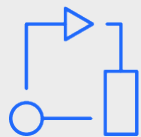# Watson IoT Platform

Harnessing your own Industrial IoT data and applying AI can help you unlock new business value.

Create new products and services

Improve quality, deliver faster time to market and increase revenue

Maximize operational efficiencies

Optimize performance, to lower costs, increase output, maximize utilization

Launch new business models

Capitalize on new opportunities and generate new revenue streams

Enhance the customer experience

Personalize customer experiences and generate insights into customer needs

We bring together
the best of IBM:

AI-powered portfolio

Applying AI to the data that enables you to generate new insights and patterns and learn continuously from every single moment in your company's day.

Industry and domain expertise

IBM Services is the world's largest business and technology service provider, helping clients develop unique IoT strategies and plans, based on deep industry expertise.

Trusted security and dedication to privacy

IBM's solutions and infrastructure are optimized to protect your and your customer's data, the insights you glean from them—and your business itself.

End-to-end global solution delivery

As a highly experienced, full spectrum player with immense resources, IBM and our extended business partner ecosystem provide end-to-end implementation services.

Open and flexible solutions

Our solutions are extendable, customizable and equipment agnostic, providing a fully integrated view an of all your assets.

We deliver fully integrated Industrial IoT solutions.

Core business needs	Software & Systems Engineering	Enterprise Asset Management	Facilities Management	AI Assistants
	Time to Revenue Quality Traceability	Availability Performance Asset Lifecycle Optimization	Cost Optimization Space Utilization / Revenue Total Cost of Ownership	Customized Experience Loyalty and Engagement Revenue Growth

How IBM can help	Software & Systems Engineering	Enterprise Asset Management	Facilities Management	AI Assistants
	– Agile Software Development – Requirements Management – Model-based System Engineering – Compliance Management – Quality Management	– Enterprise Asset Management – Asset Performance Management – MRO Inventory Optimization – Production Quality Insights – Production Optimization – Worker Safety Insights	– Facilities and Lease Management – Building Insights – Facilities Optimization	– Watson Assistant for Industries – Watson Assistant for Automotive – Watson Assistant for Hospitality

IBM solutions	Continuous Engineering	Maximo	TRIRIGA	Watson Assistant Connected Solutions
Watson IoT Platform	Connect, Collect, Process, Optimize		Tailored insights from AI and analytics	Trust and tracking within a shared Blockchain ledger
IBM Services	Industry, domain and IoT expertise		Industry solutions with pre-integrated AI / Machine Learning capabilities	

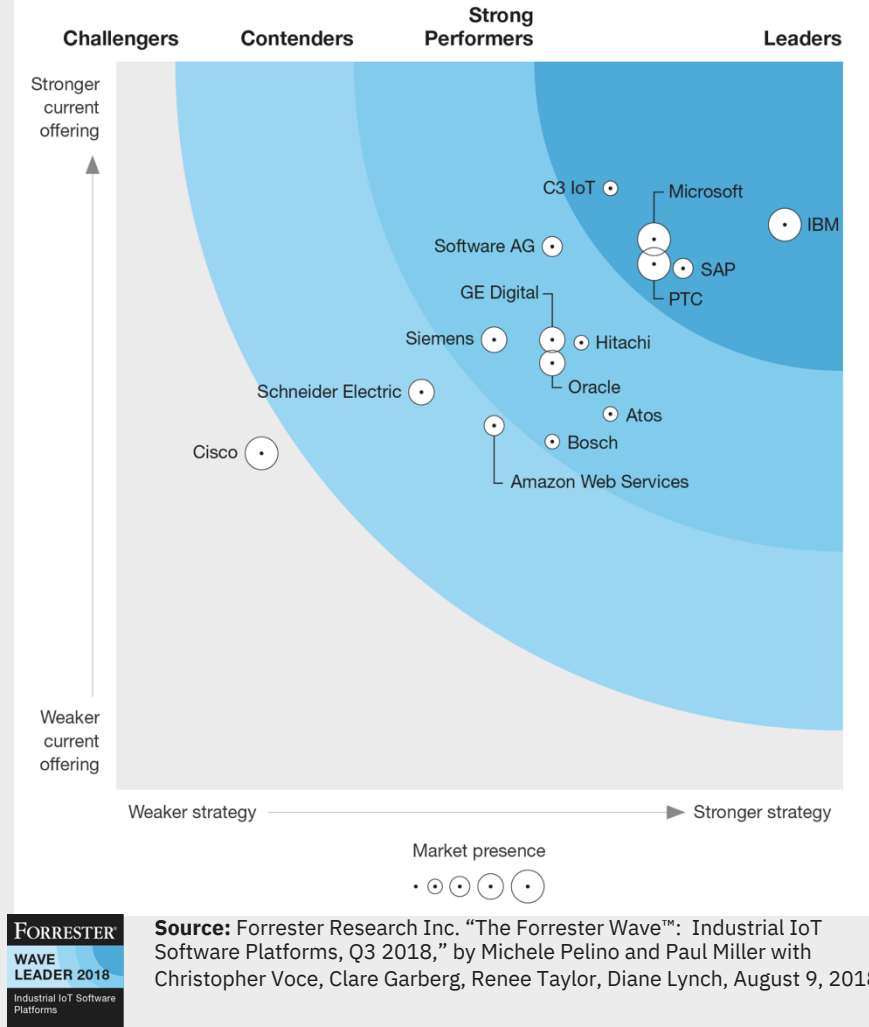# Supported by a flexible and secure Watson IoT platform.

Our IoT platform helps you:

Connect and manage
all your devices, networks, and gateways.

Integrate information
from devices, people, and other sources.

Gain insights
from real-time, AI-driven analytics in the cloud.

Manage risk
with visibility and blockchain-backed IoT data.

Challengers | Contenders | Strong Performers | Leaders

Stronger current offering

C3 IoT
Microsoft
IBM
Software AG
SAP
PTC
GE Digital
Siemens
Hitachi
Oracle
Schneider Electric
Atos
Bosch
Cisco
Amazon Web Services

Weaker current offering

Weaker strategy → Stronger strategy

Market presence

FORRESTER
WAVE LEADER 2018
Industrial IoT Software Platforms

Source: Forrester Research Inc. "The Forrester Wave™: Industrial IoT Software Platforms, Q3 2018," by Michele Pelino and Paul Miller with Christopher Voce, Clare Garberg, Renee Taylor, Diane Lynch, August 9, 2018

Watson IoT Platform is a foundation for our industry solutions and IoT business use cases

IoT Industry Solutions

Enterprise Asset Management	Production Quality Insights	Worker Insights	Facilities Optimization	Building Insights	Facilities Management
Asset Performance Management	Production Optimization	Inventory Optimization	Watson Assistant Solutions	Continuous Engineering	

Watson IoT Platform

Integrated managed service with SLAs and unified per device pricing
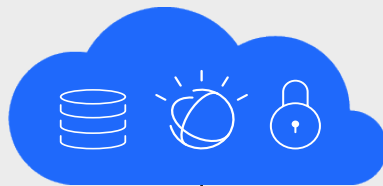
Connection Service
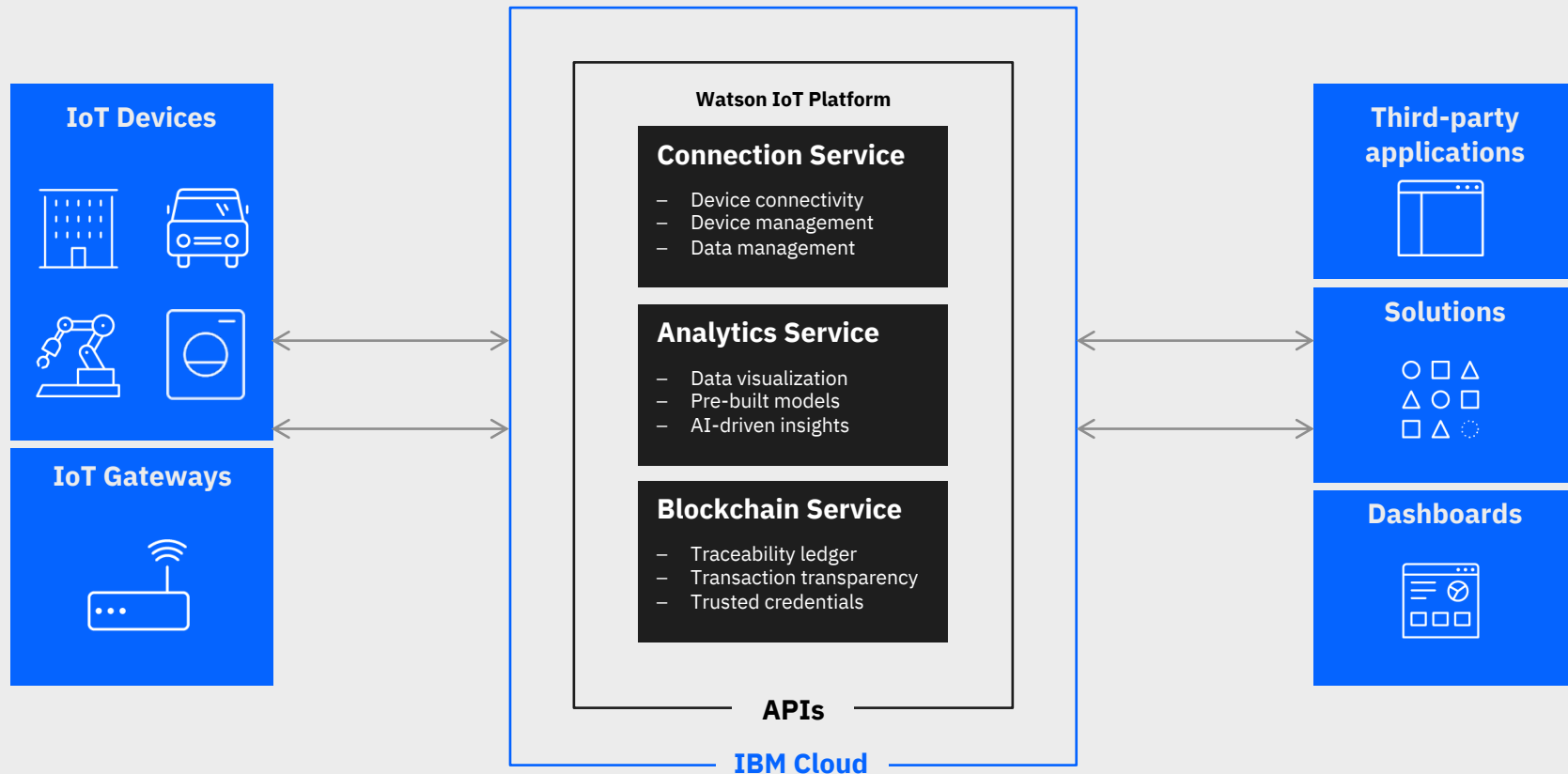Securely connect and store

Analytics Service
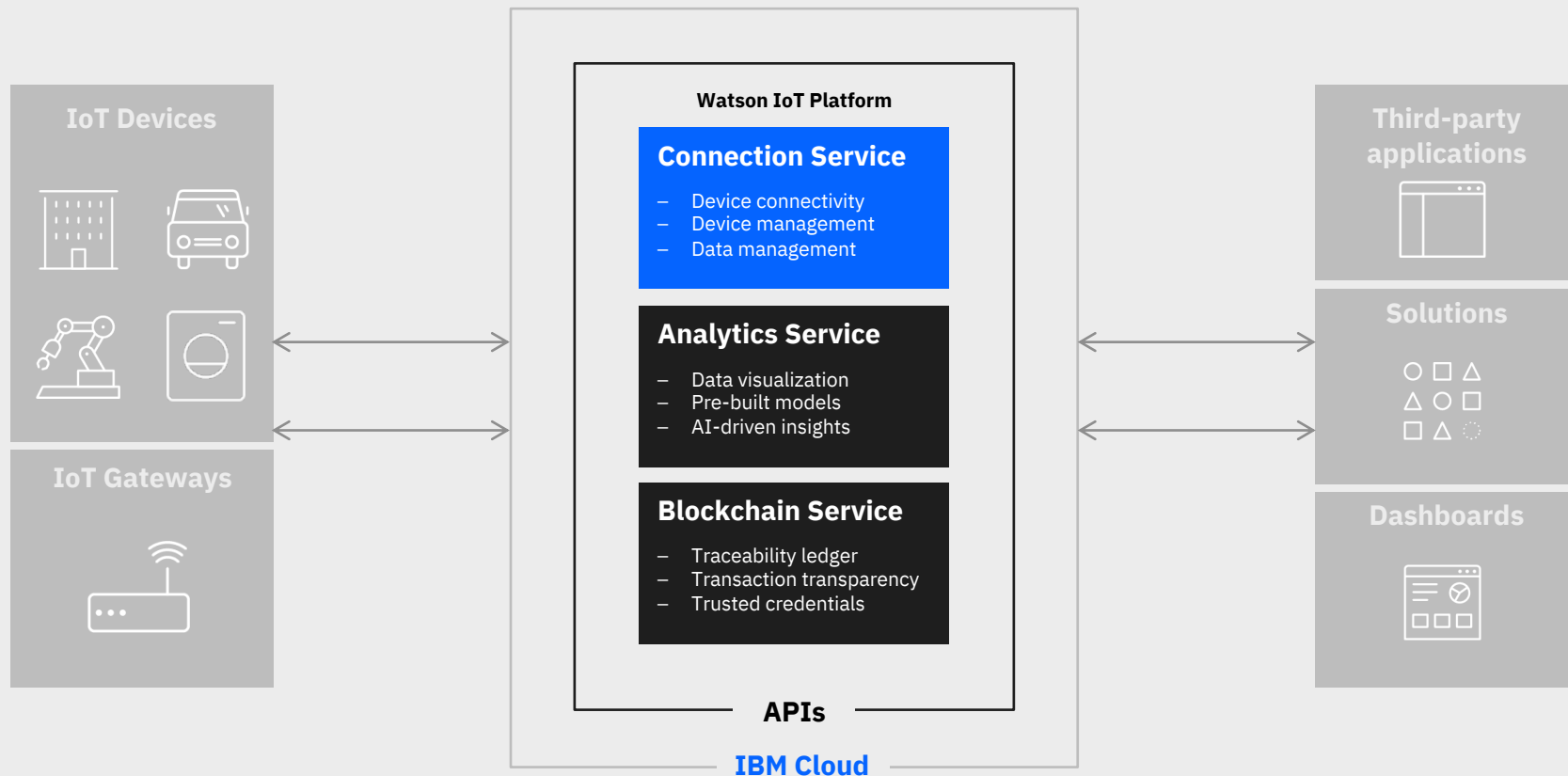Explore AI-driven insights

Blockchain Service
Govern and deliver

How the Watson IoT Platform works.

IoT Devices

IoT Gateways

Watson IoT Platform

Connection Service
- Device connectivity
- Device management
- Data management

Analytics Service
- Data visualization
- Pre-built models
- AI-driven insights

Blockchain Service
- Traceability ledger
- Transaction transparency
- Trusted credentials

APIs

IBM Cloud

Third-party applications

Solutions

Dashboards

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Watson IoT Platform Connection Service

Secure, scalable connectivity and integration for the IIoT

Open standard based communication for IoT

MQTT

Lightweight, efficient, bi-directional and optimized for IoT

HTTPS

Wide reaching and secure to reach more devices

Secure device registry

- Device properties and metadata
- Security Credentials
- Connection status

Industrial Integration

IBM Integration Bus

Manufacturing pack integrates with OPC UA/Classic and OSI PiServers

Telit Devicewise

Connect to PLCs, MES, ERP, and see the data in the Watson IoT Platform

Fluke Connect2Assets

Bring PLC and SCADA data directly to Watson IoT Platform and/or Maximo

Watson IoT Platform Connection Service

Flexible device and system management for your IoT devices and applications

Device Management

Flexible device management console provides a preconfigured means to send events such as device reboot, factory reset, or custom device functions such firmware management and upgrades.

Gateway Management

Extra functionality and control with gateways as first class type, enabling single connection actions, automatic registrations, and device management on attached devices as separately addressable entities

Platform of Platforms

Watson IoT Platform can be integrated with other platforms including 3rd party device and network management platforms and enable system management with specialized services such as AT&T Control Center, Jasper, Orange SIM
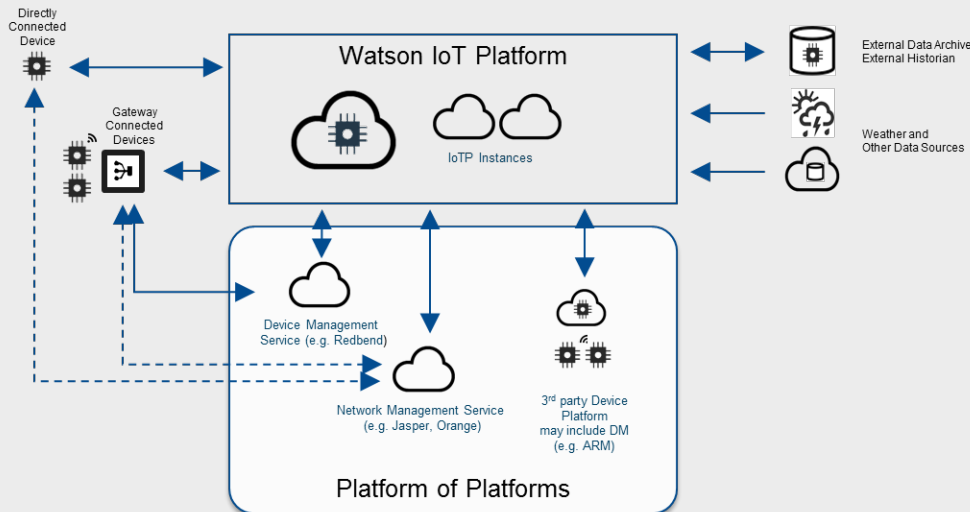
Watson IoT Platform Connection Service

Complete data management for your IoT data

Transform & Cleanse

Use devices schemas and logical interfaces to insulate applications from variability across device types, sensor models, variants and versions
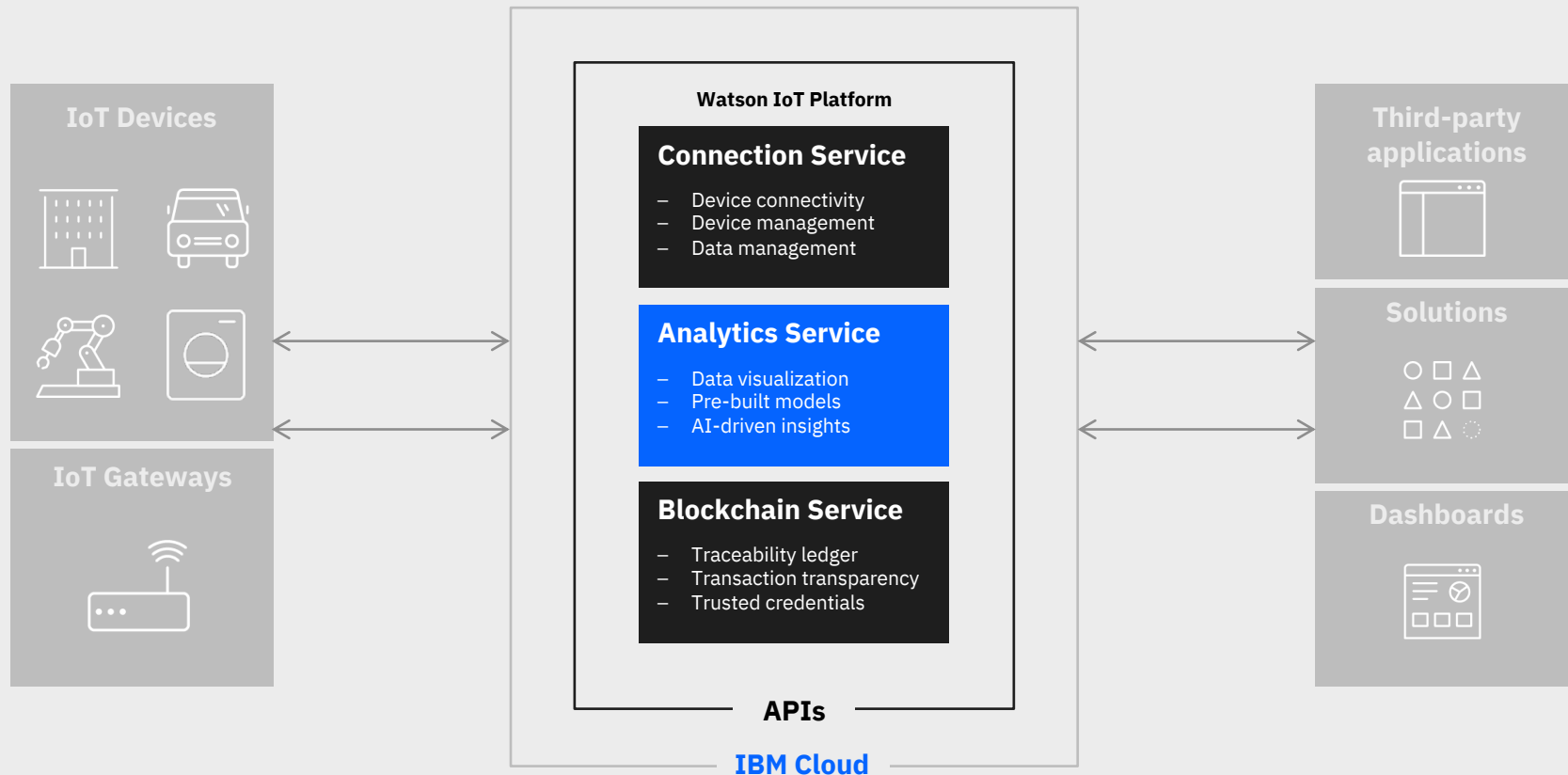
Store & Archive

Use **Data Lifecycle Management** to optimize storage utilization and reduce costs, whilst retaining flexibility.

Data lifecycle management takes care of limiting the growth of data in the various data stores within the solution. Without this, the data size would continually increase, and associated costs would grow. Data Lifecycle automatically purges older data and moves long term data to low cost storage.

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Watson IoT Platform Analytics Service

Explore, visualize and gain insight from your data with ***AI driven analytics***

Explore and
visualize data
patterns of your
IoT data

Enrich data with
analytic functions
that are focused
on business KPIs
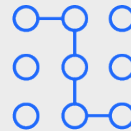
Extend catalog
with advanced and
custom models
including AI

Deep Learning and Machine Learning
Combine supervised and unsupervised learning along
with machine learning libraries and optimization
algorithms to improve operations, performance, and KPIs

Semantic Reasoning
Visualize how data relate to each other through
knowledge graphs with semantic reasoning

*Advanced capabilities available through industry solutions

Watson IoT Platform: Analytics

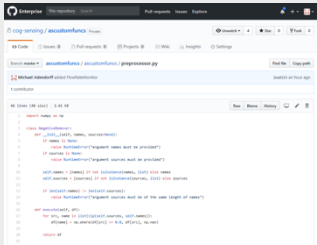*Explore, visualize and gain insight from your data with AI driven analytics*

Connect → Merge → Augment/ cleanse → Aggregate/ Enrich → Store → → Expose → Consume →

Analytics Service

Connection Service

Data lake

Analytics configuration and execution

Analytics Function Catalog

Applications

Dashboard

Solutions

Explore / Discover → Develop → Extend →
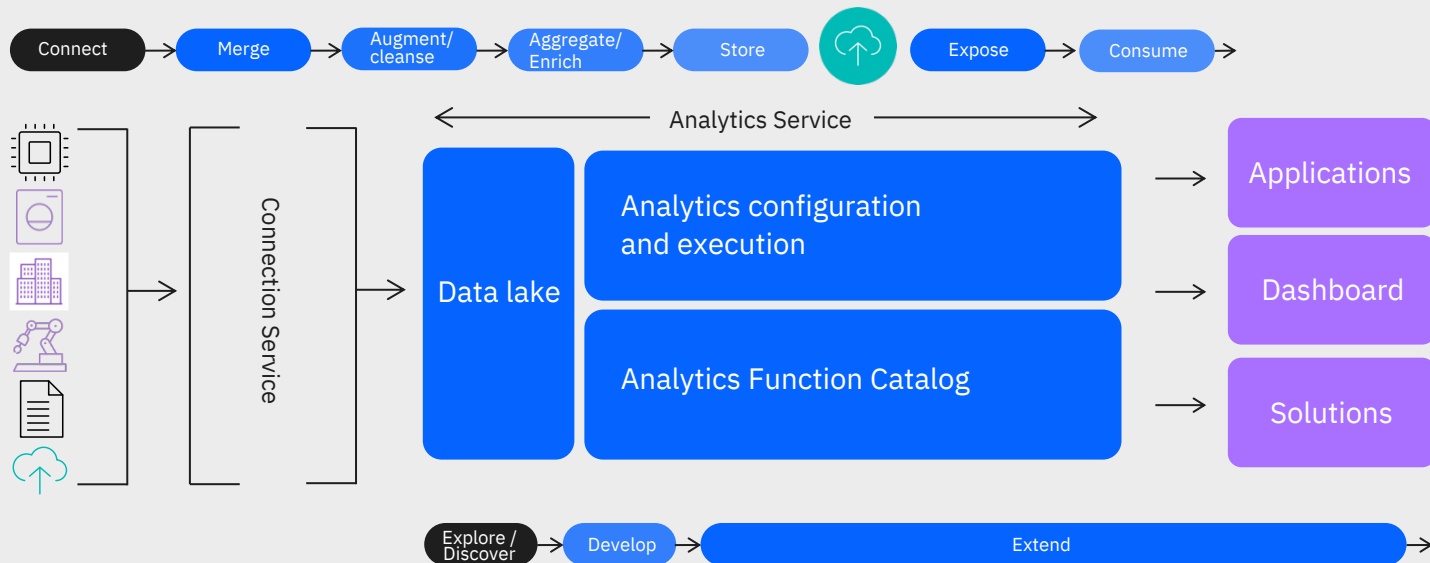
Watson IoT Platform: Analytics

Explore, visualize and gain insight from your data with AI driven analytics

2) Browse Entity Types
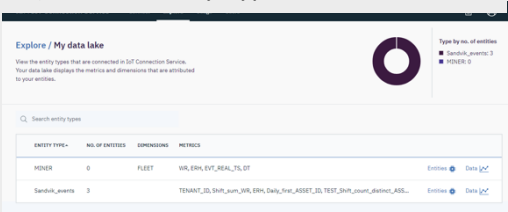
3) Use Function
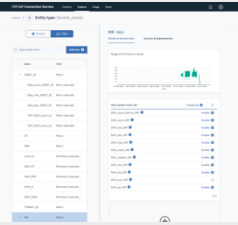
6) Register Function
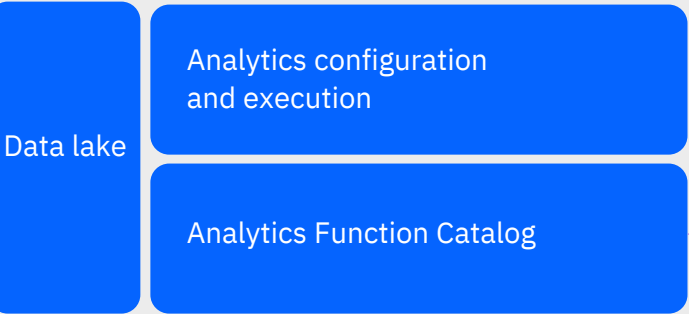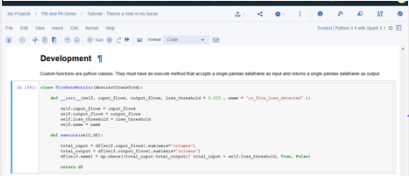
Analytics configuration and execution

Data lake

Analytics Function Catalog

5) Add To Repo

1) Add Data to Datalake

4) Author New Function

How the Watson IoT Platform works.

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- Traceability ledger
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- Trusted credentials

APIs

IBM Cloud

Third-party applications

Solutions

Dashboards
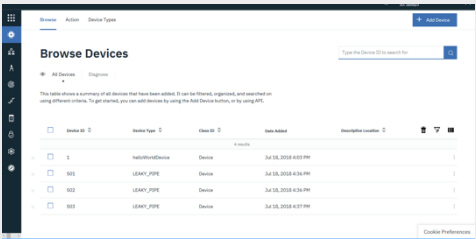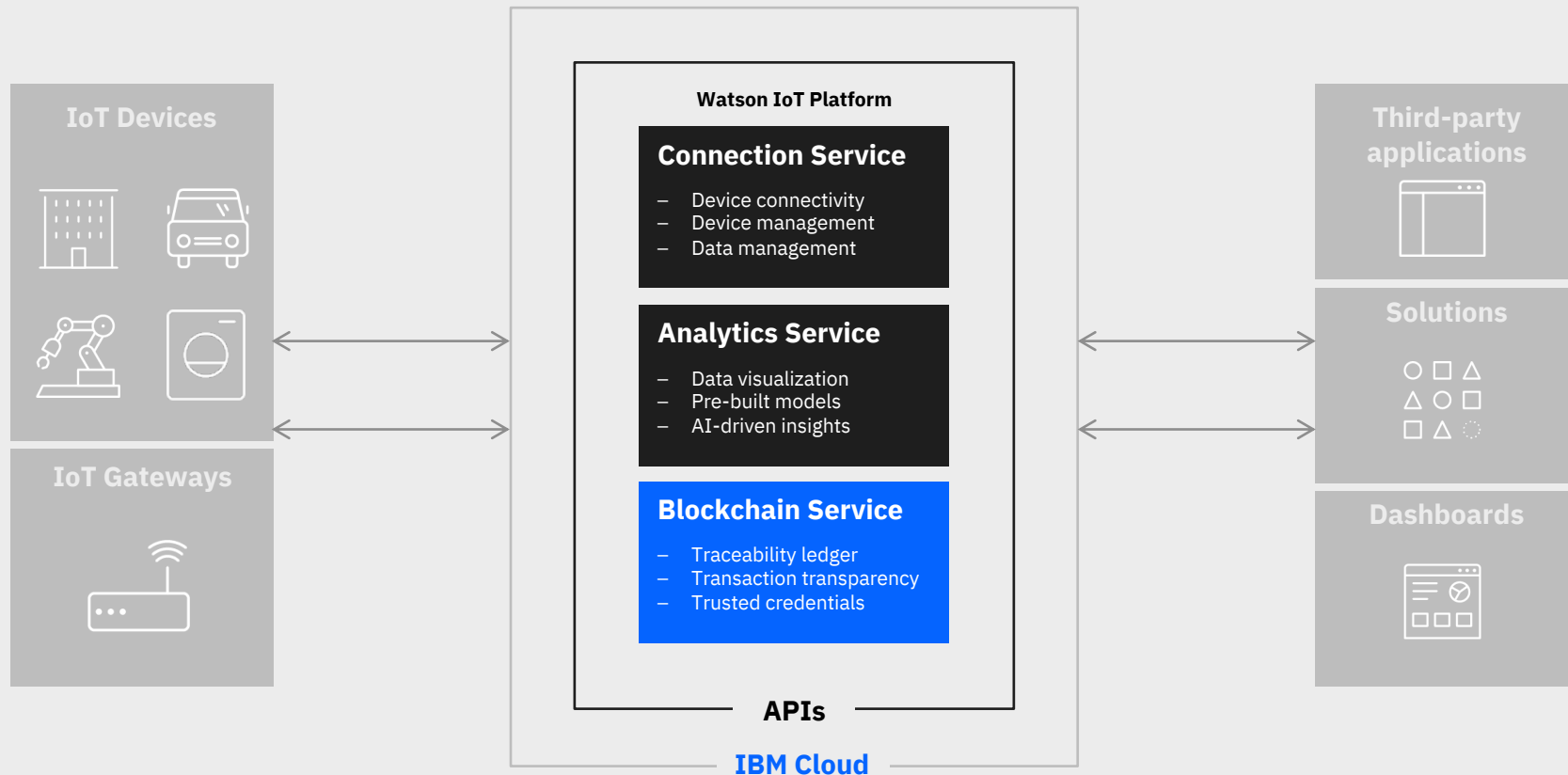
Watson IoT Platform Blockchain Service

Leader in *Industrial Blockchain*

Watson IoT Platform Blockchain Service leverages IoT, asset, and environment data to validate business conditions in a trusted, immutable blockchain ledger – improving visibility, speed, security, and trust in business networks

Device, Asset, and Environment Data	IoT Platform Blockchain Service	Industrial Blockchain Networks
Location	Security & Identity	Provenance & Origin
Temperature	Data Management	Manufacturing
Performance	Analysis & Insights	Supply Chain
Access / Unlock	Alerts and conditions	Maintenance & Operations
Asset Inspection Due	Asset Management	EAM Lifecycle
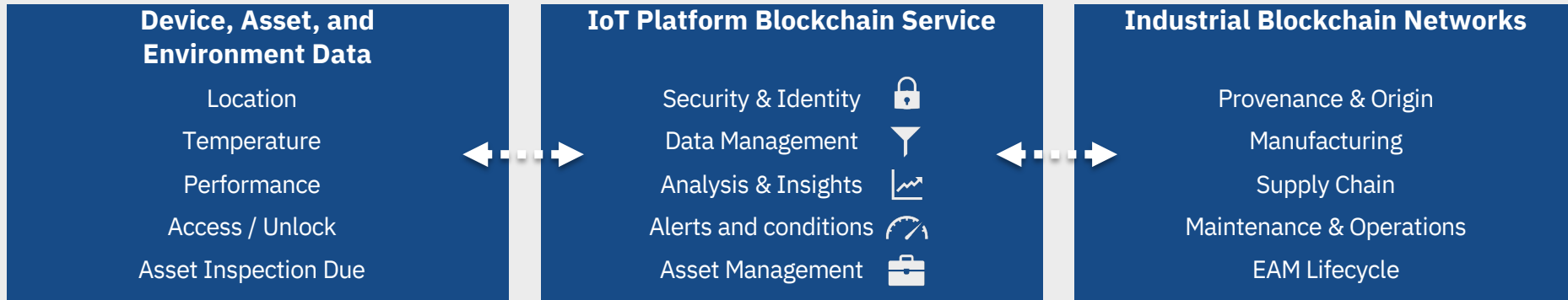
Boeing improves operations with IBM Blockchain & Watson IoT IoT and analytics based predictive maintenance for manufacturers, mechanics, and airlines.

Ford Leverages IBM Blockchain & IoT to improve warranty service, reduce counterfeit parts, and increase production efficiency with vehicle parts provenance tracking.

Golden State Foods increases food safety standard with IBM Blockchain and Watson IoT: Delivering fresh beef visibility, safety, and efficiency.

Watson IoT Platform:

Advanced application enablement, simulation and testing

Solution Foundation

Watson IoT Platform enables the capabilities of all Watson IoT Industry solutions and applications and serves as its foundation platform

Extensive APIs

RESTful and Messaging APIs with extensive libraries and examples, plus SDKs and recipes to connect to apps, services, and external systems

Visual Integration

Watson IoT Platform provides NodeRED for visual integration of IoT flows. We provide over 1700 templates of prebuilt integrations in NodeRED flows

IoT simulation

Utilize built-in device simulator or NodeRED flows to rapidly prototype and test your IoT devices, applications and integrations before deploying to production

Watson IoT Platform:
*Enabling **multi-modal digital twin***

Platform Thing Model

Aggregate multiple devices into logical objects so they can be managed as a single thing

Example: Multiple sensors aggregated in to a single boiler 'Thing model'

Many devices
Single asset

Device-to-Cloud
Interfaces

Cloud-to-App
Interfaces

Rules, Applications
& Dashboards

Temperature

Flow

Power

temperature : Number
power : Number
flow : Number

api

ACME-BOILER

Boiler

IoT Thing Model

Operational Models

IBM Prescriptive Maintenance

Predictive Models

Asset Models

IBM Maximo/TRIRIGA

DIGITAL TWIN KNOWLEDGE GRAPH

IBM Continuous Engineering

Engineering Models

PLM + CAD Models

Aras and other PLM systems

Watson IoT Platform is improving outcomes in key industries

Manufacturing

L'ORÉAL
increased 10% equipment effectiveness (OEE) and 20% operational efficiency

SANDVIK
increased production by 10% by predicting issues and avoiding downtimes

Whirlpool
improved quality by 50% and achieve 90% on time delivery

Transportation

Port of Rotterdam
Saving up to $80,000 a day in shipping costs

SNCF
Reduce maintenance cost of tracks and trains by 10X

INL — Idaho National Laboratory
Improving traffic and predicting road conditions across 300 miles of remote roads

Facilities

ISS
Transformed the management of more than 25,000 buildings worldwide

TESCO
Lower energy costs by up to 20%, which could realize savings of $25 million a year

KONE
remotely monitors and optimizes over 1.1 million elevators, escalators, doors, and turnstiles worldwide
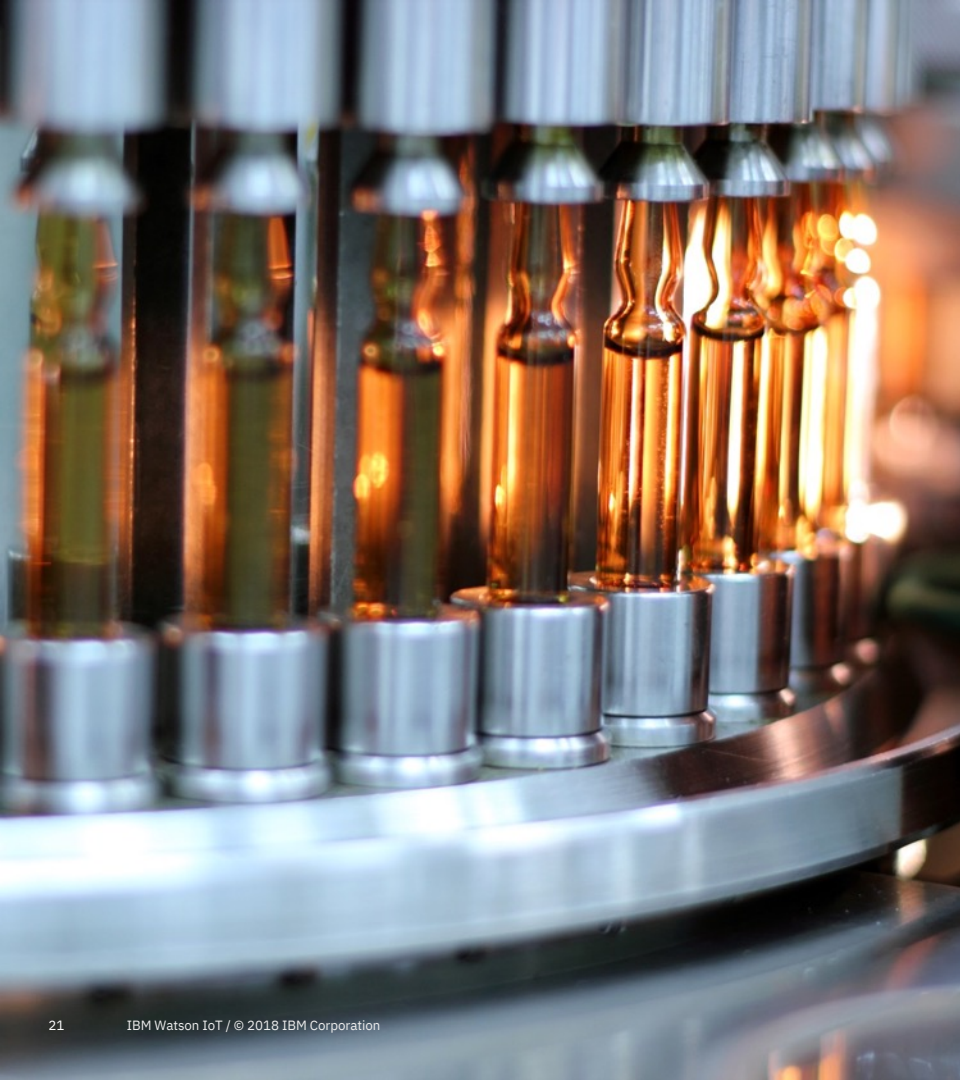
Case Study
L'Oréal

L'ORÉAL

Cosmetic and beauty leader L'Oréal needed to improve efficiency and productivity of production lines— to operate better, faster, and cheaper with quality excellence. Using IBM Watson IoT and GBS services, L'Oréal was able to optimize operations with connectivity services and analytics.

Impact

- Improved OEE with +10%
- Improved productivity with +20%
- Reduction in waste

Watch the video >

Case Study
Port of Rotterdam

Like driverless cars, connected ships operate autonomously and communicate with each other to avoid the risk of a collision. In collaboration with the IBM Watson IoT team, the Port of Rotterdam is updating its infrastructure so that it can host autonomous ships by 2025.

Impact

- Up to $80,000 a day in savings
- New customers using the port
- Faster, more accurate manufacturing
- A clear view of the best time for ships to dock

Watch the video >

Case Study Sandvik

Mining and rock technology company Sandvik needed to improve performance of their rock drilling, cutting, crushing, and hauling equipment. Using IBM Watson IoT and GBS services, Sandvik was able to optimize productivity with predictive maintenance.

Impact

- Reduce the impact of breakdowns and production loses by 10%
- Increase safety
- Improve productivity

Watch the video >

Watson IoT Platform:
Privacy and Security by design

IBM: A global leader in enterprise security

- 8000+ employees, 133 countries, 3,500+ security patents and 20 acquisitions since 2002

IBM Cloud Security and Privacy focus

- Proactive protection: Multi-layer Security Strategy
- IBM Data Policy – Customers owns all Data
- Secure Device to Cloud communication via TLS and device certificate support
- Resource level access control for administration and device control
- Support integration with QRadar for displaying IoT device status

IBM provides Chip to Cloud IoT Security through Partners, Solutions and IoT Platform

- Collaboration with silicon producers and chip designers (ARM, NXP, WISeKey)
- Expertise in Security in IoT, for example **IBM X-Force Red penetration testing**
- Secure by design Watson IoT Platform with Advanced Security policies and dashboard

IBM is the Leader in IoT Security

- Leadership Presence in IoT Security Foundation, IoT Cybersecurity Alliance, and other IoT industry bodies
- IBM Developed & Published IoT Security Best Practices for device and solution creators
- IBM Surveyed 700 Industry Executives: identified 9 practices that differentiate top IoT security performers

Five indisputable facts
about IoT security

Some concepts have long been accepted as universal truths. Among the most familiar of those: Sir Isaac Newton's laws of motion, which date back to the 17th century. Today, however, there are new principles defining how technologies will behave in specific situations. For example, the proliferation of Internet of Things (IoT) devices has generated serious concerns for IT security. And that's led us to identify five indisputable facts you need to know about IoT security.

1 Devices will operate in hostile environments
Unlike the mobile phones, tablets and laptops we use and carry with us virtually every day, IoT devices often operate without human supervision. So it's important that IoT devices, such as remote office temperature controls, must be both rugged and resistant to physical tampering. At the same time, they need to be able to recover from an attack and fail safely by degrading to an acceptable processing level—all without requiring human involvement. While cognitive security solutions can handle many threats and attacks, administrators of IoT deployments also need the visibility and control to deal with exceptional situations.

2 Software security will degrade over time
All software in use must be kept updated. And when it comes to IoT sensors and devices, the patching process typically takes place in very distributed, highly uncontrolled environments—at an enormous scale. But even if all known vulnerabilities are addressed with the first release, new exposures and vectors for attack will almost certainly be discovered. The risk of attack increases with the length of time the equipment remains in service. That means system defenses will need to be updated repeatedly—for the life of these devices—impacting the supply chain for both software and equipment.

3 Shared secrets do not remain secret
A sizable number of IoT devices come preloaded with identical credentials across multiple devices. Although these default credentials should be changed by users before the devices are made operational, they're often left as is. Default secrets aren't secret. Attackers can use them to take over such devices for unintended purposes, making them vulnerable to sabotage or disruption. By delivering devices that prompt for a mandated password change upon first use, however, manufacturers can help ensure that default credentials can't persist—and that secrets will remain secret.

4 Weak configurations will persist
The default configuration of an IoT device will usually remain in place because it takes thought and effort by users to change it. If the default settings for a given device have access control turned off, for example, it's left up to the owner to take measures to improve that security. Instead, security options should be enabled either by default or as part of an initial setup process, so that users are required to make a conscious decision to remove the default protections.

5 As data accumulates, exposure issues will increase
One of the key business drivers for IoT is the data that's generated from devices and solutions. That puts the spotlight on data security—along with how it's created, used and deleted. Over time, connections between different, seemingly disparate datasets may emerge. IoT devices are accumulating massive amounts of personal and sensitive data, including everything from audio recordings and transcripts to GPS locations and heart rate readings. If the data isn't managed, secured and destroyed when it's determined to be worth less than the risk of holding on to it, the results may lead to loss of privacy and to issues of data ownership—all of which increase the importance of partnering with IoT vendors and solution providers who can be trusted with your data.

Get the facts about
what you can do

To learn more about how IBM can help your organization create a more secure environment for taking advantage of IoT technology, visit: **ibm.com/IoT/security**

IBM

Watson IoT is defining open source and standards

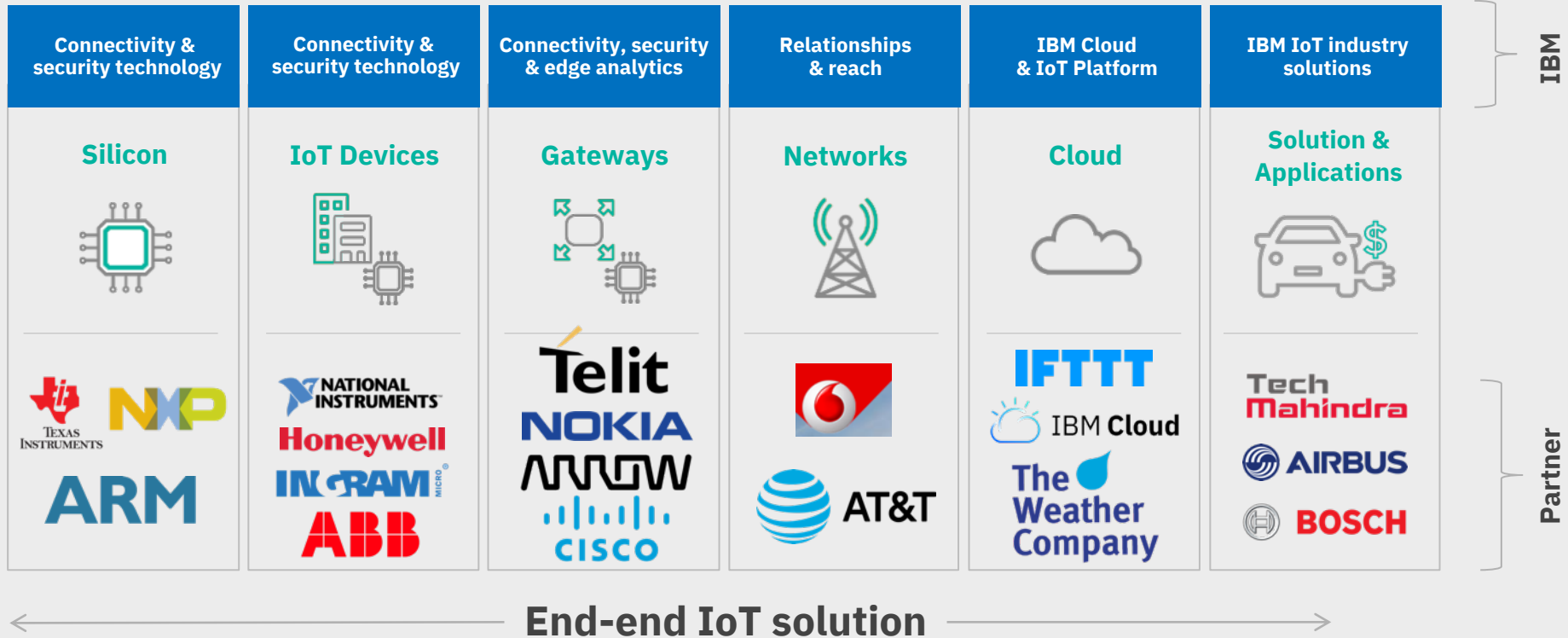# Watson IoT provides end to end solutions with strong industry partnerships across the IoT landscape

Connectivity & security technology	Connectivity & security technology	Connectivity, security & edge analytics	Relationships & reach	IBM Cloud & IoT Platform	IBM IoT industry solutions
Silicon	**IoT Devices**	**Gateways**	**Networks**	**Cloud**	**Solution & Applications**

IBM

Partner

End-end IoT solution

Watson IoT holds a robust delivery partner network

IBM Watson IoT / © 2018 IBM Corporation

Highly Differentiated Watson IoT Platform Pricing :

Easy to Adopt based on business need

Non-Production

Full featured pre-integrated version which enable proof-of-concept and pilot projects to quickly prove out business value for IoT projects

Starts at $500/mo

Capacity limited based on device type:

- Industrial → 3
- Enterprise → 50
- Consumer → 500
- Sensor → 1000

Analytics and Blockchain priced as separate add-on

Full-Production

Full production level offering suitable for enterprise execution. Fully managed ready-to-run IoT SaaS solution with service and support

Priced by number of devices based on device type:

- **Industrial → $$$$/device/mo**
- **Enterprise → $$$/device/mo**
- **Consumer → $$/device/mo**
- **Sensor → $/device/mo**

Analytics and Blockchain priced as separate add-on

Watson IoT Platform is....

An Integrated,	We've done the work to make sure the component services work together, and keep working together; When a service on IBM Cloud (Bluemix) changes, we take care of any impact to the service
Managed Cloud Service,	We have a dedicated Dev-Ops team looking after the Watson IoT Platform instances 24x7. They know how all the constituent services operate, who to contact for support inside IBM, monitor for outages and disruptions, take actions to mitigate, communicate pertinent information.
Built on....	
1) IoT connectivity technology,	The connectivity and device management is at the heart of an IoT solution - collecting data from devices in a scalable and secure way, but on it's own the platform is not sufficient to build a solution.
2) IoT data management,	By far the most challenging and expensive part of an IoT Solution is the storage, processing and archival of data. Watson IoT Platform has a built-in Data Lifecycle Management process that is designed to optimize storage utilisation and reduce costs, while retaining flexibility to meet a customer's specific needs.
3) "IoT pattern" of IBM Cloud services,	Based on scores of customer engagements, we have derived the core capabilities that the majority of IoT use cases require. We have flexibility to adjust the services and capacity that we provide to match the customer's needs. We are constantly working on extending the solution and it's easy for customers to add their own extensions.
with Analytics and Blockchain services,	Leveraging data to drive insights and optimization is the core opportunity of IoT. Watson IoT Platform Analytics Service enables customers to explore and visualize data patterns, enrich data with analytic functions, and extend with customer models and analytics. Watson IoT Platform Blockchain Service enables real time IoT data and analytics to be incorporated into secure blockchains.
which is priced per device	Customers want to understand how a solution is going to scale up in scope, capacity and price. We remove the complexity of the service calculation by providing a forecast that is tied to device growth.
and "ready to run"	We take care of the setup, instantiation, configuration, and ongoing operation of the solution. A customer doing this for themselves would need to learn enough about each service, how to set it up, integrate and operate before they could start to get value from the solution. Watson IoT Platform provides a foundation that can be used on day 1.

Make your IoT project real

Briefing & Demonstration <1 Day	→	IoT Design Thinking Workshop 5 days	→	IoT Minimal Viable Project Buildup 5 days

• Discuss Watson IoT Platform technology and capabiltiy • Explore customer business model and potential use cases • Show IoT Platform demo • Validate priority use cases for Discovery workshop	• Workshop based on IBM Design Thinking Methodology • Define requirements and details of priority use case/s • Identify architectural decisions • Define Minimum Viable Project (MVP) • Includes 3 consultants	• Implement Minimum Viable Project (MVP) • Understanding of how to build and manage IoT project • Validation of IoT Platform value • Assessment of optimal IoT industry solution • Includes 4 consultants
Remote or Face to Face	*Face to Face*	*Remote or Face to Face*
Free of charge	*Fee*	*Fee*

Let's get started together

Learn more about Watson IoT Platform and read the Forrester Report

@ibm.biz/ExploreIoTP

See what IoT can do for you. Get started with a POC project

@ibm.biz/BuyIoTP

Get started with a Design Thinking Workshop

Interested in being part of our partner ecosystem? Learn how you can get Ready for Watson IoT