

Hyperconnected world and Fujitsu's IoT research: the move to the edge

Technology Breakout Session

14.15-15.00

FUJITSU

shaping tomorrow with you

Human Centric Innovation

Co-creation for Success

Technology Breakout Session:



Hyperconnected world and Fujitsu's IoT research: the move to the edge

Simon Rees

CTO & Head of Offerings, Networks & Telecoms

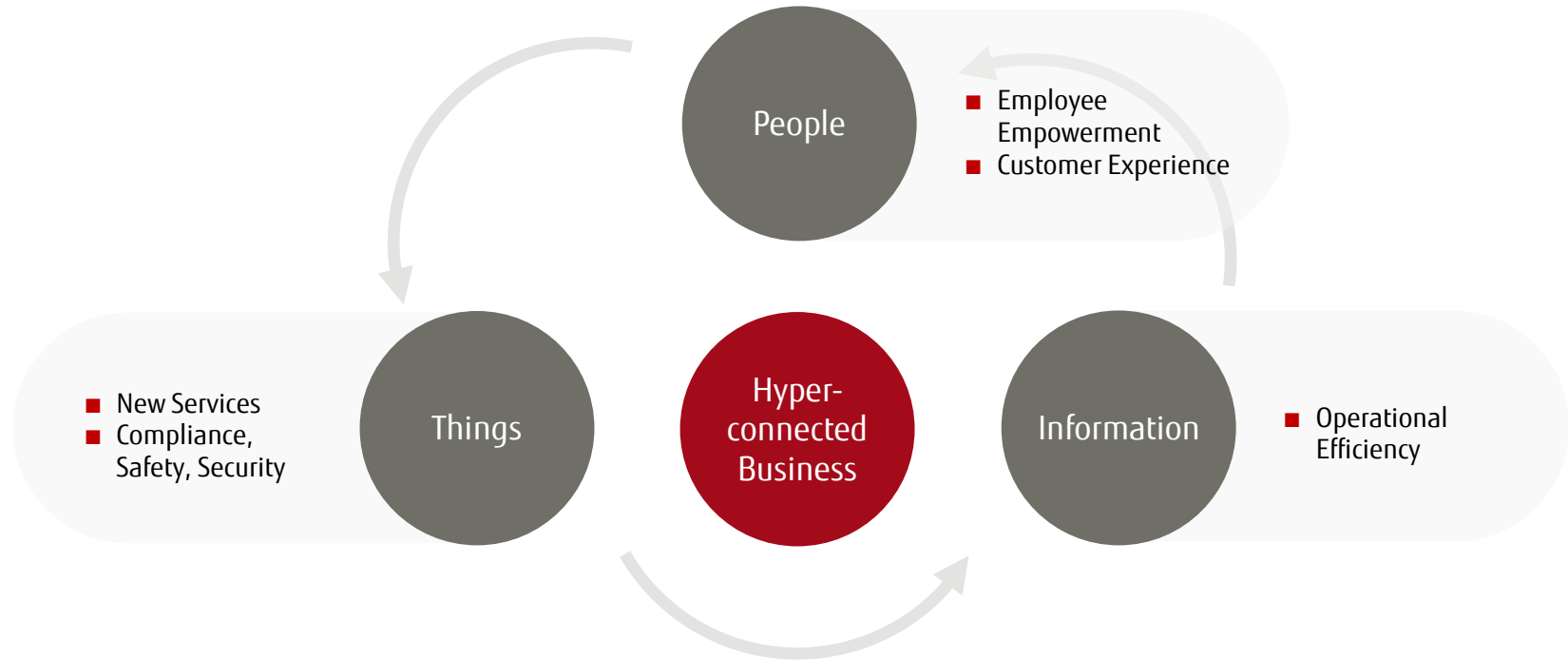
Fujitsu

Martin Courtney

IT and Telecoms Analyst

IDG

A Hyperconnected World



Characteristics of a Hyperconnected Business



Networks

- Great Connectivity, use of new technologies
- Ability to execute change quickly
- Network Analytics

Intelligent Communications

- Voice, Video, IM, Sharing from any device
- Can engage with Customers over multiple channels
- API Integration

Multi-Cloud

- Able to blend Traditional IT with New IT
- Multi-cloud, Cloud Native
- Edge Computing

IoT

- Co-creation
- A network that is fit for IoT
- Integrating IoT and OT

Analytics and Machine Learning Artificial Intelligence

- Understands the value of Data
- Use Data to provide insight
- Use Data to make decisions

Process Automation

- Ability to automate processes
- Systems linked by APIs

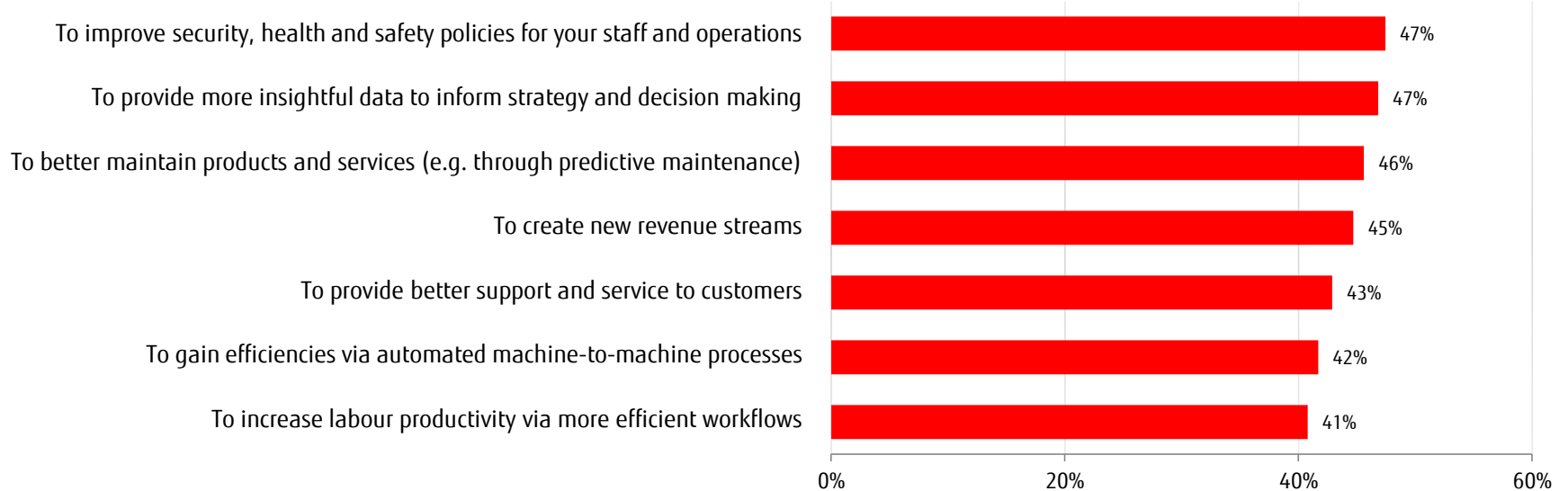
Transparency

- Wants to understand every aspect of how the business is running and performing

- **Aim:** Assess current/future approaches to IoT
- **331 respondents:** Germany, UK, France, India, UAE, Nordics, Iberia, Benelux
- **Organisation size:** 250+ (63% 500-4999 staff)
- **Verticals:** Financial services, retail, oil/gas/utilities, transport, manufacturing.

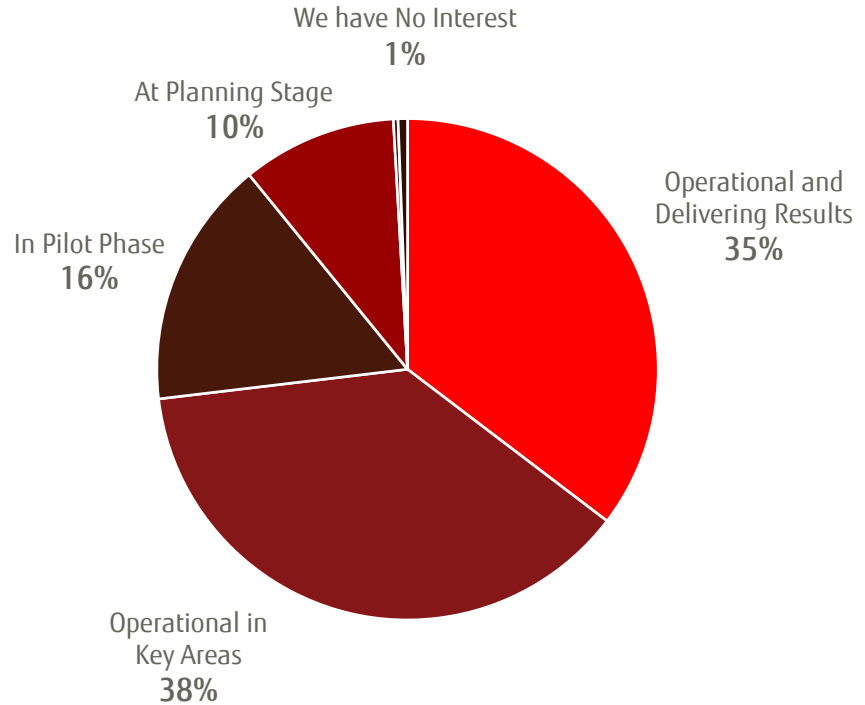


What are the main purposes of your investment or planned investment in IoT? (Select all key reasons)

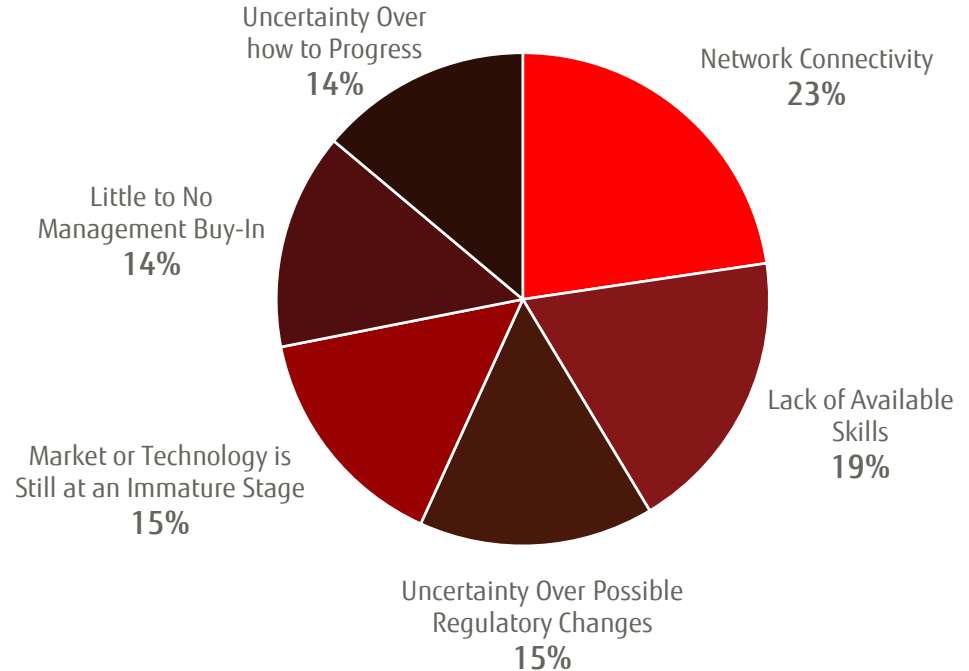


How would you describe the maturity of your organisation today with respect to the Internet of Things?

(Select the answer closest to your case)



What would you define as the biggest obstacle to the successful deployment of IoT today?



- Rapid ROI expectations
- The relatively advanced state of the audience
- IoT's perceived ability to breed premium pricing opportunities
- Synergies with Big Data and Artificial Intelligence opportunities
- The belief that vendors need to provide better support
- The pre-eminence of IT in driving projects
- That network connectivity could be the biggest obstacle.

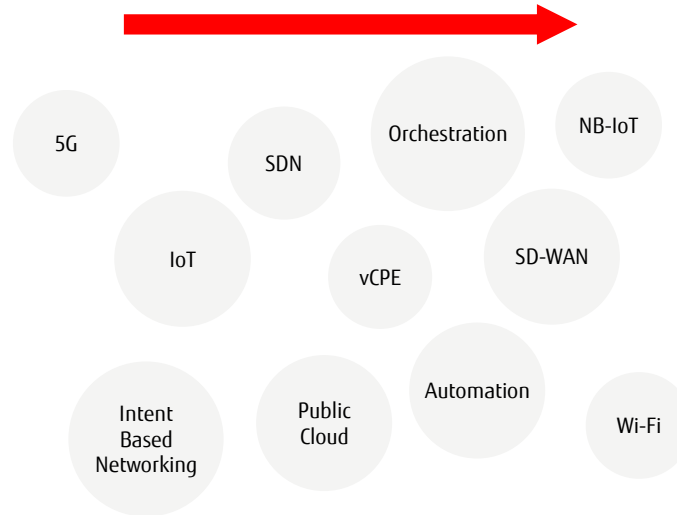


Plan to Evolve Your Network

Current Mode of Operation

- Manual operation through CLI, device by device
- Central MPLS WAN
- Single Provider lock in
- Silos
- Slow process for Change
- Boundary of the network is the desktop/POS
- Security vulnerabilities.

Disruptions

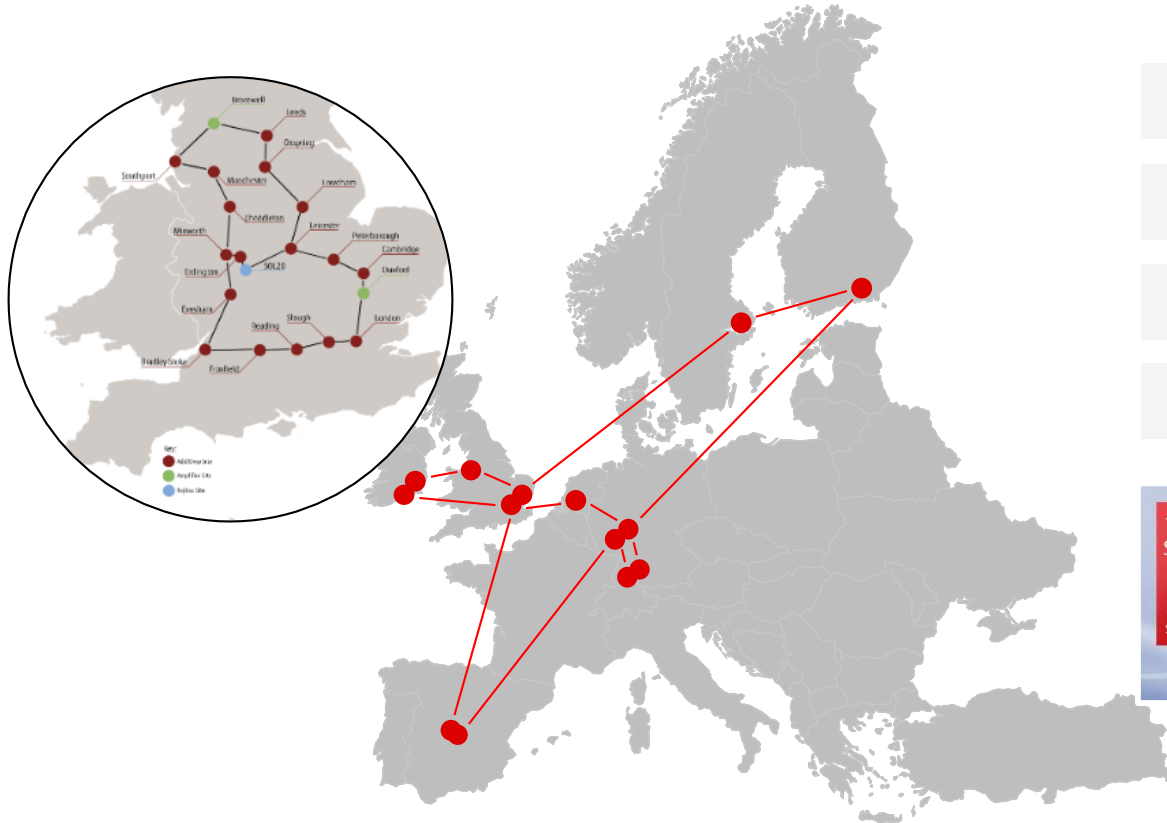


Future Mode of Operation

- Large degree of Automation
- Multiple WAN providers
- Service Catalogue driving Orchestration of services
- Cloud Network
- Boundary of network massively expanded to include IoT
- Network Access Control, policy driven
- Use of Network Analytics to predict failures
- Intent Based Networking
- Converge IT and Networks with vCPE.

Network Evolution – SCADA, IoT, AI , Edge

Fujitsu – Next Generation European Network



TFS-NOW

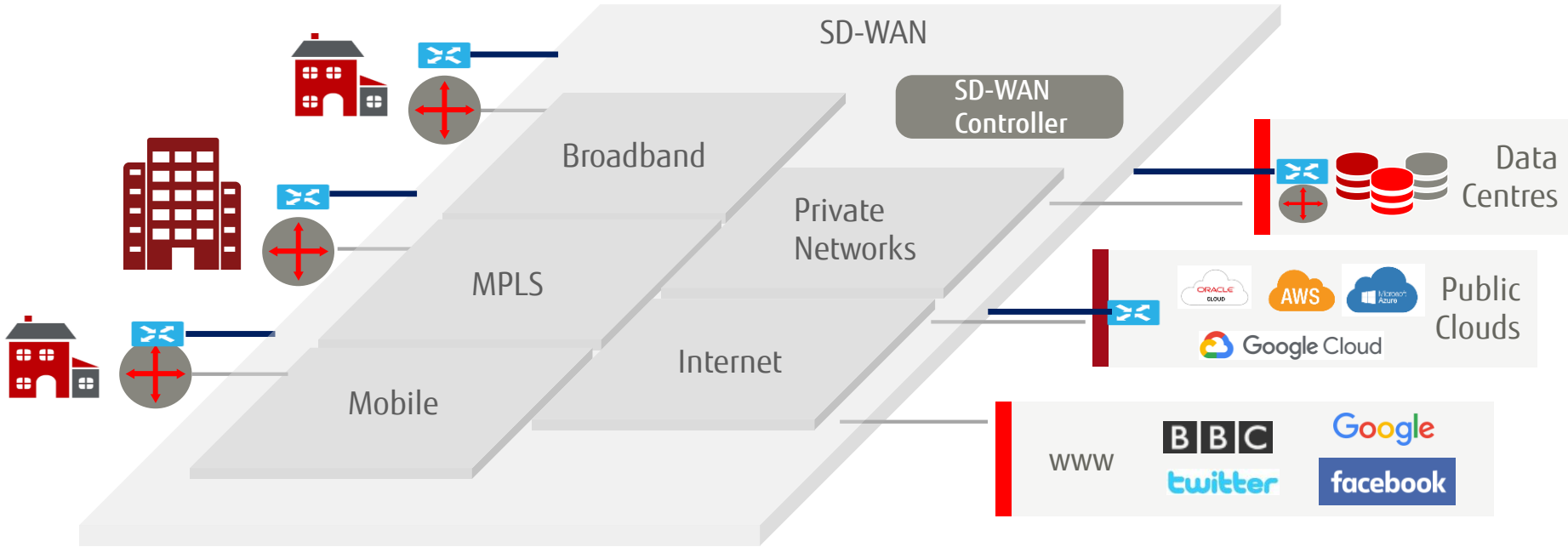
FMNOS – Network Toolset

Software Defined Network

Multi-Cloud Connectivity



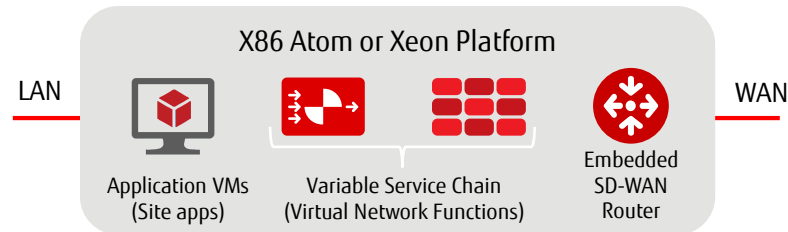
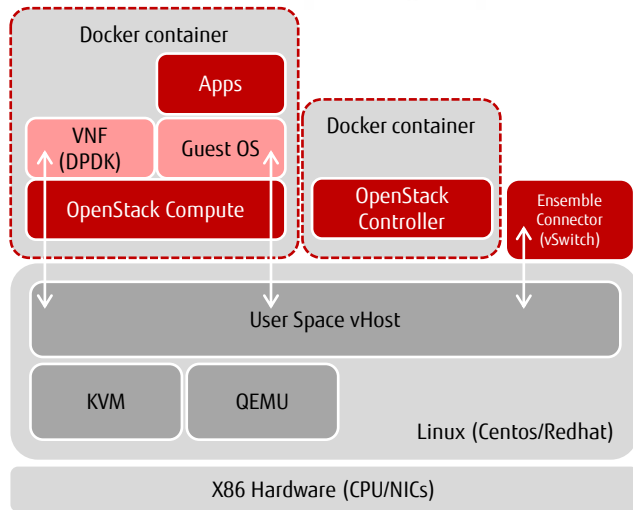
Software Defined WANs



- Transport / Carrier Independence
- Secure Connectivity (to the Cloud)

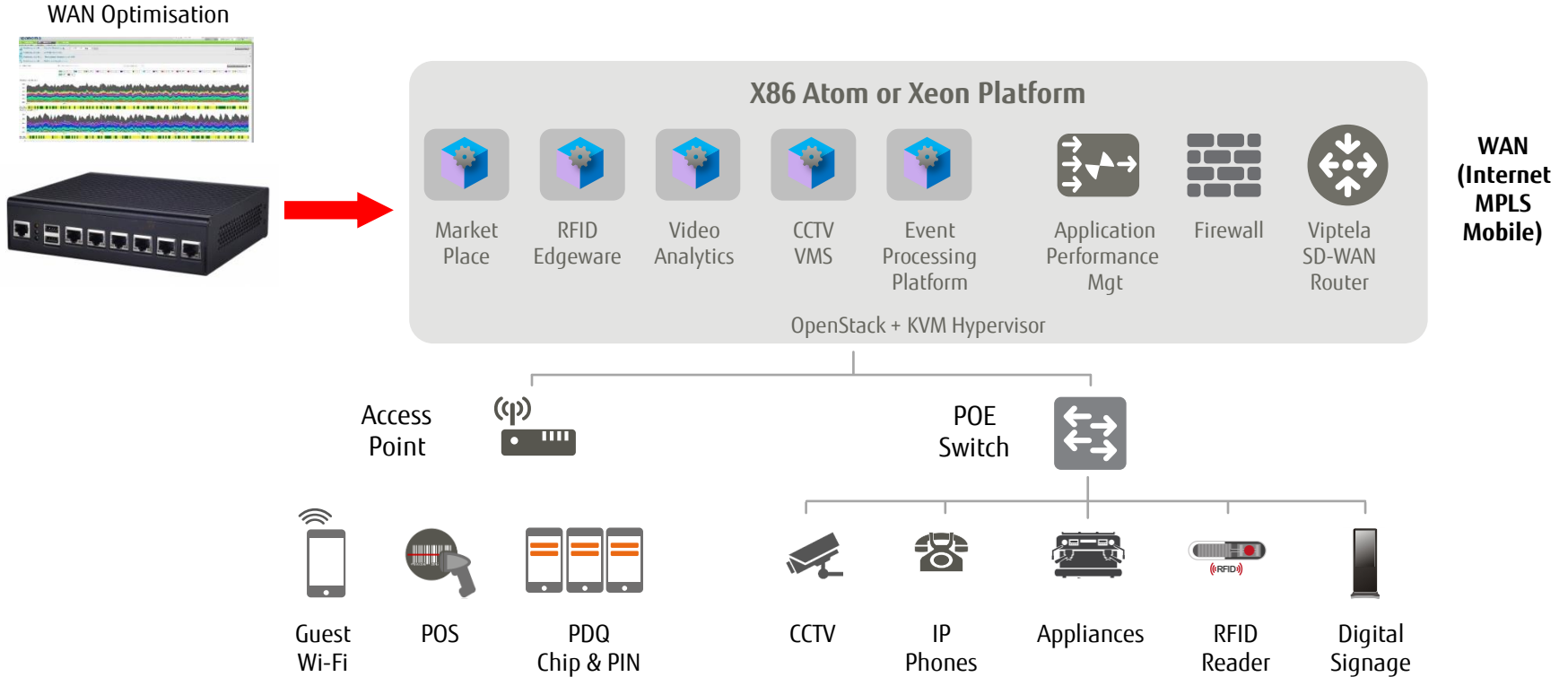
- Intelligent Path Control
- Application Optimisation

Virtual Edge

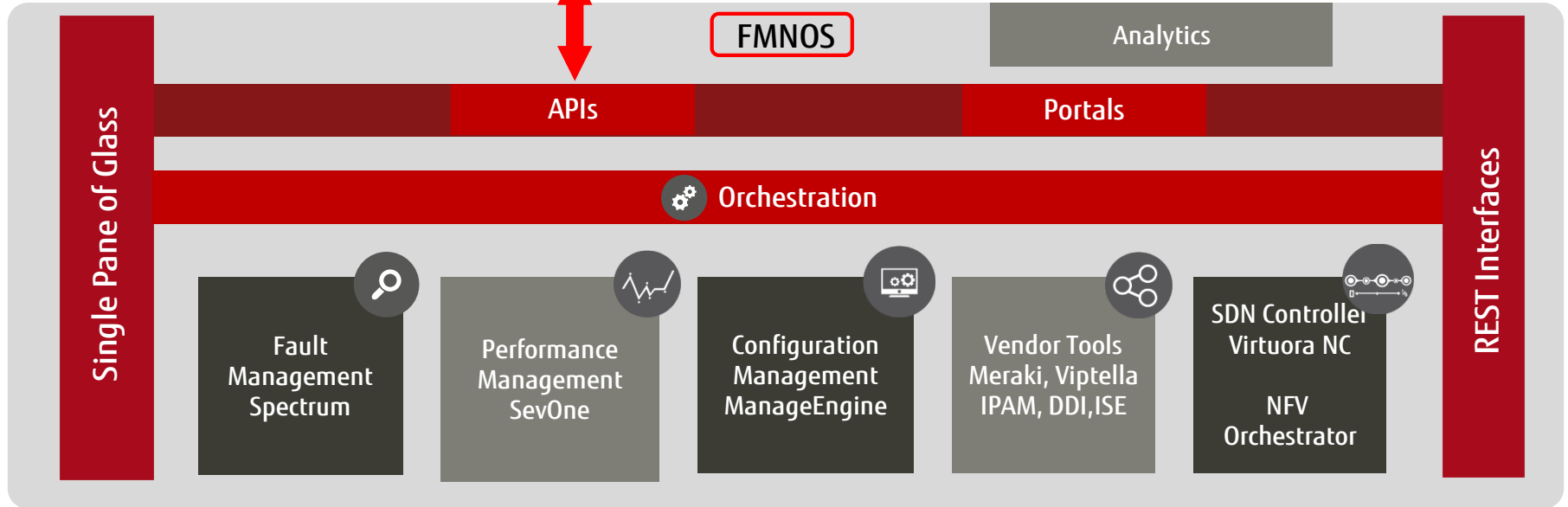


- Embedded Software WAN Router
- Deployment of Service Chains
- Deployment of VMs for Apps
- Edge Computing
 - IoT, POS, Video Analytics, local apps
- Application Visibility.

Edge Computing – Convergence of Networks & IT

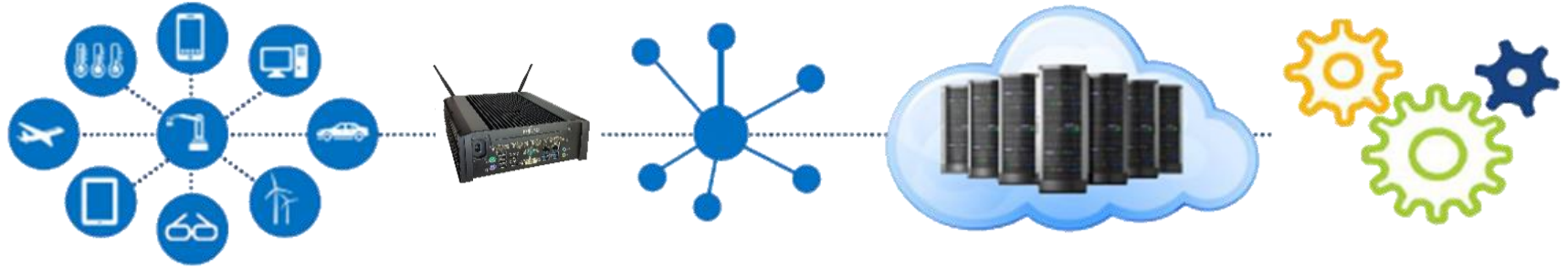


FMNOS: A Work Bench for Network Service Delivery



IIoT Components for Digital Transformation

(Industry 4.0)



Things

Wired / Wireless connectivity

- Sense
- Communicate
- Control

Gateway

- Protocol and Data Bridge
- Edge analytics
- On Premise Visualisation
- System Health

Backhaul Network Infrastructure

- Pub/Sub messaging
- AMQP
- MQTT
- X.509 certificates
- TLS

Data Centre / Cloud Infrastructure

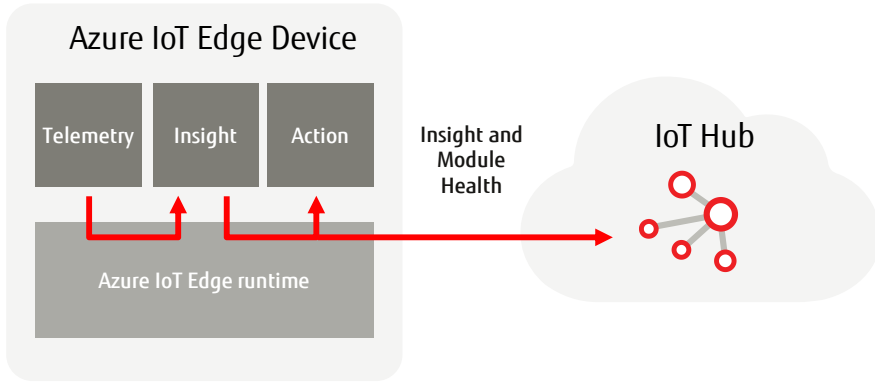
- Microsoft Azure Cloud
- Azure IoT Hub
- ICONICS GENESISs64
- Storage

Clients

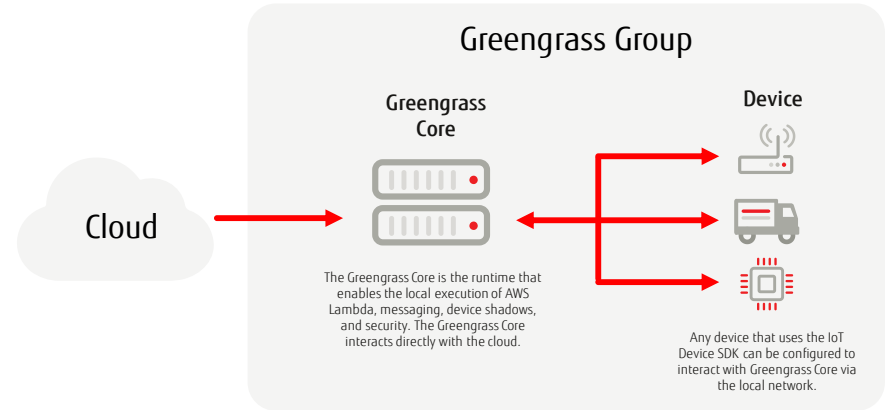
- Data Visualisation and Analytics
- System Health

IoT – The Move to the Edge

Azure IoT Edge



Amazon Greengrass



A defined group of Greengrass cores and other devices that are configured to communicate with one another. A Greengrass Group may represent one floor of a building, one truck, or one home.



Why move to Edge?

- Security
- Latency

- Connectivity
- AI

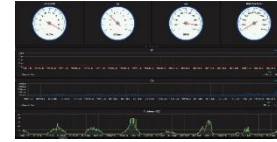
Event Processing Platform

Real-time Event Automation

- Mobile asset tracking and usage monitoring
- Maintenance personnel and subcontractor management
- Patient logistics and guidance in hospitals
- Dynamic control of digital signage and security cameras
- Machinery operation alerts and status events
- Real-time sensor events for business applications.



Time-series Visualisation and Analysis



Actions using HTTP, MQTT and SMTP Interfaces

Analytical Databases (Elasticsearch, Grafana, Kibana)

Event Processing Platform – Real-time Monitoring and Rule Processing Software

Setup
Event Log

Configuration
Target Sources

Targets
Properties

Rules
Actions

Scalar Dashboards

Custom SW Development
Indoor Floor Maps
OpenStreetMap

Integration Adapters

Wi-Fi Receiver

RFID Receiver

Quuppa Receiver

HTTP Receiver

MQTT Receiver

Custom Receivers

Wi-Fi Positioning
Systems

RFID Readers
RFID Printers

BLE Tags
BLE Beacons

GPS Data Sources

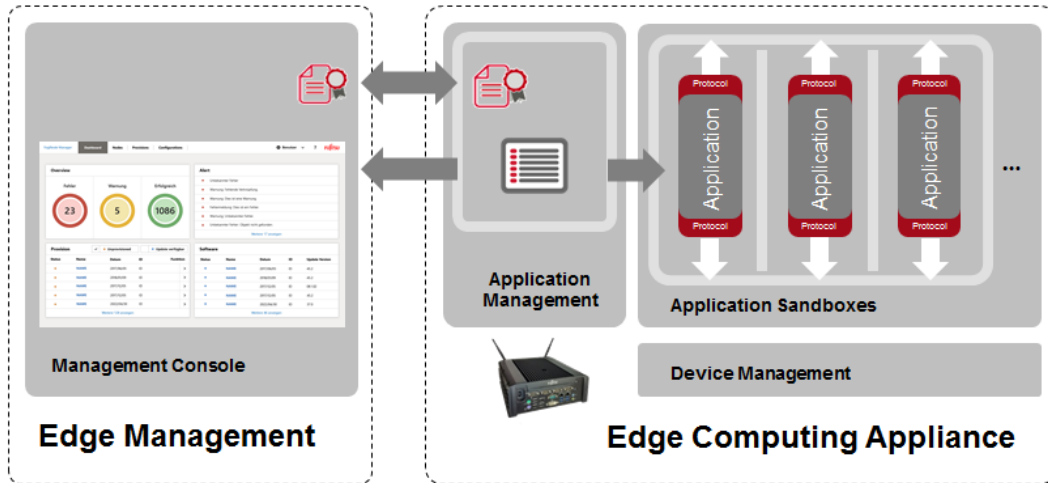
Sensors

External Data
Sources

Overview | Fujitsu INTELLIEDGE Appliance



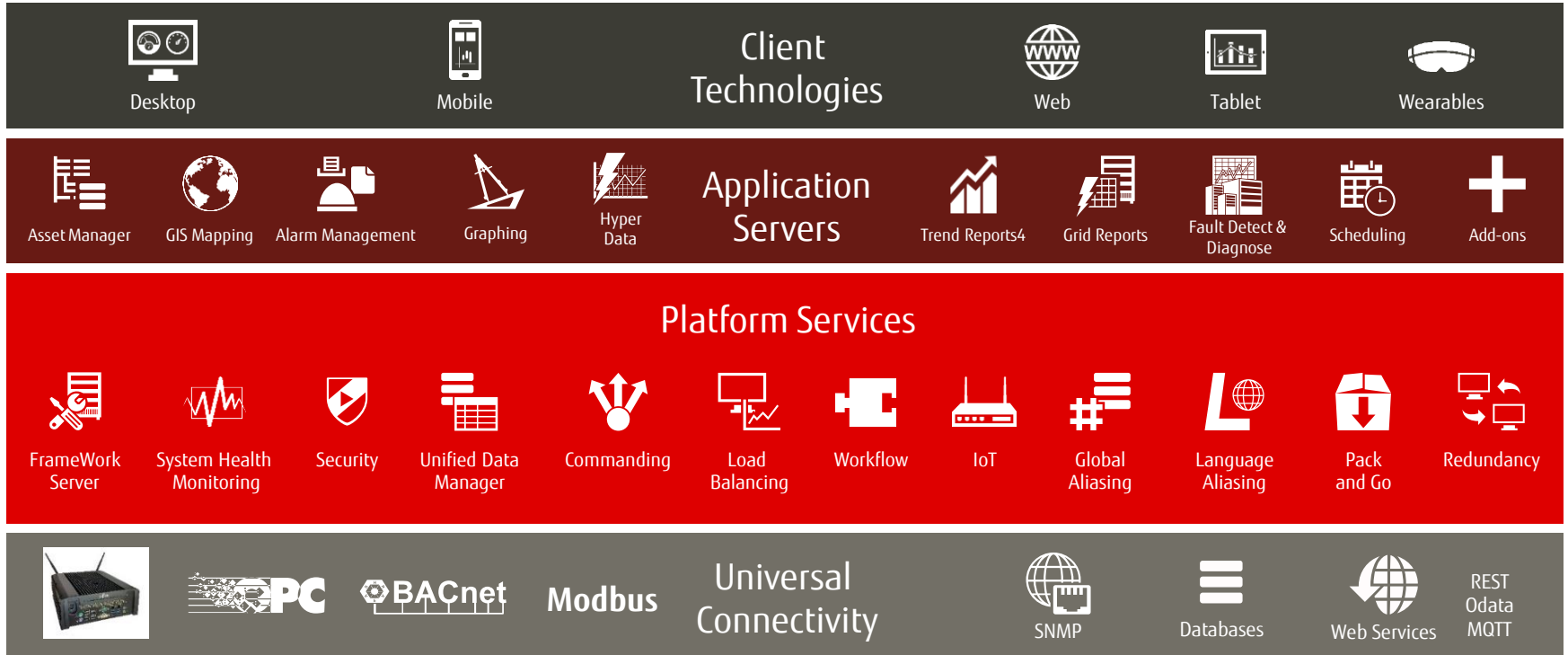
Combining the right mix of hardware and software components to understand in real-time the “enterprise” data being generated at the edge



- Gain actionable insights from various data sources quickly, securely and in real-time
- Deploy computing capabilities closer to the edge of your business
- Acquire, aggregate and analyse enterprise data in real-time
- Operate in challenging environments in manufacturing facilities, utilities and much more.

IoT Automation Platform Architecture

Universal Connectivity, Big Data, Analytics, Visualisation



Imagine...Visualise



IoT Gateway Monitoring System

- ICONICS Asia
 - Beijing
 - Ingleburn
 - Mumbai
- ICONICS Europe
 - Chavanoz
 - Dudley
 - Genoa
 - Plzen
 - Sankt Augustin
 - Sassenheim
- ICONICS USA
 - Foxboro
 - Redmond

IoT Gateway Monitor Legend

- Consumption
- Occupancy
- Memory
- Faults
- HWS

■ on target
■ over upper limit

Production

LINE 1 UP OEE 78% Prod 89	LINE 2 UP OEE 90% Prod 102
LINE 3 DOWN OEE 68% Prod 90	LINE 2 UP OEE 80% Prod 97

Foxboro

Occupied
751

DEMAND
185

GATEWAY MEMORY USAGE

Foxborough

61.8

Zone Temperature

Cooling Setpoint: 68.00	Heating Setpoint: 72.00	Occupancy Command: Off
Warm Cool Adjust: 5.00	Supply Flow: 142.50	Water Flush: Off

Trends | Alarms

KPIWork

Over detail

Pump 1	Pump 2	Pump 3	Pump 4
34.00 bar	60.00 bar	70.00 bar	100.00 bar
24 hrs Expectation: 1	24 hrs Expectation: 1	24 hrs Expectation: 1	24 hrs Expectation: 1
Pressure: 20.00 psi	Pressure: 32.00 psi	Pressure: 36.00 psi	Pressure: 36.00 psi
Production History	Production History	Production History	Production History

Meter ON

Outside Humidity: 31.40 %	Supply Temp: 14
Outside Airflow: 31.40	Avg. Dmpr Position: 14

Asset Name	Asset Path	Fault Name	Fault Incident History
VAV1A	CorporateHQ.Floor1.VAV1A	Overheating	[Progress bar]
VAV2A	CorporateHQ.Floor1.VAV2A	Overcooling	[Progress bar]
VAV3A	CorporateHQ.Floor1.VAV3A	Damper stuck closed	[Progress bar]
VAV4A	CorporateHQ.Floor1.VAV4A	Occupied setpoint	[Progress bar]
VAV5A	CorporateHQ.Floor1.VAV5A	Overheating	[Progress bar]
VAV6A	CorporateHQ.Floor1.VAV6A	Fan speed fault	[Progress bar]





Views

- Assets
- Alerts
- OV
- KT
- FDD
- FDC



Utility Cost YTD £99,999.00 mil.

999999% 0 199,999

Electric YTD 99,999 MWh

999999% 0 299999

Water YTD 99,999 gallons

999999% 0 99999

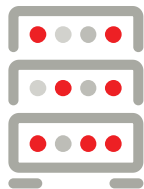
Gas YTD 99,999 ft3

999999% 0 99999

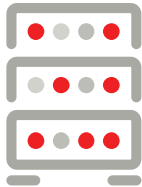
CO2 YTD 99,999 ton

999999% 0 123456

Faults Count MTD 999



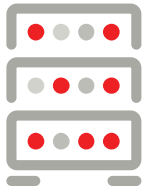
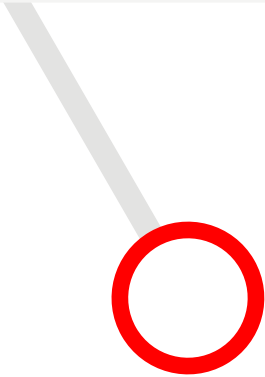
Mainframe



Mainframe



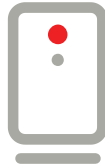
PC



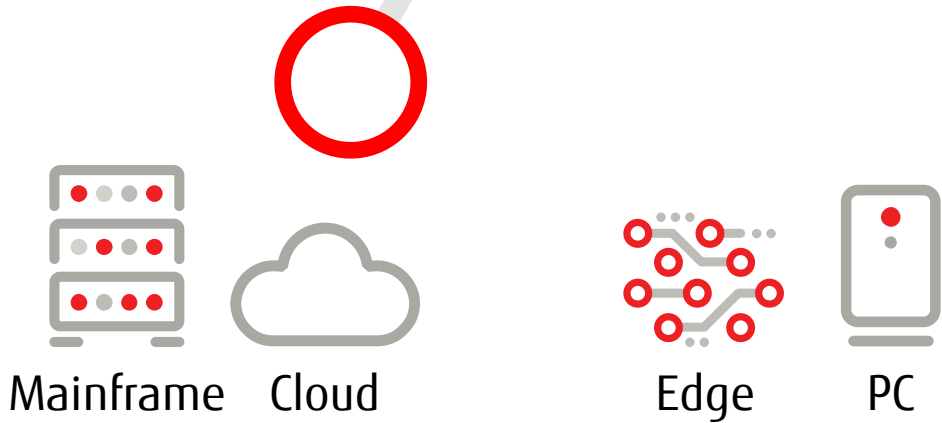
Mainframe

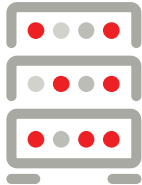
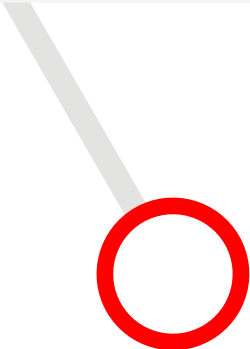


Cloud



PC





Mainframe



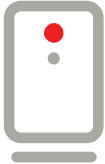
Cloud



Fog



Edge



PC

Next up...

FUJITSU

15.15

Industry Breakout Sessions:

Transportation

Education

Manufacturing

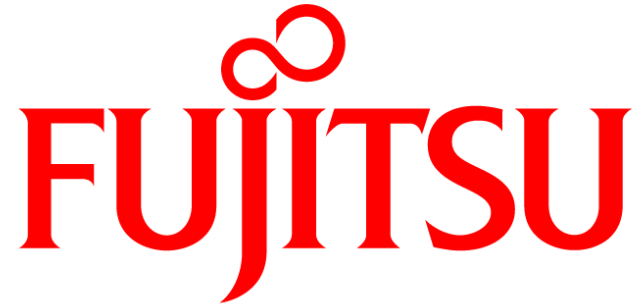
Retail & Hospitality

Public Sector

Guided Tours of the Demo Center:

Financial Services

Energy & Utilities



shaping tomorrow with you