

# Explore how to automate anything, anywhere, anytime

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February 2021

# Automation with AI transforms business operations

Automation with AI  
will deliver  
**\$134B**  
in labor value  
in 2022

## 90%

of COOs whose organizations *are scaling* intelligent automation tell us it creates higher-value work for their employees.

## 84%

of global executives say they won't achieve their growth objectives *without scaling* AI.

# Automating AI-Powered Digital Decisions

*Mike Gualtieri, VP & Principal Analyst*

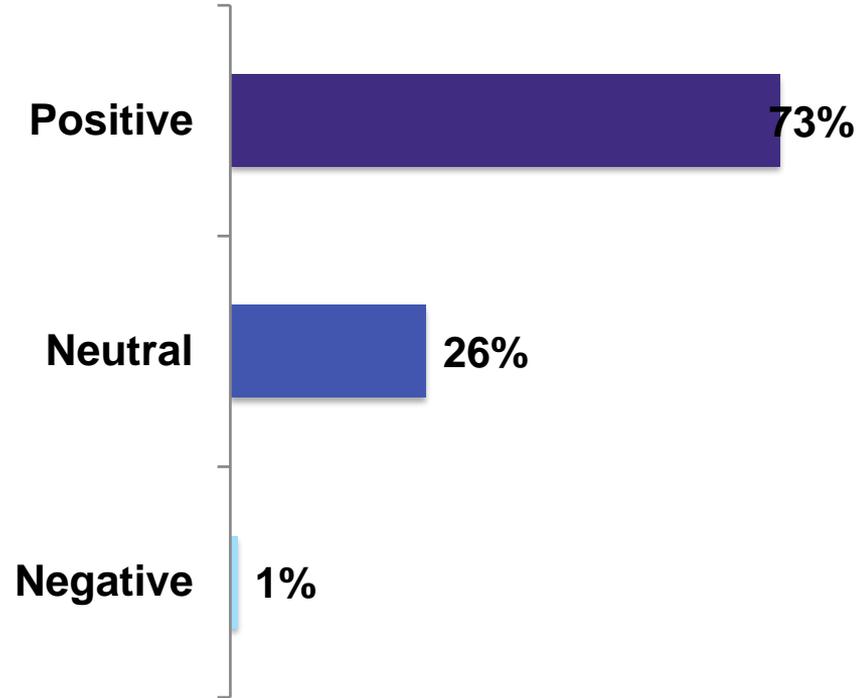
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February 2021



Organizations that  
implement AI get results.

## What type of impact has AI adoption had on your organization?



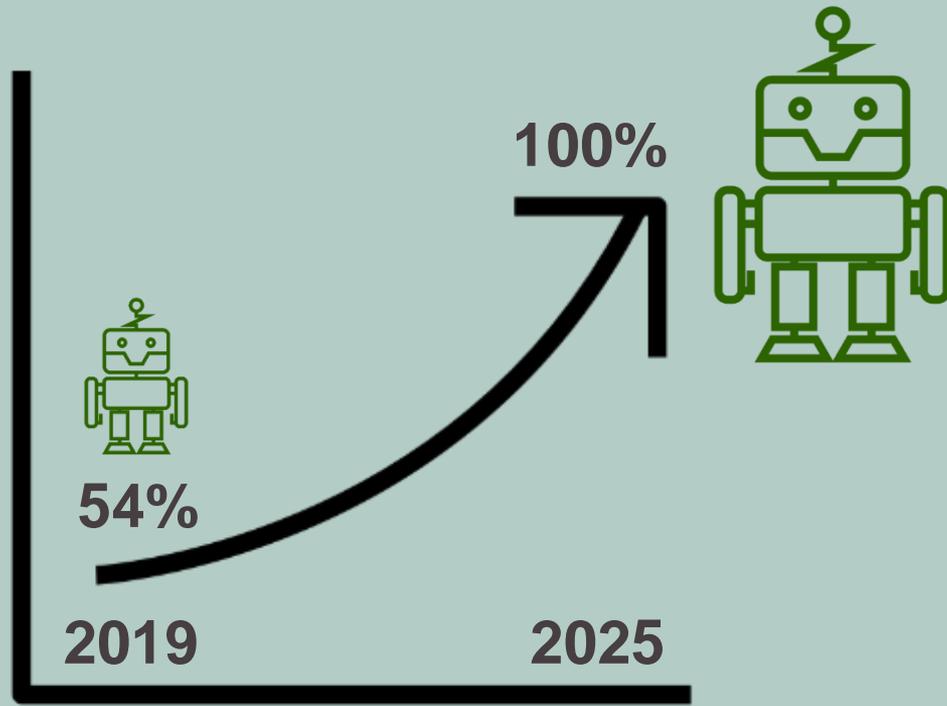
Source: Business Technographics Data And Analytics Survey, 2020  
Base: 1466 Data and analytics decision-makers whose firm is implementing or expanding use of AI

The background is a complex digital visualization. A large, glowing green globe is the central focus, partially obscured by various data elements. To the left, there are several bar charts with green bars of varying heights. In the upper left, there are rows of small, glowing green squares, resembling a grid or a data matrix. A network of thin, glowing green lines connects various points, suggesting a data network or a neural network. A large, glowing green line curves across the globe, possibly representing a data path or a specific metric. On the right side, there is a vertical axis with numerical labels: 160, 165, 170, 175, 180, 185, 190, and 200. A diagonal axis with labels 71, 72, 73, 74, 75, 76, 77, and 78 is also visible. The overall color palette is dominated by dark green and black, with bright green highlights and glowing effects.

AI is real and ready because . . .



. . . enterprises use it today to create millions in value even with a single use case.



We estimate that nearly 100% of enterprises will use AI within five years because . . .

? Decisions



**Enterprises rise or fall...**



**...based on the collective efficacy of all  
the decisions made...**



**...by leaders, employees, and**

```

private void transactTAMWithdrawals (TAMAnalyzer tam) throws ServiceException
{
    // Now it is time to make withdrawals
    Date withdrawalDate = tam.getCurrentDate();

    TAMAnalyzerEvaluation ae = tam.getCurrentAnalyzerEvaluation();

    // make sure we can withdraw on this date
    if (DateHelper.isBetweenInclusive(withdrawalDate, ae.getFirstPaymentDate(), ae.getLastPaymentDate()) == false)
    {
        return;
    }

    int periodicity = 12;

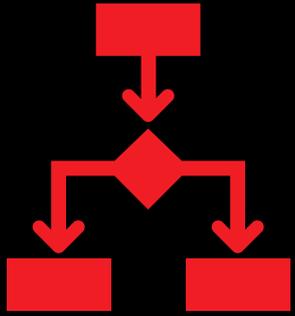
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        switch (ep.getTamPurposeKind())
        {
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                withdrawalAmount = ep.getIncomeContributionAmount()/periodicity;
                break;
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        }
    }
}

```

...by decision logic embedded in applications.



# Decisions

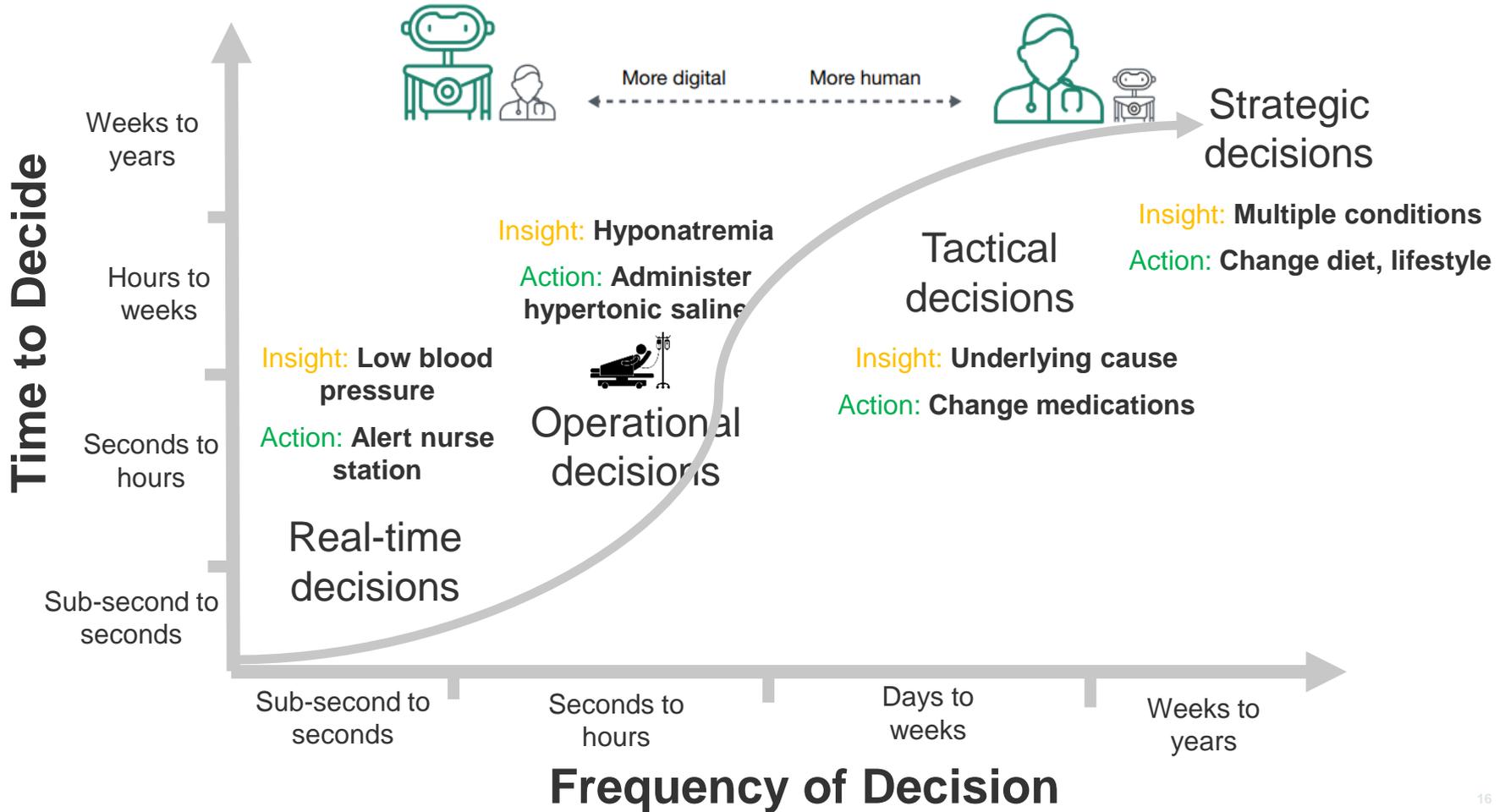
# DIGITAL

A subset of business logic, defined by business experts, informed by analytics, and embedded in applications to make routine, repeatable operational and/or customer decisions in real-time.

# DECISIONS

# Digital Decisions

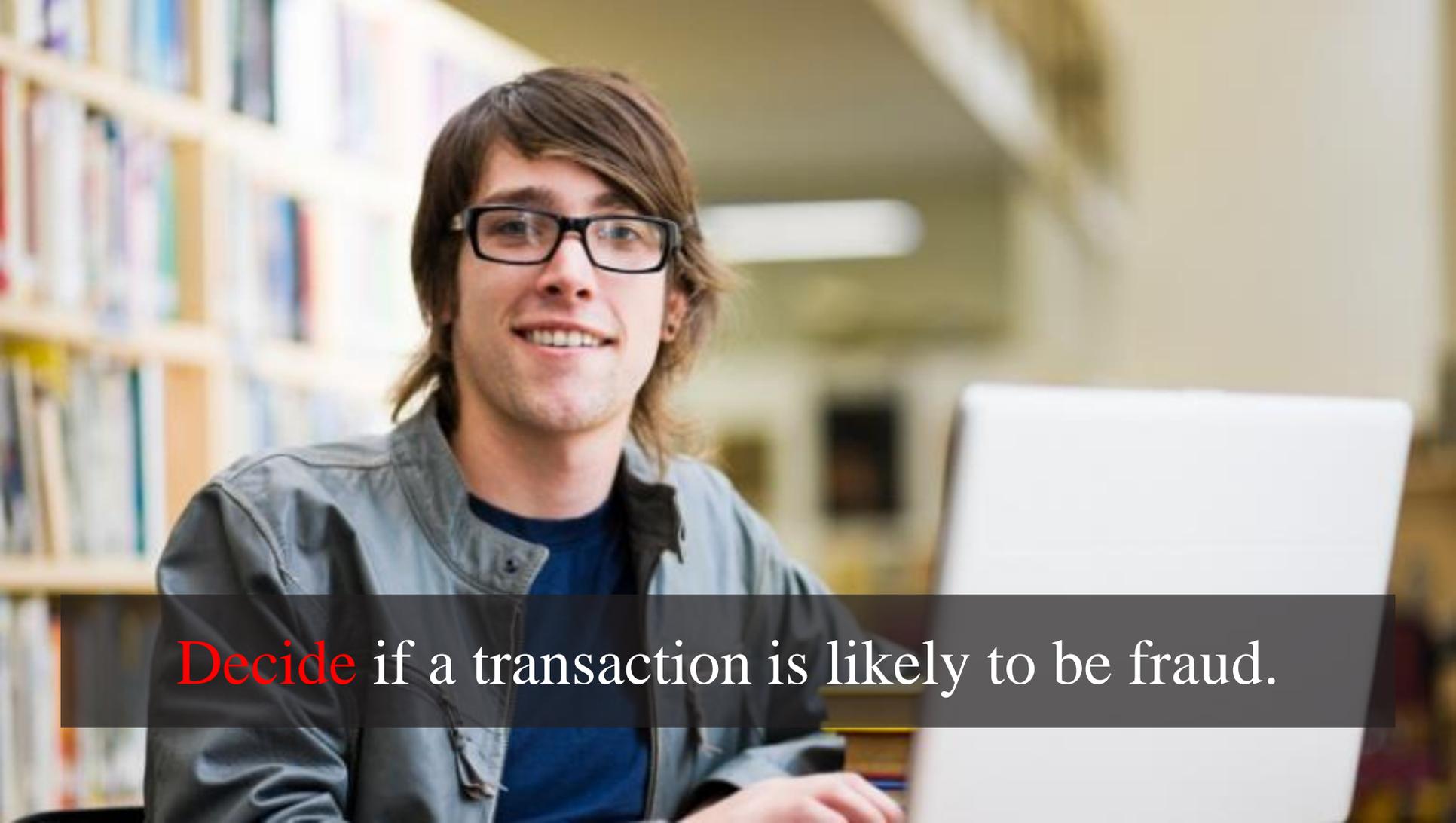
# Business Insights





**Decide** carrier assignment to meet customer delivery promises at the lowest cost.





**Decide** if a transaction is likely to be fraud.



**Decide** how to prioritize utility maintenance.



**Decide** what actions will prevent customer churn.

A large industrial factory floor filled with numerous yellow robotic arms working on car chassis. The robots are arranged in a line, and the background shows a complex network of pipes and structural elements. The lighting is bright, highlighting the metallic surfaces and the yellow color of the robots.

**Decide** when to service machines before they  
breakdown.



**Decide** whether to approve a loan based on the likelihood of default and regulatory requirements.



**Decide** what add-ons customers are likely to buy.



**Decide** best discount to gain customer loyalty.

# Digital decisions take many forms

Decision	Description
Fact	Establish a fact
Identity	Recognize a pattern, object, condition, state,...
Choice	Make a choice based on a set of defined outcomes
Process	Trigger a process or branches within a process
Policy	Determine policy compliance
Event	Route an event to an application
Advice	Surface knowledge from an expert knowledge base



There are 5, 50, 500, and perhaps 5,000 enterprise use cases for digital decisions...

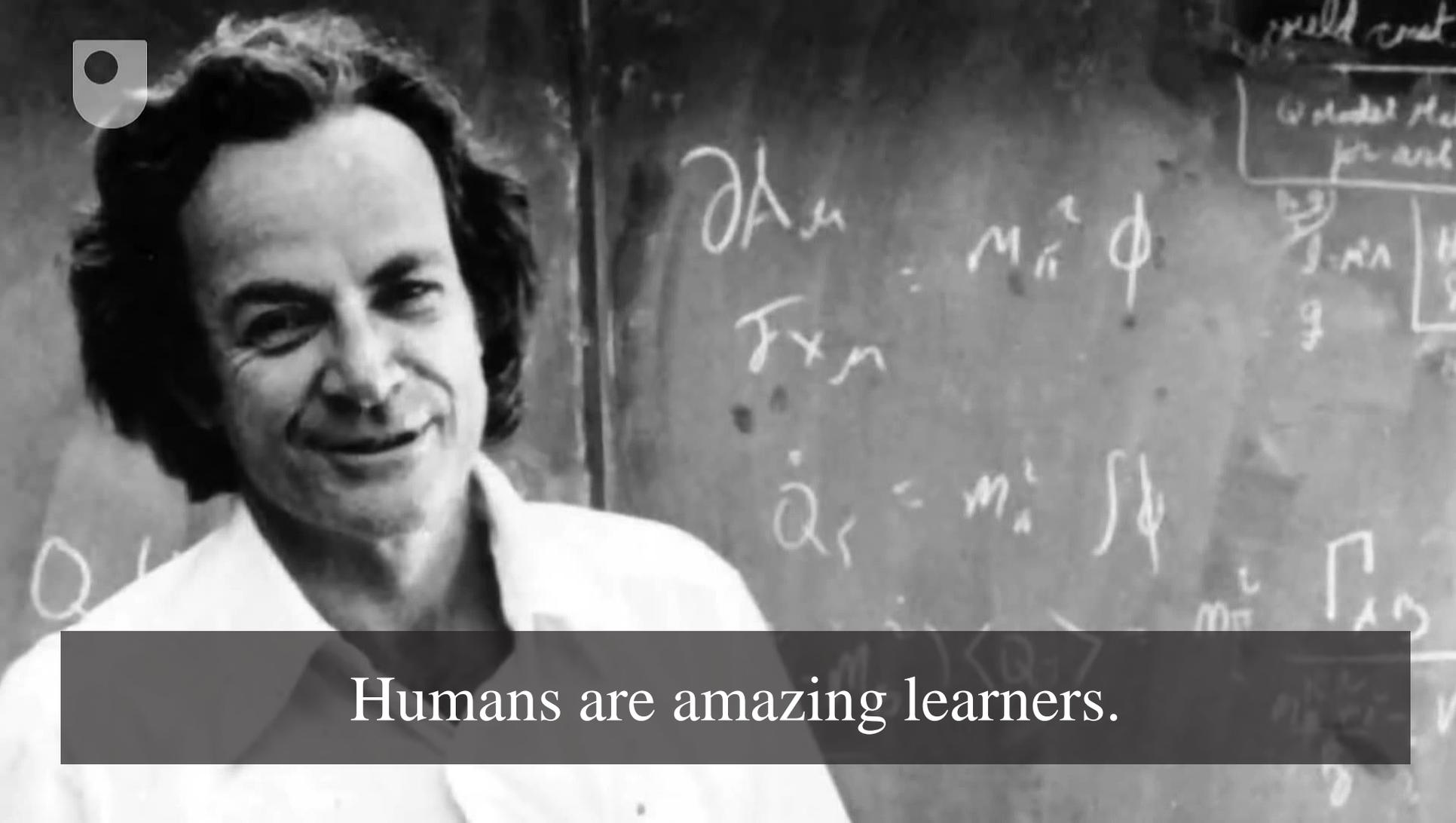


...especially for enterprises undergoing digital transformation.

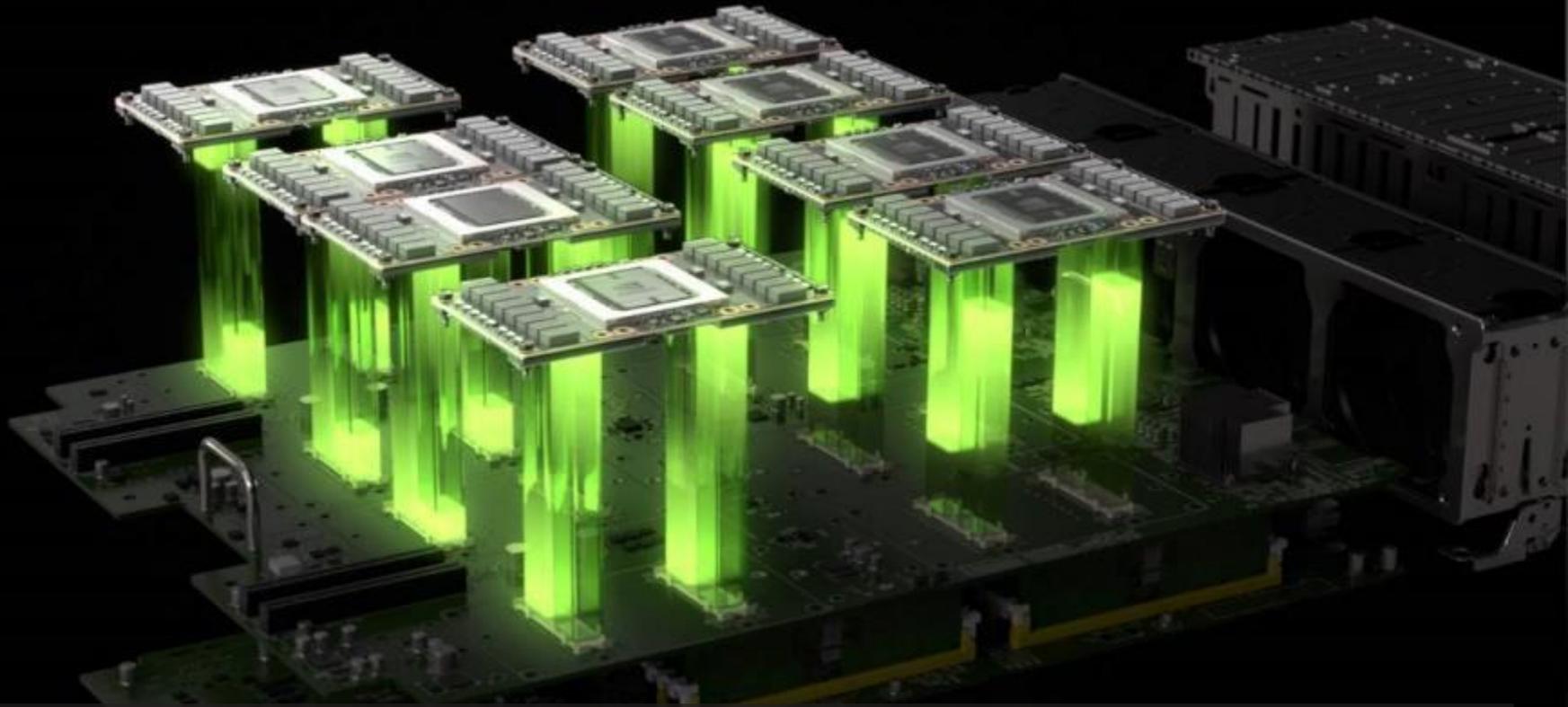
? Decisions

A hand is shown in the process of moving a black chess piece on a checkered board. In the background, a large, shiny silver trophy is visible, symbolizing success or achievement. The entire scene is set against a blue background.

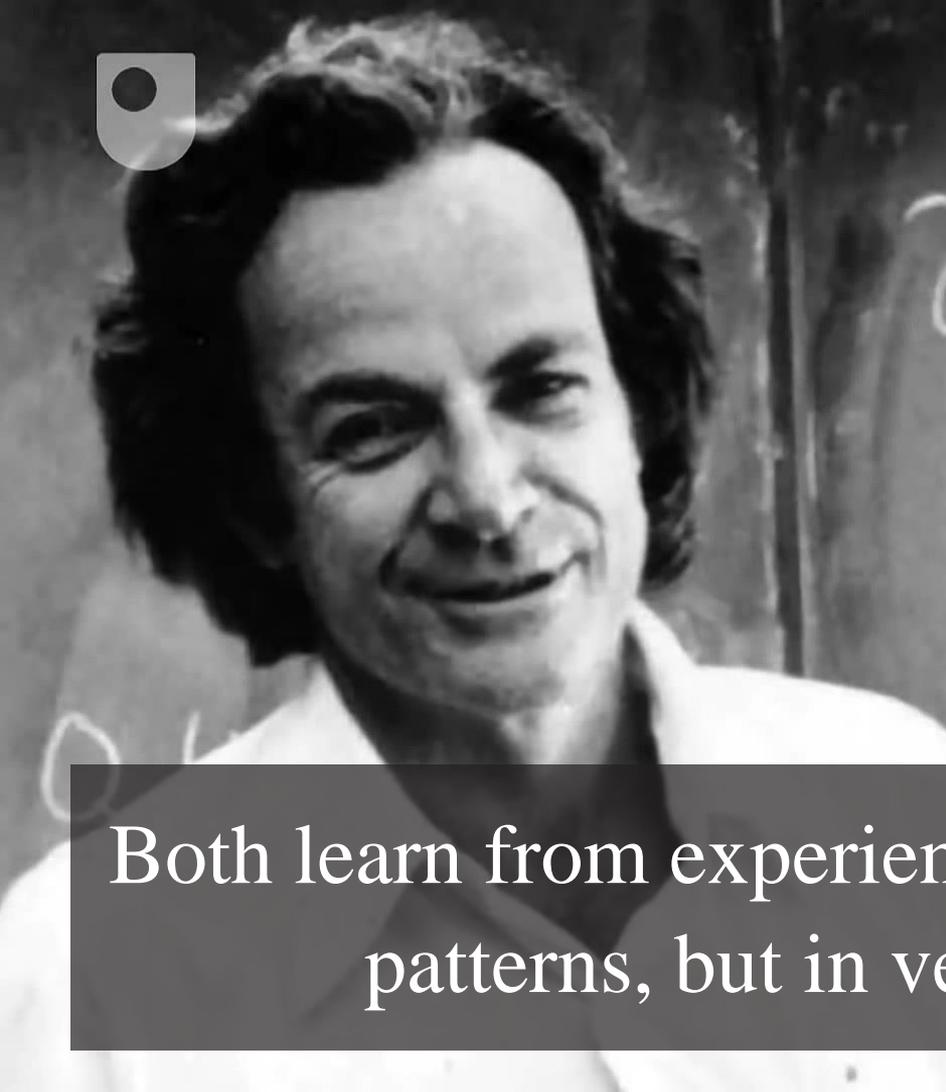
**How can enterprises make the smartest digital decisions?**



Humans are amazing learners.



Machines are amazing learners.



Both learn from experience, training, and inferring patterns, but in very different ways.

# Humans and machine learning have strengths and weaknesses.

## Human

- › **Strength:** understand decision logic in the absence of large amounts of data.
- › **Strength:** adapt to sea changes.
- › **Weakness:** unable to analyze large data sets
- › **Weakness:** cognitive biases can lead to poor decisions.

## Computer

- › **Strength:** can analyze huge amounts of data to find signals and patterns.
- › **Strength:** models can relearn quickly from new data
- › **Weakness:** poor adaptability to sudden change
- › **Weakness:** subject to mistakes by data scientists

A hand in a dark suit jacket is shown from the right, reaching towards a glowing green circuit board pattern that fills the left side of the frame. The background is a dark green gradient. The circuit board pattern consists of white lines and dots, some of which are glowing. The hand is positioned as if about to touch or interact with the digital pattern.

The most effective AI solutions will combine the best of human intelligence with the best of artificial intelligence to make decisions.

```

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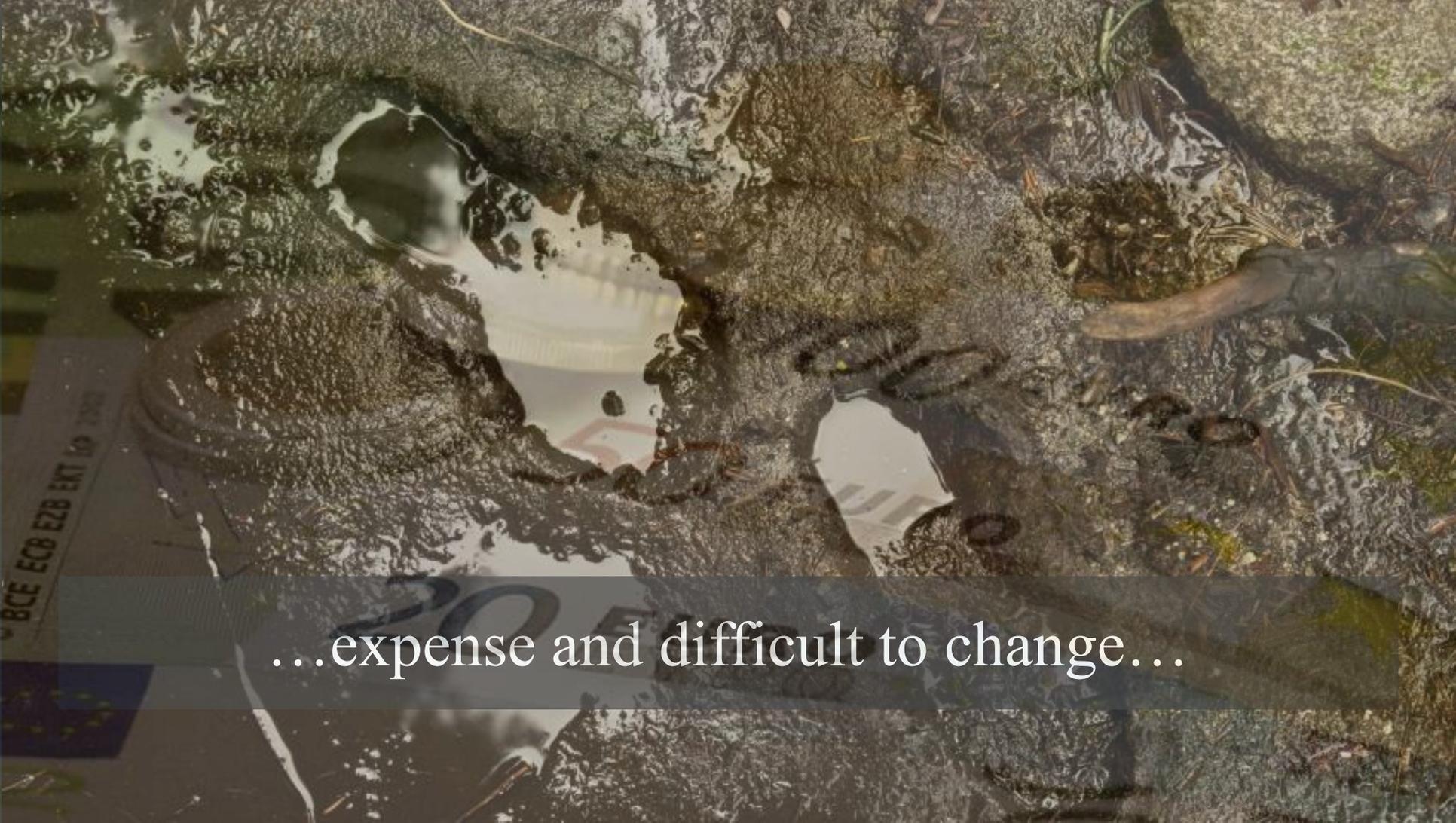
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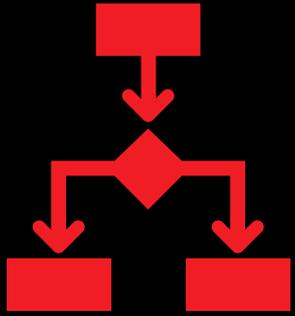
Most enterprise decision logic is  
hardcoded...



...expense and difficult to change...



..and, absent analytics and AI.



# Decisions

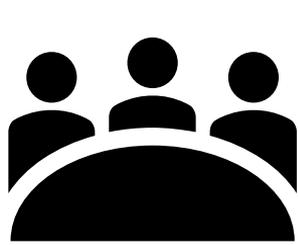
# DIGITAL

Software that allows technology and business pros to define and execute real time, operational decision logic and embed it within applications, by providing tools to author and/or integrate decision logic, analytics, and AI models.

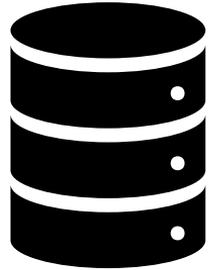
# DECISIONING

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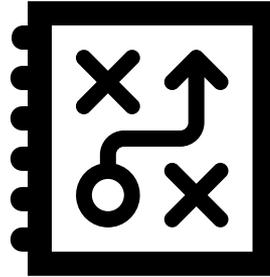
# Digital decisioning platforms bring the best decision intelligence technologies together.



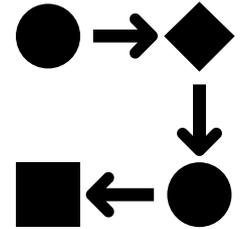
Human experts



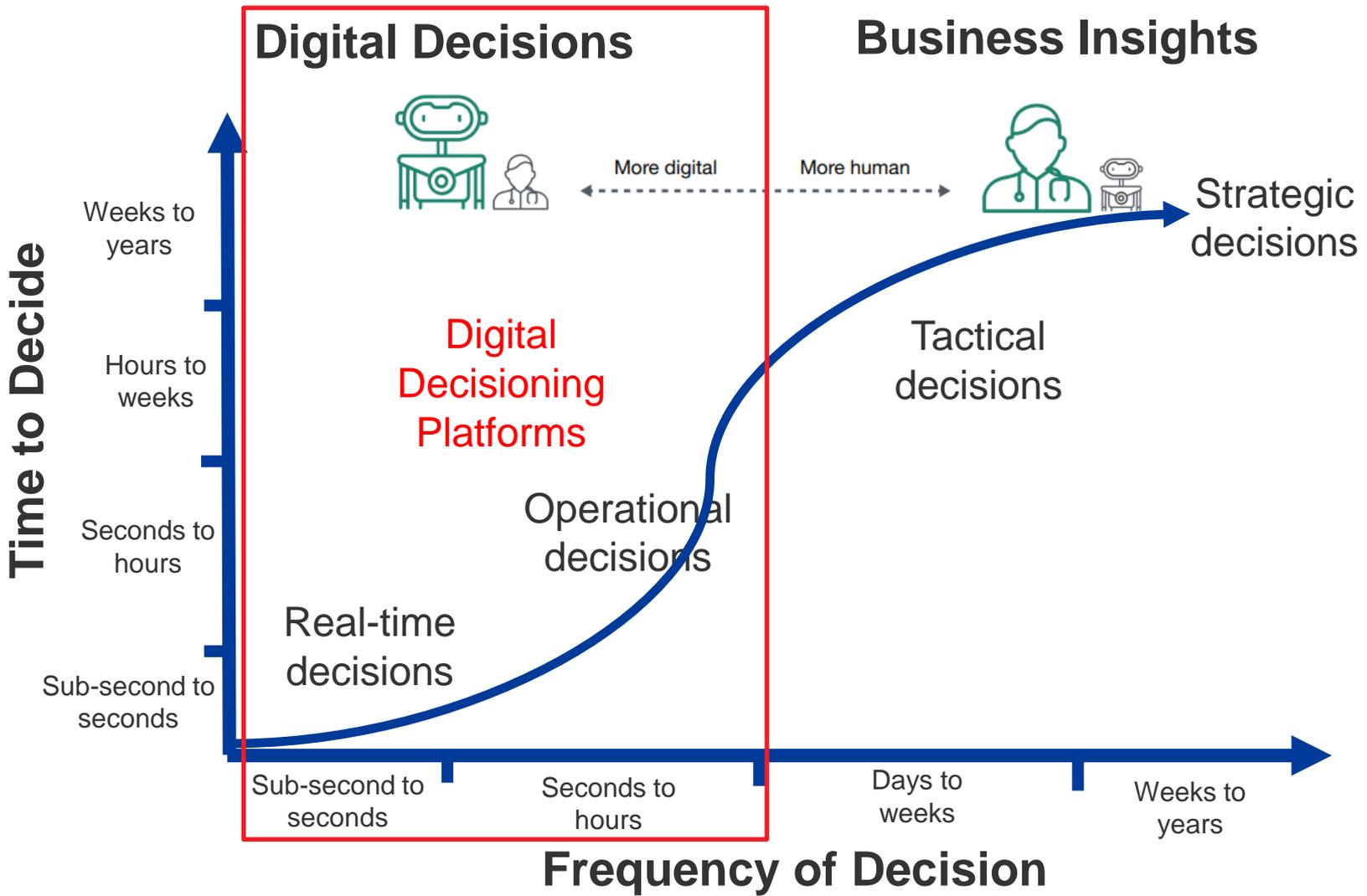
Analytics



AI



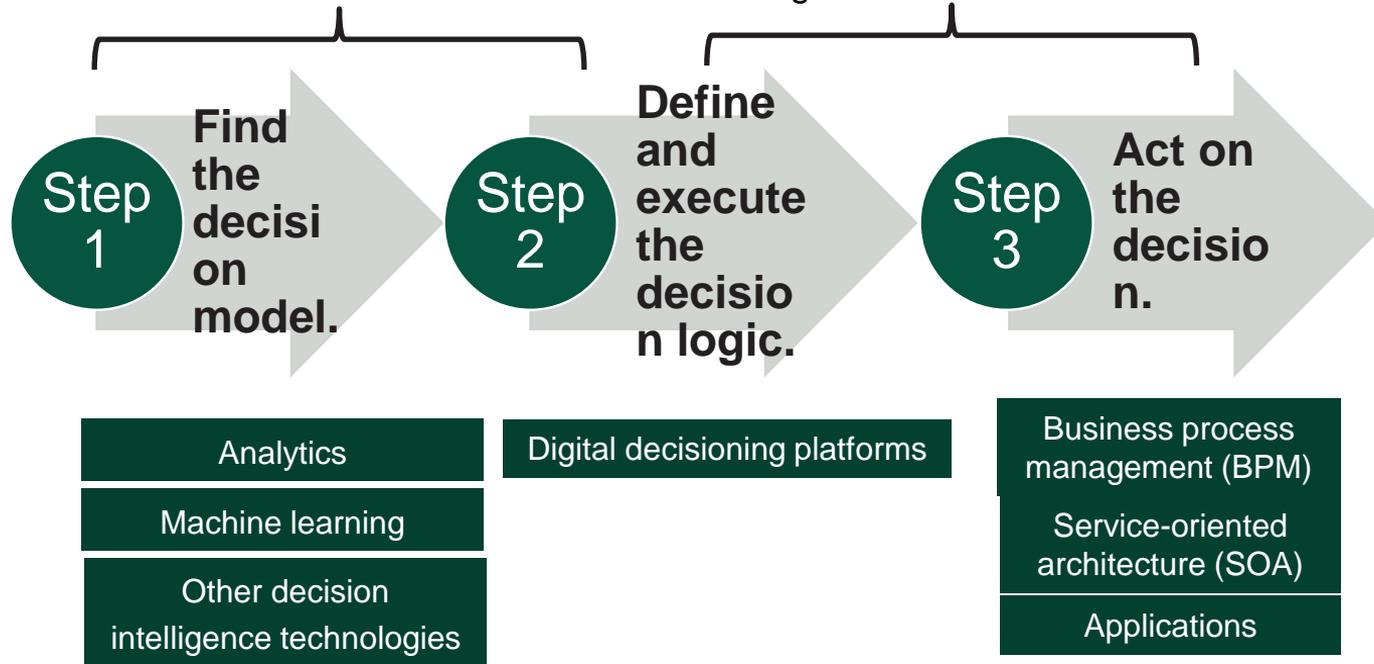
Decisions



# Digital decisioning platforms bring together insight to action lifecycle

Some tools focus on developing the digital decision model.

Some platforms focus on implementing the digital decision model.



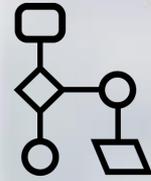
Digital decisioning  
platform  
requirements



Decision logic design tools designed for business users.



Provide or integrate with predictive analytics & machine learning (PAML).



Developer integration tools to embed or use digital decisions in applications.

Security

110010011011

Transactions

0100110011

Historical

01001001

Customer data

010

Connect to data sources needed by decision logic.



Digital decision lifecycle management tools to enable collaboration, reproducibility, versioning, and change management.



ModelOps to govern, deploy, monitor digital decisions in production.



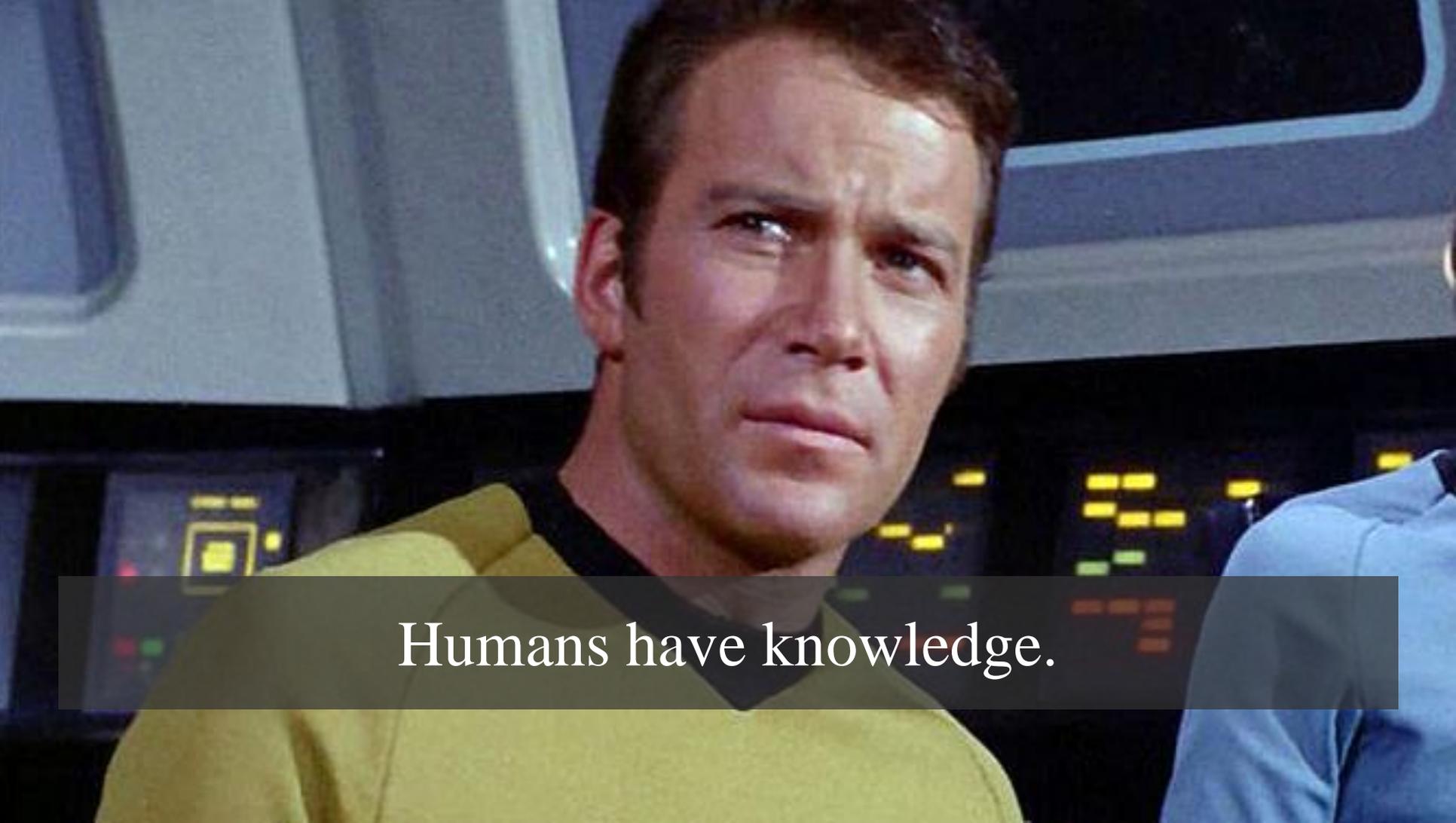
Execute digital decisions wherever applications need them – mobile, edge, public cloud, and private cloud.



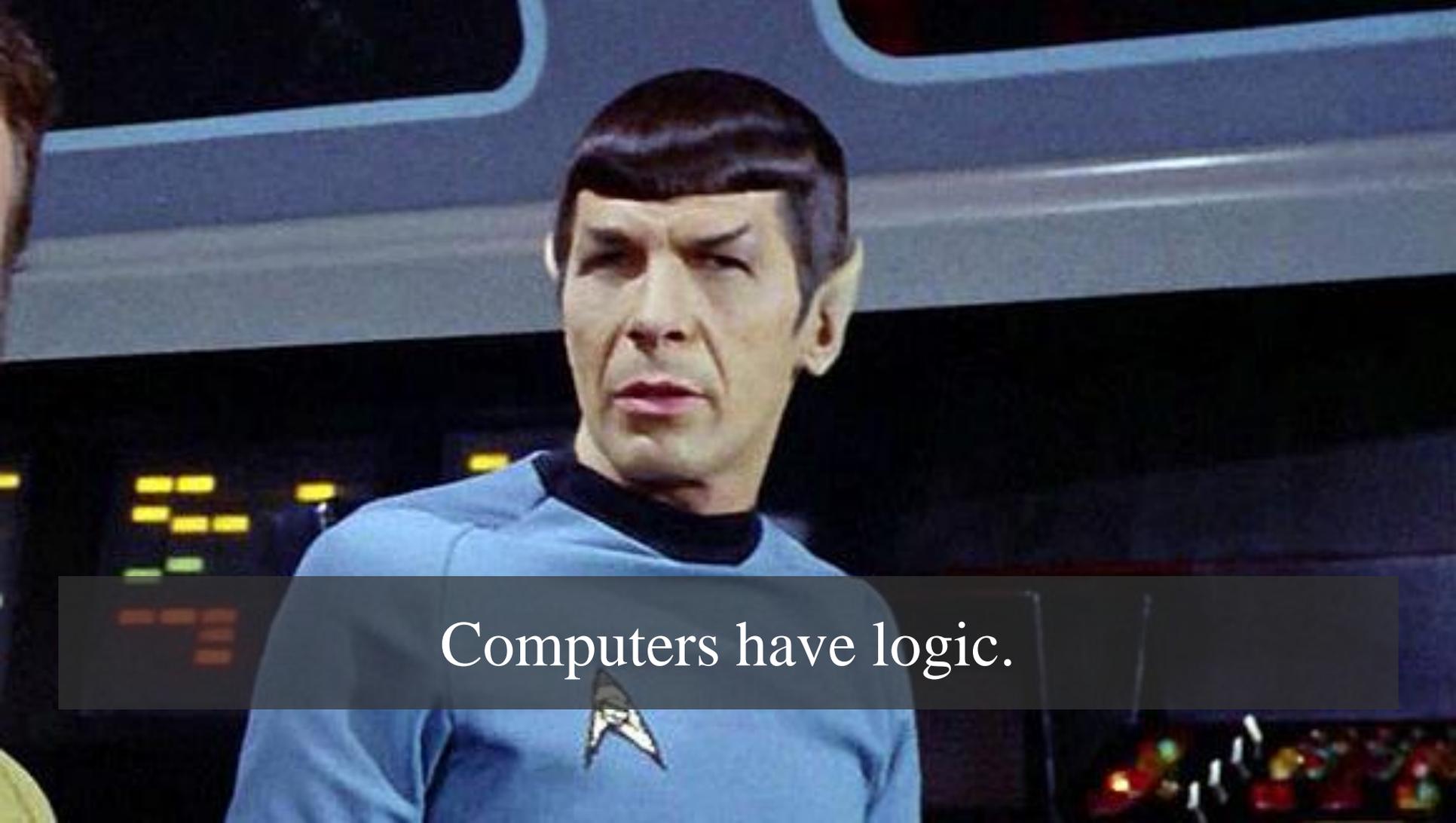
Enterprise qualities: scalability, high-availability,  
and security.



Decisions

A close-up shot of a man with short brown hair, wearing a yellow Star Trek uniform, looking off-camera with a serious and slightly worried expression. He is in a control room with various panels and lights visible in the background. A semi-transparent dark grey banner is overlaid at the bottom of the image.

Humans have knowledge.

A medium shot of Spock from Star Trek: The Motion Picture. He is wearing his signature blue Starfleet uniform with a black turtleneck and a gold Starfleet insignia on the chest. He has his characteristic Vulcan haircut and is looking slightly to the right with a neutral, logical expression. The background is a dark, futuristic control room with blue and yellow lights.

Computers have logic.



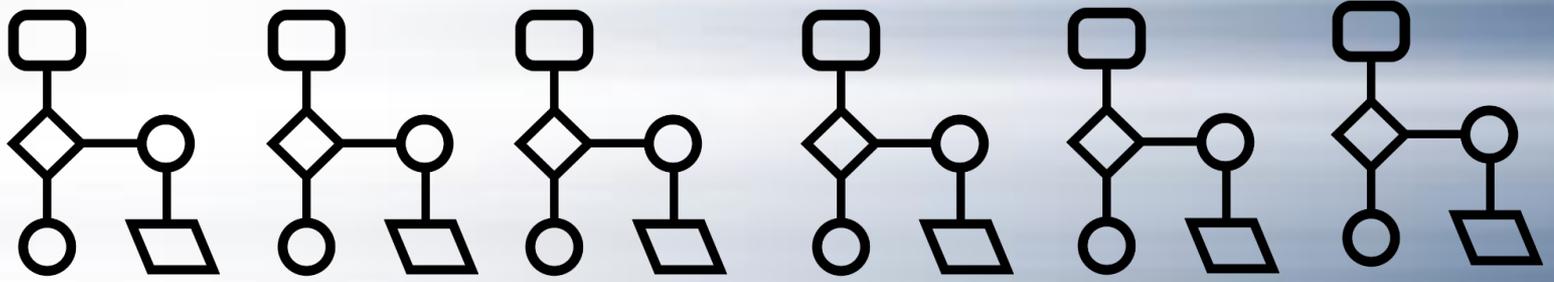
The best decisions combine both.

A conceptual image for a digital decision-making platform. It features a human hand in the background moving a black chess piece on a checkered board. In the foreground, a highly detailed, metallic, and reflective robotic hand is positioned as if about to move a white chess piece. The background is a soft, light blue gradient. A dark grey semi-transparent box is overlaid at the bottom, containing white text.

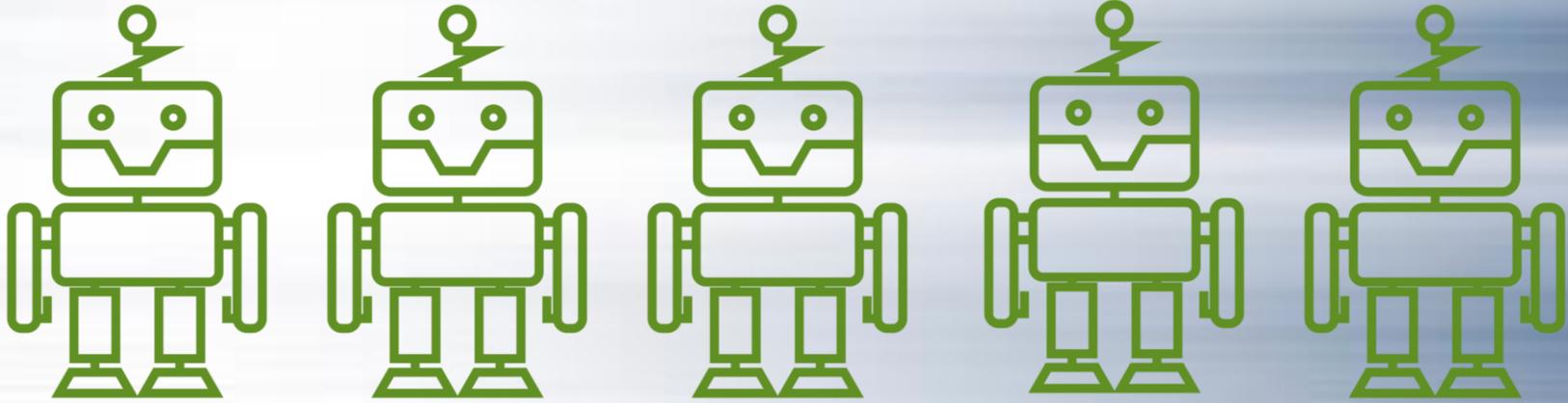
**Digital decisioning platforms make it happen.**



Recommendations



1. Build a pipeline of high-ROI use cases.



2. Join forces with AI but be the boss.

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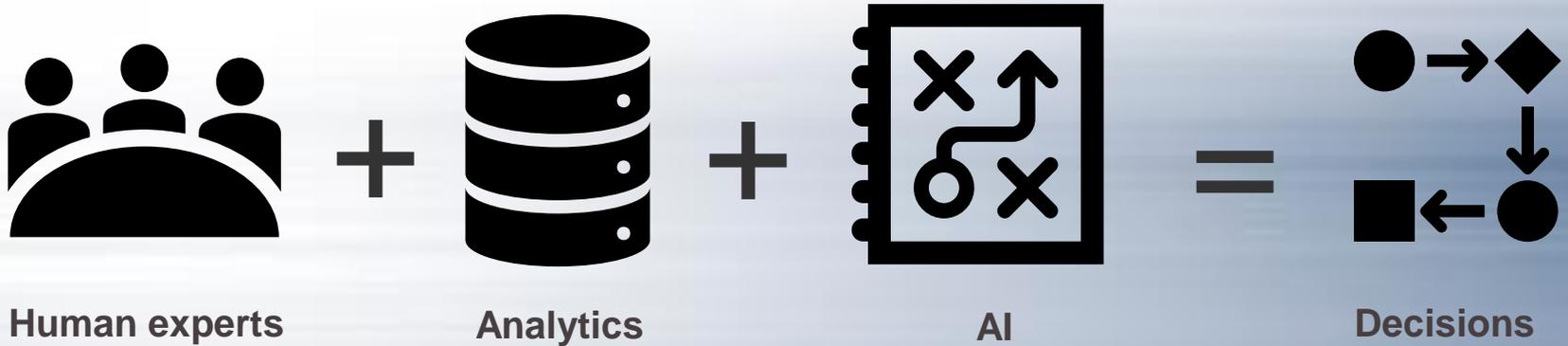
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                break;
        }
    }
}
```

3. Stop the hardcoding madness.



4. Adopt a digital decisioning platform.



Decide to decide digitally.

# Thank You.

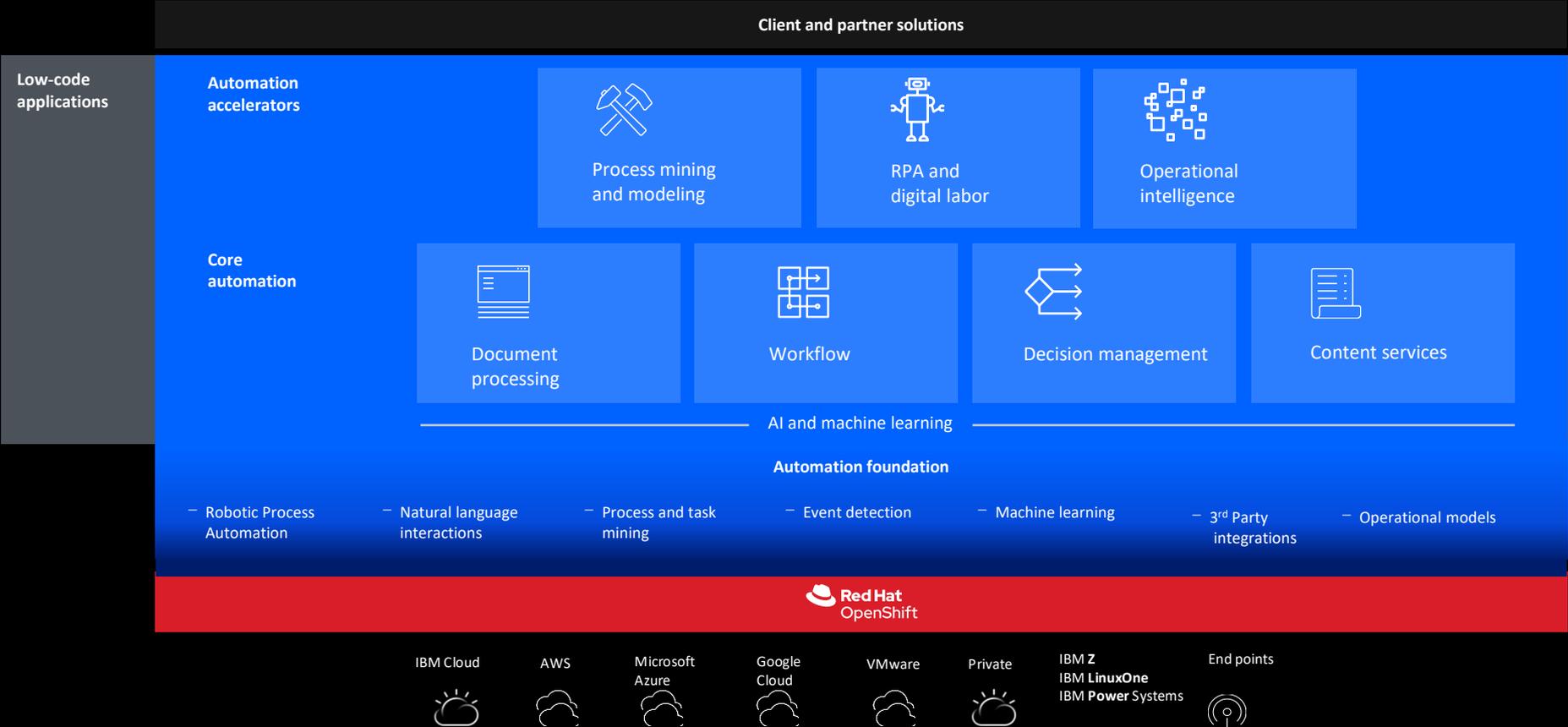
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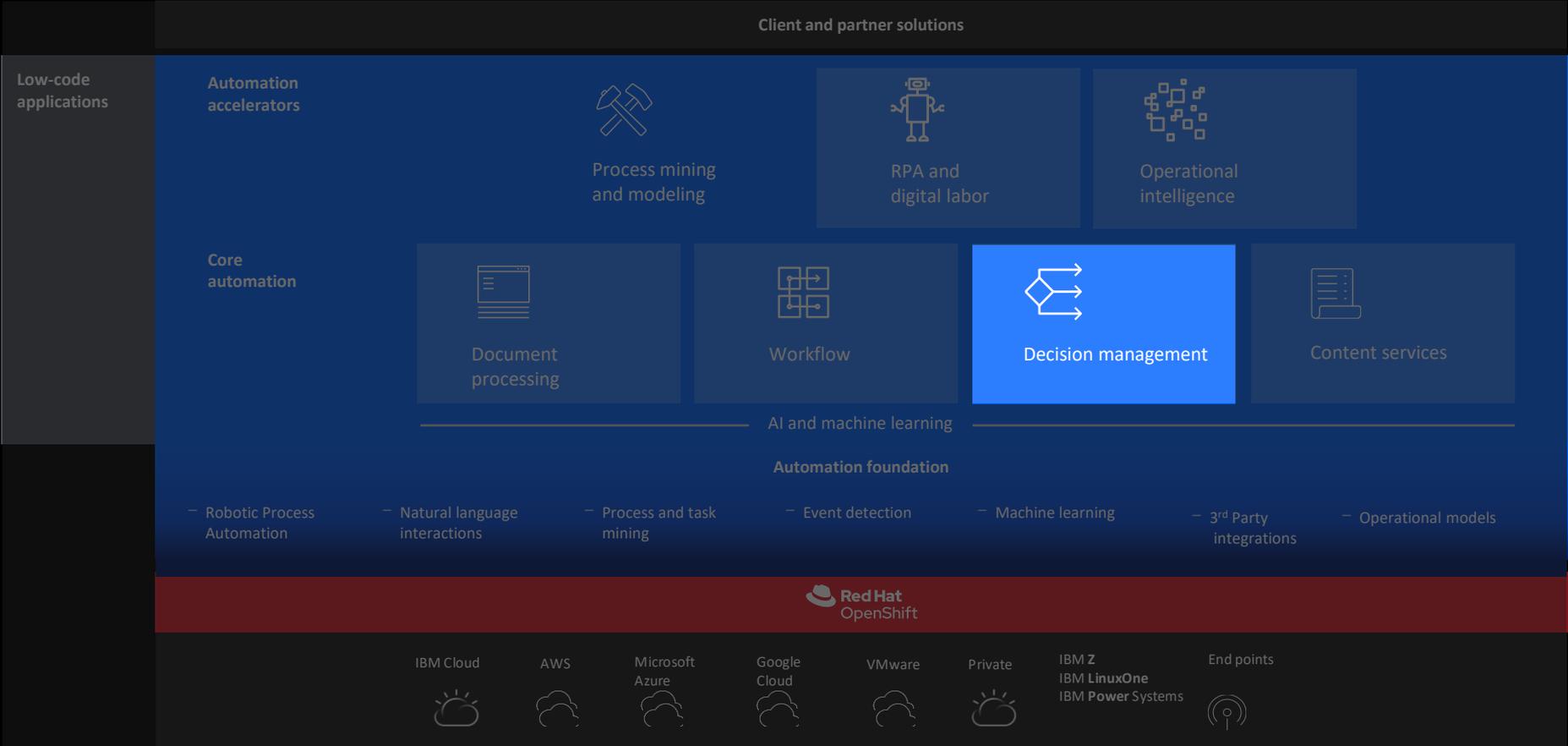
Mike Gualtieri

*VP & Principal Analyst*

# IBM Cloud Pak for Business Automation



# IBM Cloud Pak for Business Automation





# Decision management

**Decisions** are the repeatable rules and policies made as part of day-to-day business operations.

**Decision management** is the software used to gather, manage, execute and monitor decisions.

## Why IBM?

- Comprehensive business rules lifecycle management
- Business-friendly capabilities for development, testing and governance



## Define

- No-code decision modeling
- Graphical guided tools to model and validate decisions
- Integrates business rules with machine learning



## Execution and testing

- Test and simulate decisions
- Execute decisions with speed and consistency
- Highly scalable micro services architecture
- Execution tracing for auditability



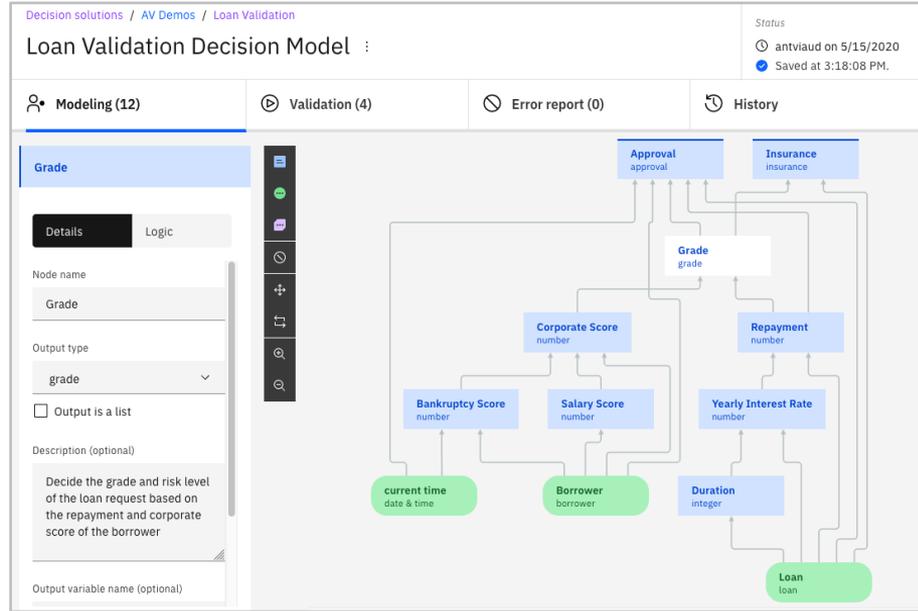
## Governance and lifecycle management

- Release management and versioning
- Role-based permission management



# Business-friendly tooling for decision management

- Intuitive business-friendly tooling to model repeatable decisions
- Business experts create and edit rules using natural language
- Test and govern decisions within a business environment
- Integrated capability for decision automation



Low-code editors provide easy-to-use tools to graphically model business decisions



# Scalable and secure decision automation

## Testing and simulation

- Step-by-step debugging with value inspectors
- Test suite definition, simulation and rule analysis

## Centralize decisions

- Centralize and externalize business knowledge
- Simple effective governance and security

## Execution at scale

- High performance and scalability for the most demanding enterprise deployments
- Supports transactional and batch rule execution

	Repayment		Corporate Score		Grade	
	min	max	min	max	grade	message
1	0	10,000	≥ 900		A	Very low risk loan
2	0	10,000	600	900	A	Very low risk loan
3	0	10,000	300	600	B	Low risk loan
4	10,000	30,000	≥ 900		A	Very low risk loan
5	10,000	30,000	600	900	B	Low risk loan
6	10,000	30,000	300	600	C	Average risk loan
7	30,000	60,000	≥ 900		B	Low risk loan
8	30,000	60,000	600	900	C	Average risk loan
9	60,000	120,000	600	900	D	Risky loan
10	60,000	120,000	900	1200	C	Average risk loan
11	60,000	120,000	900	1200	D	Risky loan
12	60,000	120,000	600	900	E	Very risky loan

```
if
  all of the following conditions are true :
  - ('Repayment' * 12 is at least 30000 and less than 60000 )
  - ('Corporate Score' is at least 900 ) ,
then
  set 'decision' to a new grade where
  the grade is "B",
  the message is "Low risk loan" ;
```

Highly scalable environment to manage millions of business rules

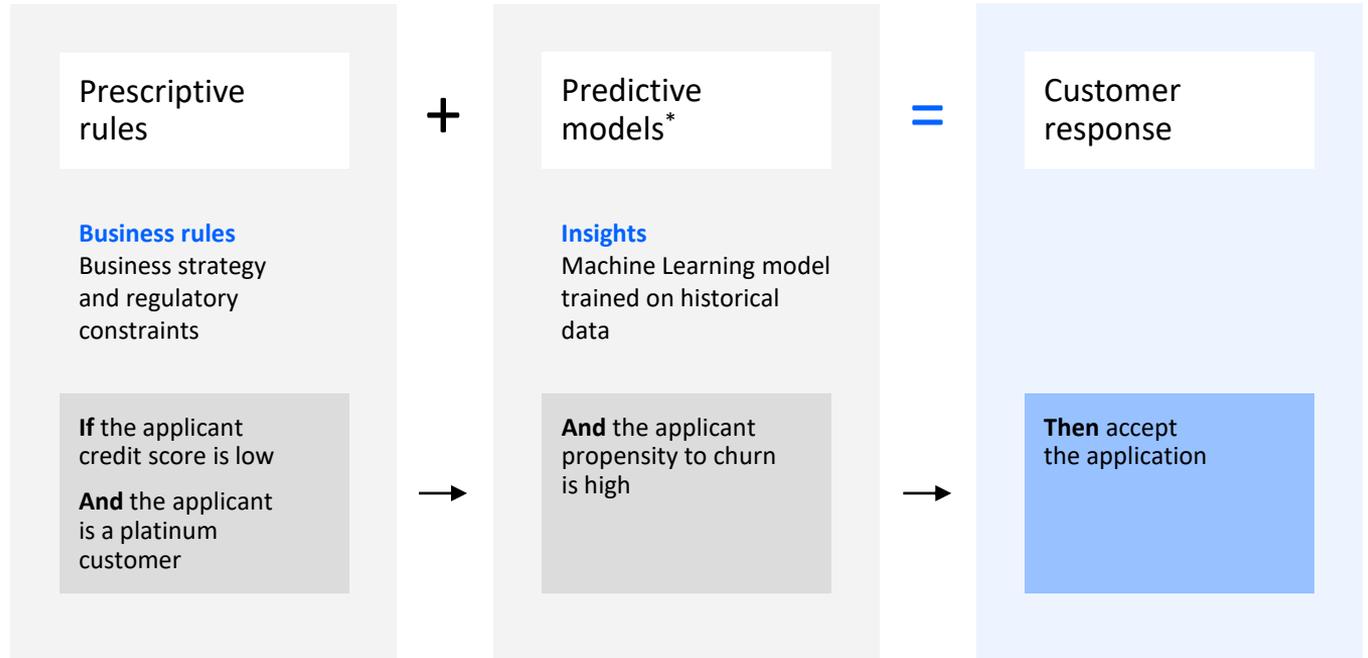
Enterprise decision capabilities with scalability to execute over **1 billion decisions per day**



# Integrated machine learning for better decisions

## Built-in integration of business rules and machine learning

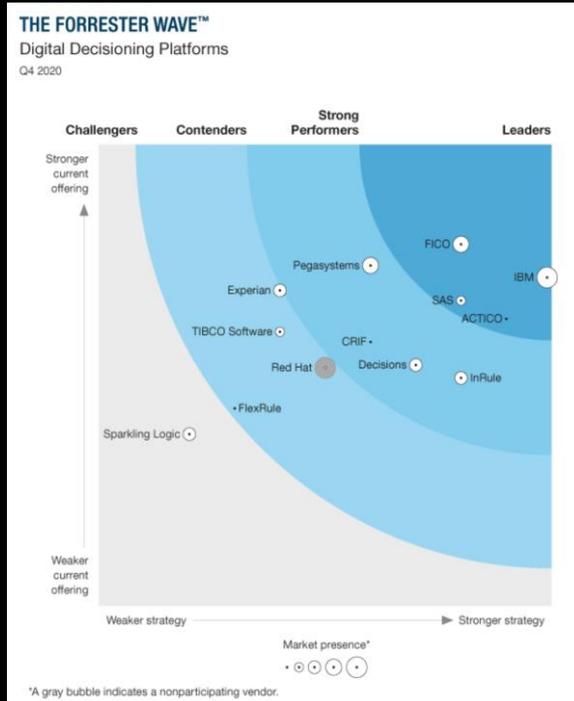
- Machine learning models accessible to business analysts in a low-code environment
- Extend rules-based decisions by incorporating machine learning models
- Native integration with Watson Machine Learning predictive analytics
- Extensive framework for third-party machine learning providers



\*Native integration with Watson Machine Learning

# Why IBM?

IBM leads the market



IBM has been named a leader by Forrester in The Forrester Wave™:  
Digital Decisioning Platforms, Q4 2020

**NHS**

Blood and Transplant

 **PNC BANK**

**Control**Expert

**BROWNELLS**®

# Thank you

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