INTEGRATING AI INTO THE SAFER GAMBLING CUSTOMER JOURNEY
OPPORTUNITIES AND CHALLENGES

Simo Dragicevic
Francesco Rodano

Market **Trends**

Global Gambling Market in 2018

€405 billion

Gross Win Value[1]

0.56%

Percentage of GDP[1]

€83.7

Average Gross Win per Adult[1]

>1 billion

Players[2]

€45 billion

Online Gross Win[1]

46.5%

Of Which Onshore[1]

[1] *Source: H2 Capital* [2] *Source: Playtech*

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Online Gambling in the EU:

Existing Frameworks and Regulatory Plans

2008

- Open multi-licensing regime
- Legislation in progress
- Exclusive rights
- No specific regulation

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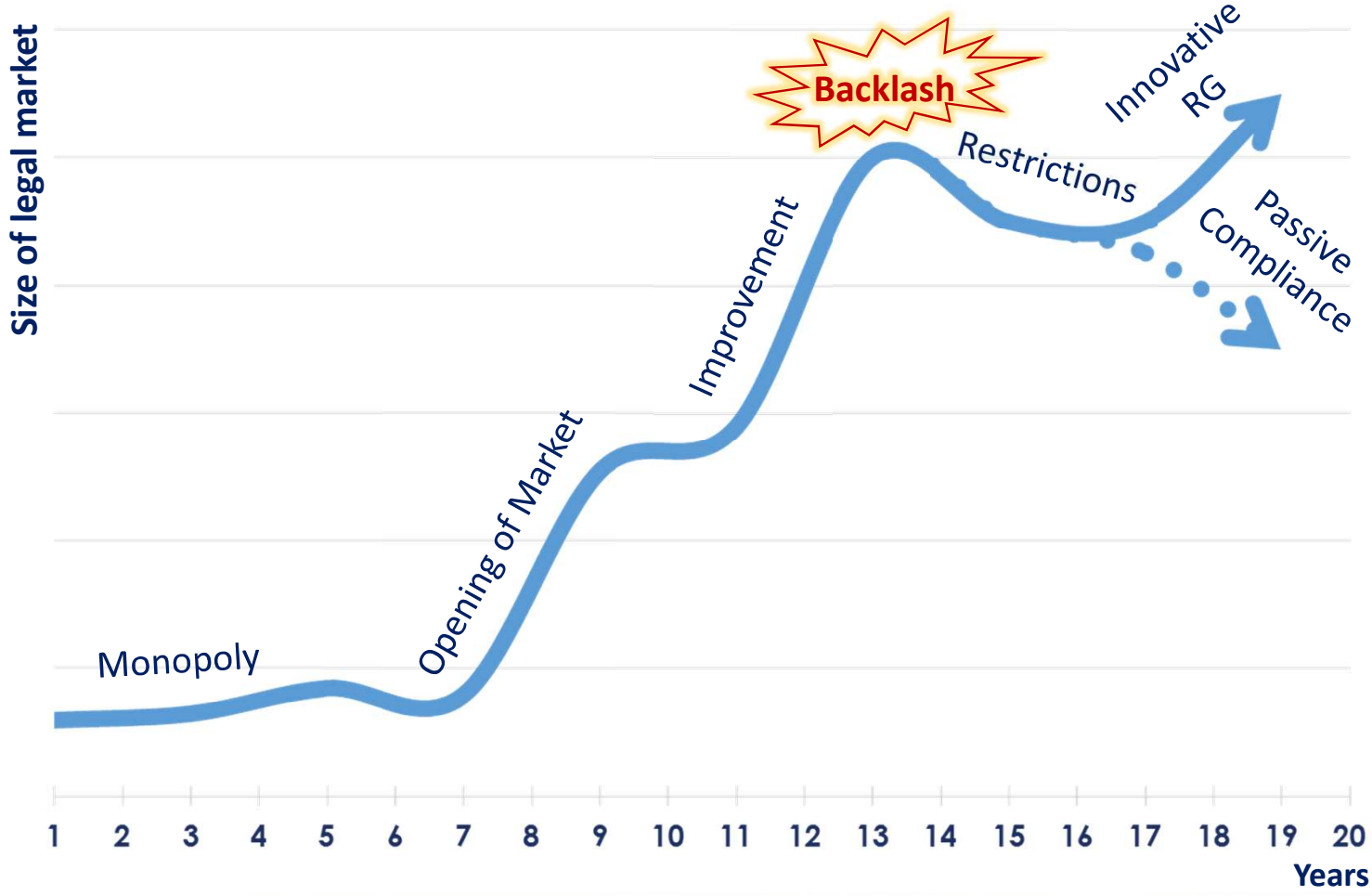
Trend of Gambling Markets – Theory



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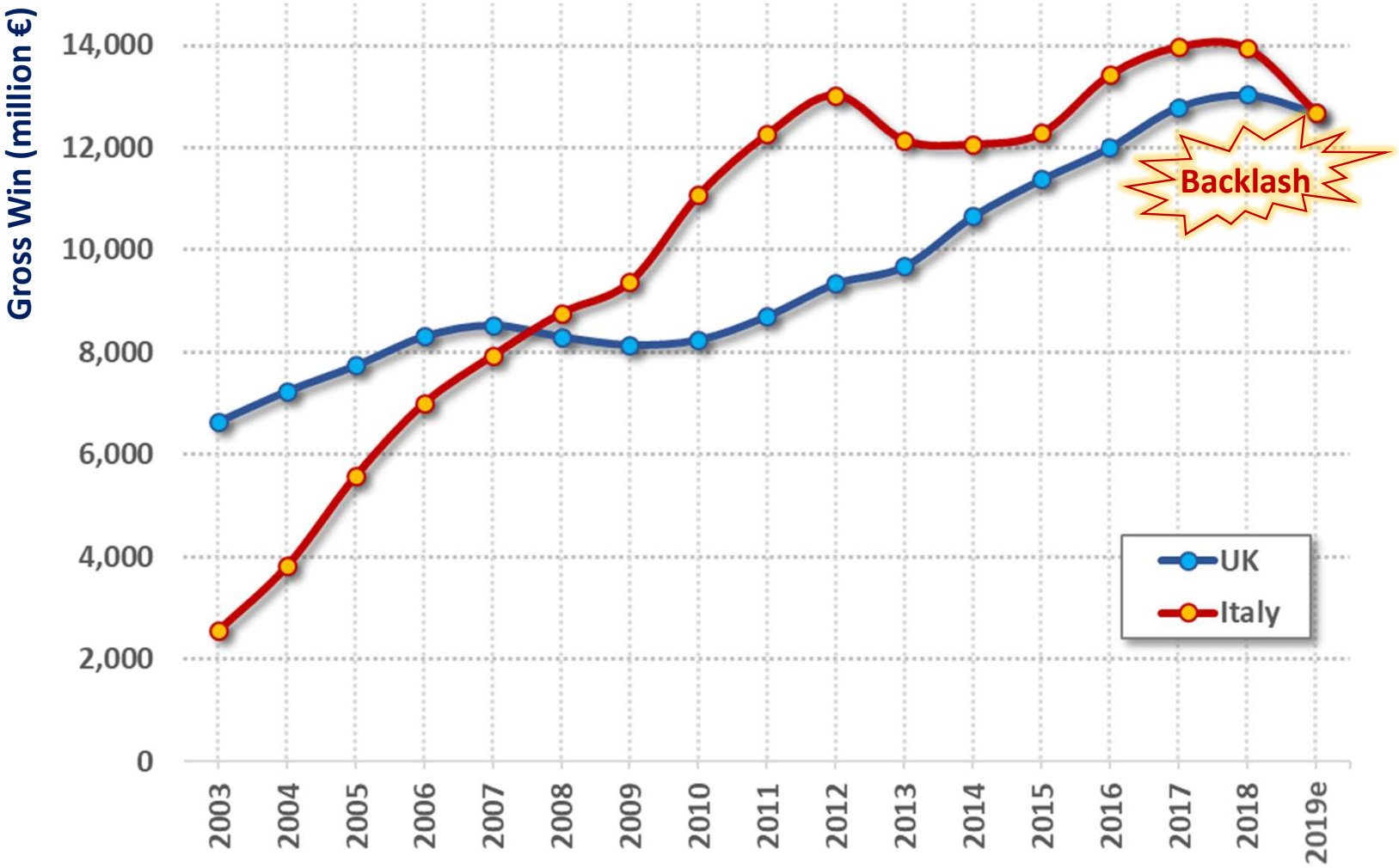
Trend of Gambling Markets – UK and Italy



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Backlash

MORE THAN TWO MILLION BRITS HAVE A PROBLEM WITH GAMBLING

More than two million people in Britain may be problem gamblers, research claims

Number of problem gamblers in the UK rises to more than 400,000

Gambling Commission report finds more than 2 million people are addicted to gambling or at risk of developing a problem

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Mail Online

More than two million people could turn into gambling addicts: Regulator warns huge expansion in online betting has left 4% of the population 'at risk'

- Gambling Commission warns nearly 4 per cent of population 'at risk' of addiction
- Comes after huge rise in online gambling, leaving 400,000 with severe problem
- Fixed-odds betting terminal users are among most likely to have an addiction

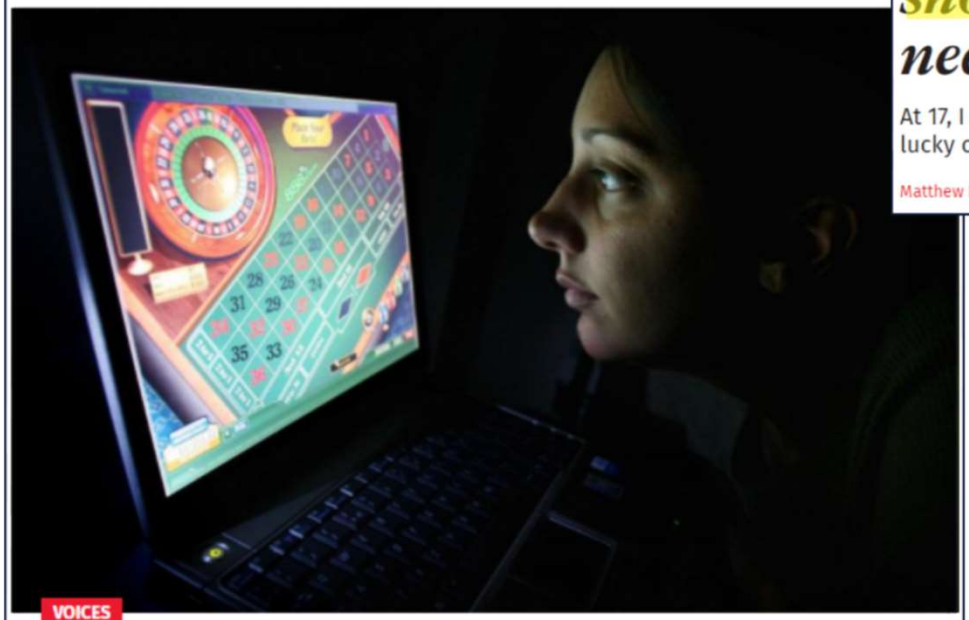
Mirror

Two MILLION Brits are addicted to gambling or at risk of becoming hooked

More than 400,000 are already deemed problem punters, with regulators demanding tougher action to prevent people developing a habit

INDEPENDENT

GAMBLING



VOICES

Matthew Norman Gambling destroys lives – if you don't believe that, this is my story

Voices

If you don't think the Government should take action on gambling, you need to hear what happened to me

At 17, I was already enough of a problem gambler to carry a forged passport. But I still count myself lucky compared to some of the people I've seen

Matthew Norman | @IndyVoices | Tuesday 20 March 2018 15:45 GMT | 4 comments

The UK's gambling industry: Sexism, virtual reality, and regulators in a race to the bottom

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BBC

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The New York Times

EUROPE

42 Minutes, £2,600 Lost: The U.K.'s Growing Gambling Problem

By PATRICK KINGSLEY SEPT. 23, 2017

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CONTRATTO PER IL GOVERNO DEL CAMBIAMENTO

CONTRACT FOR THE GOVERNMENT OF CHANGE

Il sondaggio

Il Consiglio dei ministri ha approvato nei giorni scorsi il cosiddetto decreto dignità.
Qual è il suo giudizio sui seguenti provvedimenti contenuti nel decreto...?
% giudizi positivi

	totale intervistati	elettori M5S	elettori Lega	elettori FI	elettori Pd
Stretta alle imprese che delocalizzano la propria attività dopo aver ricevuto agevolazioni dal parte dello Stato	75	92	81	82	63
Introduzione di limiti alla pubblicità e alle sponsorizzazioni per le aziende del gioco d'azzardo	74	87	79	69	62
Aumento degli indennizzi per i licenziamenti senza giusta causa e restituzione proporzionale di eventuali aiuti statali per chi licenzia	71	88	77	50	56
Agevolazioni fiscali per i liberi professionisti, norme meno restrittive su redditometro, spesometro e abolizione dello split payment dell'Iva	57	77	64	65	46
Stretta sui contratti a termine: limiti a 24 mesi, 4 i rinnovi massimi e maggiori costi contributivi	55	78	64	49	39

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SPIELSUCHT-PROZESS

Buchhalterin steckte 1,4 Millionen Euro in eigene Tasche

Berlin – **Weil sie spielsüchtig war, zweigte Jeannette N. (45) aus dem Landkreis Barnim (Brandenburg) ihren Kunden Geld ab. Sie erbeutete so knapp 1,4 Millionen Euro. Dafür muss sich die Finanzbuchhalterin jetzt vorm Amtsgericht Tiergarten verantworten.**

Libération

Accros au grattage : à la FDJ, de l'huile sur le jeu

Par Charlotte Belaich — 22 juillet 2018 à 19:56

Les ventes de la Française des jeux ont augmenté de 185% entre 1995 et 2016.
Pjoto Stéphanie Para. PQR - Berry Républicain. MAXPPP

La future privatisation de l'entreprise risque d'accroître l'indifférence vis-à-vis des personnes dépendantes. Les associations qui pointent depuis longtemps déjà le manque de régulation dans les jeux de hasard visent particulièrement Cash, numéro 1 des tickets à gratter.

PARTAGER TWEETER

La lettre politique
de Laurent Joffrin

Recevez tous les jours le billet politique de Laurent Joffrin

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EL MUNDO

Domingo, 6 octubre 2019 - 13:56

PROTESTA

Manifestación contra la "plaga" de las casas de apuestas en los barrios de Madrid

La cabecera de la manifestación contra las casas de apuestas. IU MADRID

BetBuddy a Playtech company playtech SOURCE OF SUCCESS

RTL INFO

> ACTU > BELGIQUE > SOCIÉTÉ

Les Belges ont-ils un problème d'addiction aux jeux de hasard?

Publié le 07 septembre 2019 à 14h22 |

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AB-REOC
BV-OECO

STUDY:
(ONLINE) GAMBLING NEW OPPORTUNITIES, NEW THREATS

Jan Velghe,
October 2017

Gambling generally has a bad reputation among Belgians

- **28%** of 18-65 year old believe that **gambling should be banned**
- For slightly **>50%** of the 18-65 age group, gambling should be **discouraged**
- **69%** believe that there are currently **too many gambling opportunities**
- **59%** of 18-65 year-old agree with the statement that **advertising** for bets and games of chance **should be banned** completely
- Even advertisements for the **weekly draw games of the National Lottery** are suddenly seen as negative, while this has never been an issue in the past decades

“The media’s job is to report news but they like to report bad news.
It’s amazing.
Whenever I do a piece of research, if it’s a good news story maybe 10% of the papers will pick it up.
If it’s a bad news story 90% of the papers will pick it up.
Basically misery and bad things sell newspapers.”
Dr Mark Griffiths
Distinguished Professor of Behavioural Addiction
Nottingham Trent University

Gambling firm 888 to pay over £7.8million for failing vulnerable customers

31 August 2017

Record penalty package as a result of serious failings in handling vulnerable customers

William Hill to pay £6.2m penalty package for systemic social responsibility and money laundering failures

20 February 2018

32Red to pay £2m penalty package for failing to protect a consumer

20 June 2018

Online gambling business 32Red has been penalised for not protecting a consumer from gambling related harm

Paddy Power Betfair to pay penalty package for social responsibility and money laundering failures on its gambling exchange

16 October 2018

Gambling Commission takes widespread regulatory action against online casino operators and senior management

29 November 2018

Gamesys to pay £1.2m for social responsibility and money laundering failures

11 June 2019

Online gambling operator Gamesys (Gibraltar) Limited will pay £1.2m for failing to prevent gambling harm and

Ladbrokes Coral Group to pay £5.9m for past failings in anti-money laundering and social responsibility

31 July 2019

Gala Interactive to pay £2.3m penalty package following social responsibility failures

06 November 2017

The action follows the discovery of significant flaws in Gala's dealings with two high spending customers who

SkyBet to pay £1m penalty package for social responsibility failures

28 March 2018

Gambling business Skybet is to pay a £1m penalty package for failing to protect vulnerable consumers

Rank Group to pay penalty package for failing to protect a problem gambler

10 October 2018

An online operator is to pay £500,000 for failing to follow Gambling Commission rules which protect problem

Daub Alderney to pay £7.1m fine for anti-money laundering and social responsibility failures

13 November 2018

An online gambling business will pay a £7.1m fine for failing to follow Gambling Commission rules aimed at

Widespread regulator action results in further £4.5m in penalty packages for online gambling sector

15 May 2019

Platinum Gaming Ltd to pay£1.6m for social responsibility and money laundering failures

12 June 2019

An online gambling operator will pay £1.6m for failing to identify gambling harm and prevent money laundering

£1.8m fine for Silverbond Enterprises

11 September 2019

A land-based casino has received a £1.8m fine, an operator licence warning and had additional conditions

“I swear, ‘I will not play with them’.”

“But when the brown dice […] are thrown down,
I run at once to the rendezvous with them,
like a woman to her lover.

The dice […] enslave, deceive, and torment.

The deserted wife of the gambler grieves.

In debt and in need of money, frightened,
he goes at night to the houses of other men.”

Gambler’s Lament, India, 1000 BC

HUMANS

Archaeologists Have Revealed That Game Dice Used to Be Totally Unfair

MICHELLE STARR 2 FEB 2018

The game dice we use today are as fair as we can design them - but that wasn't always the case. And now researchers have analysed the history of dice to work out when things changed, and why people didn't care about these probabilities until a certain turning point in civilisation.

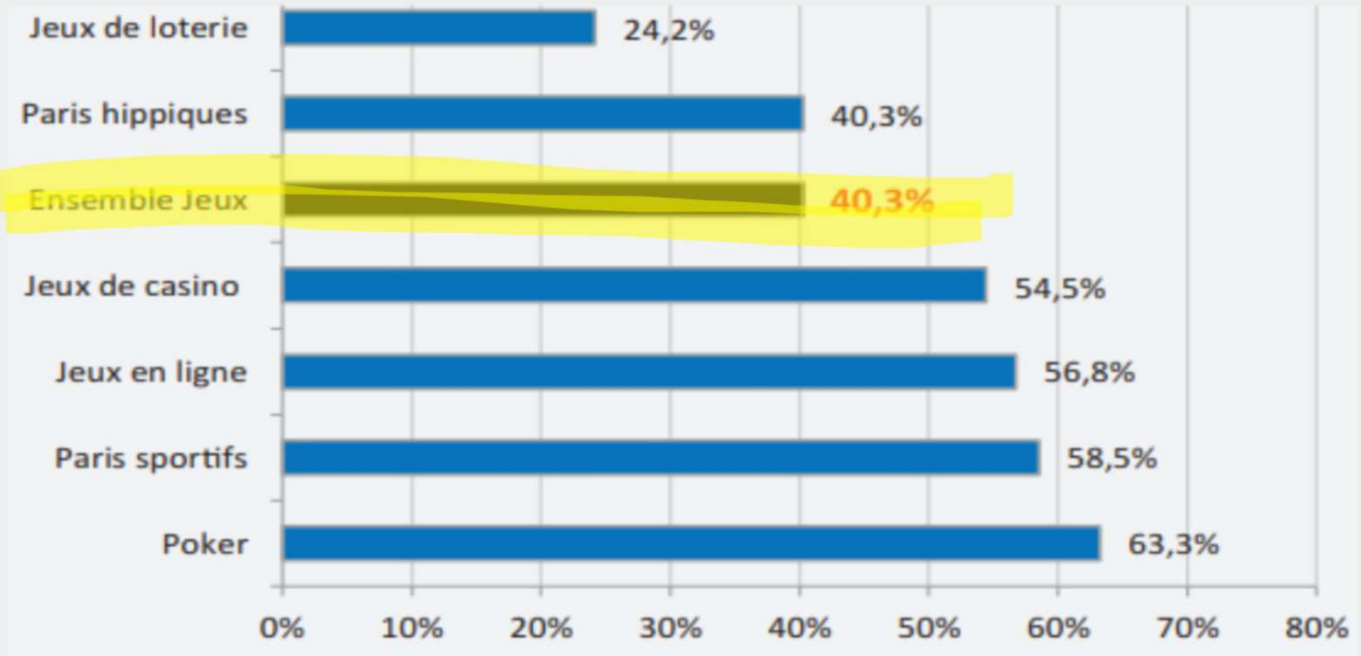
The **Conflict of Interest**

Février 2019

odj Observatoire des jeux

CHIFFRES - CLEFS POUR LA REGULATION DES JEUX D'ARGENT

Part du chiffre d'affaire attribuable aux joueurs problématiques par type de jeu, en France, en 2014



Source : Enquête nationale sur les jeux d'argent et de hasard Santé Publique France/ODJ 2014, calcul ODJ

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Paf income slides 16% following responsible gambling initiatives

BY **Steven Stradbrooke** ON **May 13, 2019**

TAGS: **FINLAND**, **PAF**

Finnish gambling operator **Paf** continues to hail its new responsible gambling stance, despite the new ethos resulting in reduced profits for the state-controlled firm.

Paf, which holds a gambling monopoly in Finland's autonomous Swedish-language Åland islands region, reported reduced turnover and profit in 2018. The shortfall was blamed on/credited to Paf's new **responsible gambling initiatives**, including fixed limits on customers' annual online gambling losses.

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Can **Artificial Intelligence** Be a Game Changer?

THE VERGE

SCIENCE \ TECH \ FACEBOOK

Facebook and CMU's 'superhuman' poker AI beats human pros

'It can bluff better than any human.'

By James Vincent | Jul 11, 2019, 2:00pm EDT

Analysts at Morgan Stanley recently reduced their price targets for three major operators with poker citing the threat of an AI program developed by Facebook and Carnegie Mellon University.

The bot is being regarded as a breakthrough - an AI that can compete against multiple opponents

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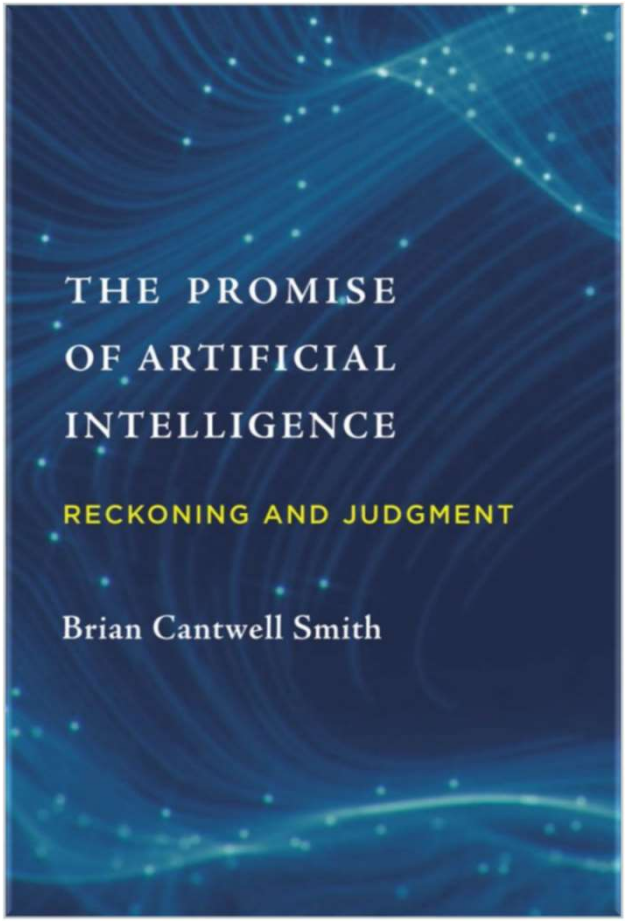
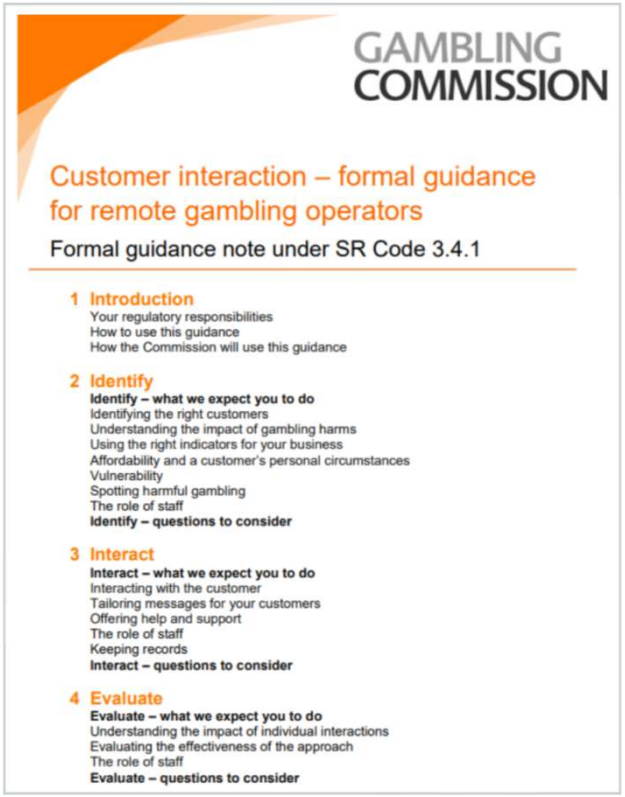
The Promise of AI



"I use the term **judgement** for the ideal to which I argue we should hold full-blooded human intelligence – a form of dispassionate deliberative thought, grounded in ethical commitment and responsible action, appropriate to the situation in which it is deployed… judgement is the standard to which human thinking must ultimately aspire"

"I use the term **reckoning** for the types of calculative prowess at which computer and AI systems excel – skills of extraordinary utility and importance, on which there is every reasons to suppose computers will continue to advance, but skills embodied in devices that lack the ethical commitment, deep contextual awareness, and **judgement**, which I will argue to be profound."

Regulatory Expectations That Require Judgement



GAMBLING COMMISSION

Customer interaction – formal guidance for remote gambling operators

Formal guidance note under SR Code 3.4.1

1 Introduction
Your regulatory responsibilities
How to use this guidance
How the Commission will use this guidance

2 Identify
Identify – what we expect you to do
Identifying the right customers
Understanding the impact of gambling harms
Using the right indicators for your business
Affordability and a customer's personal circumstances
Vulnerability
Spotting harmful gambling
The role of staff
Identify – questions to consider

3 Interact
Interact – what we expect you to do
Interacting with the customer
Tailoring messages for your customers
Offering help and support
The role of staff
Keeping records
Interact – questions to consider

4 Evaluate
Evaluate – what we expect you to do
Understanding the impact of individual interactions
Evaluating the effectiveness of the approach
The role of staff
Evaluate – questions to consider

e.g.,

- Train your staff to know their roles and responsibilities, and ensure they are supported and able to act promptly when they spot or are alerted to indicators of harm
- Even if you think the customer can afford it, they may still be experiencing gambling harms
- Do not let commercial considerations override customer protection
- Operators should consider the factors that might make an individual more vulnerable to experiencing gambling related harm.

Cannot be performed adequately solely by AI today

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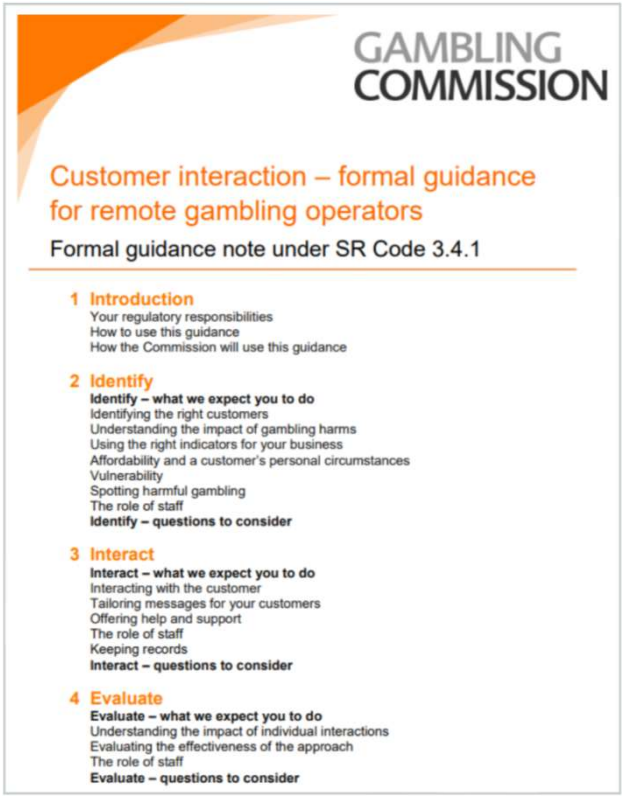
Regulatory Expectations That Require Automation



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e.g.,

- Operators have used deposit or loss thresholds as a main or sole prompt for a customer interaction, but these have often been set at levels that were inappropriately high, in comparison to the average amount of money that the majority of people have available to spend
- Identify the right customers e.g., use of broad range of markers of harm
- Change compared with previous gambling activity is a general trigger for customer interaction
- Make sure your process keeps pace with increases in demand – through growth, M&A or other changes.

Cannot be performed adequately or cost-effectively by humans today

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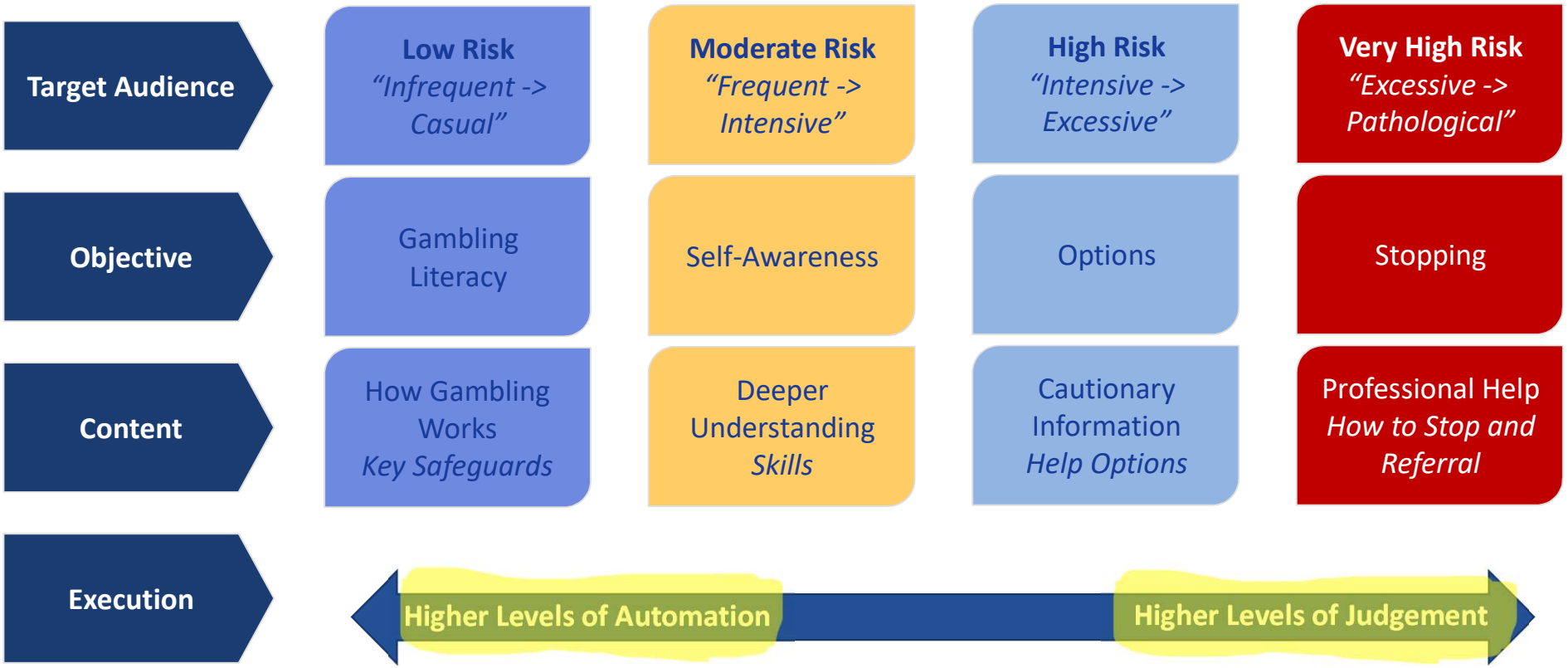
Interactions Require Judgement, Explainable AI Eases the Burden of Effort



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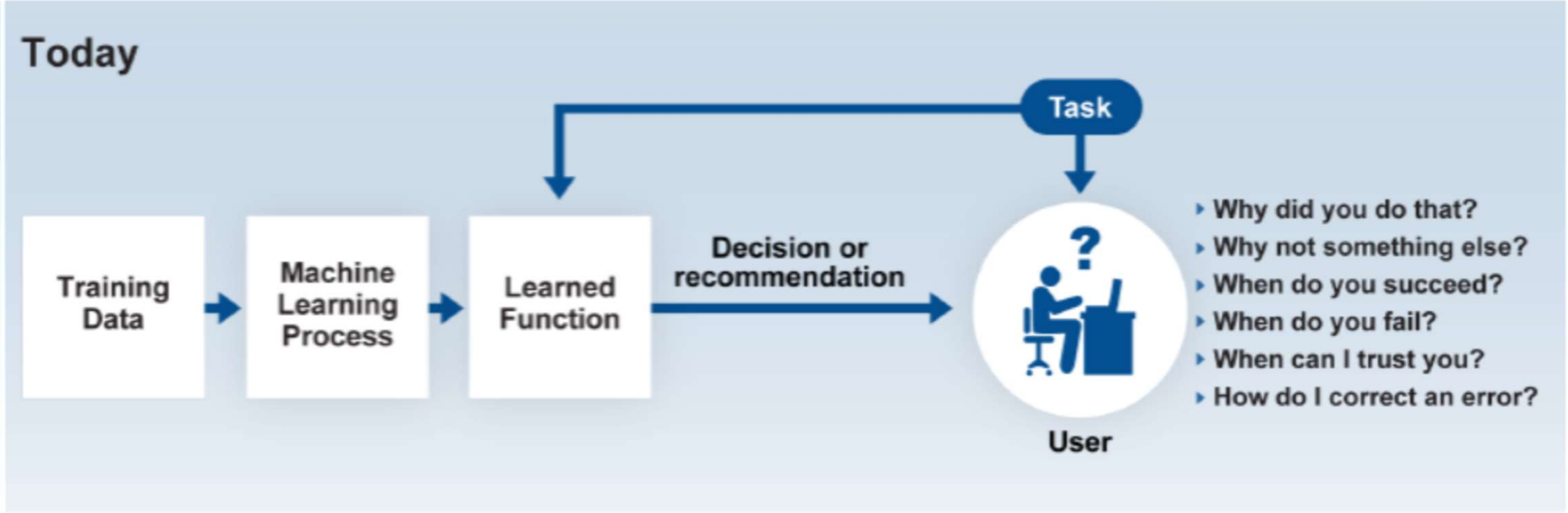
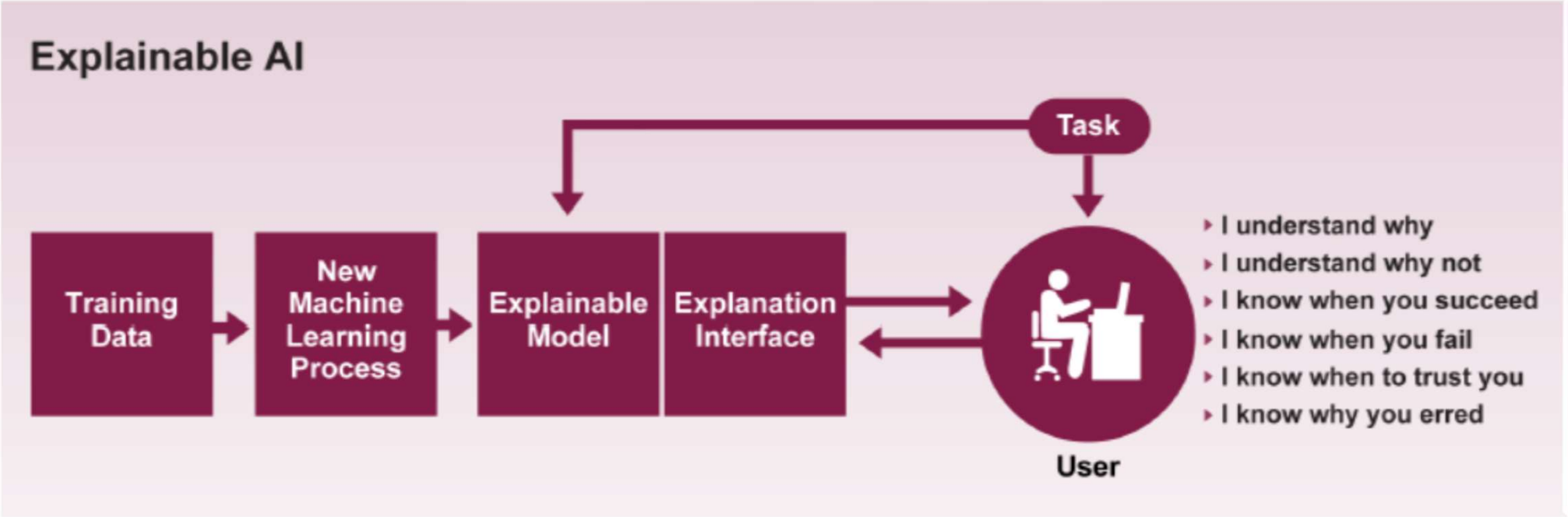
Machine Learning, Human Expertise and Explainability

Can we trust AI today to
i) auto-interact with players and ii) support human decision making?



Machine Learning, Human Expertise and Explainability

Yes, if I can understand why the AI is making its decisions



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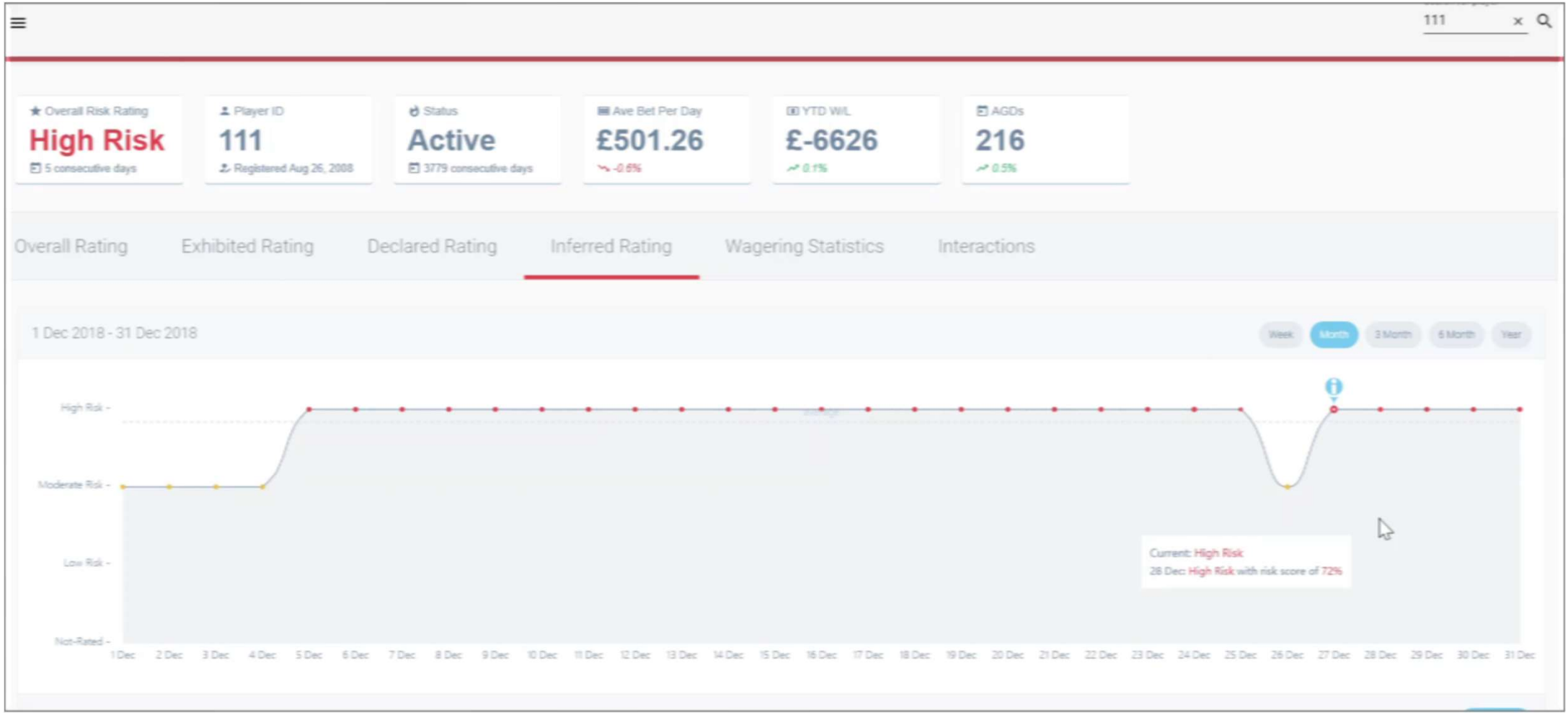
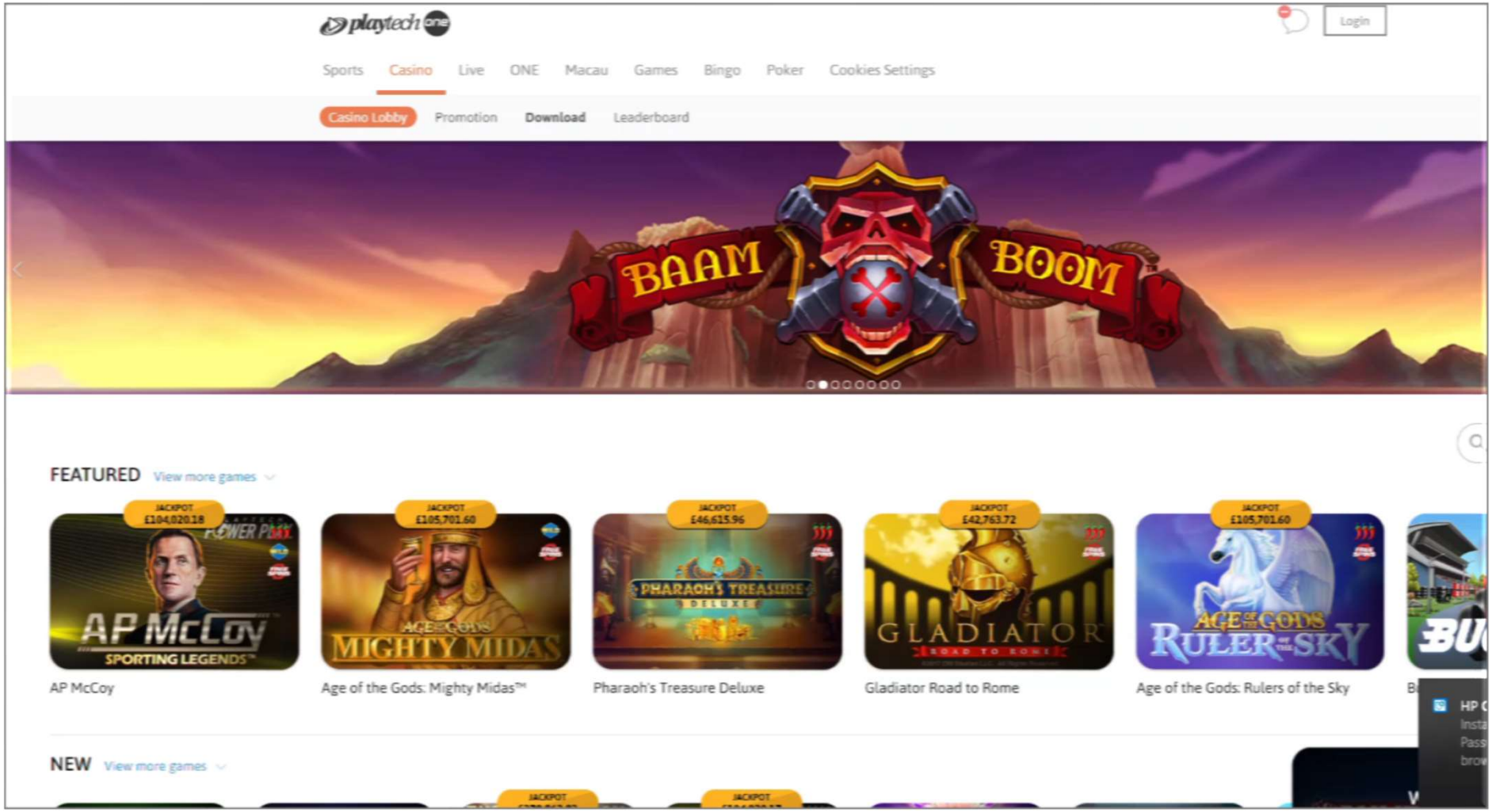
Explainable AI Enhances Human Decision Making



Explainable AI Can Deliver Relevant Interactions, Can Build Trust



Is Research Driving New Regulations Conclusive?

e.g., is PwC research, referenced by UKGC as best practice, correct?

Possibly, but we need to understand how decisions made by AI to build trust

Understanding the Risk Profile of Gambling Behaviour through Machine Learning Predictive Modelling and Explanation

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Abstract

The importance of providing multifaceted algorithms and tools for experts to be able to analyse and explain black box learning models has been greatly acknowledged recently. This includes methods for opening the black box by providing descriptions of the entire learning model, methods for explaining individual cases, simplification and visualization methods to achieve comprehensibility, feature ranking methods and teacher-student methods which seek to create simpler, more interpretable models within an acceptable range of loss of accuracy. In this paper, we propose a simple and efficient method for analysing how a chosen feature may influence the outcome of a learning model. The method produces curves which can reveal the trend of a feature value *till else being equal*, thus complementing feature ranking methods. Specifically, we show that it can help domain experts explore the directional impact (as opposed to the scale impact) of predictions as a feature value is varied within the model. Trends in the average values of a chosen feature are characterised w.r.t. a target outcome and visualized alongside error bands to support assessments of significant changes in the outcome. The method is scalable and applicable in principle to any learning system. Differently from decision trees or rule-based approaches, it offers a visualization of feature value trends which can be used by domain experts for the iterative analysis and understanding of a learning system. We have applied this method, called feature risk curves, to the analysis of a real system used by Playtech Plc for the protection of online gamblers which identifies players who may be at risk. The curves have proved insightful in discussions with sector experts for understanding the model-level drivers of particular features towards gambling harm, providing nuance to the mainstream understanding of features like night-play or declined deposits. In particular, the use of error bands around the curves helps us "know what we don't know", by drawing attention to the limits of what can be said about single features of player behaviour. The curves remain an active area of research for the team, with planned extensions described at the end of the paper.

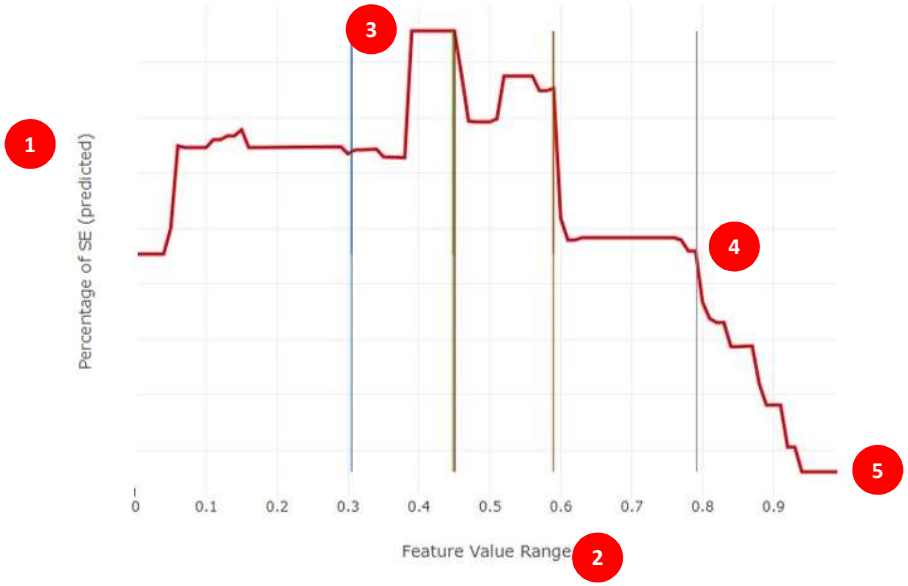
Keywords: Explainable AI, Knowledge Representation and Machine Learning, Gambling Harm Protection.

33rd Conference on Neural Information Processing Systems (NeurIPS 2019), Vancouver, Canada.

- Latest BetBuddy research focused on explaining how machine learning models make their decisions by examining influence of feature values on prediction, combined with expert review
- Technical methodology supported by visual representation of behaviours on impact on risk scores
- Machine learning models and explainability supplemented with expert reviews;
  - Academic and research professional *(Sophro)*
  - Clinical professional *(Responsible Gambling Council)*
  - Data analytics professional *(Ontario Lottery and Gaming Corporation)*
  - Compliance professional *(Playtech)*
  - Responsible gambling professional *(Mansion)*
- To be presented at NeurIPS workshop; *Knowledge Representation & Reasoning Meets Machine Learning (December 2019, Vancouver)*

Global Model Explainability
Enables Critique of Current ML Research

"Time and spend indicators: amount and frequency of time and deposits, time of day (according to research (PWC 2017), a higher percentage of overnight gamblers were found to be problem gamblers, than during other times of day)" UKGC



- This Night Play Ratio feature risk curve supports the mainstream assessment to an extent;

3 The model sees an increase in average self-exclusion probability if players go from never playing at night to playing a little bit. The highest probability values occur from 38% to 68%

4 However, after this level, average self-exclusion probability declines and in a way that is weakly significant

5 By the time someone is playing almost entirely at night, the model sees less self-exclusion than in day-players.

- Discussion with our experts interprets this as the distinction between night-play when it is typically a regular, stable habit (i.e. night-play is the clear majority of play; e.g. shift workers) and night-play when it represents evening sessions leaking later into the night as players struggle to stop ("I'm on a roll, I'll just play one more hour" or "I didn't mean to lose that; I'll play a bit longer and win it back").

1 Probability of model predicting a player as a serious self-excluder

2 Percentage of play that a player spends gambling between 12am – 8am

Gambling Faces an Existential Threat, But It Can Be Effectively Mitigated?

Lessons from Companies That Put Purpose Ahead of Short-Term Profits

"What we are seeing is no longer a conflict between doing the "right" thing and commercial success, but rather, a complex interaction of factors that has the characteristics of a paradox – a situation in which oppositional tendencies are brought into close contact.

The fundamental challenge is how to use such paradoxes to inform creative tensions – which lead to innovation and growth – rather than succumb to paralyzed indecision or poor judgment calls.

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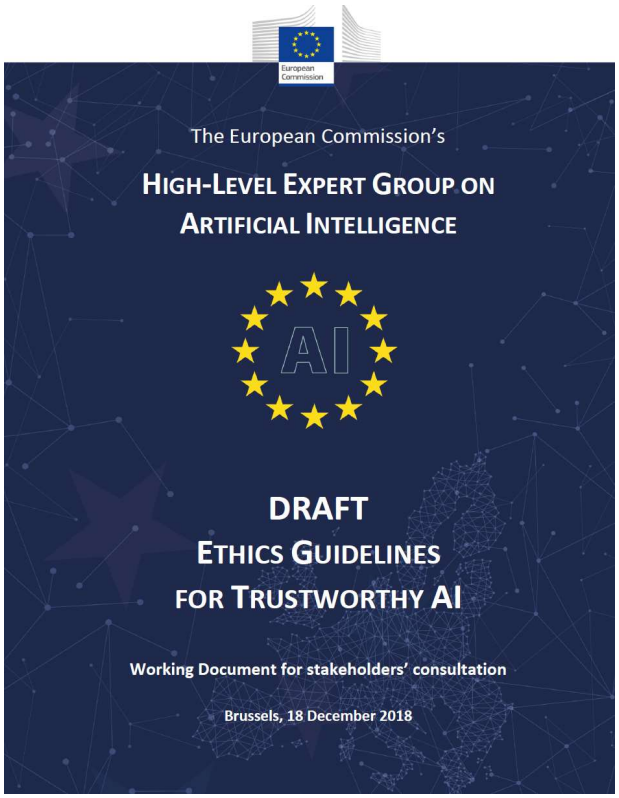
What Might an AI Strategy Look Like That Can Save The Gambling Industry?

- Invest in AI for safer gambling to protect the vulnerable
- Embrace explainability in sensitive applications of AI
- Build AI to enhance staff capability and skills
- Leverage AI for entertainment, however, change products where evidence points towards harm
- Be scientifically robust and continually evaluate
- Be open about AI blind spots and failures
- Avoid creating or re-enforcing biases
- Incorporate privacy by design
- Empower all stakeholders, including customers, staff and Boards, in the possibilities and risks of AI



Ethical Artificial Intelligence Becomes A Supreme Competitive Advantage

Joe McKendrick Contributor ⓘ
AI & Big Data
I track how technology innovations move markets and careers

Ethical AI ensures more socially conscious approaches to customer and employee interactions, and in the long run, may be the ultimate competitive differentiatior as well, a recent survey suggests. Three in five consumers who perceive their AI interactions to be ethical place higher trust in the company, spread positive word of mouth, and are more loyal. More than half of consumers participating in a recent survey say they would purchase more from a company whose AI interactions are deemed ethical.

3,317 views | Jun 24, 2019, 02:07pm

Microsoft Reconsidering AI Ethics Review Plan

Deborah Todd Contributor ⓘ
Consumer Tech

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Oxford University given record £150m donation to fund AI ethics institute

The £150m gift from Blackstone boss Stephen A Schwarzman is reported to be the biggest ever single donation to a UK university.

Wednesday 19 June 2019 10:42, UK | OXFORDSHIRE

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US military

Pentagon seeks 'ethicist' to oversee military artificial intelligence

General says 'We are thinking deeply about the ethical, safe and lawful use of AI' as US seeks to catch up with China's early lead

THANK YOU FOR YOUR TIME AND PLEASE ASK US ANY QUESTIONS.

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francesco.rodano@playtech.com