Explore how to automate anything, anywhere, anytime

Harley Davis , VP, Automation Intelligence and France Lab, IBM

Mike Gualtieri, VP, Principal Analyst, Forrester

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.

FORRESTER®

Automating AI-Powered Digital Decisions

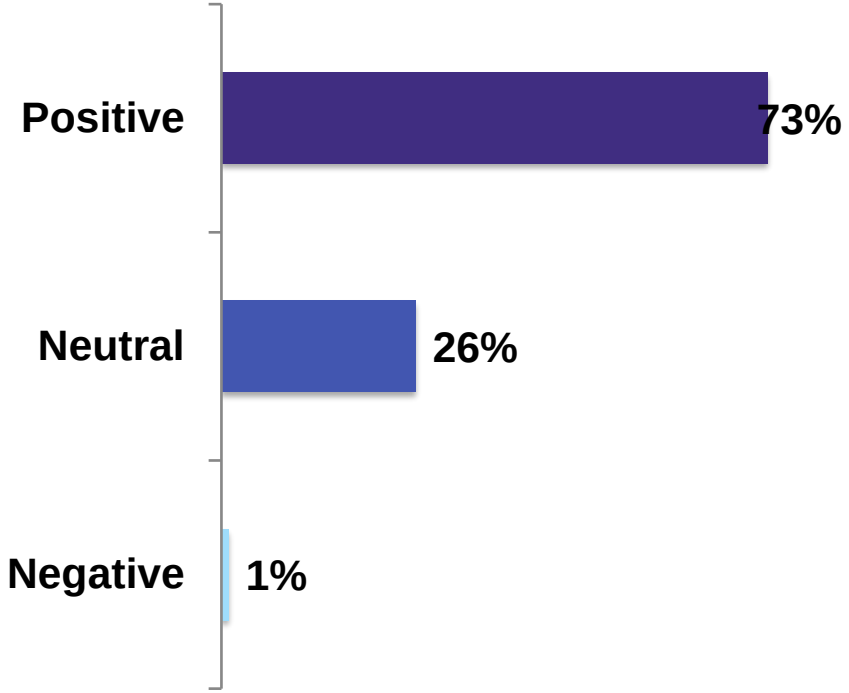
Mike Gualtieri, VP & Principal Analyst

February 2021

AI

Organizations that implement AI get results.

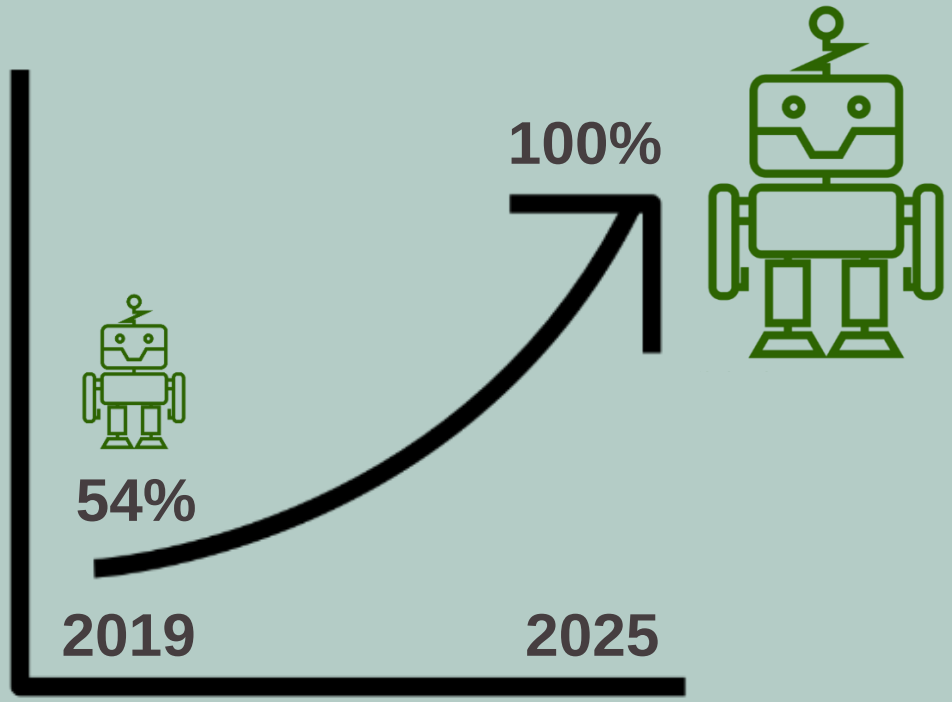
What type of impact has AI adoption had on your organization?



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


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...

...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;

    TradeOrderService tos = new TradeOrderService(tam.getAccount());
    // cycle through this puppy and create the tradeorders
    for (int p=0; p < ae.getTamPositions().size(); p++)
    {
        TAMEvaluationPosition ep = (TAMEvaluationPosition)ae.getTamPositions().get(p);

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        switch (ep.getTa
        {
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                break;
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        }
```
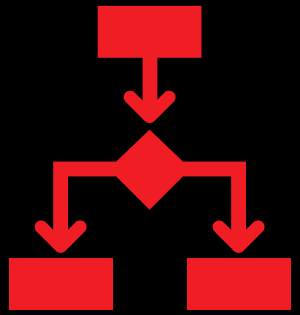

...by decision logic embedded in applications.

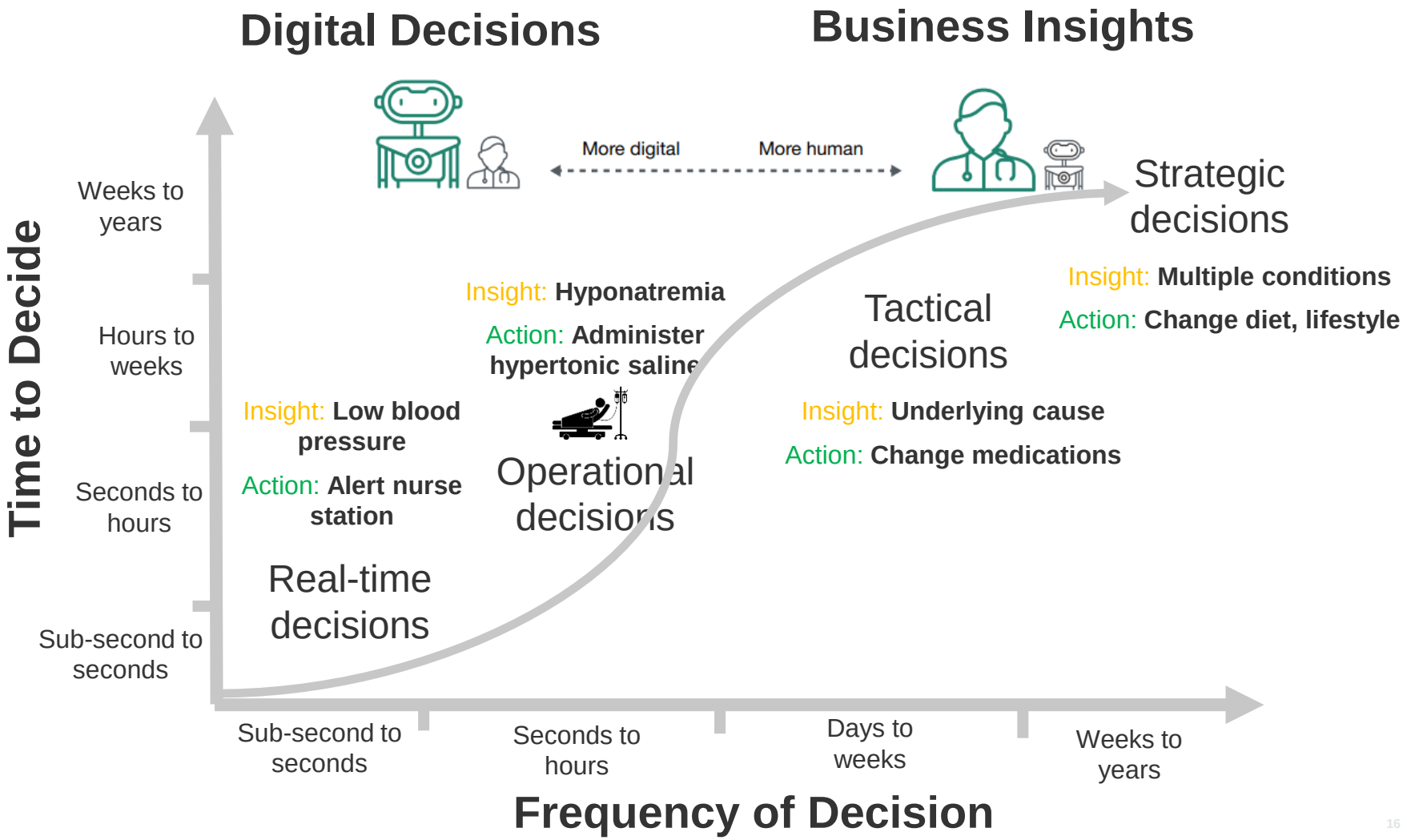


Decisions

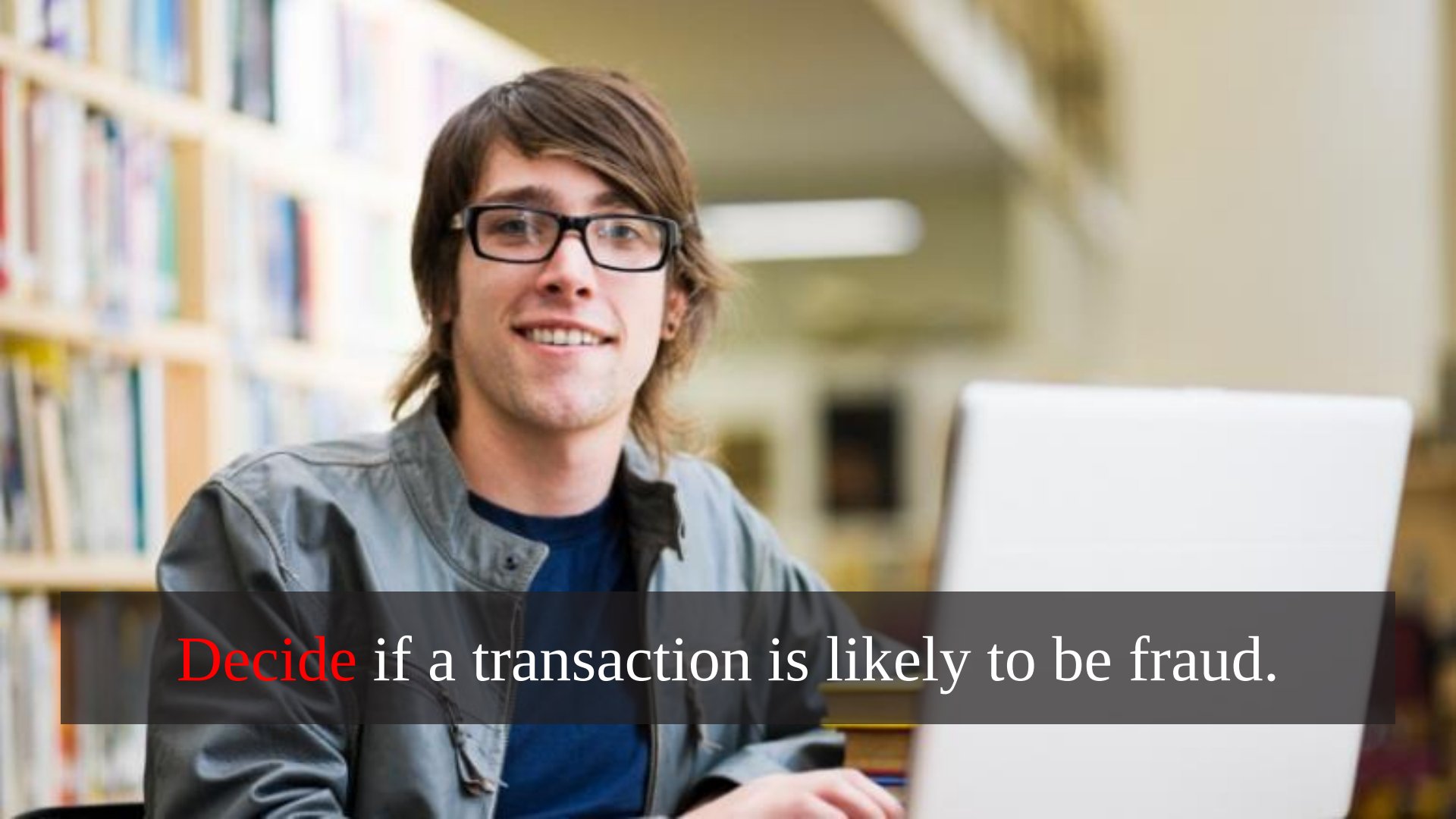
DIGITAL

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
More digital
More human
Time to Decide
Weeks to years
Hours to weeks
Seconds to hours
Sub-second to seconds
Strategic decisions
Insight: Multiple conditions
Action: Change diet, lifestyle
Tactical decisions
Insight: Underlying cause
Action: Change medications
Insight: Hyponatremia
Action: Administer hypertonic saline
Operational decisions
Insight: Low blood pressure
Action: Alert nurse station
Real-time decisions
Sub-second to seconds
Seconds to hours
Days to weeks
Weeks to years
Frequency of Decision


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.


Decide when to service machines before they breakdown.


Decide whether to approve a loan based on the likelihood or 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

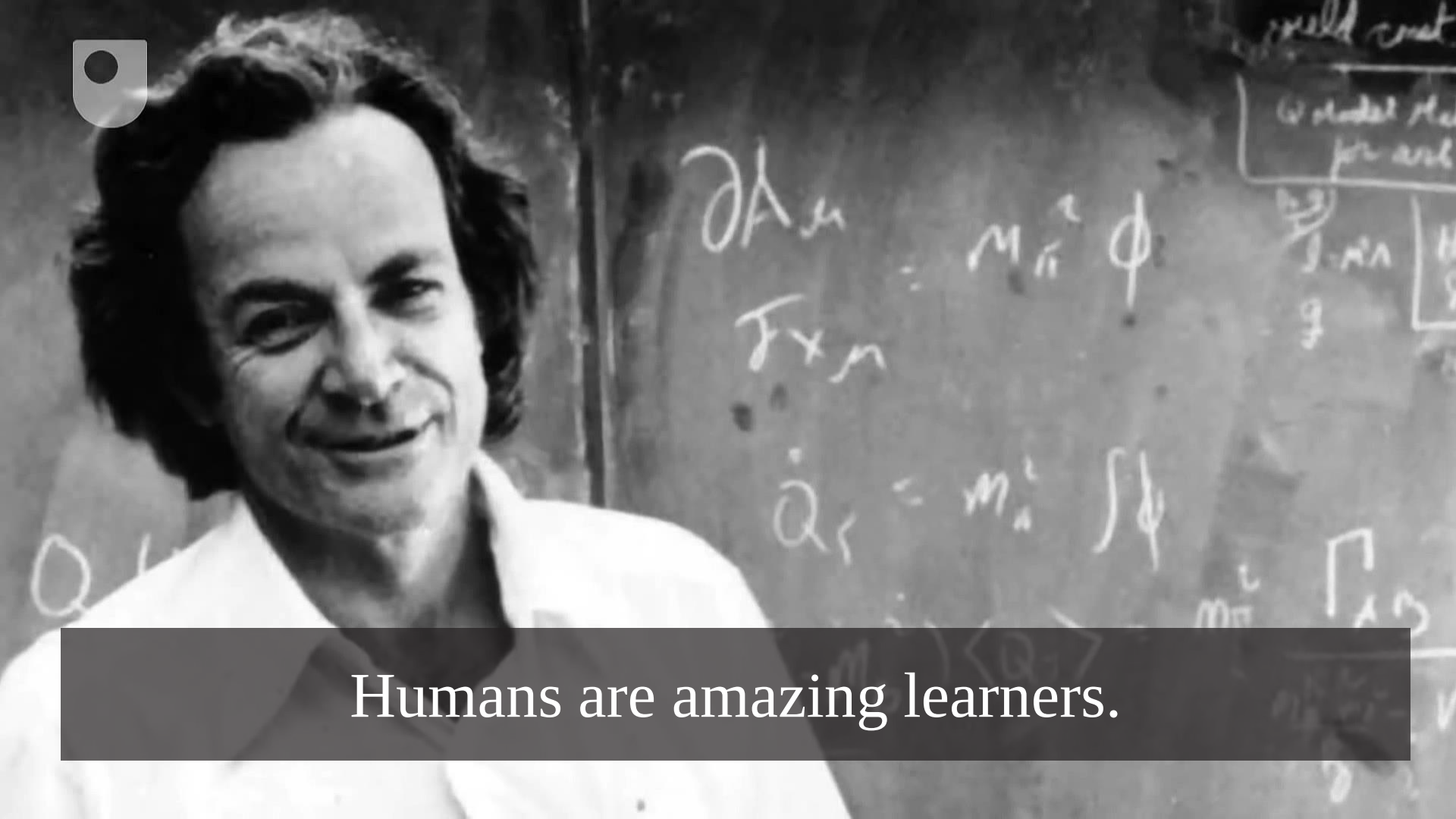
Decision	Description
Fact	Establish a fact
Identity	Recognize a pattern, object, condition, state,…
Choice	Make a choice based on a set of defined outcomes
Process	Trigger a process or branches within a process
Policy	Determine policy compliance
Event	Route an event to an application
Advice	Surface knowledge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

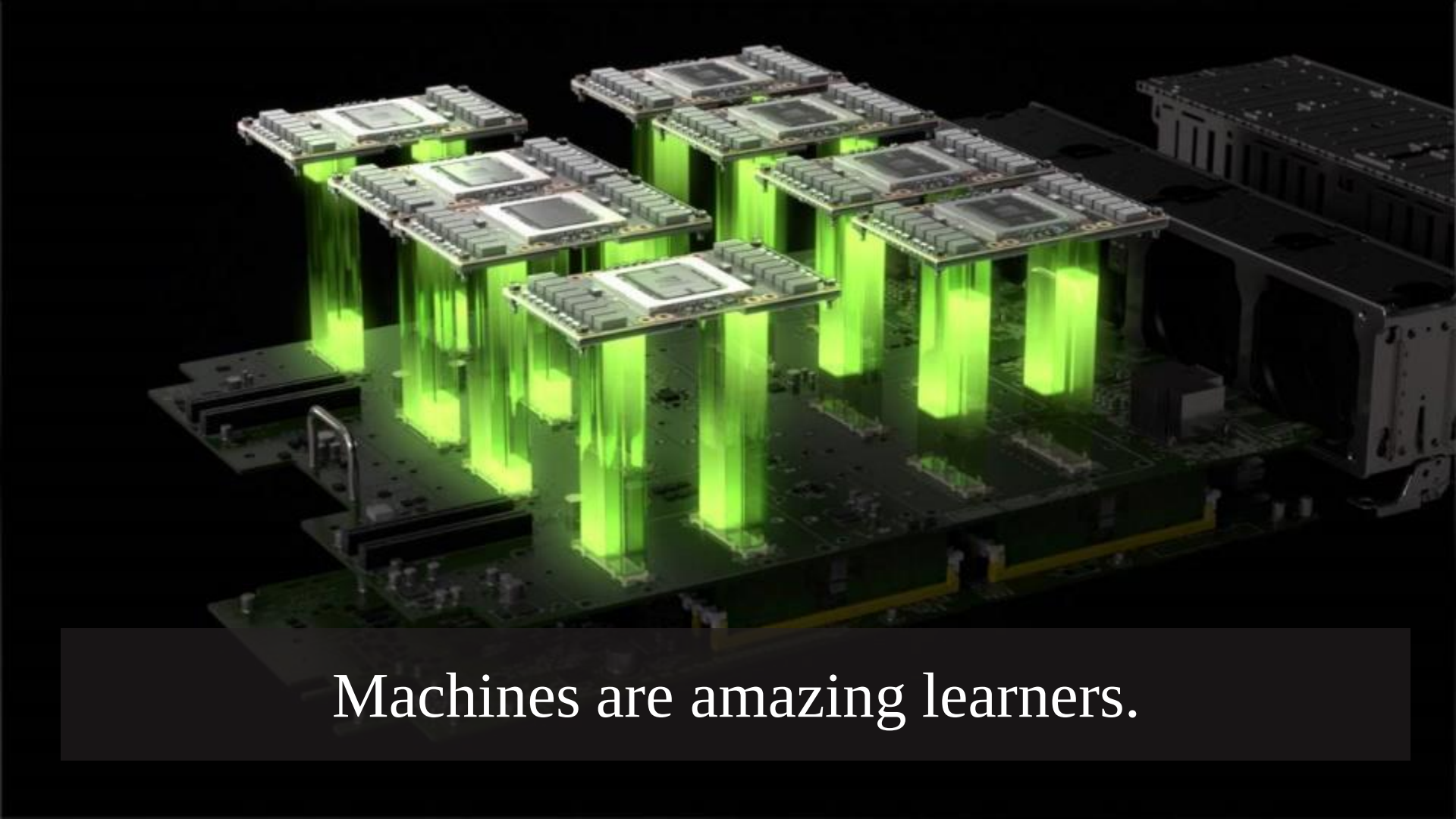
There are 5, 50, 500, and perhaps 5,000 enterprise use cases for digital decisions…

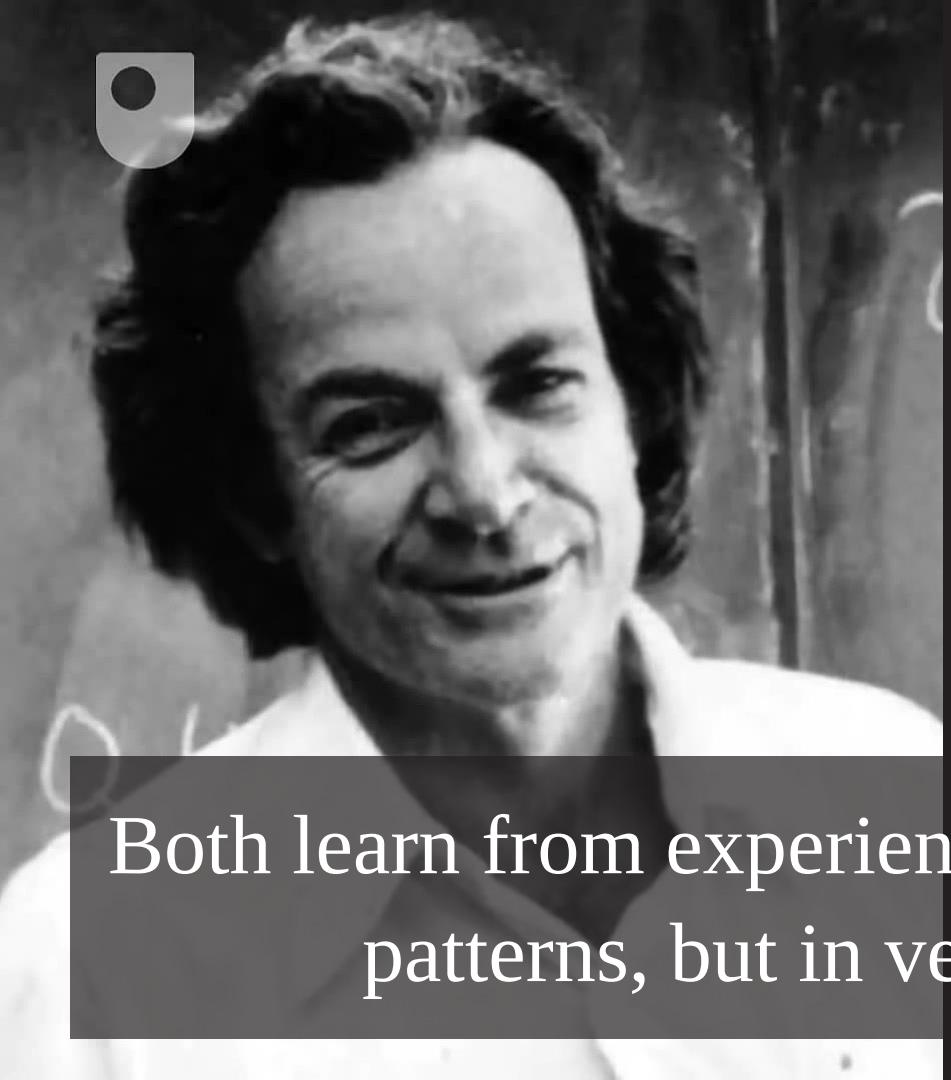

…especially for enterprises undergoing digital transformation.

?Decisions

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


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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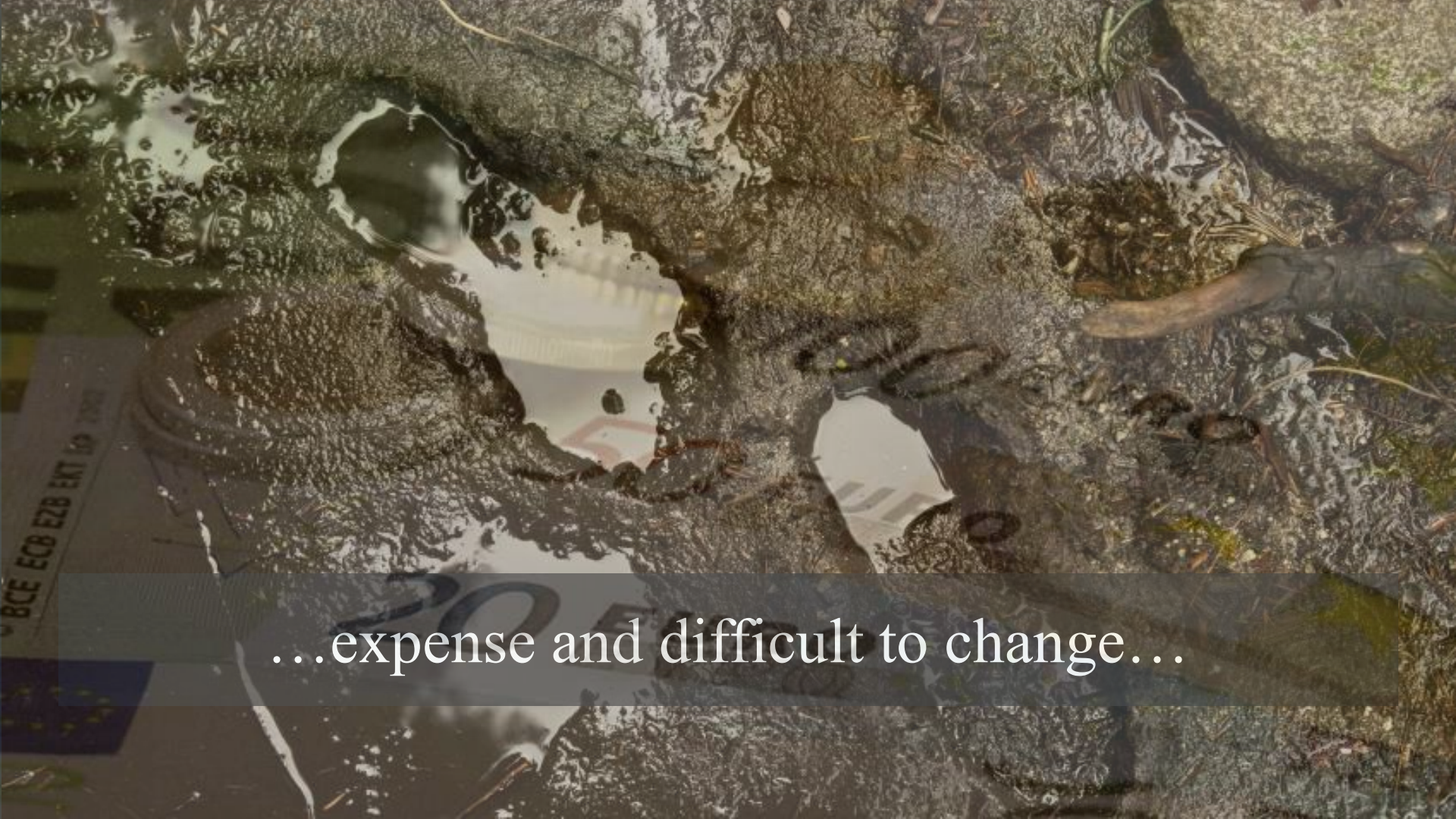
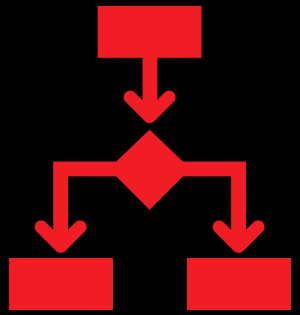
Most enterprise decision logic is hardcoded…


…expense and difficult to change…

..and, absent analytics and AI.



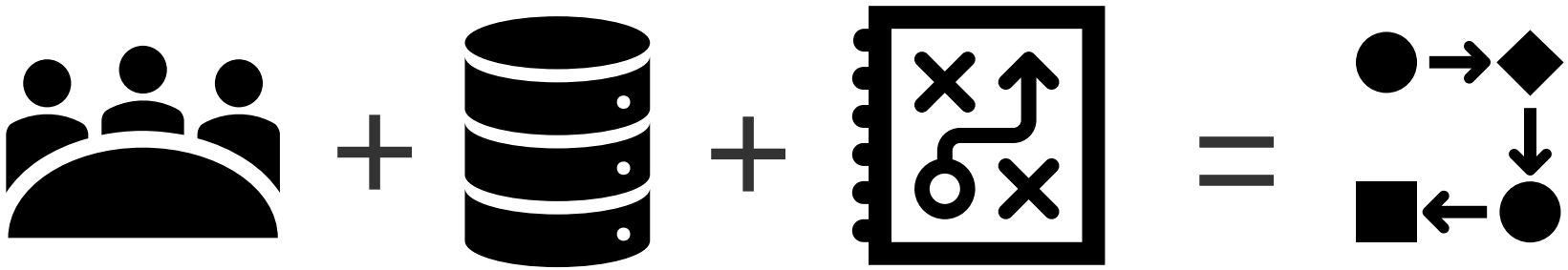
Decisions

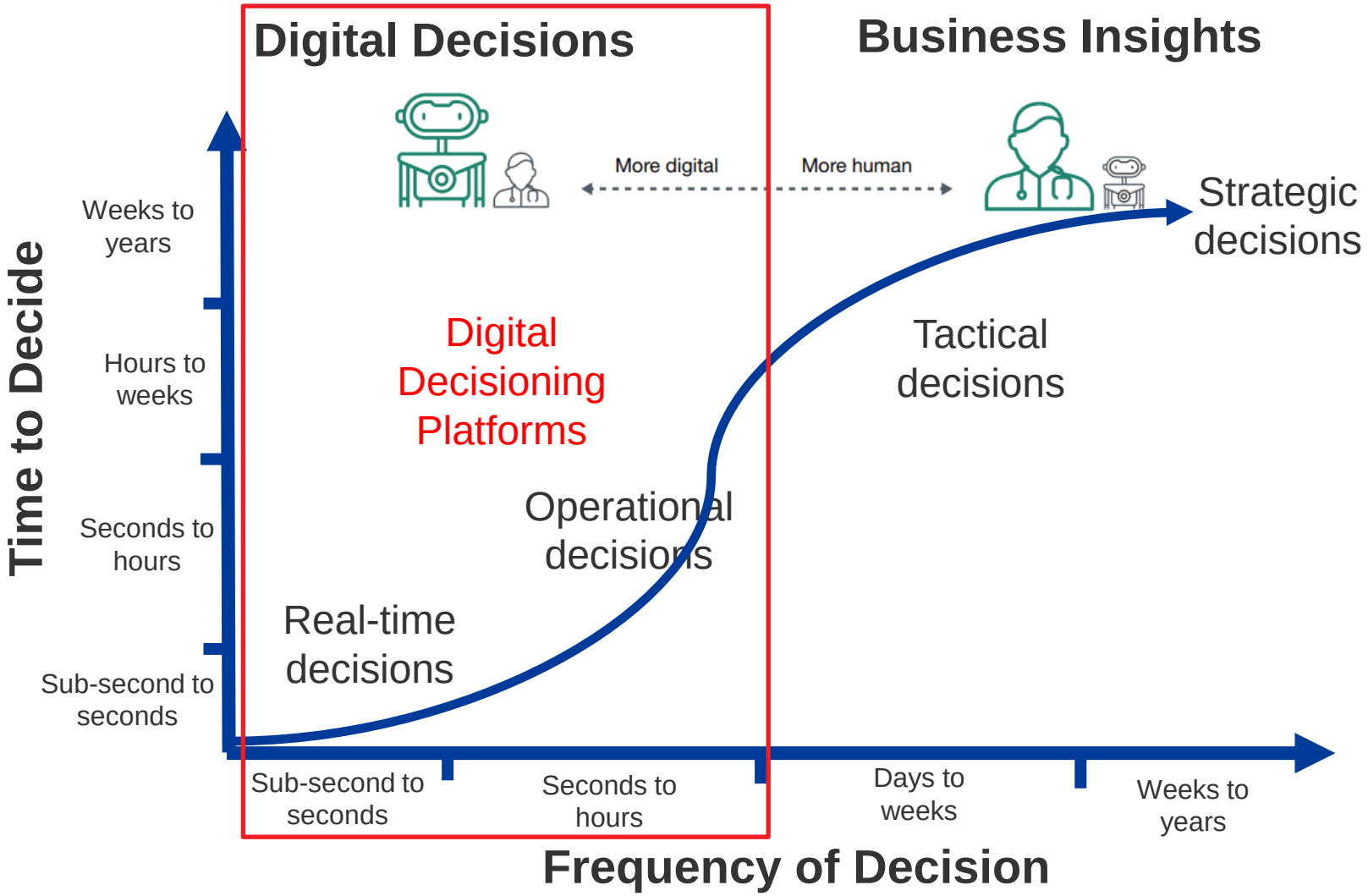
DIGITAL

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

Digital decisioning platforms bring the best decision intelligence technologies together.




Digital Decisions
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More digital
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Time to Decide
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Digital Decisioning Platforms
Strategic decisions
Tactical decisions
Operational decisions
Real-time decisions
Sub-second to seconds
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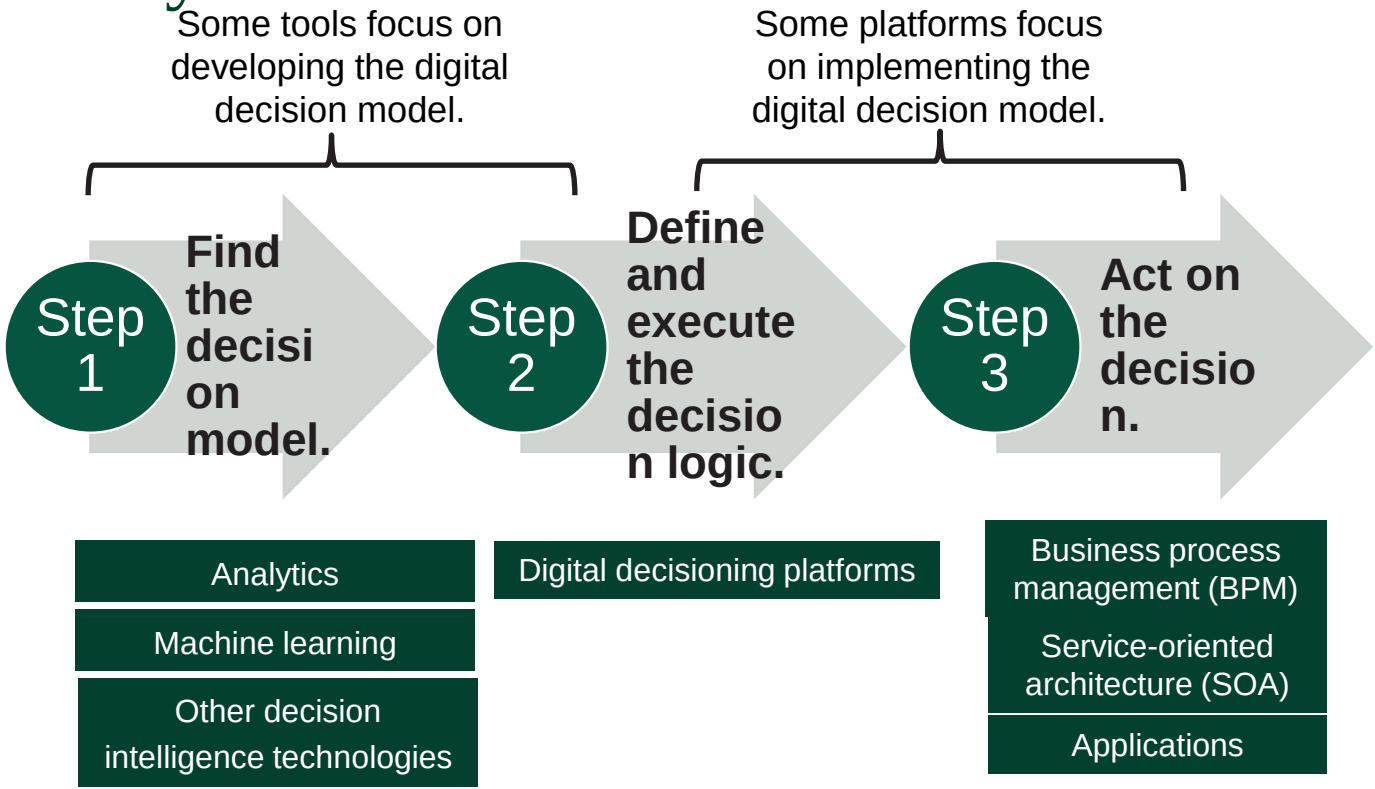
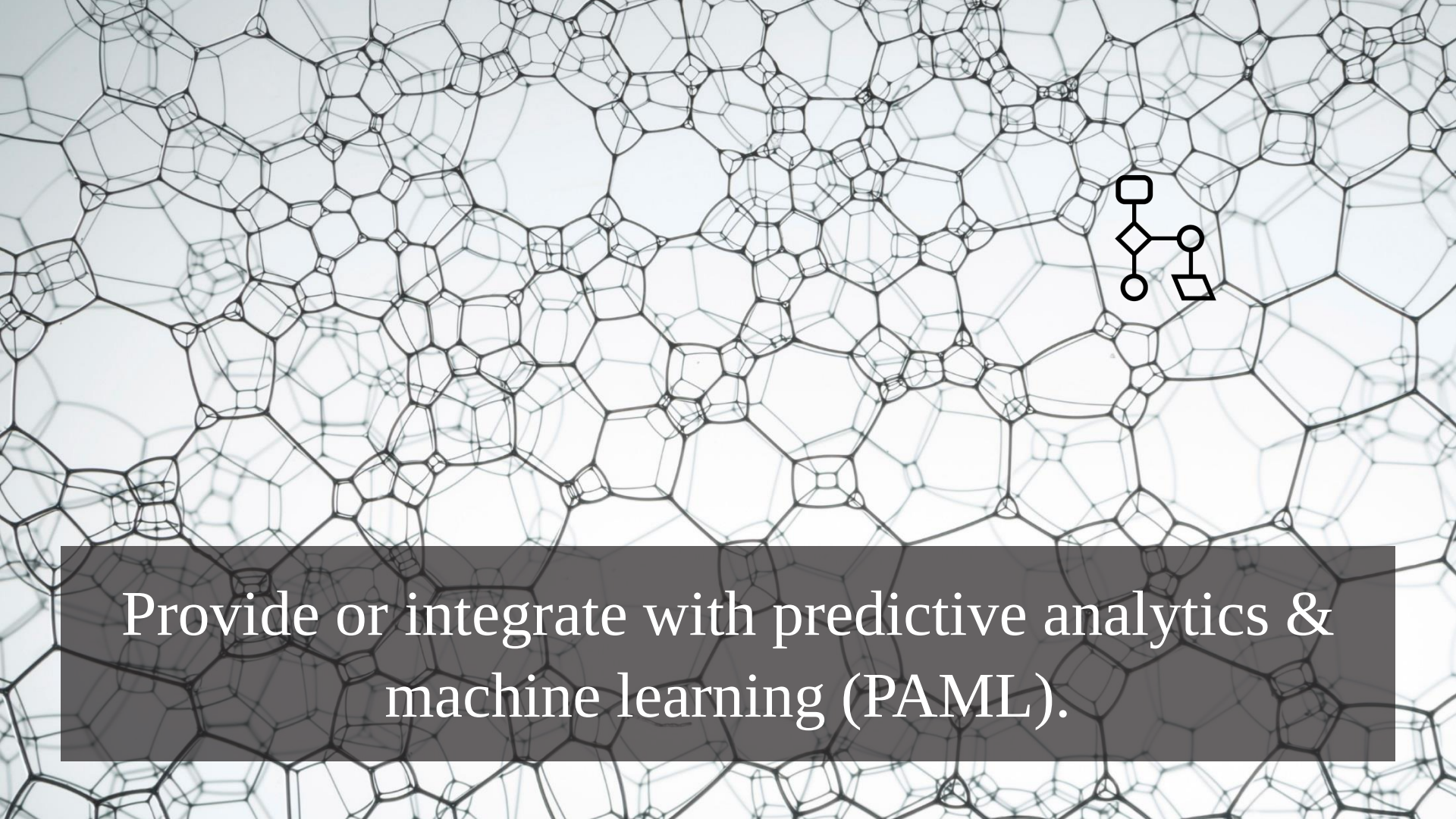
Days to weeks
Weeks to years
Frequency of Decision

Digital decisioning platforms bring together insight to action lifecycle



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.

Connect to data sources needed by decision logic.

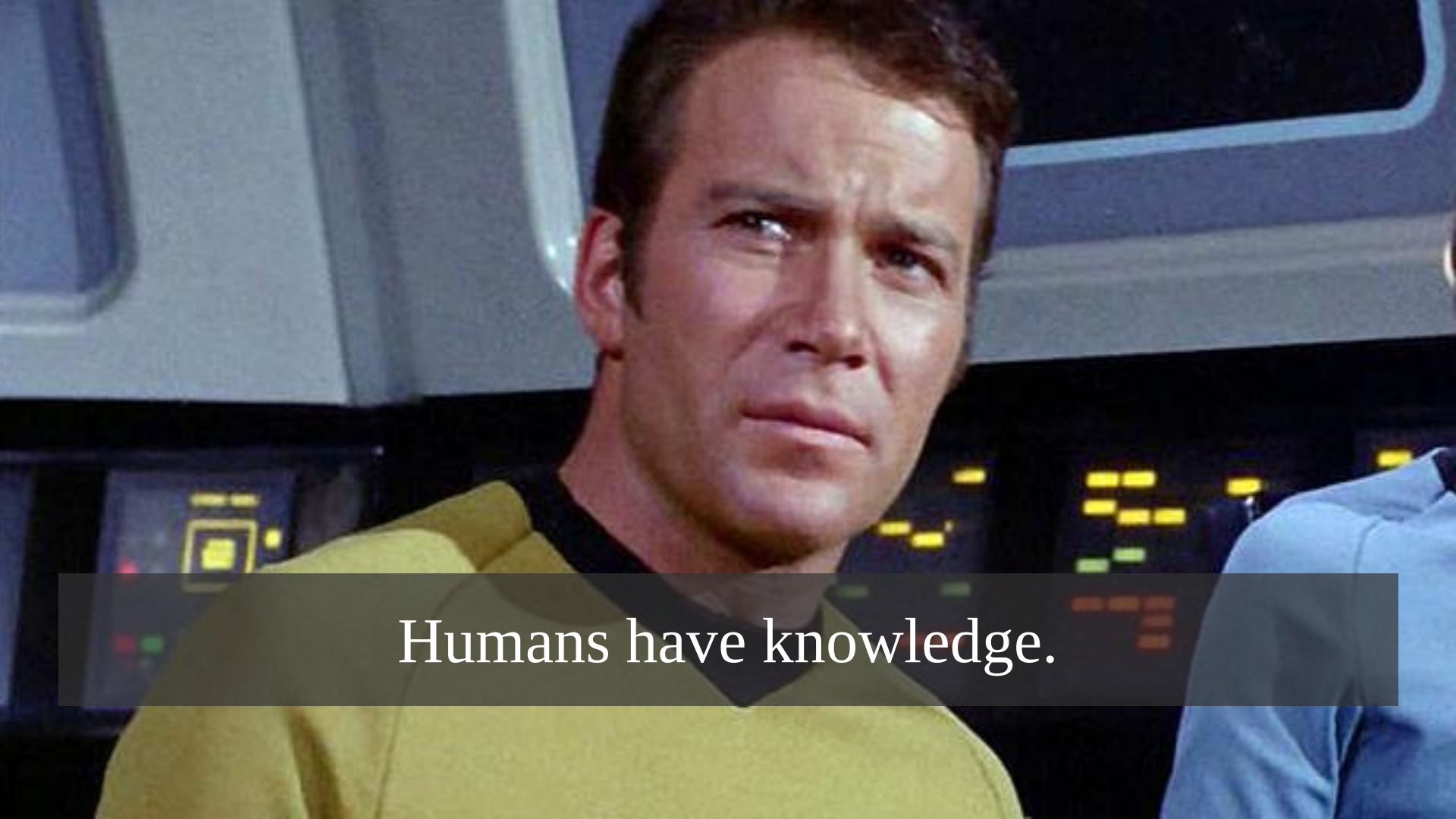

Digital decision lifecycle management tools to enable collaboration, reproducibility, versioning, and change management.

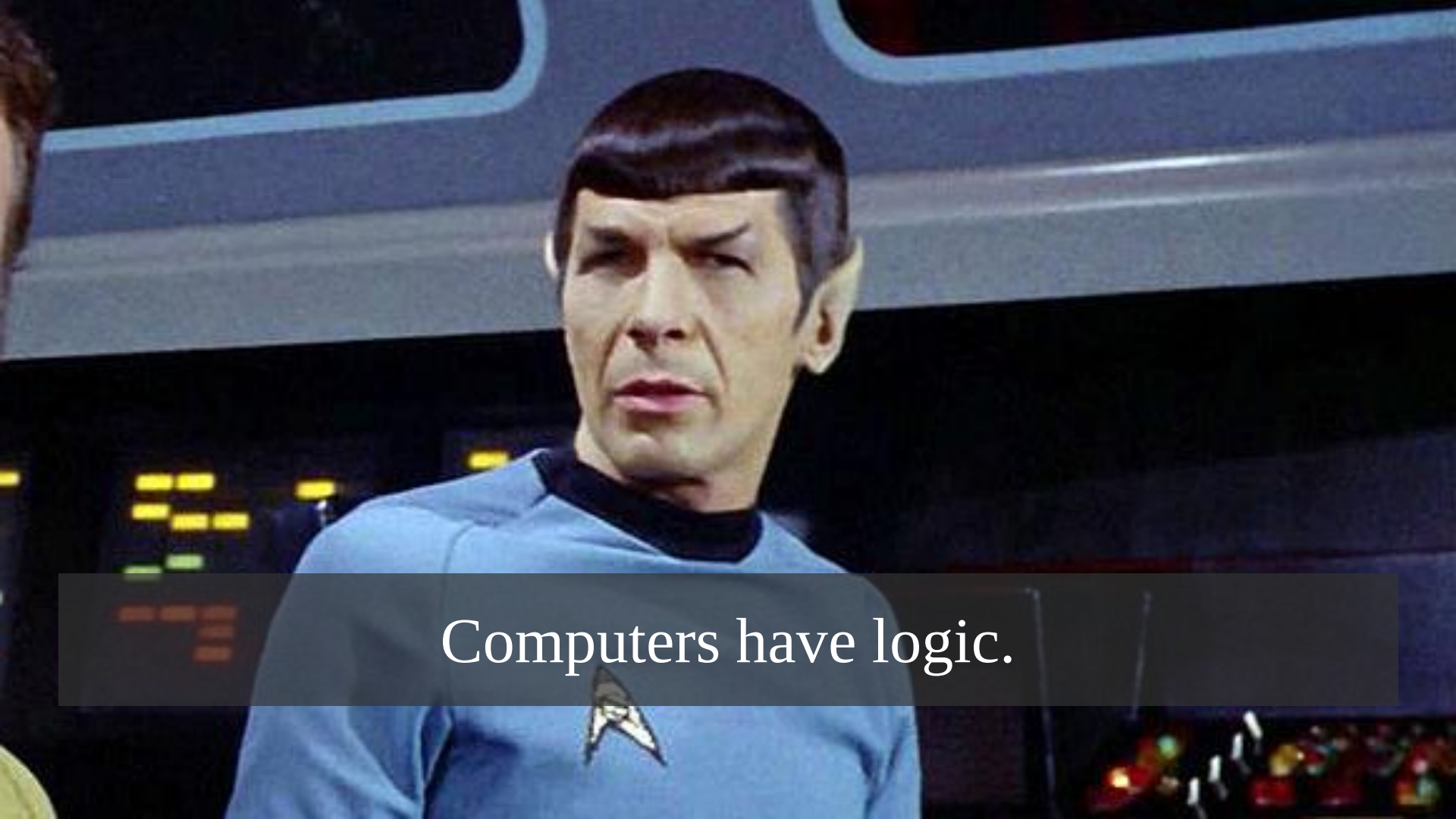

ModelOps to govern, deploy, monitor digital decisions in production.

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


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

Decisions

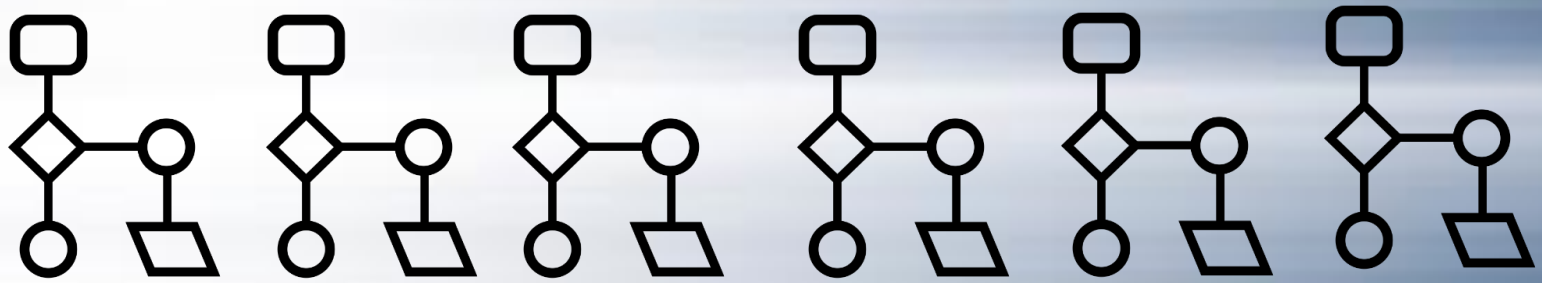

Humans have knowledge.


Computers have logic.

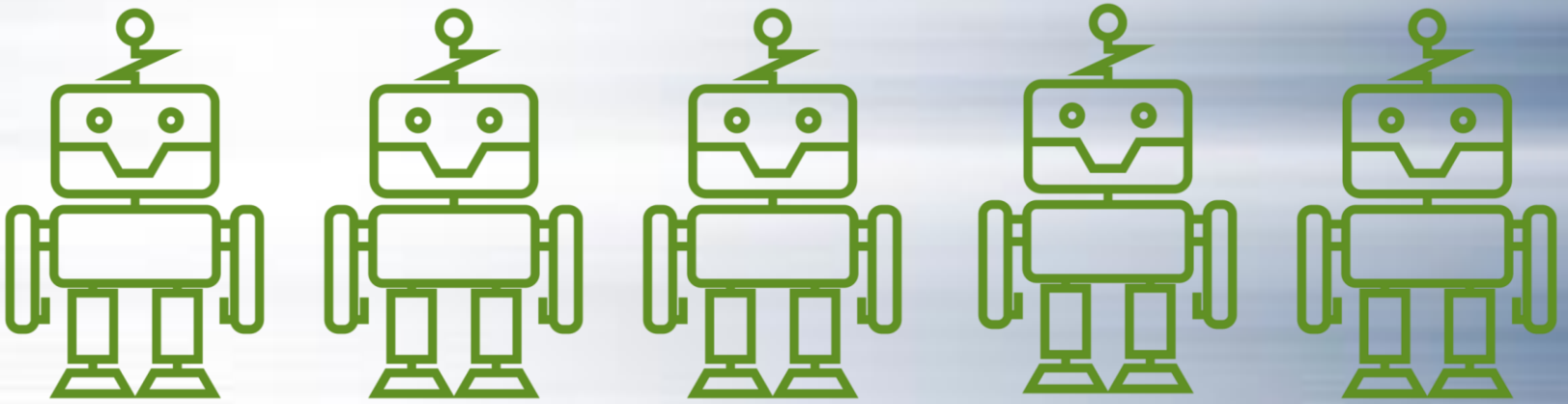

The best decisions combine both.

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.

3. Stop the hardcoding madness.

4. Adopt a digital decisioning platform.

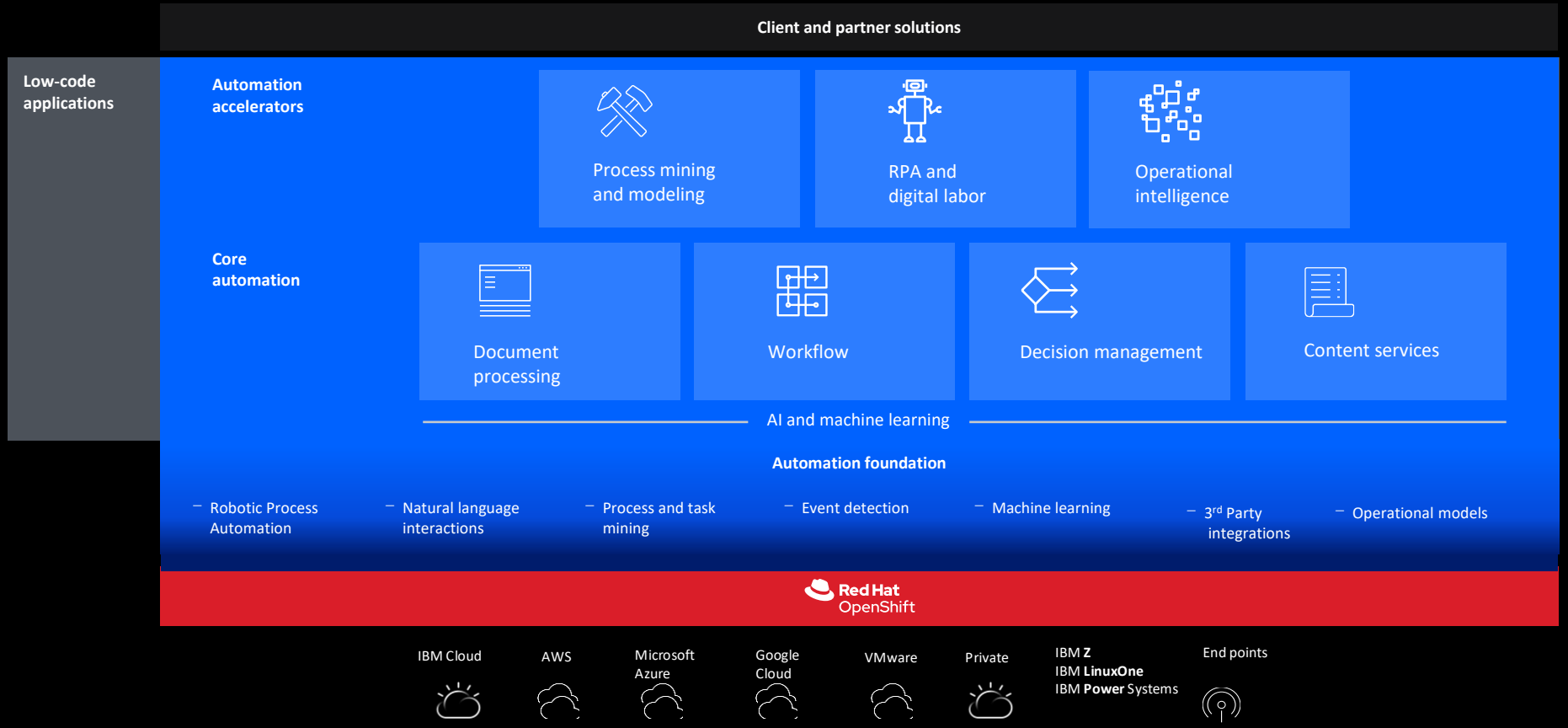

Decide to decide digitally.

Thank You.

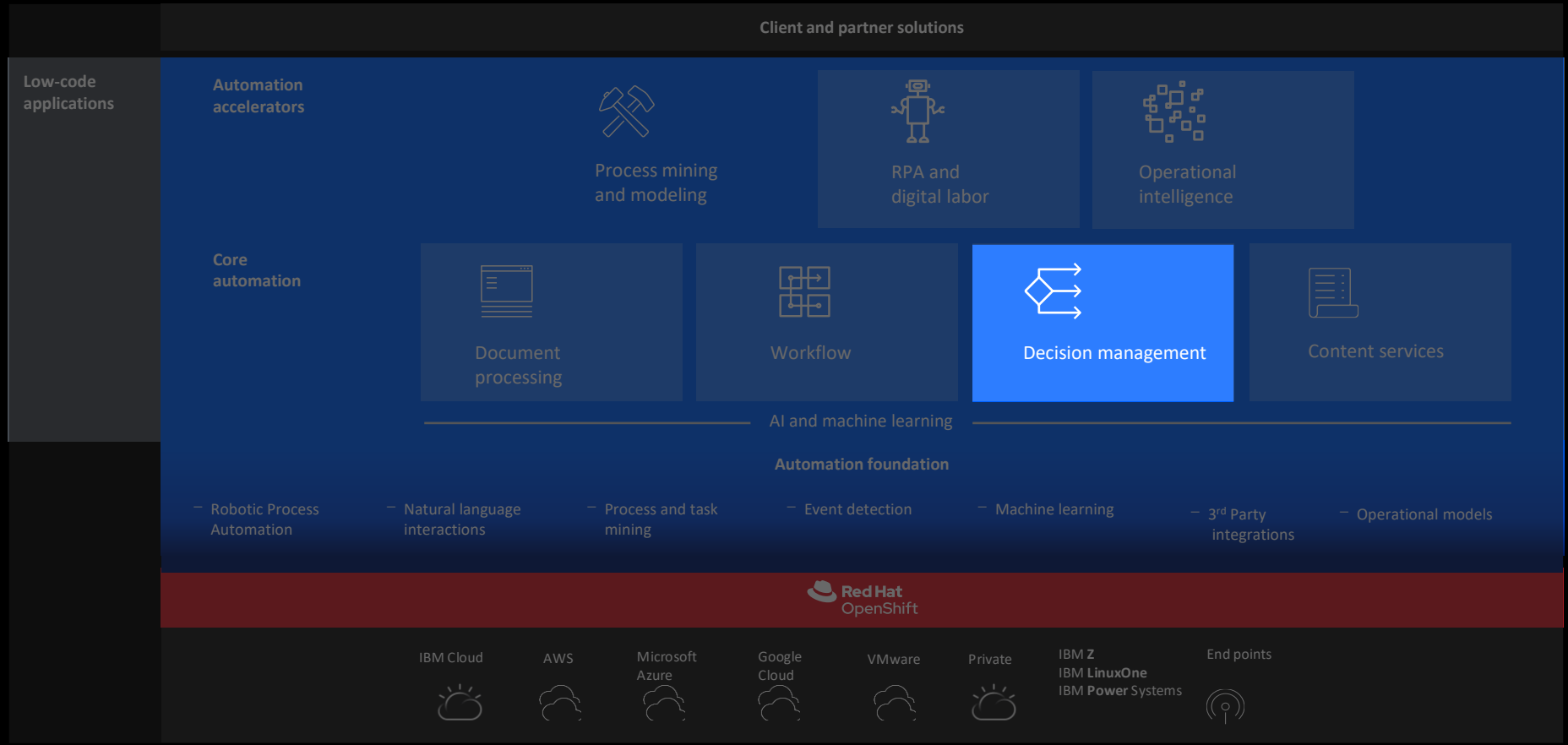
Mike Gualtieri

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

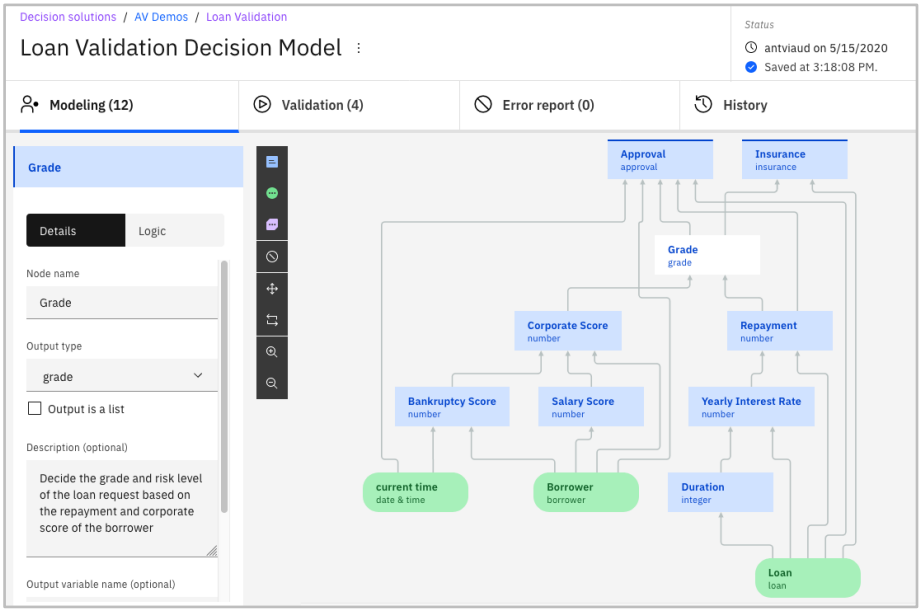
- Test and simulate decisions
- Execute decisions with speed and consistency
- Highly scalable micro services architecture
- Execution tracing for auditability

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

Decision management

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
				900	C	Average risk loan
				600	D	Risky loan
					C	Average risk loan
				900	D	Risky loan
				600	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

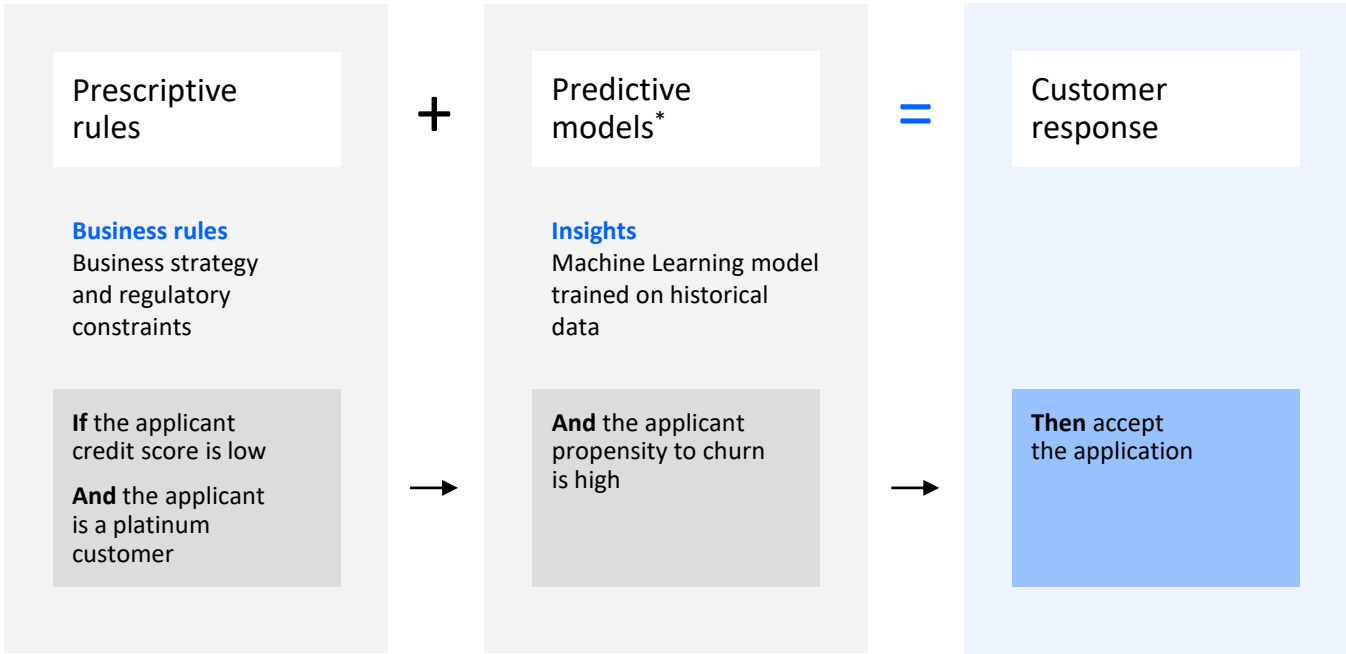
Enterprise decision capabilities with scalability to **execute over 1 billion decisions per day**

Decision management

Integrated machine learning for better decisions

Built-in integration of business rules and machine learning

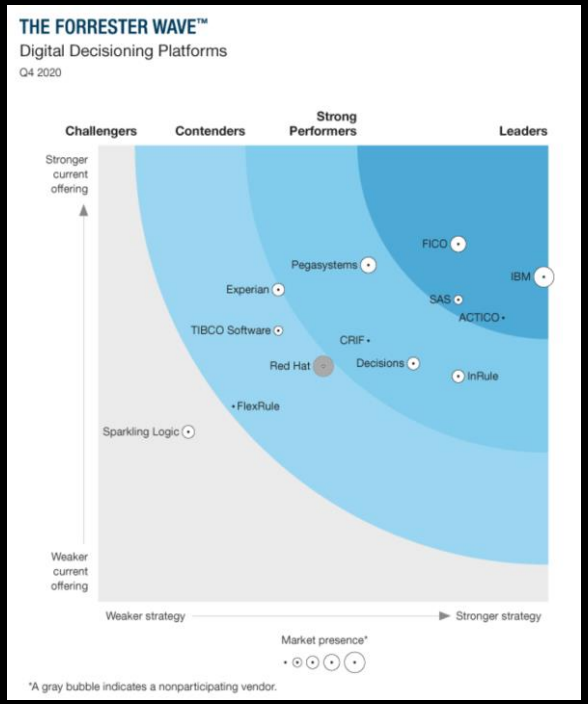
- Machine learning models accessible to business analysts in a low-code environment
- Extend rules-based decisions by incorporating machine learning models
- Native integration with Watson Machine Learning predictive analytics
- Extensive framework for third-party machine learning providers



*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

Source: Forrester Wave™: Digital Decisioning Platforms, Q4 2020

NHS Blood and Transplant

PNC BANK

ControlExpert

BROWNELLS®

Thank you

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—
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ibm.com/cloud/cloud-pak-for-business-automation

Mike Gualtieri
VP, Principal Analyst, Forrester Research Inc.


IBM