

NTT Group at a Glance

88%
of Fortune
Global 100 choose
NTT Group

275,000
employees
worldwide

Network
coverage in
196
countries
& regions

\$105bn*
in total
revenues

Global
presence in
88
countries
& regions

Ranked
#60
in Fortune
Global 500

Investing
\$2bn
annually in R&D

*As of March 2017

Direction of NTT Group's Global Business

Business transformation partner

Advisory

Transform to hybrid cloud

Hybrid & Multi Cloud infrastructure

Cloud

Data Center

NW/NFV/NI

Platform Based

Accelerate digital transformation

Modular, Standard, and automated solutions

Digital

Cloud SI

Apps Dev.

Business Solutions

Deliver disruptive innovations

Cross-industry Platform, Virtual platform/ecosystem

IoT

Big Data

AI

New Business Models

Full-stack (Inter-linked services, Seamless delivery, One-Stop operation)

Total ICT Management

ITO

AMO

Security

Global footprint

Full-lifecycle

R&D



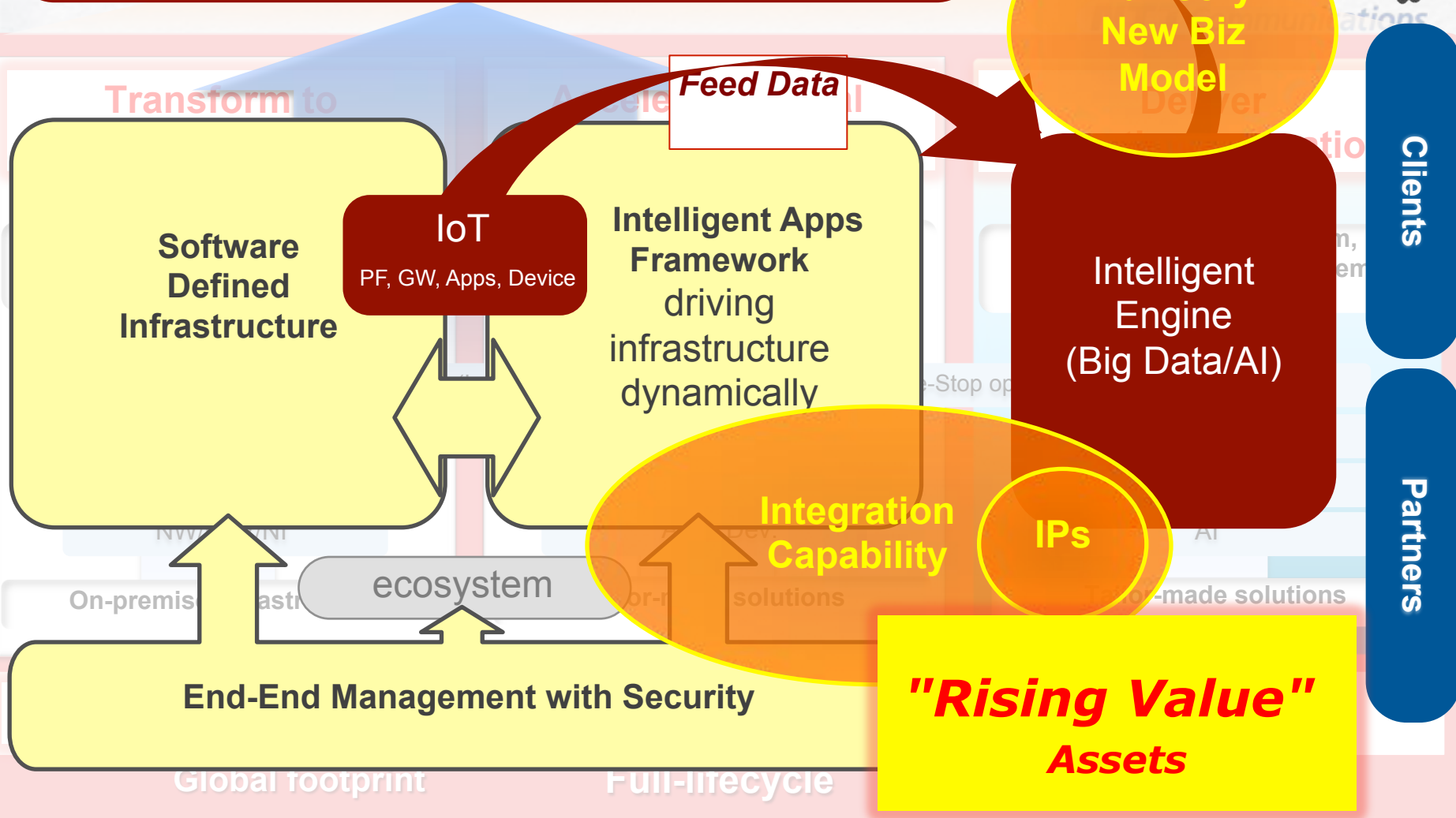
Solutions to drive client's/society's transformation for focused clients, verticals, cross-industries

We are enhancing



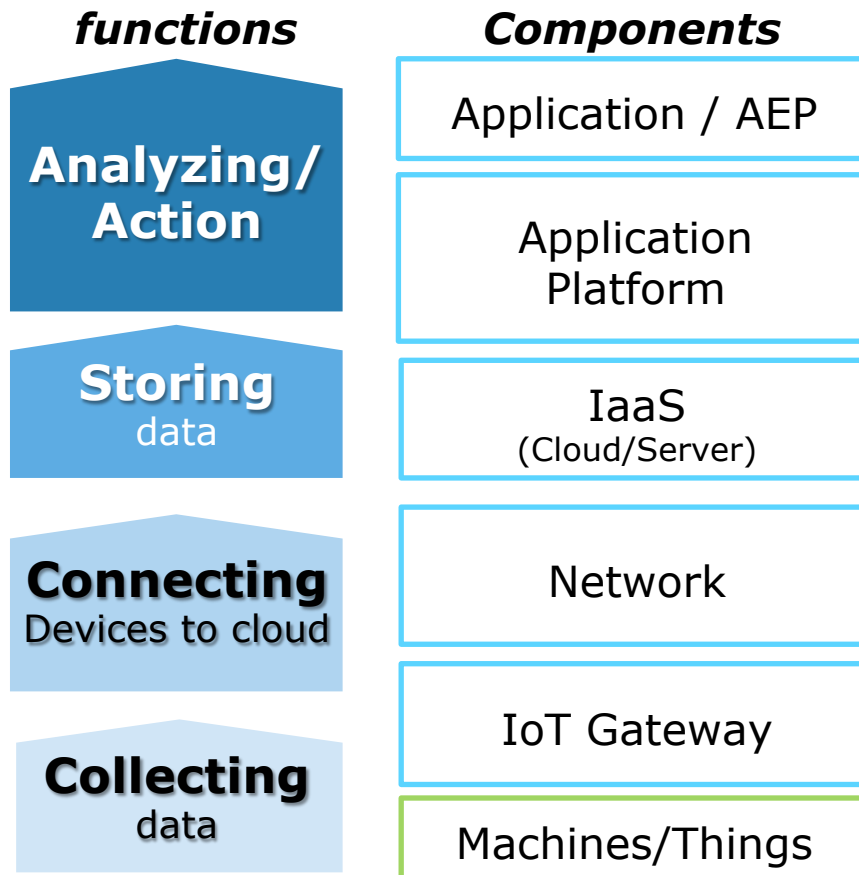
Advisory New Biz Model

Feed Data



Why Now?

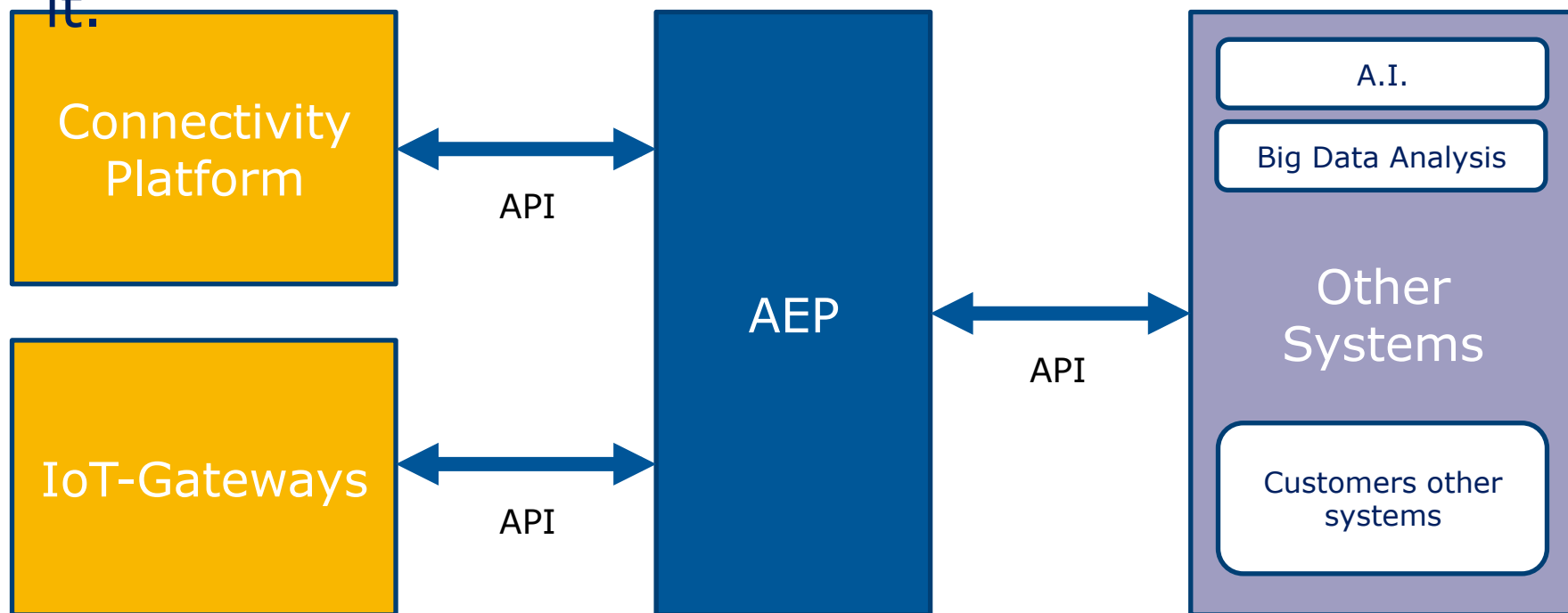
Cost of all IoT components have been going down well in the past few years. It makes enterprises easy to introduce IoT total system for their own business.



However, Integrating the components is the challenge on getting value out of IoT

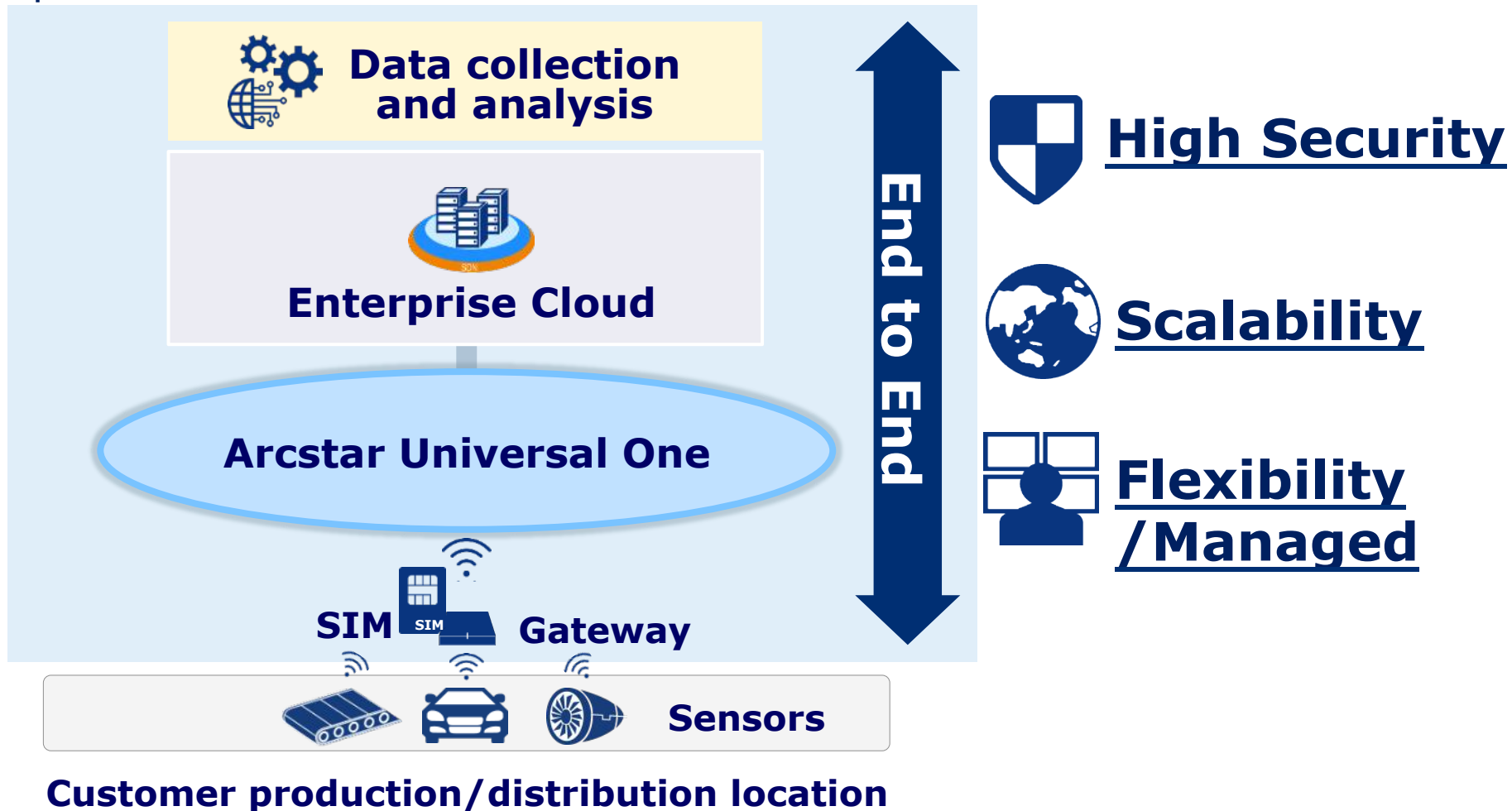
API perfectly fits IoT expansion

Supporting API must be a key value for AEP. The API ecosystem enables flexible expansion of IoT total system. It's not just about connecting things, but connecting to other systems to get value from it.



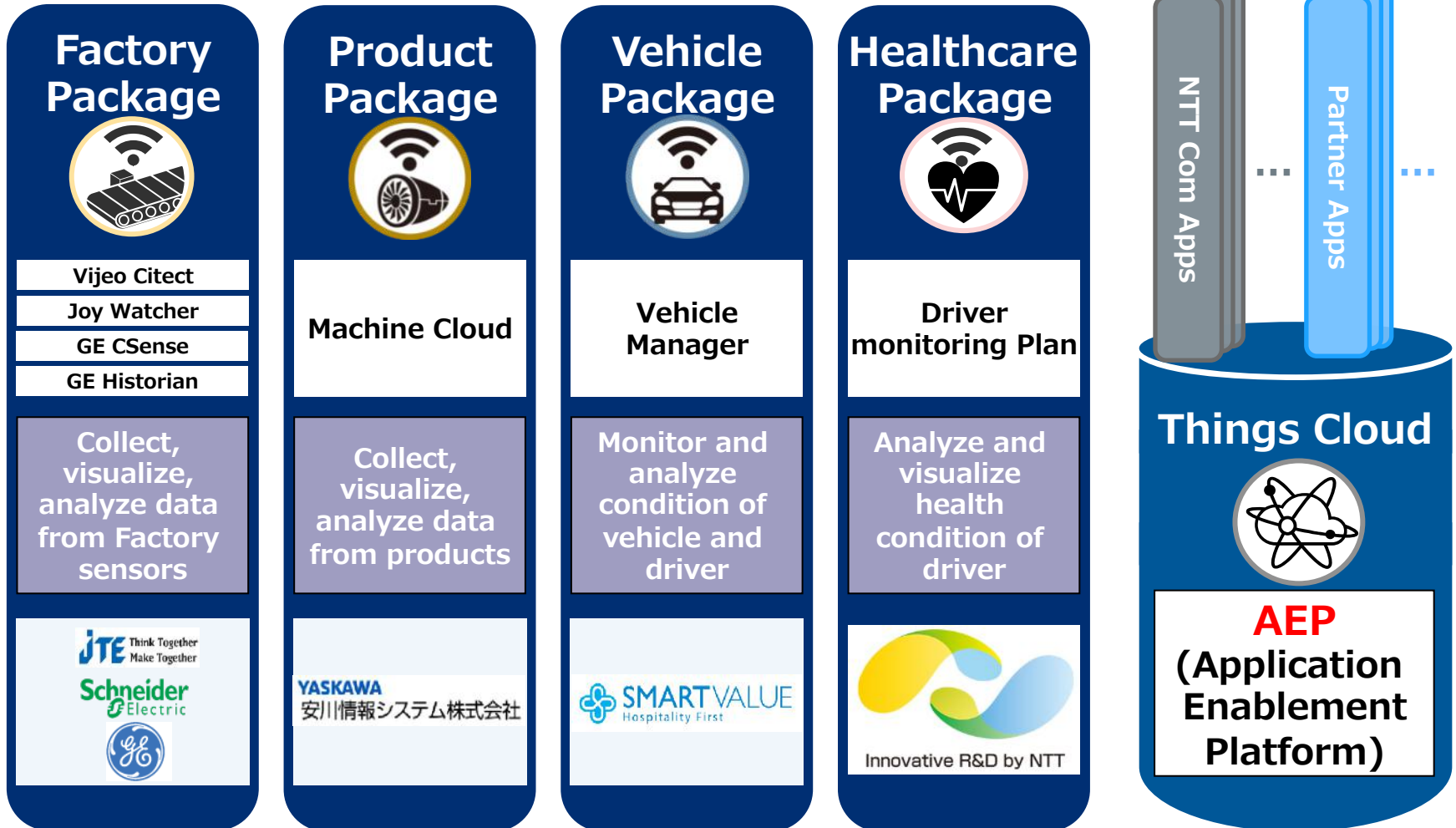
Our ideal IoT Platform

To pioneer digital transformation of our customers' business, we'll provide **SECURE/ GLOBAL / MANAGED** trinity service, which enables quick PoC start and making strategic decision for our customers' business expansions



IoT Platform Service Menu

IoT Platform Service



Application Enablement Platform [Things Cloud]

Easy to develop IoT solution / apps for all industries

- Easy to extract data coming from things
- Visualize data on the web-based dashboard with dozen of pre-installed widgets

Easy to manage data and device in NTT-C IoT secure cloud

- Store and transfer the data of location and condition, easy to configure the KPIs, thresholds and alarm.
- Manage the software and the firmware of the certified device

Easy to start and easy to expand your business

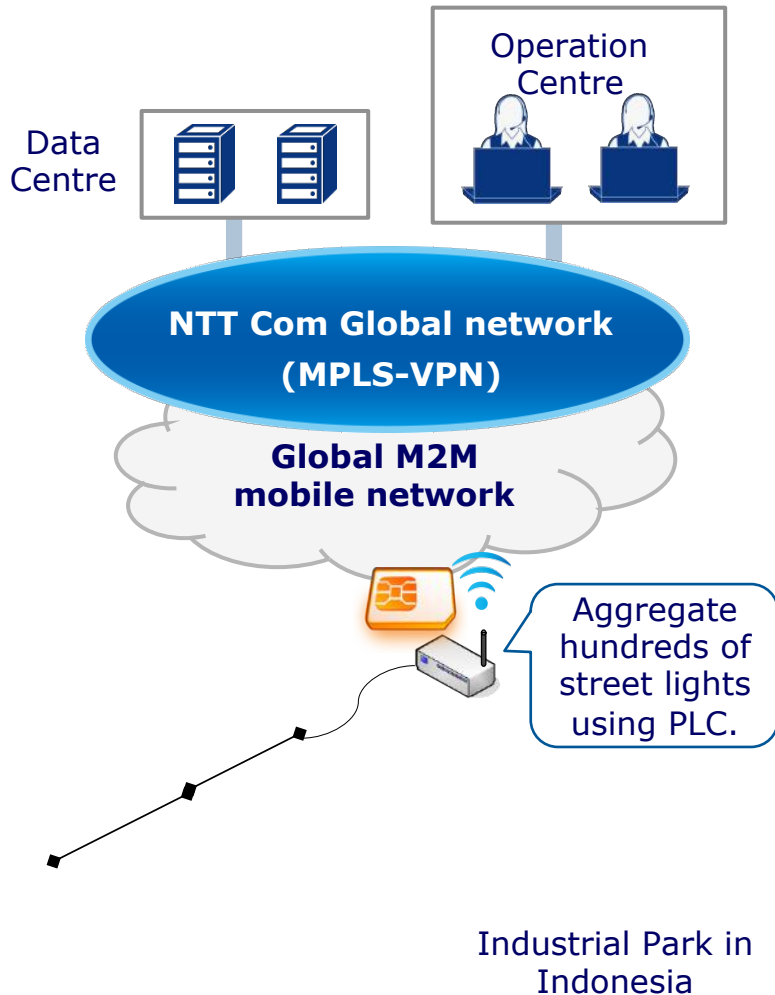
- No need to prepare your own server resources
- With full API function, other service can be connected



 Cumulocity

Use Case: Smart lighting in Indonesia

NTT-Indonesia and NTT-C provide smart lighting solution for local governments in Indonesia.



Outdoor smart lighting system to save energy and enhance safety.

- Reduce power consumption and carbon dioxide emissions as well as operate, maintain, and control street lighting with more efficiently.
- Automatic power control makes it a safer place after dark.

Scalable, flexible and cost effective network.

- Using global mobile network service to effectively connect to every single light located outside and to cover major countries in Asia.
- The smart street lighting is used by a local government in Indonesia and expected to be expanded to more countries in Asia.



Before

**More brightly
safety
smartly**



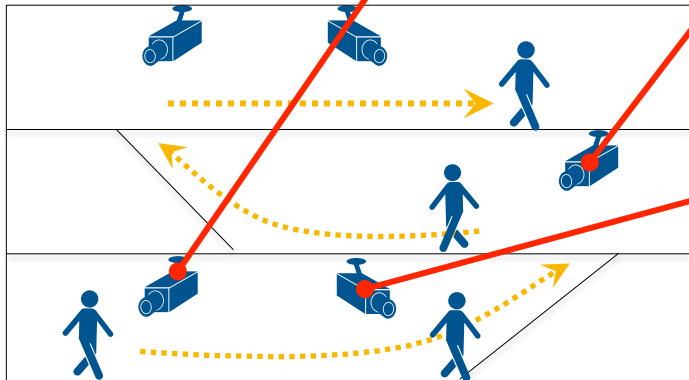
After

Use Case: Using AI for Tracking Individuals

New AI Technology Identifies human motions.
Newly developed "Deep Learning" that automatically understand features from a photograph and identifies the person who fits the profile through each camera

Successful in identifying the person with high accuracy.

Inferred person → Person within is whom AI have identified to be the same person.

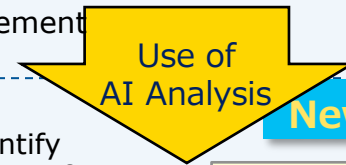


To search for a specific person (lost child, black listed individual) security manager needed to search using naked eye which was time consuming.



Management

Today's method



New method

Quickly identify specific person from several cameras by using search function.

Search



Management

Search results :



Use Case: Predicting Future in Plants using AI

Successfully predicted the quality of product at the chemical plant using AI.

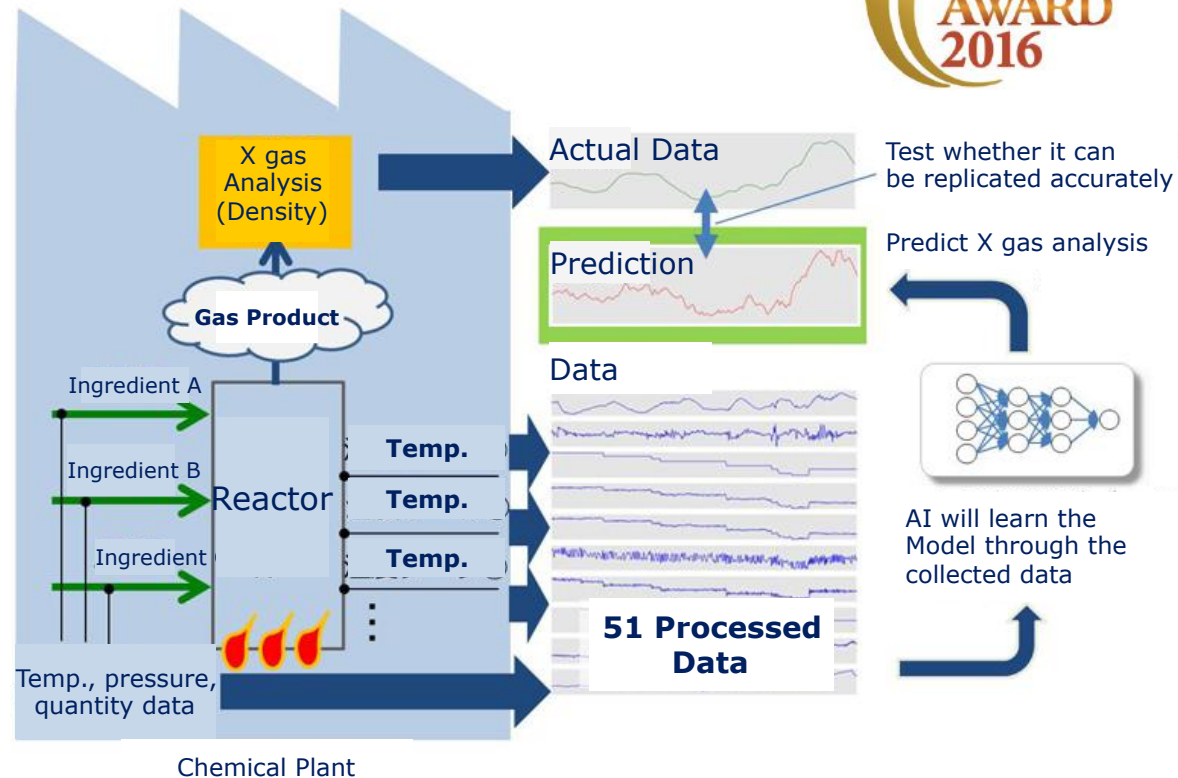
~Model using Deep Learning to accurately predict the 20 min future product quality ~



三井化学



Mitsui chemical and NTT Com have made a model using an AI(*1) technology called Deep Learning(*2) which successfully predicted the 20 min future gas quality (X gas density) with high accuracy by analyzing the relationship between the collected process data(*3) of the reactor and the gas density(*4).



*1 : A system or software which tries to copy the mechanism of human brain with a computer.

*2 : A multi-layered neural network. Unlike the conventional machine learning, it can collect necessary features to understand things automatically without entering rules. Breakthrough made in AI development.

*3 : All the sensor data such as temperature, quantity, and initial machine setting etc.

*4 : Production quality. "X gas" is a specific gas using density as its quality parameter .

<http://www.ntt.com/about-us/press-releases/news/article/2016/20160915.html>

Keifuku Bus Pilot

- SAP/NTT Co-Innovation -

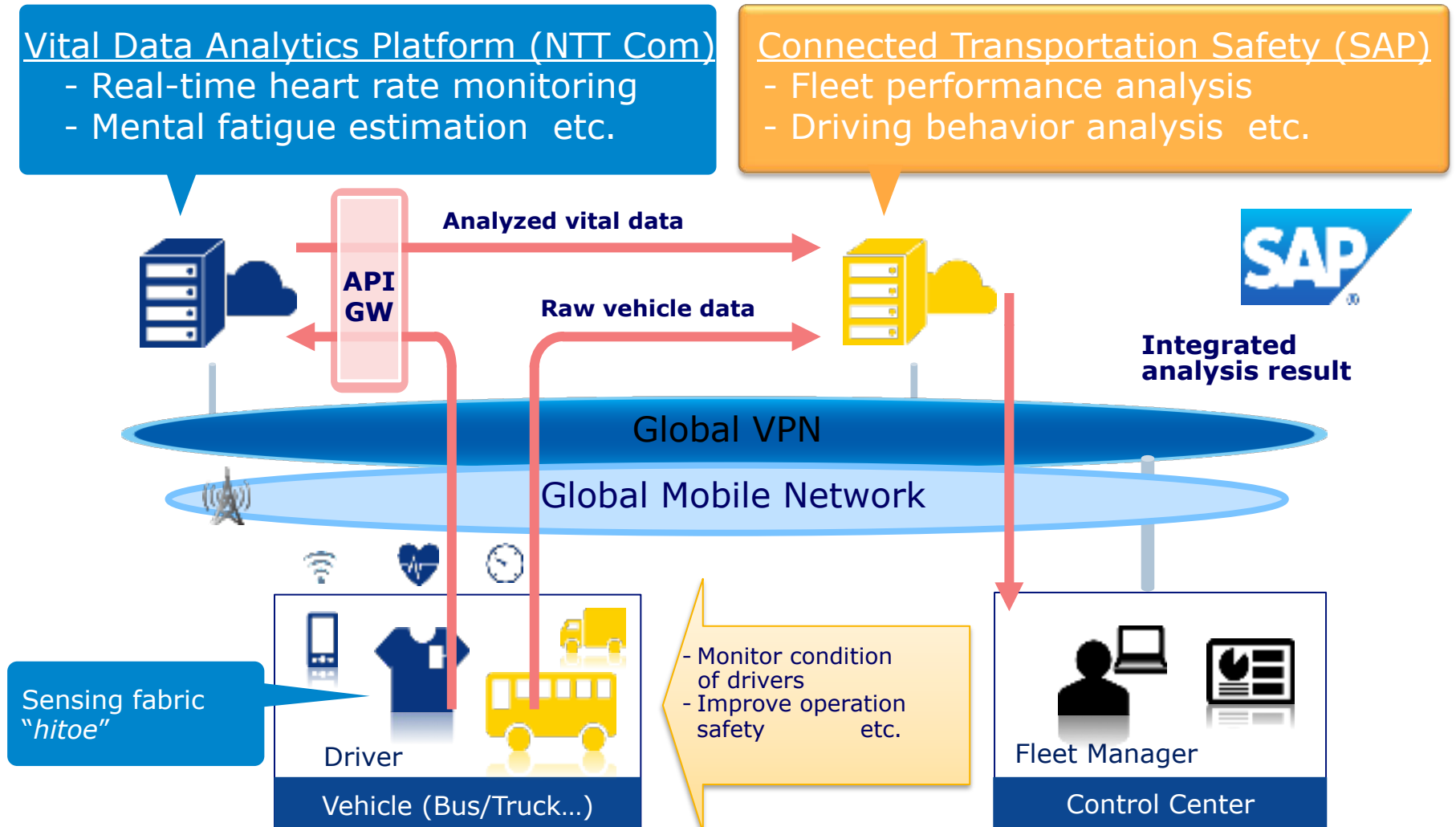
Integrated analysis of driver vital data and vehicle performance data to support safe fleet operation

Vital Data Analytics Platform (NTT Com)

- Real-time heart rate monitoring
- Mental fatigue estimation etc.

Connected Transportation Safety (SAP)

- Fleet performance analysis
- Driving behavior analysis etc.

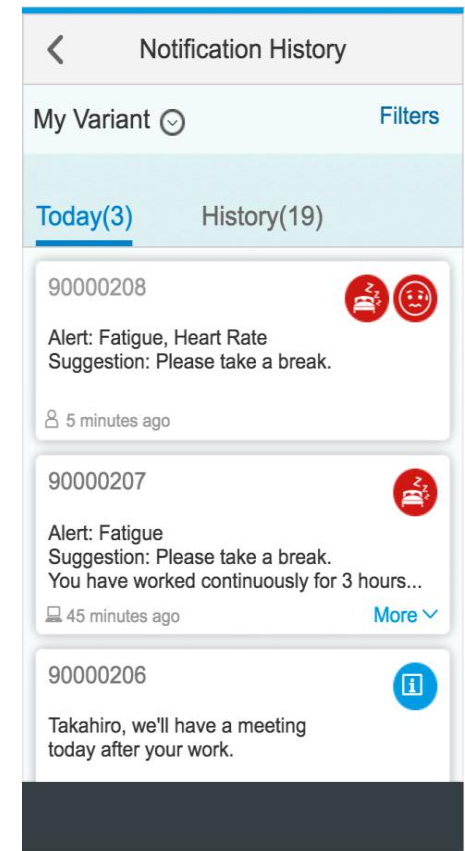
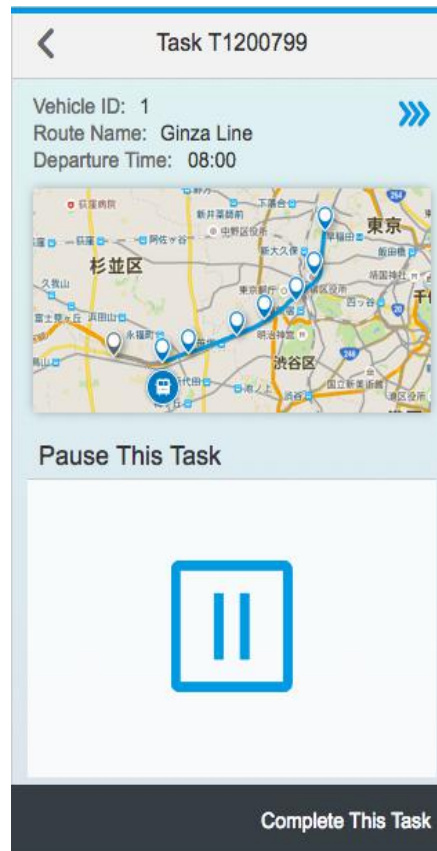


Field Trial (Oct – Nov. 2016)

“hitoe®” wear and biophysical data analytics



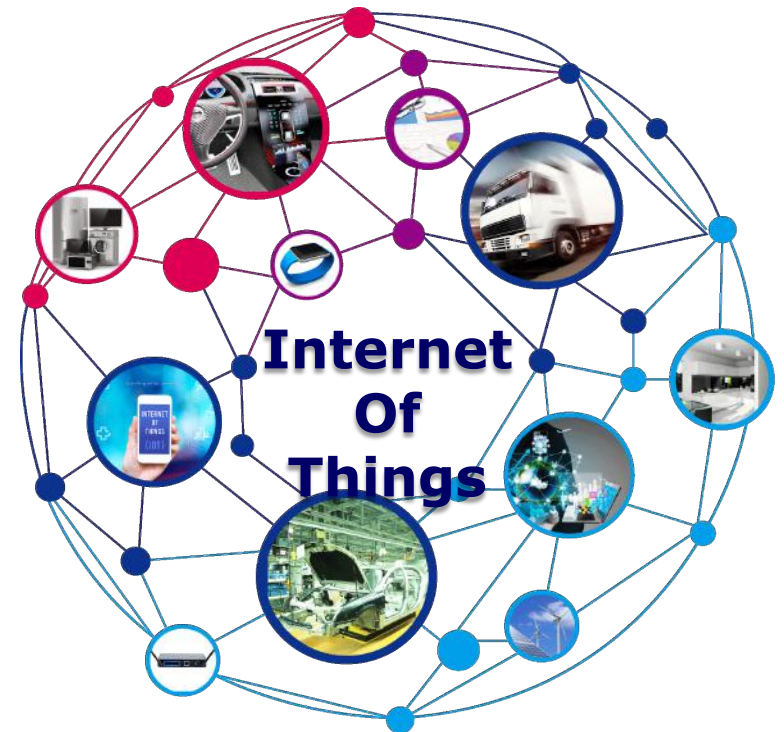
SAP Connected Transportation Safety App



Thank You!

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The most successful smart enterprises are powered by  Cumulocity



Our Story

to build a *Horizontal IoT Platform* at Nokia, in Mountain View, CA

Development starts

Proven product, Global customers, Use cases in all verticals/segments



Releases Cumulocity 8.0 – a market proven, stable and feature rich IoT Platform



NOKIA

2010

2012

2014

2015

2016

2017



Cumulocity created

as a spin-off, and HQ moved to Dusseldorf

Geographical expansion

starts with first customers in MEA, APAC & Americas

Figure 2: MachNation IoT IEP ScoreCard Overall Ratings

Vendor	Overall	Security	Integration	Scalability	Support	Compliance
Cumulocity	4.8	4.8	4.8	4.8	4.8	4.8
Other vendors	3.5 - 4.5	3.5 - 4.5	3.5 - 4.5	3.5 - 4.5	3.5 - 4.5	3.5 - 4.5

#1 IoT Platform

Cumulocity rated Leading platform in MachNation's global IoT Platform scorecard – in 2014, 2015 and 2016

Software AG acquires Cumulocity

1Q 2017: Software AG acquires Cumulocity



Global customers





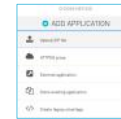
600+ SaaS Applications



Integration Layer

Application development & hosting

- Plugins: Add widgets, branding, extensions
- Develop own web applications with AngularJS
- Develop own web/mobile apps using REST
- Host your applications in Cumulocity with lifecycle management (archive, revert)



Data Visualization

- Dashboard designed, 25+ widgets
- Real-time visualization
- Data export, reporting
- Responsive design



Real-time Analytics

- Geo-fence
- Missing data
- Time windows
- Thresholds
- Escalations
- Pattern matching
- Calculations
- Aggregation
- ...



- Condition monitoring
- Automation
- Predictive maintenance
- Forecasting
- Scoring
- ...

Open APIs for device and data integration & abstraction

Device Management

- Connection monitoring & metrics
- Real-time alarm management
- Bulk operations with scheduling
- Firmware / Software management
- Troubleshooting: Shell, Logs,
- Access screen of remote machine



Selected **solutions** and **use cases** powered by Cumulocity

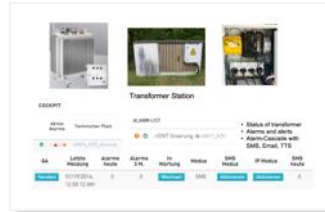
Smart, connected products



Predictive Maintenance



Grid element monitoring



Utility metering



Sensing & Observations



Smart consumer products



Telematics & Insurance



Logistics & Asset tracking



Surveillance & Security



Healthcare



Traffic monitoring / Safety



Smart City



Retail / Vending telemetry



Intelligent building



What's your business?



Thank you



Cumulocity
Connect to Innovate