Decision Automation from IBM: A key component of the IBM Cloud Pak for Business Automation

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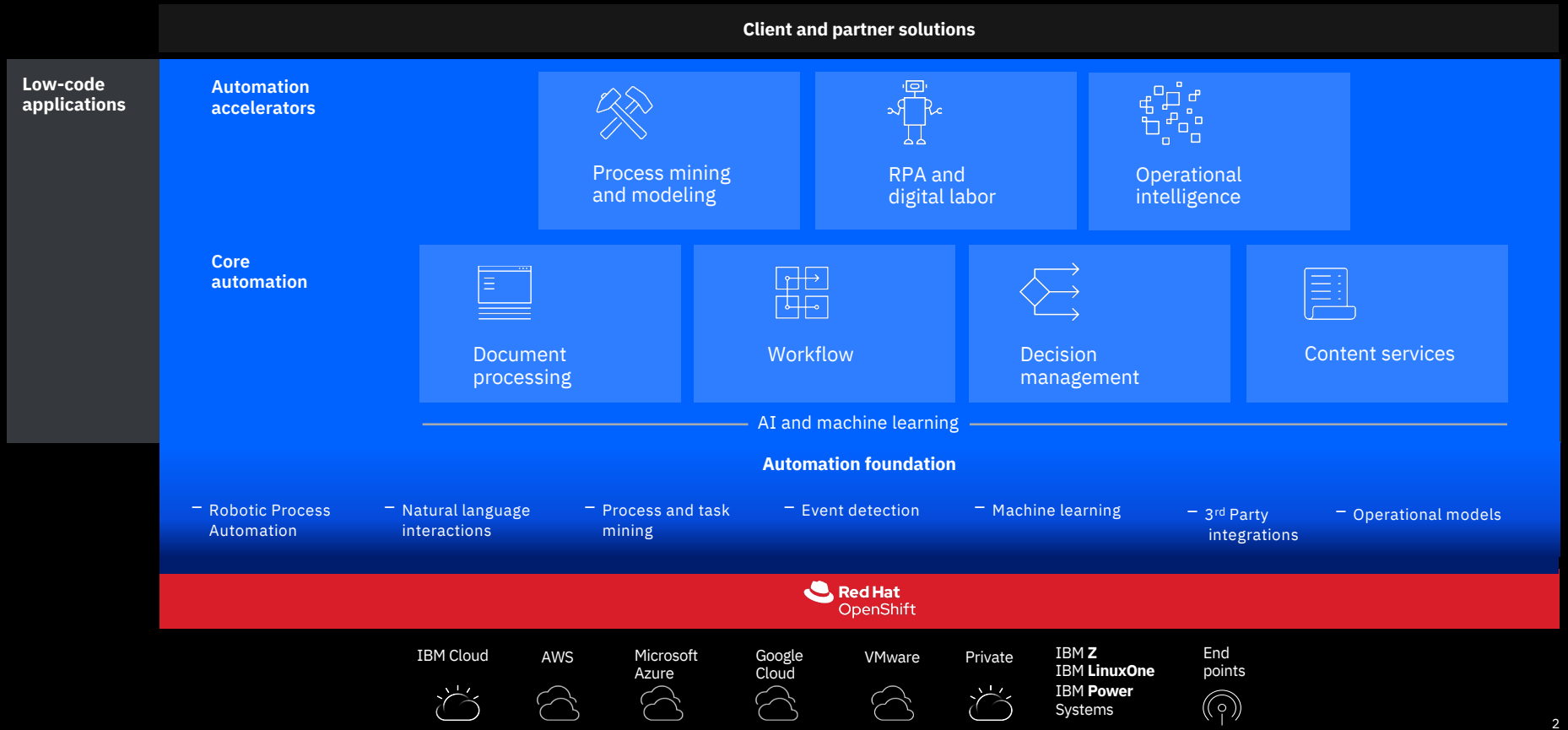
Hybrid Cloud Build Team

IBM Cloud Pak for Business Automation

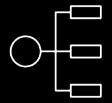
A complete hyperautomation solution



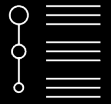
Automation Decision Services

IBM

Decision modeling capabilities



Definition of decision logic



Configurable business rule terms

Model composition

Powerful rule constructs

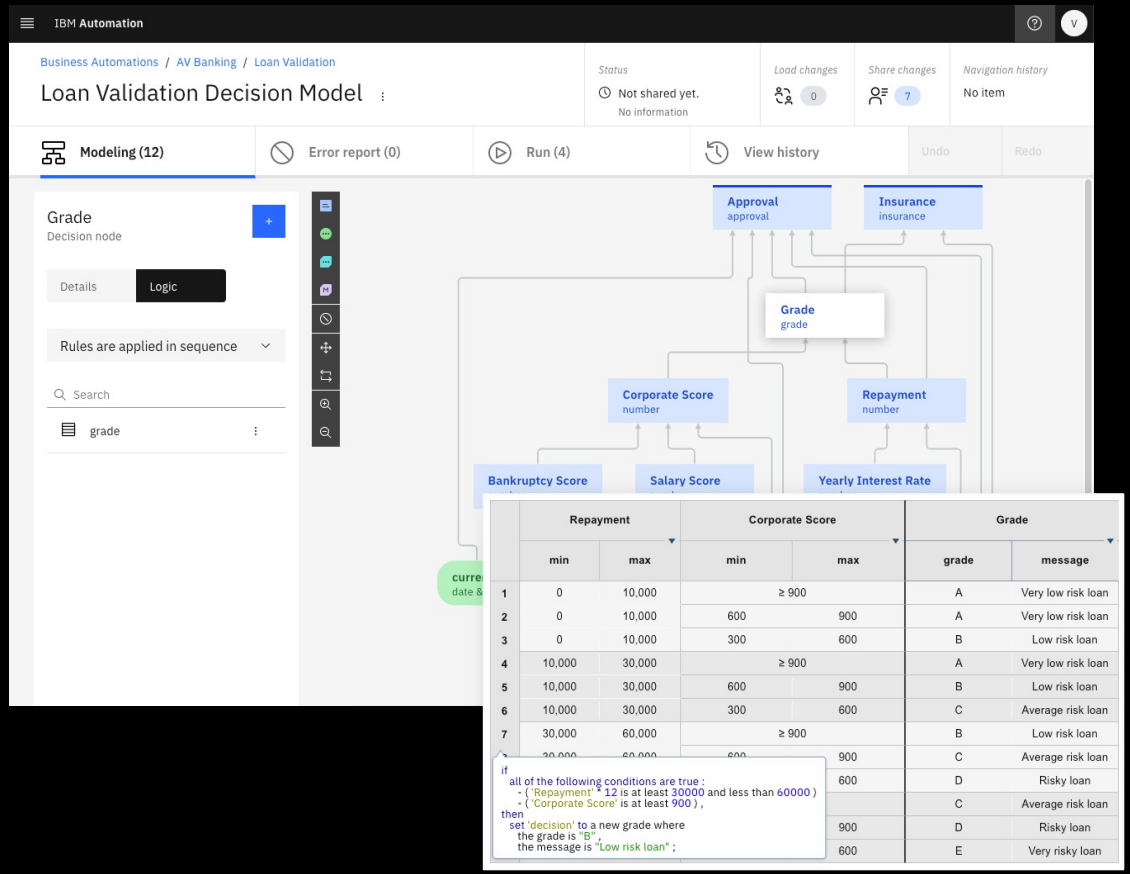
Multi-user collaboration

Localized UI and rule languages

Intuitive Decisions – with low code decision modeling

Empower business users to:

- Initiate and build enterprise-scale decision automation projects
- Author rules with business-friendly language and editors
- Validate decisions
- Collaborate with their peers



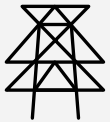
Across Industries, Machine Learning is becoming Essential

Banking & Financial Services

- Reduced loan processing times
- Customer onboarding
- Financial risk and regulatory investigations

Government and Education

- Customs and border control
- Benefits and services eligibility
- Tax payments



Energy and Utilities

- Power grid management
- Bill processing
- Energy consumption management

Retail and Consumer Products

- Retail orders
- Customer service
- Customer loyalty programs

Insurance

- Automated claims processing
- Underwriting
- Fraud investigations

Travel and Transportation

- Online ticketing and reservations
- Invoicing
- Customer Loyalty programs

Healthcare and Life Sciences

- Improved patient care processes
- Donor matching processes
- Medical fraud investigations

Manufacturing

- Manufacturing quality and control
- Defect Investigations
- Conditioned-based maintenance

Machine Learning and Business Rules are Complementary

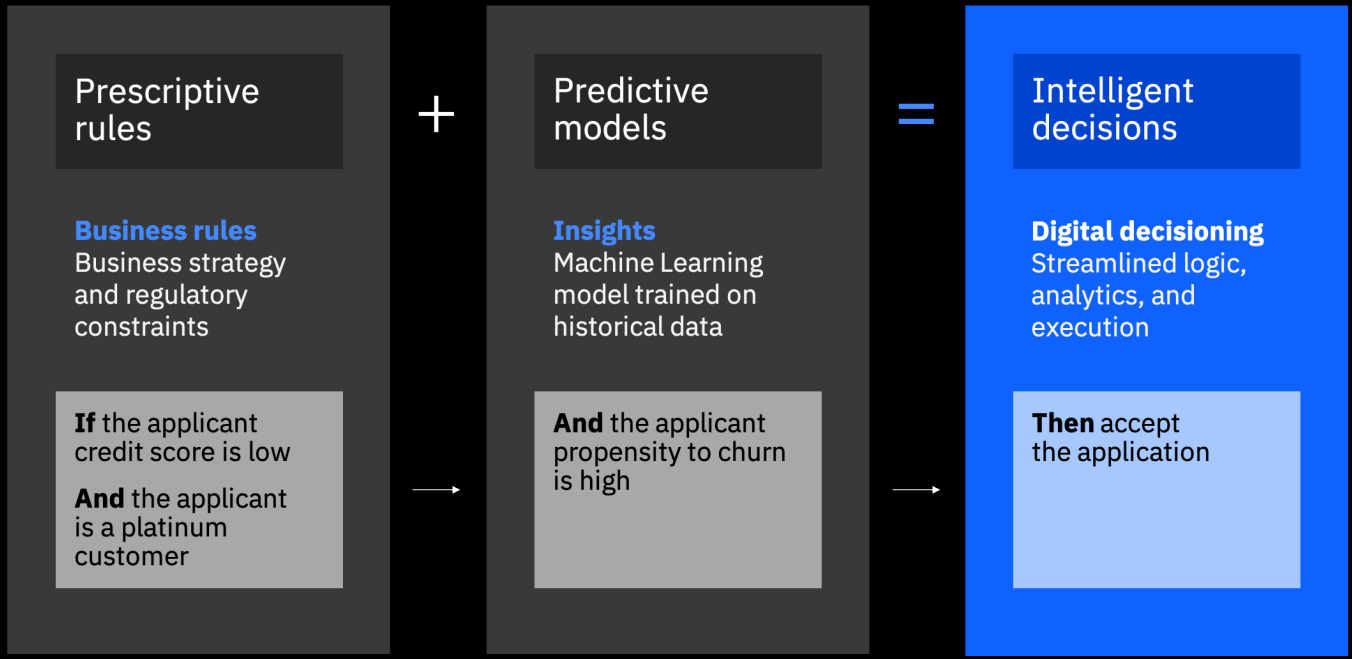
Use Case	Machine Learning	Business Rules
Product Recommendations	Score how likely a customer is to buy a product	Ensure eligibility and decide on personalized offer
Insurance Underwriting	Determine propensity of customer to churn	Calculate quote and apply discount if appropriate
Insurance Claims Handling	Assess likelihood of fraudulent claim	Determine eligibility and coverage based on policy
Loan Approvals	Assign probability of default on payment	Apply business policies to maintain company risk profile
Travel Disruptions	Expose potential for missed connections	Apply policies to rebook early/efficiently
Tax and Bill Calculations	Highlight probably irregular entries	Flag for investigation or manual review

Intelligent decisions enhance business rules with predictions

Combine **predictive analytics** with **business rules** to make **predictive decisions**.

Benefits:

- Personalize content at scale, increasing engagement
- Increase operational efficiency by streamlining common cases and reducing costs
- Drive growth and retention by leveraging client touchpoints to ensure compliance and transparency



Make predictive decisions: opportunities

Examples:

- In product recommendations, ML scores how likely a customer is to buy a product, and business rules ensure eligibility and decide on personalized offer
- In insurance underwriting, ML determines propensity for a customer to churn, and business rules calculate a quote and apply discount if appropriate
- With travel disruptions, ML exposes potential for missed connections, and business rules apply policies to rebook early/efficiently

Before applying AI

Automated decisions such as:

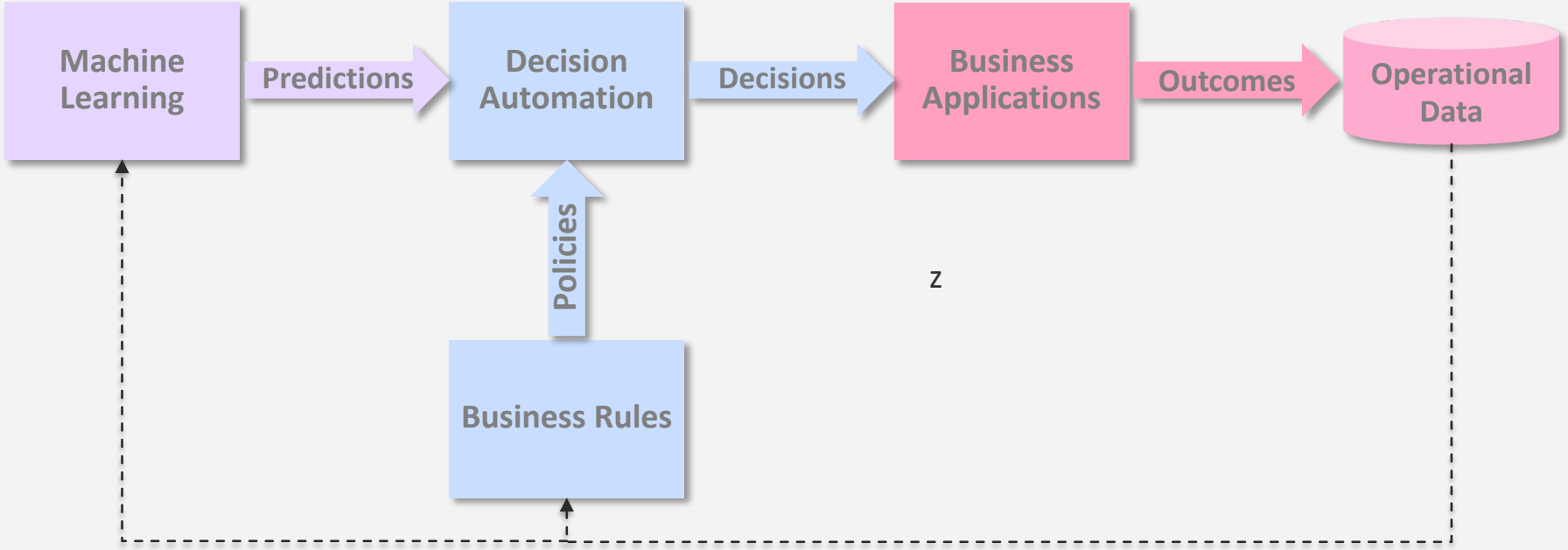
- Is the applicant eligible to this offer?
- Should I approve this claim/loan?

After applying AI

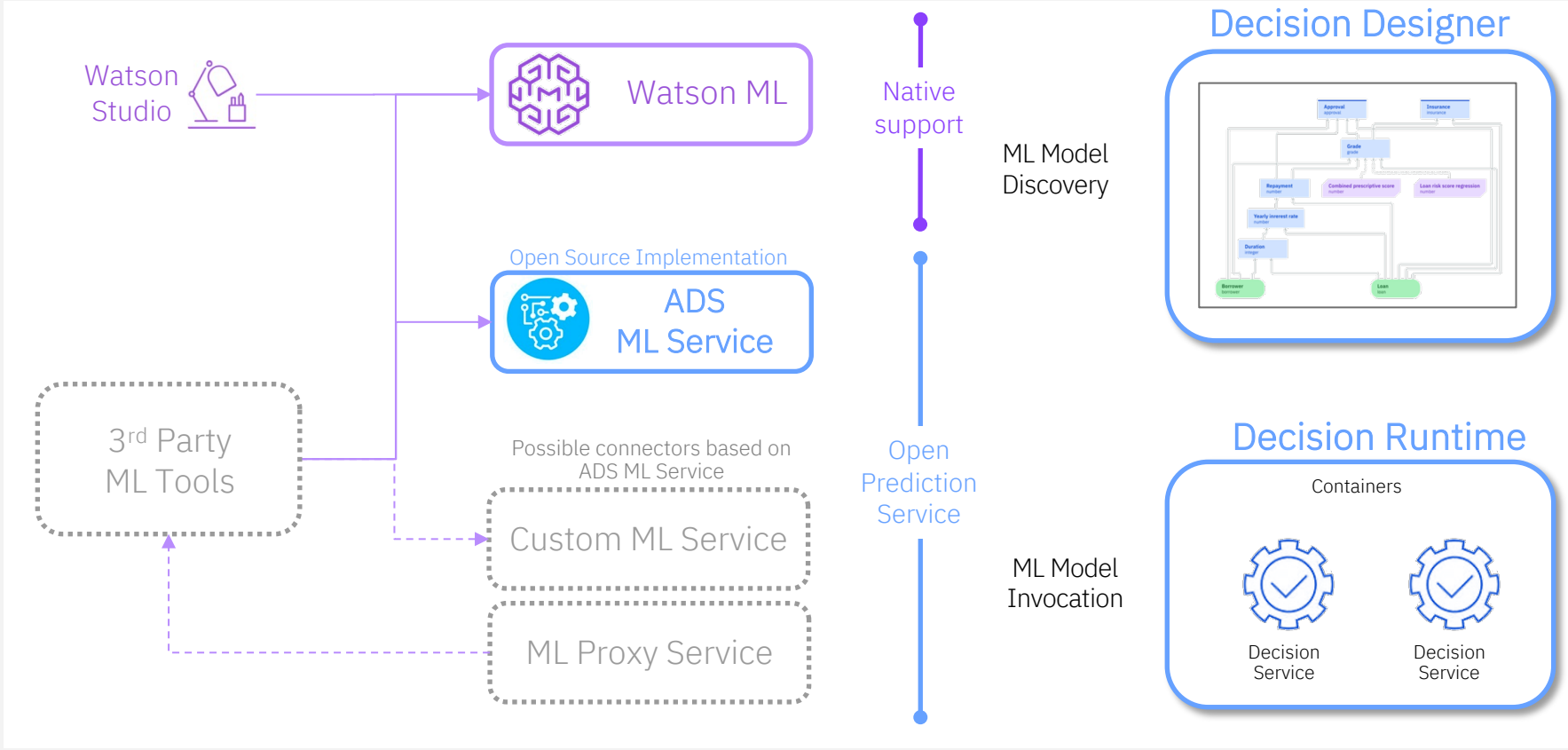
Richer decision making such as:

- What is the best personalized offer I can make?
- What self-service options can I offer to minimize cost to serve?
- How can I manage compliance in a consistent and transparent way?

Decision Automation enables Continuous Improvement



Options to connect to ML Platforms



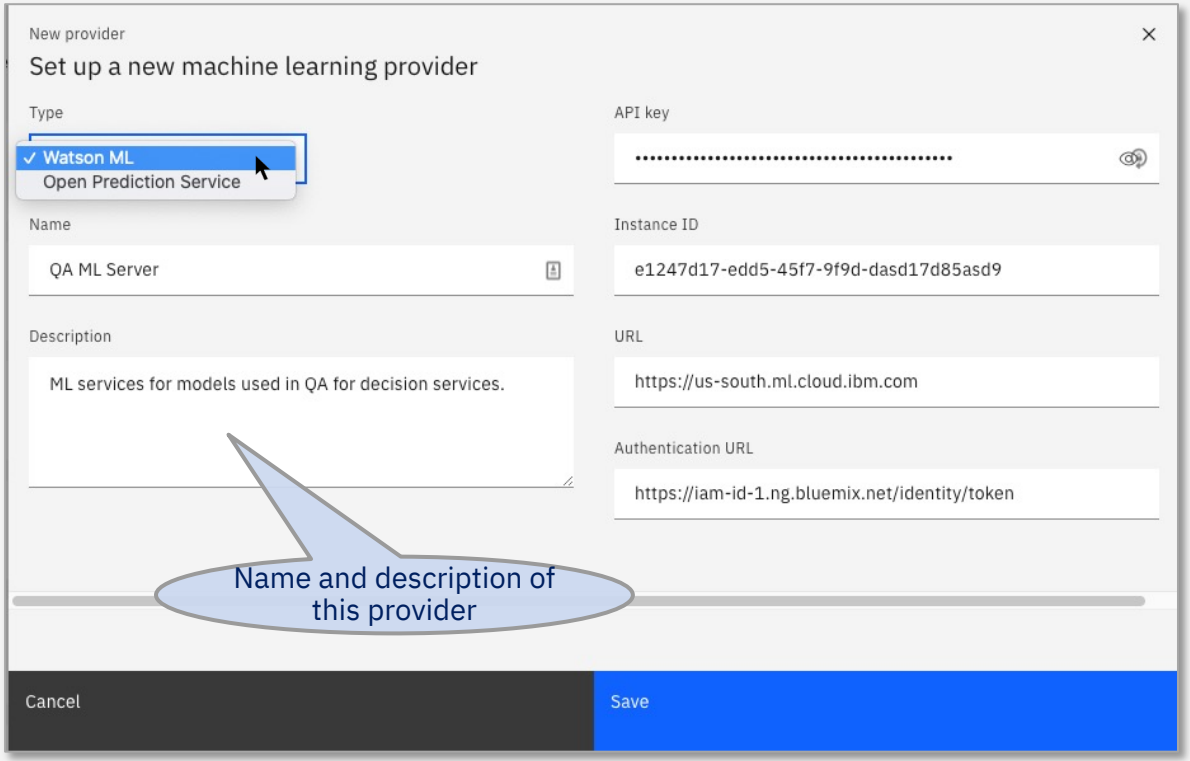
https://github.com/icp4a/automation-decision-services-extensions/tree/master/open-prediction-service

Step 1: Configuration of ML Providers (one-time setup)

Each “provider” represents a remote ML service

Supports IBM Watson Machine Learning natively.

Supports other ML services through extensible “Open Prediction Service”.



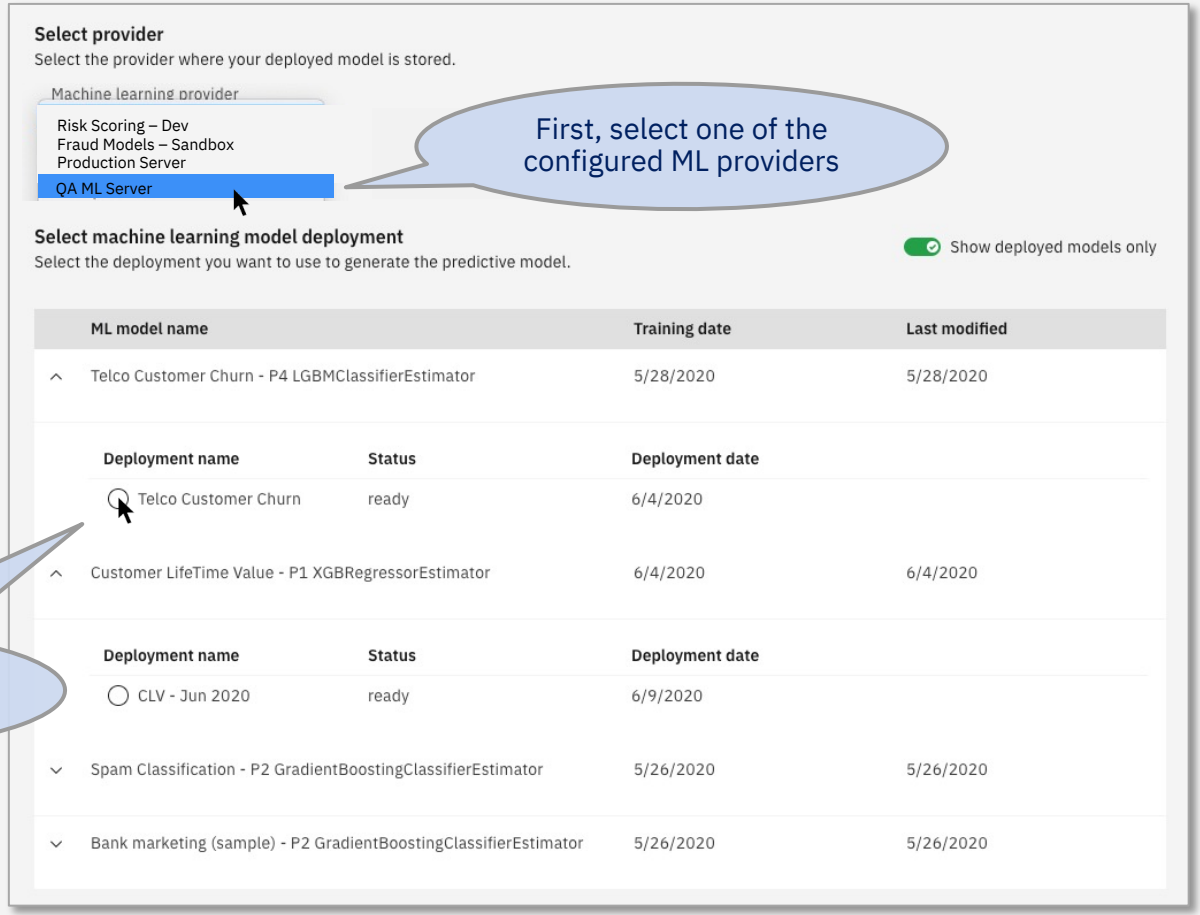
Step 2. Create Predictive Model and Launch ML Wizard

- First, create new Predictive Model, which generates a template with nodes for data mapping and ML invocation
- Second, launch “ML wizard” to connect the Predictive Model to an external ML model
- Notes:
  - Connecting to ML model is optional, i.e. it’s possible to use Predictive Models without ML, with rules providing predictions
  - This allows “top-down” or “decision-first” modeling, where ML model is connected later

Step 3. Discovery and selection of ML model

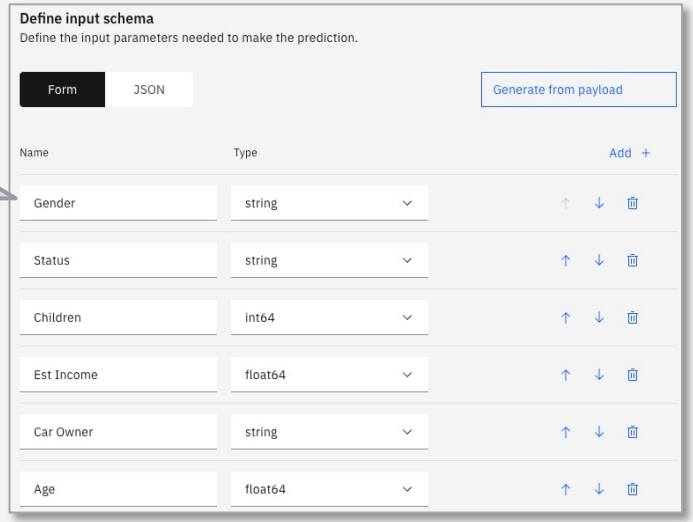
Easily browse to see available ML models

Supports multiple provider types and environments

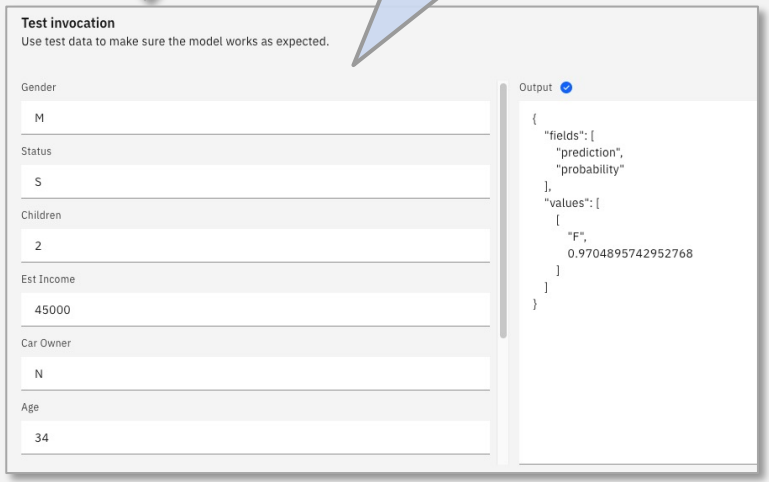


Step 4: Wizard to connect the selected ML model

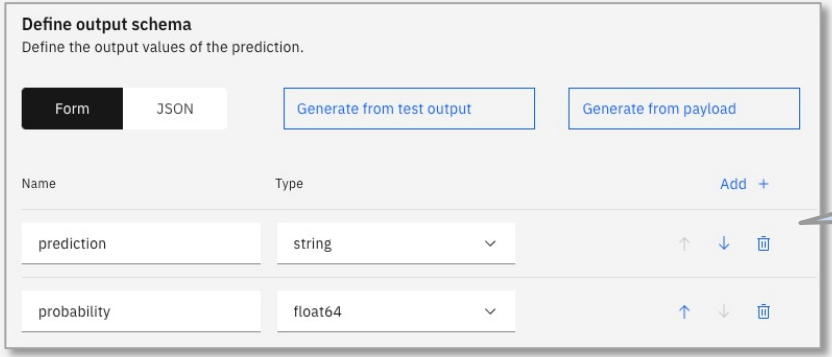
1. Validate the parameters required to invoke the ML model



2. Perform a test invocation with example values



Leverages schemas from ML Providers (when available)



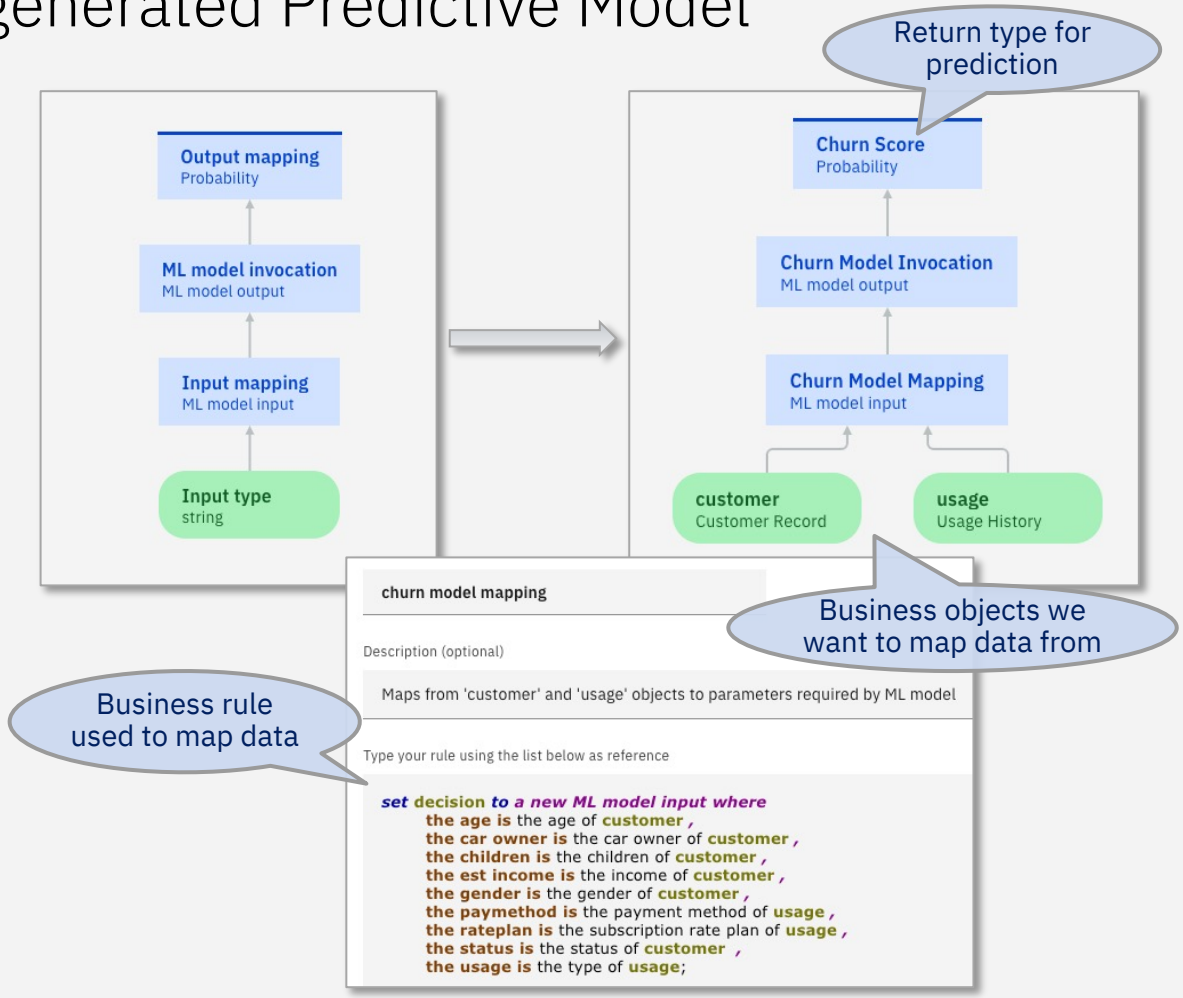
3. Validate the response schema of ML model

Step 5: Configuring the generated Predictive Model

A ‘predictive model’ encapsulates the ML model

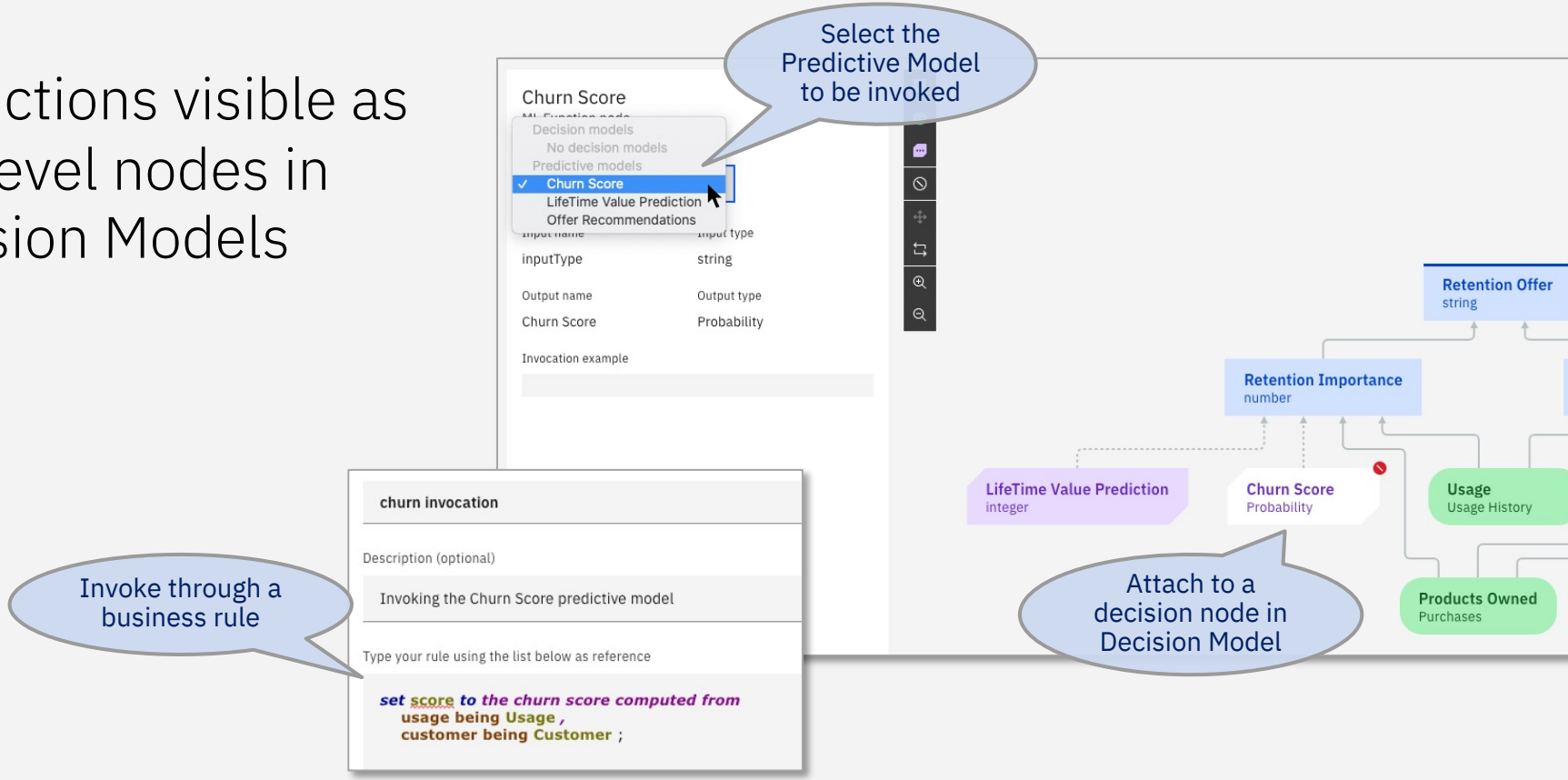
Using rules to map data, ensure safe invocation, and transform the return score.

This Predictive Model hides the complexities of the ML model and is invokable using business objects.



Step 6: Invoke the Predictive Model from a Decision Model

Predictions visible as top-level nodes in Decision Models



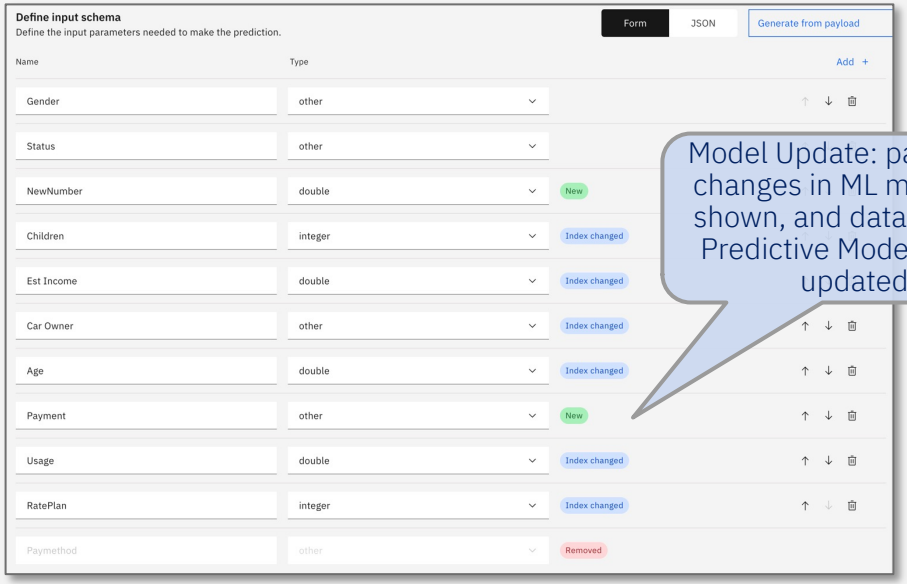
Model Update: Re-connect to new ML Model

'Editing' the configuration of a Predictive Model allows re-connecting to new ML model, in order to (for example):

1. Update to a re-trained ML model
2. Change to a different ML model
3. Move to a different ML service environment

Note:

- It's possible to select ML model from another ML Provider
- ML wizard will detect and manage changes in parameters (see right)

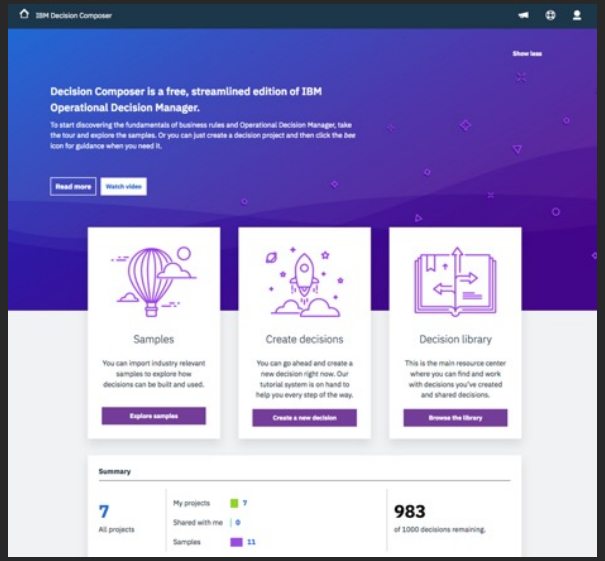


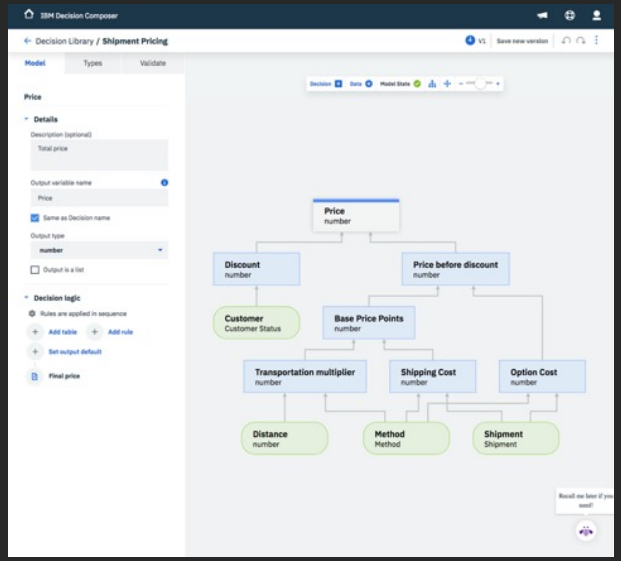
Capabilities supported by each type of ML Provider

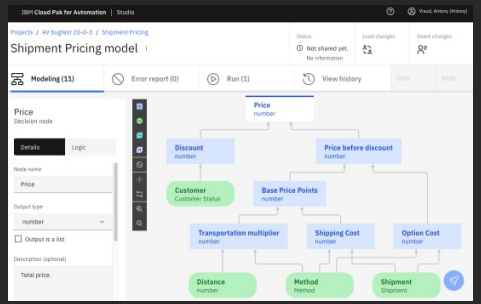
	Discovery of models	Leverage Schema (Input / Output)	Validate (Decision Designer)	Invocation (Runtime)
Watson Machine Learning	**Yes**	**Input: Yes**, if deployed from Watson Studio (otherwise depends) **Output: No**, need to use test invocation or edit manually.	**Yes**	**Yes**
Open Prediction Service	**Yes** (ads-ml-service) Otherwise depending on service.	**Input: Yes** **Output: Yes** (ads-ml-service)	**Yes**	**Yes**

Decision Composer

- Discover and learn how to model, author, validate, and share business rules on the cloud
- No code environment enables you to initiate and invoke decisions in minutes
- Run up to 1000 decisions per month
- Start in Decision Composer, then import into Automation Decision Services for full fledged decision modeling

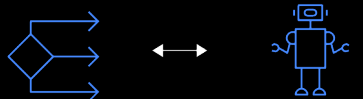




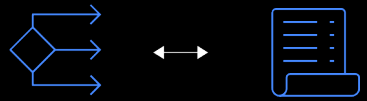


Automation Decision Services

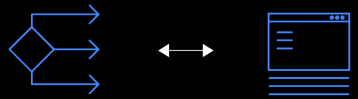
Decisions can be combined with other capabilities to add value



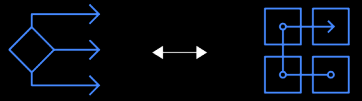
Make smarter decisions faster by combining RPA and Decisions



Extract content from unstructured documents to enlarge the scope of data to support better decisions

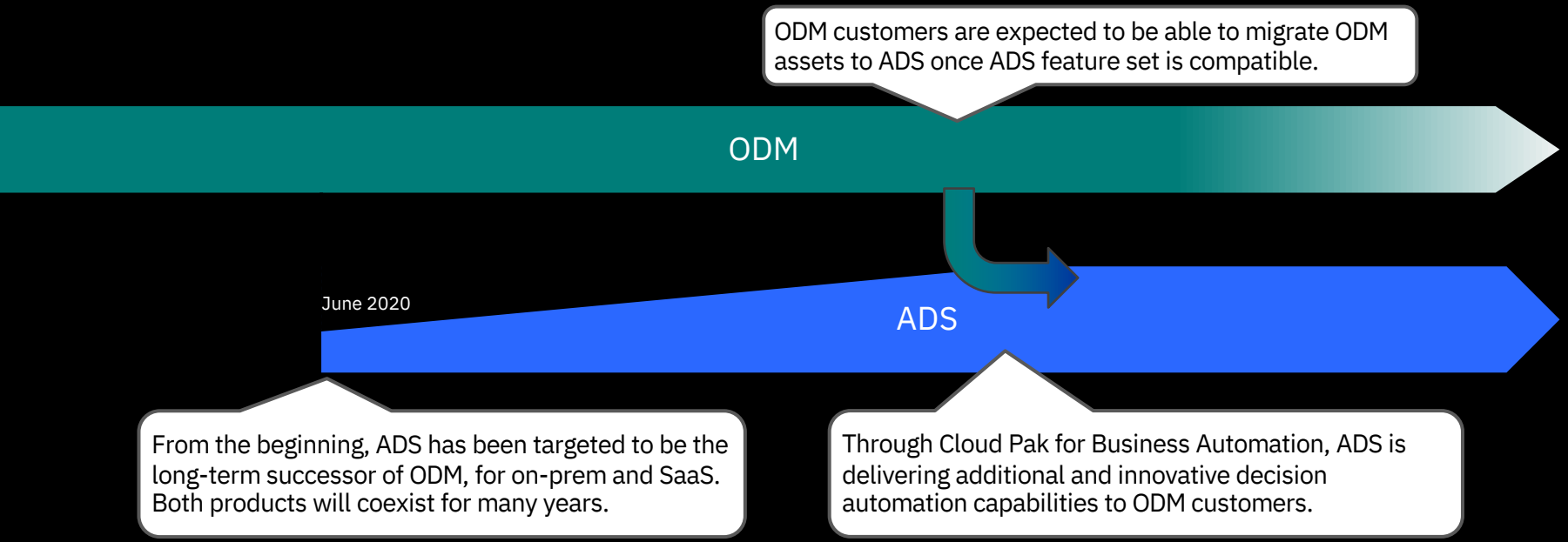


Analyze unstructured data, invoke business rules to improve responsiveness



Extract business logic into rule-based decisions to enhance agility and reduce complexity

ADS and ODM positioning



ODM best when a project requires…

As of April 2021

- Large/complex decision services
  - With hundreds of rules organized in a hierarchy
  - With data models for rules based on Java models
  - With a need to combine business rules, script-based actions and orchestration of tasks
- Reuse of existing ODM rules and ruleflows
- Deployments on app servers, embedded in Java apps, on compute grids, on z/OS
- Built-in testing and simulation capabilities
- Advanced runtime management capabilities

ADS best when a project requires…

As of April 2021

- New decision automation led by business groups
- Intuitive decision modeling and data models definition
- Built-in integration of Machine Learning predictions
- Usage of Git as the repository and driver for governance
- Ease of integration with 3rd party CI/CD pipelines
- Native cloud architecture
- Integration with other automation components

Comparing ADS and ODM for decision projects

As of April 2021

From a capability perspective:

Requirements	ODM	ADS
Reuse of existing ODM rules and ruleflows	+++	-
Large/complex decision service	+++	+
Business-led creation of decision service	+	+++
Decision modeling	+ (1)	+++
Git as the source of truth	+	+++
Integration with CI/CD pipelines	+	+++
Built-in validation of decision service	+	++
Built-in non-regression testing	++	-
Design-time integration with Machine Learning services	-	+++
Integration with other automation services	+	++

(1): Deprecated

Thank you