



Red Hat, l'Open Source e i suoi partner per l'Internet of Things

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#RedHatOSD



DIGITAL TRANSFORMATION

The accelerating **transformation** of business activities, processes and competencies to fully leverage the opportunities of **digital** technologies and automation.



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WHY OPEN SOURCE FOR IoT

- Use open standards
- Take advantage of community innovation and advances
- Wider integration with platforms and devices
- Speed time to market to deliver solutions
- Maintain control of your IoT technology selection and licensing
- Iterate more quickly with less risk
- Lay the foundation for future system and requirements scaling



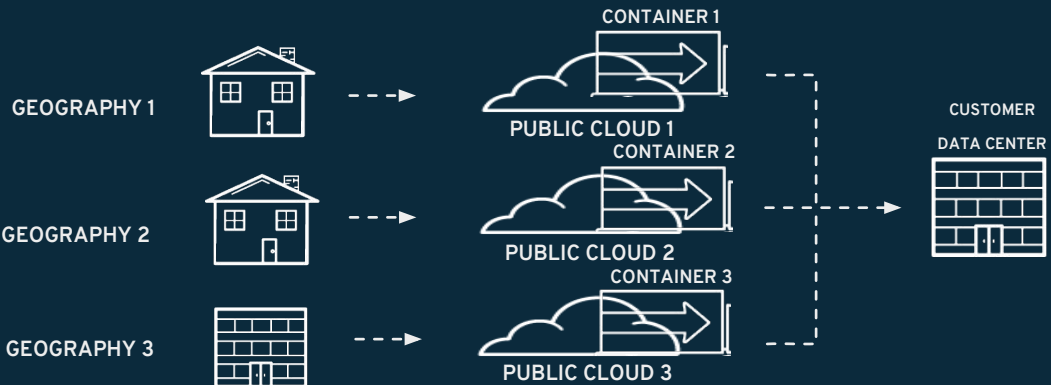
BUILDING THE INTELLIGENT ENTERPRISE

ENHANCE THE IOT PLATFORM OF AN APPLIANCE MANUFACTURER

Vorwerk, a European Appliance manufacturer wanted to develop an IoT solutions for its new line of products sold worldwide (+1 mio) and needed a stable and fully automated container platform which will serve as an IoT backend working on multi-cloud environments

Openshift to act as the IoT back-end platform to deploy and support its IoT solutions with a deployment of +7000 containers and +800 VMs

CloudForms on top of the solution as a brokerage and cost control solution to leverage the multi-cloud environments in different geographies



RESULTS:

- Extremely fast and simple deployment of new IoT solutions
- Completely independent without vendor lock-in from any public cloud provider



BUILDING THE INTELLIGENT ENTERPRISE

BUILDING INTELLIGENT FACTORY WITH OPEN SOURCE

POSCO ICT sought to cost-effectively create an intelligent factory that uses real-time data from Internet of Things (IoT) sensors to monitor and control facility conditions, maintain a stable operation environment, and extend the lifespan of the facility.

Red Hat Enterprise Linux as an open source foundation for its critical systems, such as its enterprise portal and collaboration systems.

Red Hat Virtualization and Red Hat JBoss Enterprise Application Platform, to support data analysis conducted at the smart factory



"Compared to UNIX, we reduced our operating system costs by more than 10 times with Linux. With middleware and virtualization products from Red Hat, we saved about 40-50% compared to our proprietary solutions."

TEAM LEADER - I.T. INFRASTRUCTURE TECHNICAL SUPPORT TEAM, POSCO ICT

RESULTS:

- Reduced IT operating system, middleware, and virtualization costs by an average of 50% compared to proprietary solutions
- Established a collaborative, innovative corporate culture to better develop and deploy stable, competitive solutions
- Enhanced IT skills and knowledge on multiple open source solutions to better take advantage of emerging technologies such as big data, IoT, and cloud computing



BUILDING THE INTELLIGENT ENTERPRISE

SMART TRAIN AT THE EDGE

SBB, the Swiss Railways Company is looking to empower its trains with intelligent gateways powered by RHEL to provide onboard information system. The IoT gateways feeds in-train Information terminals - shows next stop and additional train connections, process loudspeakers for alert messages, handle surveillance cameras. Sattelite is used to update RHEL on the gateways and the underlying platform is Openshift to support the backend.



RESULTS:

- Management and Enterprise support of the gateways on the train
- Massive reduction of the overall old proprietary solution
- Higher flexibility to rapid update and adapt to new needs



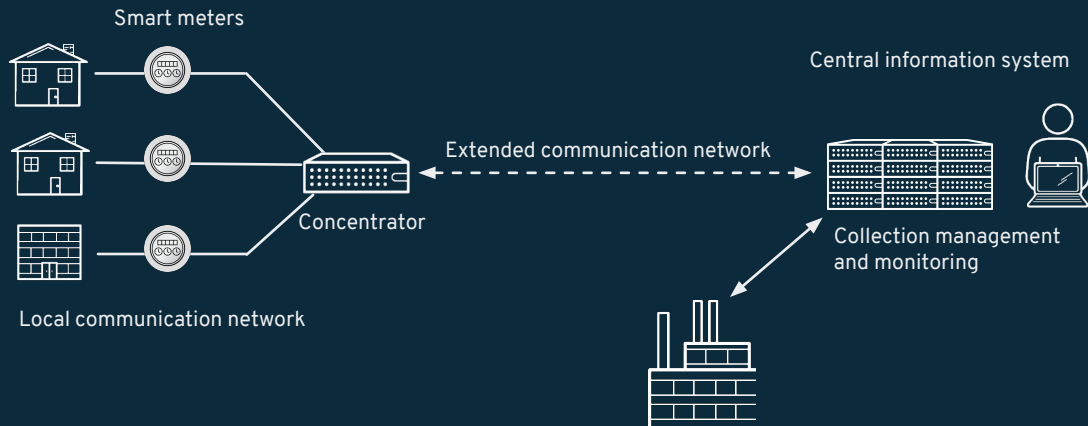
BUILDING THE INTELLIGENT ENTERPRISE

EUROPEAN ELECTRICITY PROVIDER

Complex Event Processing (CEP) to analyze events in real time; address electricity network optimization requirements

Red Hat JBoss BRMS - complex business logic and rules

Red Hat JBoss Data Grid – BRMS session caching for reliability and high availability in critical implementation



RESULTS:

Smart meters to help decrease energy consumption and fuel costs

- 8 million events processed/day
- 35 million smart meters
- 700,000 concentrators



KEY CHARACTERISTICS FOR AN END-TO-END IoT ARCHITECTURE



Modular Architecture

Integrated yet independent components that you can utilize to make best of your existing investments



Open & Interoperable

Based on open source and open standards to ensure interoperability and accelerate innovation



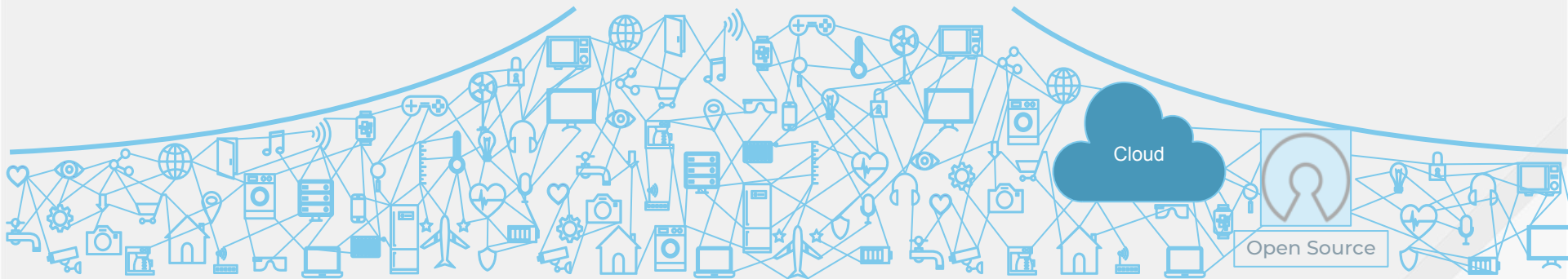
End-to-End Security

Enterprise-grade data security and compliance – from the edge all the way through to storage and access



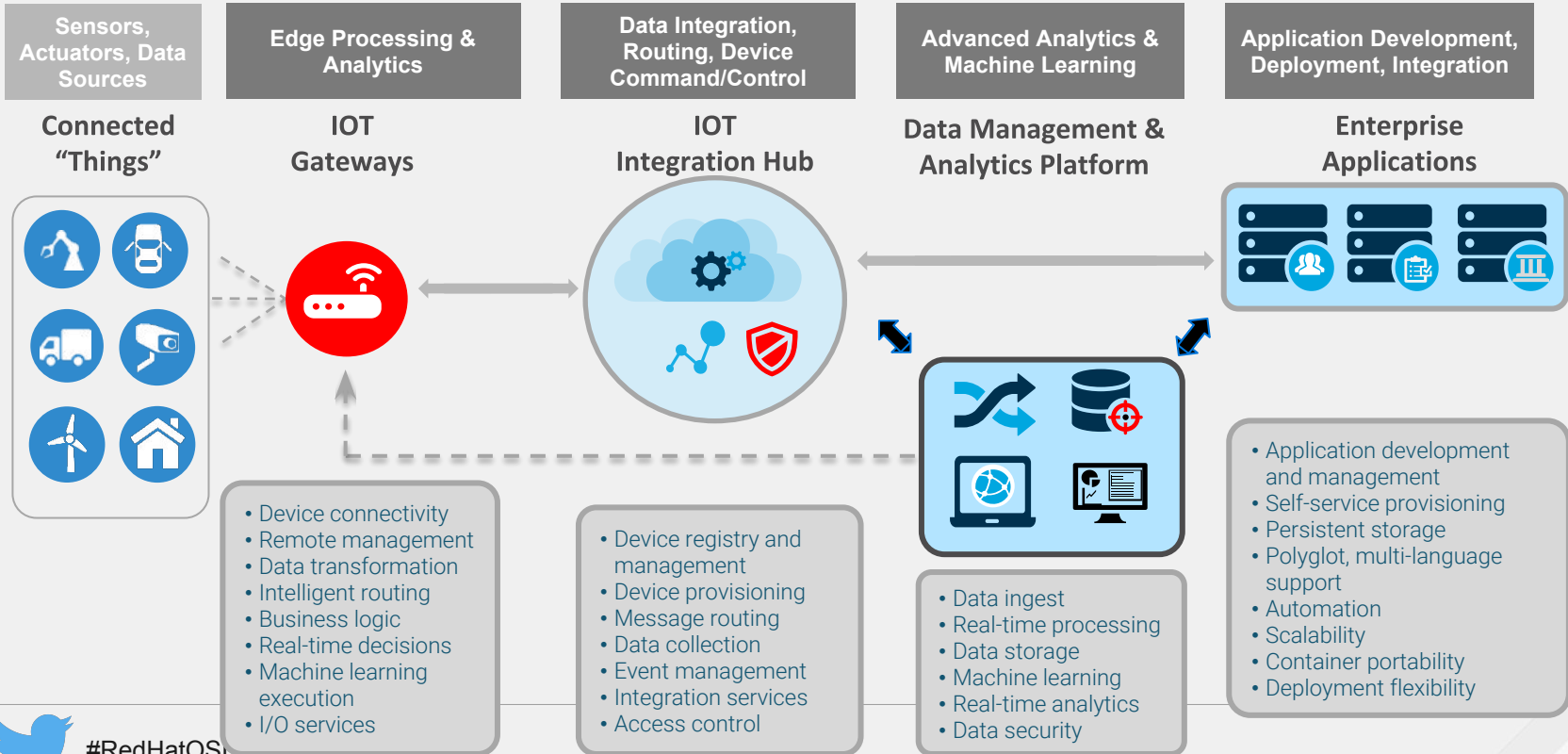
Deployment Flexibility

Deploy anywhere you want it – on the edge, on any of the leading cloud platforms or in your data center

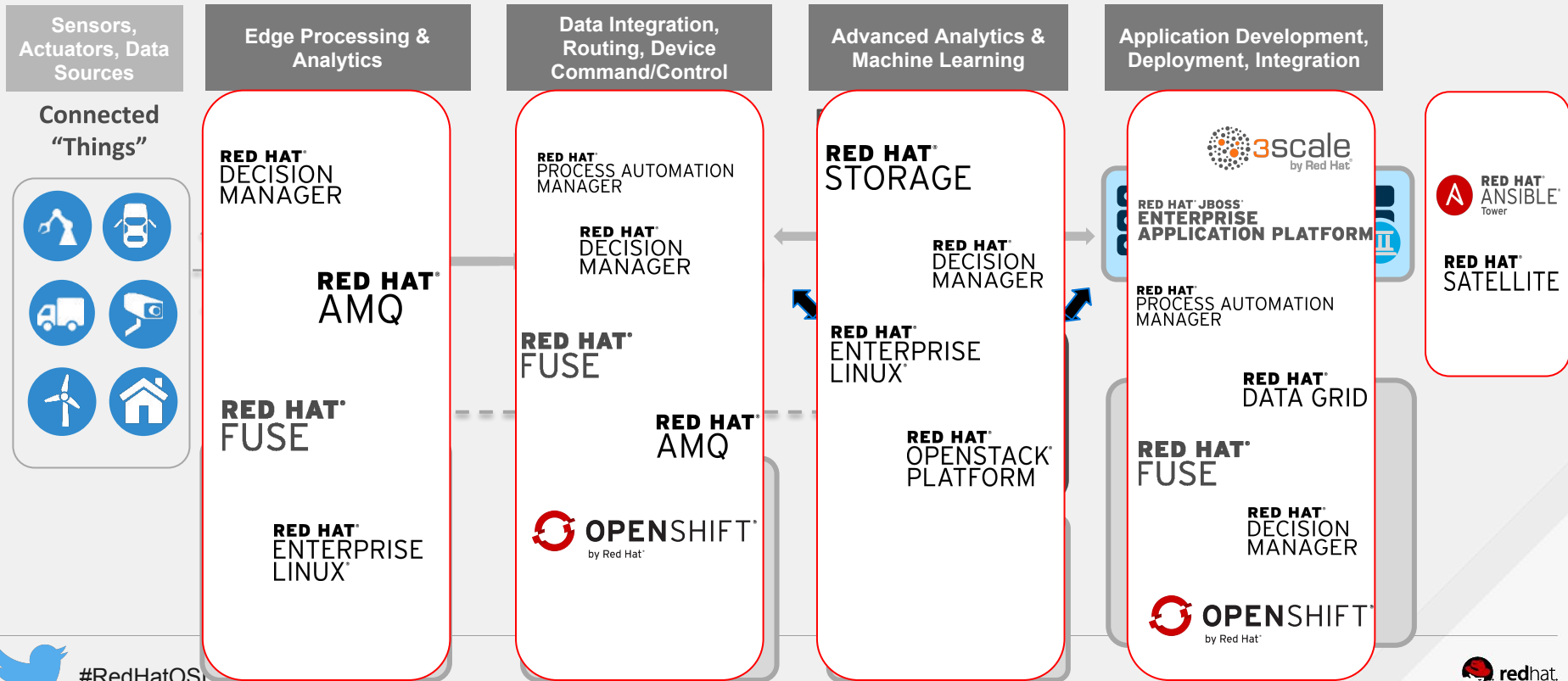


OPEN END-TO-END IoT ARCHITECTURE

Integrating IoT operating technology, data management, analytics, and applications



RED HAT CONTRIBUTION TO THE OPEN END-TO-END IoT ARCHITECTURE



MULTIPLE EDGE DEPLOYMENTS SCENARIOS

Corporate Node



Plant Node

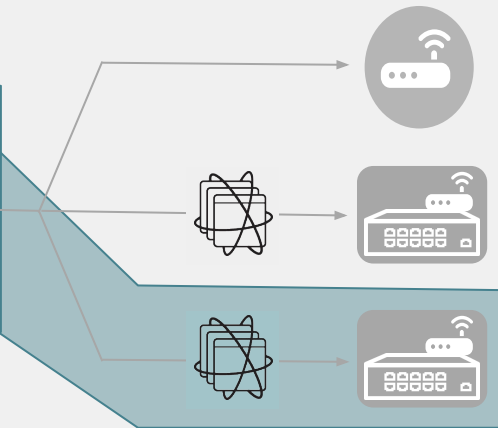
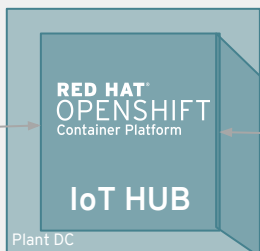


Edge Node



Deployment Scenarios
(Based on resource (CPU/Memory)
and connectivity (Bandwidth/Latency)
availability)

Available capabilities



SCENARIO 1

Low resource (Edge Gateway)
Non reliable connectivity

- Data gathering
- Basic analytics remotely managed

SCENARIO 2

High resource (Edge Server)
Reliable connectivity

- Data gathering
- Dynamic deployed containerized business applications

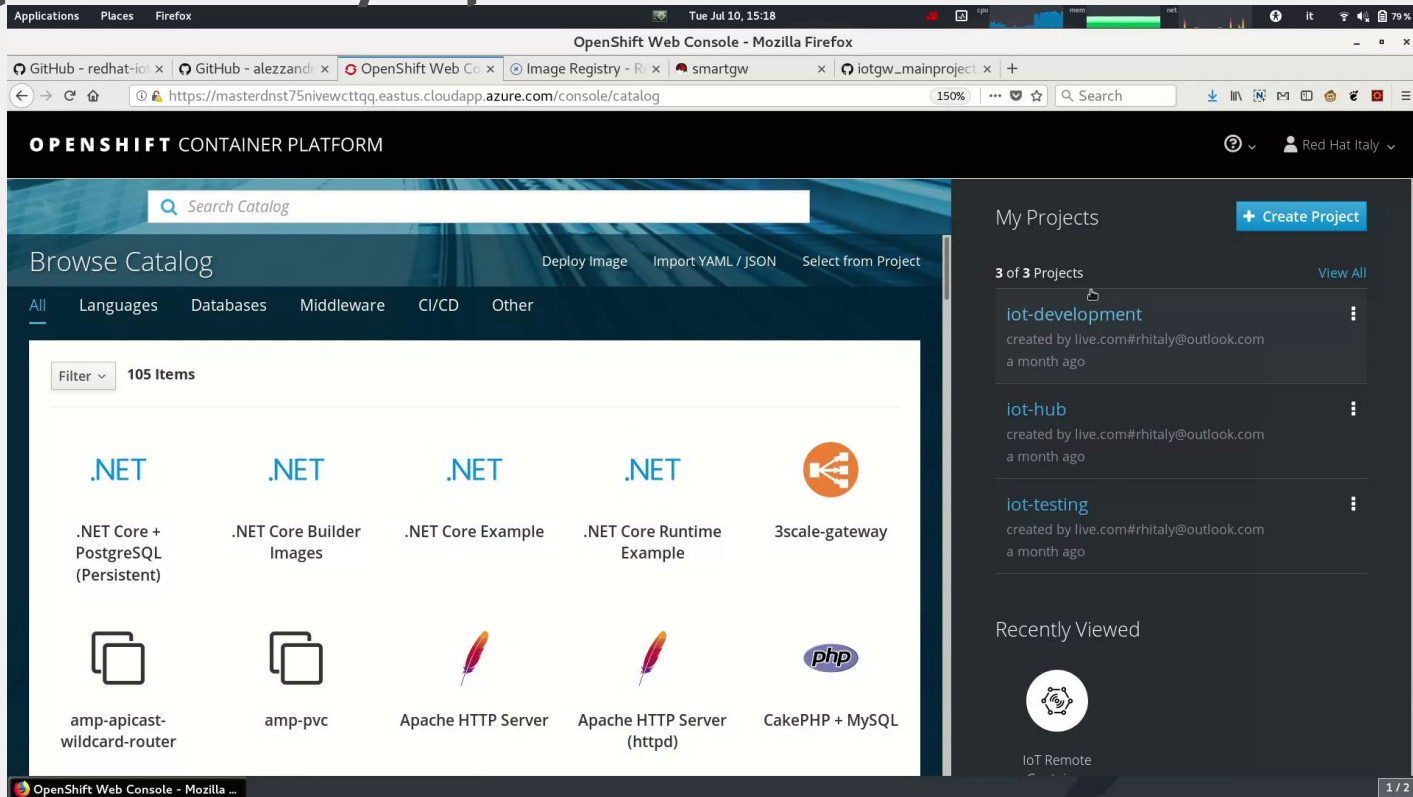
SCENARIO 3

Available resource (Edge Server)
High affidability connectivity

- Data gathering
- Dynamic deployed containerized business applications
- Centralized Management



Container hybrid deployment to the EDGE powered by Openshift & RHEL



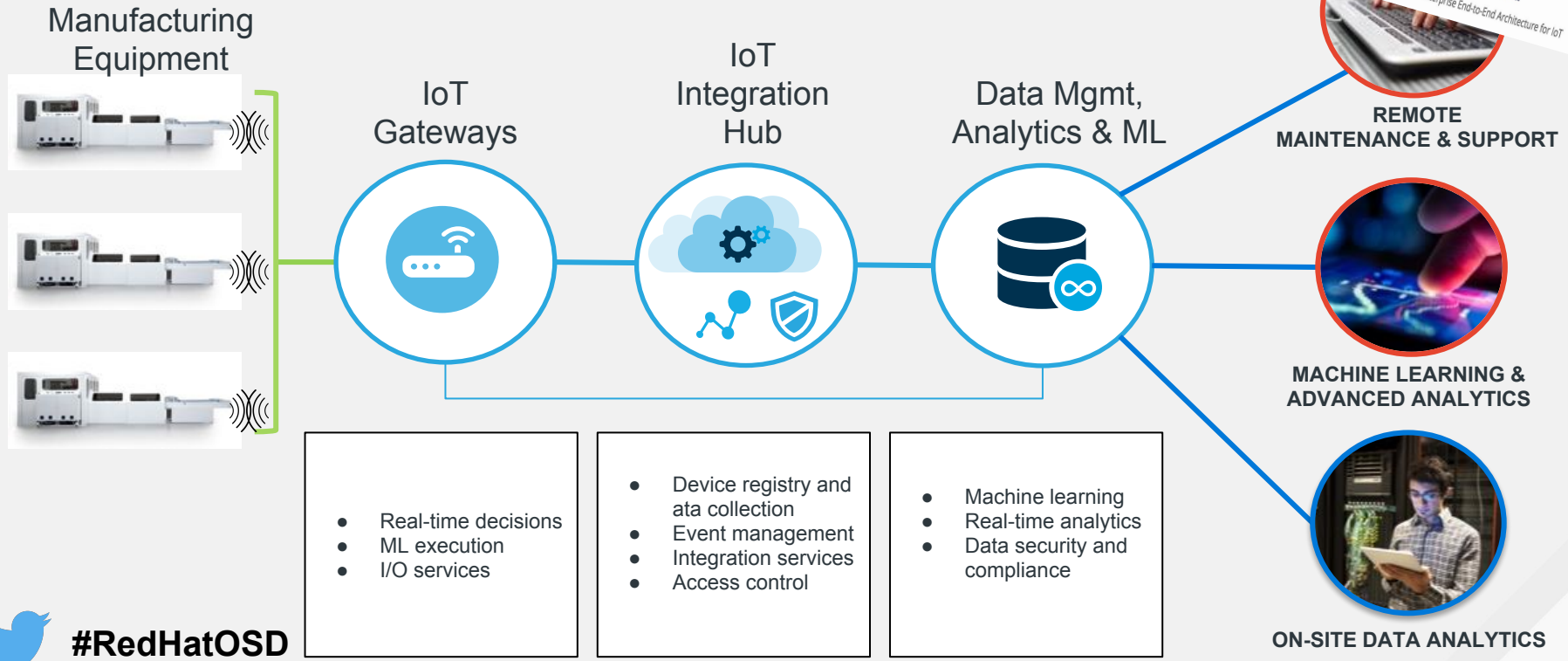
The screenshot displays the OpenShift Web Console interface. At the top, the browser address bar shows the URL `https://masterdnst75nivewcttq.eastus.cloudapp.azure.com/console/catalog`. The main header reads "OPENSIFT CONTAINER PLATFORM" (note the typo in the image) and includes a search bar labeled "Search Catalog". Below the header, the "Browse Catalog" section is active, showing a filter for "105 Items". The catalog displays several application templates, including:

- .NET Core + PostgreSQL (Persistent)
- .NET Core Builder Images
- .NET Core Example
- .NET Core Runtime Example
- 3scale-gateway
- amp-apicast-wildcard-router
- amp-pvc
- Apache HTTP Server
- Apache HTTP Server (httpd)
- CakePHP + MySQL

On the right side of the console, there is a "My Projects" section with a "+ Create Project" button. It lists three projects: "iot-development", "iot-hub", and "iot-testing", each created by "live.com#rhitaly@outlook.com" a month ago. Below this is a "Recently Viewed" section showing an "IoT Remote" project.

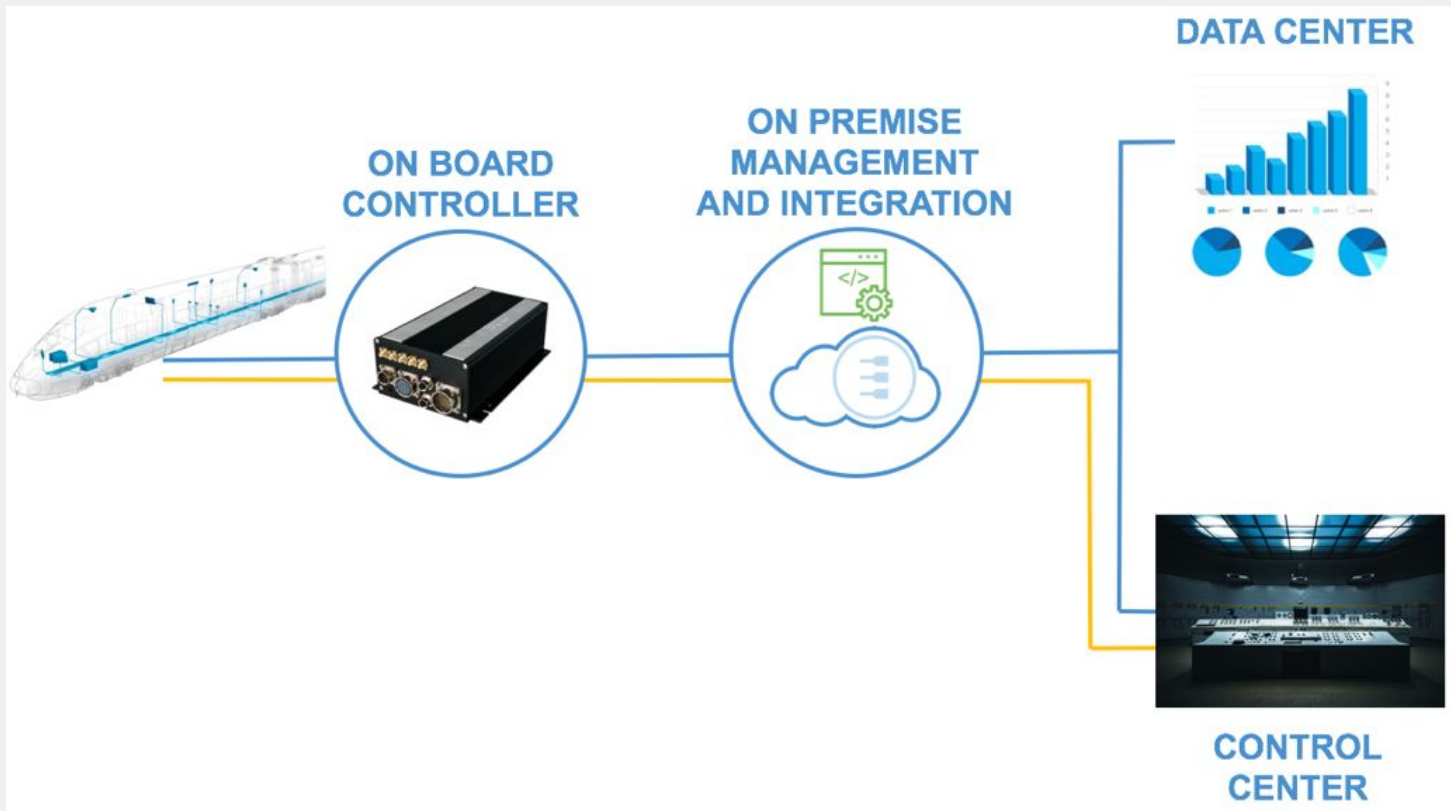


OPEN SOURCE END-TO-END IOT ARCHITECTURE FOR AN INDUSTRY 4.0 CASE

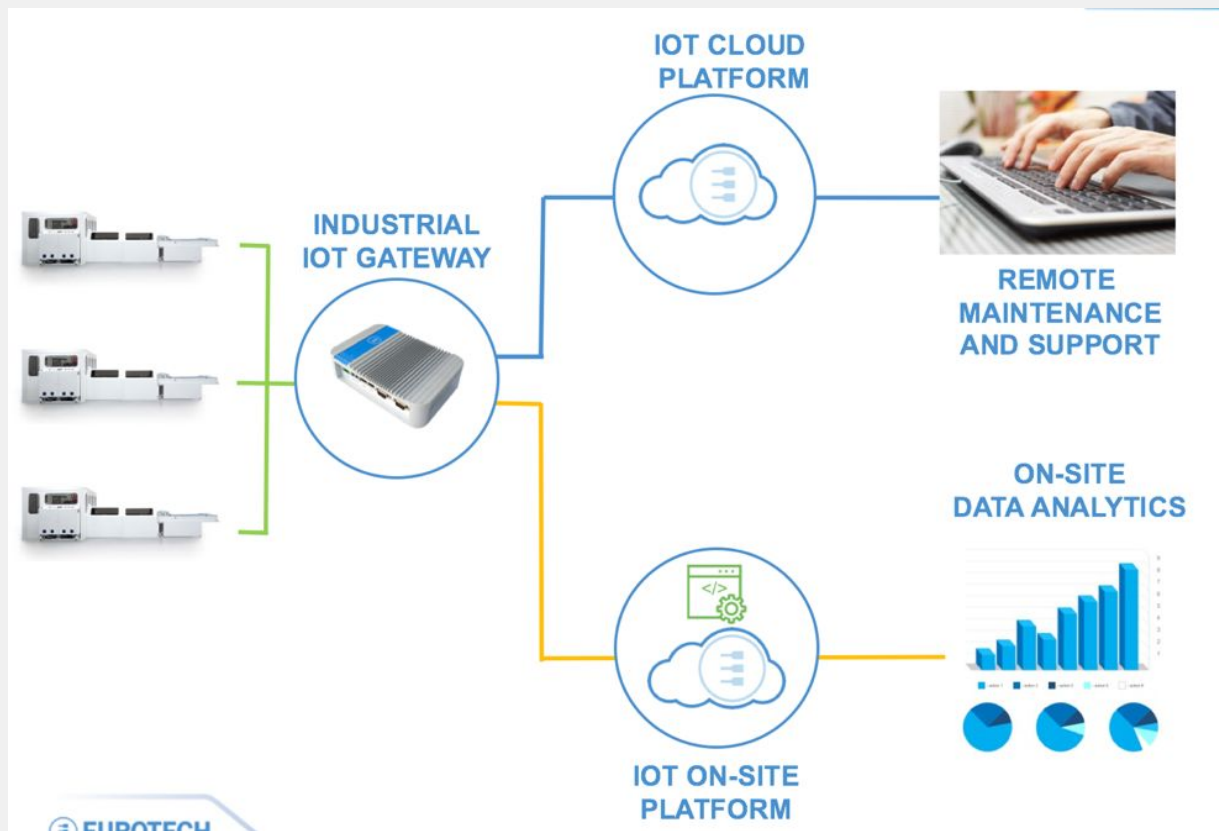


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USE CASE: RAILWAY



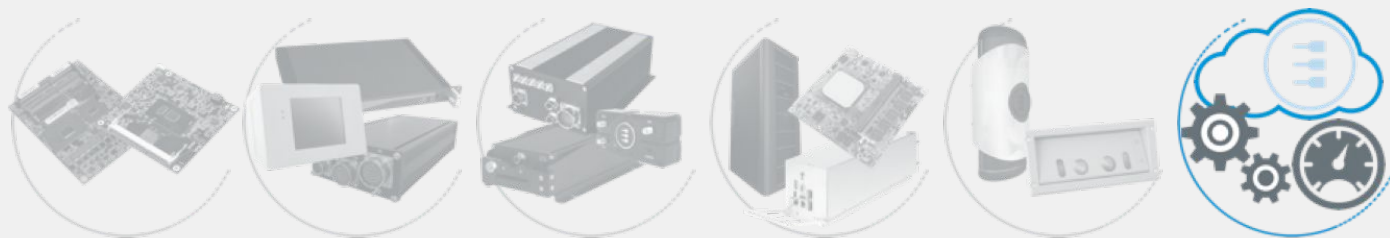
USE CASE: INDUSTRY 4.0



EDGE COMPUTERS and SERVERS

	10-0x (ARM)	10-1x (ARM)	10-2x (i.MX6)	20-xx (Atom®)	30-xx (Celeron®, Core™ i, Xeon®)
Bolt				(G) (M) (M) 20-25 20-28 20-11 	(C) 30-17 
Dyna	(G) 10-06 (*) 	(G) 10-12 			
Relia	(G) 10-05 	(G) 10-12  (G) 10-11	(G) 10-20 	(G) 20-25 	

SW offering



IoT



IoT Edge Framework



IoT Integration Platform

Everyware IoT

Eclipse IoT

Contributed by



Middleware for IoT Gateways



Modular IoT Integration Platform



2.5
million
lines of code



30*
projects

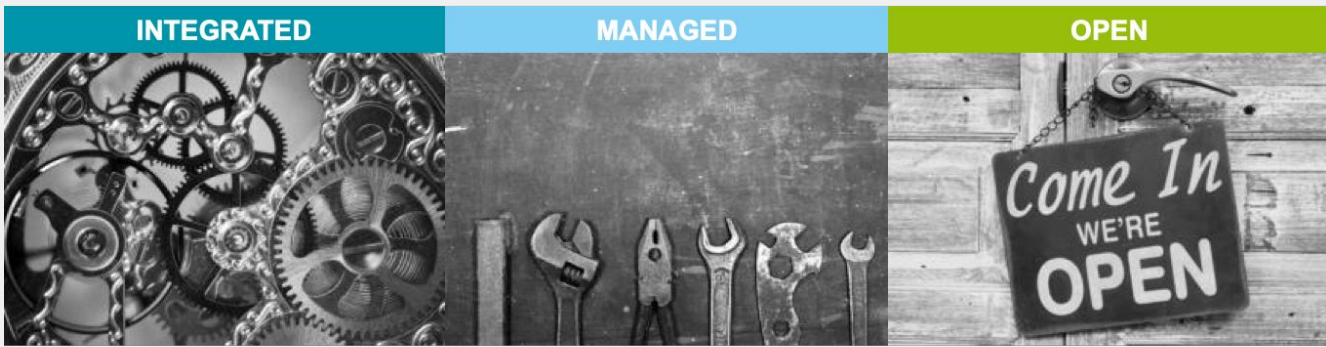


290+
developers



1.5M
annual
visitors

Benefits



Integration @ Edge
Integration @ Data Center
End-to-end Modular IoT Solutions

Increased Flexibility
Faster Innovation
Faster Time-to-Market
Real-Time Actionable Data

IT Management
OT Management
IT / OT Integration & Security

Operational Efficiency
Low TCO
Deployment Flexibility
End-to-End Security

Open Source
Open & Industry Standards
Open & Flexible Hardware

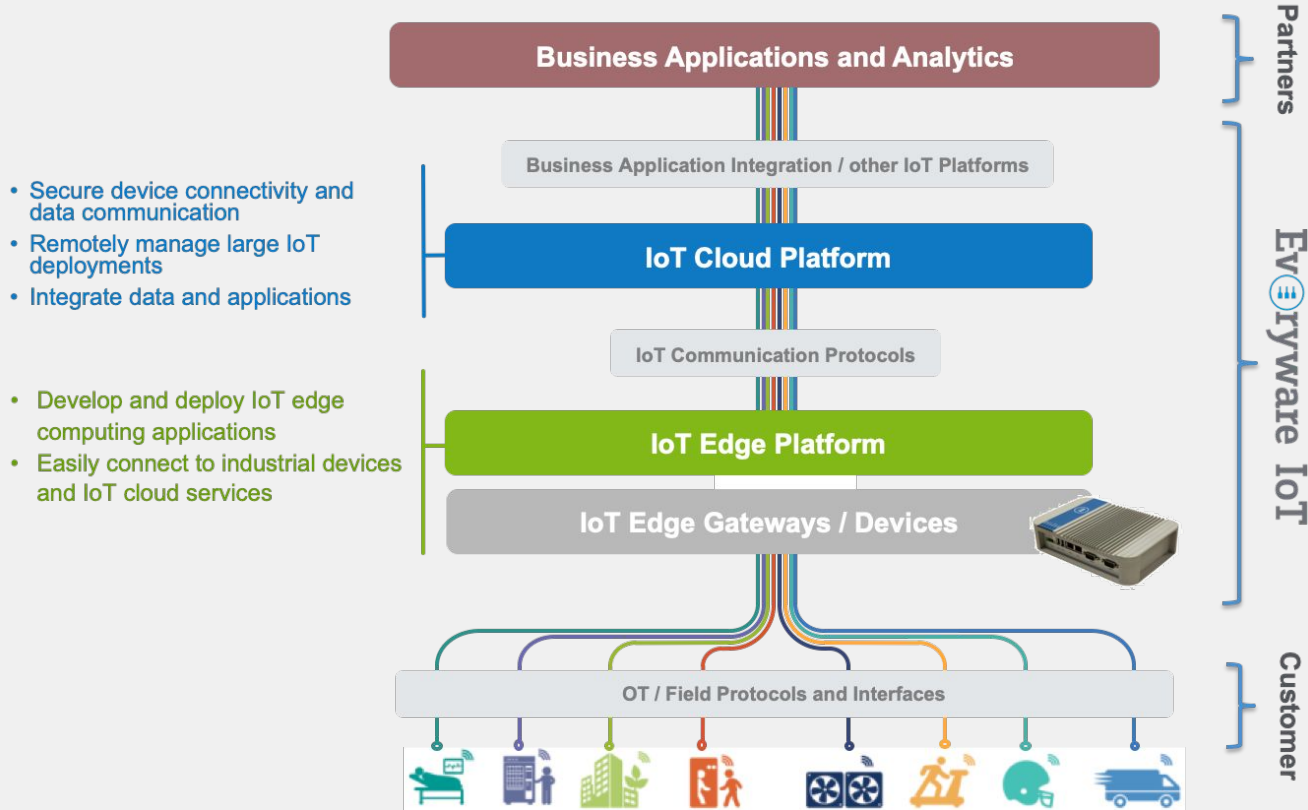
No Vendor Lock-in
Protection of Investments
Large Eco-system
Interoperability
Customers as Partners

Integrated. Managed. Open.

as simple as

Ev③**ryware IoT**

IOT ecosystem





GRAZIE PER L'ATTENZIONE

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