **There is a need for consistency in the terminology used by industry:** Certain interviewees reported there are inconsistent approaches to capturing data on responsible gambling. There is a need for consistency in the industry in order to measure progress and outcomes.
- **Not all gamblers are the same:** Interventions that work for some gamblers, may not work for others. Similarly, behaviour that may represent risky behaviour for one, is not for others. This was a consistent view from a number of participants across most stakeholder groups. Technology based solutions must be responsive to this and consider the differences amongst players, including demographic and cultural differences.
- **There is appetite in the industry to invest but there is a need for a whole of industry response:** Some interviewees commented that there is limited collaboration and coordination in the industry with respect to responses to gambling harm and that there is a need to bring industry together to translate the research and evidence into practical responses.
- **The impacts of COVID will affect the industry for the foreseeable future:** Industry expect cash flow will be significantly constrained for a number of years, which may impact the ability for many to further invest in responsible gambling outcomes, as well as other investment areas. Technology investments are likely to be more focused on business stabilisation. This concern was noted by a number of operators, peak bodies and technology providers.

4 Opportunities for investment and research into technology for application within the gambling industry in NSW by ORG

Based on the analysis presented in the previous sections and gaps identified, a number of options have been identified that are available to ORG. It is important to note that while other opportunities were identified to invest further in technologies related to community education and awareness, these were out of scope for this project.

The sub-sections below firstly present the options available, including:

- The type of opportunity presented by the option
- The rationale for inclusion of the opportunity
- Key activities required to progress the option
- Key benefits, risks and considerations
- Indicative costs and resourcing.

The next sub-section provides an overview of the relative priorities of those options and the framework used for that prioritisation exercise (detail can be found in the appendix).

Following this, there is a proposed high level implementation roadmap and recommended next steps.

4.1 Options for ORG

ORG leads the development of responsible gambling strategy and public policy advice to the NSW Government. As part of this role, ORG develops and implements programs and initiatives focused on supporting the prevention and minimisation of risk associated with gambling harm.

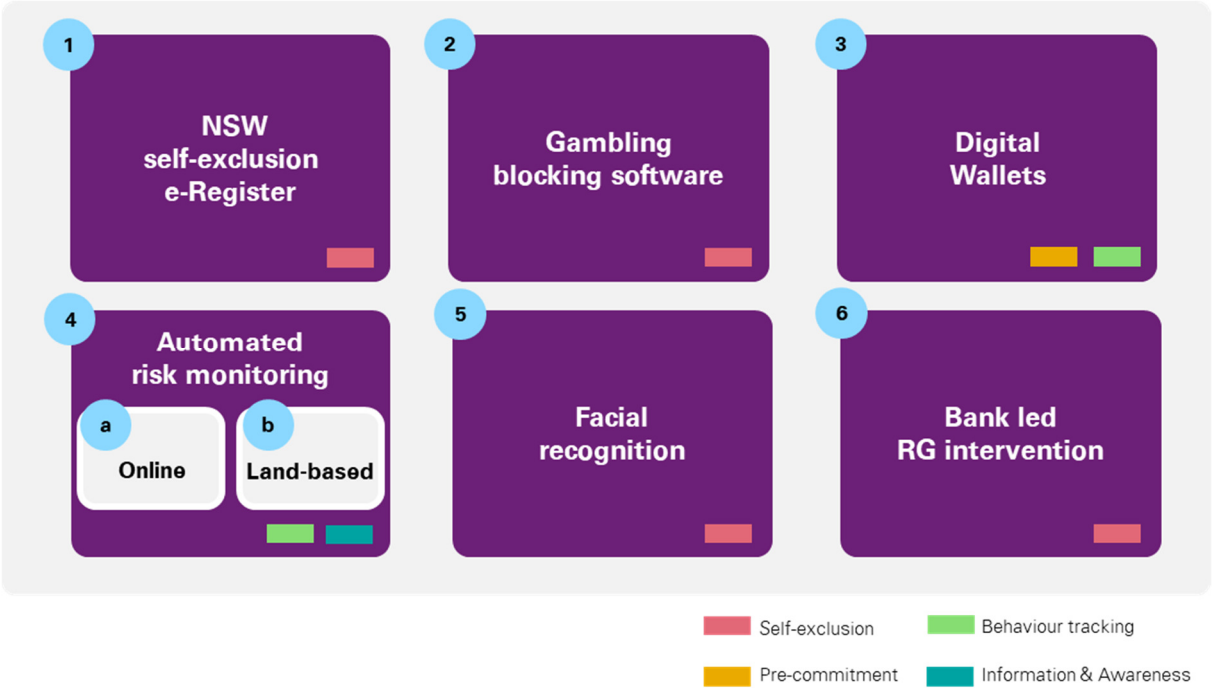
Within this role, ORG has five key levers for progressing these technologies in the NSW context:

1. **Direct investment:** Investing in the development and piloting of technology
2. **Industry partnerships:** Establishing partnerships with industry to progress the development and understanding of technology
3. **Research:** Funding research projects to build the evidence base for emerging technology
4. **Education:** Building awareness of responsible gambling technologies and how to use them within the community and amongst operators
5. **Advocacy:** Influencing the gambling industry and other industries that interface with the gambling industry and play a role in preventing or minimising harm in their adoption or use of technology.

Six main types of technology interventions have been identified for ORG to explore further investment in. These technologies and the categories of intervention they align to are illustrated in Figure 11.

Another technology intervention, a single customer identifier for gambling activities, was considered as part of this project based on technology interventions found in the Nordics. However, the relative complexity and cost associated with implementing this option in the NSW environment meant it was not deemed feasible as an option and was considered out of scope for this report. The analysis for this option has been retained at Appendix G.

Figure 11: Technology opportunities for ORG



Source: Project Team

This section presents practical options for ORG to progress each of these opportunities using the levers specified above, including risks, benefits, considerations and costs.

The options presented here are at the early stage of development and will require further analysis and design to allow detailed costs to be determined. The Order of Magnitude (OOM) costs are approximate and are based on experience of the project team. They indicate the level of effort and associated costs that we anticipate would be required to undertake the tasks outlined. These would need to be validated prior to undertaking the initiative though standard business case or project planning processes. The order-of-magnitude (OOM) costs applied to the options below were evaluated based on the criteria in Table 3: Criteria to understand cost.

Table 3: Criteria to understand cost

Cost Classification	OOM Range	Criteria Examples
Low	<$500K	Research funding, Industry-led initiative support/guidance
Medium	>$500K and <$3M	Software-as-a-service adoption, Technology pilots with 1-2 industry players
High	>$3M	Technology implementation with multiple integrations spread across multiple operators and channels; custom built solutions/platforms

Source: Project Team

4.1.1 Option 1: NSW self-exclusion e-Register

Direct Investment Opportunity

ORG could invest in establishing a self-exclusion e-Register for all gambling operators in NSW (both online and land-based). This would require early buy-from industry, and co-design and testing with stakeholders such as operators, regulators (state and Commonwealth) and customers, as well as evaluation to ensure it is achieving the intended aims without unintended consequences. This would also require policy and regulatory change to support adoption.

Rationale

Self-exclusion is widely considered to be a fundamental intervention for responsible gambling, enabling people who are experiencing difficulty controlling their gambling to effectively bar themselves from accessing land-based and/or online gambling. Self-exclusion schemes are offered in NSW across all settings, however not all arrangements are technology enabled and they are typically specific to a single operator or a select group of operators, such as the Multi-Venue Self-Exclusion scheme by ClubsNSW. This means people have to approach numerous operators if they want to exclude themselves from multiple forms of gambling in NSW. A central, state-based e-register would provide an easily accessible, confidential, single point for people to register for self-exclusion and would also provide operators with a central location against which they can check whether a person has self-excluded.

Key Activities

- Establish or leverage an existing industry forum for the initiative, involving key industry players from the start to build buy-in and provide an avenue for input.
- Work with industry and customers to co-design a suitable conceptual design and accompanying program roadmap, awareness strategy and evaluation parameters.
- Build the business case, including the vision, scope, objectives, options, benefits, risks, plan etc, and seek funding.
- Engage an appropriate delivery partner.
- Undertake staged detailed design, build, test, integration, implementation, awareness campaign and evaluation activities, reviewing outcomes at each stage to influence subsequent stages. For example, potential integration with the national online wagering self-exclusion register is likely to be in the later stages of the program.

Key benefits, risks and considerations

A summary of key benefits, risks and considerations for this option are presented in Table 4 below.

Table 4: Key considerations, benefits and risks for a NSW Self-exclusion e-Register

Key considerations	• This intervention still requires customers to self-initiate restrictions. However depending on how accessible the feature is for customers, it could offer a confidential channel for customers to restrict gambling. • The industry is progressing with a national self-exclusion register for online wagering (as prescribed by the Commonwealth government), however all major operators already offer an operator specific self-exclusion scheme. Considering this progress, the future state solution could focus on introducing an integrated self-exclusion system for all land-based gambling in NSW and provide the ability to integrate with a future national system for online wagering through APIs. • The solution would still require operators to detect customers before they play through different mechanisms (some of which are more effective than others).

	• In implementing an e-Register, ORG would need to consider what other mechanisms are employed to promote take up of the scheme, ensure it is accessible to all customers and operators, and that their staff understand the purpose and intent of the scheme and how a confidential channel reduces the stigma associated with having a problem with gambling so players feel empowered to subscribe to a self-exclusion scheme. • Some players who have experienced harm are hesitant to access self-exclusion schemes if they restrict them from accessing other non-gambling parts of a venue. The scheme could seek to offer players flexibility on what channels or operators they are self-excluded from. • Efforts would be needed to integrate many separate systems and enable communication across operators and venues to reach an ideal where players only have to complete one self-exclusion agreement to be excluded from multiple venues.
Benefits	• Self-exclusion is seen to be an effective tool to help keep problem gamblers safe from excessive gambling. • Take up may be greater if this could be done independently and externally to the venue, if it were possible to exclude simultaneously from multiple venues and if it were perceived to be more effective by individuals.
Risks	• It may be challenging gaining buy-in from state and commonwealth stakeholders in light of progress towards a national self-exclusion register for online wagering. • Even with full integration, players can access the unregulated online market. • There is a risk that industry may be resistant to the development and adoption of a self-exclusion register as there may be cost implications for them to integrate to it.

Source: Project Team

Costs and resourcing

The likely level of investment required for this option will be **High**, but may be offset by co-investment by industry into the Scheme. Resourcing will be required to facilitate co-design, manage business case development, deliver, promote and evaluate the register.

4.1.2 Option 2: Gambling blocking software

Direct Investment and Education Opportunity

ORG could explore subsidising the use of an existing gambling blocking software for customers in NSW. The gambling blocking software could be accessible through ORG's Gambling Help website.

Prior to entering into an agreement with a gambling blocking software provider, ORG should test the technical effectiveness of different products through a trial prior to procuring a specific product.

Any subsidisation of this software should be supported by communication activities to customers and operators to ensure there is awareness of this product, how it works and where to access it.

Rationale

A number of other jurisdictions, including Victoria, and operators offer gambling blocking software as a suitable approach to restricting access to online gambling websites.

Research conducted on three main products in the market in the UK reveal gambling blocking software is generally an effective approach in restricting access to online gambling. Though a national self-exclusion register

for online wagering is currently being developed, it will not be available in the near future is expected to be limited to regulated operators in Australia. Wider accessibility to a gambling blocking software solution would offer players in NSW the ability to restrict their access to both regulated and non-regulated online gambling sources.

Key Activities

- Publish a Request for Tender to procure a suitable vendor to provide the blocking software and integrate it into ORG's Gambling Help website. As part of the RFT process, ORG could conduct an evaluation of the existing software to determine which would be most appropriate. This could be performed through an Expression of Interest process, which potential vendors would respond to outlining their capabilities – this can then inform an RFT process. Alternatively, NSW Government procurement processes can now accommodate Technology Proof of Concept activities as part of the procurement process to help select the best candidate to take forward.
- Conduct a small trial to test uptake with a targeted sample of users.
- Develop and implement a communications strategy to promote the availability of the software through ORG's website across the industry.
- Implement rollout and integration into website.
- Assess ongoing effectiveness of the tool and outcomes of the initiative.

Key benefits, risks and considerations

A summary of key benefits, risks and considerations for this option are presented in Table 5 below.

Table 5: Key considerations, benefits and risks for Self-exclusion applications

Key considerations	• As with all self-exclusion options, this intervention also requires customers to self-initiate restrictions. However depending on how accessible the feature is made for customers, it could offer a confidential channel for customers to restrict gambling. • As this feature is targeted at online gambling, it could be explored at a national level in collaboration with other state and territory responsible gambling agencies.
Benefits	• Easy to adopt Software-as-a-Service option. • This form of self-exclusion is useful to tackle the unregulated online industry, both apps and websites, and to restrict access to gambling for those who are at risk, or underage. • This intervention could also offer a secondary mechanism for individuals to exclude from regulated operators i.e. online wagering.
Risks	• Players may gain a false sense of security that the software is 100% effective. As unregulated sites become more advanced and new sites enter the market, there is a risk that certain unregulated sites might be missed or able to be worked around. It will be important to provide clarity on limitations of the software. • There may be poor take up of the technology by customers. • Compatibility with certain operating systems or phones may change over time. Stringent assessment of the capabilities of the vendor as well as the software will be necessary to mitigate this risk.

Source: Project Team

Costs and resourcing

The likely level of investment required for this option will depend on the results of the pilot, take up of the application by customers and commercial arrangements established with an organisation, however the investment is likely to be **Low** to **Medium**.

4.1.3 Option 3: Digital Wallets

Advocacy, Research and Education Opportunity

At the time of developing this report, it was identified that trials are expected to be conducted on Digital Payments and their respective harm minimisation interventions through Liquor and Gaming NSW's Regulatory Sandbox which includes industry partners such as operators and, treatment and academic experts. ORG could be actively involved in the oversight and design of these trials.

There may also be a need for ORG to conduct additional research on digital wallets and harm minimisation interventions as the trials progress to supplement activities being conducted in the trials.

Depending on the outcomes of the trials and decisions made by Liquor and Gaming NSW on the policy and regulatory landscape for this technology, there may also be a role for ORG to play in providing information and education to industry on good practice in interventions and how customers can best use them.

Rationale

Cashless payments have been flagged by industry as a key area of interest, initially driven by moves towards a cashless society but now accelerated by COVID. While there are a range of harm minimisation opportunities associated with digital wallets, there is a limited evidence for digital wallets with respect to responsible gambling and what interventions work.

The rationale for considering this is that it is largely inevitable and so harm minimisation options should be considered. There is a need ORG and the broader industry to capitalise early on this technology and the harm minimisation opportunities that are offered. This should include development of an evidence base into what harm minimisation features work through digital wallets, such as settings and messaging.

Key Activities

- Seek participation in the Regulatory Sandbox and trials.
- Provide input into trial design and delivery.
- Identify opportunities to conduct further research, as required, and procure research organisation assistance to conduct research.
- Determine information and education needs of the industry that ORG could meet based on the outcomes of the trials and research.

Key benefits, risks and considerations

A summary of key benefits, risks and considerations for this option are presented in Table 6 below.

Table 6: Key considerations, benefits and risks for Digital Wallets

Key considerations	• Australia is increasingly shifting away from cash for retail spending and some individuals will not engage in an activity which requires the use of cash. • Currently being considered by the Regulatory Sandbox and the industry will propose next steps for cross-operator trials. • A digital wallet could support a range of responsible gambling measures, including setting limits on play (i.e. pre-commitment), account summaries or activity statements about play, self-exclusion and restrict play by players who are underage. It would be important to consider the evidence related to each of these responsible gambling measures in considering the use of digital wallets.

	• Research would need to be conducted in collaboration with the industry, particularly with EGM manufacturers and technology providers to understand the feasibility of incorporating this functionality. Some newer EGMs can already integrate some cashless/e-Wallet technology. • There are lessons to be learnt from initiatives introduced in the COVID context – digital wallets offer a safe and hygienic way to play compared to the use of cash.
Benefits	• Positive implications for crime, including reducing violence, theft and money laundering if established through an identifiable account. • Enhances the reach of responsible gambling measures across operators and channels if players use a single digital wallet to gamble which includes these features. • May offer savings to industry in time and money for exchanging cash to play. • Could enhance the ability of many responsible gambling and harm minimisation features including real-time activity statements, deposit/time limits, customised messaging, exclusion/time-outs. • Could incorporate educational and informational strategies and introduce delays in access to the funds deposited.
Risks	• ORG would need to ensure concerns regarding privacy and confidentiality of player information are considered in the research and mechanisms required to protect data. • There are a range of associated risks related to the use of digital wallets which can make gambling much easier, including easier access to funds and increased risk of over-spending. • Potential overlaps with trial activities will need to be managed.

Costs and resources

The likely level of investment required for this option will be vary depending on progress made through trials but is initially expected to be **Low**.

4.1.4 Option 4: Automated risk monitoring (ARM)

Research and Education Opportunity

ORG could play a key role in facilitating the appropriate use of this technology in both a land based and online context for responsible gambling purposes by operators in NSW. This could be completed through two separate sub-options (one for online and one for land-based) as follows:

4. a) ARM for the online setting

ORG could partner with an online operator in NSW and a research organisation to trial the use of ARM. The trial could focus on testing different scenarios of interventions to build the evidence base for what interventions are most effective at different stages of the customer journey in an online context.

While underpinning algorithms are likely to be commercially sensitive, key outputs of this work could be shared with the broader industry to facilitate the appropriate use of this technology by industry. This could include profiles and underpinning behaviours of at risk players in NSW that can be considered by other online operators in developing algorithms, as well as guidance on which interventions work at different stages of the customer journey.

Rationale

The evidence base for this technology is still emerging and online gambling, though data rich, is relatively new compared to land-based gambling. While there are some positive outcomes reported[63] by both technology providers and operators, there has been limited independent research conducted into the effectiveness of this technology.

A key success factor in applying this technology are the risk settings which enable the operator to predict and detect risky behaviour amongst players and the interventions used by operators when a risk threshold is met. ARM is an emerging technology in the NSW context though these type of interventions have been adopted in a number of international jurisdictions. Online operators (that are national in focus) are testing different risk settings and interventions to determine what works best. However there are limited longitudinal studies that are able to define an evidence base for thresholds of risk and what the accompanying intervention should be. This is a key gap that could be addressed by ORG.

Key Activities

- Scope research project and key parameters.
- Seek an online operator that is already using ARM to partner with and establish an agreement for the research.
- Seek potential buy-in or collaboration by other states or the Commonwealth in the research.
- Procure research organisation to lead research with ORG and operator.
- Conduct research project.
- Develop guidance, communications and education materials for operators and customer reflecting the results of the research.

Key benefits, risks and considerations

A summary of key benefits, risks and considerations for this option are presented in Table 7 below.

Table 7: Key considerations, benefits and risks for Automated Risk Monitoring (ARM) in the online context

Key considerations	• Technology providers and operators internationally are already conducting research or partnering with research organisations to further understand the effectiveness of this technology and different interventions. ORG should consider partnering with other organisations to understand lessons learnt and in designing the scope of research to be conducted. • As operators in the online setting operate at a national level, ORG could consider seeking buy-in or collaboration from other state organisations or the Commonwealth to support the research project. • ARM technologies are already used by industry in the online context for marketing purposes. A consideration is the extent to which responsible gambling interventions used for at-risk players interact with marketing activities. A key area for exploration in the research could be to explore how effective activities that restrict marketing towards at-risk players are in preventing and reducing risk of gambling harm. • While investment in this space could contribute to improvements in the use of ARM by local operators, the issue of integration across multiple operators in an online context remains. • A behavioural economics lens can be applied in considering the interventions that may work.

[63] Woodie, A 2016, 'Using Big Data Analytics to Fight Gambling Addiction', *datanami* , 10 March, viewed 13 May 2020, <https://www.datanami.com/2016/03/10/using-big-data-analytics-to-fight-gambling-addiction/>; Kindred Group 2019, Sustainability Report 2019, viewed 13 May 2020, <https://www.kindredgroup.com/globalassets/documents/sustainability-related-documents/kindred-sustainability-report-19.pdf>.

Benefits	• ARM technologies increase the ability for operators to identify risk and intervene to prevent harm.
Risks	• Algorithms are likely to be seen as Intellectual Property (IP) by operators and they may be unwilling to share this information across the broader sector. Establishing guiding principles such as profiles and behaviours that signal risk in an online setting, and publishing evidence of interventions which work may offer a suitable balance between offering the online industry insights into what works while managing commercially sensitive information of the industry partner.

Source: Project Team

Costs and resourcing

The likely level of investment required for this option will depend on the level of industry interest and buy in from a partnering online operator and/or other government agencies to support this research, but is likely to be **Low** to **Medium**. ORG will need to facilitate the research and may be required to subsidise involvement from an industry partner.

4. b) ARM for the land-based setting

ORG could partner with a land-based operator in NSW and a research organisation to trial the use of ARM. The trial could focus on testing different scenarios of interventions to build the evidence base for what interventions are most effective at different stages of the customer journey in a land-based context.

While underpinning algorithms are likely to be commercially sensitive, key outputs of this work could be shared with the broader industry to facilitate the appropriate use of this technology by industry. This could include profiles and underpinning behaviours of at risk players in NSW that can be considered by other land-based operators in developing algorithms, as well as guidance on which interventions work at different stages of the customer journey.

Rationale

The evidence base for this technology is still emerging and one of the challenges in the land-based environment is the limited amount of gambling activity data available compared to the online context. While there are some positive outcomes reported[64] by both technology providers and operators, there has been limited independent research conducted into the effectiveness of this technology.

A key success factor in applying this technology are the risk settings which enable the operator to predict and detect risky behaviour amongst players and the interventions used by operators when a risk threshold is met. However there are limited longitudinal studies that are able to define an evidence base for thresholds of risk and what the accompanying intervention should be. This is a key gap that could be addressed by ORG.

ARM is an emerging technology in the NSW context though these type of interventions have been adopted in a number of international jurisdictions.

The land-based industry is in the early stages of exploring the use of ARM. One larger operator has developed an AI model and is using technology to identify distressed behaviour. One technology provider is looking to build a solution for pubs and clubs.

Key Activities

- Scope research project and key parameters.
- Seek a land-based operator that has established some ARM capability to partner with and establish an agreement for further development of the technology (if necessary) and research.

[64] Woodie, A 2016, 'Using Big Data Analytics to Fight Gambling Addiction', *datanami* , 10 March, viewed 13 May 2020, <https://www.datanami.com/2016/03/10/using-big-data-analytics-to-fight-gambling-addiction/>; Kindred Group 2019, Sustainability Report 2019, viewed 13 May 2020, <https://www.kindredgroup.com/globalassets/documents/sustainability-related-documents/kindred-sustainability-report-19.pdf>.

- Procure research organisation to lead research with ORG and operator.
- Conduct research project.
- Develop guidance, communications and education materials for operators and customer reflecting the results of the research.

Key benefits, risks and considerations

A summary of key benefits, risks and considerations for this option are presented in Table 8 below.

Table 8: Key considerations, benefits and risks for Automated Risk Monitoring (ARM) in a land-based context

Key considerations	• Technology providers and operators internationally are already conducting research or partnering with research organisations to further understand the effectiveness of this technology and different interventions. ORG should consider partnering with other organisations to understand lessons learnt and in designing the scope of research to be conducted. • The underpinning technologies for ARM are advanced data analytics, integration with CRMs and configuration of AI based algorithms, and may not be feasible for smaller land-based operators to adopt (e.g. smaller clubs and pubs. However, other interventions (e.g. registered digital wallets, single sign-on) could assist in implementation of this technology for at least a portion of play. • While investment in this space could contribute to improvements in the use of ARM by local operators, the issue of integration across multiple channels and operators in the land-based setting remains. • A range of data and privacy considerations remain regarding the use of ARM technologies such as anonymisation of customer persona data, GDPR compliance where applicable, seeking customer consent for use of social media and geo location data. Further investment in this technology could seek to explore how adherence to these can be achieved. • A behavioural economics lens can be applied in considering the interventions that may work. • A key consideration for this option is the timing of a trial. As the technology is in the early stages of progression in the land-based industry, ORG may be required to co-invest in a technology being developed by an operator (e.g. a larger operator identified during consultations and specified above) to accelerate its development and therefore enable it to be ready for a trial. Alternatively ORG could delay investment in this space until an operator has developed its technology to a point where it's ready for research. • A separate approach is to co-invest in the development of an ARM technology for the land-based NSW context. This consideration has been noted here for completeness, however, given the limited evidence base and significant investment that would be required, it does not represent a cost-effective option and does not form part of the recommended scope for this opportunity.
Benefits	• ARM technologies increase the ability for operators to identify risk at various levels by detecting markers not visible to a human observer and intervene to prevent harm.
Risks	• Algorithms are likely to be seen as Intellectual Property (IP) by operators and they may be unwilling to share this information across the broader sector. Establishing guiding principles such as profiles and behaviours that signal risk in a land-based setting, and publishing evidence of interventions which work

	may offer a suitable balance between offering the industry insights into what works while managing commercially sensitive information of the industry partner. • While industry has signalled its interest in investing in ARM technologies, this technology may not be feasible for smaller operators to adopt at this point in time (e.g. smaller clubs and pubs), and therefore any research conducted will only initially benefit a segment of the industry. Depending on the outcome of research, ORG could consider investing further in this technology to pilot a feasible solution for smaller operators to adopt.

Source: Project Team

Costs and resourcing

The likely level of investment required for this option will depend on the stage of development a partnering land-based operator is at with its technology, timing of implementation and whether ORG is willing to wait for a larger operator to have a more established ARM solution to test, and the level of industry interest and buy in from a partnering land-based operator to support this research. Investment is likely to be **Low** to **Medium** initially. ORG will need to facilitate the research and may be required to subsidise involvement from an industry partner.

4.1.5 Option 5: Facial recognition

Research and Direct Investment Opportunity

ORG could invest in research to understand the effectiveness of this technology in preventing self-excluded players from entering venues. If the evidence base provides a view that this technology is effective in detecting self-excluded people and does not present a significant cost barrier to the industry, ORG could consider subsidising facial recognition software for smaller operators in the industry who lack the economies of scale to invest.

Rationale

Studies conducted on self-exclusion schemes have found that a key challenge with their effectiveness is the issue of players breaching their self-exclusion agreement. Technologies such as facial recognition are increasingly being used to assist staff to better identify and remove self-excluded players from venues. These technologies also have other applications for operators, including in identifying underage customers in restricted areas or customers that have been banned from venues for other reasons. In South Australia, the SA Government has mandated the use of facial recognition in venues with more than 30 machines which also have note acceptor capability.

However a key consideration in any investment decision is the reach of such a technology. While self-exclusion schemes are seen to be a fundamental responsible gambling response in the industry, only a small proportion of individuals access self-exclusion schemes, and a smaller proportion of which would seek to break their self-exclusion agreement. This means the target audience for such a technology is limited in scope and any investment decision should evaluate the overall costs compared to expected benefits.

Key Activities

- Scope research project and key parameters.
- Procure research organisation to lead research with ORG and operator.
- Conduct research project.
- Review outcomes of research and determine whether subsidisation is appropriate.
- If determined to be appropriate, develop business case to seek approval for investment, including likely take up and costs.

Key benefits, risks and considerations

A summary of key benefits, risks and considerations for this option are presented in Table 9 below.

Table 9: Key considerations, benefits and risks for Facial recognition

Key considerations	• Facial recognition technologies can be an enabler for land-based self-exclusion interventions though they are distinct technologies in their own right. The establishment of a NSW Self-Exclusion e-Register would provide a centralised repository for recording identity photos of people choosing to self-exclude which may make industry investment in FRT more compelling. • Facial recognition technology is evolving. A key consideration in investing is the maturity of the solution and to what extent the technology might age with time as new technologies enter the market, and present a more effective and efficient response to identifying self-excluded players. • There are other technology-based solutions which would enhance the detection rate and accuracy to enforce self-exclusion. • It is worth noting the target audience for this technology is limited so the costs compared to expected benefits needs to be considered, i.e. people who attempt to breach are a subset of the small proportion of people who need and will use self-exclusion.
Benefits	• There have been some positive results in studies conducted commercially or in-house by operators. Such a study as this will build the foundational evidence base for further investment. • Facial recognition has broader applications for operators, including in identifying underage customers in restricted areas or customers that have been banned from venues.
Risks	• The effectiveness of the technology may evolve as the research is being conducted. • As industry is already investing in this technology and the technology is maturing, it may be appropriate to invest once a self-exclusion e-register is established.

Source: Project Team

Costs and resourcing

The likely level of investment required for this option will be **Low** initially to form the evidence for further investment. This will include procuring a research organisation and industry partners to facilitate the study.

However if ORG were to consider subsidising the use of technology by smaller operators in industry, this will present a more significant investment. This will be dependent on the extent to which costs reduce as this technology develops and how much ORG might be able to subsidise industry. The costs associated are likely to be in the **Medium** to **High** range.

4.1.6 Option 6: Bank-led RG intervention

Advocacy Opportunity

ORG could actively influence the adoption and use of technology-enabled gambling harm minimisation interventions through engaging with industry peaks (e.g. Australian Banking Association) and establishing a dialogue one-on-one with banks (e.g. CBA, NAB, American Express) that are already active in this space, to

understand these features and inform the sector about what approaches work well. The focus of these discussion should be on:

- Bringing insights from research and analysis completed by ORG into interventions being led by banks. For example, findings from trials being conducted on ARM could be shared with banks as similar interventions are possible within the banking context.
- Banking institutions sharing insights from activities they are completing to be brought into initiatives led by ORG.
- Influencing the direction the banking industry are taking with regards to gambling harm minimisation interventions – including improving adoption of harm minimisation measures by industry.

Rationale

Banks have an increasingly stronger focus on vulnerable customers and a number of Australian banks have recently started introducing services allowing customers to block gambling payments based on the transaction merchant code category. Other interventions offered by some banks include credit card restrictions and limits, and payment trackers. Though banking initiatives are outside the remit of ORG, a number of consultation participants have highlighted the value of engaging with a wider range of groups to further responsible gambling objectives, including the finance sector. During consultations, peak bodies indicated the banking community would have an interest in better understanding opportunities ORG are considering.

Key Activities

- Reach out to the Australian Banking Association to discuss opportunities for ORG to support the ABA's focus on problem gambling and relevant industry forums.
- Engage in industry forums and workshops related to gambling harm to bring ORG's perspective to these discussions and a greater awareness of the work ORG are doing and planning.
- Build relationships with banking industry stakeholders to understand the gambling harm minimisation work and research they are doing.
- Support connections between gambling and banking industry stakeholders to further responsible gambling objectives.
- Seek opportunities to support and guide banking sector initiatives to minimise gambling harm, where appropriate.

Key benefits, risks and considerations

A summary of key benefits, risks and considerations for this option are presented in Table 10**Error! Reference source not found.** below.

Table 10: Key considerations, benefits and risks for Bank-led RG Interventions

Key considerations	• The Australian Banking Association has recently consulted with banks on credit cards bans for all gambling. Credit cards are currently allowed for wagering and lottery products. • Harm minimisation features offered through some banking products could be introduced more widely across the sector, including limit setting, blocking of all gambling spend, account summaries that include proportion of spending on gambling and behaviour tracking. • Adoption by customers could be bolstered by the promotion of these responses by ORG and by financial institutions as the technology offerings evolve.
Benefits	• Based on the outcomes of building these relationships, ORG could work with other state and territory responsible gambling agencies and financial institutions in Australia to promote the adoption of harm minimisation responses to their customers.

	• ORG will be able to consider insights on banking sector initiatives as part of its own planning processes. • Banking harm minimisation features can unlock boundaries between operators and channels by providing a central mechanism for a player to restrict gambling behaviour outside of the operator context. • It would be possible for banks to develop algorithms to detect risky gambling patterns, particularly in relation to markers of financial distress. • Banks offer a unique insight into gambling across operators in combination with income and markers of financial wellbeing.
Risks	• Harm minimisation features are relatively new within the banking industry. As such, there is limited evidence on their efficacy.

Source: Project Team

Costs and resourcing

The likely investment required by ORG is **Low** and limited to resourcing to engage in industry discussions.

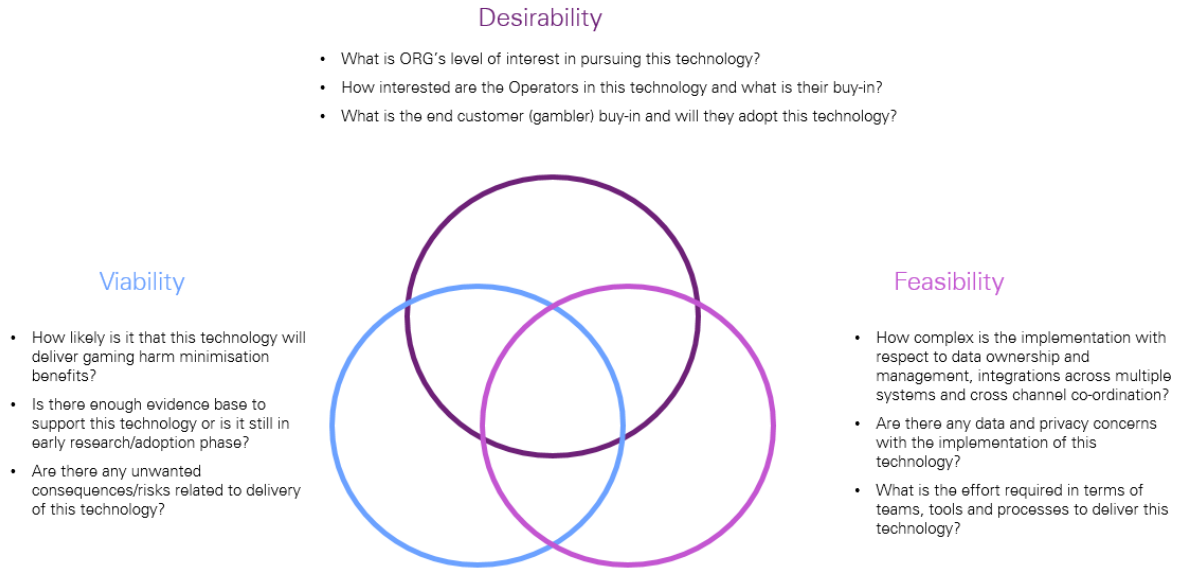
4.2 Prioritisation of options

Prioritisation frameworks are often used to determine where to focus investment where a range of options are available for an organisation.

A prioritisation framework was developed for this project to evaluate the options presented above and to provide a view of the relative priorities of the options in order to inform the subsequent roadmap activity.

The prioritisation framework centres on the following criteria: Desirability, Viability and Feasibility (as illustrated in Figure 12).

Figure 12: Prioritisation framework criteria



Source: Project Team

The prioritisation framework illustrated in Figure 13 included nine sub-criteria to evaluate the options. The results of this prioritisation exercise are summarised below and detailed further in **Appendix F**.

Figure 13: Prioritisation framework

Source: Project Team

The results of the prioritisation exercise are outlined in Table 11: Prioritisation of options and rationale, including a brief description on the rationale for investment.

Table 11: Prioritisation of options and rationale

#	Option	Rationale		
		Desirability	**Viability**	**Feasibility**
1	NSW Self-Exclusion e-Register	**High desirability** with interest from ORG, operators and buy-in from the customers.	**High viability** with mature evidence base for delivering benefits and low risks.	**Medium-low feasibility** due to complexity in implementation and high resource requirements. However, ORG has already started to progress on this technology and commonwealth is also progressing on a national solution for online wagering.
2	Gambling blocking software	**High desirability** owing to ease of use and as an option to tackle the unregulated online industry and supplement self-exclusion registers.	**Medium viability** with low matured evidence to prove the effectiveness owing to being a relatively newer technology and hence needs a trial before wider roll-out.	**Highly feasible** owing to lower relative costs and implementation complexity supported by software-as-a-service options.
3	Digital Wallets	**High desirability** with the industry showing high interest in cashless gambling and increased use by consumers.	**Medium viability** with benefits to track and monitor play, time and spend. Little evidence to support, almost none specifically on gambling due to this being an evolving technology. Hence would need research first before more investments towards implementation.	Data and privacy concerns for longer term implementation but **high feasibility** for research to be initiated.
4a	Automated risk monitoring (ARM) - Online	**Medium-High desirability** with ORG outlining the need to partner with an operator. Online operators are showing high interest and are already investing. Online customers less resistant to data collection as it is a prerequisite for online access.	**Medium-Low viability** with good benefits to early journey stages but a low-evidence base to support effectiveness.	**Medium feasibility** recognising data-rich online environment but with the requirement to partner with an online industry player and a research body/researcher.

#	Option	Rationale		
4b	Automated risk monitoring (ARM) – Land-based	**Medium desirability** with ORG outlining the need to partner with an operator. Operators showing high interest but propensity to invest limited to larger operators and some land-based customers preferring anonymous play so may be less comfortable with behaviour tracking.	**Medium-Low viability** with good benefits to early journey stages but a low-evidence base to support effectiveness.	**Medium-Low feasibility** with limited activity data compared to online, lower maturity of these technologies on the land-based context and the requirement to partner with a land-based industry player and a research body/researcher.
5	Facial recognition	**Medium-Low desirability** with small operators finding this as a costly option to implement. The casino and some larger operators already have the infrastructure but are dependent on how the self-exclusion register develops as this intervention provides support to the detection phase of self-exclusion.	**Medium-Low viability** as the cost-benefits proposition is not convincing for adoption especially for smaller operators and the evidence base is not strong enough.	**Medium-Low feasibility** with high co-ordination required among industry players to support sharing of data of customers to be detected across multiple venues and channels. High technology costs.
6	Bank-led RG intervention	**Medium desirability** with ORG's role limited to advocacy. Recognition in the industry that this could be effective for customers and there is likely little effort needed from them to be involved.	**Medium viability** with low evidence base and unknown risks as this is a recent development in the industry.	**Medium feasibility** with longer term data and privacy concerns with issues including banks' ability to intervene and limit customer spending if they appear to have a problem, perceptions of privacy, ability to use their own data. Some interventions such as voluntary blocks on gambling merchant code categories are already used by all major Australian banks.

Source: Project Team

The next sub-section presents a view on how these options may be implemented, including any interdependencies or considerations between options.

4.3 Roadmap and implementation

The roadmap in Figure 14 defines the activities required to implement each of the opportunities identified in section 4.1. It also provides an estimated duration for each activity. A number of factors have influenced the recommended timings of opportunities illustrated in the roadmap. In addition to the relative priorities of the opportunities described in section 4.2, the resourcing impacts and complexities of parallel initiatives, the current progress of these opportunities at ORG and logical inter-dependencies between some opportunities have been taken into account in forming the high-level roadmap view. However, this view will need to be revisited once these opportunities have been considered within the broader strategic context of ORG and subsequent analysis and design activities define more precise costs and timeframes for each opportunity, which is outside the scope of this work. It is recommend ORG start implementation of the identified opportunities over three phases (immediate, six-months and 12 months).

Phase 1 - Immediate

ORG could initially invest in NSW Self-Exclusion e-Register, Gambling blocking software and Digital Wallets opportunities as part of Phase 1.

- ORG has indicated that planning towards a NSW Self-Exclusion e-Register has already started. This will also set the foundation for the future intent to have one system for land based self-exclusion and the ability to integrate through an online API with National Online Wagering solution which has gone to tender.
- Investment in Gambling Blocking Software scores high on all evaluation parameters and will help to further build the evidence base for self-exclusion effectiveness.
- The initial investment in Digital Wallets is funding research to support responsible gambling guardrails for the implementation in the field of digital payments. This is driven by rapidly changing consumer behaviour and is a high priority for the gambling industry.

Phase 2 - Six months

Given what we know of the scale of the ORG team and considering the resource impacts and complexities of delivering multiple parallel initiatives, we recommend ORG should wait six months before starting implementation of other opportunities. ORG could look to fund research in Automated Risk Monitoring in the online context and also start engaging with the Banking sector to understand and promote harm minimisation opportunities which are led by banks. Both these opportunities were rated as medium priority for ORG to pursue.

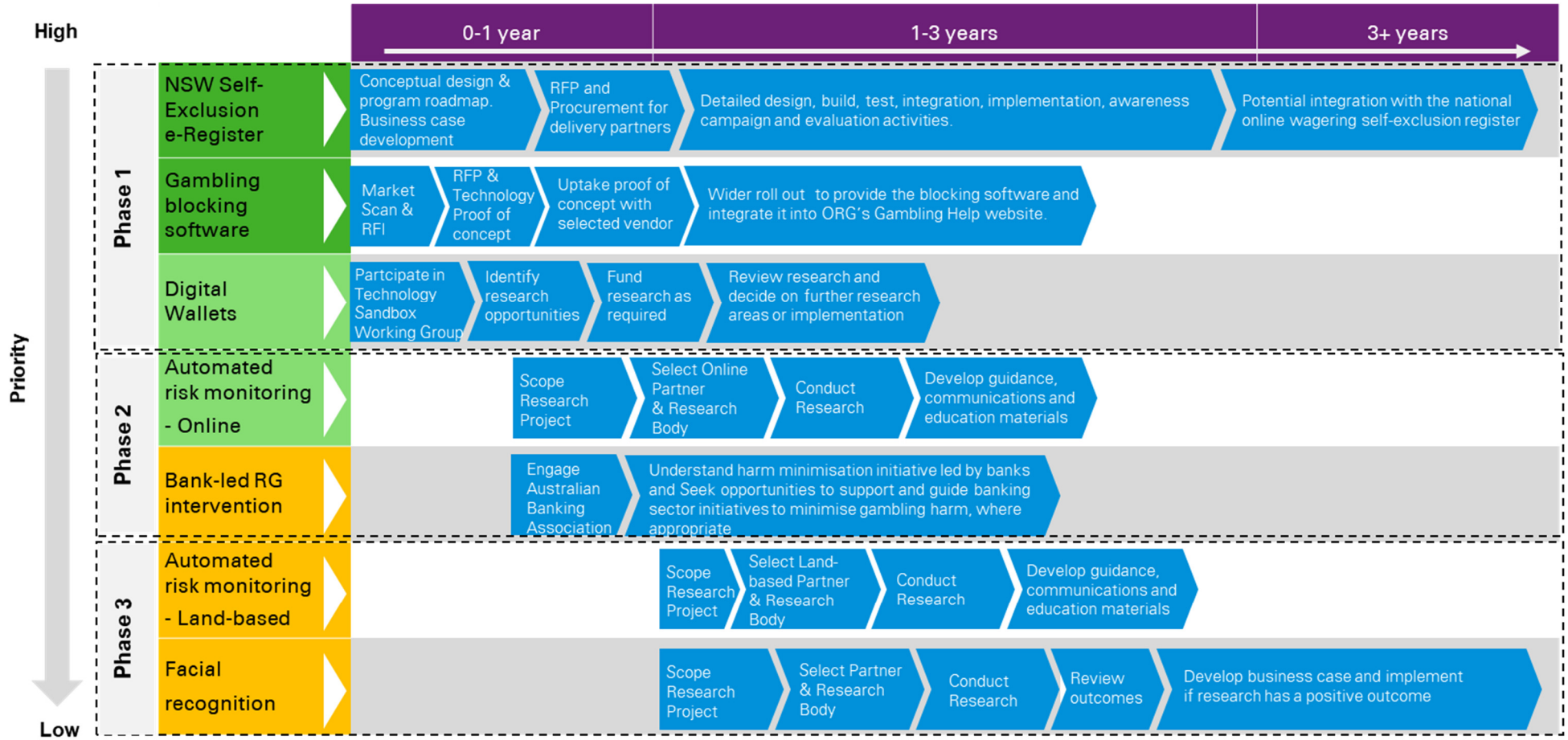
Phase 3 - Twelve months

It is recommended that Automated Risk Monitoring in the land-based context commence in phase 3 to allow time for a more mature ARM capability to be established in a large land-based operator. Partnering with an operator that has a mature capability and is ready to provide value to research and trials will be a more cost-effective option for ORG than engaging earlier and potentially needing co-invest in the technology before it is ready for trials. This approach may also be able to take advantage of learnings from setting up the Automated Risk Monitoring in the online context opportunity in phase 2.

Though rated as lower priority, if desired, ORG could start investing in funding research for facial recognition in the third phase once the NSW self-exclusion e-Register has progressed. Facial recognition technologies can be an enabler for land-based self-exclusion interventions though they are distinct technologies in their own right. The establishment of a NSW Self-Exclusion e-Register would provide a centralised repository for recording identity photos of people choosing to self-exclude which may make industry investment in FRT more compelling. Therefore it would be prudent for ORG to first evaluate the progress made for the NSW self-exclusion e-Register before investing in this Facial Recognition opportunity.

Figure 14 illustrates the proposed roadmap and sequence of activities for the opportunities identified.

Figure 14: Gaming harm minimisation technology roadmap



Source: Project Team

4.4 Next Steps

The findings and opportunities outlined in this report will be used by ORG and the RGF Trust for internal planning purposes. A number of steps need to be undertaken to translate the opportunities outlined here into executable pieces of work:

- A prioritisation framework has been used to evaluate relative priority of the opportunities described here but they will need to be considered within the context of the broader strategic agendas of ORG and RGF to gain an appreciation of which ones should be pursued.
- The options presented here are at the early stage of development and will require detailed analysis and design to allow specific costs and timings to be determined.
- A high-level roadmap has been provided, however this will need to be revisited once priorities have been agreed within the broader strategic context and more precise costs and timeframes are known.
- Once the relevant opportunities are incorporated into the ORGs strategic plans and approved, the activities outlined in the accepted opportunities could begin.

It is also worth noting that some participants expressed an interest in working more closely with ORG and a number are interested in understanding how ORG plans to encourage the use of technology to reduce gambling harms as a result of this work. There is an opportunity for ORG to capitalise on consultations with stakeholders and further build interest and buy-in for their gambling harm minimisation agenda.