

# *Speed with Security*

Joe Speed

CTO IoT

 @JoeSpeeds



**ADLINK**

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Leading **EDGE** COMPUTING

made MQTT open



put IoT into cars



launched IBM IoT

people + things





Andrew P. Collins

3/25/14 5:30pm • Filed to: LOCAL MOTORS ▾

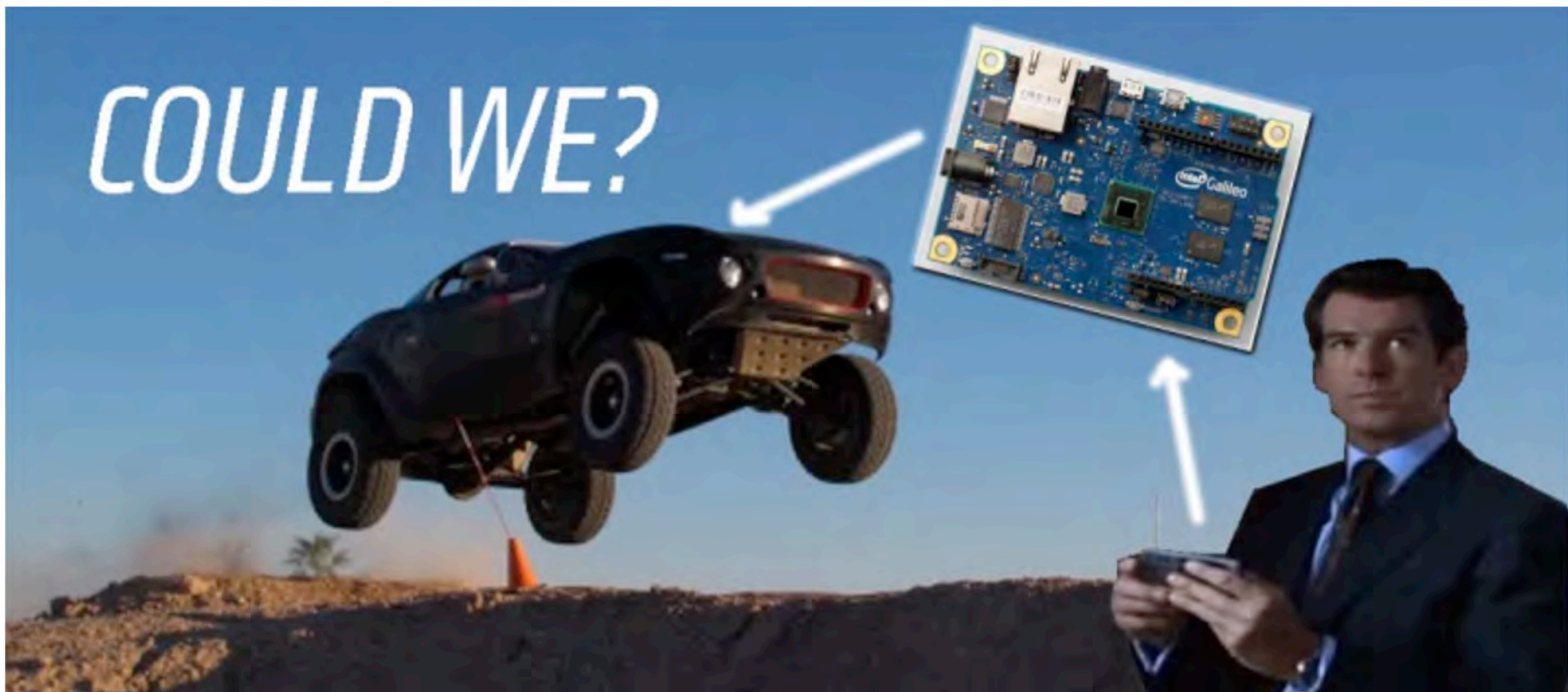
  
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# COULD WE?



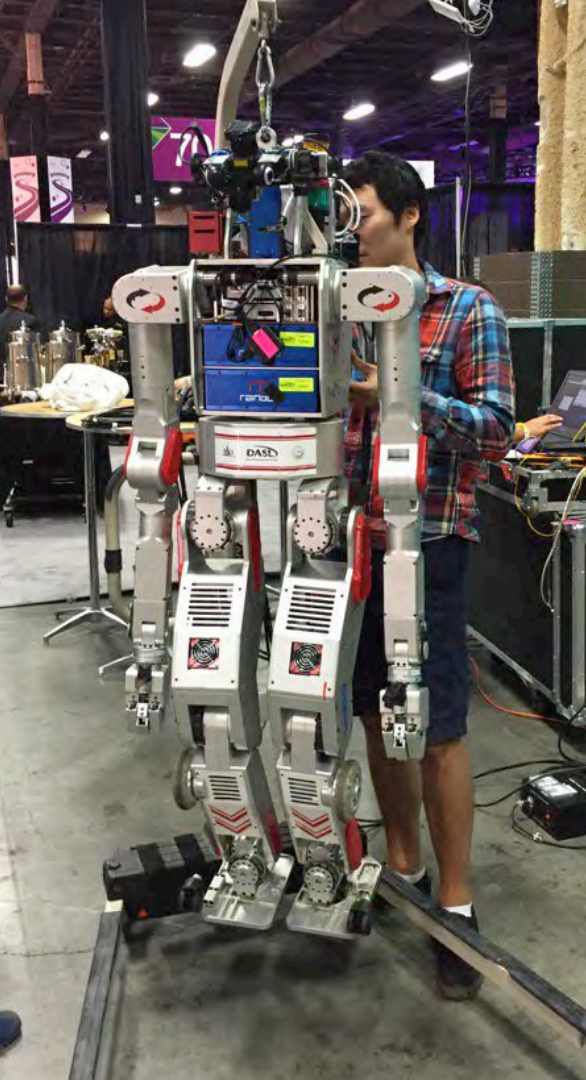
# YES WE CAN!











# Who is ADLINK?



- 1,900 people making cool stuff & IoT software
- all about rugged, industrial edge compute
- connect the unconnected for 20 years
  - ... “Aye-Dee-Link” as in “Analog to Digital Link”
- never heard of us ... unless you make robots, trains, factories ... or military planes & tanks
- growing fast, \$340M last year
- We’re awesome! Love to work with you

# Connecting the Unconnected

The Foundation for the Connected Enterprise



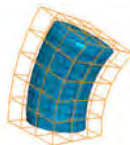
Vibration



Acoustic



Force



Distortion



Temperature



Power



Pressure



Flow



Insulation  
Degradation



Structure  
Dislocation



Partial Discharge  
Sensor



Pressure Sensor



Acoustic  
Emission



Flow Meter



Accelerometer



Microphone



Load-cell



Strain Gauge



RTD/TC



Current Transducer



Historian



Protocols



Human Machine  
Interface



# ADLINK IoT



## Comprehensive Solutions for edge IoT

### Connect the Unconnected

People, Places & Things



Building blocks for rich data capture



### Intelligence at the Edge

Monitor, Manage, Analyze



Peer to Peer intelligent devices



### Connect the Clouds

Data to the right place



Vendor-agnostic cloud connectivity



# hand-eye coordination for robots

camera is edge compute and IoT gateway



**ADLINK**



**RECOGNITION  
ROBOTICS**

The Visual Guidance Company



install on your robot and train in 1 hour

**YASKAWA** **NACHI** **adept** **DENSO** **EPSON** **FANUC** **KUKA** **ABB** **STÄUBLI**

EXCEED YOUR VISION



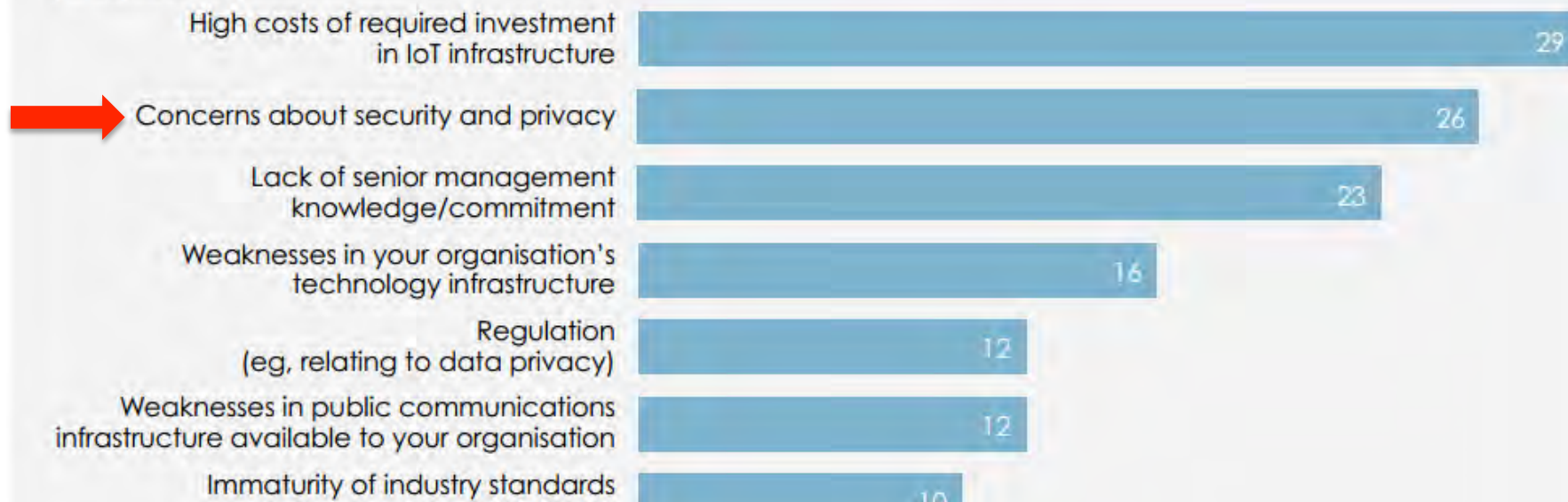
# IoT – Challenging for All

## The challenges to IoT adoption

### What are the chief obstacles currently to your organisation using the IoT?

Select up to two.

(% respondents)

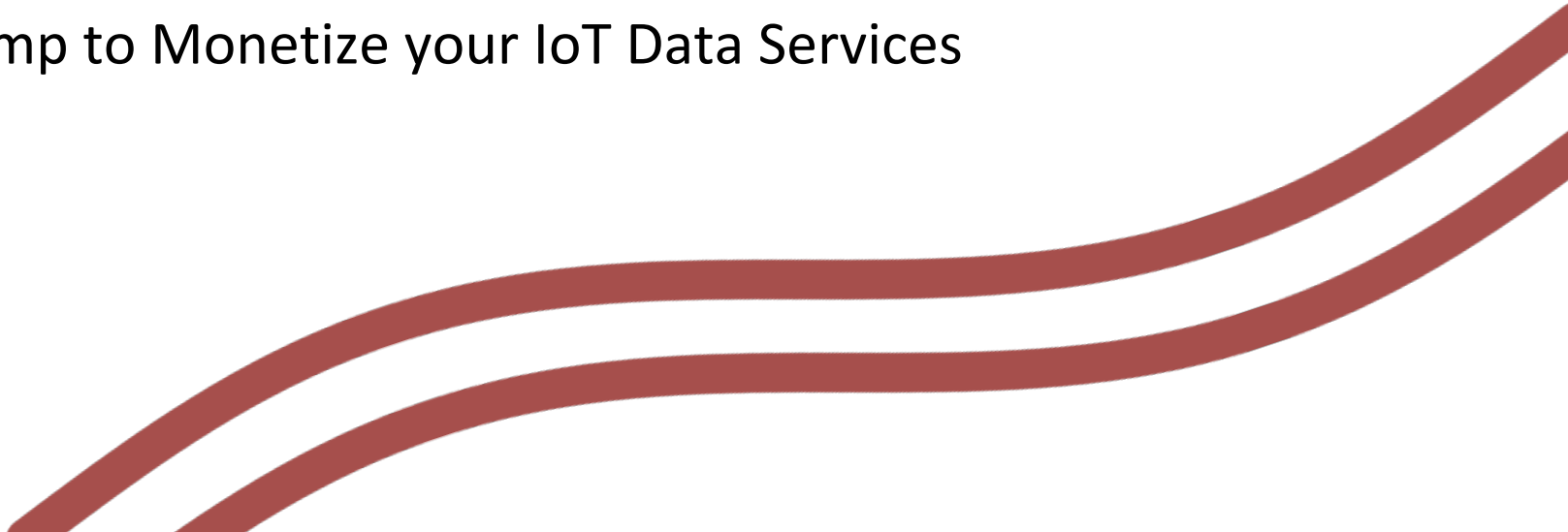




# Driven by the ADLINK *Vortex Data River*™



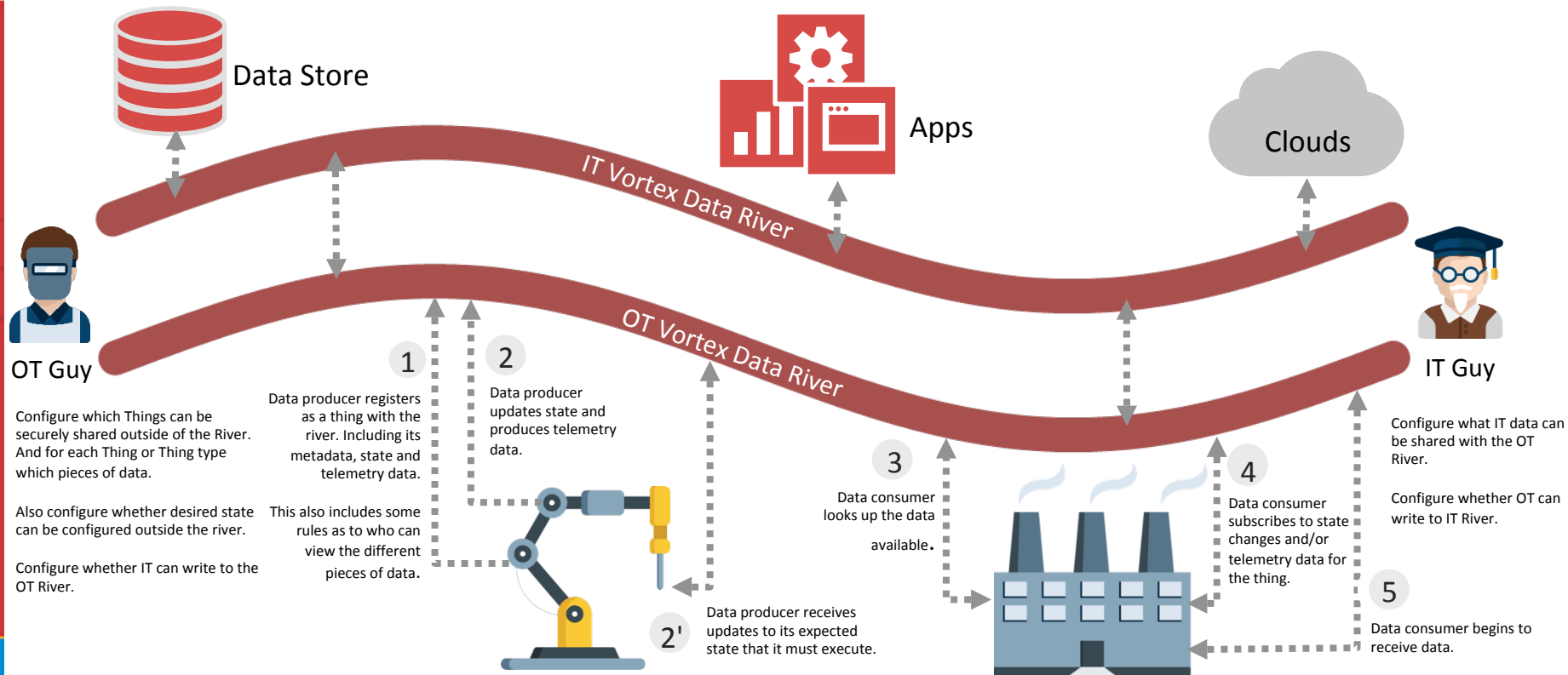
- Connect Once - Stream Anywhere
- Enterprise Resiliency and Security for IoT
- Analytics Where It's Needed
- On-ramp to Monetize your IoT Data Services



# How the Vortex Data River™ works



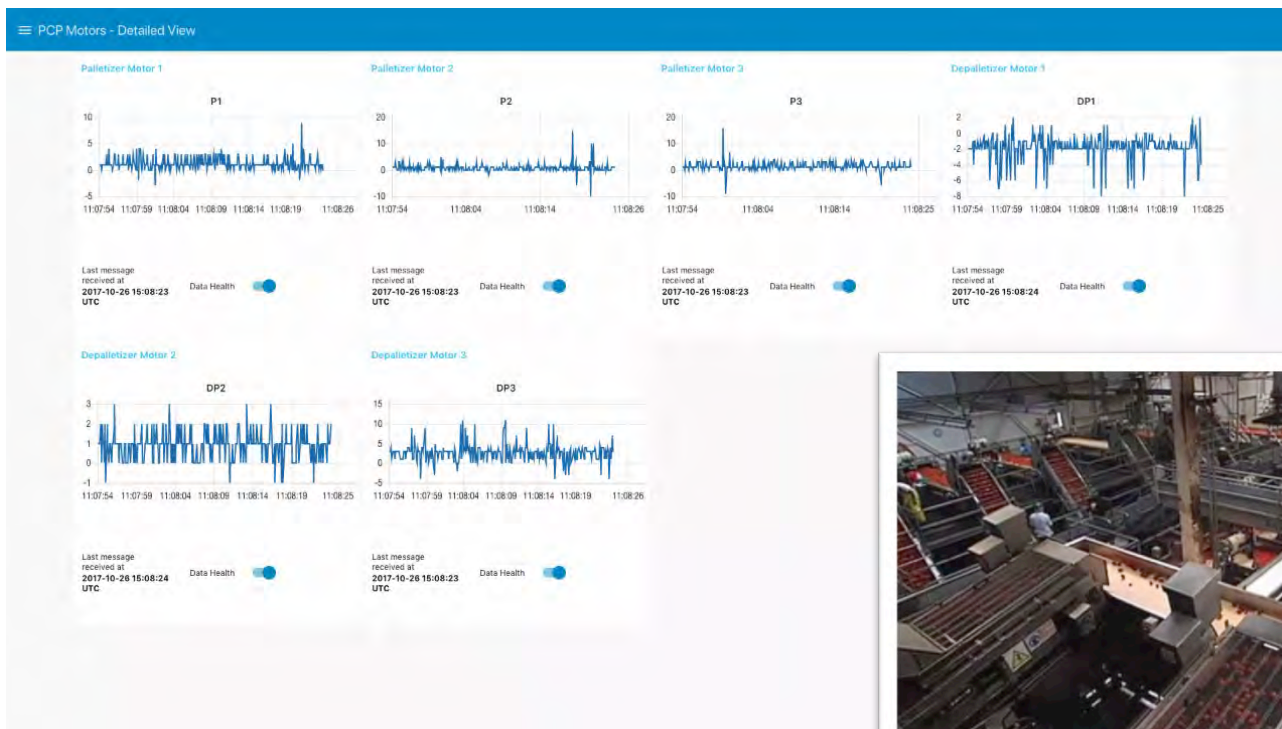
Helping IT and Operational Technology Converge



# Digital Experiments Get You Started Fast



“Connect the Unconnected, Stream it the Cloud”

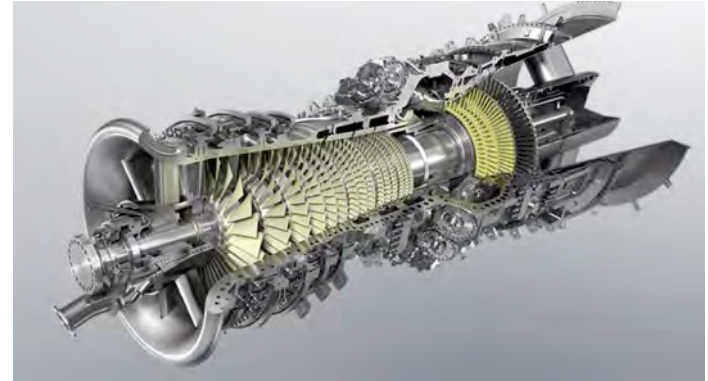




# Use Case – Gas Turbine Analysis

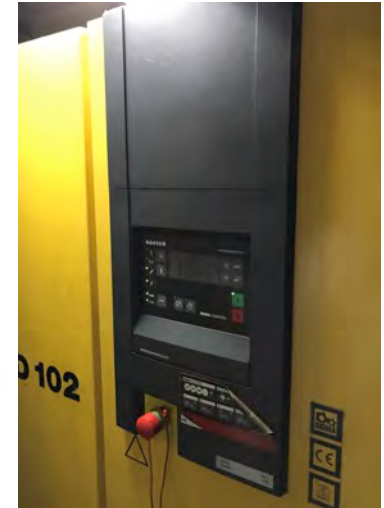
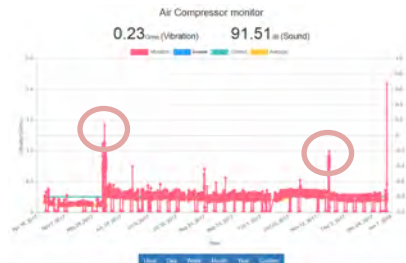
- Gas Turbine Data Analysis

- Challenge – Making data from OSIsoft PI System part of a connected IoT data value chain
- Solution – Vortex Edge PI Connect as part of a Vortex Data River enabled IoT solution
- Benefits:
  - Stream your historian data to any data center, cloud based AI and cognitive services
  - Historian data can be published to **one or** multiple clouds concurrently
  - **Enables you to** switch cloud or analytics providers more easily
  - Publish cloud based analytics back to your historian to maintain a single vision of the truth
  - Share OT information with your business partners securely



# Digital Experiments in Our Own Factories

- Pain point: air compressor is noisy so was locked away in a small chamber with no one around, BUT if compressor stops then whole factory shuts downs
- Solution: real-time condition monitoring to ensure 7 x 24 service
  - Already discovered compressor parts damage twice last year per ISO 10816-8:2014 without involving compressor manufacturer
  - Non stop service is more reliable then regular check



# IoT is an ecosystem ... so is security



- One that we work with is Entrust Datacard
- Worked with Entrust Datacard for years in B2B, web APIs, et al.
- Securing IoT devices, containers, microservices
- Authenticating producers & consumers



**ioTrust**<sup>™</sup>



**ADLINK**

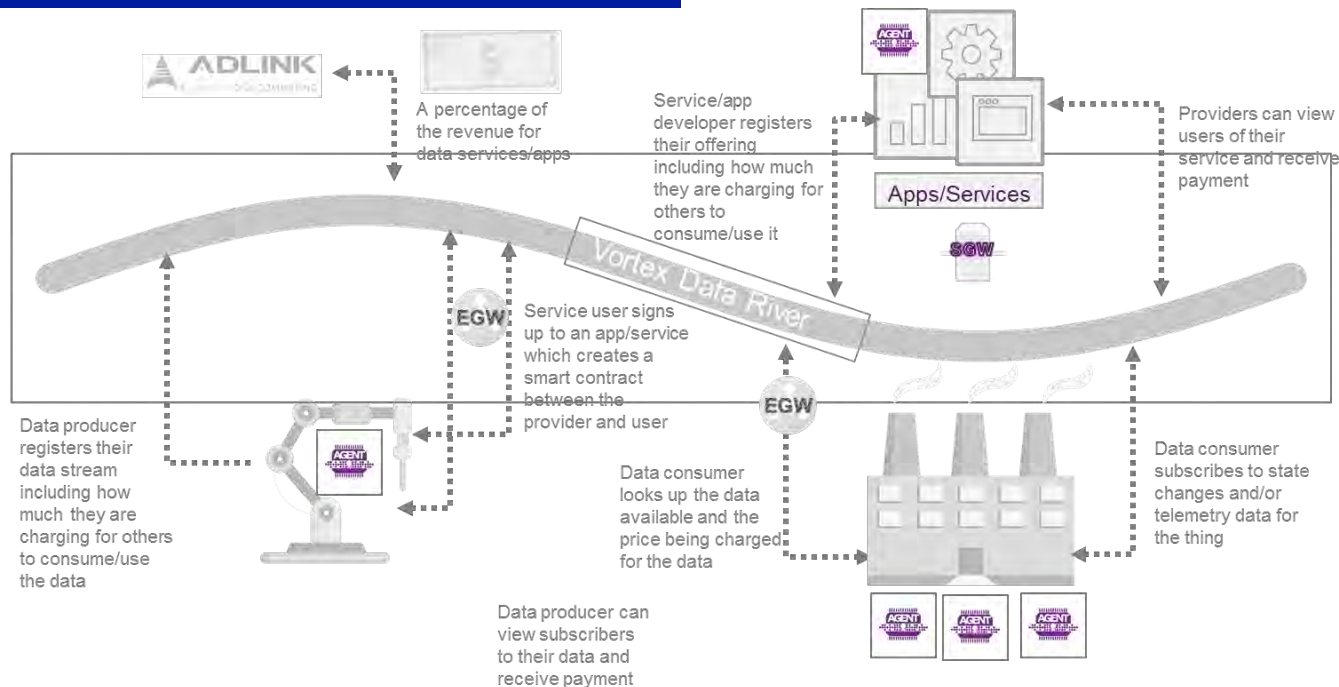
Leading **EDGE COMPUTING**



# Securing the Flow: endpoint agent

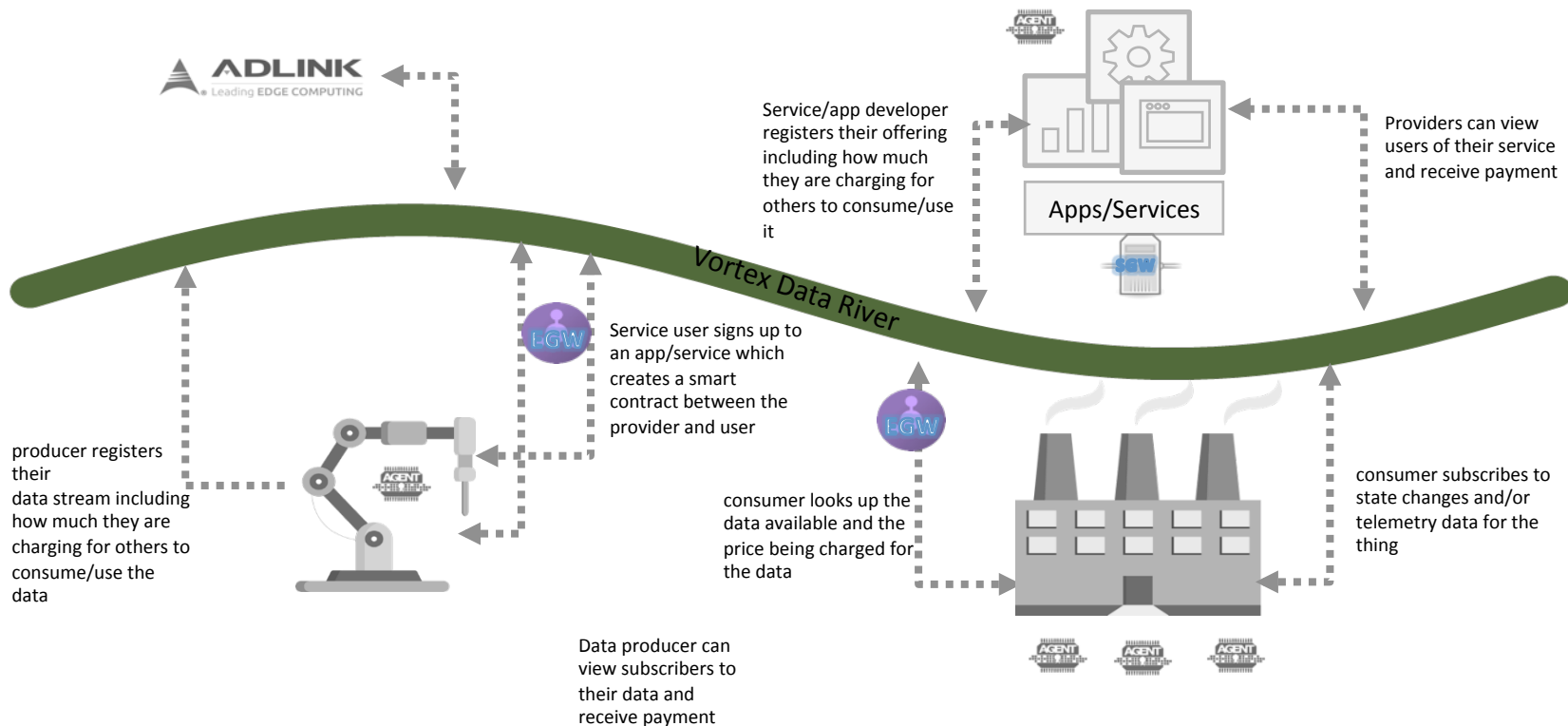
- Managed and secured Identity for Authentication to Data River
- Data Security for MQTTS, TLS 1.2, Payload encryption
- Secure enrollment with service discovery

- Unique for attestation and provisioning
- Cryptographic identity to ensure binding to the customer entity

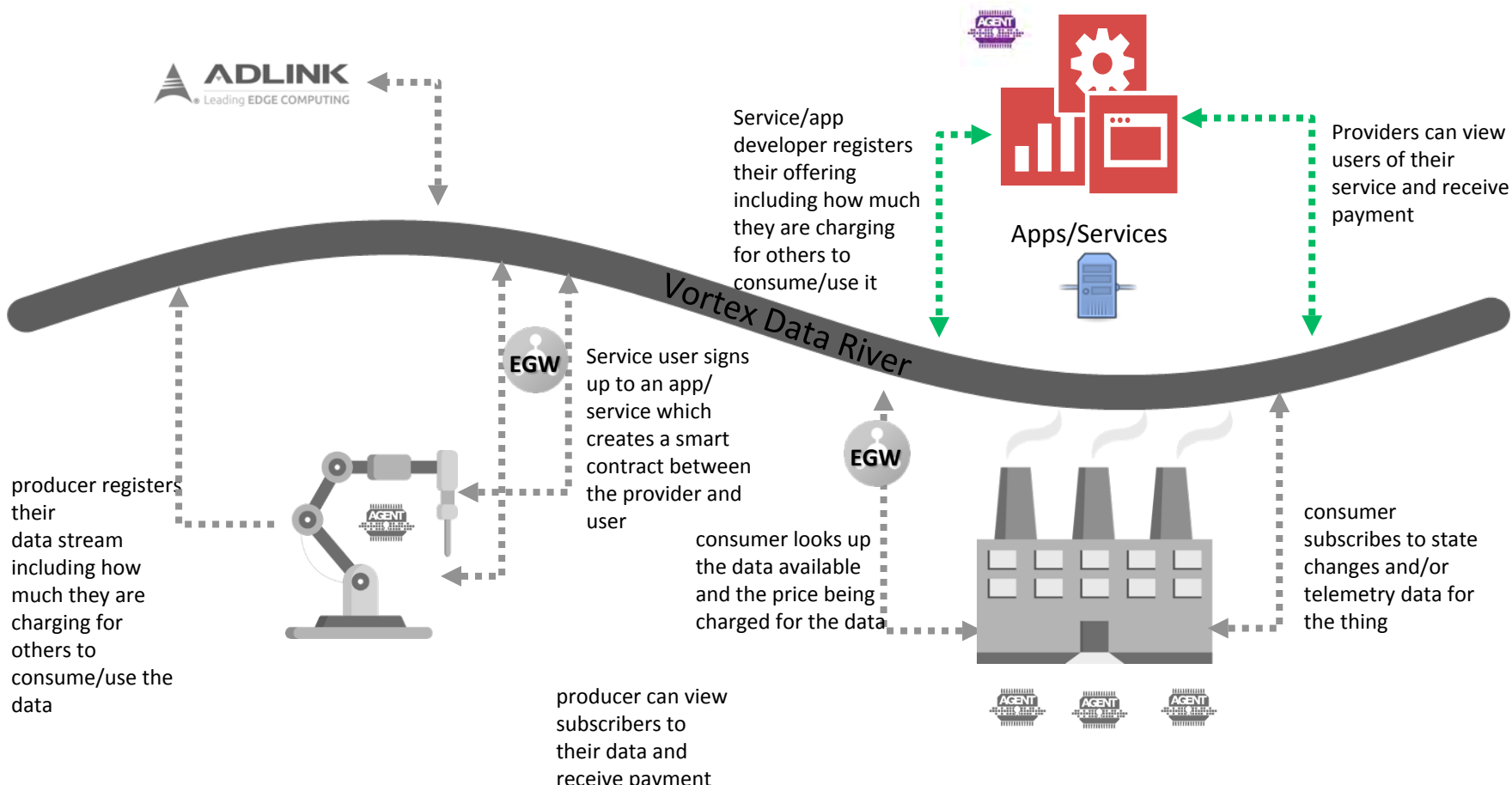


# Securing the Flow: Edge gateway

- Secured connectivity brokerage between thing network and data flow
- Local enforcement point for security policies and entitlement



# Securing the Flow: service gateway





# Service Gateway Security Appliance



## IDENTITY ISSUANCE

Issuance backed by TPM /  
HSM enables devices to  
be secure at production,  
applications to be signed,  
licenses to be enforced



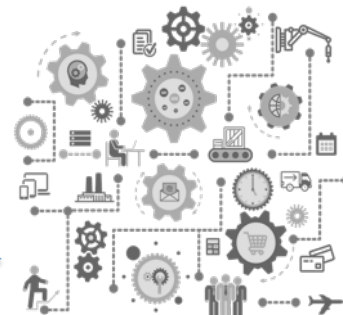
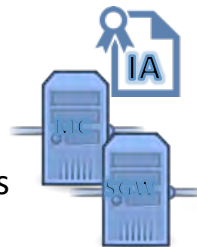
## IDENTITY MANAGEMENT

Locally managed  
identities reduce  
network dependencies



## INFRASTRUCTURE & DATA SECURITY

acts as "Head End" to  
local secure systems



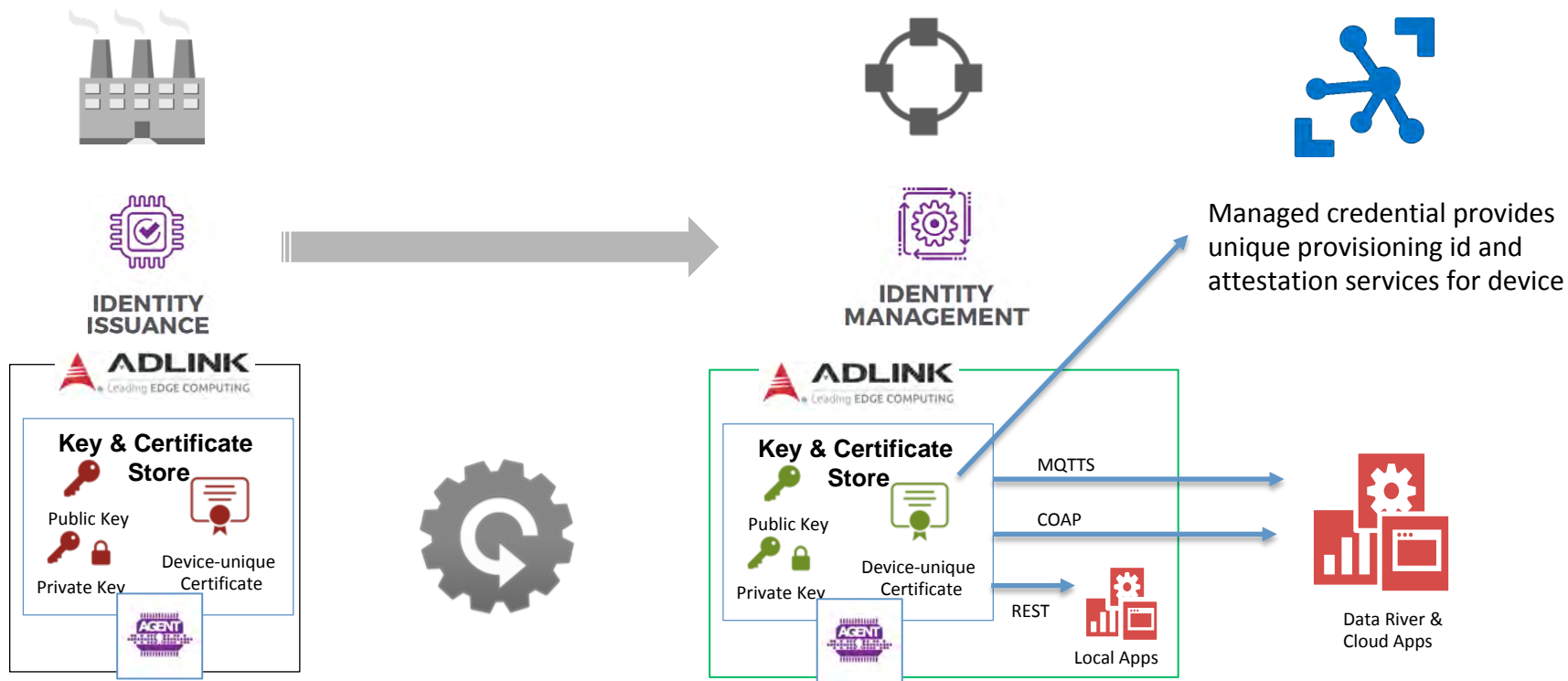
Sensor Networks

# Unified Identity Strategy



ioTrust provides unified Identity Management regardless of your MDM or Analytics

## Device Production



# Editorial: a few words re Sensors & Actuators



- Sensors

- open data, rethink how you approach, collaborate with universities
- Authenticate producers, but be permissive w consumers
- Strive to make as open as possible! Think about what can be made open data
- Be open, be fast! Enable the masses to work on your problems
- Open on prem, Open via cloud

- Actuators

- Lock it down, be restrictive
- Actuators is how equipment gets broken, people get hurt, vehicles are crashed



**Join ... today!**





ROS 2











[design.ros2.org](https://design.ros2.org)

[github.com/ros2](https://github.com/ros2)

[github.com/Adlink-ROS](https://github.com/Adlink-ROS)

# why ROS2?

- speed & security
- teams of robots 
- small embedded 
- real-time  
- non-ideal networks 
- production use   

# #tech4good

if you can ...

then you must

transportation for  
elderly and disabled is  
**broken**



# MIT Technology Review

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Business Impact

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**A Self-Driving Bus That  
Can Speak Sign  
Language**





# @MIT guide the blind to empty seat

Team Erich hits a home run at MIT AT hack w/Bluetooth app that helps the visually impaired navigate public transportation. [#AccessibleOlli](#)



RETWEETS

2

LIKES

5



MIT A.T. Hack : Find a seat on the bus!  
Assistive technology makes public transportation easier to navigate [#AccessibleOlli](#)



RETWEETS

5

LIKES

6



# @Princeton “Don’t forget your ...”

Outstanding creativity-solving physical & cognitive challenges for public transport.

[#accessibleolli](#), [#HackPrinceton](#)

Congrats team Olli Recall!! Winners of the [#accessibleolli](#) [#HackPrinceton](#) challenge!!

[#watsonIoT](#) [@IBMAccess](#) [#cognitive](#)



RETWEETS

4

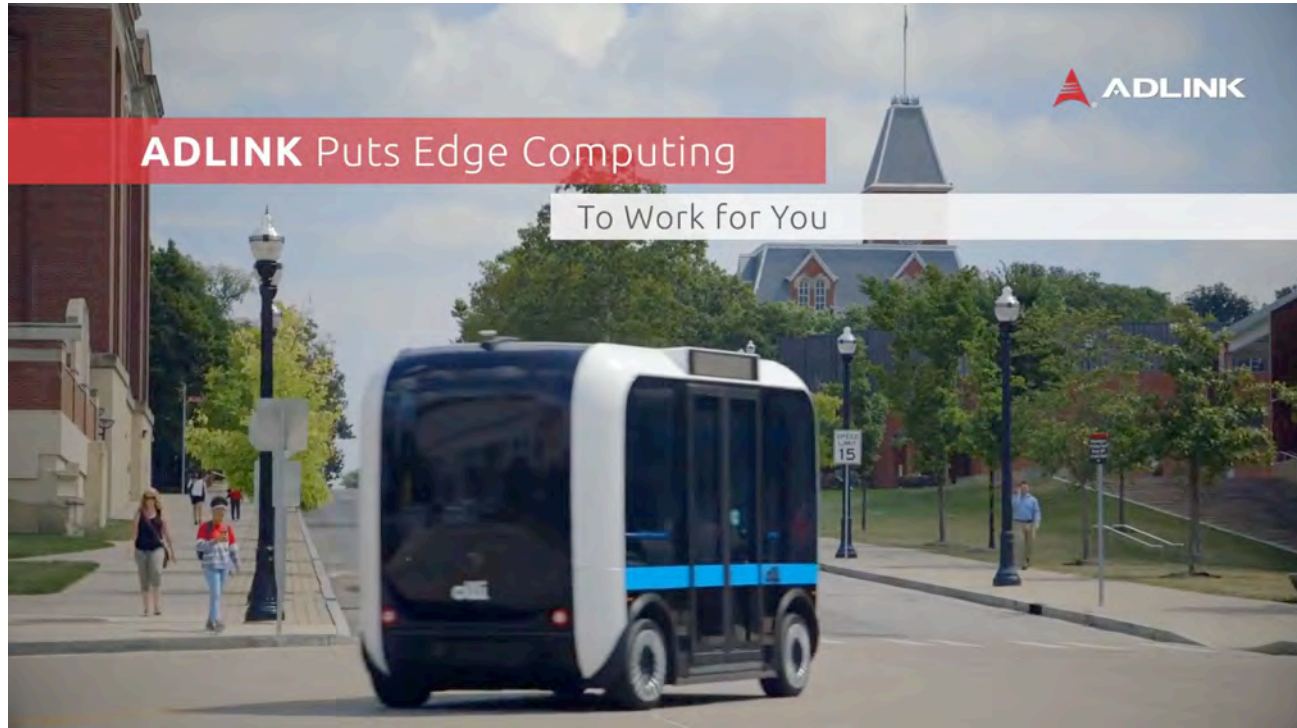
LIKES

8









<https://youtu.be/vguPTyT1R08>