

Building the Internet of Things



Java at V2COM

Exploring Java and V2COM

January, 2016

Leonardo Lima

CTO

llima@v2com.mobi

9600 Great Hills Trail, #150W
Austin, TX 78759

phone: + 1 512 637 1043

information contained in this document is subject to change without notice and is presented without express or implied warranty.

V2COM and Conera are trademarks of V2COM Inc.

All other trademarks are the property of their respective owners.

Copyright 2016, V2COM Inc.

All rights reserved.

One

Our Business



□))



A story that started in 2002

V2COM was founded to connect remote devices

V2COM is a leading Latin American provider of **Internet of Things** platform and Smart Grid solutions. Our offer includes **hardware, software and services** that can reduce financial losses and increase **process efficiency**, currently connecting **more than 1 million devices**.

Besides the economic gains for our customers, we develop solutions with **significant impact** on the environment (avoiding losses of important natural resources) and with social responsibility (our Smart Grid systems can be used to offer free internet access in challenging areas)

Our award winning **technology platform** accelerates project deployments and increases **Smart Connected Products time-to-market**



Of pioneering in the M2M / IoT



V2COM has received more than 15 international awards



To distinguished companies that have taken Oracle's Java Embedded technologies to a new vertical market, are leveraging inherent Java capabilities such as security and portability to address industry challenges, or are building out a new product based on Oracle's Java Embedded technologies bringing innovation to the marketplace



The best WSN/IoT Application award went to the collaboration of V2COM, Gemalto M2M and Oracle, delivering flexible, smart grid solutions in Latin America, an excellent system-level solution to energy monitoring and management which effectively addresses client retrofit and payback concerns in addition to good system integration. (<http://www.idtechex.com/research/articles/idtechex-energy-harvesting-and-storage-usa-2013-award-winners-00006011.asp>)



To simplify and help CIOs navigate the IoT landscape, CIOReview is coming up with annual special edition on 50 Most Promising IoT Companies where a distinguished comprising of CEOs, CIOs, VCs, analysts including CIOReview editorial board will decide the '50 Most Promising IoT Companies 2014' in the U.S. CIO Review research team has analyzed over a 1000 companies providing IoT solutions for various industries.



Jointly instituted by the Wharton School of the University of Pennsylvania and Infosys Technologies, the Wharton Infosys Business Transformation Award (WIBTA) celebrated excellence and innovation in information technology with industry-wide impact. The Enterprise Business Transformation Award is granted to organizations that made the best use of IT for business transformation in their region. Past winners include: Amazon.com , Royal Bank of Scotland, YouTube, Wikimedia Foundation.



The Value Chain Awards, organized by M2M Magazine, honor the most successful corporate adopters of M2M technology and the team of solution providers that made their success possible. Four time winner: in 2006 with Ampla and in 2007 with Codensa, Chilectra and BR Distribuidora (<http://www.specialtypub.com/m2m/valuechain/>)



The M2M 100 is a list of the most important and influential machine-to-machine technology providers as determined by the editors of M2M magazine and its editorial advisory board. It is designed to provide a snapshot of the market as it exists today and the companies with the greatest impact on its direction. (http://www.m2mmag.com/m2m_100/). V2COM is a 2008, 2009 and 2010 member of M2M 100, as well as 2010 CW100 (<http://www.connectedworldmag.com/CW100.aspx?id=VNDR080505075429910>).



Connected to key players

V2COM is at the center of the IoT Technical Space



industrial internet
CONSORTIUM

ORACLE® Gold
Partner

Servicing Major Utilities In LATAM



Both state owned and private companies

30 Companies

1 million devices

USD3 billion/year*



* Automated revenue collection



Sao Paulo and Florianópolis
50 people



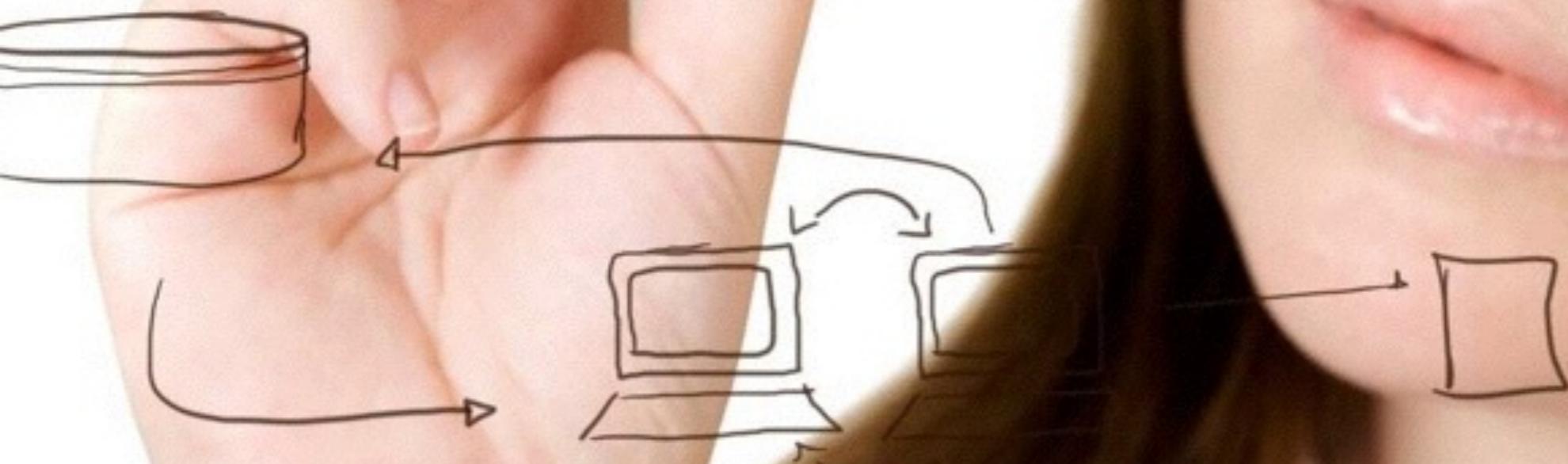
V2COM Inc.



Taking V2COM's expertise to new verticals and new markets

- Established in 2015 to accelerate companies to have Smart Connected Products
- Operation In Austin, TX for worldwide projects



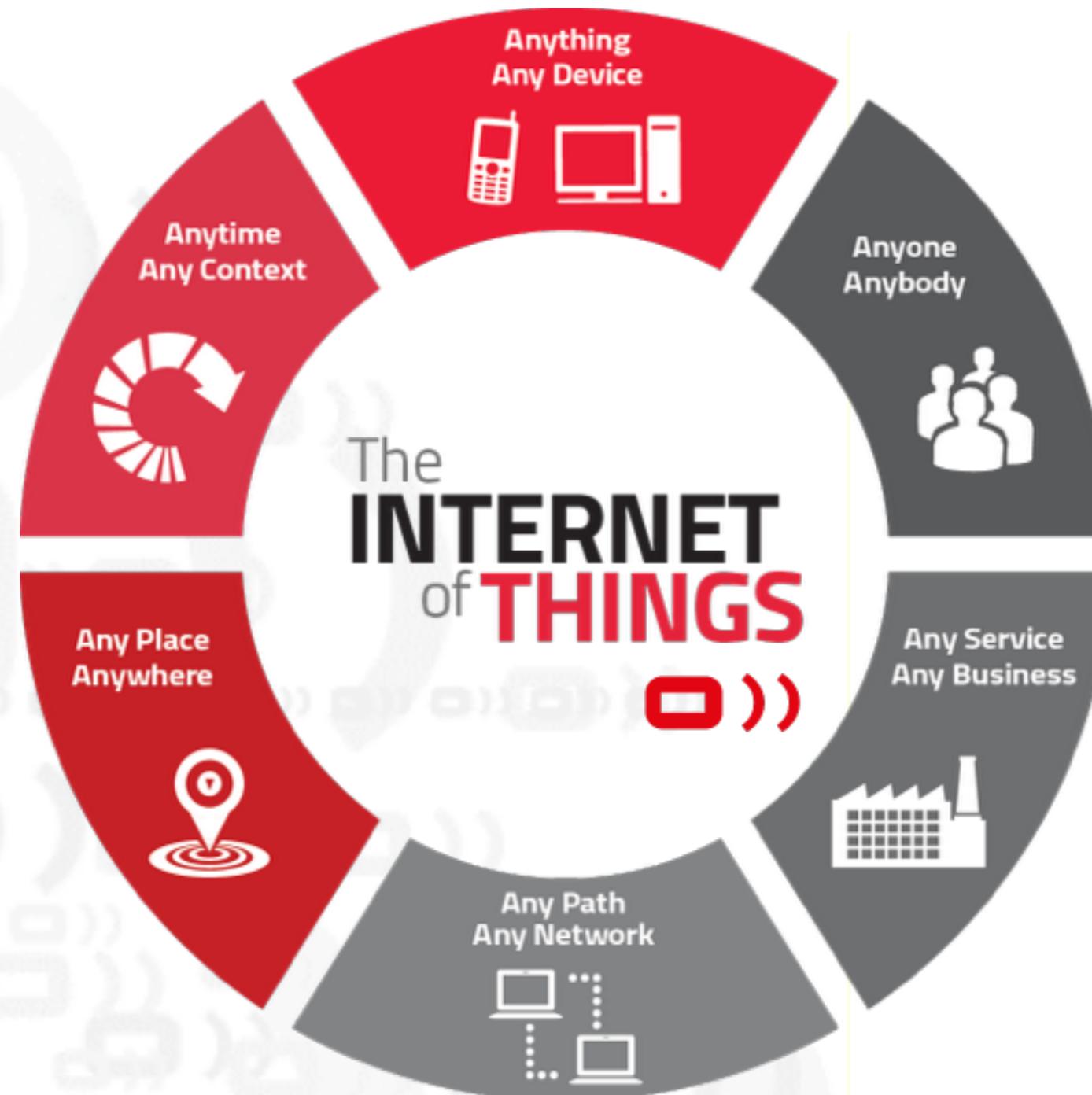


Two
Our Solution



Connecting Easily

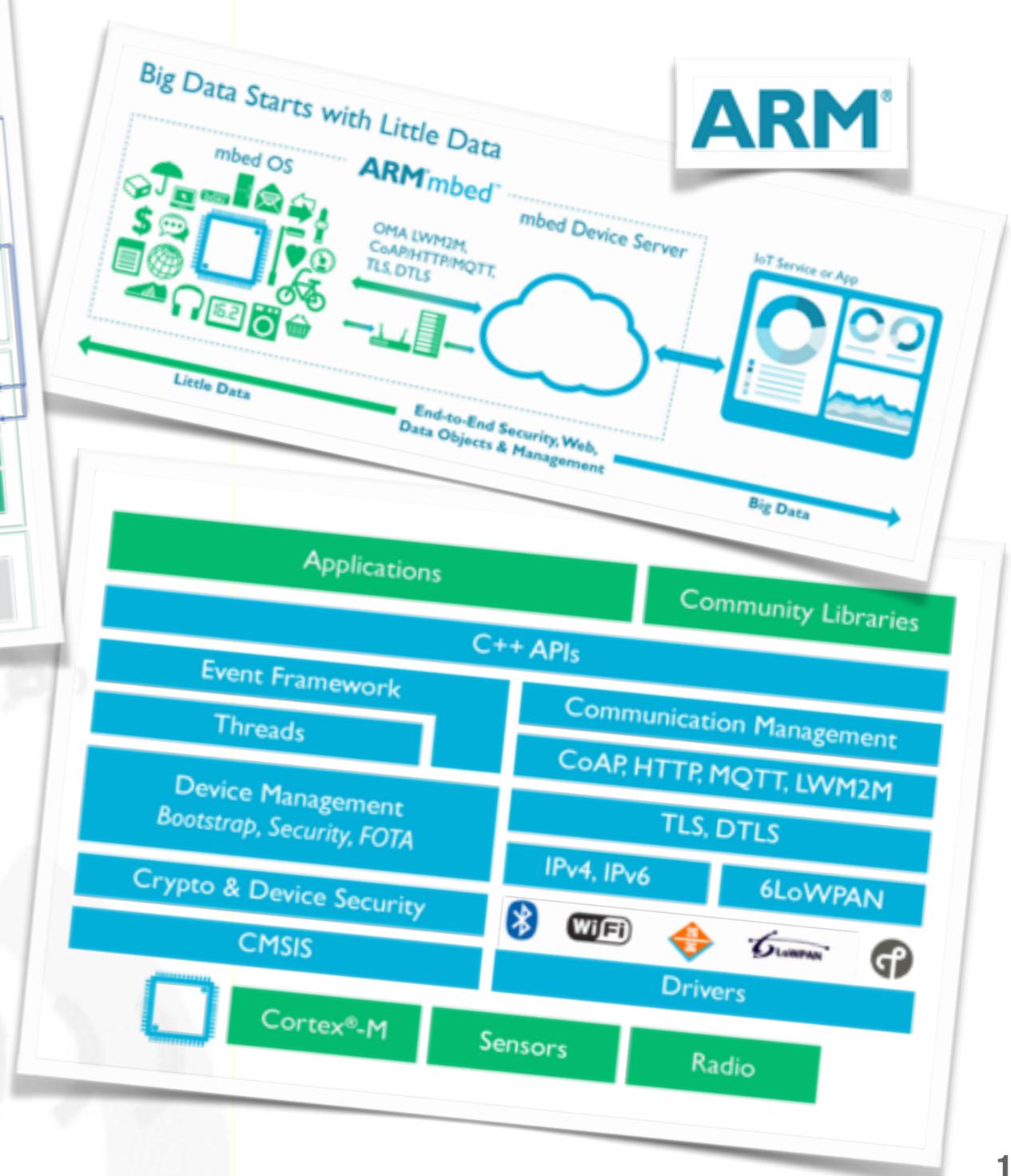
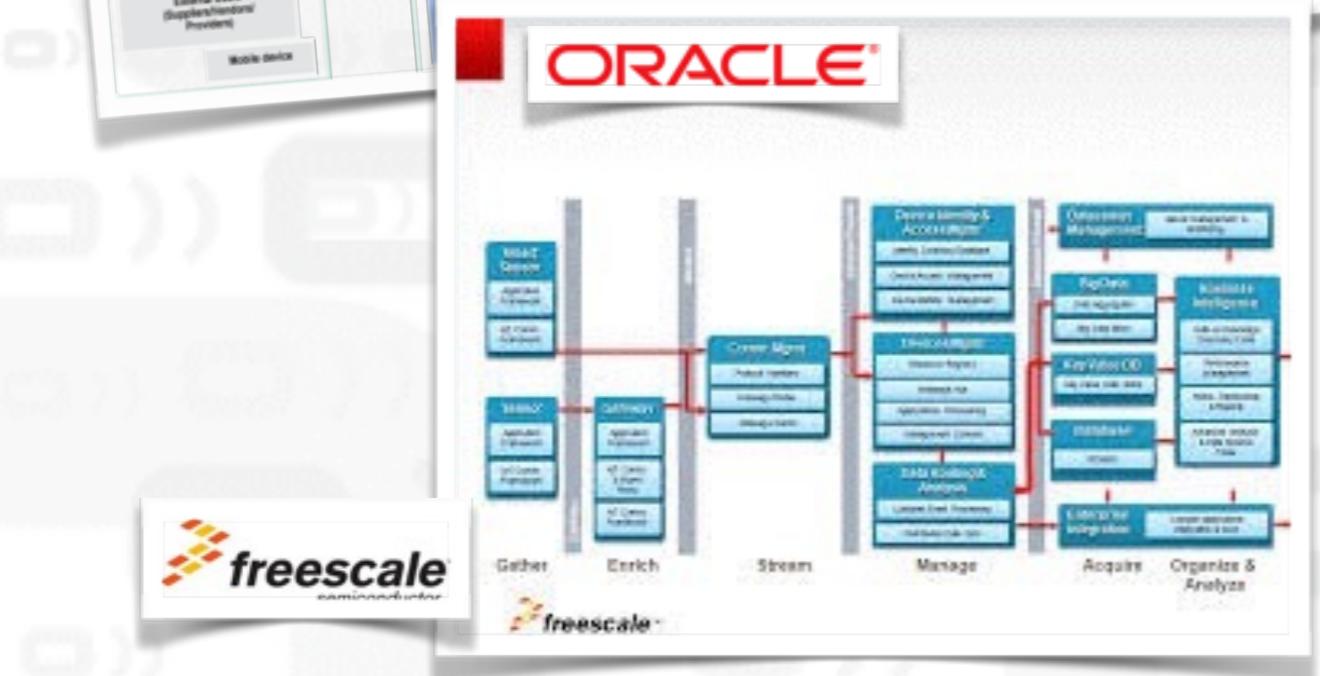
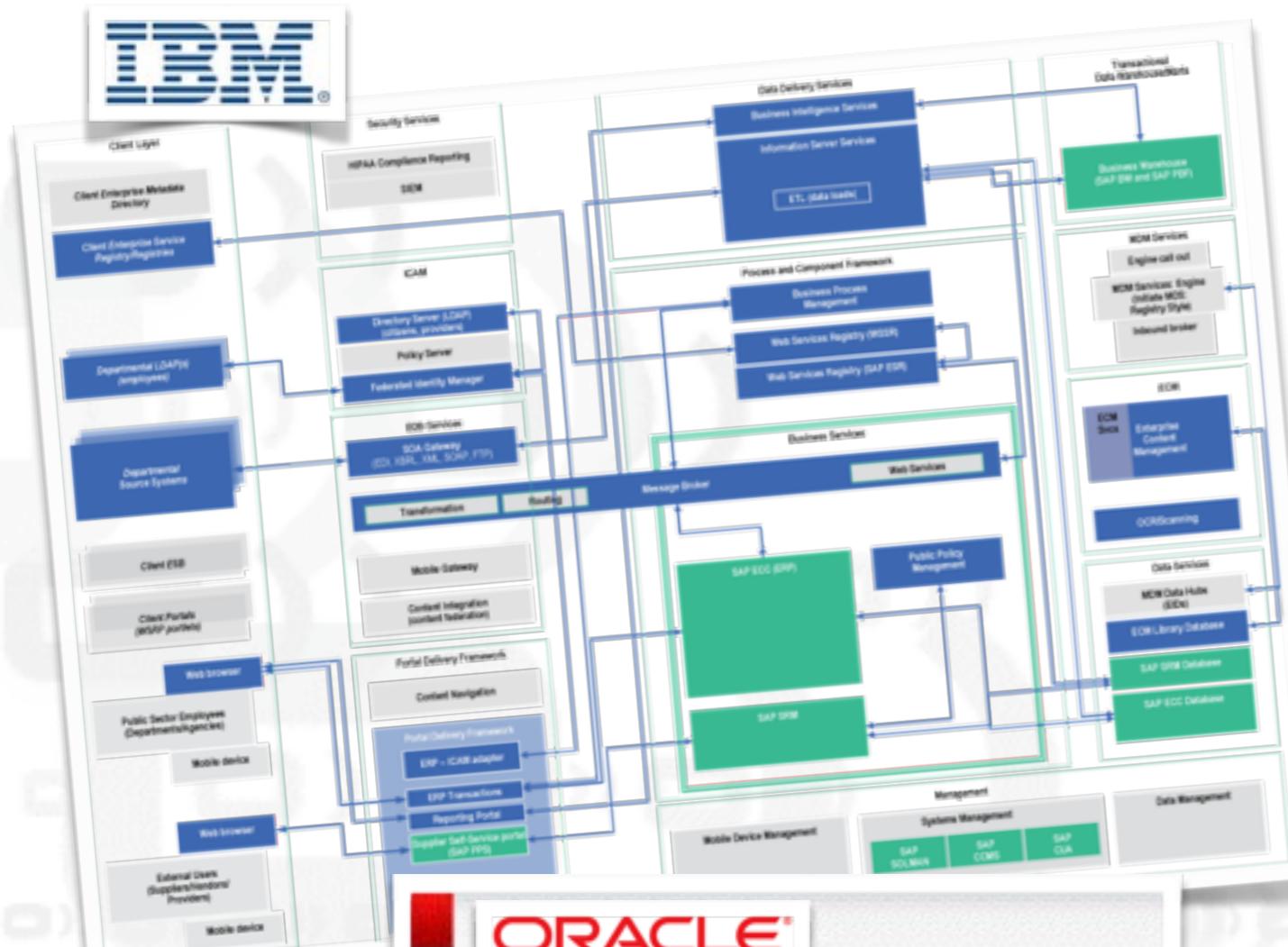
Leveraging V2COM's Conera & Intelligenceware Suite



Multiple architectures & Platforms



Regardless of the network and the IT infrastructure



Our Offer to bring IoT to Fortune 500

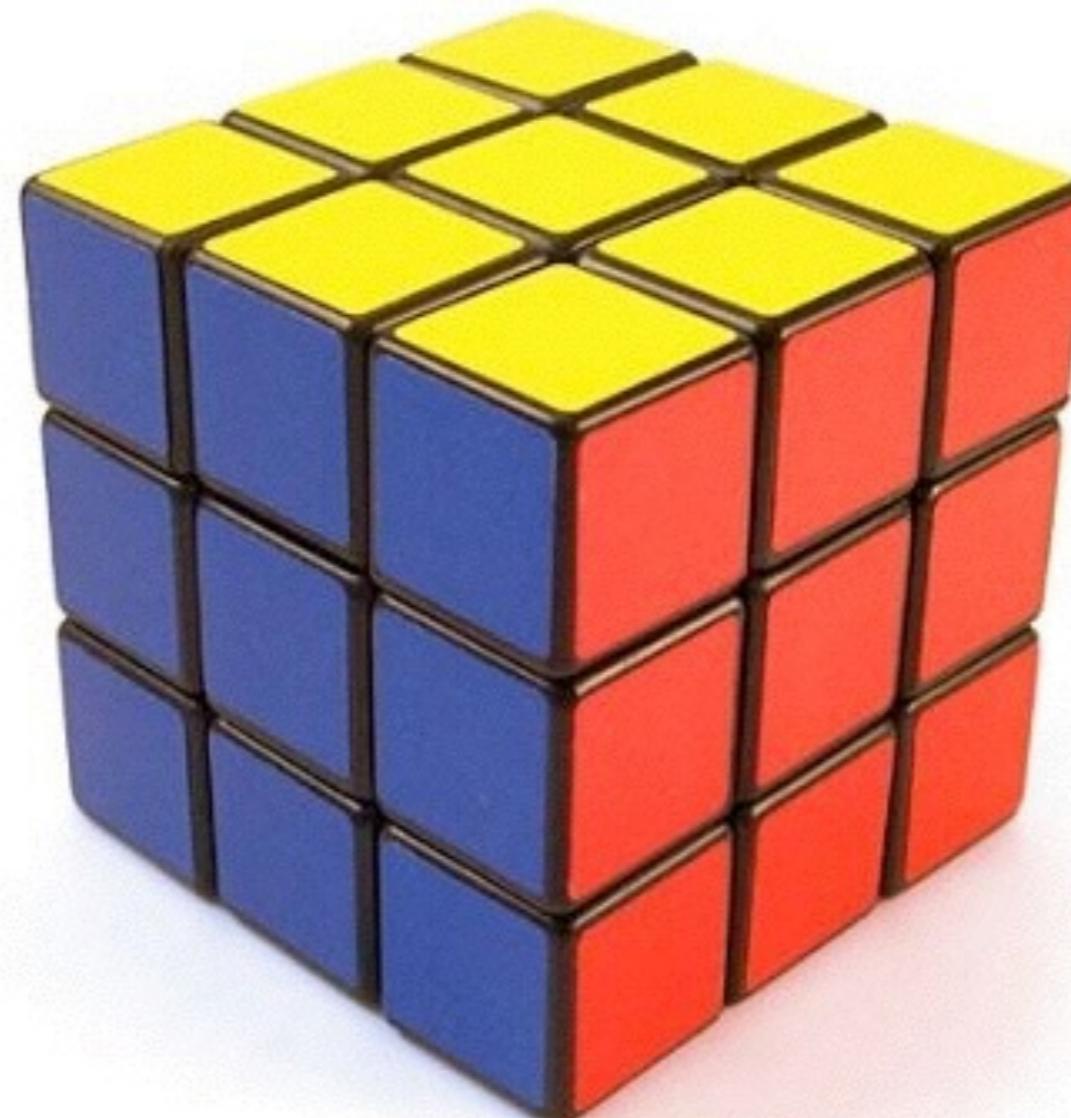


Addressing the gap to accelerate time to market

Services

Hardware

Software



Customized Hardware Solutions

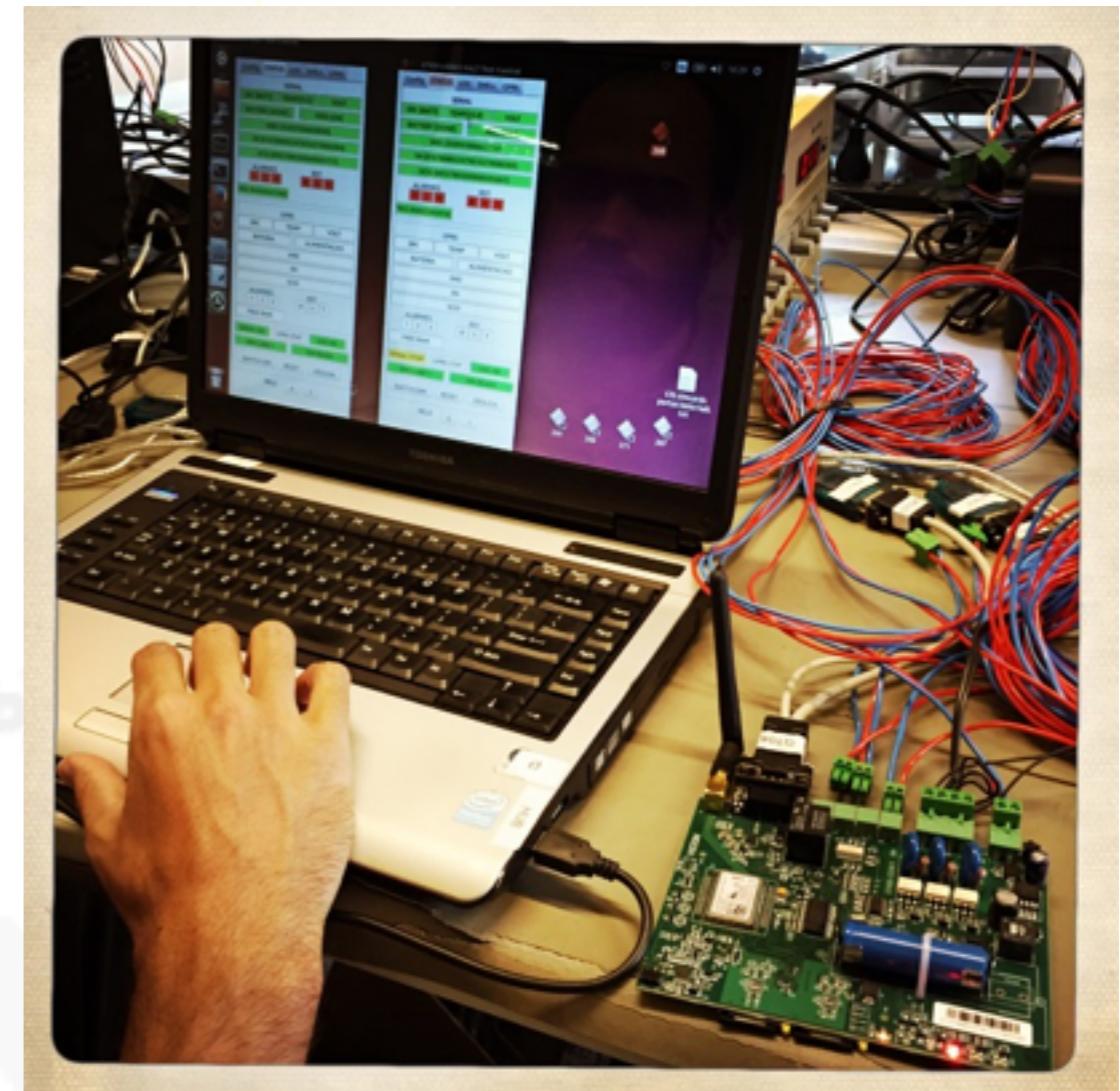


Products and Services

Ready Boards



Design Support



IntelligenceWare Suite

Bird's-eye view

Decision

BI

CEP

Vision

Device Data

Business Processes

WITS

Protocol management
and translation

Scheduling and load
balancing

System
Integration
(ESB)

Axon

Network Management

Device Accessibility

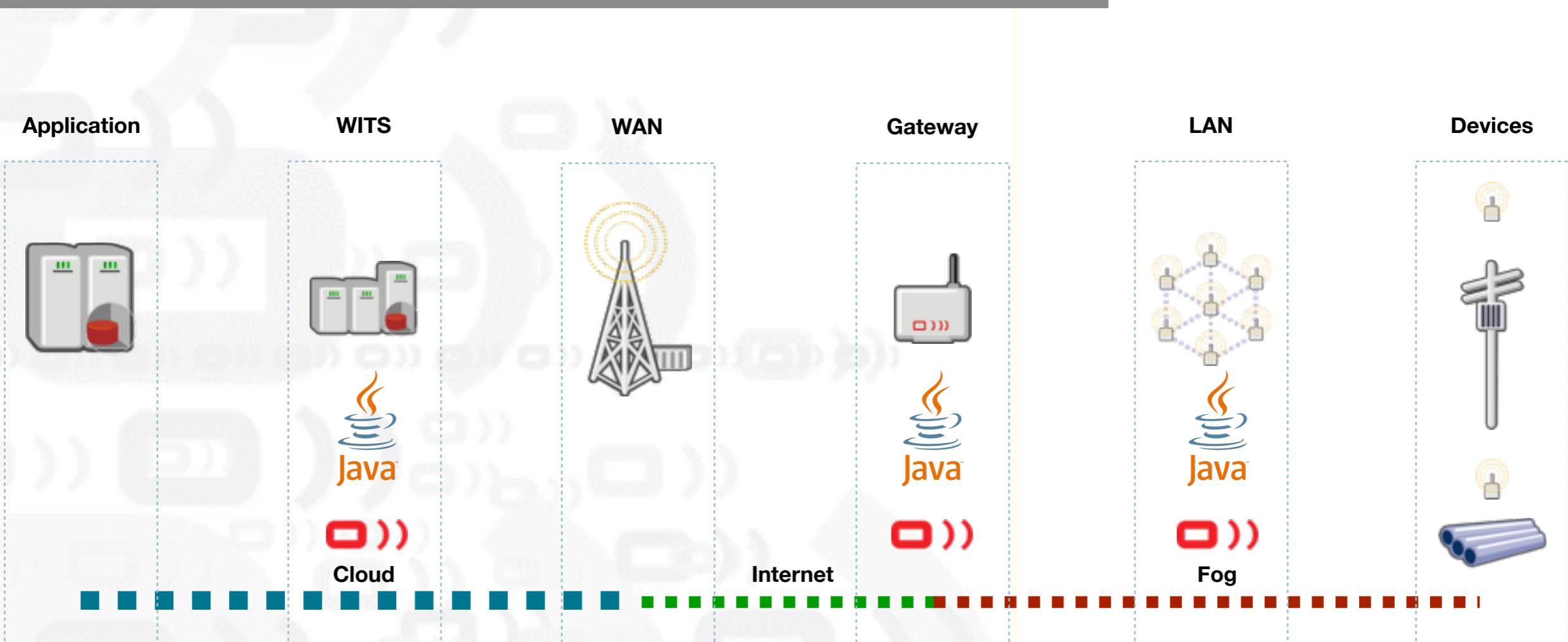
Data in Action



Fast Data and Actionable Business Intelligence

Rapidly scale and connect new and legacy devices

Data is analyzed everywhere: fog and cloud





IoT in Action

Enabling Smart Cities

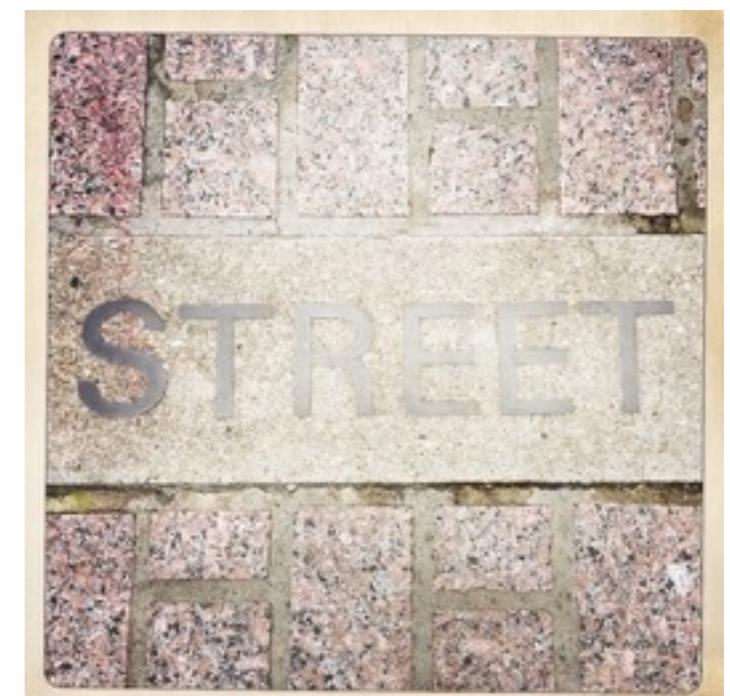
Traffic



Sewage



Parking



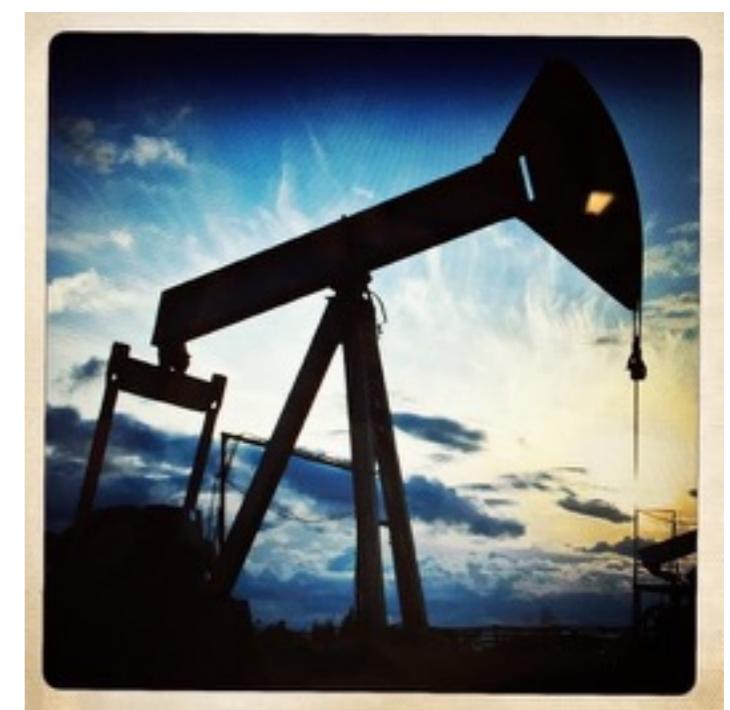
Water



Electricity



Oil & Gas





Energy: C&I Metering

Extracting value from your meter data

- ▶ Connect to large C&I clients using cellular, satellite, fiber or private wireless network
- ▶ Extract value from your data: load, validate, store, and format meter data in ways that facilitate business processes across multiple internal and external systems.
- ▶ Automatically analyze usage and event data and issue Service Investigative Orders based on exceptions, events, commands, missing readings and meter reader remarks
- ▶ Proactive analysis supports revenue protection by initiating maintenance or repair tasks as needed, improving the performance, and prolonging the life of meter and network devices.
- ▶ Operational and management dashboards to assist with day-to-day operations and management tasks.





Energy: Residential Metering

Remotely service residential clients

- ▶ Connect using mesh self-healing networking enable neighbourhood connection using smart gateways, or directly using one of many WAN options.
- ▶ Remotely service residential clients: read, connect and disconnect clients in seconds
- ▶ Extract value from your data: load, validate, store, and format meter data in ways that facilitate business processes across multiple internal and external systems.
- ▶ Automatically analyze usage and event data and issue Service Investigative Orders based on exceptions, events, commands, missing readings and meter reader remarks
- ▶ Proactive analysis supports revenue protection by initiating maintenance or repair tasks as needed, improving the performance, and prolonging the life of meter and network devices.
- ▶ Operational and management dashboards to assist with day-to-day operations and management tasks.

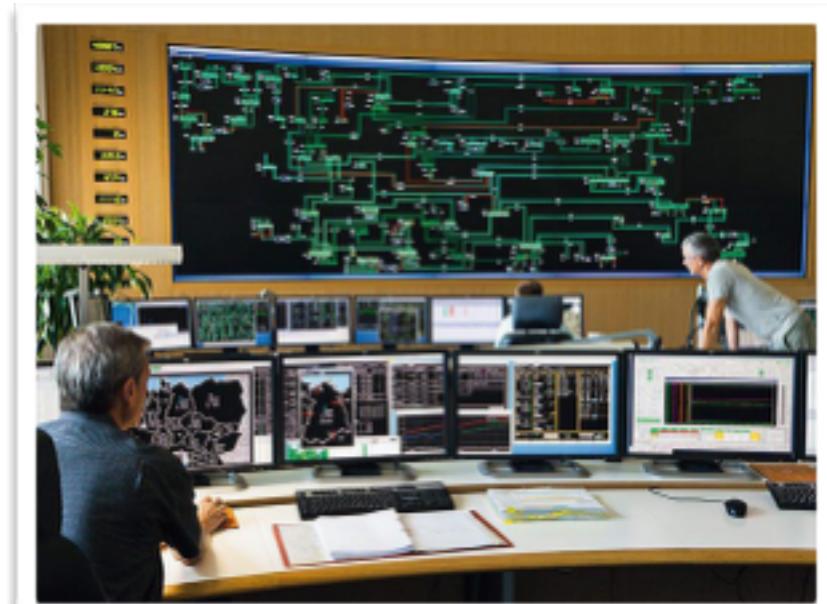


Energy: Distribution Automation



Sensors and faster response for cost and service benefits

- ▶ Instantly get notified of field events - direct connection from field to control room
- ▶ Improved reliability with better response times to field events - up to 40% faster fault detection and correction
- ▶ Add new intelligent, connected sensors and equipment to the grid - breakers, voltage and outage sensors.
- ▶ Extract more from legacy equipment - add intelligence and connection to capacitor banks, voltage regulators, transformers.
- ▶ Economic benefits with more effective grid, such as Volt/VAR control with expert algorithms that monitors and controls substation voltage devices in coordination with down-the-line devices.
- ▶ Improved power quality with RTU and power monitoring equipments on feeders that monitor, detect and correct power-related problems before they occur.



Water: C&I Metering



Extracting value from your meter data

- ▶ Connect to large C&I clients using cellular, satellite, fiber or private wireless network
 - ▶ Add new intelligence to legacy meter, enable load profile acquisition for improved analysis.
 - ▶ Extract value from your data: load, validate, store, and format meter data in ways that facilitate business processes across multiple internal and external systems.
 - ▶ Automatically analyze usage and event data and issue Service Investigative Orders based on exceptions, events, commands, missing readings and meter reader remarks
 - ▶ Proactive analysis supports revenue protection by initiating maintenance or repair tasks as needed, improving the performance, and prolonging the life of meter and network devices.
 - ▶ Operational and management dashboards to assist with day-to-day operations and management tasks.



Water: Residential Metering



Remote management of residential clients

- ▶ Connect using mesh self-healing networking enable neighbourhood connection using smart gateways, or directly using one of many WAN options.
 - ▶ Add new intelligence to legacy meter, enable load profile acquisition for improved analysis.
 - ▶ Extract value from your data: load, validate, store, and format meter data in ways that facilitate business processes across multiple internal and external systems.
 - ▶ Automatically analyze usage and event data and issue Service Investigative Orders based on exceptions, events, commands, missing readings and meter reader remarks
 - ▶ Proactive analysis supports revenue protection by initiating maintenance or repair tasks as needed, improving the performance, and prolonging the life of meter and network devices.
 - ▶ Operational and management dashboards to assist with day-to-day operations and management tasks.

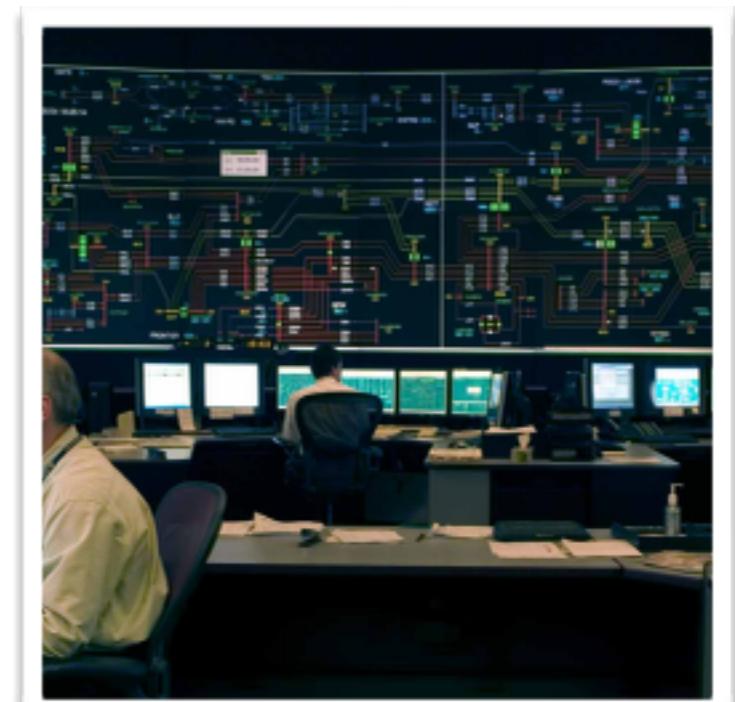




Water: Distribution Automation

Precise control over whole network

- Prevent leaks and avoid under- or overpressure situations with connected pressure valves
- Remotely manage assets, lowering operational costs
- Economic benefits with more effective grid, such as pressure and flow control with expert algorithms that monitors and controls substation devices in coordination with down-the-pipe devices.
- Improved water supply reliability with monitoring equipments that detect and correct problems before they occur.

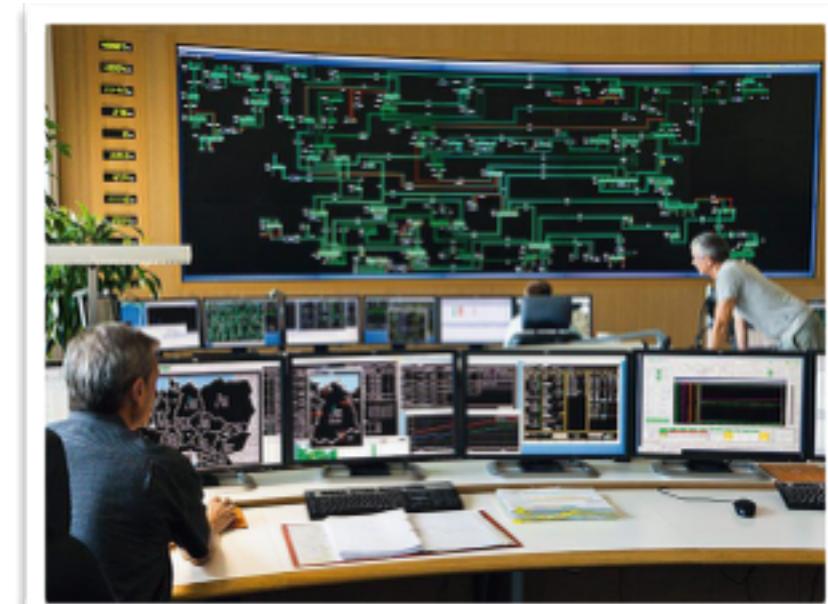


Parking: Smart Pay & Placement



Reduce traffic, pollution and monitor public parking spaces

- Cost-effective way to help drivers find unoccupied parking spaces
- Cuts traffic congestion and vehicle emissions
- Increases compliance as parking space activity is monitored in real time, with automated permit checking.
- Increases enforcement performance as action can be focused where an offence or cluster of offences occur
- Better management and future planning of new public parking spaces
- Parking is typically the second or third highest revenue source for a city (price variation will add value)





Traffic

Reduce traffic & pollution with better traffic flow

- ▶ Cost reduction. Traffic management has become a major challenge for megacities
- ▶ Improved productivity
- ▶ Reduced number of accidents
- ▶ Pollution reduction (decreases in fuel consumption and carbon dioxide (CO2) emissions)
- ▶ Better management of enforcement resources
- ▶ Increase of daily problems visibility and preventive actions



Street lighting

Fine control of each street light

- Control street lights at feeder level or individual level.
- Timely schedule that can be monitored and changed remotely - reduce your electricity bill with finer schedule control.
- Measure the electricity consumption and associated theft and faults.
- Centralized monitoring and control of lights with reporting for energy consumption.
- Fault detection mechanism to know if the light is not working.
- Preemptive maintenance and end-of-life warnings





Three
Java at V2COM



Why Java?

What we like about Java

Same language from device to datacenter

Same language in many environments

Same product in many platforms

Healthy open-source ecosystem





Where Java?

Where we use Java

On the field - Gateways and Mesh Nodes

On the Datacenter - whole software stack





Java technologies we use

Where we use Java

Java ME - since CLDC 1...

Migrating to newer versions





Java technologies we use

Where we use Java

Java SE 5 and 6



Netty



Apache



eclipse



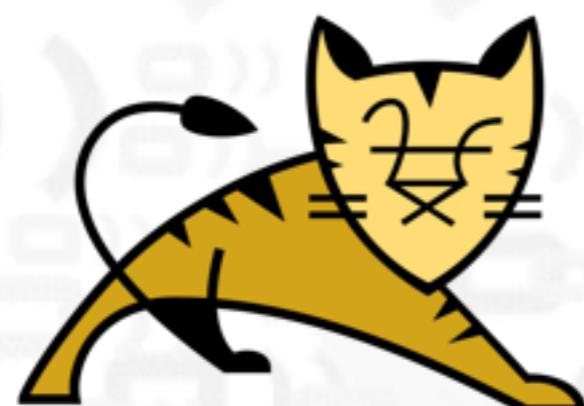
Java technologies we use

Where we use Java

Java EE 5 and 6 - EJBs, JPA, JSP, JSF, JMS

ORACLE
WebLogic

JBoss®
by Red Hat



IBM.
WebSphere.

