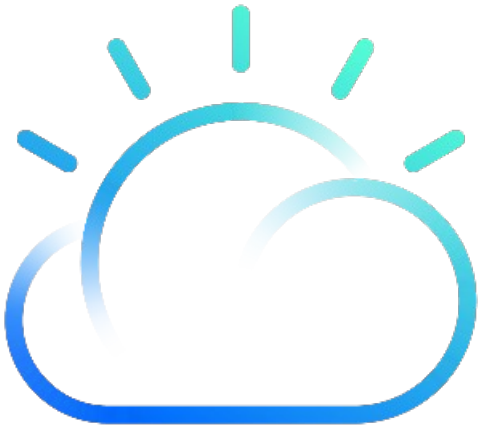
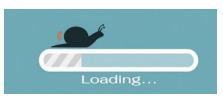


IBM **Cloud**

Watson Studio
Supporting the end-to-end AI workflow

Connect & Access Data	Search and Find Relevant Data	Prepare Data for Analysis	Build and Train ML/DL Models	Deploy Models	Monitor, Analyze and Manage
Connect and discover content from multiple data sources in the cloud or on premises. Bring **structured** and **unstructured** data to one toolkit.	**Find** data (structured, unstructured) and AI assets (e.g., ML/DL models, notebooks, Watson Data Kits) in the **Knowledge Catalog** with intelligent search and giving the right access to the right users.	Clean and prepare your data with **Data Refinery**, a tool to create data preparation pipelines visually. Use popular open source libraries to prepare unstructured data.	**Democratize** the creation of ML and DL models. Design your AI models **programmatically** or **visually** with the most popular **open source** and IBM ML/DL frameworks or leverage transfer learning on **pre-trained** models using **Watson tools** to adapt to your business domain. Train at scale on **GPUs** and **distributed** compute	Deploy your models easily and have them **scale automatically** for online, batch or streaming use cases	Monitor the performance of the models in production and trigger automatic retraining and redeployment of models. Build **Enterprise Trust** with Bias Detection, Mitigation Model **Robustness** and Testing Service Model **Security**.



Getting access to the data is often a challenge

To only part where the company gets the benefits

Data Scientist in DevOps mode

Watson Studio

Built for AI teams – enabling team productivity and collaboration

Tanya
Domain Expert

Her Job:
To transfer knowledge to Watson for a successful user experience.

What she does:
- Range of domain knowledge and uses that to teach Watson and develop a custom models
- As Tanya gains more experience she optimizes her knowledge to teach Watson to design better end-user experiences.

Sometimes known as:
Subject matter expert, content strategist.

Mike
Data Scientist

His Job:
Transform data into knowledge for solving business problems.

What he does:
- Runs experiments to build custom models that solve business problems.
- Use techniques such as Machine Learning or Deep Learning and works with Tanya to validate success of trained models.

Sometimes known as:
ML/DL engineer, Modeler, Data Miner

Ed
Data Engineer

His Job:
Architects how data is organized and ensures operability

What he does:
- Builds data infrastructure and ETL pipelines. Works with Spark, Hadoop, and HDFS.
- Works with data scientist to transform research models into production quality systems.

Sometimes known as:
Data infrastructure engineer

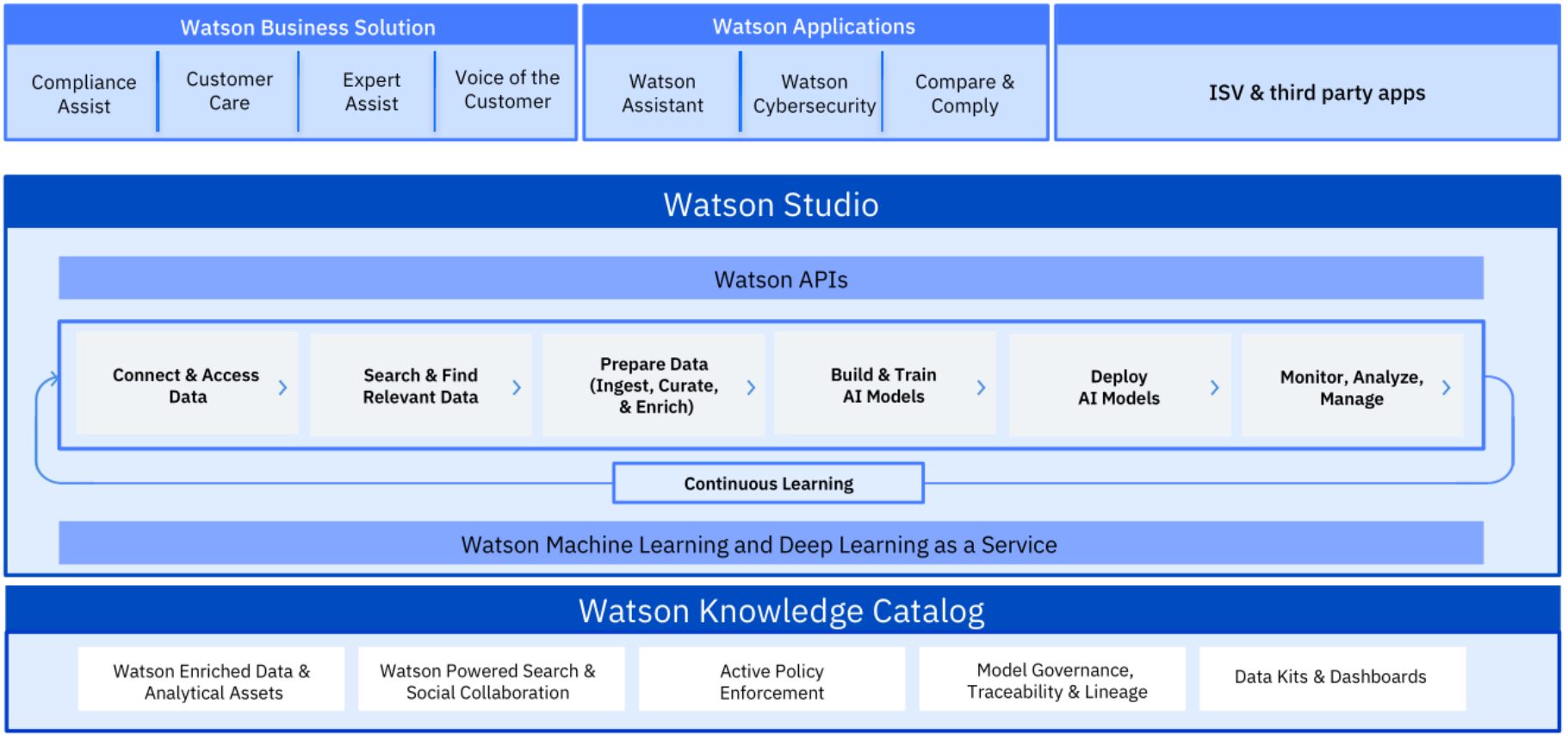
Deb
The Developer

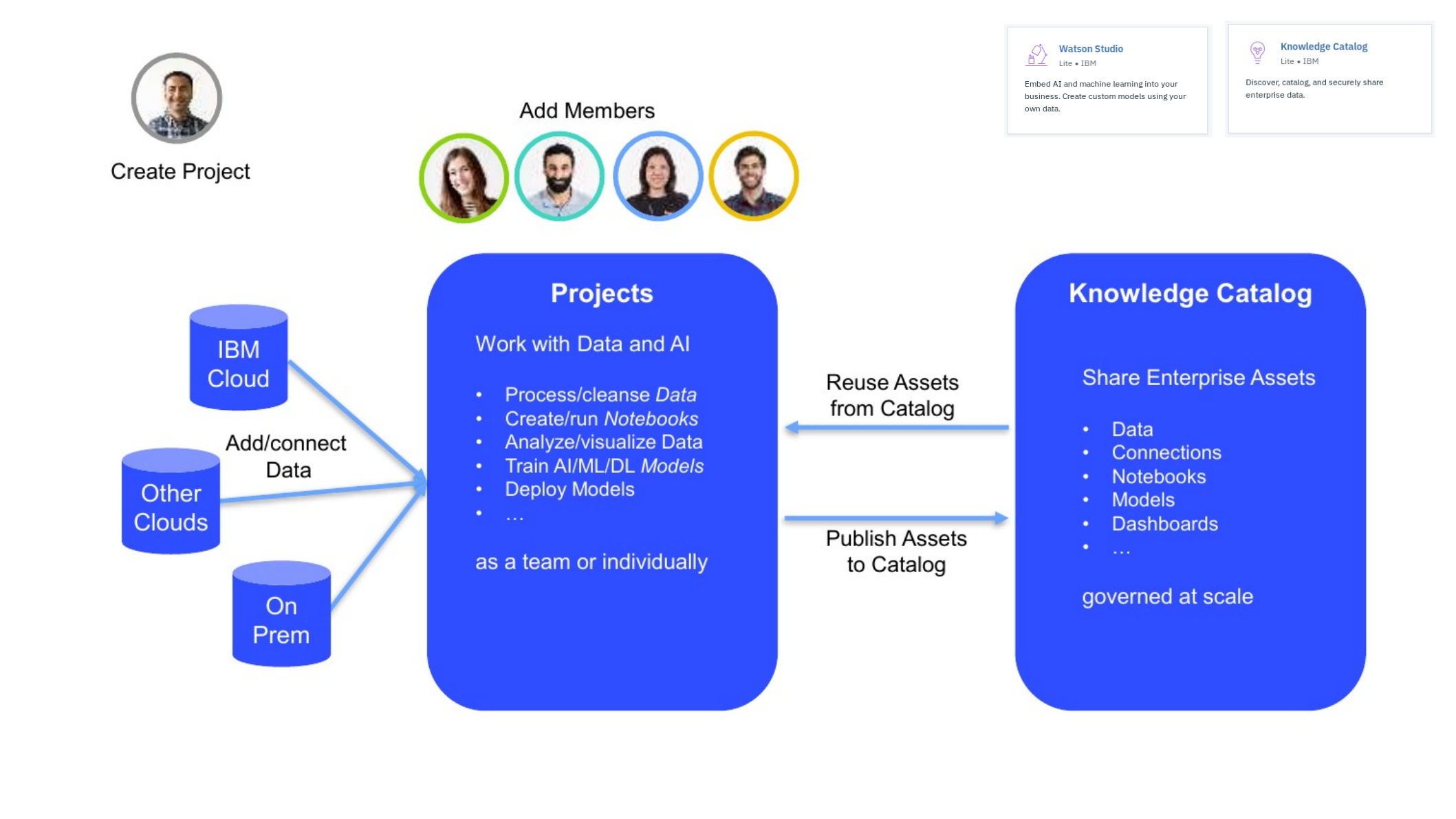
Her Job:
Builds AI application that meet the requirements of the business.

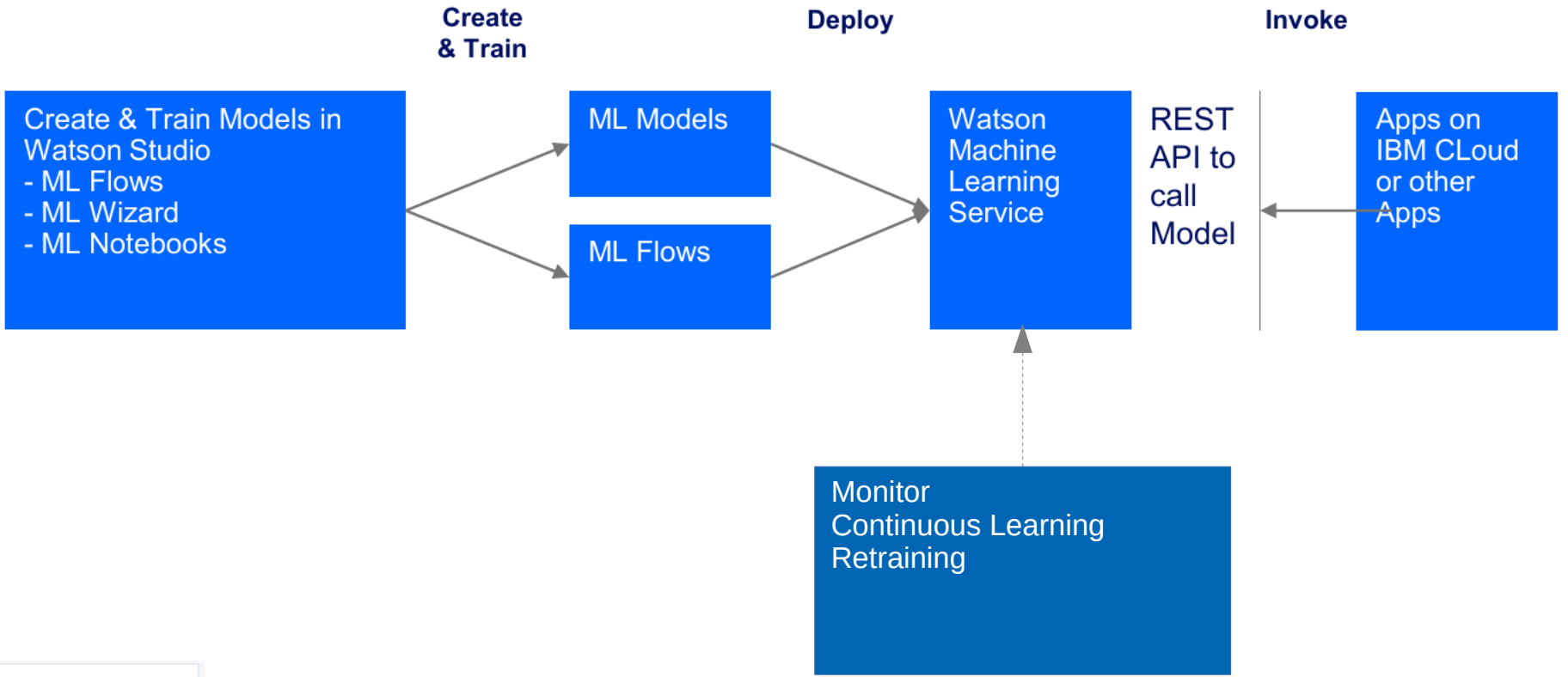
What she does:
- Starts PoCs which includes gathering content, dialog building and model training
- Focus is on app building for the team or company to use. Will handle ML Ops as needed

Sometimes known as:
Front-end, back-end, full stack, mobile or low-code developer

Watson is AI for Smarter Business




Watson Studio
Lite • IBM
Embed AI and machine learning into your business. Create custom models using your own data.
Knowledge Catalog
Lite • IBM
Discover, catalog, and securely share enterprise data.
Create Project
Add Members
IBM Cloud
Other Clouds
On Prem
Add/connect Data
Projects
Work with Data and AI
• Process/cleanse Data
• Create/run Notebooks
• Analyze/visualize Data
• Train AI/ML/DL Models
• Deploy Models
• …
as a team or individually
Reuse Assets from Catalog
Publish Assets to Catalog
Knowledge Catalog
Share Enterprise Assets
• Data
• Connections
• Notebooks
• Models
• Dashboards
• …
governed at scale



Machine Learning
Lite • IBM

IBM Watson Machine Learning - make smarter decisions, solve tough problems, and improve user outcomes.

Welcome Stefan!

Watson Studio and Watson Knowledge Catalog are both part of IBM Watson.

Get started with key tasks

New project | Catalog and find data | Refine data | New notebook | Deep learning | New Modeler flow

Recently updated projects

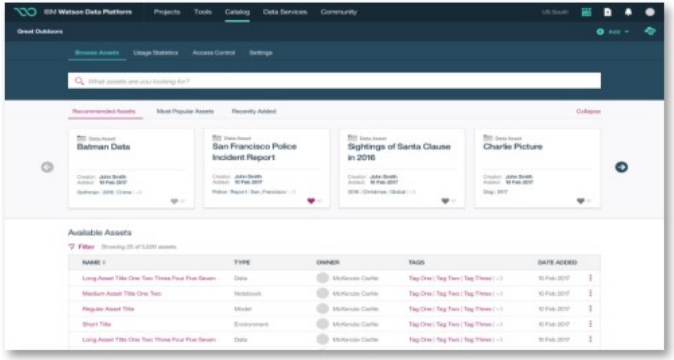
View all (5)

New project

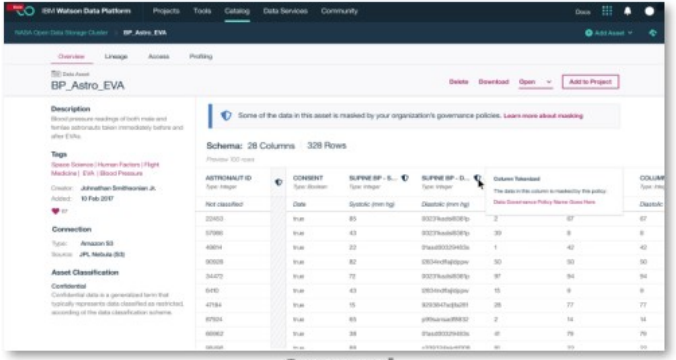
NAME	ROLE	COLLABORATORS	DATE CREATED	LAST UPDATED
Europe Watson Demo Sandbox	Admin	KP CW MB +107	Mar 15, 2018	Apr 24, 2018
Watson Data Enablement Project	Editor	BB +35	Apr 23, 2018	Apr 23, 2018
Watson-Studio-Test	Admin	SB	Mar 20, 2018	Apr 19, 2018
Learning-Python	Admin	SB	Mar 22, 2018	Mar 22, 2018

Watson Knowledge Catalog

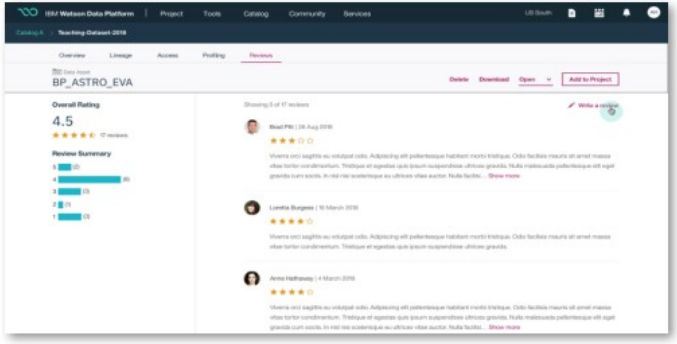
Unlock tribal knowledge and put data in the hands of people who need it



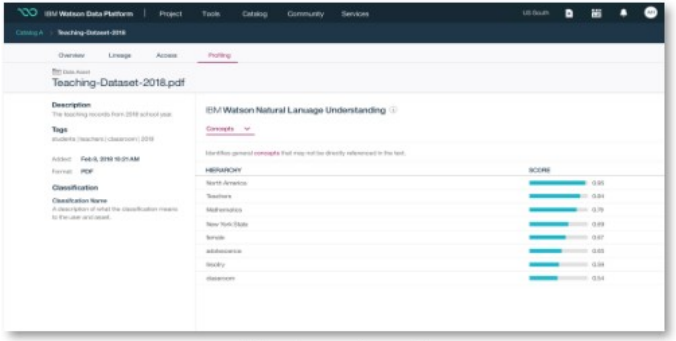
Find



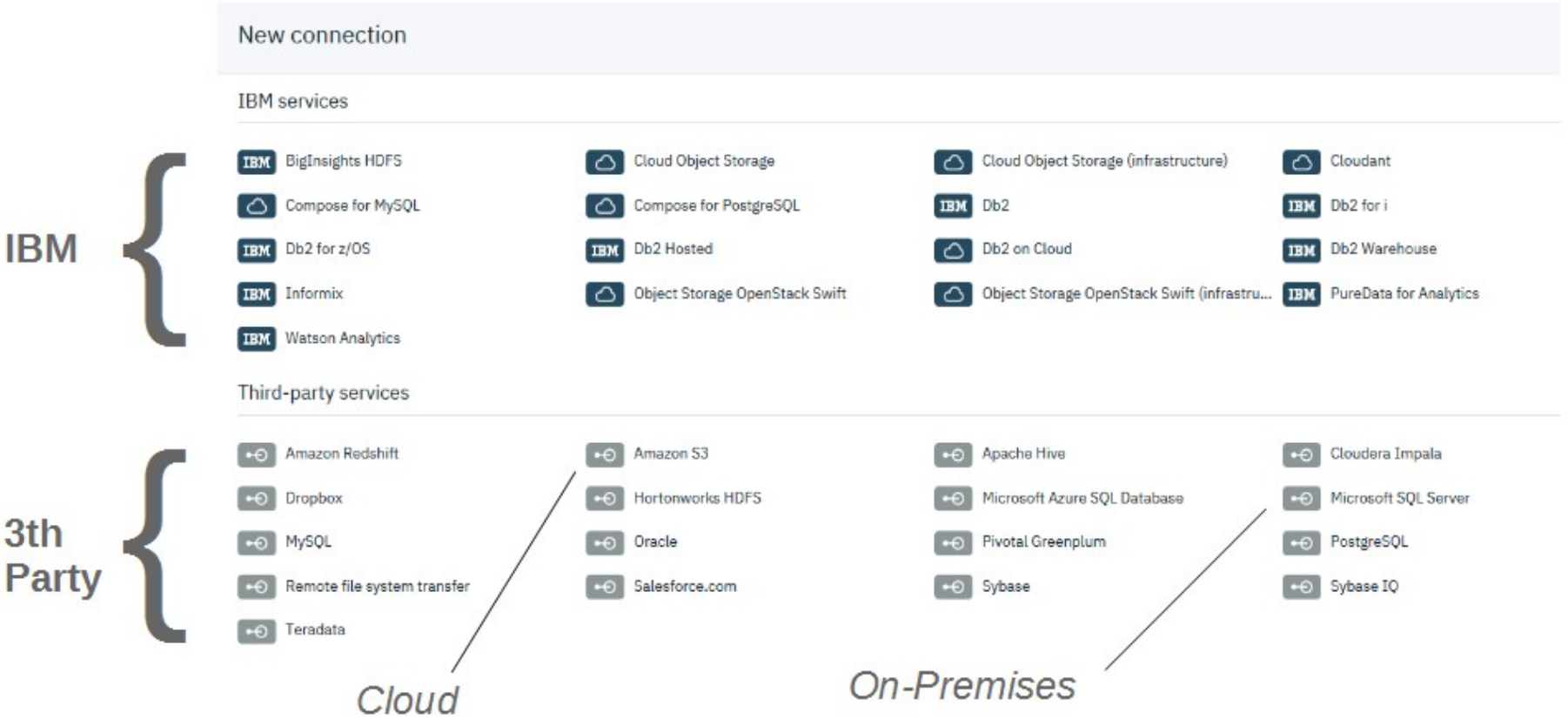
Control



Collaborate



Understand


New connection
IBM services
BigInsights HDFS
Cloud Object Storage
Cloud Object Storage (infrastructure)
Cloudant
Compose for MySQL
Compose for PostgreSQL
Db2
Db2 for i
Db2 for z/OS
Db2 Hosted
Db2 on Cloud
Db2 Warehouse
Informix
Object Storage OpenStack Swift
Object Storage OpenStack Swift (infrastru...
PureData for Analytics
Watson Analytics
IBM
Third-party services
Amazon Redshift
Amazon S3
Apache Hive
Cloudera Impala
Dropbox
Hortonworks HDFS
Microsoft Azure SQL Database
Microsoft SQL Server
MySQL
Oracle
Pivotal Greenplum
PostgreSQL
Remote file system transfer
Salesforce.com
Sybase
Sybase IQ
Teradata
3th Party
Cloud
On-Premises

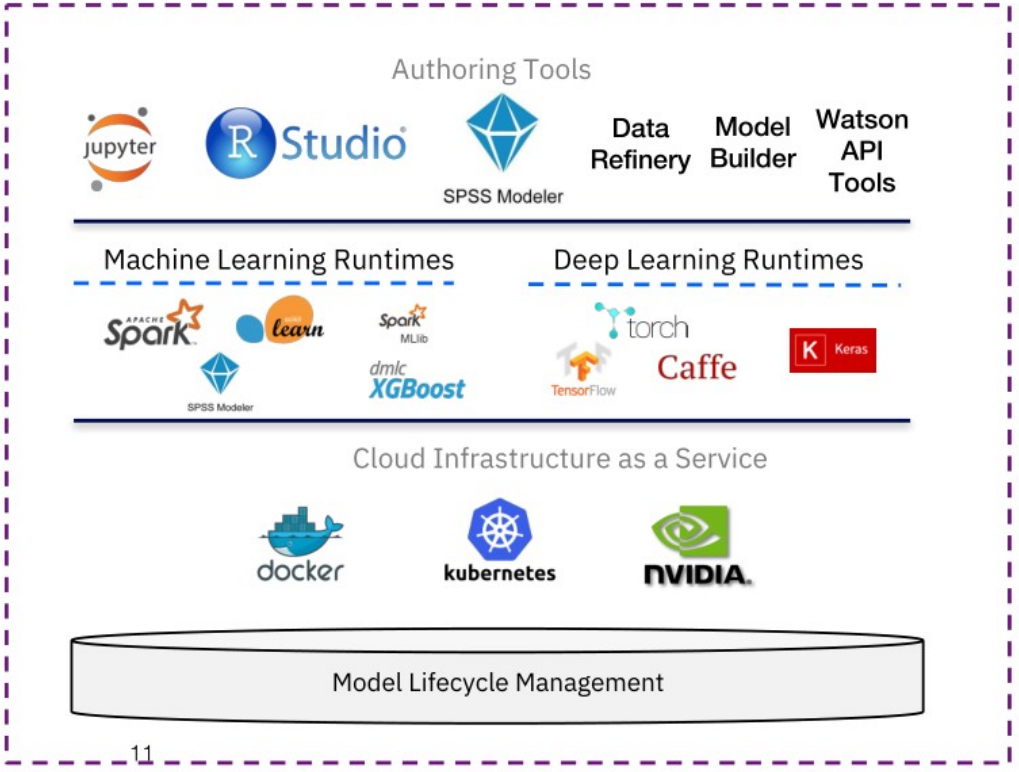
Watson Studio

Providing comprehensive set of tools for the end-to-end AI workflow

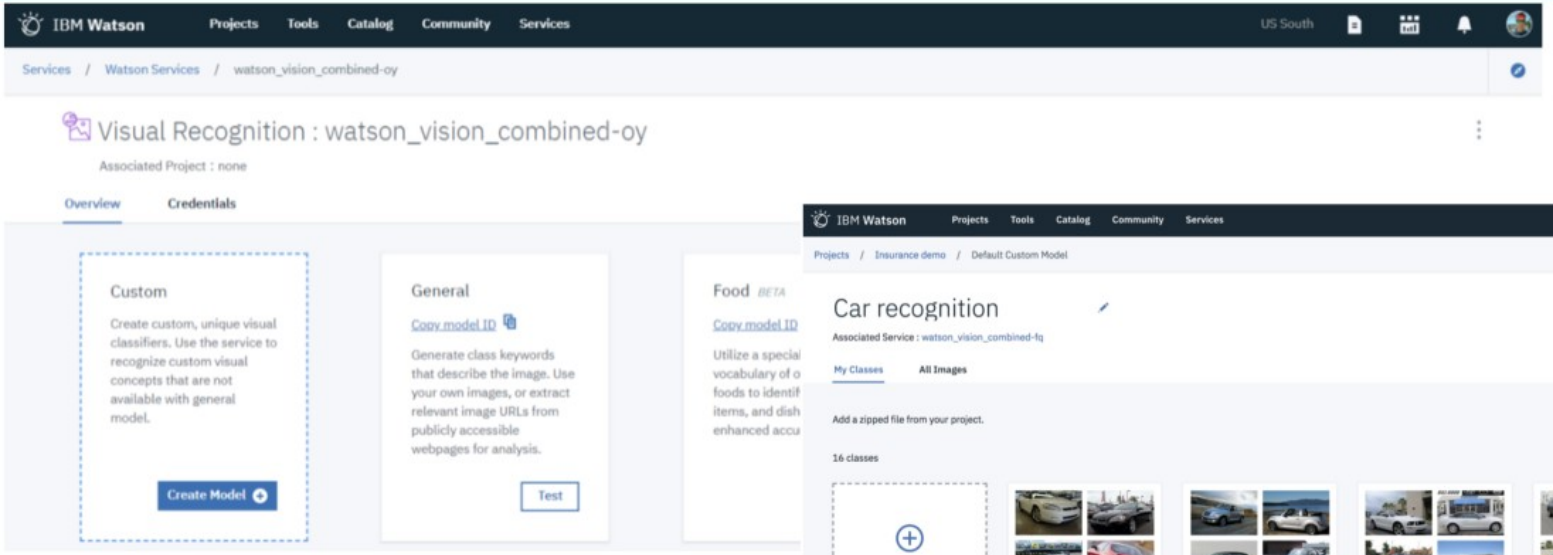
- Create, collaborate, deploy, and monitor
- Best of breed open source & IBM tools
- Code (R, Python or Scala) and no-code/visual modeling tools
- Tools to customize and train Watson APIs

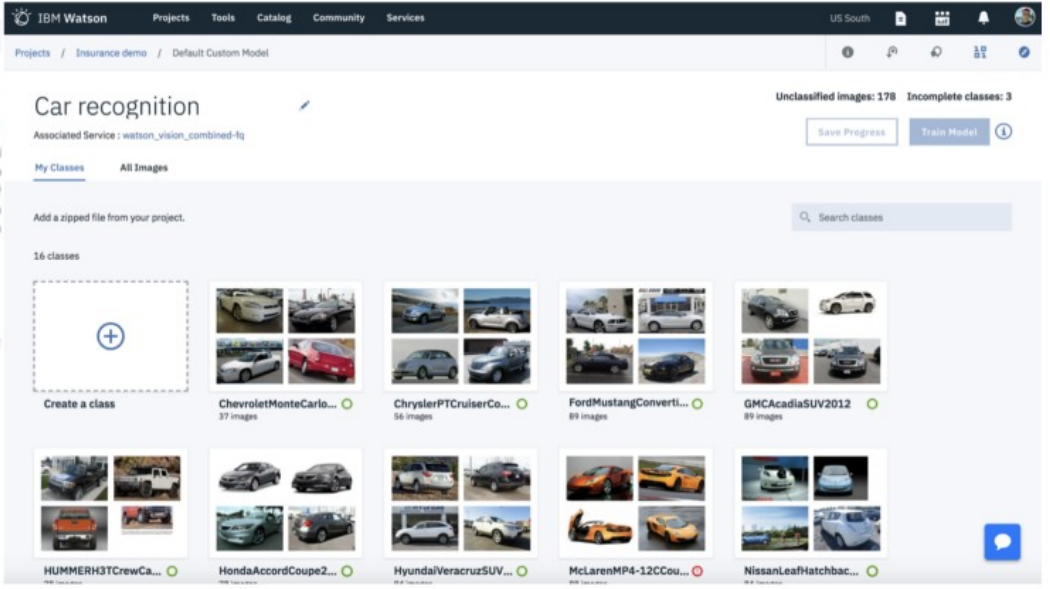
- Most popular open source ML/DL frameworks
- IBM best-in-class frameworks

- Fully managed service
- Container-based resource management
- Elastic pay as you go CPU/GPU power



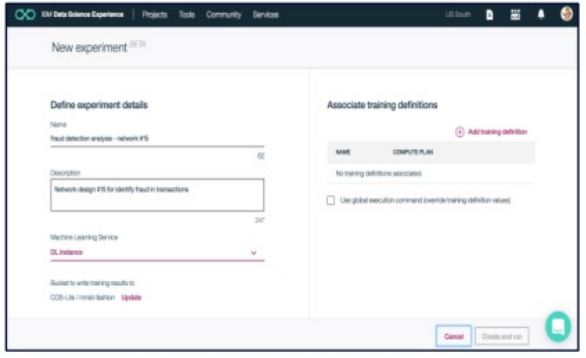
Watson Studio
Integration with Watson APIs



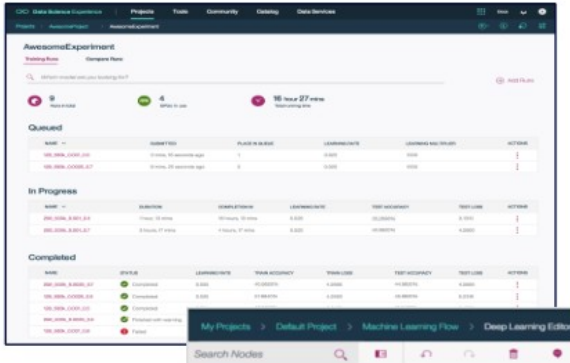


Watson Studio
Experiment with Deep Learning

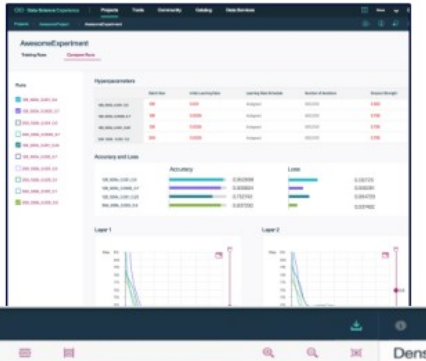
Define experiment



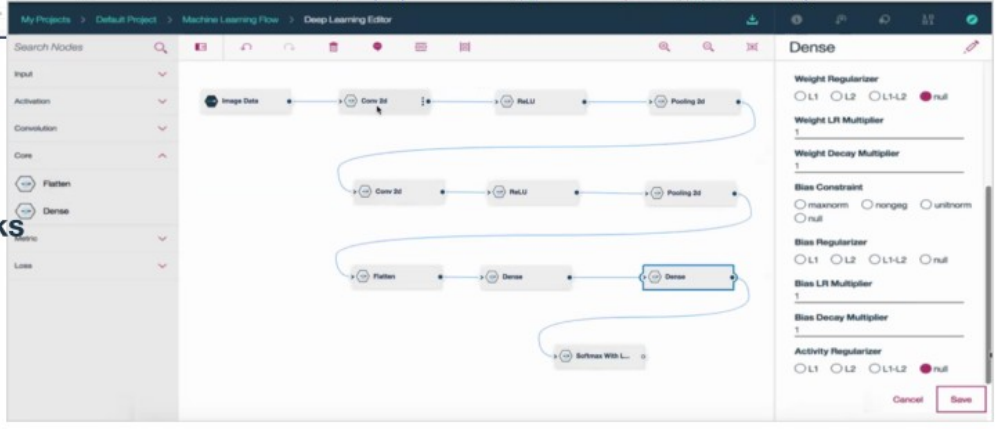
View progress



Analyze Results



Build Neural Networks



Watson Studio
Differentiating Capabilities

Integrated Collaboration Environment

- Data Scientists, Subject Matter experts, Business Analysts & Developers all in one environment to accelerate innovation, collaboration and productivity
- Built-in learning to get started or go the distance with advanced tutorials

Choice of Tools for the full AI lifecycle

- Best in-breed open source and IBM tools that support the end-to-end AI lifecycle
- Choice of code or no-code tools to build and train your own ML/DL models or easily train and customize pre-trained Watson APIs

Support for all levels of expertise

- Use Watson smarts and recommendations for the best algorithms to use given your data, OR
- Use the rich capabilities and controls to fine tune your models

Experiment centric DL workflow

- Monitor batch training experiments then compare cross-model performance without worrying about log transfers and scripts to visualize results.
- You focus on designing your neural networks. We'll manage and track your assets.

Model lifecycle & management

- Deploy models into production then monitor them to evaluate performance.
- Capture new data for continuous learning and retrain models so they continually adapt to changing conditions.

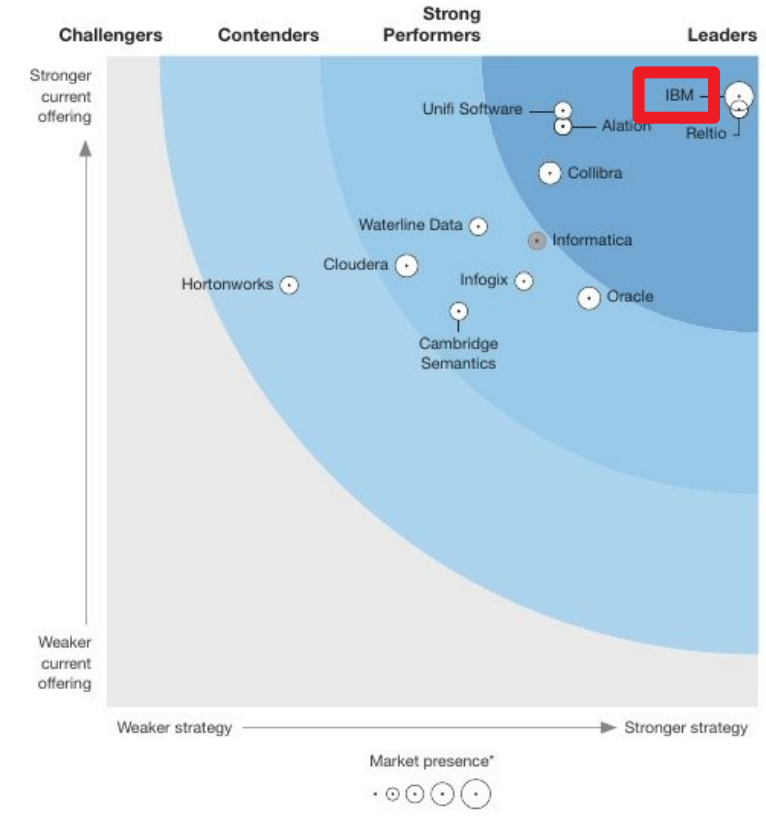
Integrated with Knowledge Catalog

- Intelligent discovery of data and AI assets that enables reuse & improves productivity
- Seamlessly integrated for productive use with Machine Learning and Data science
- Powerful governance tools to control and protect access to data

THE FORRESTER WAVE™

Machine Learning Data Catalogs

Q2 2018

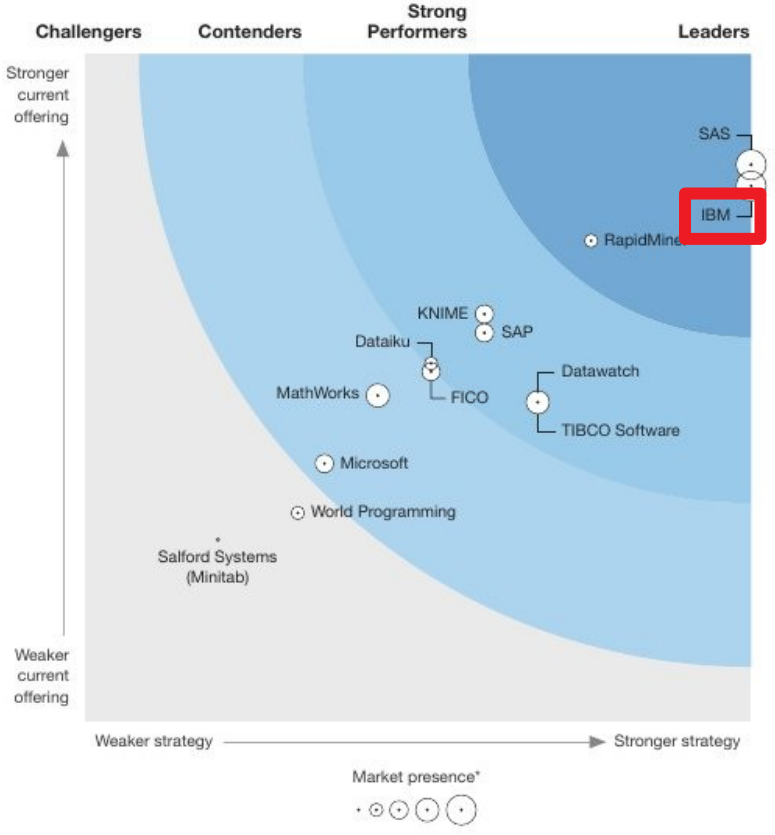


*A gray bubble indicates a nonparticipating vendor.

THE FORRESTER WAVE™

Multimodal Predictive Analytics And Machine Learning Solutions

Q3 2018



*A gray marker indicates incomplete vendor participation.

ANZ bank unpicking neural networks in effort to avoid dangers of deep learning

Rather than pushing a successful proof-of-concept into production, ANZ bank has a number of health checks to work through first.

By Chris Duckett | September 4, 2018 -- 07:22 GMT (08:22 BST) | Topic: Artificial Intelligence

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"The biggest danger in terms of deep learning is because it is bringing in new attributes and new correlations we've never seen, is that the things that traditionally we have never seen that could be creating bias, that we wouldn't know to look for to say, 'that's something we shouldn't do'," Humphrey explained.

Fairness

https://www.zdnet.com/article/anz-bank-unpicking-neural-networks-in-effort-to-avoid-dangers-of-deep-learning/

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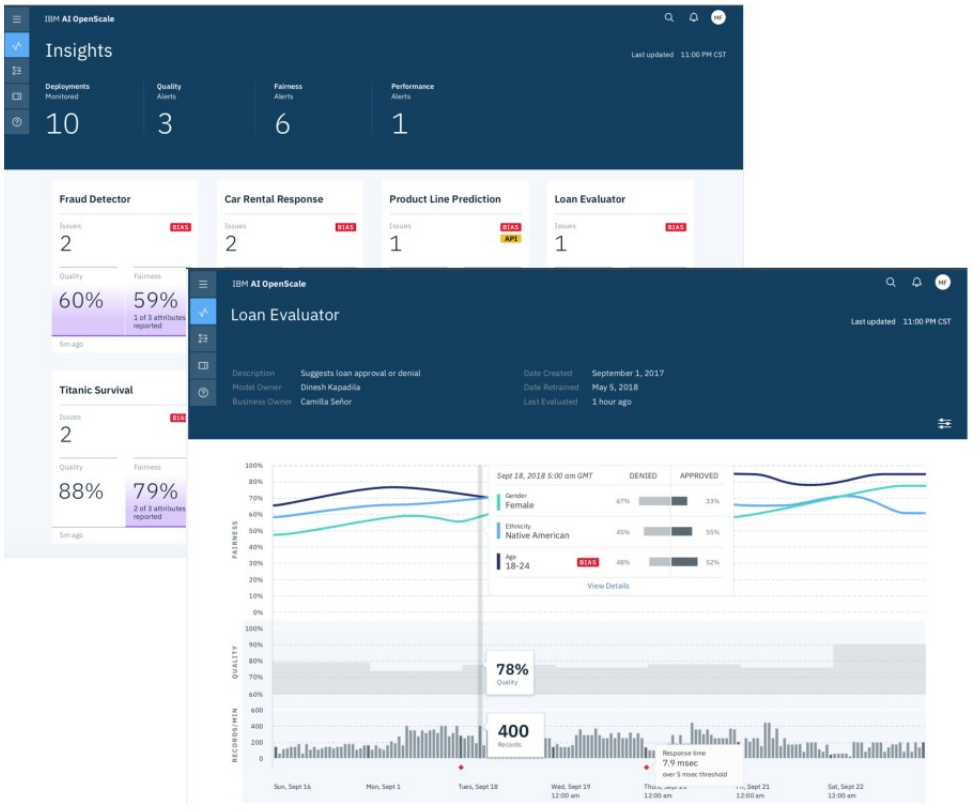
"In a deep-learning environment, it becomes very difficult to work out the factors that were the most predictive for this instance, or for this customer," he said. "Before we roll out any deep-learning models, we need to solve for that -- even though it's not legislated here. I think it is good practice to be able to know why decisions are being made."

Explainability

https://www.zdnet.com/article/anz-bank-unpicking-neural-networks-in-effort-to-avoid-dangers-of-deep-learning/

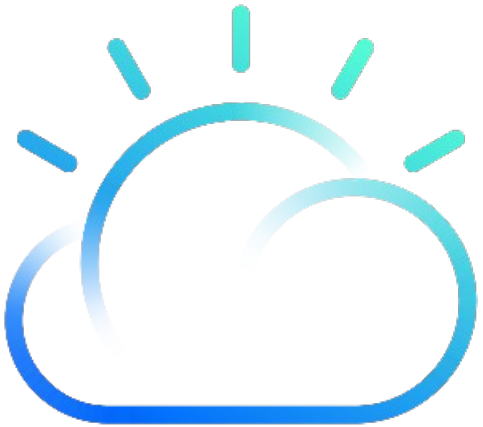
Introducing IBM Trust & Transparency capabilities for AI on IBM Cloud

- Automatically detects fairness issues at runtime
- Intelligently delivers bias mitigation help
- Provides traceability & auditability of AI predictions made in production applications
- Tracks AI accuracy in applications
- Explains an outcome/recommendation in business terms



AI OpenScale
Lite • IBM

IBM AI OpenScale operationalizes your AI with trust and transparency by giving your business the tools and confidence to deploy



IBM **Cloud**