Intelligence at the leading edge

Put your data to work
Don’t “byte” off more than you can chew

Data volumes are growing at an unprecedented rate. Most of all data ever generated was created in the last few years. Data volumes are growing so fast that we might soon have to invent newer ways to measure them.

Terabytes are so last decade!

Managing all that data is a clear priority for all organizations. They must combat the complexity represented by the numerous systems that generate, collect, and distribute data. It doesn’t matter whether they’re on premise or in the cloud, the data needs to be analyzed to achieve insights. That’s how new ideas flow back to the edge of your enterprise to optimize operations or customer engagement.

But, data needs context. Without it you can’t improve the way information is gathered and processed to boost optimization and efficiency. It’s also how you can achieve the wisdom you need to make the best decisions.

Data on its own doesn’t amount to much. It needs to be processed and transformed into usable information. That’s what you do with that information that gives you the edge.

“Data on its own doesn’t amount to much. It needs to be processed and transformed into usable information.”
In the rapidly developing era of The Industrial Internet of Things (IIoT) being able to move from data to wisdom quickly gives you a significant edge. Billions of sensors will collect data from their immediate environments and send it in for processing into information. What happens to that data next is what really matters.

It’s important to match customer and market data with operational data to understand how your business is coping with change throughout the value chain. You need to see more clearly where you need to improve operations in real-time to get ahead of change.

The pace of data flow will only get faster and harder to handle or process at any given point of time. It’s a big challenge. We need to step back and ask ourselves a simple question: What are we going to do with all this data?

**Data at the edge of change**

Scientists study change. It’s the basis of usable knowledge. As award-winning physicist Carlo Rovelli says, “We understand the world by studying change, not by studying things.”1 So, your data must reveal how the world around you is changing in terms of innovation, markets, and customer needs. That’s what gives you the edge.

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1 The Order of Things by Carlo Rovelli 2018
60% of that data will be generated by enterprises like yours.

That’s a 10x increase on today!

...163 Zettabytes by 2025

60% of that data will be generated by enterprises like yours.

25% of data subject to analysis will be real-time

95% of which will be generated by IoT.
Seeing patterns of change more clearly (and quickly) – that’s where the real questions and opportunities are. You need the knowledge and wisdom to answer those questions and take every opportunity.

Data is the raw material for transformation, agility and innovation

The sextillion zeroes in a zettabyte mean nothing!

It’s what those zeroes tell you about what’s happening on your shop floor right now that counts. It’s also how your logistics are handling demand, or what trends are developing in your markets through subtle shifts in consumer buying patterns.
It is organizations that understand the importance of this hugely valuable raw material that's being generated by default that have the edge. Their data arises from millions (and billions) of interactions which happen daily throughout the value chain, and they have the means to cut through the noise to reveal insights – fast. That's what makes them agile, responsive and also gives them the power to disrupt.

Simply put, data can give you the cutting edge you need in a challenging economic and trading environment, but only if you achieve that edge intelligently.

IoT will have an economic impact worth $3.9 trillion by 2025 and the potential could be even more...

linking the physical and digital worlds could generate $11.1 trillion of economic value if it's done right.

[McKinsey: The Internet of Things: Mapping the Value Behind the Hype: June 2015]
If data comes from everywhere your business must have no hard edges

A hard edge can be a barrier. Your Operational Technology (OT) and Information Technology (IT) must work together seamlessly. If data flows from everywhere, then it must be combined in a controlled way.

So, if you have sensors out in the field collecting and sending back data, it needs to be 'seen' by all your systems. It must be sent to the right place for analysis and actioning. That could be on-premises or in the cloud. Data generated on the shop floor should be processed in the right place, by the right systems, at the right time. That’s why the convergence of OT and IT is so important. And the faster the data is made ready for processing (and is supplied in the right form for quick analysis), the faster you can take the right decisions.

Fast track your insights

The faster you yield actionable information and knowledge from raw data means you can:

- Improve predictive maintenance
- Reduce shop floor downtime
- Optimize processes and logistics
- Respond to market shifts faster

“Your Operational Technology (OT) and Information Technology (IT) must work together seamlessly.”
Your organization is and will always be in constant flux

Let the ‘things’ collect the data while you drive your business forward as an agile, innovative enterprise which has the edge over its competition.

That means viewing your organization as a living system that is made up of things, people and processes. A system that is impacted by events that happen within and outside of it and in all this flux of critical data that is being generated as a result. Data that needs to be processed further, data that is vital and serves as lifeblood for the many systems (and people) across all levels that depend on it to function effectively, optimally and efficiently.

One I or two I’s – IoT/IoT both mean BIG numbers

Making sense of data needs a ‘living edge’ which makes use of a clever mixture of AI, machine learning, pattern recognition and algorithms to generate intelligent insights. That has to be done strategically and intelligently based on your specific needs and objectives.

An Edge Computing Appliance enables you to transform your business by connecting all the ‘data islands’ that exist inside and outside your business so that you can make sense of an ‘ocean of data’. The data streaming from all kinds of production machinery or industrial robots can be integrated with that from devices out in the field (some in very remote places). Data from trucks or containers or wearables on people can flow into your operational systems providing greater visibility into how existing processes, schedules, production flows can be further optimized using advanced analytics that run from systems that are either on-premises or in the cloud.

No data-set is an island, it is part of the living entity that is your entire business. Which means the many systems and processes working at the core of your enterprise can do so more intelligently: they collect the right data and know what it all means.
In 2015 there were **15.4 billion** connected ‘things’ but by 2025 there might be **75.4 billion**!*  

*Statista

By 2020 50% of IoT spending will be driven by discrete manufacturing, transportation and logistics, and utilities. The most critical success factor they all depend on is secure, scalable and reliable end-to-end integration solutions that encompass on-premise, legacy and cloud systems, as well as platforms.†

†BCG: Winning in IoT 2017
FUJITSU IoT Solution INTELLIEDGE: Software, hardware, sharp, incisive, forceful

INTELLIEDGE Appliance sits at the nexus between your business and your marketplace, and manages the collection, control and actuation of the vast amounts of data that are being generated by sensors in operational environments. It’s designed for all sectors, from manufacturing to utilities to logistics and retail, banking, insurance and healthcare. To name just a few.

All sectors face the challenge of rising data volumes, and they’re all increasingly making use of IIoT technologies. It’s a new era – often characterized as Industry 4.0 – and it’s brought into sharp relief the need for control at the network edge.

The INTELLIEDGE Appliance connects disparate OT and IT systems to unlock value. That’s the bottom line (the cutting edge). It’s a carefully designed mix of software and hardware solutions to enable you to make the most of the data that’s out there at the edge of your enterprise. It’s a key element in the creation of a truly smart enterprise.

It bridges the gap between Enterprise Cloud, Analytics, Artificial Intelligence and Machine Learning enabling existing systems to make the most of the data from the ‘things’, sensors and actuators arrayed across your operational footprint.

The data flows to ensure that you are in control. INTELLIEDGE binds the two layers together and does a lot of hard work by not just channelling the flow of data, but also aggregating and filtering it. That means pre-analytics (automated intelligently) can speed the flow of knowledge through your business.

INTELLIEDGE Gateway:
A flexible and configurable hardware offering with pre-installed operating system that can be integrated easily into your enterprise IoT and IIoT initiatives. You can choose from the latest generation of Intel processors to achieve superior and next generation IIoT technologies. Robustly designed, the INTELLIEDGE Gateway is a shock and dust proof, fanless IoT-ready device with an industrial housing built to withstand extreme conditions in the field.

INTELLIEDGE Appliance:
An integrated software and manageable platform which offers a fully optimized software and hardware integrated solution. It delivers device, application and network management. You can connect your existing OT/IT systems to the cloud whilst your on-premise IoT applications are isolated in sandboxes. Boost resilience with our system integrated recovery solution which enables automated recovery back to original states.

INTELLIEDGE™ Appliance
Management Component
Role based Configurations, Provisionings, deployments, Application configuration
Asset management, health, load

Appliance Component
Application and network separation
OT and IT side manageability
Security: "Mini datacenter at the edge"

OT Layer
Shopfloor equipment
OT Systems: PLC, DCS, SCADA, Sensors, Industrial Robots, Actuators

Hybrid IT
Mix of on premise, public and private clouds

Cloud Platforms:
Microsoft Azure, and/or other platforms of choice

Plant-side IT Systems: ERP, MES

IT Layer
On-premise Systems, Cloud and Hybrid IT

(Device)IoT Protocols: MQTT, AMQP, OPC-UA, Web Services

Interfaces: Ethernet, Wireless

Fieldbus Protocols: Modbus, OPC-UA

Interfaces: Ethernet, Serial (RS232/422/485), Wireless

INTELLIEDGE™ Center
Management Component
Role based Configurations, Provisionings, deployments, Application configuration
Asset management, health, load

Appliance Component
Application and network separation
OT and IT side manageability
Security: "Mini datacenter at the edge"
Mastering cause-and-effect gives you the edge

Understanding cause and effect is the basis for most human knowledge. If you understand what is happening and why, you can make a more informed judgment about what you need to do.

Our mission is to give that ‘effect’ an edge. Your edge. Data can help correlate trends with causes, but only if the data is manageable. INTELLIEDGE achieves that because it is an IoT-ready platform that offers customizable solutions that can fit your ever evolving Industry 4.0 scenarios and context perfectly.

Speed gives you edge in a fast-moving environment, so INTELLIEDGE is designed to enable you to achieve quick deployments of Industry 4.0 and IIoT projects to gain operational intelligence from data flows at the edge of your business.

That’s the basis of your ability to respond faster.

Fujitsu is the right partner to enable you to yield actionable intelligence, knowledge and wisdom from your data. Both ComputerWorld and NetworkWorld named us amongst the most powerful IoT companies in the world. IDC’s fifth annual global IoT decision makers survey revealed that we were ranked in the top three IoT Systems Integrators.

Our leading position is based on long experience and expertise in pioneering Industry 4.0 and building a new world of IIoT/IIoT capabilities which are transforming a wide range of economic sectors.

Talk to us about how we can help you make a difference to your enterprise right now.

→ To learn more about the INTELLIEDGE Appliance and INTELLIEDGE Gateway IoT family, please visit fujitsu.com/fts/INTELLIEDGE

→ Also, learn more on how we are Co-creating and delivering Industry 4.0 here.