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Next-Gen Artificial Intelligence

Intelligent decision automation using Merlynn Intelligence Technologies

Technology has driven us to a point where process automation is common place. It no longer differentiates one organisation from the next. The next frontier is the automation of human intelligence, something that until now has remained out of reach.

In a constantly changing and unpredictable business environment, organisations are being challenged to think beyond traditional efficiency and automation plays

With human experts the foundation of any successful business, the next frontier of opportunity lies in helping these experts to expand their decision-making impact using artificial intelligence

The Challenge

Against a backdrop of limited resources lies a challenge common to many organisations; an imperative to deliver faster, more efficiently and without creating additional or unnecessary risk.

Identifying solutions that yield favourable business outcomes typically requires the skill of key individuals, who draw on expertise and experience, to weigh up all the relevant information, actions and consequences, and make decisions that enable the business to thrive.

As complexity and risk increases so too does the organisation's reliance on human experts to make the difference between positive and negative outcomes. Yet it can be difficult to access these human experts and to elicit what exactly it is that makes them especially good at what they do.

The Response

To date, organisations have typically responded to this challenge by attempting to reduce the reliance on human decision making elements. This approach has primarily been focused on robotic process automation efforts, with these bots driven by highly repeatable business rules logic.

These process automation initiatives have delivered a range of results, some successful and others less so. The success of these process automation programs remains situational but all have a common dependency on the availability and quality of data.

It's this persistent reliance on data that has historically led to challenges in attempting to scale from process automation to decision automation. This is because human decision-making constructs are inherently reliant on tacit knowledge i.e. that which is considered experiential and not simply a systemised execution of basic business rules.

What now?

Humans know more than they can tell. We typically think of knowledge as something that can be recorded in words. This core premise has underpinned traditional automation solutions for many years, highlighting why these tools are unlikely to be suited to resolving higher order exception based decisions that cannot simply be executed through rules-based engines. As much as 60-70% of employee time in large, established enterprises is spent on handling exceptions – events that were not anticipated by standard processes.

The future lies in deploying next generation artificial intelligence to digitise key decision makers in the form of Virtual Experts.

Introducing Merlynn's Tacit Object Modeller: TOM™ applies artificial intelligence to model **human expertise**

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Codifying Subject Matter Expertise

Leveraging subject matter expertise, Merlynn's TOM™ provides business users with a highly intuitive user interface where they can simply and quickly configure highly intelligent **Virtual Experts.** The Virtual Experts are capable of rapidly replicating complex human decisions that typically rely on highly nuanced or subjective decision-making processes.

With relatively minimal reliance on data, the TOM™ Virtual Expert acts as a tangible, automated version of the expert's own tacit knowledge base, with APIs enabling seamless downstream integration into enterprise systems and your existing automation footprint.

The strategic value of TOM™ lies in its ability to replicate complex subjective decision elements, those which cannot be explicitly defined and rarely exist in the form of business rules. It systematises the 'how' behind what makes a subject matter expert a 'good' decision-maker.
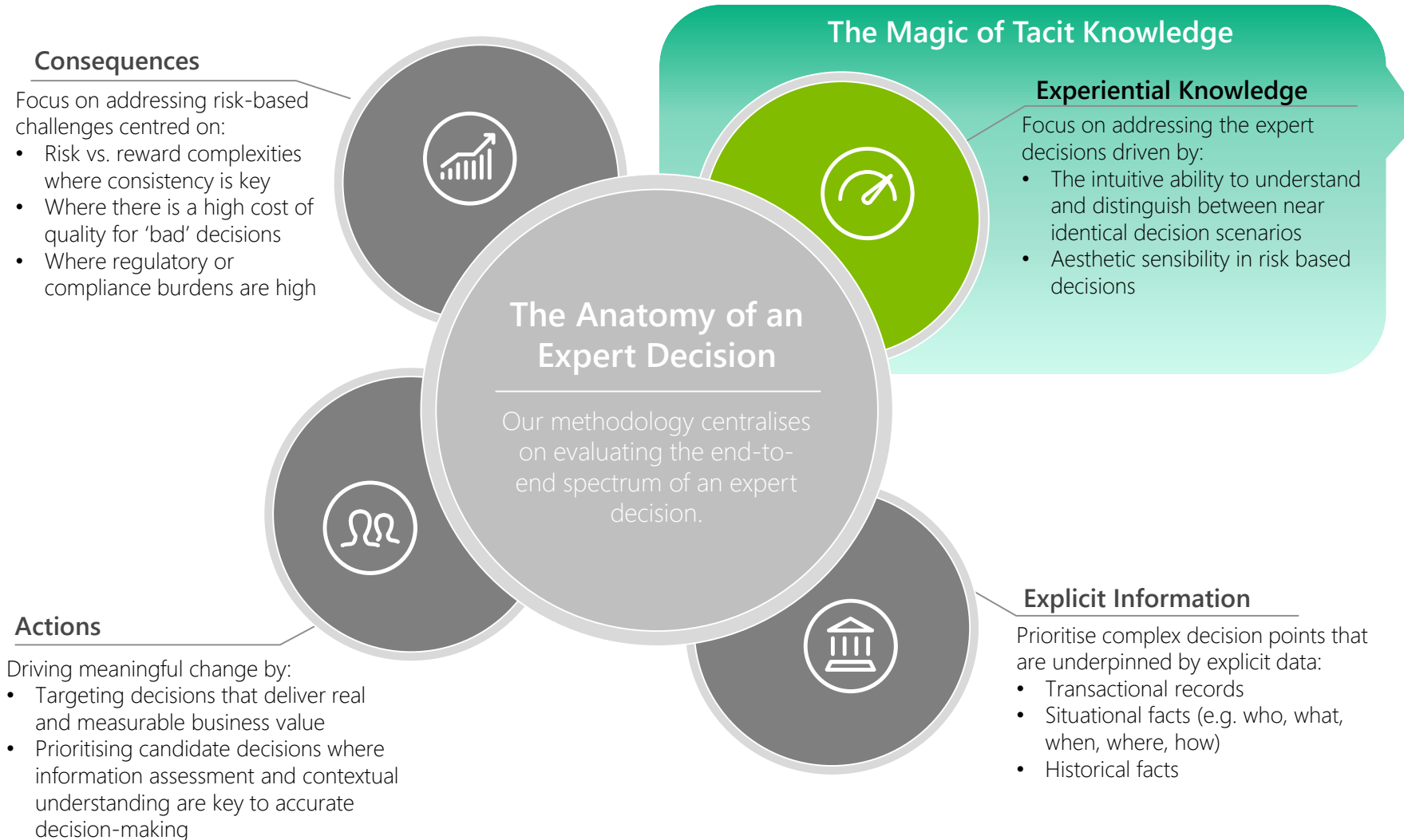
Scalable and Traceable

This concept of tacit expertise is typically very difficult to expose from the underlying data itself. TOM™ allows users to intuitively codify the opaque, tacit objects that underpin the human decision making process, and enables this decision execution in a highly repeatable, traceable and scalable manner. TOM™ then employs a champion / challenger framework for model training and validation prior to deployment.

Capacity and Scalability
TOM™ has the capacity to scale and extend easily with rapid build, validation and training cycles

Cost Reduction
Evidence of TOM™ Virtual Experts executing decisions at 15% of the cost of human resources

24/7/365 Operations
'Always on' processing with no fatigue, no variability and no decision backlogs during peak volumes

Internal Control
Centrally managed logging and control enables audit and compliance efficiency, whilst simultaneously reducing risk

TOM™ Strategic Benefits

Operational Speed
Turnaround time and decision execution are improved by up to 80%

Highly Visible, Highly Traceable
Highly transparent, highly visible subjective decision logic enables organisations to easily demonstrate compliance with emerging regulatory requirements

Quality and Consistency
TOM™ executes subjective decisions consistently and quickly, every time and enables human effort to be re-purposed towards complex exception management

Codifying Institutional Knowledge
By codifying expertise over process, TOM™ enables organisations to mitigate key person risk by systematising the SME knowledge base

Figure 1: Deloitte – Strategic Benefits of TOM™

Successfully implementing TOM™ starts with identifying your most trusted SMEs and understanding what makes them uniquely good at what they do

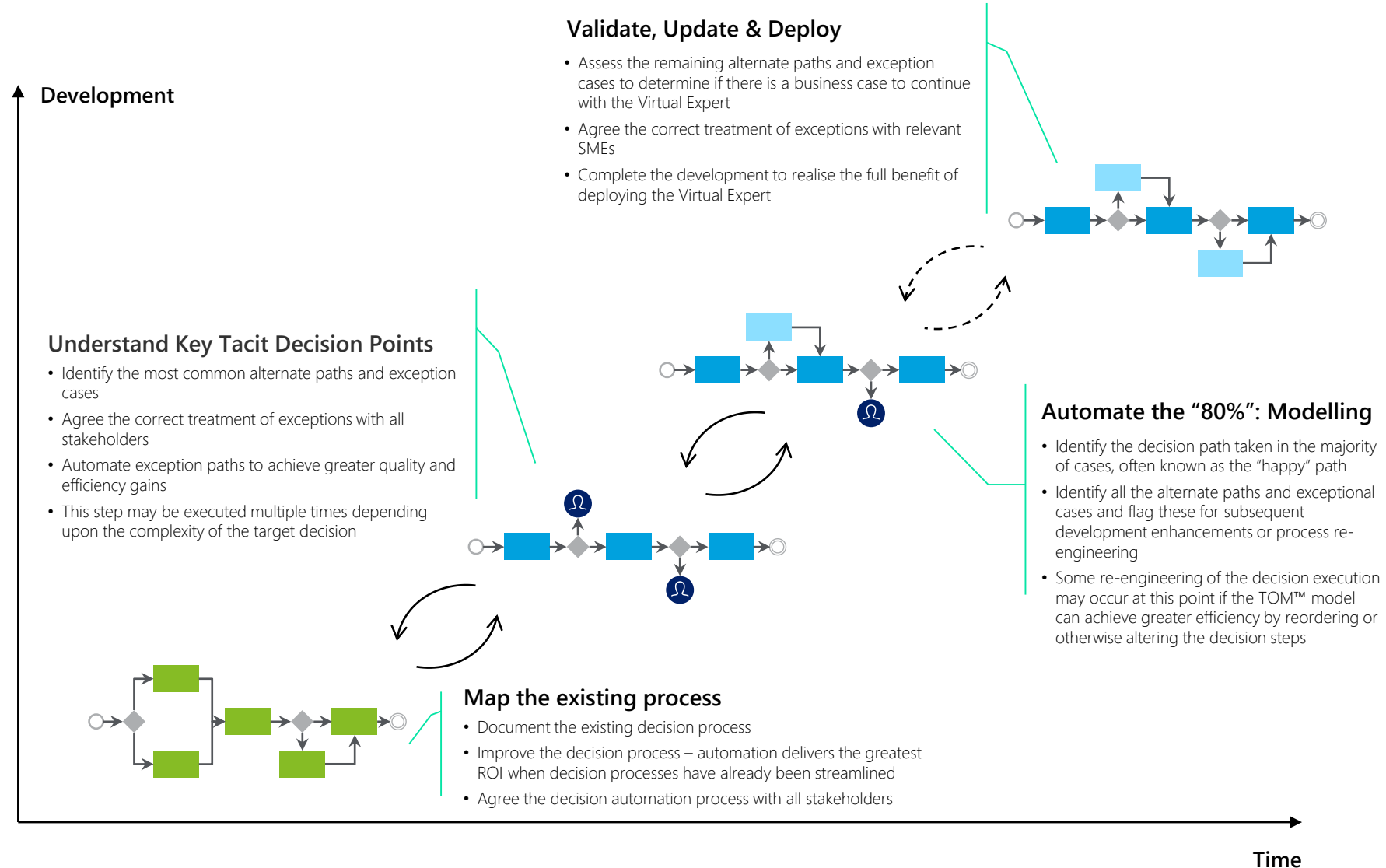We apply a holistic set of design principles in the creation of your TOM™ **Virtual Experts**.

Consequences

Focus on addressing risk-based challenges centred on:
- Risk vs. reward complexities where consistency is key
- Where there is a high cost of quality for 'bad' decisions
- Where regulatory or compliance burdens are high

The Magic of Tacit Knowledge

Experiential Knowledge

Focus on addressing the expert decisions driven by:
- The intuitive ability to understand and distinguish between near identical decision scenarios
- Aesthetic sensibility in risk based decisions

The Anatomy of an Expert Decision

Our methodology centralises on evaluating the end-to-end spectrum of an expert decision.

Actions

Driving meaningful change by:
- Targeting decisions that deliver real and measurable business value
- Prioritising candidate decisions where information assessment and contextual understanding are key to accurate decision-making

Explicit Information

Prioritise complex decision points that are underpinned by explicit data:
- Transactional records
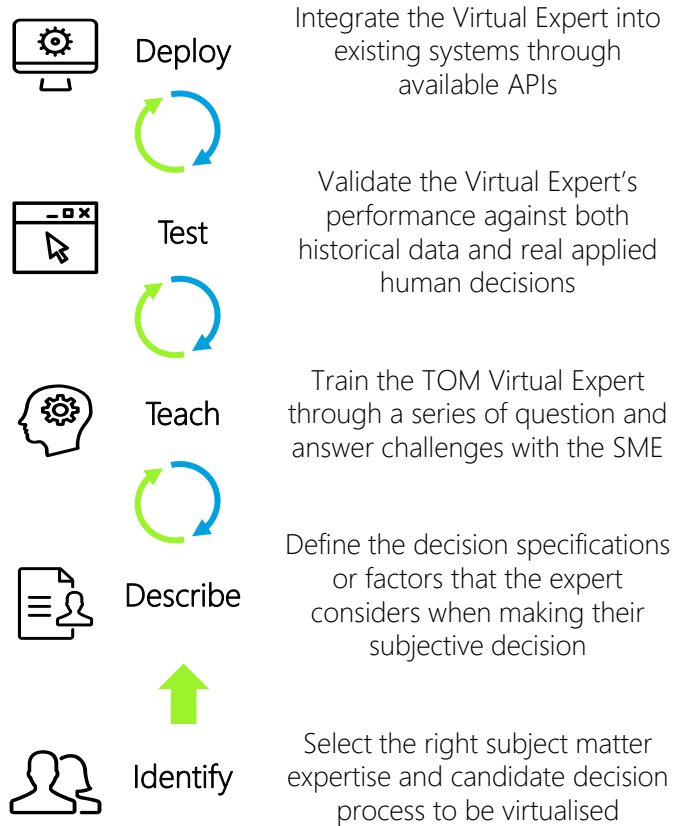- Situational facts (e.g. who, what, when, where, how)
- Historical facts

Tacit knowledge is the gut instinct that only comes with experience – it's difficult to discern and often isn't evident in the data alone. It's what allows an underwriter to look at two similar risks and determine that one is good to insure and the other is not. Or a claims handler that is able to assess two seemingly comparable cases yet know that something is wrong with one of them and requires further investigation before making a decision.

It's a judgement call, a kind of 'sixth sense', one that is developed and refined over years of dealing with various situational scenarios. Add to this business acumen and an ability to correctly favour one action over another to achieve optimal customer and commercial outcomes, and you have an expert worthy of virtually replicating.

It's that unique combination of experience and intuition that comprises what we refer to as tacit knowledge. And this is precisely what TOM™ was built to model – it learns directly from the expert to consistently and traceably automate intelligent decision making processes.

A high impact implementation begins with identifying the right experts to define key factors, and training TOM™ with a 'challenge and response' approach

Deploy — Integrate the Virtual Expert into existing systems through available APIs

Test — Validate the Virtual Expert's performance against both historical data and real applied human decisions

Teach — Train the TOM Virtual Expert through a series of question and answer challenges with the SME

Describe — Define the decision specifications or factors that the expert considers when making their subjective decision

Identify — Select the right subject matter expertise and candidate decision process to be virtualised

Development

Validate, Update & Deploy
- Assess the remaining alternate paths and exception cases to determine if there is a business case to continue with the Virtual Expert
- Agree the correct treatment of exceptions with relevant SMEs
- Complete the development to realise the full benefit of deploying the Virtual Expert

Understand Key Tacit Decision Points
- Identify the most common alternate paths and exception cases
- Agree the correct treatment of exceptions with all stakeholders
- Automate exception paths to achieve greater quality and efficiency gains
- This step may be executed multiple times depending upon the complexity of the target decision

Automate the "80%": Modelling
- Identify the decision path taken in the majority of cases, often known as the "happy" path
- Identify all the alternate paths and exceptional cases and flag these for subsequent development enhancements or process re-engineering
- Some re-engineering of the decision execution may occur at this point if the TOM™ model can achieve greater efficiency by reordering or otherwise altering the decision steps

Map the existing process
- Document the existing decision process
- Improve the decision process – automation delivers the greatest ROI when decision processes have already been streamlined
- Agree the decision automation process with all stakeholders

Time

Implementation of TOM™ delivers significant direct and indirect benefits

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Direct Benefits.

Indirect Benefits.

Additional benefits worth consideration in the business case include

>85% Optimising Operational Efficiency

The optimisation of resource capacity currently allocated to the execution of subjective decisions can reduce costs by up to 85%. This enables key SMEs to push further up the curve of decision complexity towards higher cognitive load tasks.

>200% Reduction in Key Person Risk

Research has shown that the cost of turnover for specialist skill sets required in complex decision-making roles can be up to 213% of the annual salaries. Codifying decision expertise using TOM™ directly mitigates the key person risk associated with loss of complex SME knowledge whilst improving the transparency and traceability of the decisions made.

>99% Consistent & Accurate Decision Making

The emulation of expert decisions reflects the expert insight codified by TOM™ but with the execution of those decisions following a consistent, verifiable pattern.

Internal Control

Codifying subject matter expertise brings clarity to processes that may have otherwise been misunderstood. With a stronger understanding behind subjective decision making, organisations can better manage and measure risk, and demonstrably comply with emerging regulatory requirements.

Quality

Human error is avoided, significantly increasing quality control standards through consistent decision outcomes. Humans can then refocus their attention to exception management, further enhancing overall quality.

24/7 Operations

Full-time access to decisions which include human insight & empathy. Peak loading of workload and pressure on throughput is significantly reduced. Loading on systems can also be reduced, optimised, and controlled through the suitable deployment methods.

We apply our proven process for identifying and prioritising candidate decisions for automation using TOM™

Business Value Criteria	Areas of Assessment	Assessment Value		
		High	Medium	Low
Operational Improvements	• Optimise FTE requirements • Increases capacity • Reduces volumes • Reduces error rates / rework	Offers substantial work effort reduction, error rate reduction and/or reduced volume	Offers positive work effort reduction in terms of FTE, error rate reduction and/or reduced volume	Little to no ROI in FTE terms, error rate reduction and/or reduced volume
Customer Experience	• Reduces wait times, turn-around times etc. • Improves customer interactions	Offers significant improvement to customer experience (e.g., faster, more consistent decisioning)	Moderately improves customer experience (e.g., reduction in decision turnaround times)	Minimal to no impact to customer service
Risk Mitigation	• Removes or mitigates risks associated with erroneous, inconsistent or opaque decision execution	Removes or significantly mitigates risk, brings significant transparency to a highly regulated decision environment	Partially removes or mitigates risk or brings improved transparency to complex regulatory areas	Little to no risk reduction from decision automation or where regulatory requirements are minimal or non-complex
Employee Experience	• Improves employee experience by valuing expertise and making it readily available	High retention of human experts, and increased capability of workforce	Moderate improvement in retention of experts and some improvement in team capability	Little to no change in human expert retention and limited change in team capability

Implementation Complexity Criteria	Areas of Assessment	Assessment Value		
		Low	Medium	High
Decision Complexity	• Base decision complexity and any 'decision re-engineering' required • Known decision variations and/or exceptions • Documentation availability	Decision has little to no variations, exceptions, instances of subjective reasoning and/or unstructured communications, and can be automated end-to-end through traditional RPA methods	Decision has select variations, exceptions, instances of subjective reasoning and/or unstructured communications, and can be mostly automated without process re-engineering	Decision has multiple instances of variations, exceptions, instances of subjective reasoning and/or unstructured communications, may require process re-engineering and cannot be easily automated
Technology Complexity	• Number of systems involved • Interaction volume and complexity • Types of technologies utilised	Decision involves limited number (1-2) of systems and technology platforms	Decision involves multiple systems (3-4) and interacts with more than one technology platform	Decision involves many systems (>4) and interacts across a variety of technology platforms
Effort to Launch	• SME availability • Test data and environment availability • Change management requirements • Component reuse	Documentation, test data and SME resources are readily available. Limited change management required	Decision requires some documentation, test data & a few resources need to be made available. Some change management required	Decision requires extensive documentation, test data & multiple resources need to be made available. Significant change management required

Business Value assessment to be conducted during detailed deep dive opportunity assessment and TOM™ strategy definition

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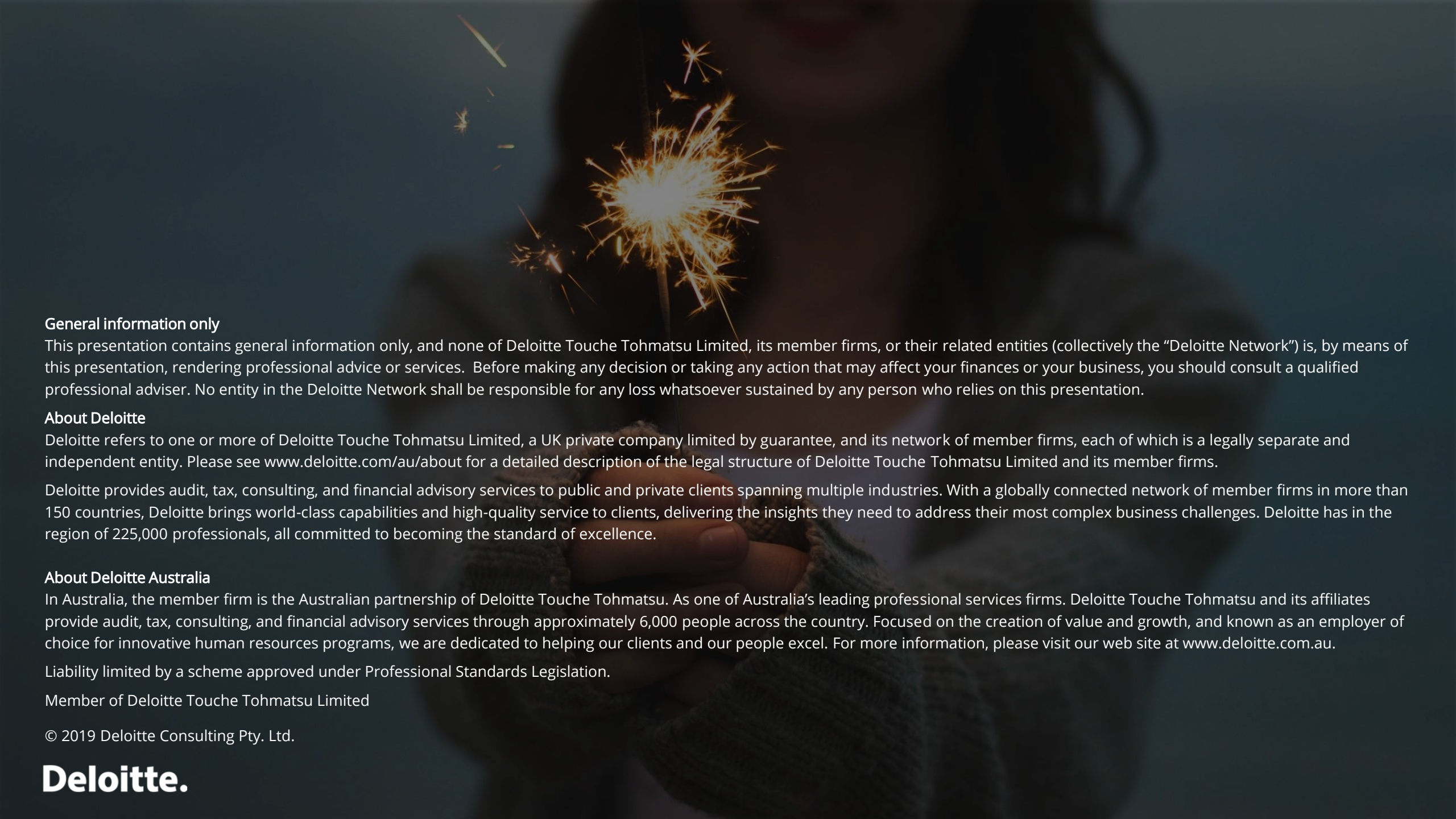E: wdodd@deloitte.com.au

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