



AI專案探討與人機合作新未來

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Edge Computing

...places enterprise applications closer to where the data is created, and where actions need to be taken.



4 PoVs of IBM Edge Computing

*Millions of devices,
Enterprise-grade and
Open by Design*

1. Management at enormous scale

Common management and orchestration across clusters and edge nodes.

Using policies, roles and compliance based management.

2. Data Protection

Signed workloads, runtime isolation and data encryption.

Compliance reporting and **auditing**.

3. Open Source Technologies

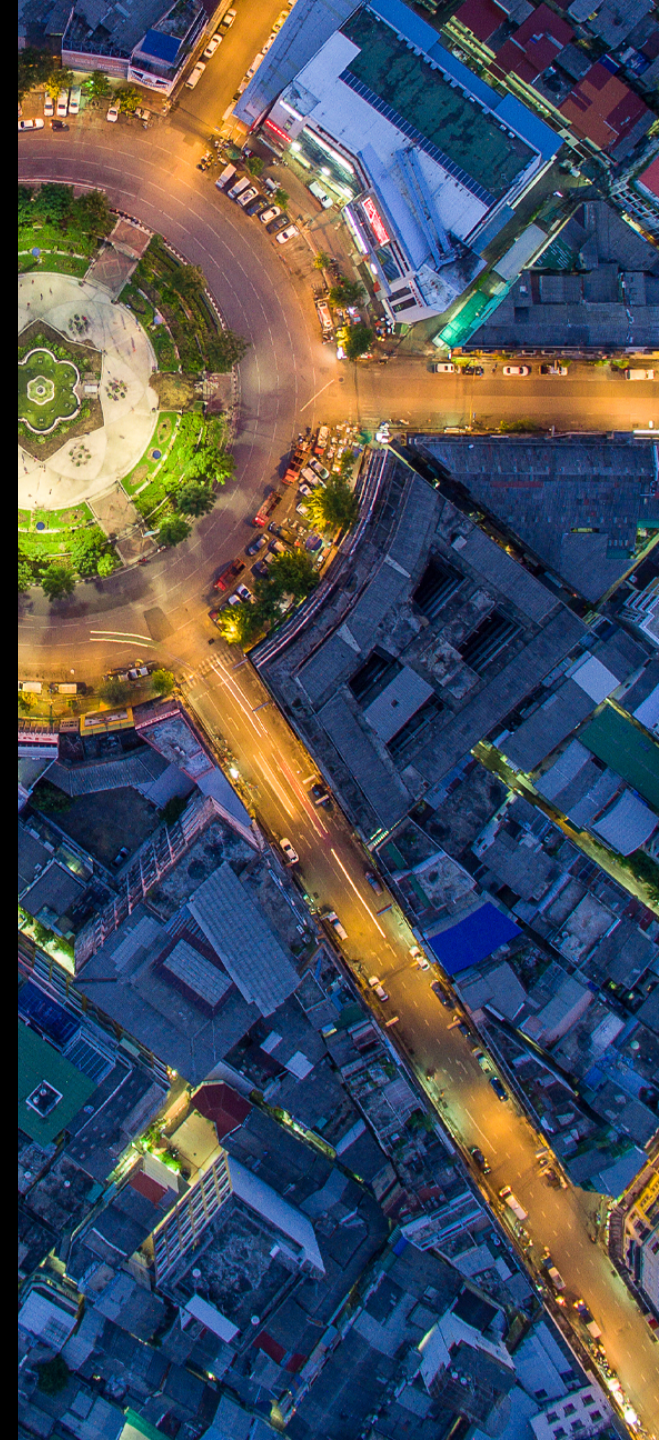
Built on **open source** technologies for deployment and communication.

Kubernetes, docker, MQTT, Open Horizon, etc.

4. Value and Capabilities

Move other IBM, Red Hat or 3rd party containers, services and AI models to the edge with **speed**.

Workloads deployed where data resides and actions are taken.



Clients has numerous challenges where Edge Computing is relevant..

Industrial

Obtain low latency Augmented Intelligence at the edge, to predict and avoid outages and advise on plant optimization or controlling the line completely.



Retail

Reduce theft with intelligent video analytics at the edge, by detecting anomalies at the point of sales or at the ATM without cluttering your network with expensive image transferring.

Healthcare

Enable IT to support treatment and care of patients in their homes and in the ambulance, even at very remote locations, where fault-tolerance is key and data capturing can be used to derived life-saving insights.



Autonomous Vehicles

Allow autonomous vehicles to collect, process and share in a broader network of trains, warehouse low-lifter, cars, public transport or drones.



By 2020

Connected Clouds

... **70%** of enterprises will **integrate cloud management** — across their public and private clouds — by deploying unified hybrid/multicloud management technologies, tools, and processes.

By 2023

Edge Buildout

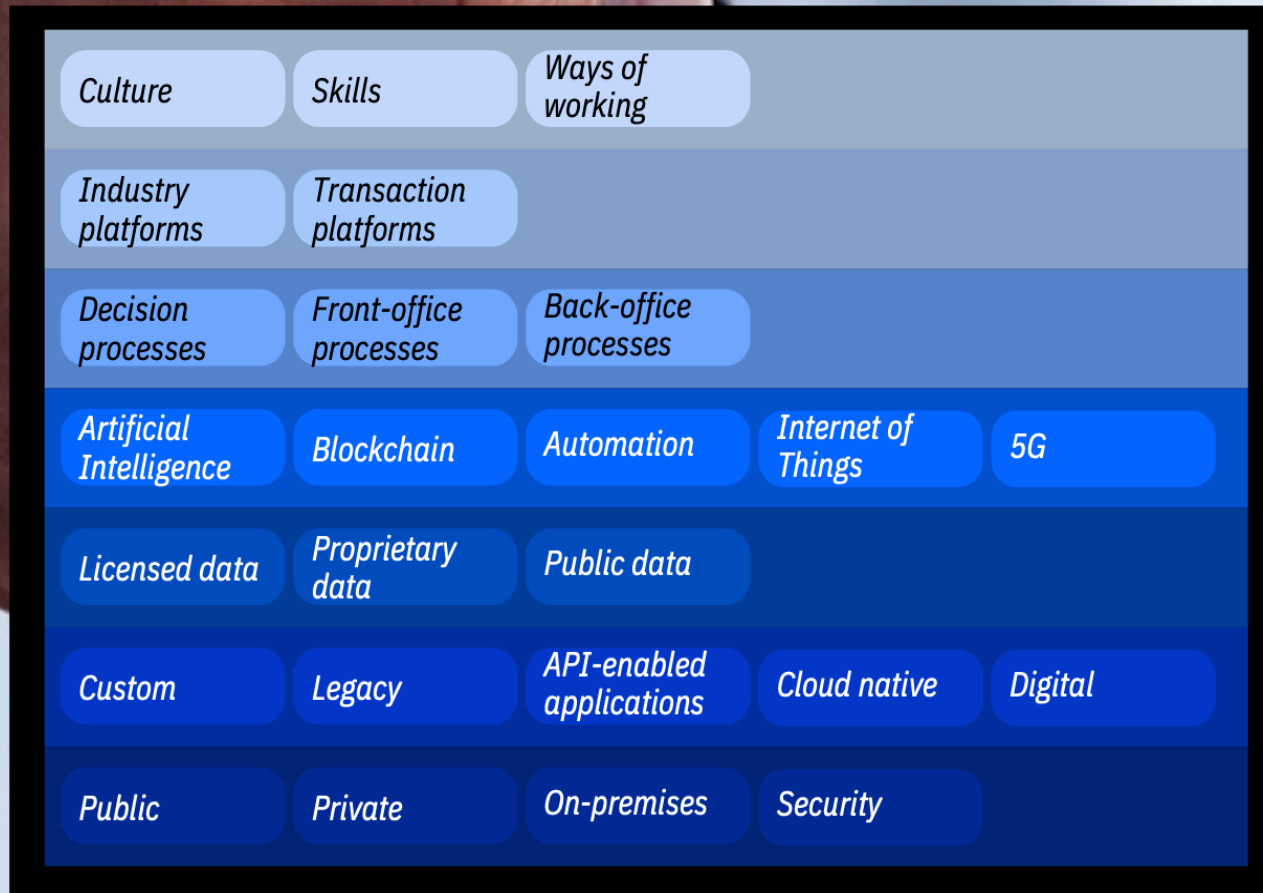
... over **50%** of new enterprise IT infrastructure deployed will be at the **edge** rather than corporate datacenters, up from less than 10% today; by 2024, the number of **apps** at the edge will increase **800%**.

By 2025

Digital Innovation Factories

... nearly two-thirds of enterprises will be prolific software producers with code deployed daily, over **90%** of new apps **cloud native**, **80%** of code **externally sourced**, and 1.6 times more developers.

Our Vision = The Cognitive Enterprise



ARTIFICIAL INTELLIGENCE

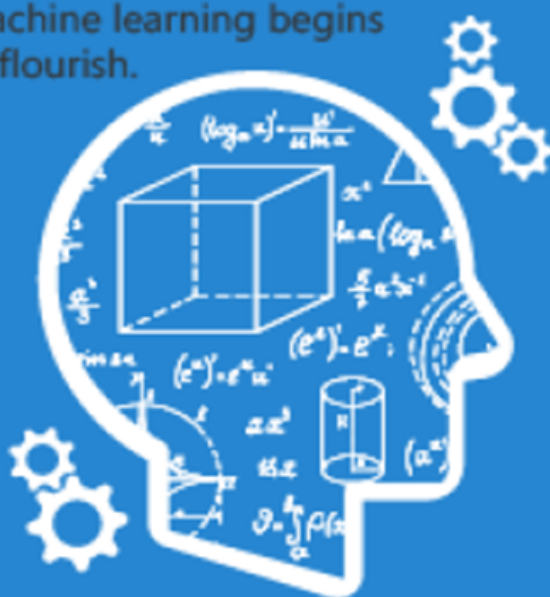
Early artificial intelligence stirs excitement.



人工智慧

MACHINE LEARNING

Machine learning begins to flourish.



機器學習

DEEP LEARNING

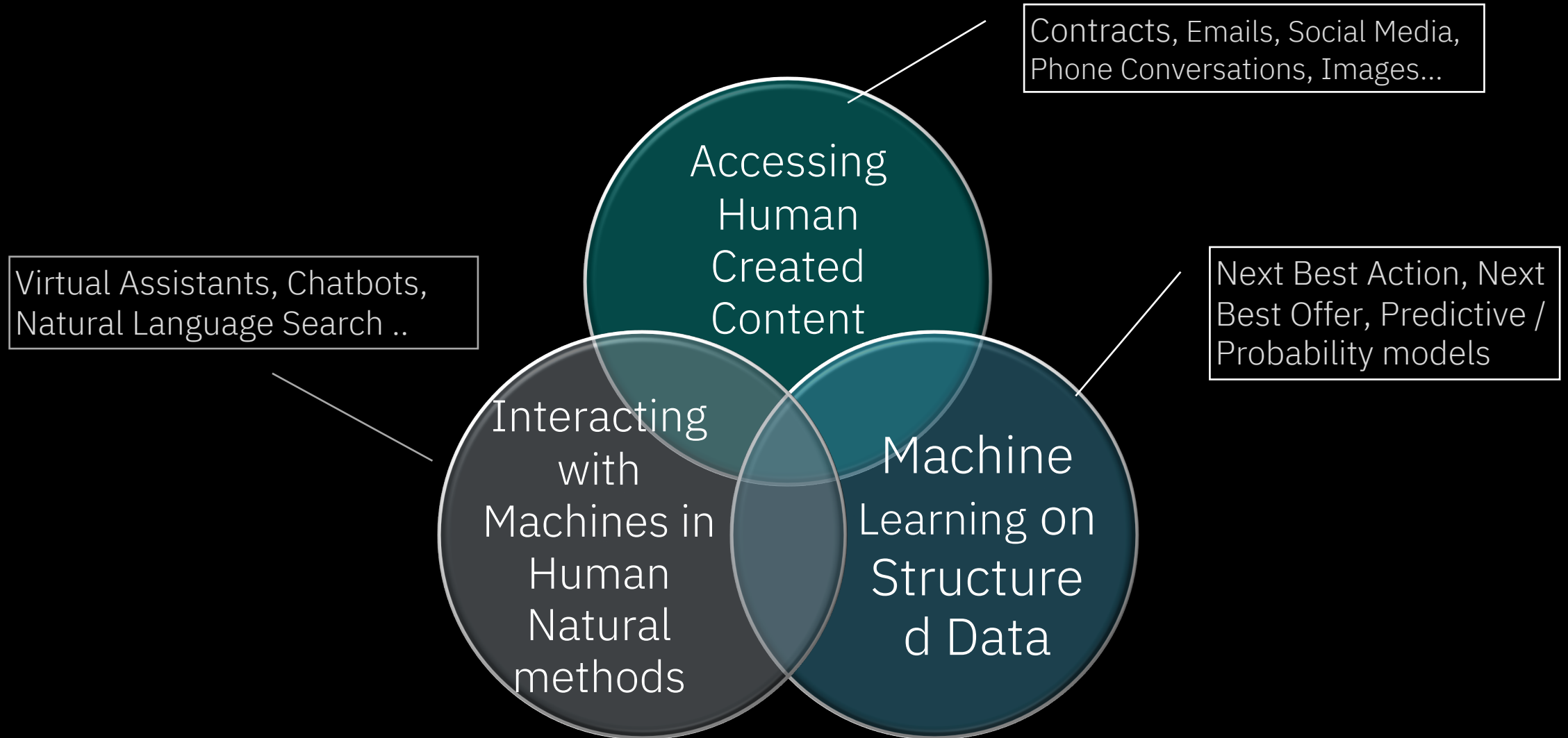
深度學習

Deep learning breakthroughs drive AI boom.

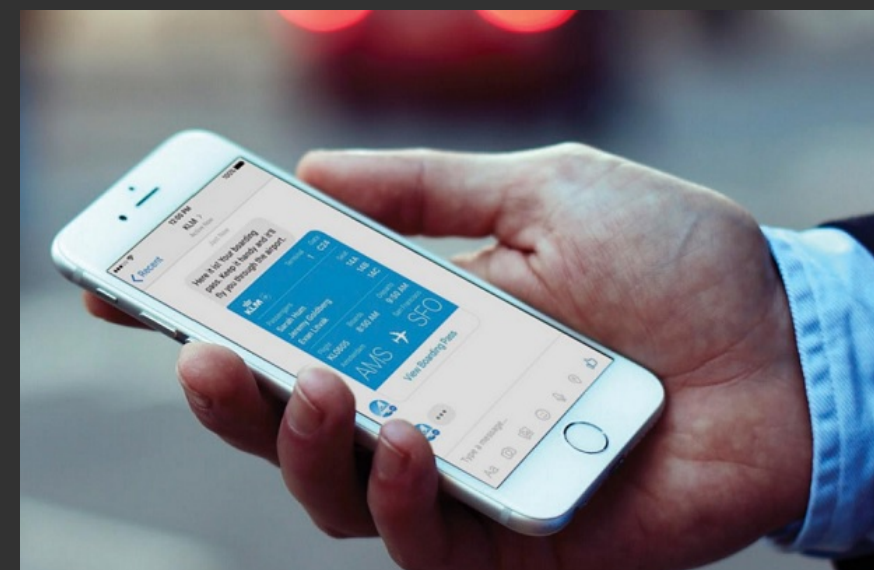
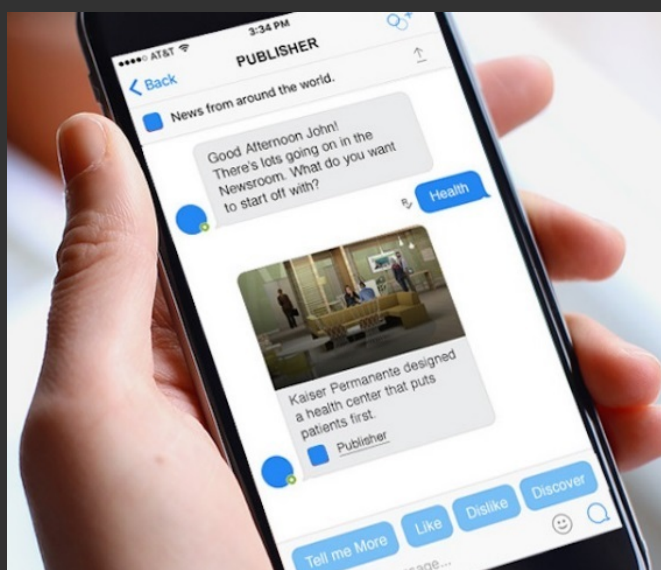
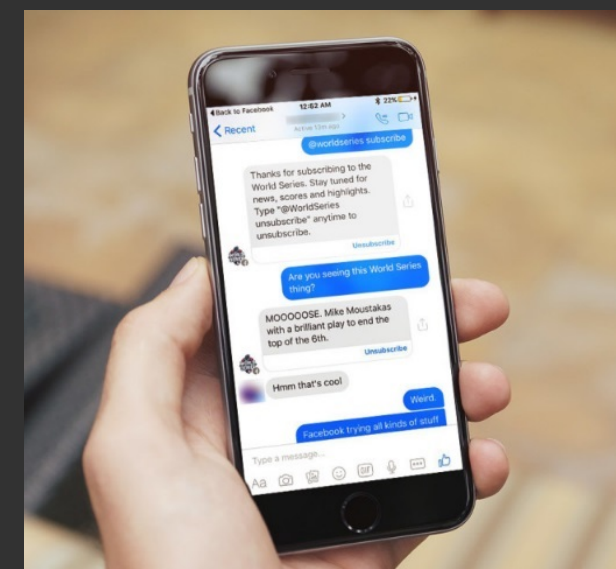
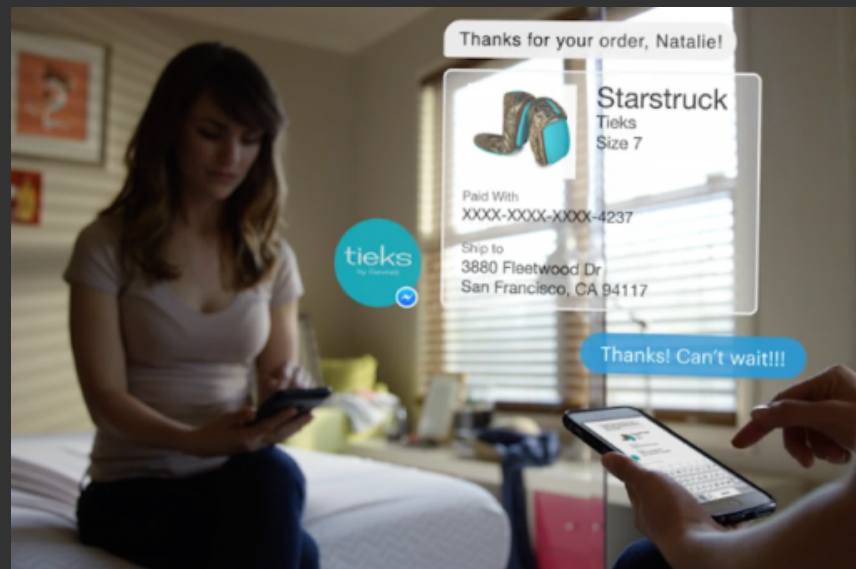
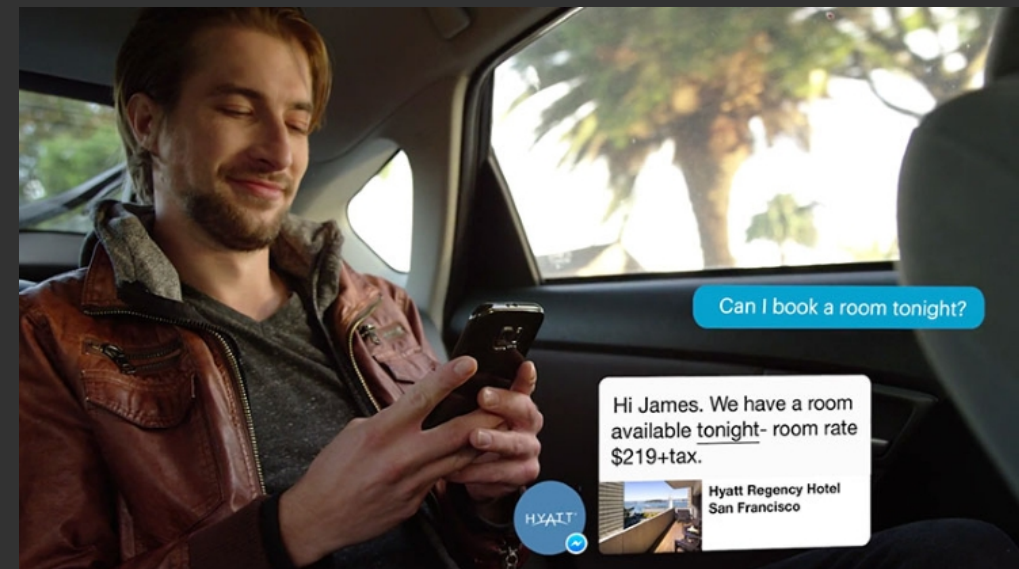


Since an early flush of optimism in the 1950's, smaller subsets of artificial intelligence - first machine learning, then deep learning, a subset of machine learning - have created ever larger disruptions.

AI目前有三種主要應用案例



Chatbot 用最自然的對話方式，以使用者體驗為核心，來優化功能設計



IBM Watson AI 自然語言處理(Pattern)

請問維修申請的流程大致為何?

1

請問維修申請的**步驟**大致為何?

2

請問**商品維修**申請的流程大致為何?

3

我想知道房貸申請的流程大致為何?

4

請問房貸申請的**程序**是什麼?

5

請問房貸申請的流程是**蝦米**?

Key Word (斷字斷詞)

請問

維修

申請

流程

大致

為何

步驟

商品

我想

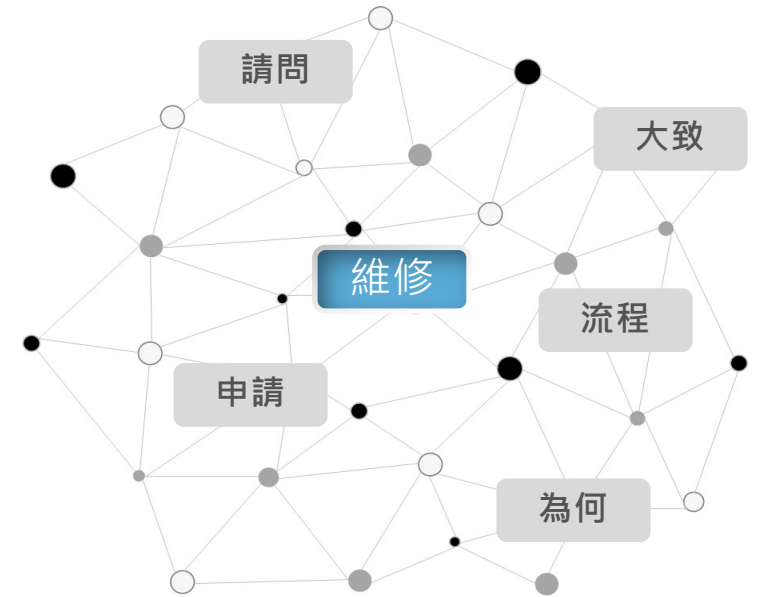
知道

程序

蝦米

Pattern (Watson ML)

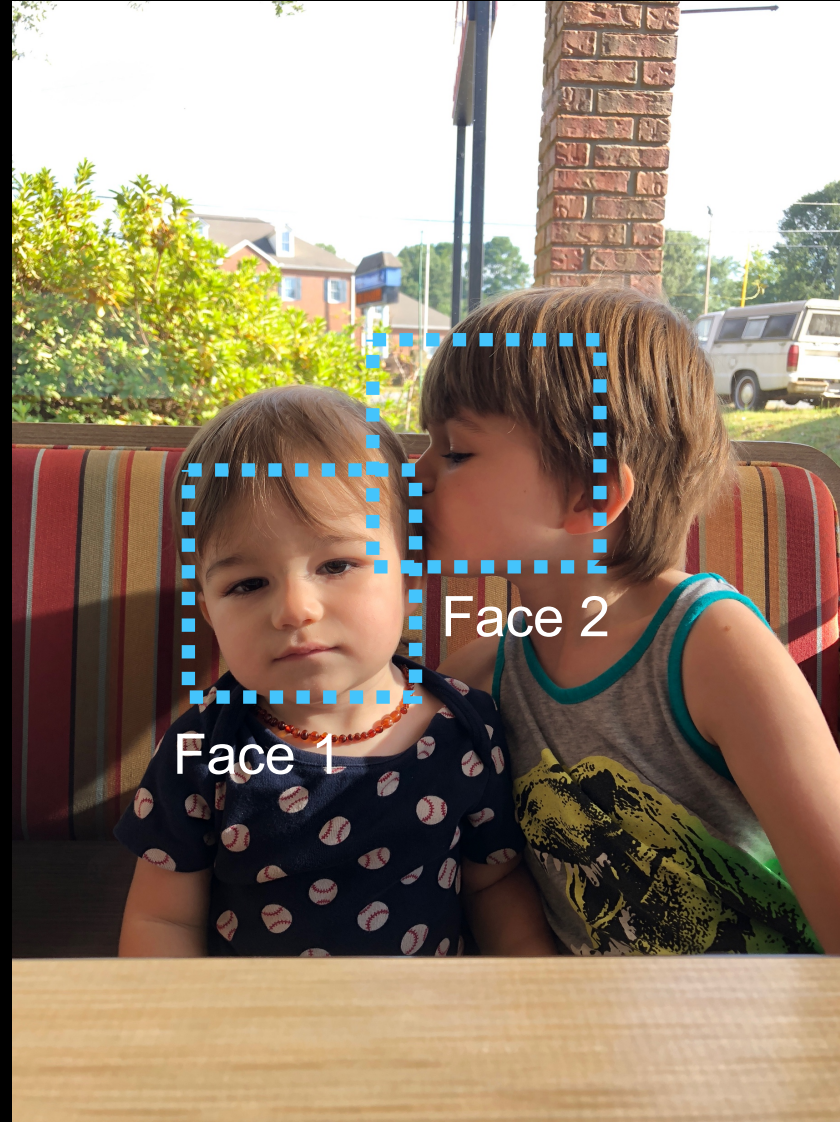
請問維修申請的流程大致為何?



Word Vector(詞向量)

影像處理與分析

We can now identify people, objects and more in images with increasingly more accurate results.



person 0.73
family 0.57
child 0.56
twin 0.52
boy with family 0.51
boy 0.50

Face 1:
age 0-12 0.68
MALE 0.68

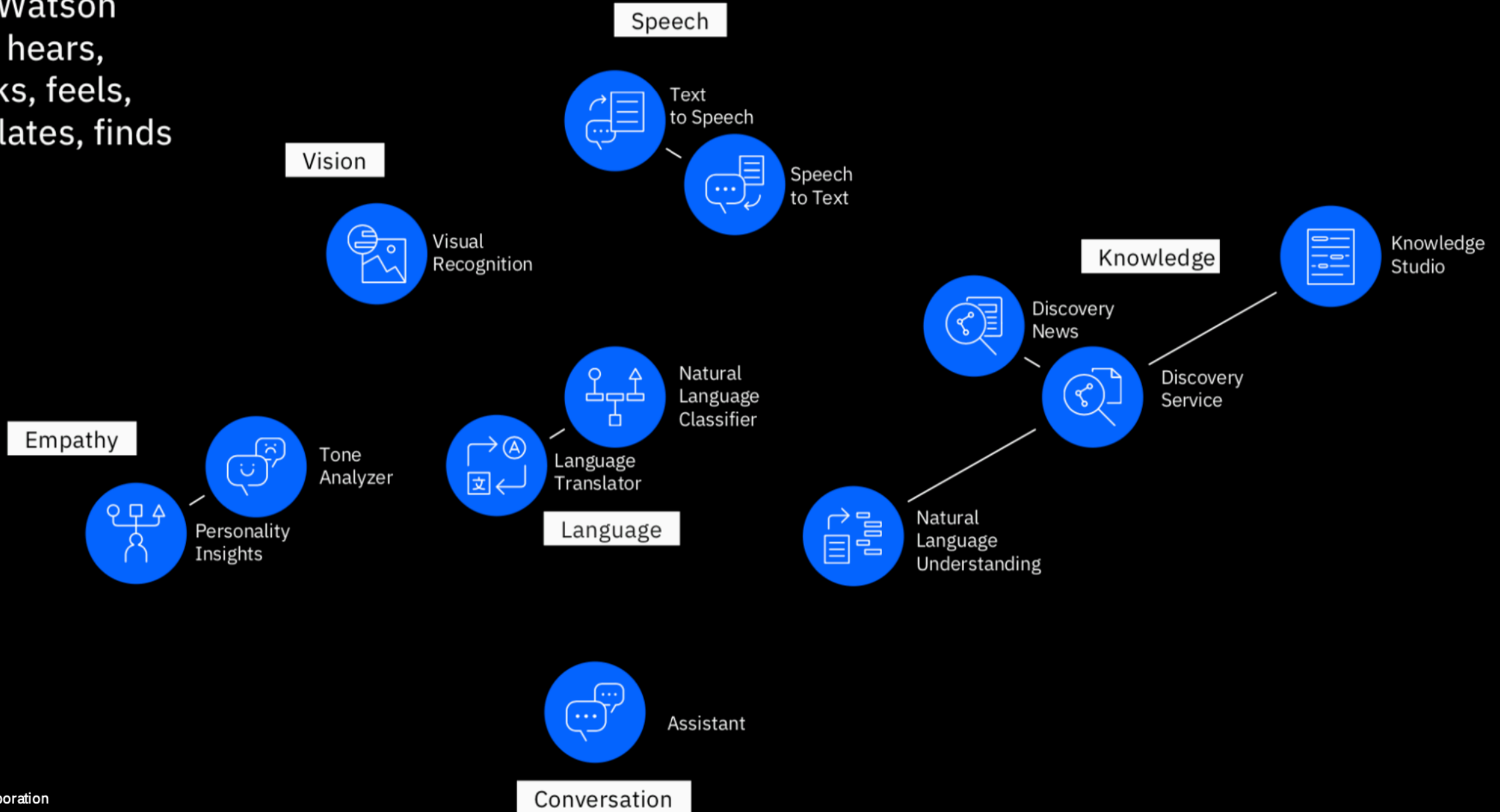
Face 2:
age 0-12 0.51
MALE 0.65

日本 MIZUHO 銀行使用實體對話機器人進行數位分行轉型



IBM Watson APIs Services

How Watson sees, hears, speaks, feels, translates, finds



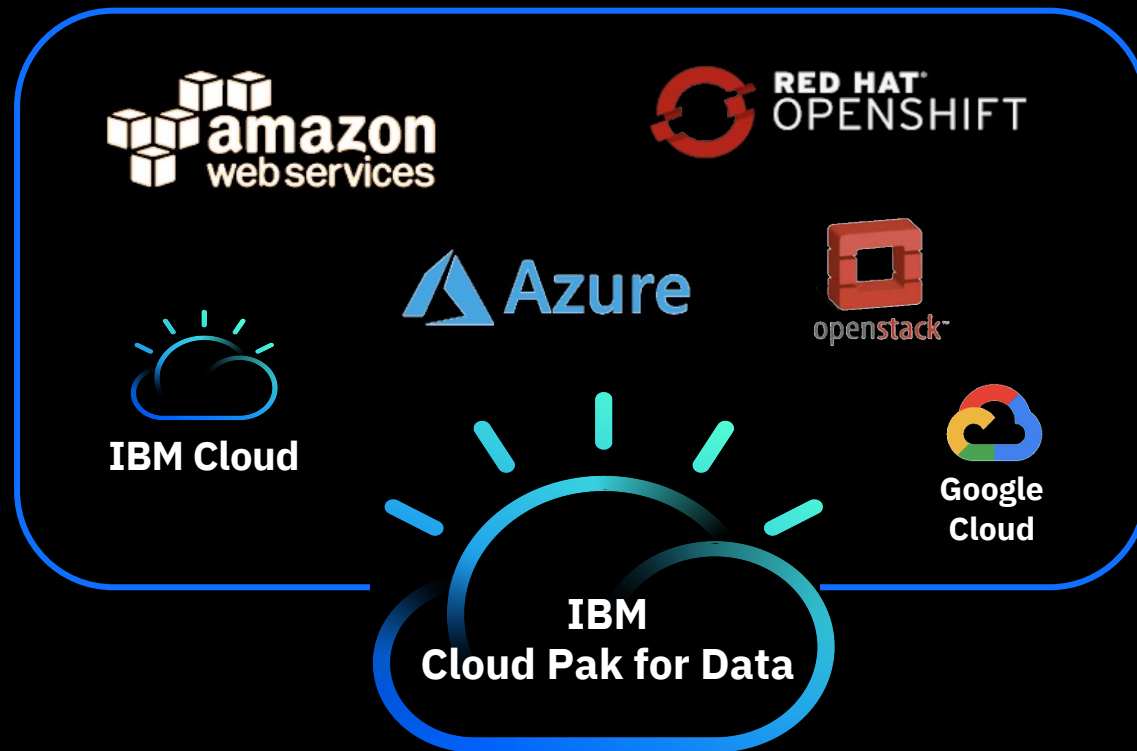
IBM Watson Anywhere

One Platform, Any Cloud

- 可依照您的選擇，支援在不同的雲平台上部署 Watson 的技術
- 將 AI 模型和工作流程，與其所依賴的資料保持一致
- 擁抱開源，使用一系列的雲端原生資料與 AI 框架

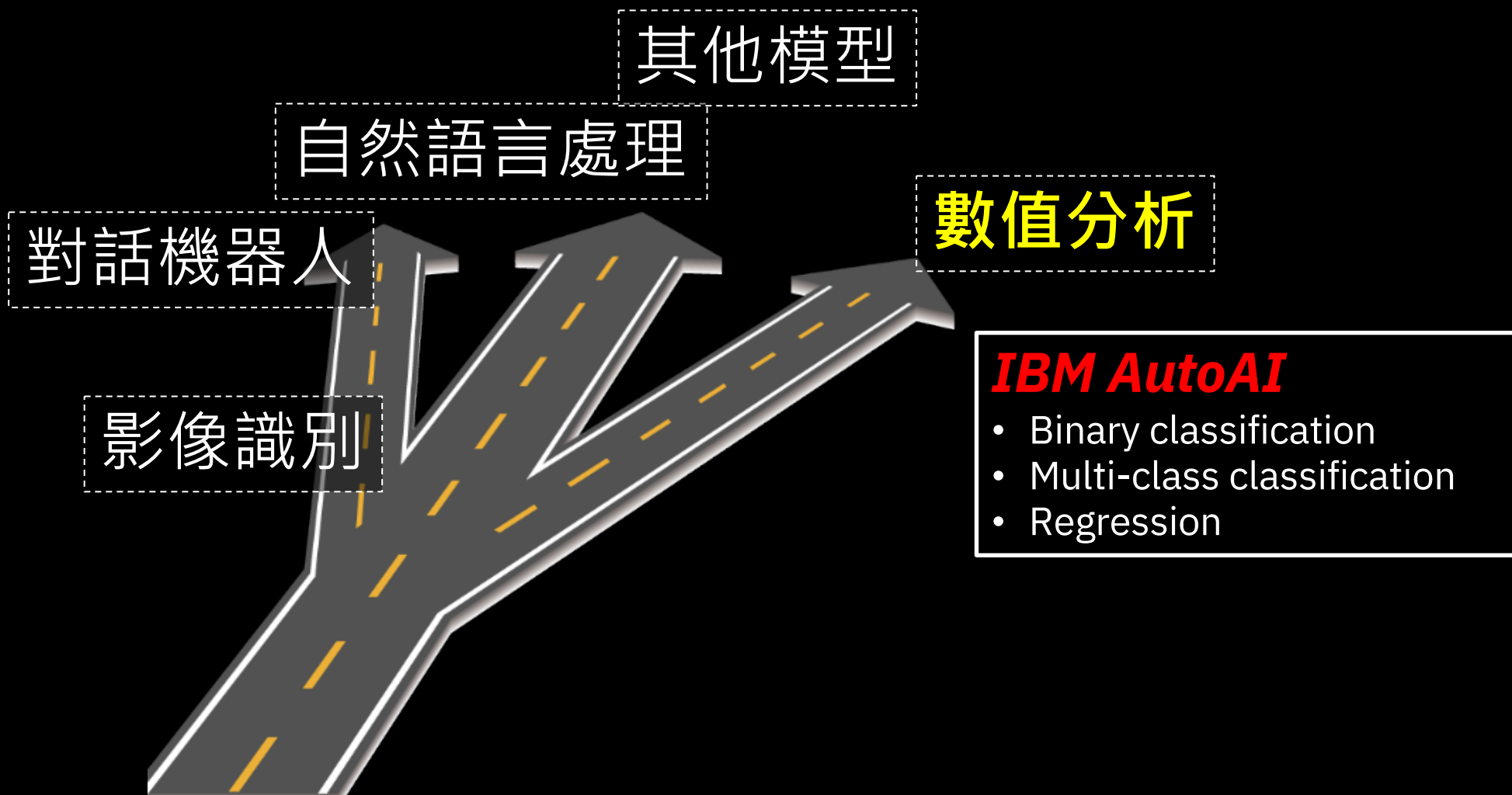


- Watson Studio
- Watson Machine Learning
- Watson Knowledge Catalog
- Watson APIs
- Watson OpenScale
- Watson Assistant & Discovery



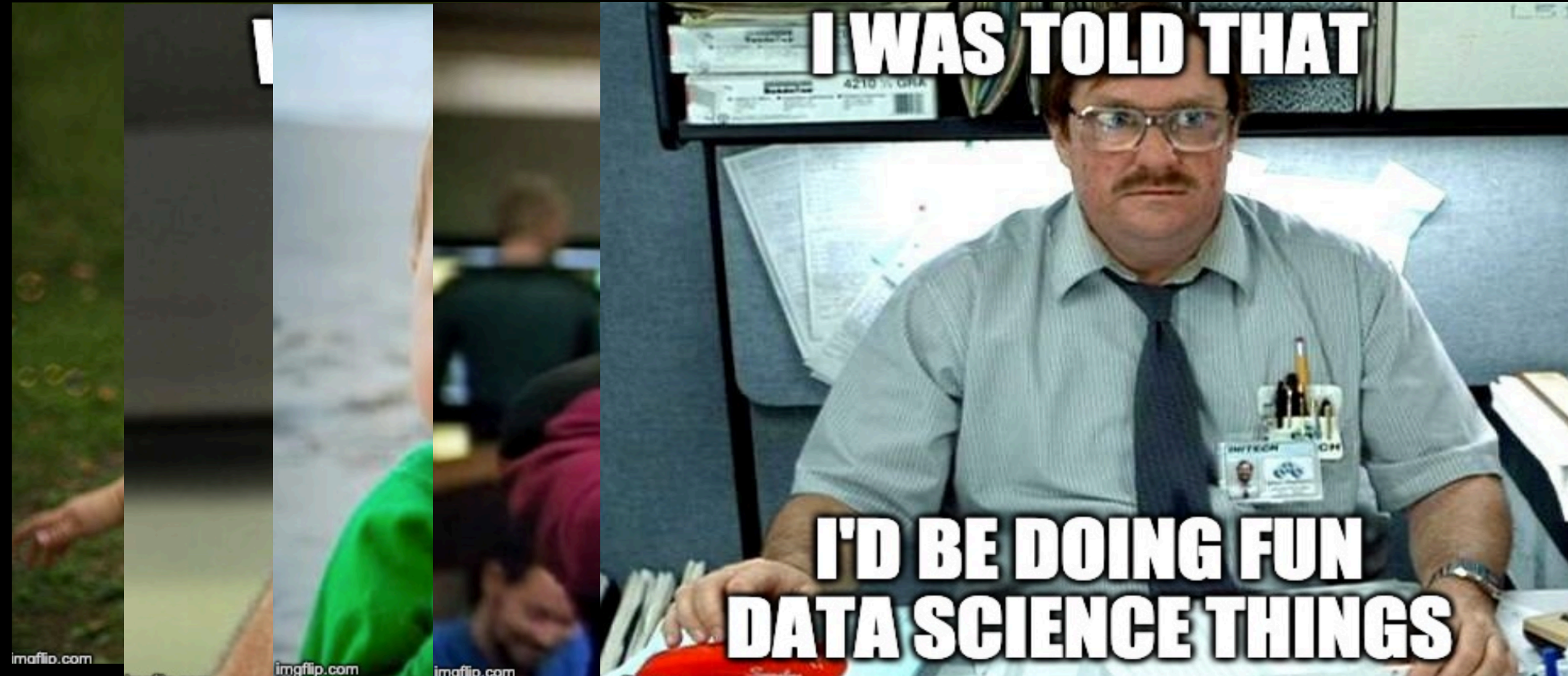
Path of AI Journey

From issues to solutions

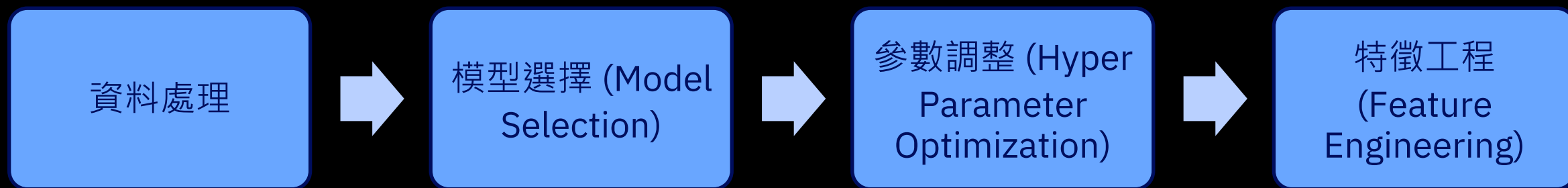


Data Scientist

Typical model building & Deployment path



From Manual to Auto AI



IBM Watson: AutoAI



Pipeline leaderboard

[Compare pipelines](#)

Ranking based on:

ROC AUC (Optimized)

Rank	Name	Estimator	ROC AUC	Enhancements	Build time
> ★ 1	Pipeline 3	Gradient boosting classifier	0.999	HPO-1 FE	04:05:41
> 2	Pipeline 4	Gradient boosting classifier	0.999	HPO-1 FE HPO-2	00:55:10
> 3	Pipeline 1	Gradient boosting classifier	0.999	None	00:08:34
> 4	Pipeline 2	Gradient boosting classifier	0.999	HPO-1	00:18:43

IBM Watson: AutoAI new visualization

IBM Watson Studio

My Projects / try / AI

Rank by: Root Mean Squared Error (RMSE) (Optimized) | Score: Cross validation | Holdout

Relationship map

Prediction column: windDirection_95m

FEATURE TRANSFORMERS

PIPELINES

TOP ALGORITHMS

WIND_2017_500.CSV

Progress map

Swap view

Experiment complete ✓

4 PIPELINES GENERATED

4 pipelines generated from algorithm. See pipeline leaderboard below for details.

Time elapsed: 9 minutes

[View full log](#)

AutoAI: Feature Importance

My Projects / try / Wine Regression

← Back to Wine Regression

RANK 4 | Pipeline 4 ▾

RMSE (Optimized) 0.667

ALGORITHM Extra trees regressor

ENHANCEMENTS HPO-1 FE HPO-2

ExtraTreesRegressor

Feature Importance ⓘ

TARGET : QUALITY

Feature	Importance
alcohol	0.31
NewFeature_10	0.15
NewFeature_5	0.09
volatile aci...	0.08
NewFeature_1	0.08
free sulfur ...	0.05

OneBM: The AutoAI feature

OneBM for Kaggle Home Credit Prediction

<https://www.ibm.com/demos/collection/IBM-Watson-Studio-AutoAI/?lc=null>

- **OneBM enables**

- reducing the lines of code by 100-5000x
- reducing the time to model from 3 months to 3 days
- reducing the number of humans from 10 to 1
- achieving performance comparable to winning Kaggle team with just a single lightgbm model

Solutions	Feature Engineering	Team Members	# lines of code	Modelling	AUC
Ikiri_DS (winner)	Manual	10	25918	complex ensemble	0.805
OneBM (IBM)	Automatic	0	5	lightgbm	0.785
OneBM (IBM)	Semi-automatic	1	145	lightgbm	0.795

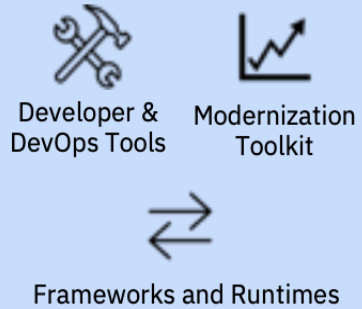
IBM AutoAI 產品簡介 / 教學 / 免費試用

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Cloud Paks – Pre-integrated for cloud use cases

Today, IBM offers clients *the first five Cloud Paks...*

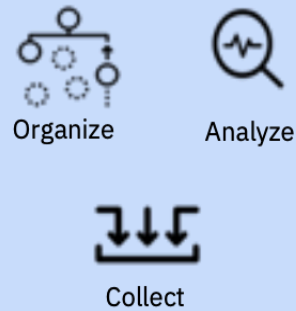
Cloud Pak for Applications



Container platform and operational services



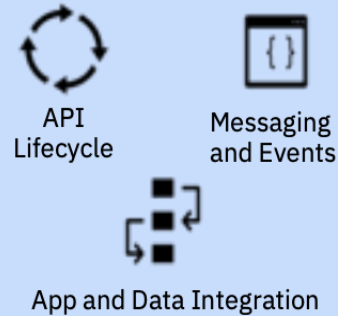
Cloud Pak for Data



Container platform and operational services



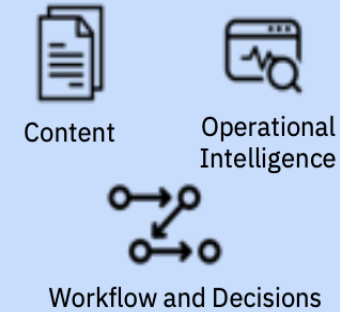
Cloud Pak for Integration



Container platform and operational services



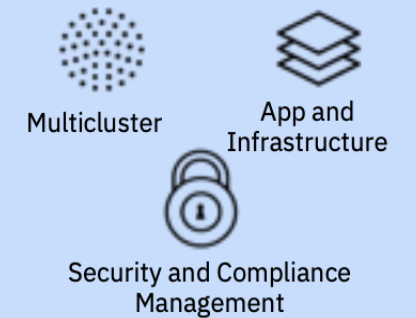
Cloud Pak for Automation



Container platform and operational services



Cloud Pak for Multicloud Management



Container platform and operational services



IBM Cloud

Google Cloud

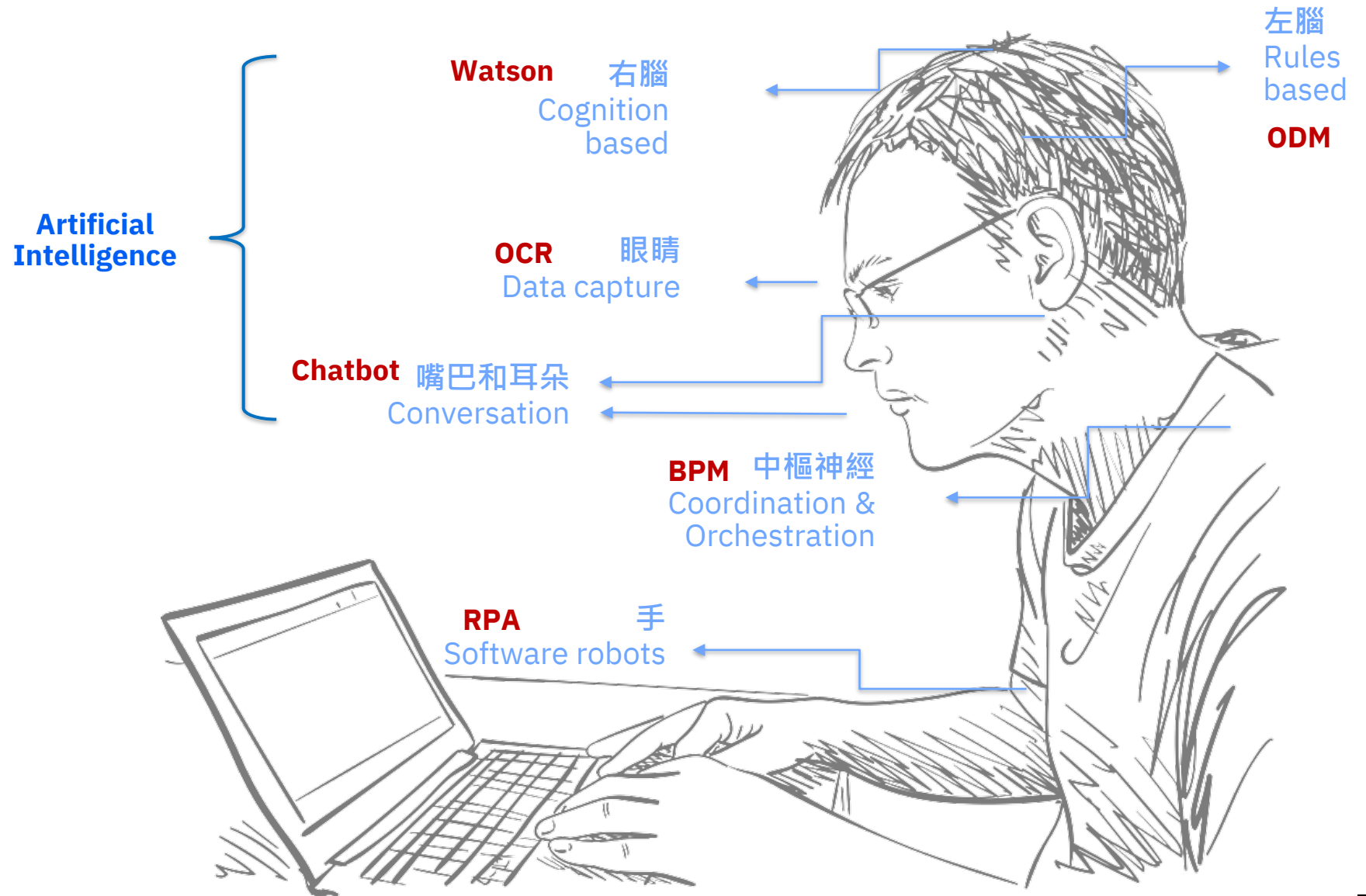
Edge

Private

Systems

仿造人類打造一個 認知機器人

大腦獲取互動(圖像/對話/文字)並處理分析數據，洞察見解，再依據過去的經驗做出預測、依邏輯合理地推理，做出最終決策，進而觸發一連串的行動



AI 是否會取代我們的工作？不，未來是人機協作時代



Thank you ありがとう 謝謝

