

IBM CoDE : Advanced Analytics & Governance Masterclass

19 August 2021, Thursday
10:00 AM – 11:30 AM | MYT



Agenda

- | | |
|-----------------|---|
| 10:00 AM | Welcome and Opening Remarks |
| 10:05 AM | Collect – Make all data simple and accessible |
| 10:20 AM | Organise – Create a business-ready analytics foundation |
| 10:40 AM | Analyse – Build, scale and Operationalize AI with trust and transparency |
| 11:00 AM | Infuse - Discover the power of IBM Watson with Watson Assistant and Watson Discovery |
| 11:20 AM | Wrap Up, Next Step |



Speakers



Eddy Liew

*Technical Sales Leader,
IBM Malaysia*



Aaron Lee

*IBM Data & AI Client
Technical Specialist*



Tan Liak Kuan

*Technical Sales, Data & AI,
IBM Malaysia*



**Indrajit
Mukherjee**

*Data & AI Specialist
IBM Watson (ASEAN)*



**Radin
Ayuwandira**

*Technical Sales -
Data & AI, IBM ASEAN*

Welcome and Opening Remarks



Eddy Liew
*Technical Sales Leader,
IBM Malaysia*



Collect – Make all data simple and accessible



Aaron Lee

*IBM Data & AI Client
Technical Specialist*



Data Today

Commonly accepted as a new foundation for business

68% of data

created today goes unanalyzed

42% of data

annual growth in enterprise data volumes

Data is what fuels to Digital Transformation

AI is the one which unlocks the value



But what is AI ?

At the enterprise level, AI (Artificial Intelligence) can be defined as a way of radically improving three things to drive better decisions and improve business outcomes :

PREDICTION

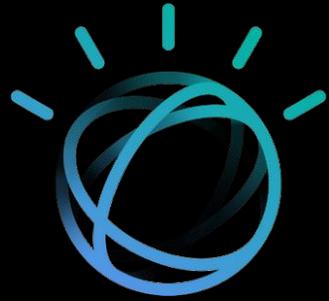
To be able to forecast what's going to happen in their business, at both the macro and micro level

AUTOMATION

By automating critical, yet time-consuming, business processes that are often done manually, employees are free to focus on higher-value, more relative work.

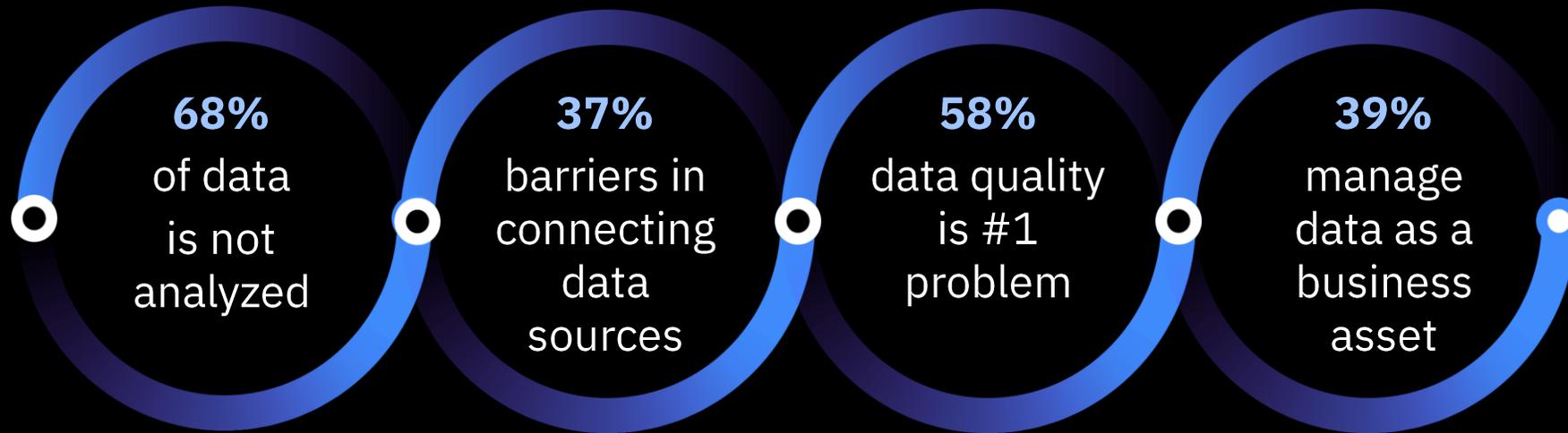
OPTIMIZATION

AI is a tool for improving human decision-making, at speed and scale, and has the potential to augment the work of every employee.



AI is not Magic

Data management complexity is the great inhibitor

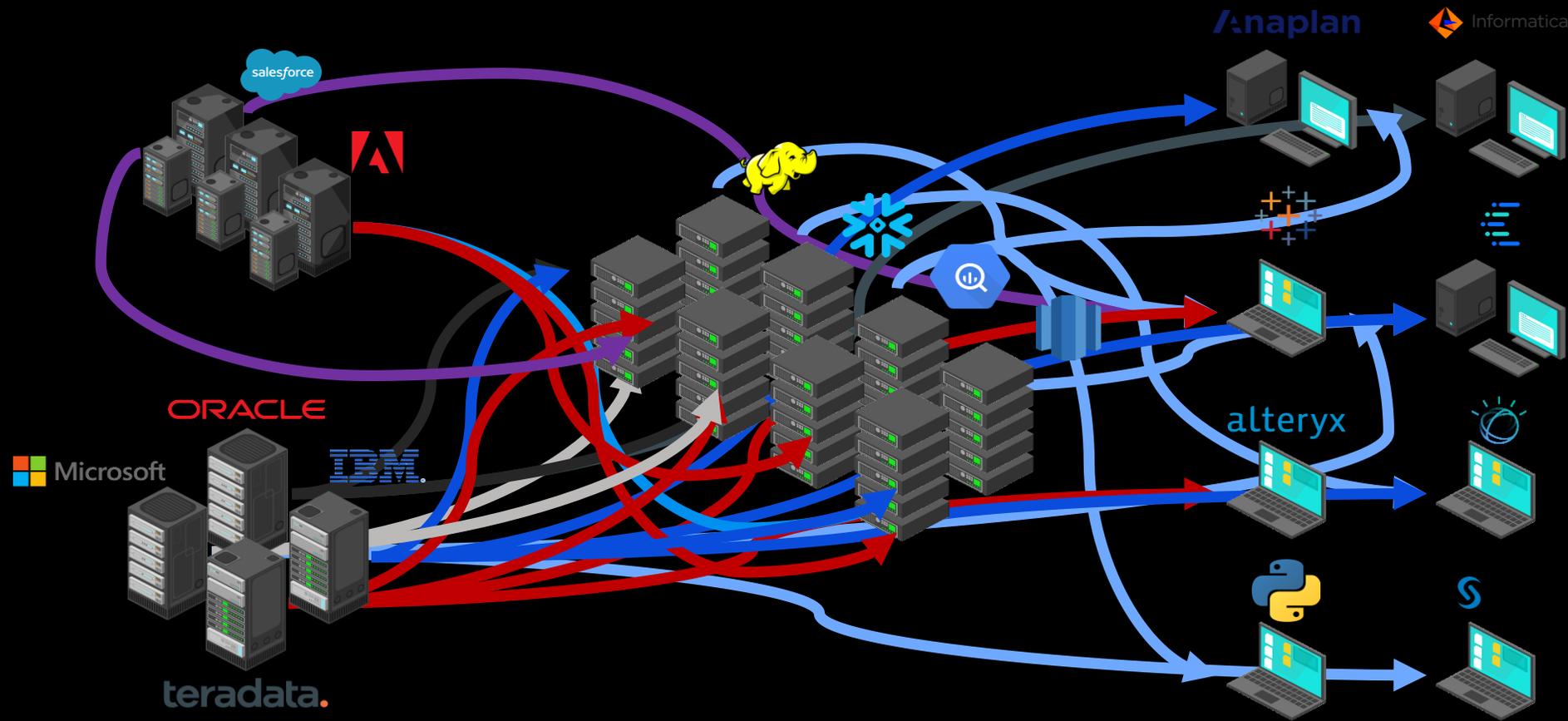


- Data is spread across expansive digital ecosystems as cloud apps proliferate
- Overly manual efforts to move and unify data are slow, costly, and have limited impact
- Rapid growth in data with decreasing lifespans will only make things worse

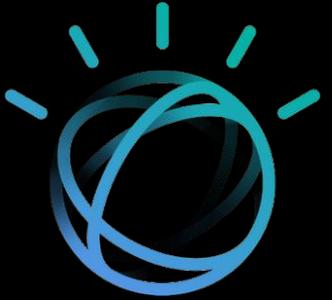
42%

annual growth
in enterprise
data volumes

Common reality:
Tool oriented, little value, unnecessarily complex, and costly



There is no AI without an IA



“Information Architecture”

“*No amount of AI algorithmic sophistication will overcome a lack of data [architecture]*

Data collection & preparation is the most time consuming and difficult part of AI

”



The AI Ladder

IBM's prescriptive approach to the journey to AI

Infuse

Operationalize AI throughout the enterprise

Analyze

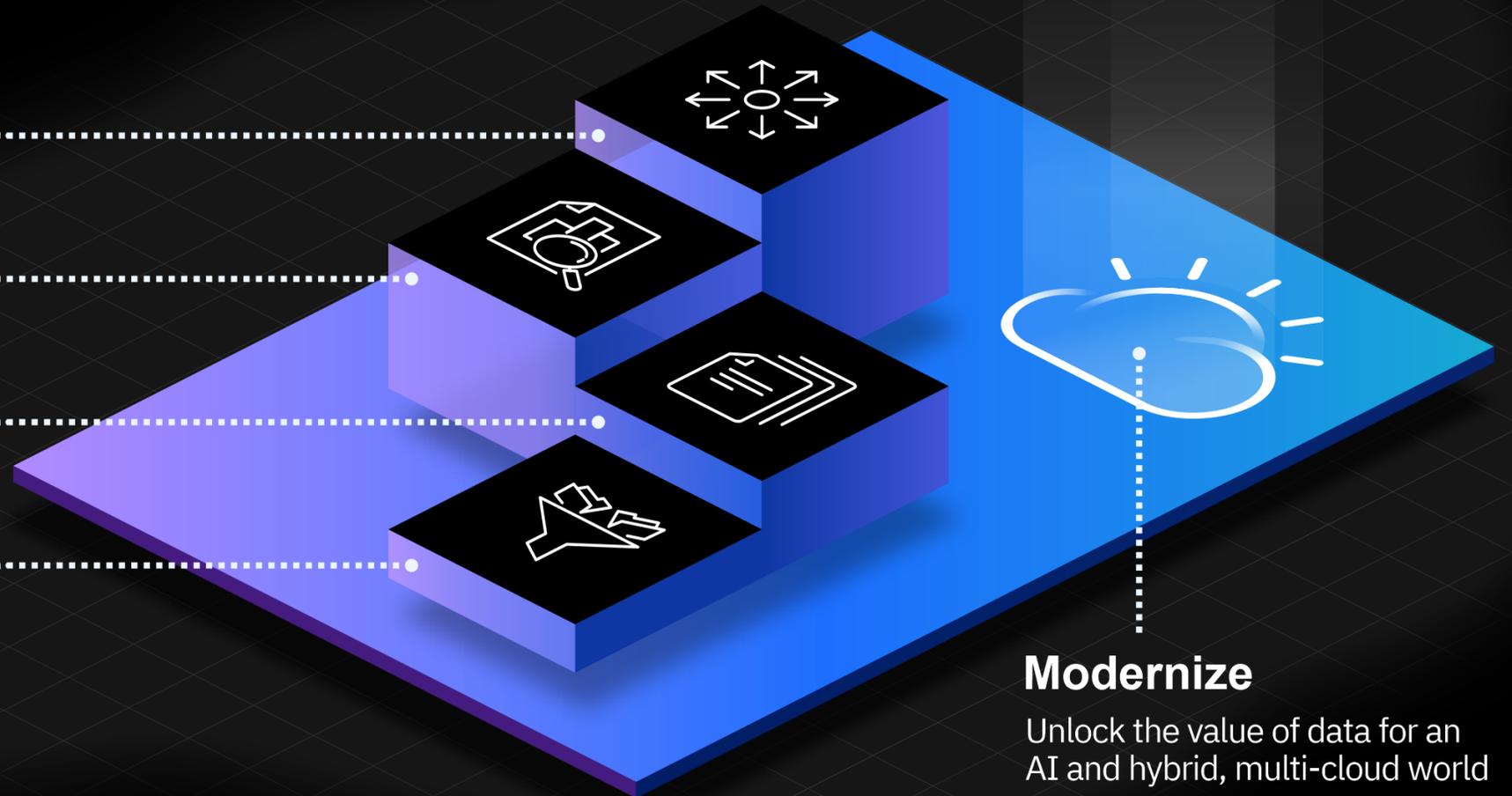
Build and scale AI with trust and transparency

Organize

Create a business-ready analytics foundation

Collect

Make all data simple and accessible



Modernize

Unlock the value of data for an AI and hybrid, multi-cloud world

Introducing **IBM Cloud Pak for Data**

Simplifies, unifies and automates your journey to AI

Analyze & Infuse

*Plug and play 45+ data, analytics and AI apps.
Manage your favorite open source capabilities along
side IBM's market leading differentiators.*

Organize

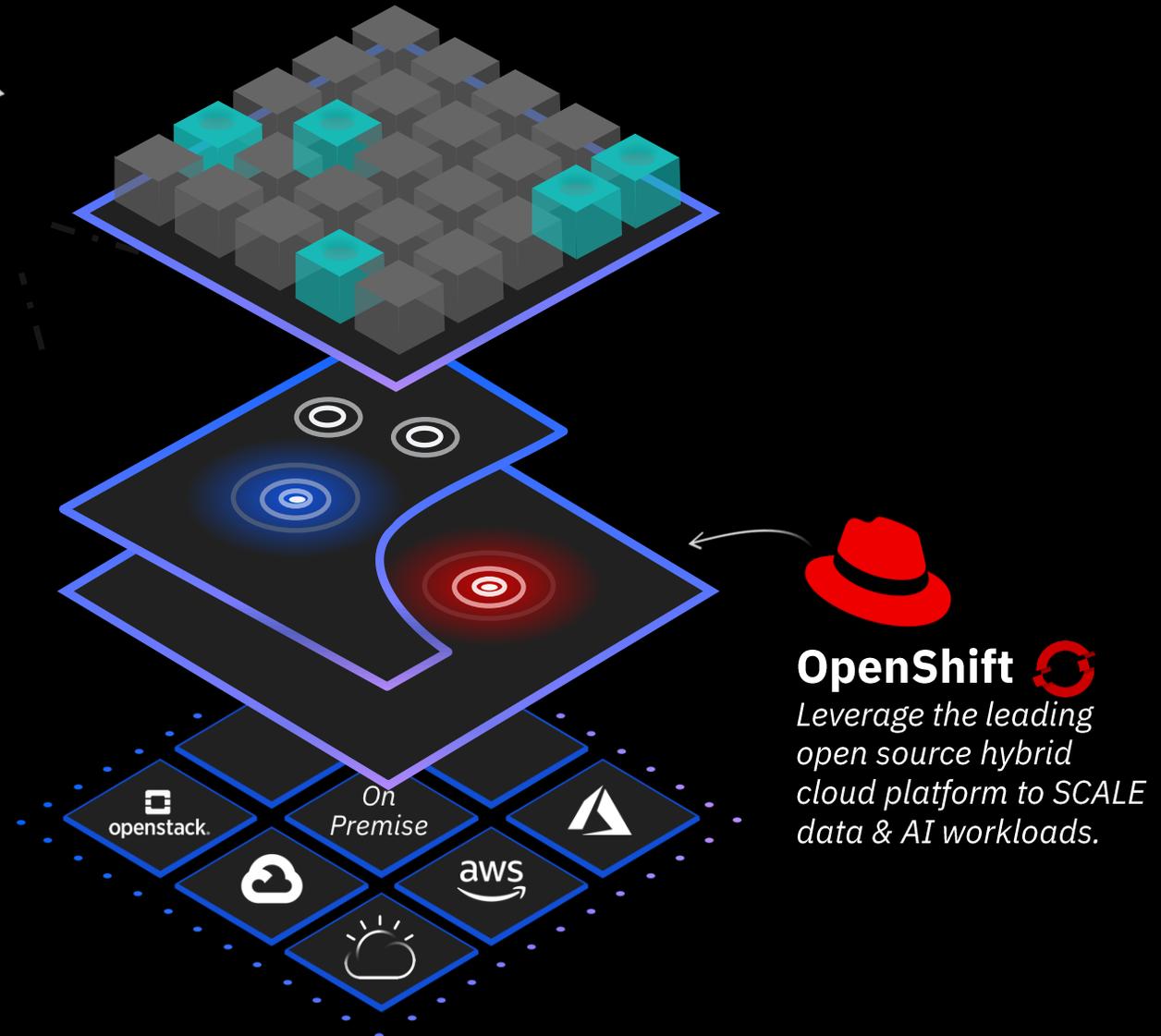
*Catalog and govern all enterprise data, models, rules,
and insights through a common experience*

Collect

*Virtually connect, manage and query data & AI
assets no matter where they live.*

Run on ANY Cloud

*Decoupling enterprise data, analytics and AI will
prevent lock in and accelerate polyglot eco-systems.*



Collect – Data management

Make data simple and accessible



Multi-Cloud

- Fast and flexible data service management
- Ease of portability across private and public clouds



Unified Console

- One experience across all data services
- Coherent, efficient, scalable data services experience
- Ease of provisioning, monitoring, and more



Comprehensive Ecosystem

- Netezza, Db2 Warehouse, AESE, and Event Store
- Partnerships with MongoDB, EnterpriseDB, and more
- Data Virtualization



Data Governance and Self-Service Analytics

- Data automatically integrated with data governance capabilities for self-service data discovery

Data Virtualization

Data virtualization in IBM Cloud Pak for Data is a technology that connects all of your remote data sources from your platform into a single collection, known as a **constellation**.

The phases of data virtualization

Connect: Start by connecting to data sources. You can connect to multiple data sources.

Join, create, and govern: Then, create virtual tables, group tables by schema, associate data with projects, and govern your virtual assets.

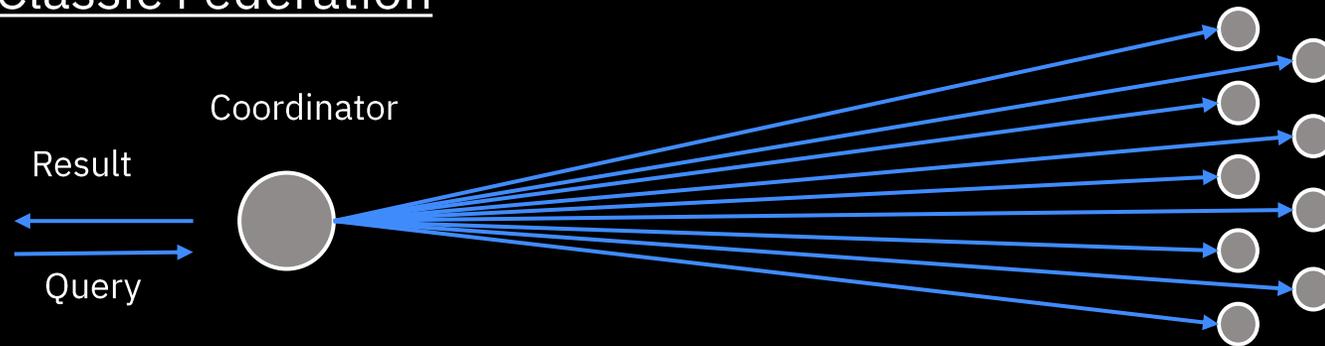
Consume: Finally, consume virtual tables in analytics projects, dashboards, data catalogs, and other applications.

The upside of Data Virtualization

- Does not store data in centralized location
- Data is not copied and is only persisted at the data source
- Allow users to access all data sources from single location

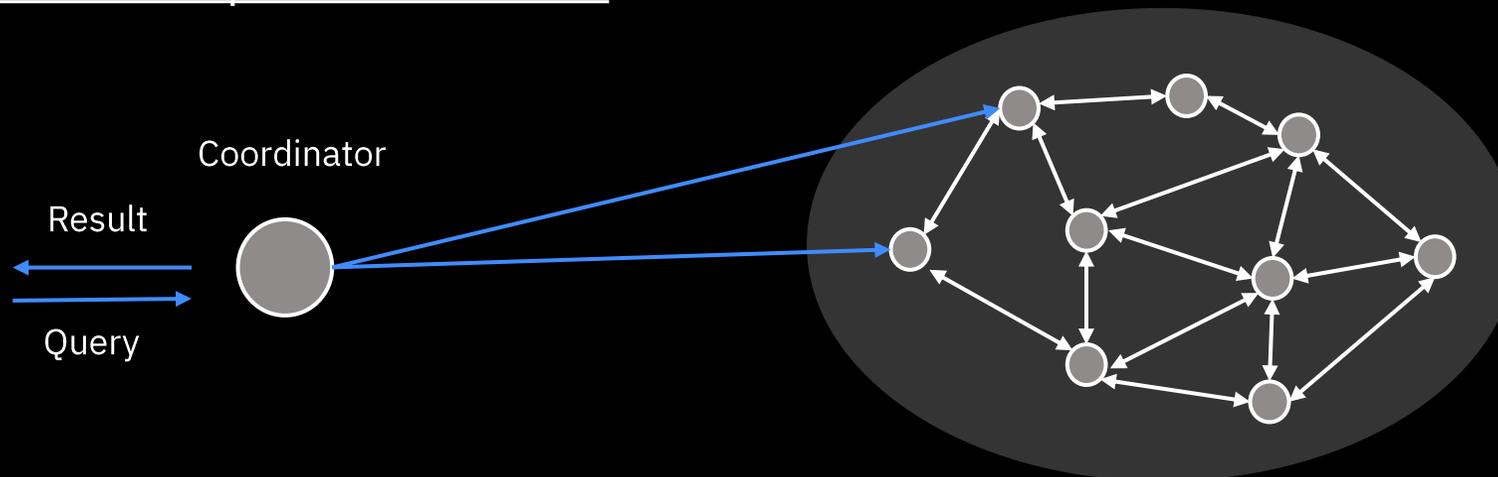
Federation vs Data virtualization

Classic Federation



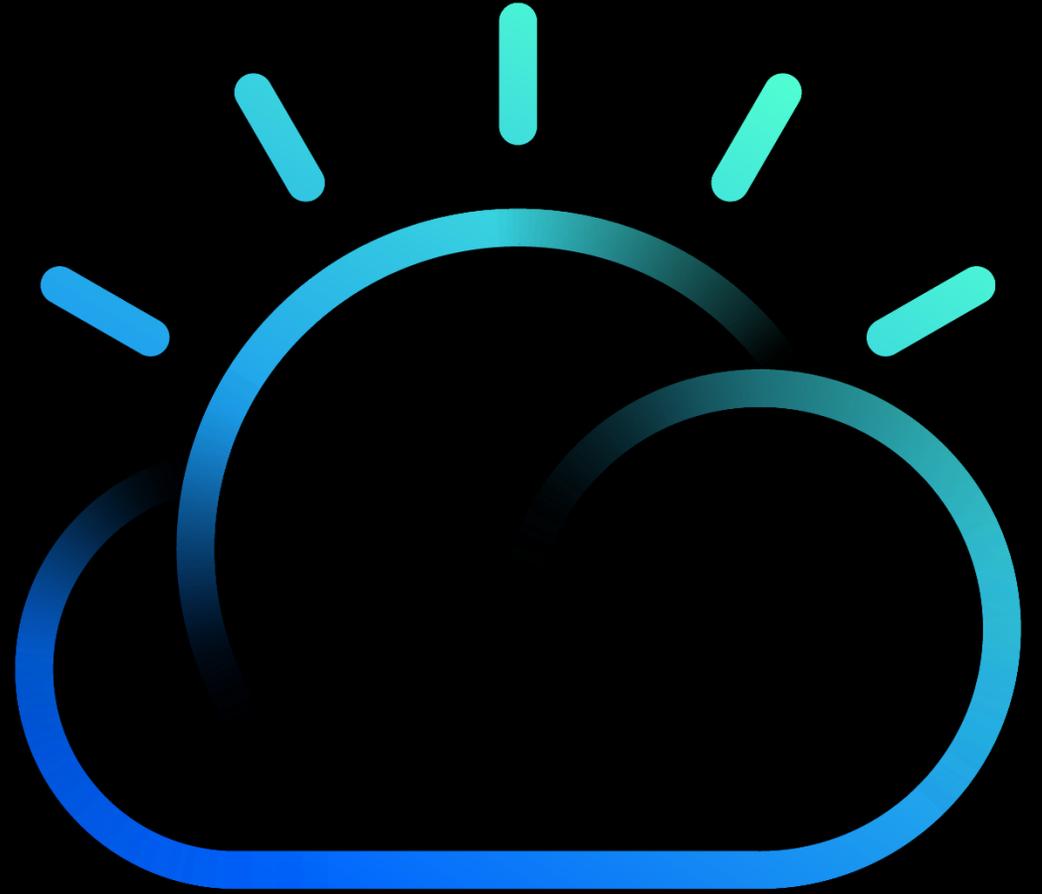
- Edge nodes individually perform as much work as they can based on their own data
- Individual data are sent back for coordinator for merging and perform analytics

New Computational Mesh



- Edge nodes self organized into a constellation where they can communicate with one another
- Nodes collaborate to perform almost all analytics
- Coordinator receives mostly finalized results from fraction of nodes.

Demo



Organise – Create a business-ready analytics foundation



Tan Liak Kuan

*Technical Sales, Data & AI,
IBM Malaysia*



Watson Knowledge Catalog

One integrated solution. Delivering trusted data to the enterprise.

Enterprise Data Governance



IBM provides an enterprise data governance platform that supports business and technical users on data governance teams. It eliminates the cost and complexity of integrating a stand-alone data governance platforms with data integration, quality, and consumption tooling.

Enterprise Data Quality



IBM provides the most complete, most scalable, and most integrated data quality platform supporting data profiling; creation, execution, and monitoring of data validation rules and data matching and consolidation.

Enterprise Data Consumption



IBM provides an enterprise data catalog that delivers self-service capabilities for data citizens (business analysts, data scientists) to search and explore information, to preview and refine information to act upon information in a secure environment driving new data science or analytics.

← Create Business-Ready Data (Trusted and Governed)

Exploit Business-Ready Data →



Data Governance Teams

- Build business glossary
- Manage reference data
- Identify data stewards
- Governs assets with workflows
- Discover metadata assets
- Classify data assets
- Data lineage

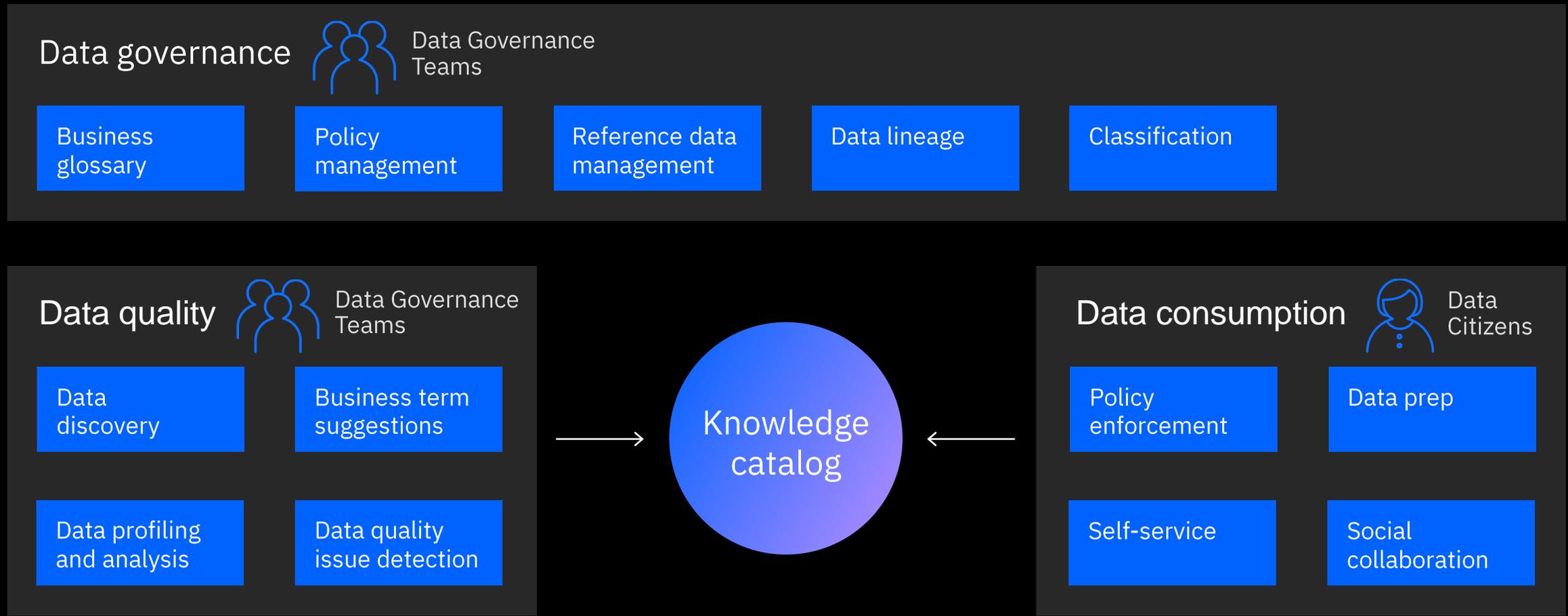
- Profile data
- Apply validation rules
- Assess data quality
- Monitor
- Remediate



Data Citizens

- Search and find relevant data
- Comment, rate and share
- Prepare data for consumption and analytics
- Analyze data to derive insights

All capabilities in a single experience



Watson Knowledge Catalog

Delivering Business Ready Data to the Enterprise

- Phase I – Catalog Foundation.
Business Domain elements which help organize and apply meaning to information
- Phase II – Metadata Import and Discovery.
Automated processes for identifying and evaluating information, assessing data quality, and in-depth analysis in business context
- Phase III – Delivery of Business-Ready Data.
Allowing Data Citizens to search and explore meaningful, trusted and quality data to drive new insights and deliver analytics

Governance Artifacts

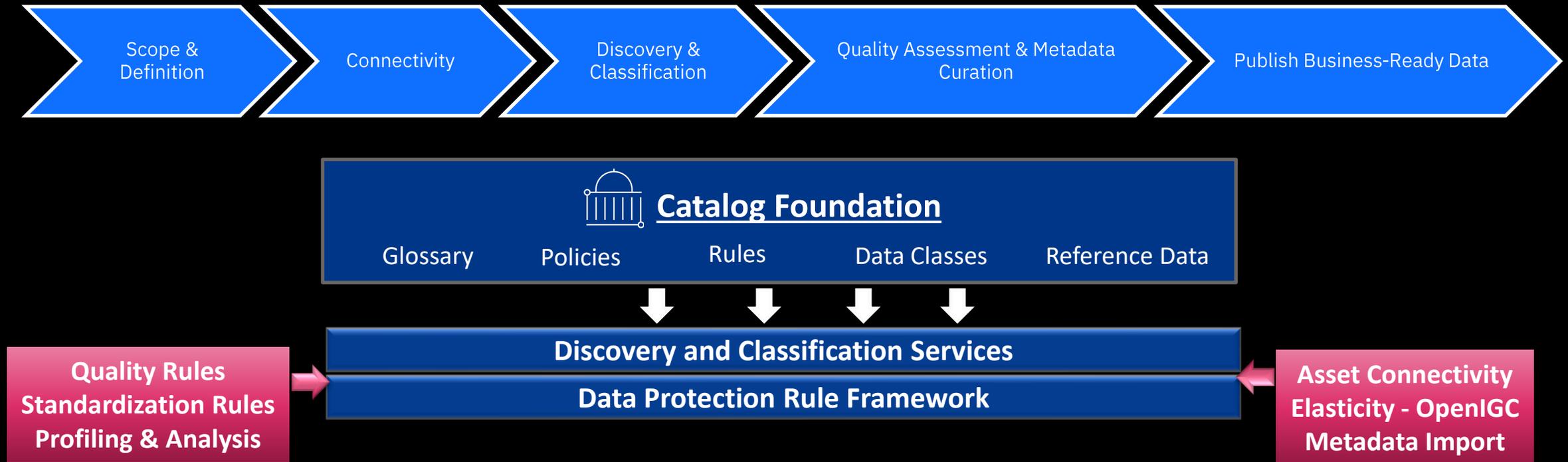
Govern your data with governance artifacts, and you organize and control access to governance artifacts with categories.

The screenshot displays the IBM Watson Knowledge Catalog interface, which is used for managing data governance artifacts. The interface is organized into several sections:

- Business terms:** Located at the top left, it includes a search bar with the text "Agree" and a blue button labeled "Add business term".
- Policies:** Below Business terms, it features a search bar with "Find poli" and a blue button labeled "Add policy".
- Rules:** This section is further divided into "Published" and "Custom" categories. It contains a search bar with "Find rules" and a list of rules, including:
 - Email Address Format must be valid
 - ID Number 1st Digit Validation
 - ID Number Length validation
 - ID Number must be Numeric
 - Name Can not be Null
- Data Classes:** The main focus of the screenshot is the "Data Classes" section, specifically the "Account External Identifier" data class. The page title is "Account External Identifier" with a "Draft" status. It includes a "Send for approval" button and a "Delete draft" button. The data class details are as follows:
 - General:**
 - Description:** Information regarding the external identification of accounts. This can be also a longer description text that takes multiple lines. (Includes a "Show more" link)
 - Examples:** No examples added yet
 - Primary category:** Accounting (All Categories / Business Domain / Finance)
 - Secondary category:** No category added yet
 - Data matching:** Enabled (indicated by a red toggle switch).
 - Parent data class:** No data class added yet
 - Dependent data class:** No data class added yet
 - Matching method:** Specify how to determine whether this data class fits the data in a column. This is known as assigning a data class type in
- Stewards:** Sammy Schuckert (sammy.schuckert@ibm.com)
- Effective dates:** Start Date and End Date are both set to "-".
- Tags:** No tags added yet
- Created by:** Sara Smith, Apr 14 2019
- Modified by:** Sara Smith, Apr 14 2019

Watson Knowledge Catalog

Delivering Business Ready Data to the Enterprise



The second step is to load and represent data in the Catalog, data that is representative and data that is deemed useful and required. During the process, data is scanned and assigned meaning, identification and responsibility.

Data Quality Analysis

Data Quality result for a specific database table, includes the suggested Data Class and Business Terms for each column, suggested key definitions, Data Rule and Data Quality results.

The screenshot displays the Data Quality Analysis interface for a table named ACCT_TBL. The overall data quality score is 89%. The interface includes several charts: a donut chart showing a 100% conformed data quality threshold, a bar chart for quality score distribution, a bar chart for analysis status (Analyzed, Error, Outdated), and a bar chart for relationships (Candidate, Selected, None). A table lists the columns and their quality scores:

Name	Score	Delta
SOURCE_ID	100%	0%
ID01	99%	0%
NAME	98%	0%
ADDR1	98%	0%
ADDR2	98%	0%
CITY	98%	0%

The 'Columns' table also shows inferred data classes and business terms for each column:

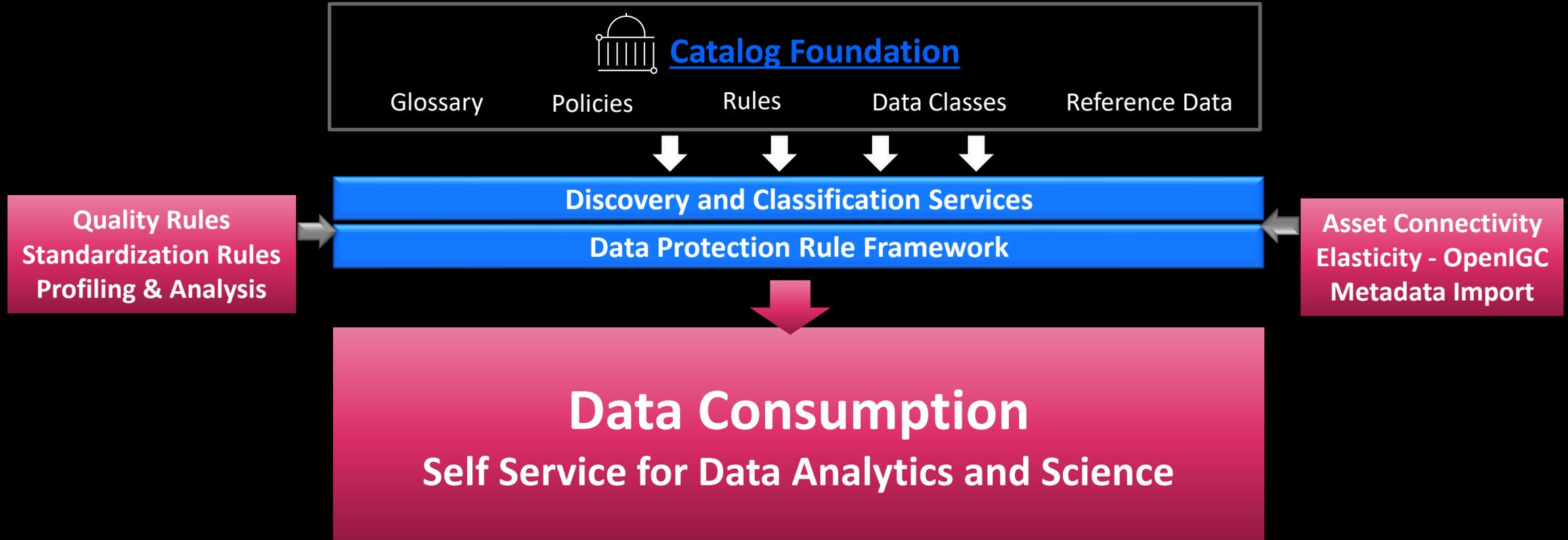
Name	Analysis status	Last analyzed	Data class	Business terms	Format	Nullability	Uniqueness
SOURCE_ID	Completed	2 days ago	Identifier		AA9999999		Yes
ID01	Completed	2 days ago	Identifier	NRIC 100%	999999-99-9999		Yes
NAME	Completed	2 days ago	Person Name		NA		No
ADDR1	Completed	2 days ago	Address Line 1		NA		No
ADDR2	Completed	2 days ago	Text		[EMPTY]		No
CITY	Completed	2 days ago	Text	Last Na... 100% + 4 more	NA		No

Callouts in the image highlight the following elements:

- Data Quality Score**: Points to the overall 89% data quality score.
- Inferred Data Classes**: Points to the 'Data class' column in the table.
- Discovered Terms**: Points to the 'Business terms' column in the table.

Watson Knowledge Catalog

Delivering Business Ready Data to the Enterprise



The final step is to allow users to search and explore business-ready data, gaining understanding, building trust and ensuring responsibility to data. Understanding how to use data to drive new Analytics or Data Science.

Find, trust and understand your data

Global Search can search across assets in projects, catalogs, information assets and governance artifacts such as terms, policies, reference data etc., supported by ML-driven relevancy based search results.

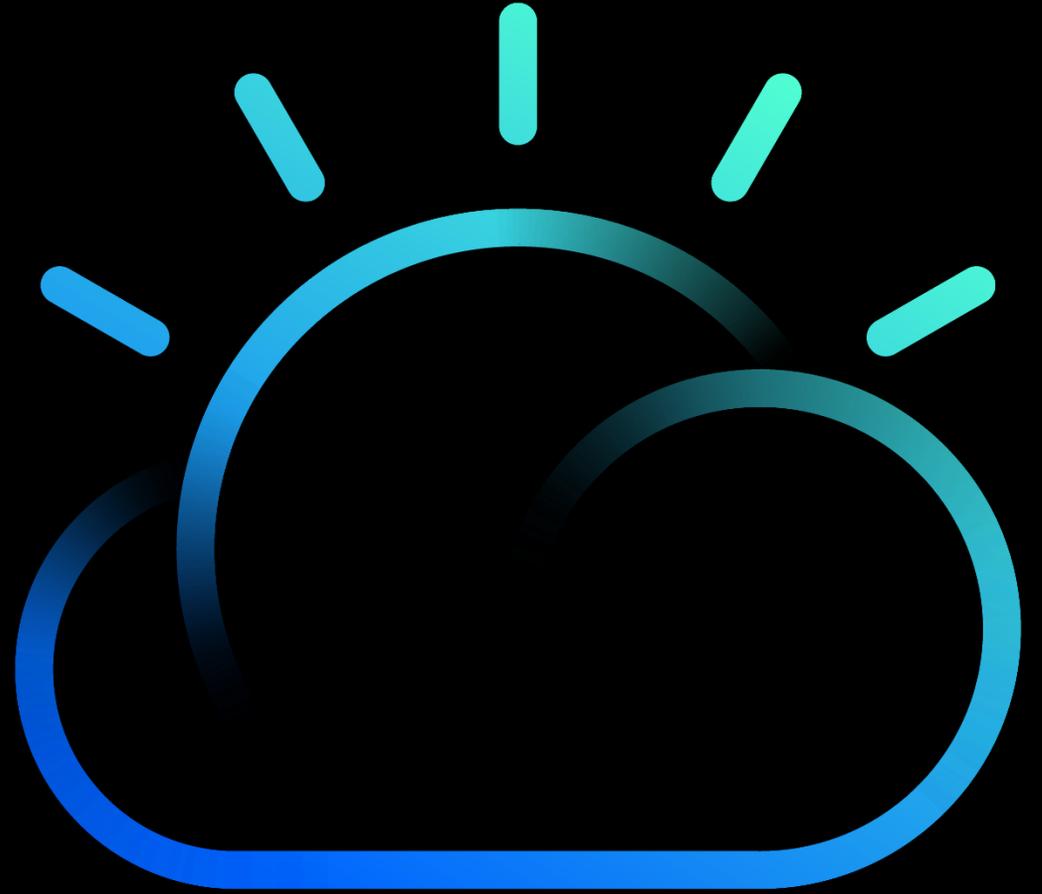
The screenshot shows the 'Enterprise Catalog' interface. At the top, there are navigation tabs for 'Browse Assets', 'Access Control', and 'Settings'. Below this, there are filter options for 'Any source', 'Any type', 'Any business term', and 'Any tag'. The main content area displays a list of data assets under the 'Watson Recommends' tab. The assets listed are: RESOURCEUSAGE, JOBRUN, JOBEXEC, IGBUSINESSTERM, HOST, and IGBUSINESSCA. Each asset card shows the owner (Administrator IIS), the date added (May 17, 2019), and the tags (synced).

The screenshot shows the 'CUSTOMERS' data asset profile page. The 'Review' tab is active, displaying an overall rating of 4.0 based on 4 reviews. A 'My Review' section shows a review by Susanna Tai on May 19, 2019, with a 5-star rating and the text: 'Yes indeed. In the past I've also joined this asset with additional data from our CRM system.' Below this, 'Other Reviews' are shown, including one by Marc Haber on Jun 18, 2019, and one by Elaine Hanley on Jun 11, 2019. A blue callout box in the top right corner says 'Share knowledge with other users'.

The screenshot shows the 'CUSTOMERS' data asset profile page with the 'Profile' tab active. It displays a detailed data profile for 3,000 rows and 24 columns. The columns shown are EMAIL_ADDRESS, PHONE_NUMBER, GENDER, CUSTOMER_ID, CREDIT_CARD_NO, and EDUCATION. Each column has a progress bar indicating the percentage of data that is masked. Below the progress bars are frequency charts for each column. For example, the GENDER chart shows a distribution between Male and Female. At the bottom, there are statistics for each column, such as Unique, Minimum Length, Maximum Length, and Mean Length.

Dynamic data masking from active policy enforcement

Demo



Analyse – Build, scale and Operationalize AI with trust and transparency



Indrajit Mukherjee

*Data & AI Specialist
IBM Watson (ASEAN)*



Overcoming data science challenges – What if you had:

Fragmented data

Intelligent data fabric

Short supply of data science skills

Simplified ModelOps lifecycle

Variety of tools / practices / frameworks

Run any AI models

IT standards for training / deployment

Flexible deployment

Operationalizing ML models is difficult

Automated ModelOps lifecycle

Unclear if ML models are accurate

Trusted AI

Difficult to audit model predictions

Explainable AI



What is ModelOps?

Build a model operations practice to accelerate AI delivery

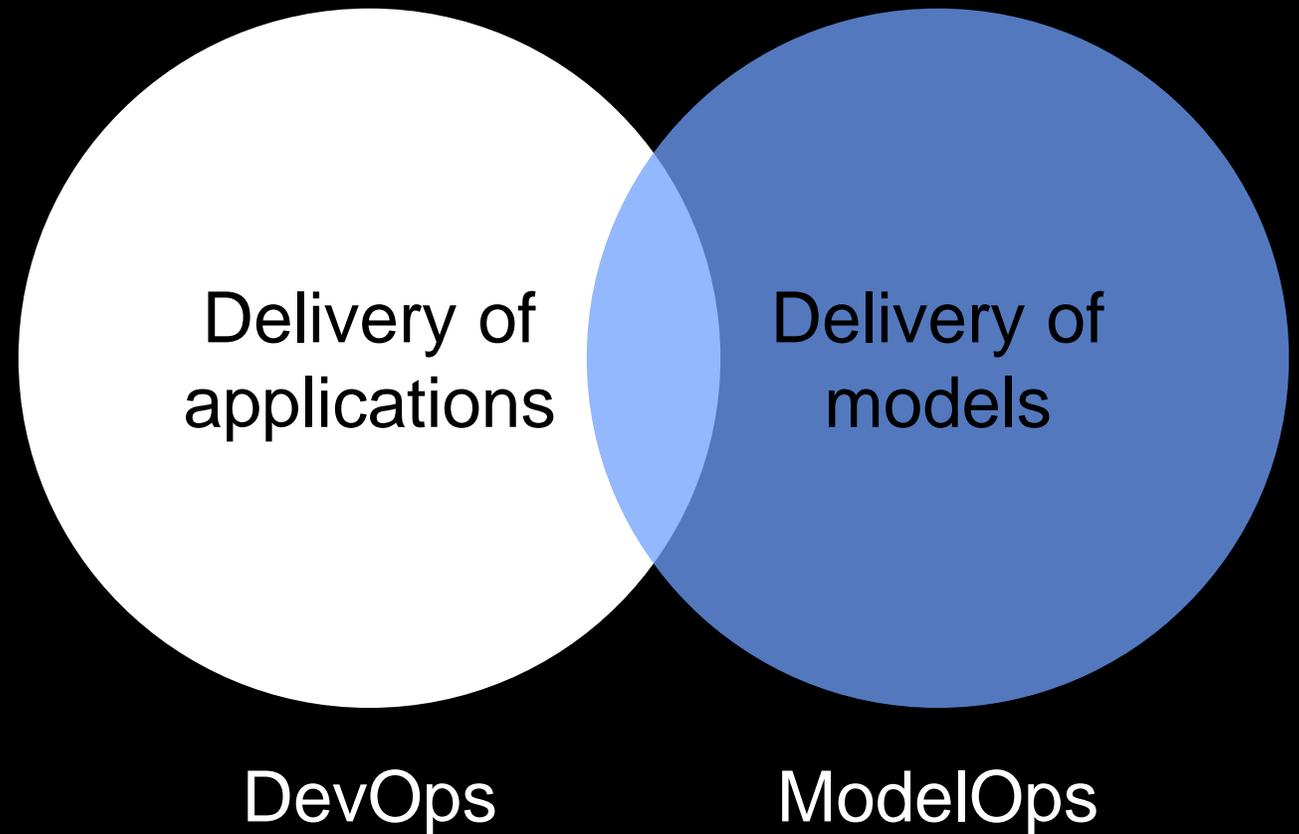
ModelOps (or MLOps) is a set of practices connecting data preparation, model creation, deployment, and monitoring.

Successful ModelOps practices are:

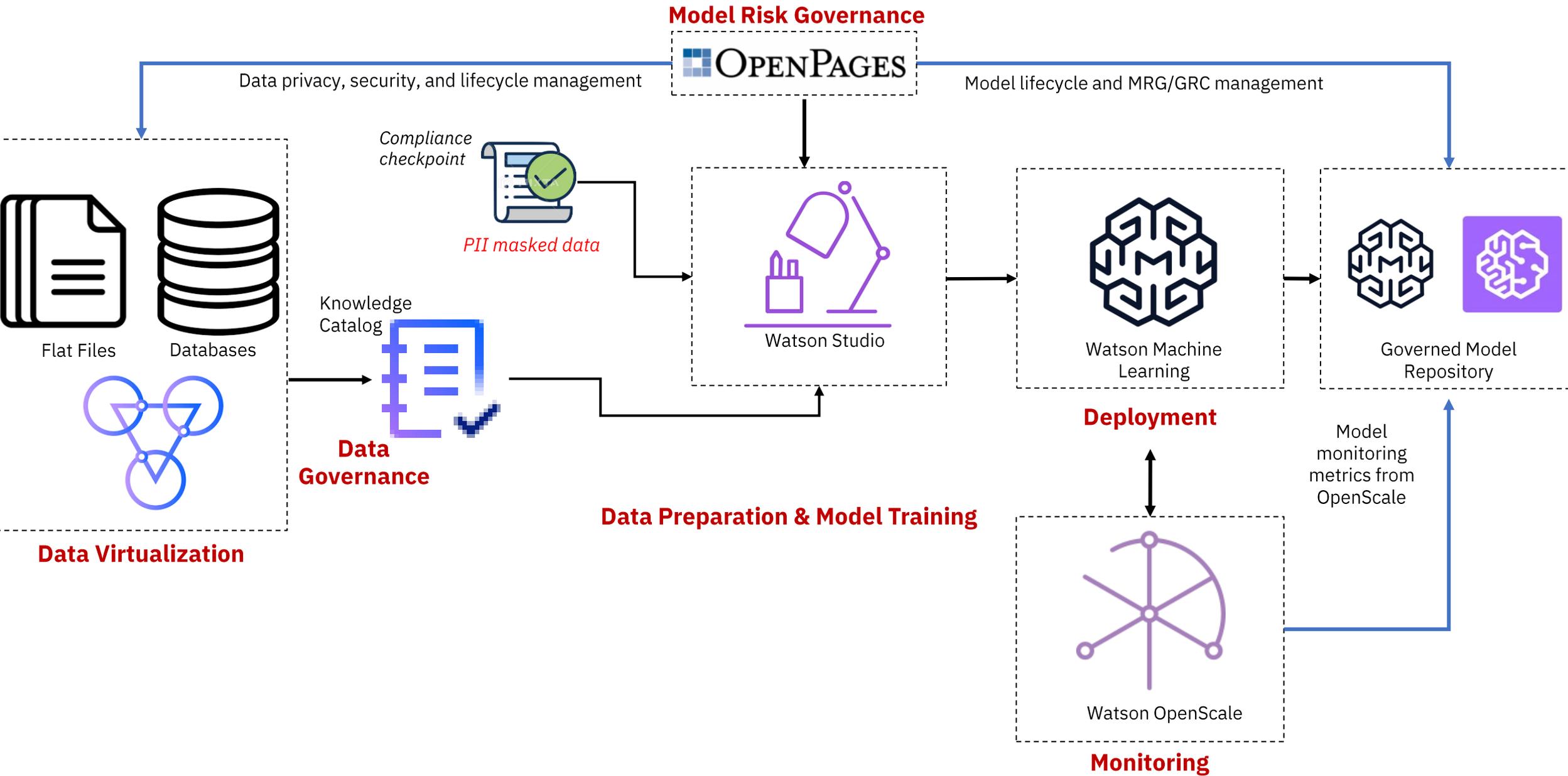
- Outcome driven
- Managed
- Measurable
- Trusted
- Scalable

Barriers to deploying ML models to production

- 55% - Cost
- **52% - Lack of a ModelOps practice**
- 49% - Lack of responsible AI



Integrated deployment blueprint (Live)



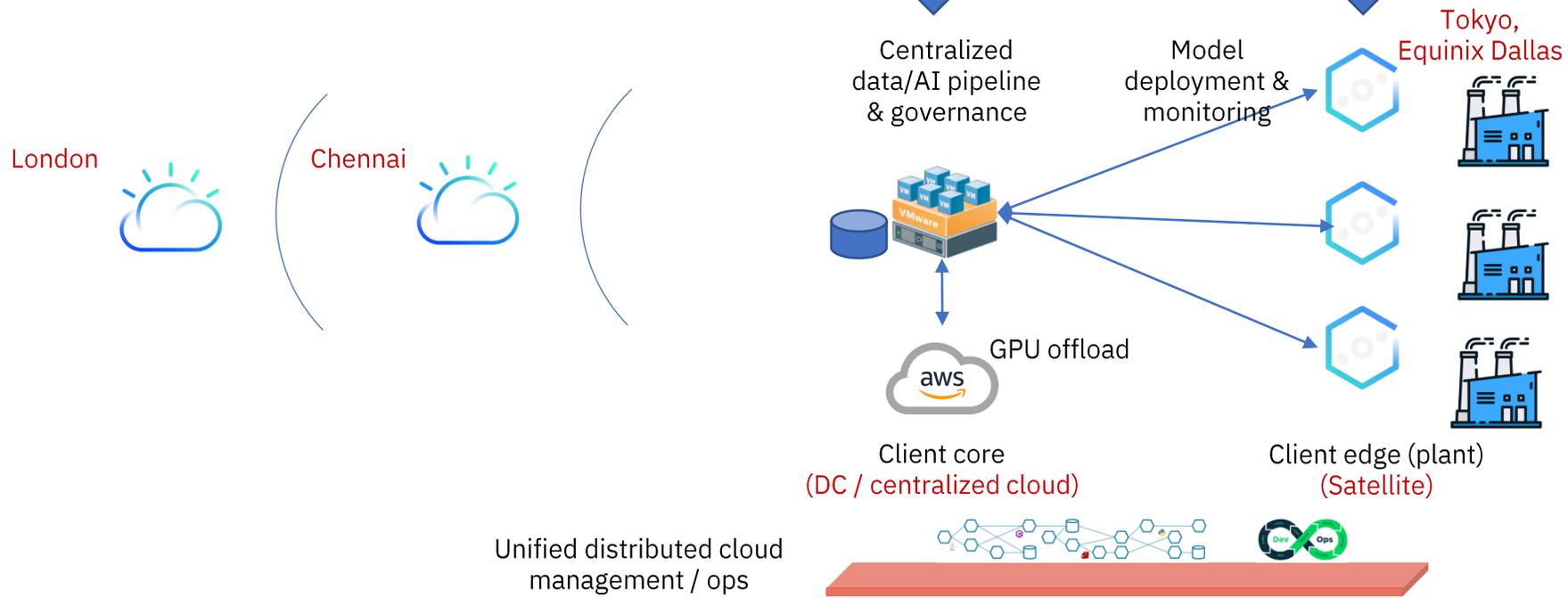
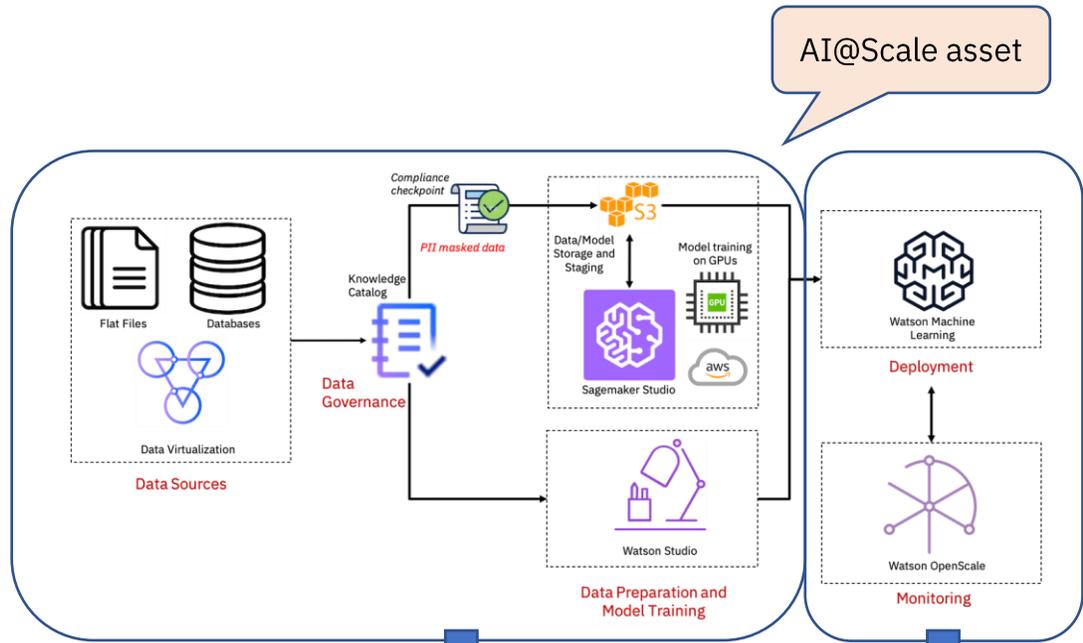
Distributed / Edge deployment (Live)

Centralized

- Data governance
- Model governance
- GPU offload on hyperscaler (training)
- Unified MLOps & devOps

Edge

- Model deployment (Inference)
- Model monitoring (drift, bias,..)
- Data collection for re-training



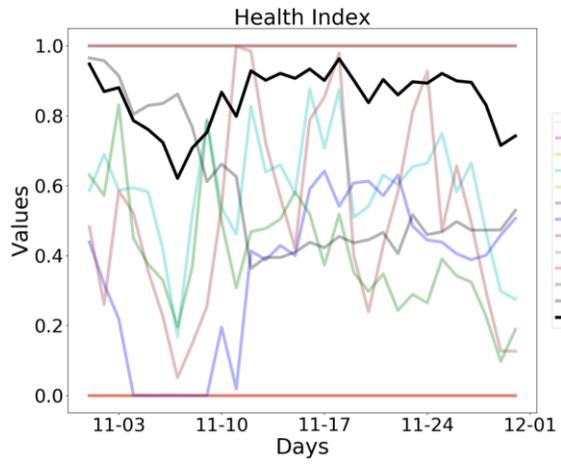
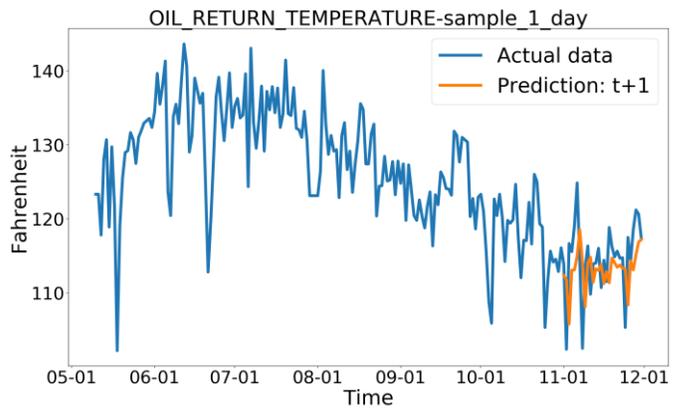
Industry Edge usecases

Worker safety

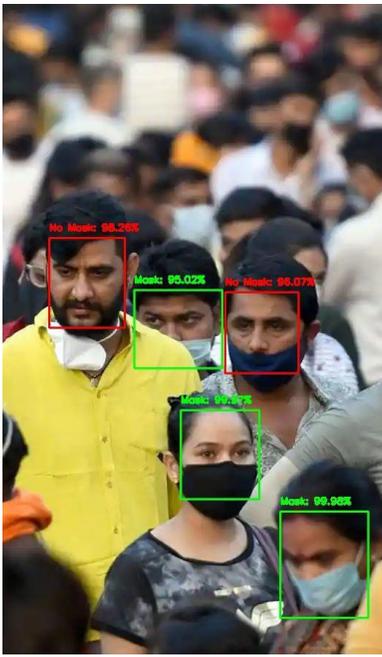
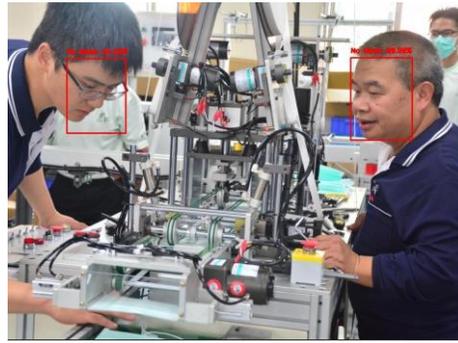
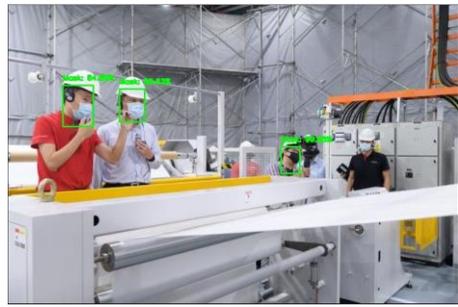
Manufacturing defect detection



Predictive Maintenance



- FT-202B,weight: 1
- TANK_FILTER_IN_PRESSURE,weight: 0
- PT-203,weight: 1
- OIL_RETURN_TEMPERATURE,weight: 1
- TANK_FILTER_OUT_PRESSURE,weight: 0
- PT-204,weight: 1
- MAIN_FILTER_IN_PRESSURE,weight: 1
- TANK_TEMPERATURE,weight: 1
- FT-204B,weight: 1
- MAIN_FILTER_OUT_PRESSURE,weight: 0
- MAIN_FILTER_OIL_TEMP,weight: 1
- TANK_LEVEL,weight: 1
- overall_health_index



Cloud Pak for Data supports multi-disciplinary approaches to data science



Citizen data scientist



Visual data scientist



Programmer data scientist

Automated

Codeless

Code-based

Data preparation

AutoAI

Data refinery / Modeler flows

Notebook

Model building

AutoAI

Modeler flows

Notebook

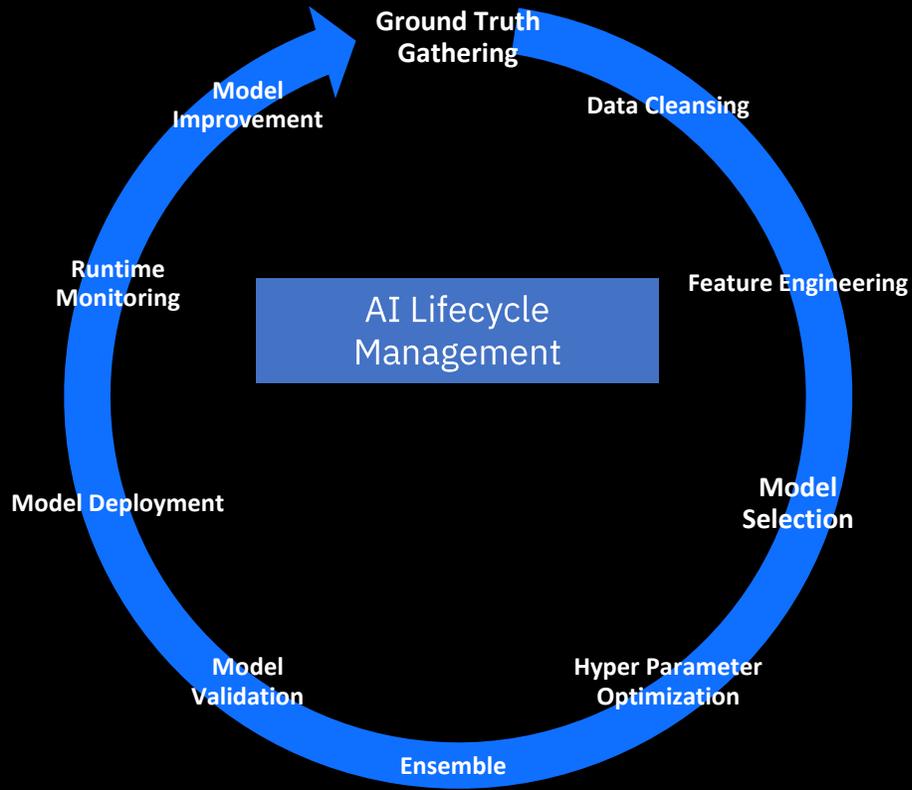
Model deployment

Watson Studio model deployment service

Model operations

Watson Studio model operations and monitoring services

Building custom AI models takes weeks or months...

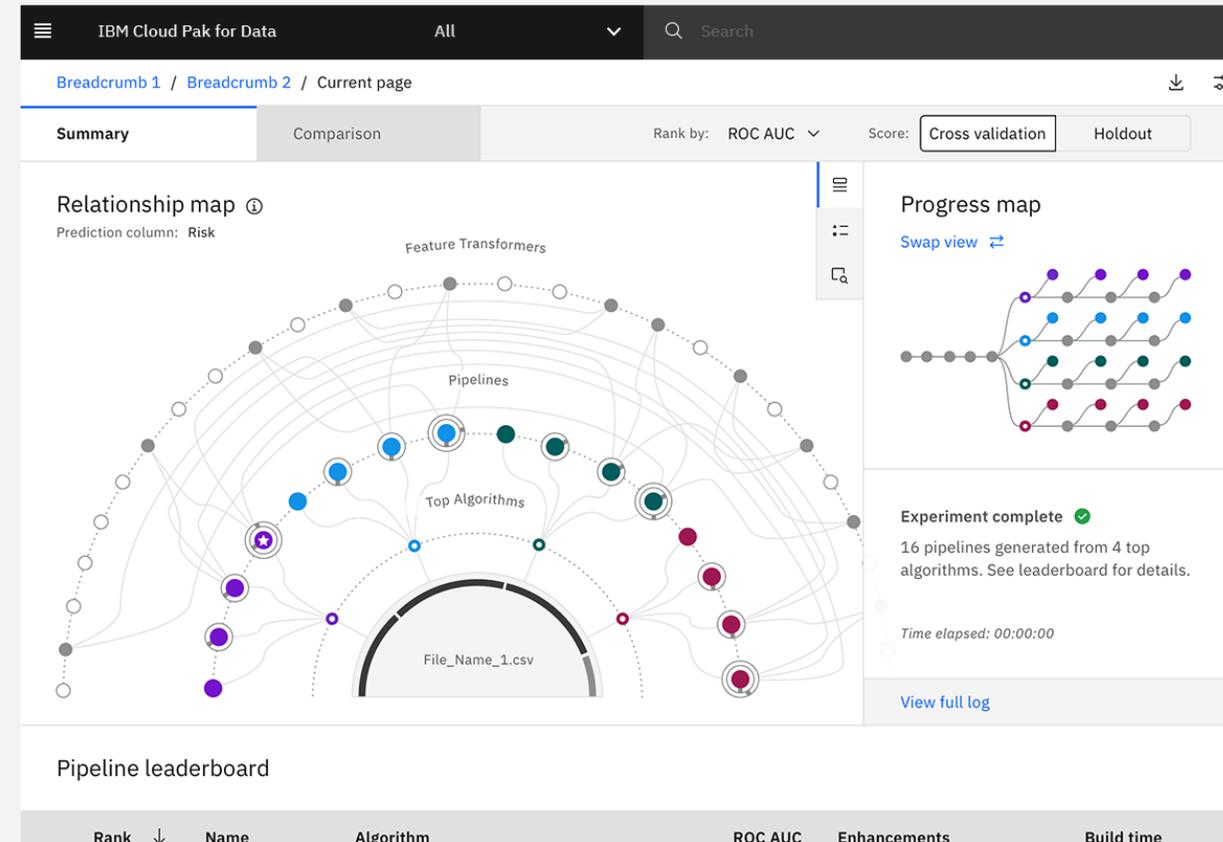


Business Value:

- AutoAI is already placing in the **top 20%** in open data science competitions – can reduce FTEs and skills requirements
- Build ML/AI models in **minutes instead of weeks**
- **Zero lock-in** with autogenerated Python code

AutoAI automates the AI development process – from weeks or months to minutes

“AI for AI”



Data scientists are 40% more productive using SPSS Modeler

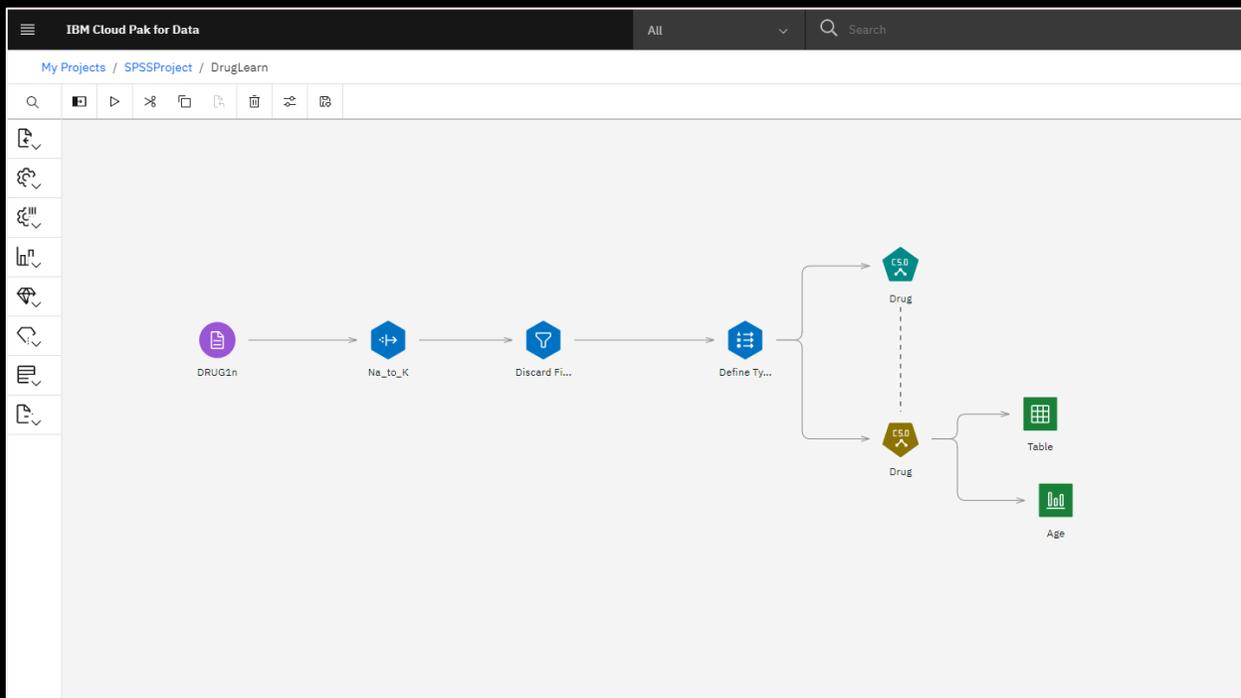
40%

Business Challenges addressed

- Helps organizations avoid hires needed to keep pace with demand
- Makes the entire data science life cycle more efficient
- Spend more time building models, training models and improving existing models
- Support more demand for more projects

Forrester Total Economic Impact – SPSS Modeler

- Benefits by category: 14% cost savings, 32% data scientist productivity gains, 54% due to business impact
- Payback period 7 months
- ROI of 480%
- Net present value of \$2,011,867



Jupyter Labs and Notebooks

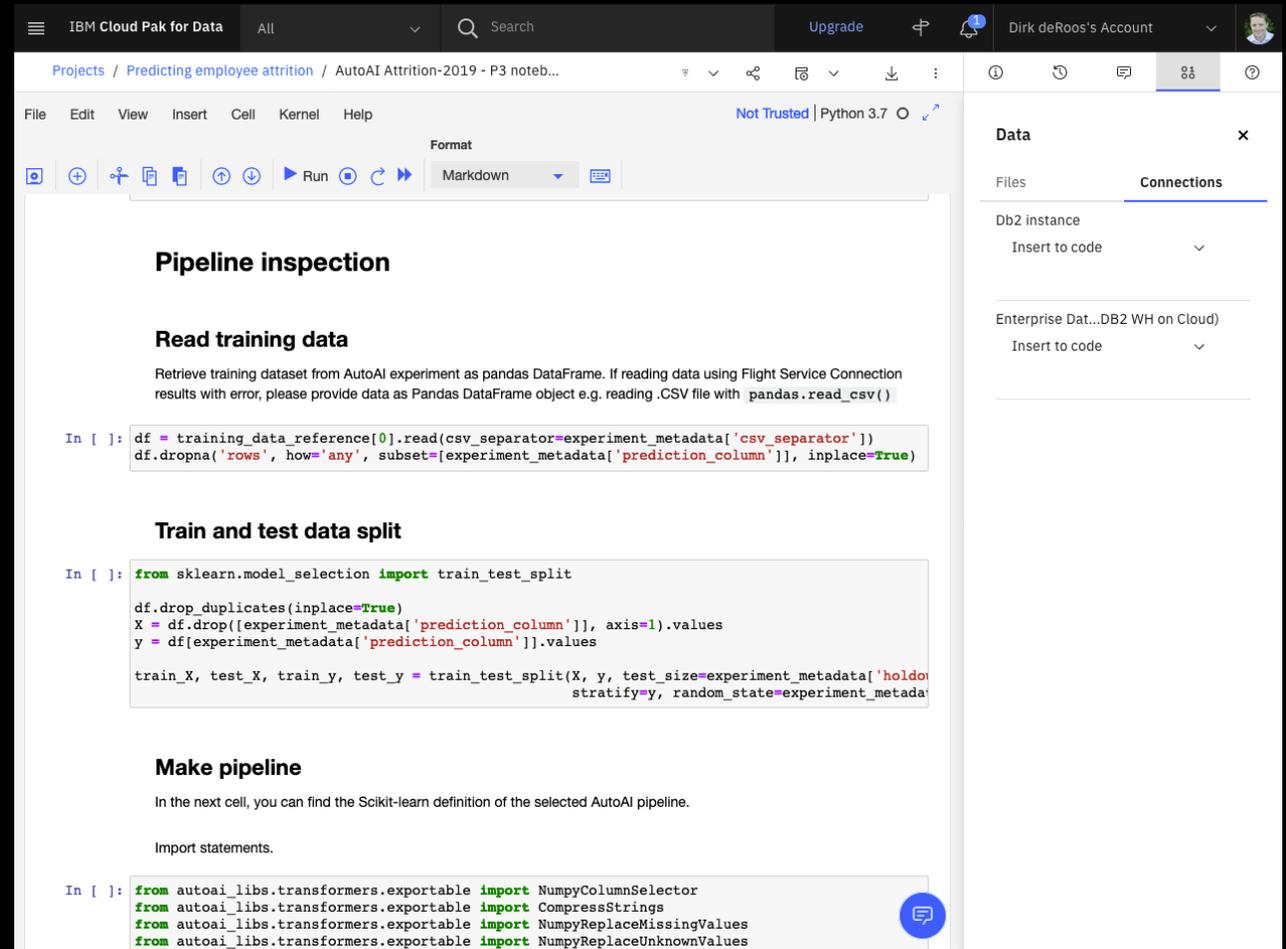
Playground for programmer data scientists

Out of the box inclusion of dozens of libraries, frameworks, and runtimes

Notebook insert to code feature supports all catalog connections

Data processing for notebook can run where the data is (Hadoop, IBM Cloud Satellite sites)

Git-based source control Integration



The screenshot shows the IBM Cloud Pak for Data Jupyter Notebook interface. The notebook is titled "Predicting employee attrition" and is part of a project named "AutoAI Attrition-2019 - P3 noteb...". The interface includes a menu bar with options like File, Edit, View, Insert, Cell, Kernel, and Help. The notebook content is displayed in a code editor with a "Format" dropdown menu set to "Markdown".

The notebook content includes the following sections:

- Pipeline inspection**
- Read training data**
Retrieve training dataset from AutoAI experiment as pandas DataFrame. If reading data using Flight Service Connection results with error, please provide data as Pandas DataFrame object e.g. reading .CSV file with `pandas.read_csv()`
- Train and test data split**
- Make pipeline**
In the next cell, you can find the Scikit-learn definition of the selected AutoAI pipeline.
Import statements.

The code cells contain the following Python code:

```
In [ ]: df = training_data_reference[0].read(csv_separator=experiment_metadata['csv_separator'])
df.dropna('rows', how='any', subset=[experiment_metadata['prediction_column']], inplace=True)

In [ ]: from sklearn.model_selection import train_test_split

df.drop_duplicates(inplace=True)
X = df.drop([experiment_metadata['prediction_column']], axis=1).values
y = df[experiment_metadata['prediction_column']].values

train_X, test_X, train_y, test_y = train_test_split(X, y, test_size=experiment_metadata['holdo
stratify=y, random_state=experiment_metada

In [ ]: from autoai_libs.transformers.exportable import NumpyColumnSelector
from autoai_libs.transformers.exportable import CompressStrings
from autoai_libs.transformers.exportable import NumpyReplaceMissingValues
from autoai_libs.transformers.exportable import NumpyReplaceUnknownValues
```

Watson Machine Learning Accelerator

Efficient resource management for deep learning processing

High performance clustering capability for machine learning and deep learning

Accelerated analytics
execution

Train and deploy
AI at scale

Automate deep
learning workflows

11x

Faster GPU
performance with
accelerated ML
library

94%

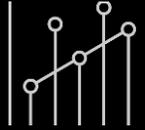
Scaling efficiency
for training from
6 to 48 GPU

10k + iterations

are automatically run to
find and test the most
optimal hyperparameters

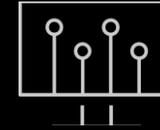
Machine learning and optimization

Predictive analytics

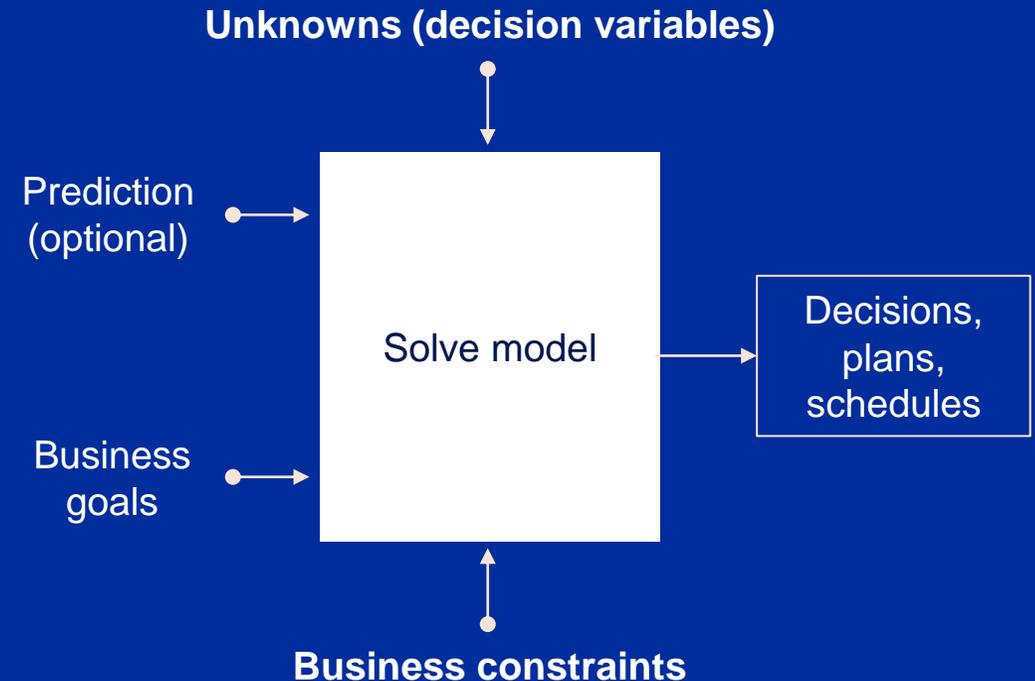
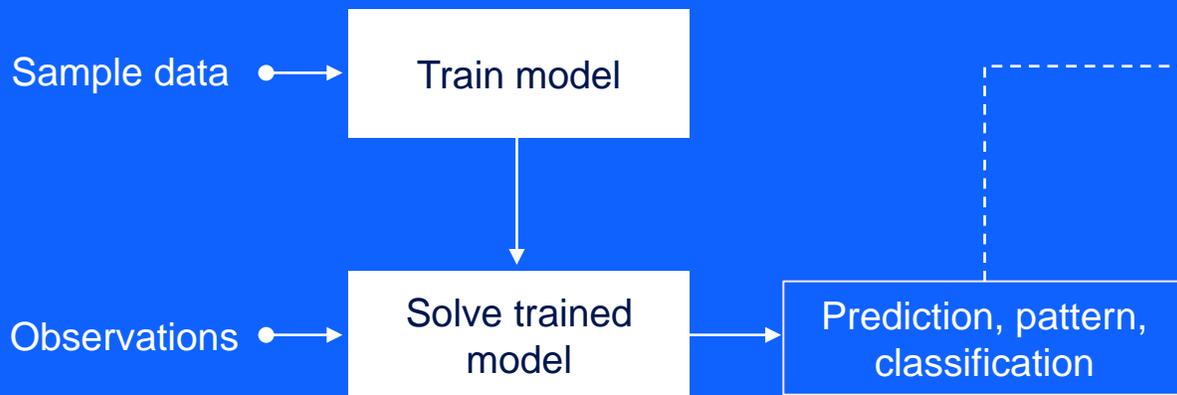


Basic (supervised): You have the answers, and you train the machine how to find them

Prescriptive analytics



You don't know the answers, and you provide the machine logic on what is a good and a bad solution



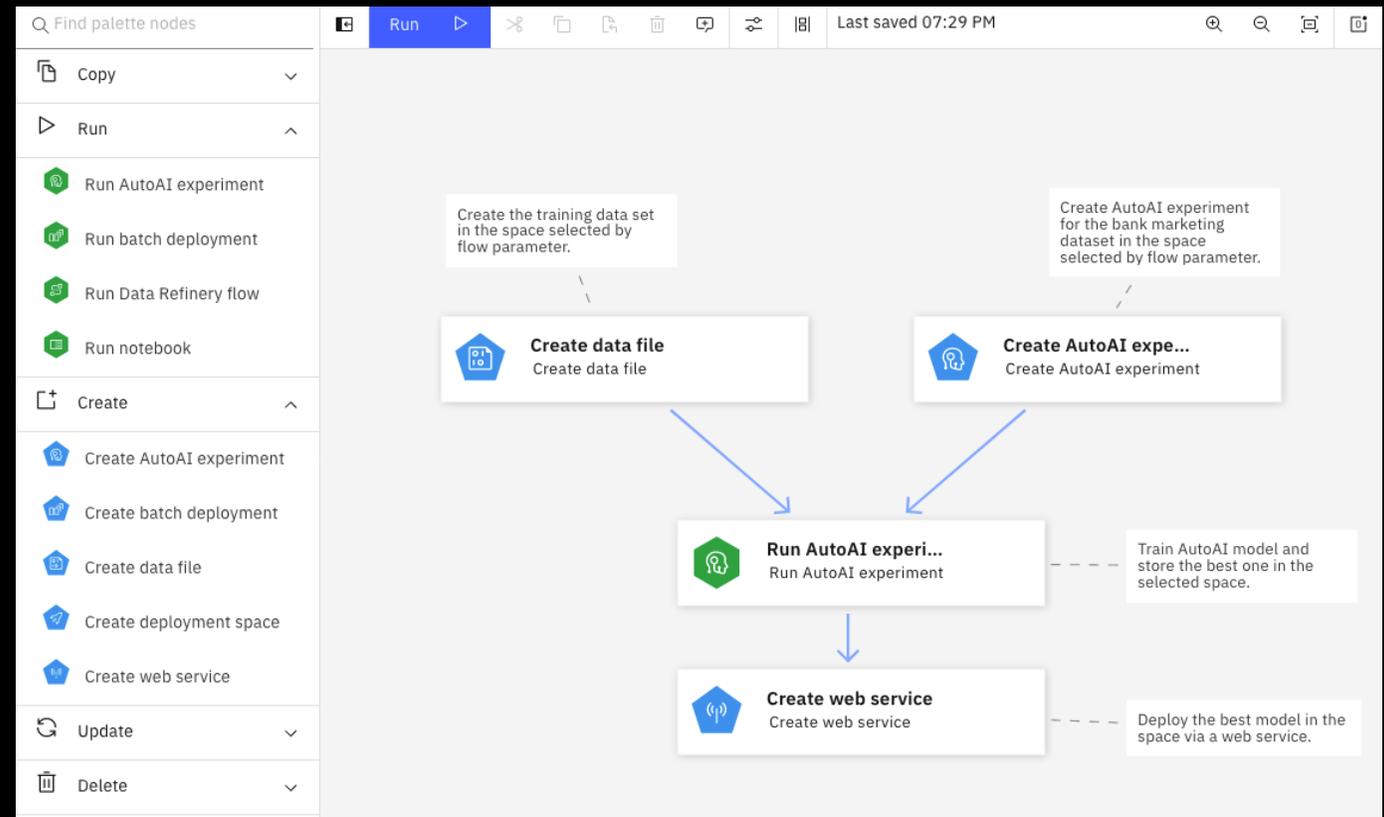
Orchestration flow editor

In beta on Cloud Pak for Data as a Service



Automated pipeline interface

- Combine tasks from different Watson Studio project tools
 - Notebooks
 - Data refinery flows
 - AutoAI experiments
 - Online model deployments
 - Batch model deployments
- Automate model training and deployment as new data sets emerge
- Automatically train challenger models and deploy them if they have higher accuracy than the incumbent



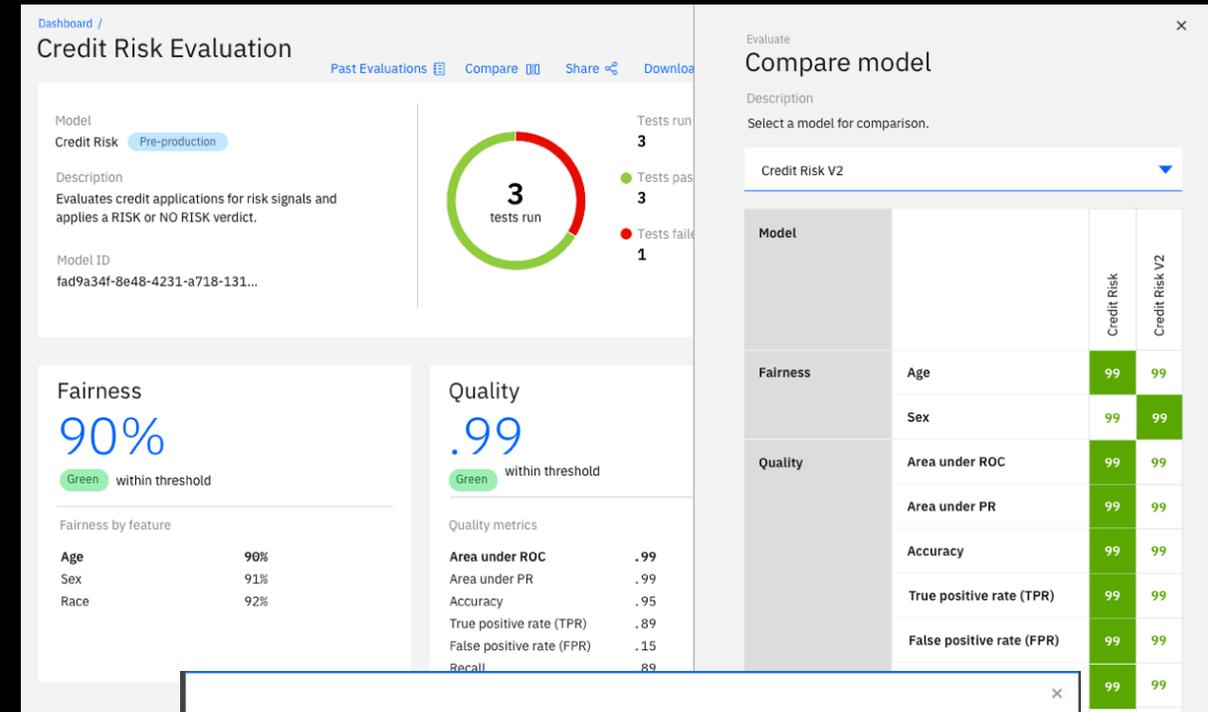
Model risk management

Watson Studio model deployment monitoring

- Validate pre-production models
- Compare performance of models
- Continual data gathering of quality and trust metrics

OpenPages Governance, Risk, and Compliance (GRC) software features a Model Risk Governance module

- Integrates with Watson Studio model monitoring metrics
- Store, manage, and monitor model metrics
- Calculate risk scores and impact for models



The 'Send to OpenPages' dialog box allows users to select metrics to be sent to OpenPages. It includes a description: 'Select the metrics to send to OpenPages. If the metric is not yet available in OpenPages, a new metric will be created automatically.' The dialog is organized into three columns: Quality measures, Fairness measures, and Performance measures. Each column contains a list of metrics with checkboxes. The 'Quality measures' column includes Area under ROC, Area under PR, Accuracy, True positive rate (TPR), False positive rate (FPR), Recall, Precision, F1-measure, and Logarithmic loss. The 'Fairness measures' column includes Fairness, Age, and Sex. The 'Performance measures' column includes Throughput. Additionally, there is a 'Drift measures' section with Drop in accuracy, Drop in data consistency, Estimated accuracy, and Base accuracy. At the bottom right, there are 'Cancel' and 'Schedule' buttons.

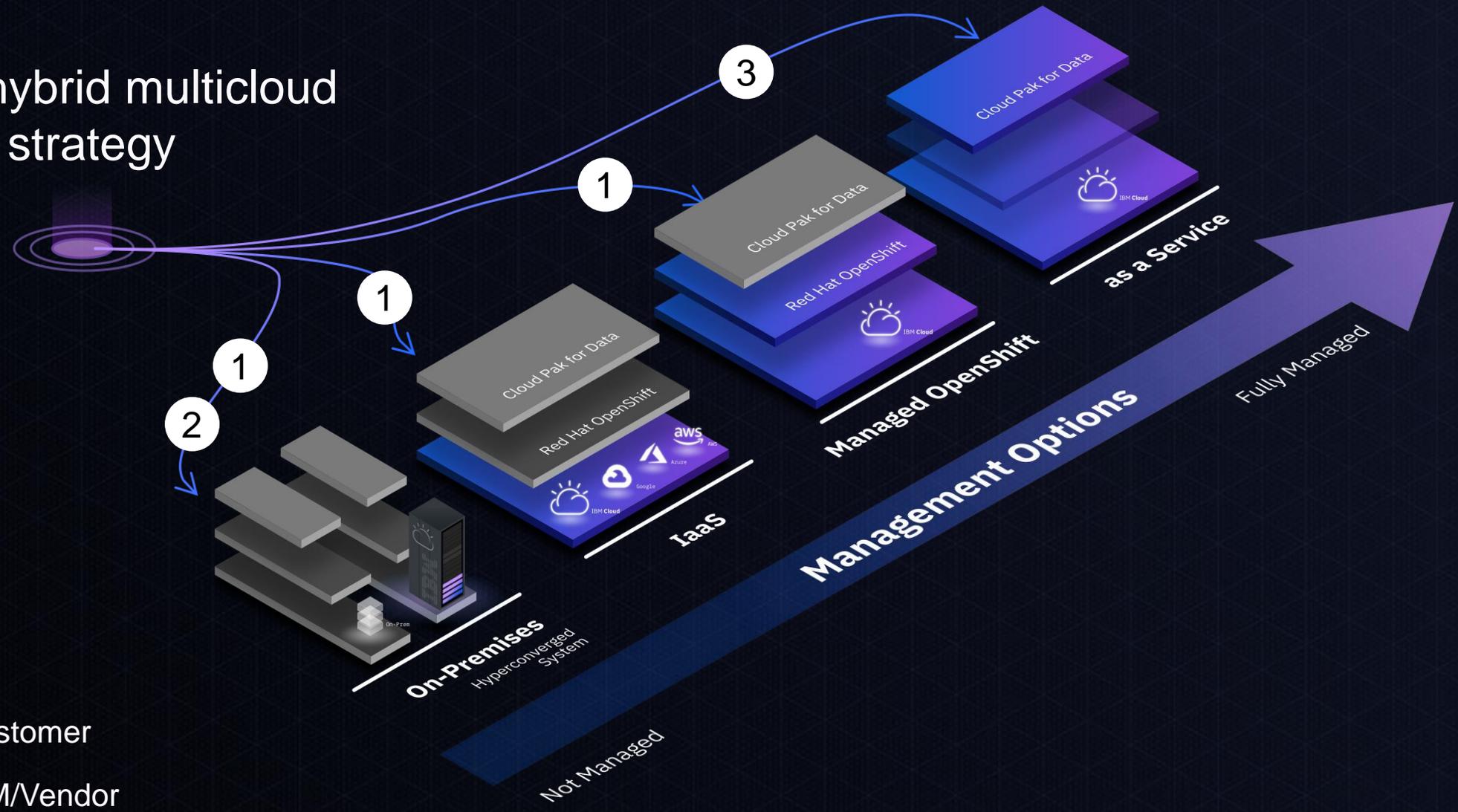
Train and deploy your models anywhere

Including as a managed service on IBM Cloud

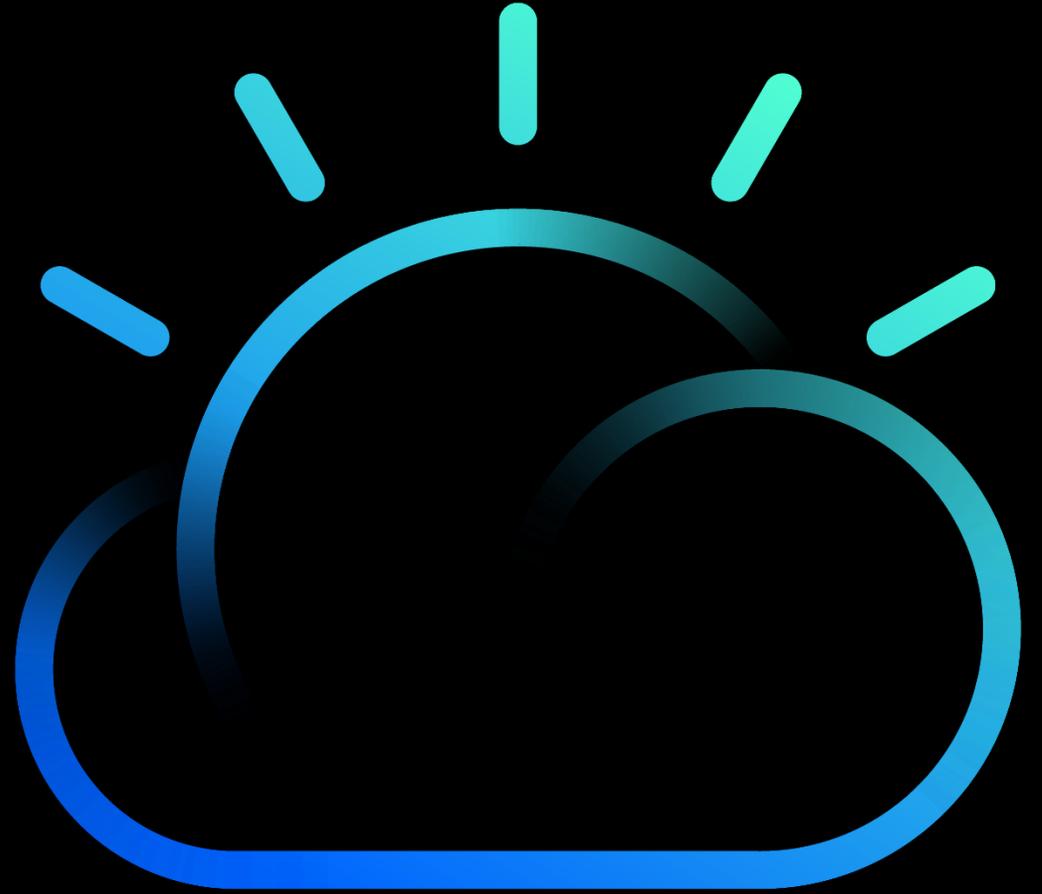
A true hybrid multicloud strategy

- 1 Software
- 2 System
- 3 as a Service

- Managed by Customer
- Managed by IBM/Vendor



Demo



Infuse - Discover the power of IBM Watson with Watson Assistant and Watson Discovery



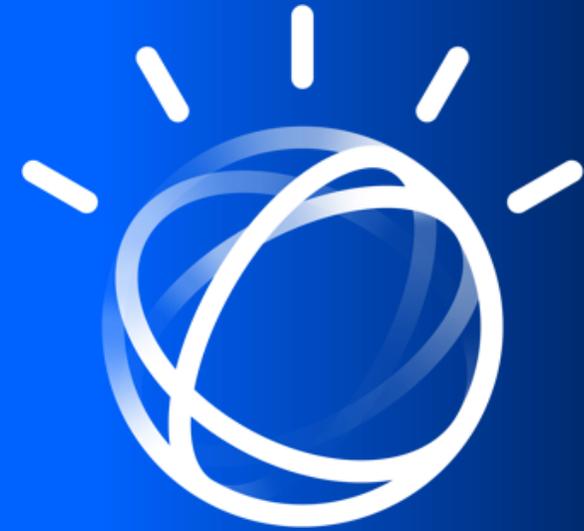
Radin Ayuwandira

*Technical Sales –
Data & AI, IBM ASEAN*

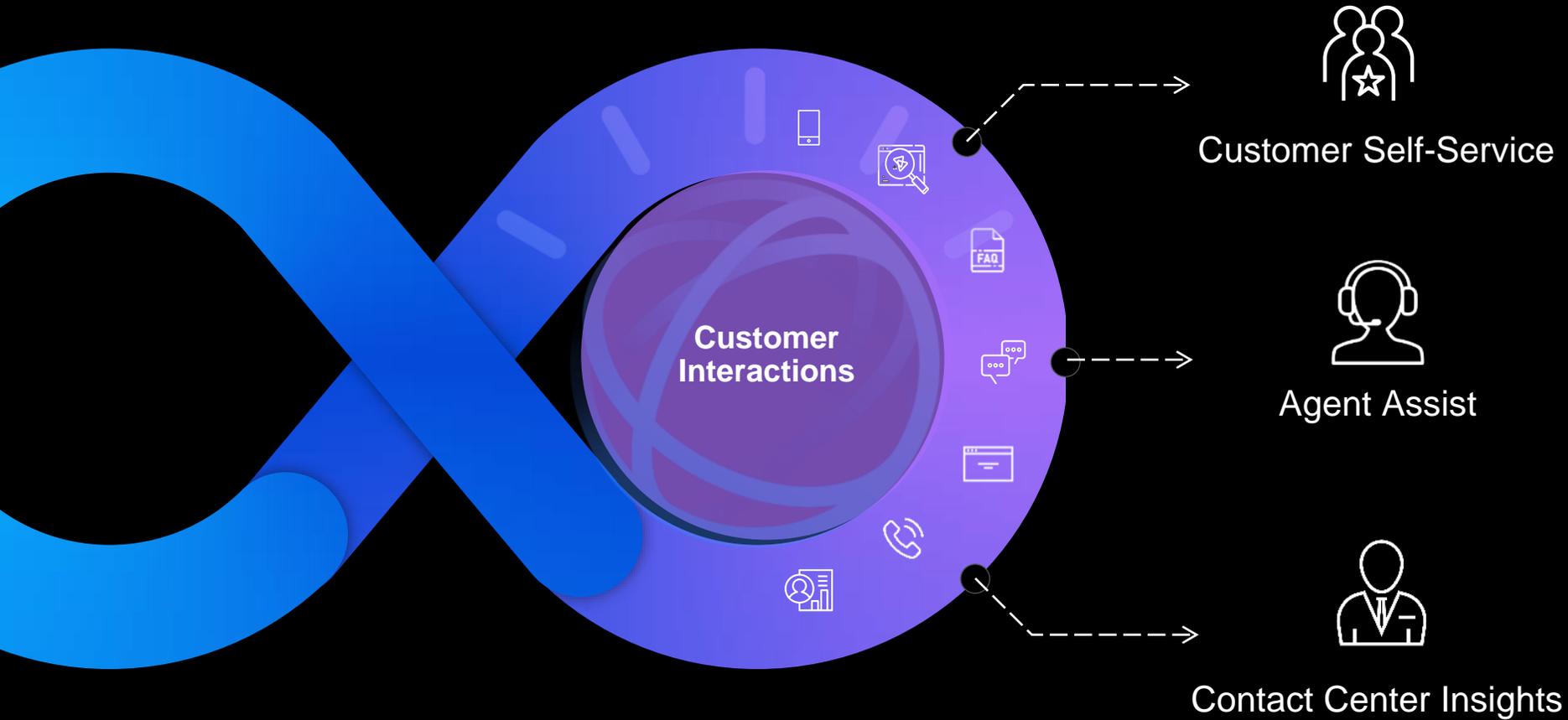


IBM Watson Assistant

IBM's conversational AI platform can engage your customers to get them what they want, when they want it, through any channel.



Strengthen customer service with AI while lowering costs and reducing risk



Watson Assistant

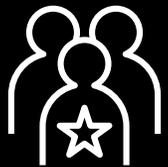
Conversational AI fueling smart customer experiences

Best first contact resolution rate

Connect to your existing systems

Accelerate time to value and reduce TCO

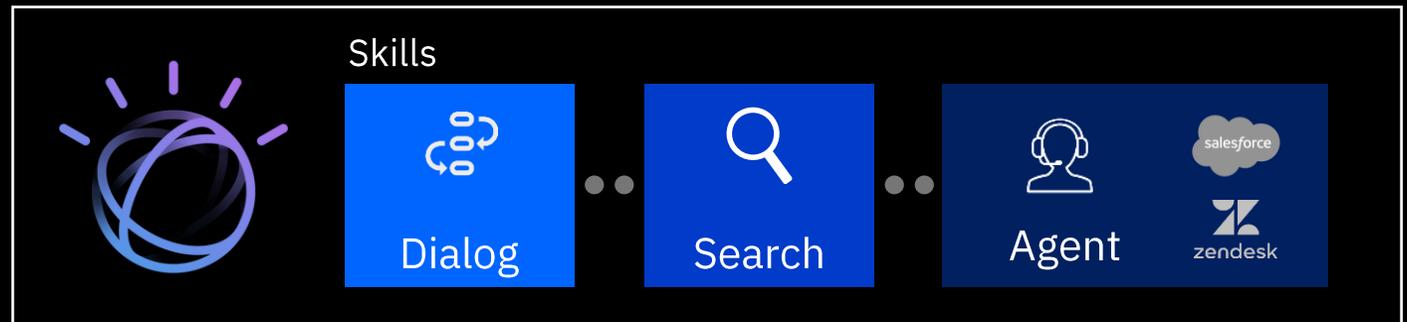
Secure, resilient and protects data privacy - anywhere.



Customer,
Employee



Channel

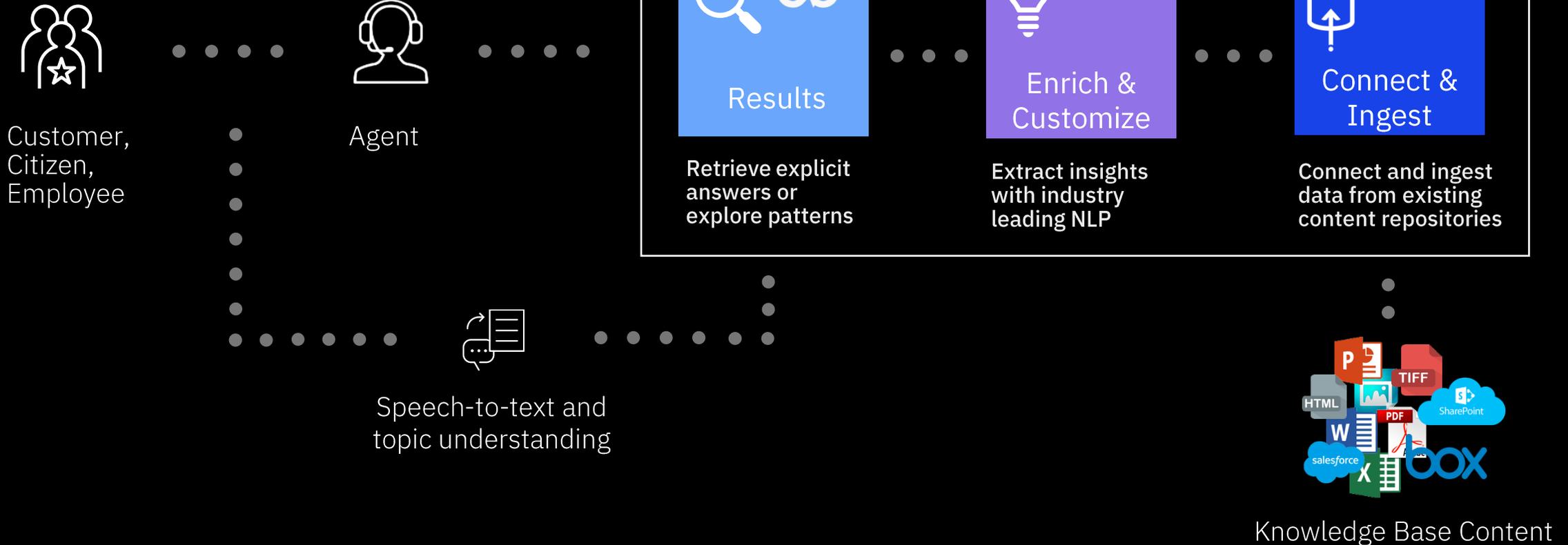


Watson
Assistant

Watson Discovery

Enterprise search that boosts agent performance, while unlocking a deeper understanding of customer interactions

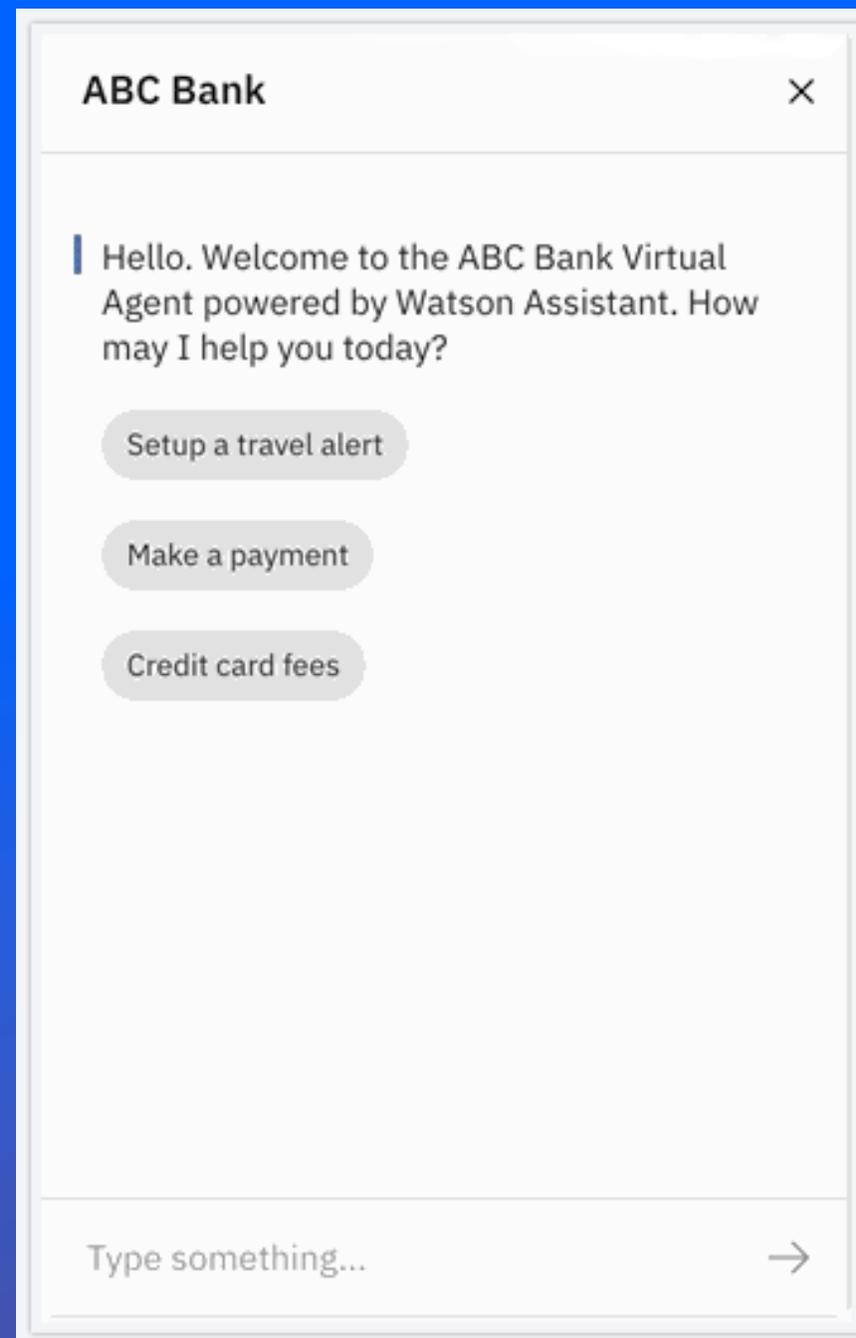
Watson Discovery



Web chat

Out of the box web chat

- Building a chat interface takes money and time
- Watson Assistant virtual assistants can be deployed in minutes
- Additional Features:
 - Secure Login
 - Visual Customization



Disambiguation

- Watson Assistant doesn't jump to conclusions
- With disambiguation, Watson Assistant automatically asks for clarification: no guess work

The screenshot shows a chat interface for 'DTE Bank Assistant'. The assistant's initial message is: 'Hello. Welcome to the DTE Bank Virtual Assistant Demo. How may I help you today?'. Below this are four suggested buttons: 'I am traveling', 'Pay my bills', 'Check my account balance', and 'Can I use my card while abroad'. A user's input bubble on the right contains the text 'I am traveling'. The assistant's response is: 'Okay! I can help you:'. Below this are three suggested buttons: 'Look for Travel Tips', 'Set up a Travel Alert', and 'None of the above'. A dotted line connects the 'Set up a Travel Alert' button to a text box on the right. At the bottom, there is a text input field with the placeholder 'Type something...' and a right-pointing arrow button.

Automatically disambiguates a user's utterance if its unsure

Slots

- Slots collect information at the user's pace
- Your assistant asks only for the missing details

Chat
window in →
production

↓
Watson Assistant
tooling
to configure slots

DTE Bank Assistant

Okay I will help you setup a Travel Alert. I just need a few pieces of information from you about your trip. First, where are you going?

i am traveling to Rome tomorrow

When do you come back?

in a week

Your account has been setup for a travel alert for 2020-04-30 to 2020-05-06 while traveling to Rome. Thank you.

I have your Mobile number as 444-555-6666. Would you like to update it?

Yes No

Type something... →

Then check for:

	CHECK FOR	SAVE IT AS	IF NOT PRESENT, ASK	TYPE		
1	@sys-location	\$location	Where are you travelir	Required	⚙️	🗑️
2	@sys-date	\$depart_date	When do you leave?	Required	⚙️	🗑️
3	@sys-date	\$return_date	When do you come ba	Required	⚙️	🗑️

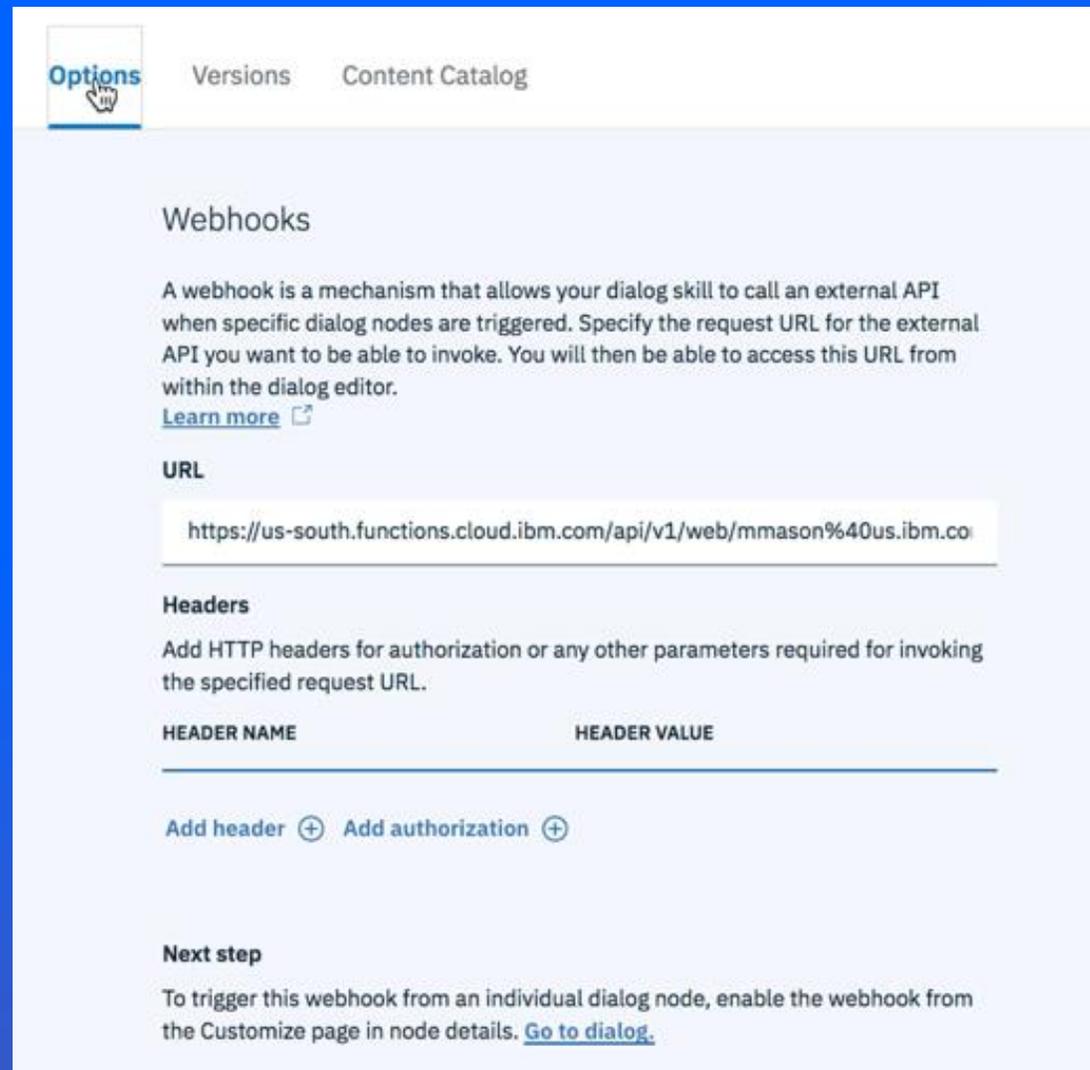
Digression

- Digression allows users to jump midstream from one topic to another
- Make conversations have a natural flow

The screenshot shows a chat interface titled "DTE Bank Assistant". The conversation starts with a user message: "Set up Travel Alert". The assistant responds: "Okay I will help you setup a Travel Alert. I just need a few pieces of information from you about your trip. First, where are you going?". The user then asks a digressive question: "What is a CVV?". The assistant provides an image of a credit card with a callout box highlighting the number "123" and labeling it as "CVV". Below the image, the assistant explains: "You can find your CVV on the back of your card as shown above. It's usually a 3 digit number." The user then repeats the original question: "Okay I will help you setup a Travel Alert. I just need a few pieces of information from you about your trip. First, where are you going?". A question mark icon is visible next to the second user message. At the bottom, there is a text input field with the placeholder "Type something..." and a send button.

Webhooks

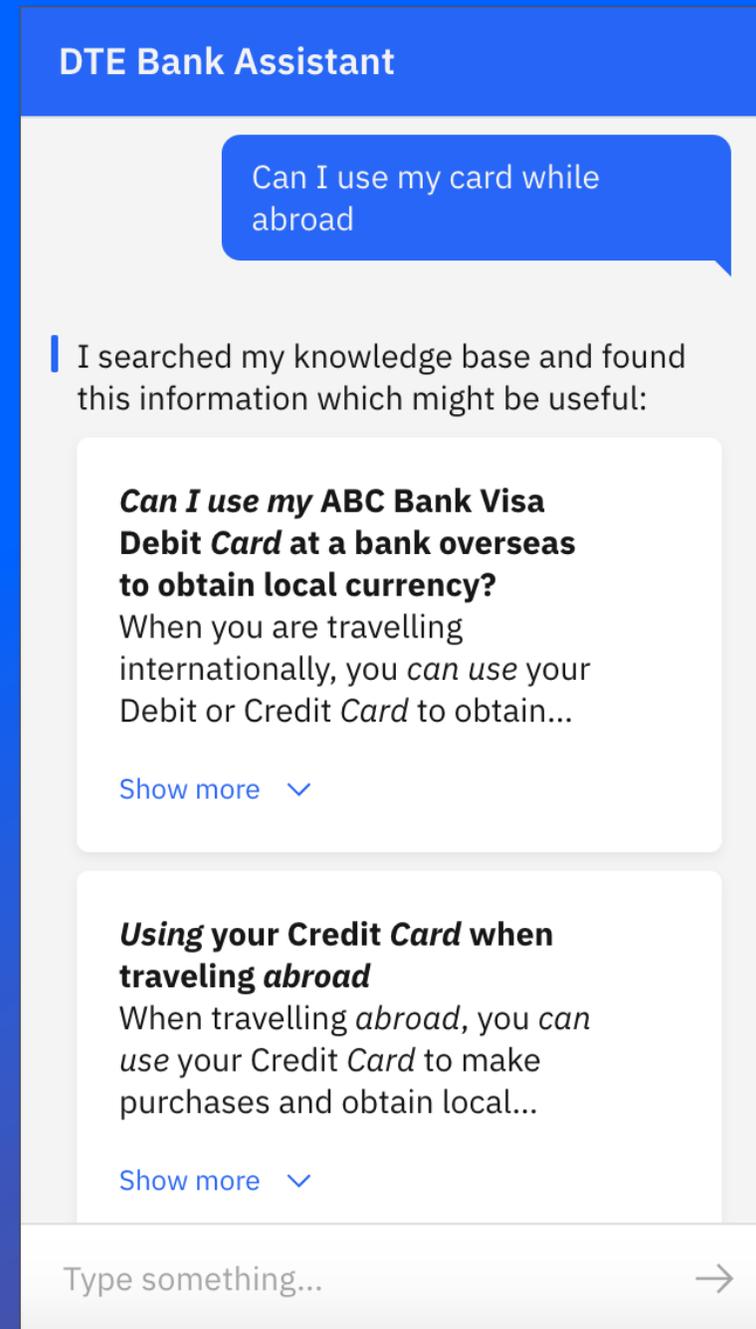
- Webhooks pull external data into your virtual assistant (for example, account information)
- Webhooks invoke actions in other systems (for example, opening a support ticket)



The screenshot shows a web interface for configuring webhooks. At the top, there are navigation tabs: "Options" (with a hand cursor icon), "Versions", and "Content Catalog". The main heading is "Webhooks". Below it is a descriptive paragraph: "A webhook is a mechanism that allows your dialog skill to call an external API when specific dialog nodes are triggered. Specify the request URL for the external API you want to be able to invoke. You will then be able to access this URL from within the dialog editor." This is followed by a link "Learn more" with an external link icon. The "URL" section contains a text input field with the value "https://us-south.functions.cloud.ibm.com/api/v1/web/mmason%40us.ibm.co". The "Headers" section includes a descriptive paragraph: "Add HTTP headers for authorization or any other parameters required for invoking the specified request URL." Below this is a table with two columns: "HEADER NAME" and "HEADER VALUE". At the bottom of the headers section are two buttons: "Add header" and "Add authorization", both with plus icons. The "Next step" section contains a paragraph: "To trigger this webhook from an individual dialog node, enable the webhook from the Customize page in node details. [Go to dialog.](#)"

Search skill

- Improve coverage of your assistant by using **existing content** within your organization
 - Let AI find and highlight relevant answers from complex documents
 - Surface answers from existing content like marketing pages and knowledge base articles
 - Use pre-built connectors to search existing data sources



Wrap Up, Next Step



Eddy Liew

*Technical Sales Leader,
IBM Malaysia*



What's Next?

Choices of Complementary Workshops Offer:

- 1. Design Thinking (developing use case)**
- 2. Architectural Workshop (solutioning)**
- 3. Data Science MVP Workshop (pre-requisite to firm up use case and solutioning)**



THANK YOU

Any Enquiries kindly visit us at: ibm.biz/IBMCoDE

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