

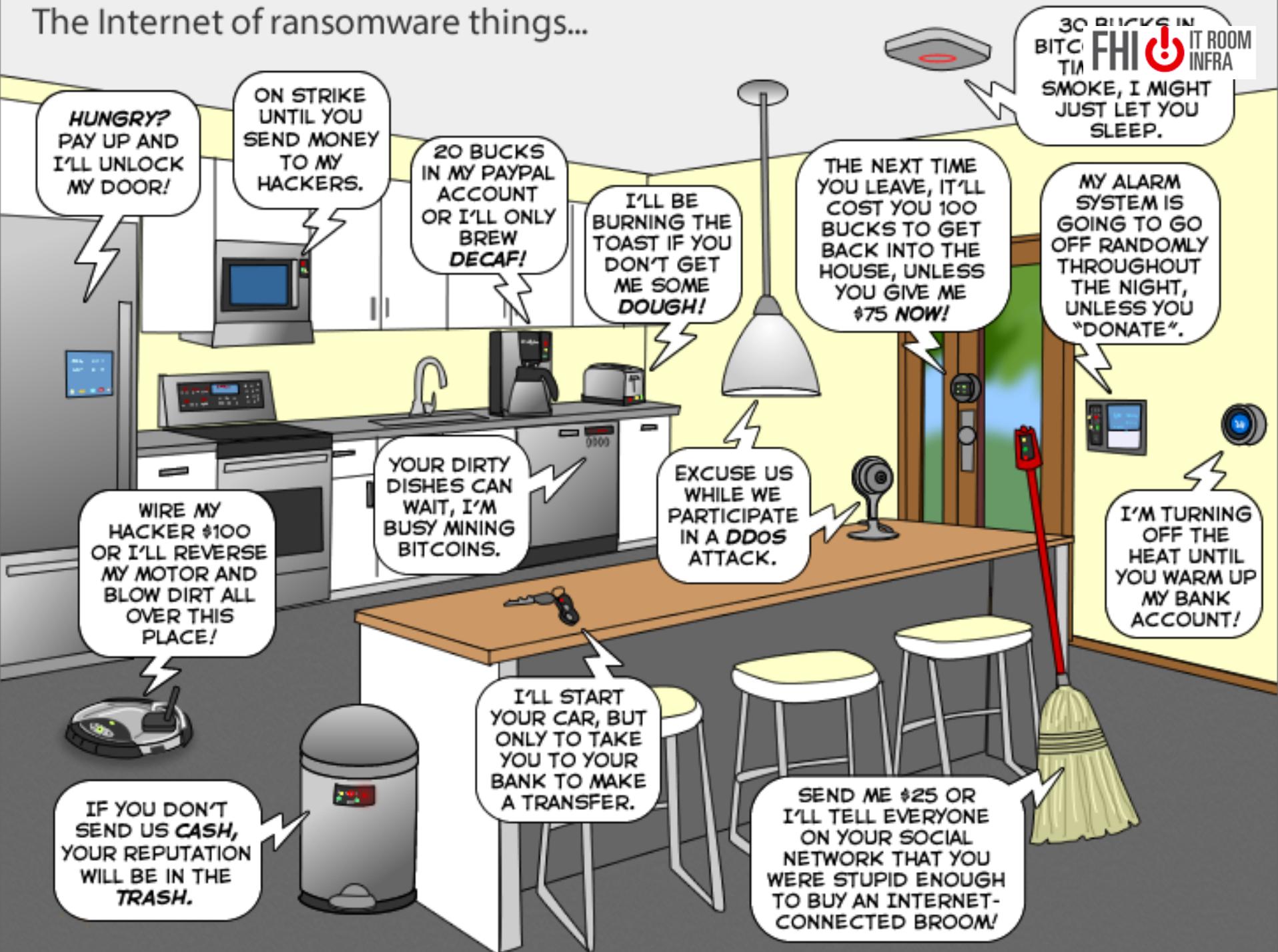
# Van IoT tot IQT

Dell EMC  
Hans Timmerman

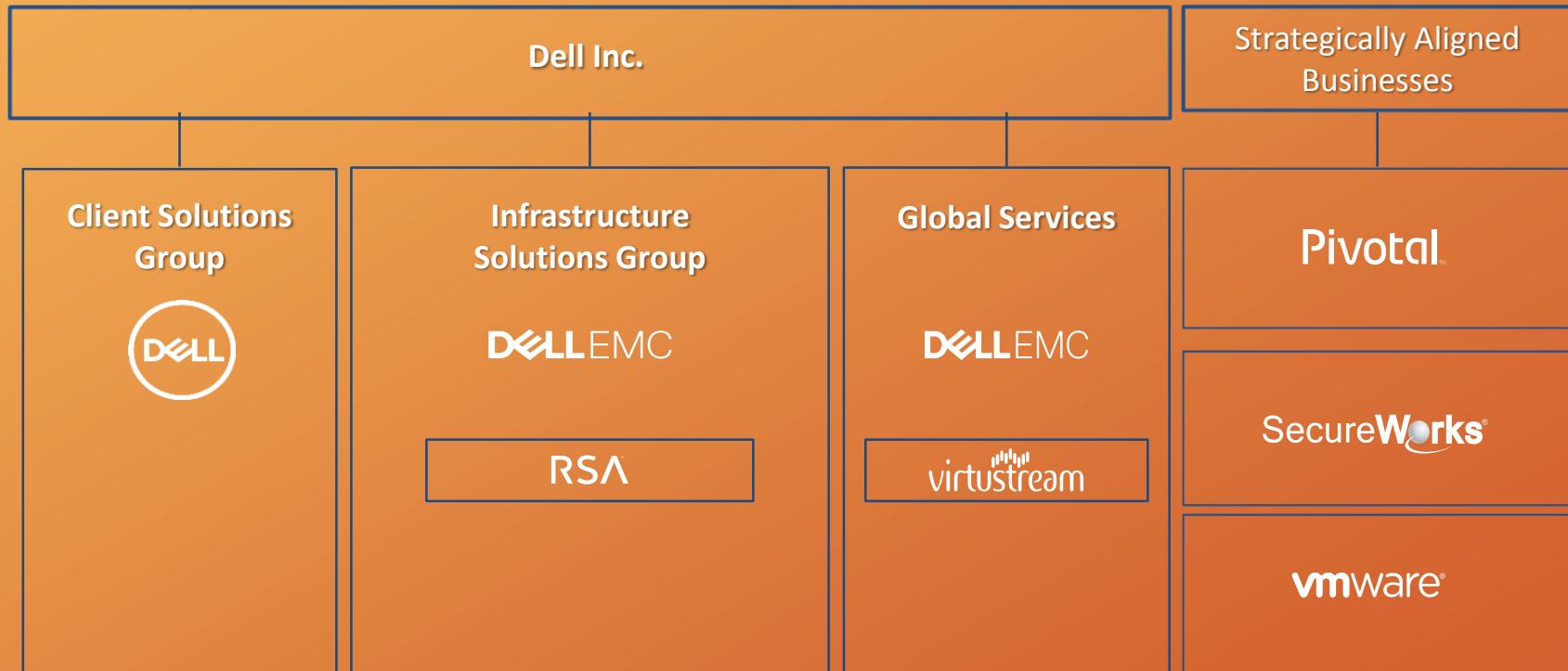


"WE HAVE TO GO OUT FOR DINNER. THE  
REFRIGERATOR ISN'T SPEAKING TO THE STOVE."

# The Internet of ransomware things...



## Dell Technologies



Dell Technologies - World's largest privately controlled Tech Company

74 B\$ revenue – 140.000 team members - 20.000+ patents - \$4.5 billion on R&D/year

# FEEDING 9 BILLION PEOPLE BY 2050

# THE PRECISION FARMING REVOLUTION



# THE NEW OPPORTUNITY...



Product



CONTEXT



INTENT



DATA About  
**REAL-TIME**  
The Product

# MULTI-SOURCE DATA NEEDS

DELIVERING ACTIONABLE INSIGHT IN REAL-TIME



REAL TIME OPERATIONS

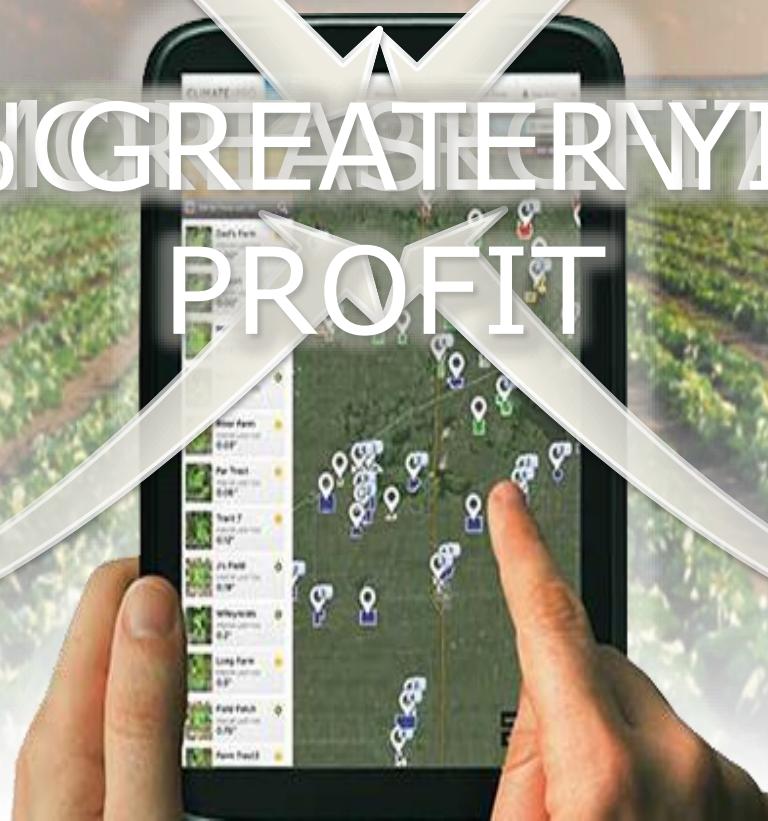


SOIL ANALYSIS



WEATHER FORECASTING

\$4320% GREATER NYIELD  
PROFIT



640Labs

MACHINE DATA

# Edge intelligence

# The Intelligence of Things

## Fog Computing

## Mist Computing

# The Internet of Things is not a thing . . . It's a concept



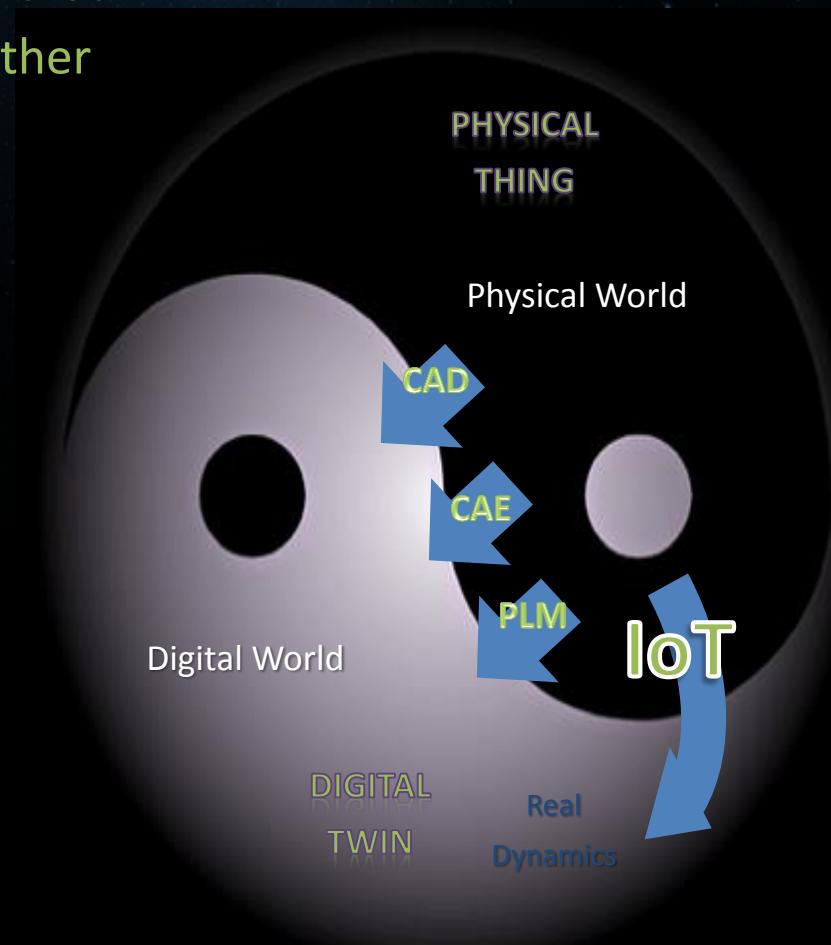
An architecture of:  
Sensors  
Data  
Connections  
Processing +  

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*Analytics*

# Convergence of the Physical and the Digital World

Two opposite forces that complement each other



- Real time
- Monitor
  - Control
  - Optimize
  - Automate

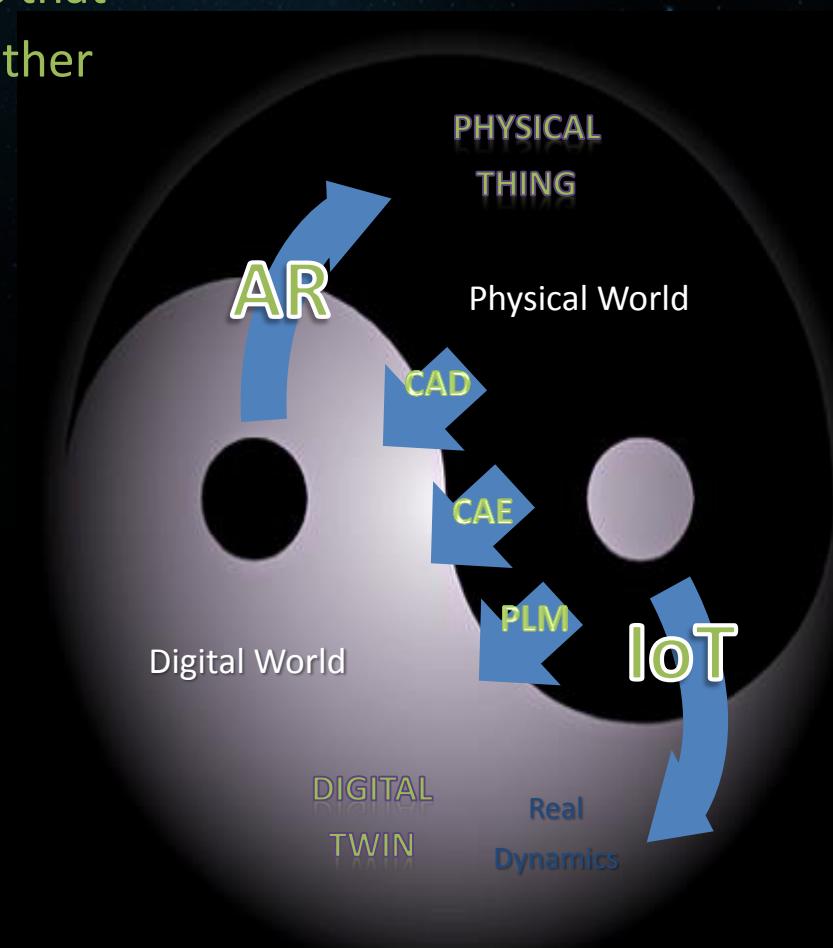
# We experience physical and digital separately



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# Convergence of the Physical and the Digital World

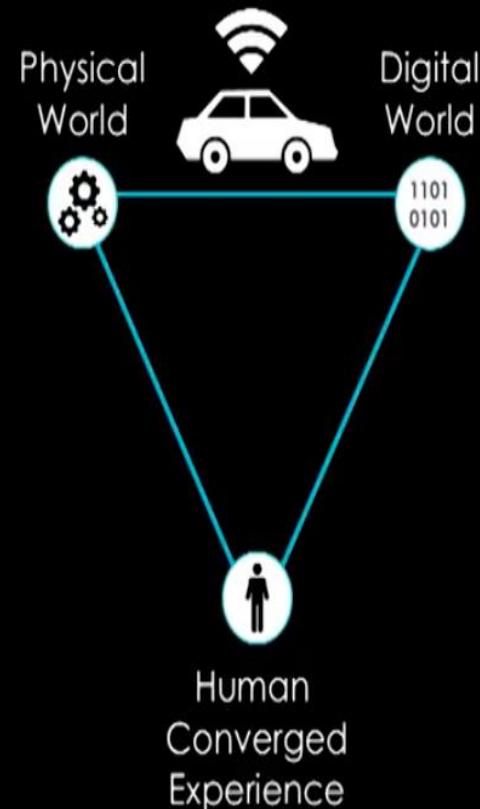
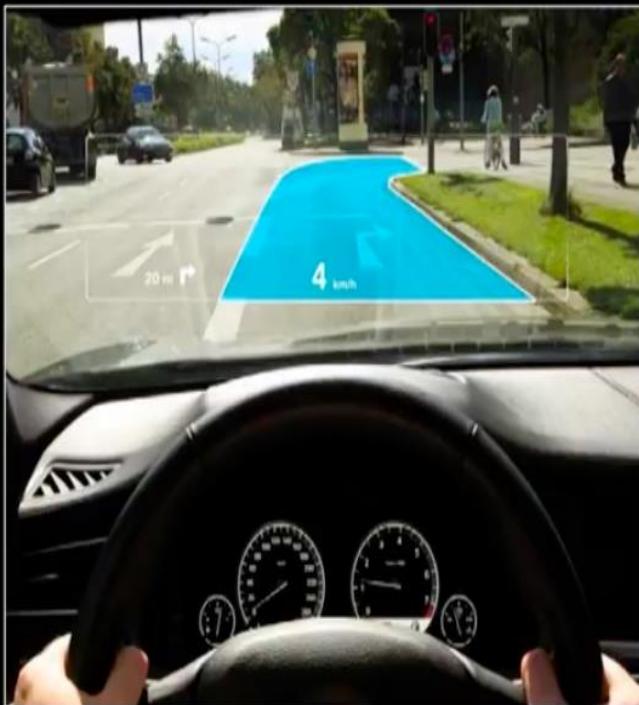
Two opposite forces that complement each other



- Real time
- Monitor
  - Control
  - Optimize
  - Automate

# Converged experiences enable faster decisions

Converged View of Physical / Digital World



# How to integrate the physical and digital experience

# IoT: history & development

In just a few decades, computers will be embedded into almost every industrial product.

Karl Steinbuch  
(Cybernetic Engineer)

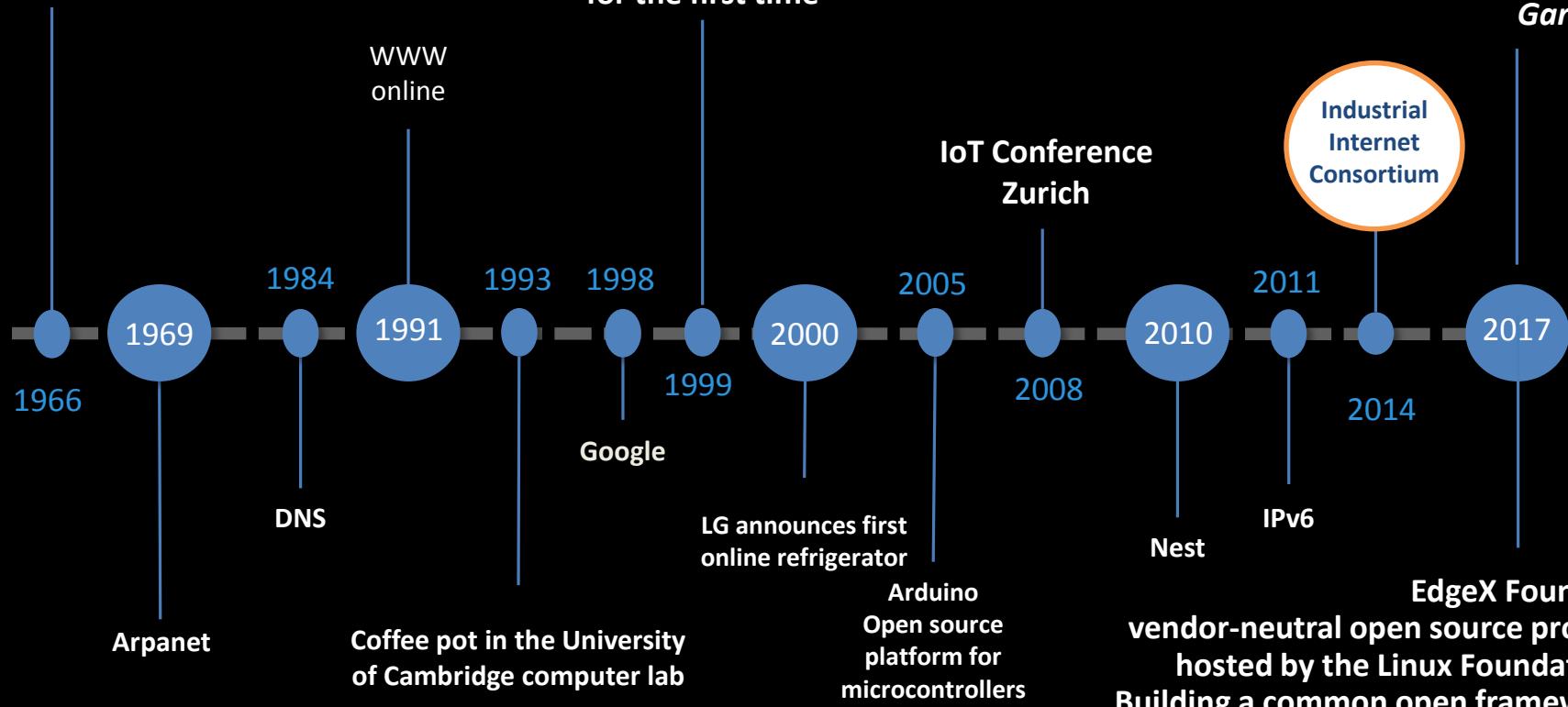
Kevin Ashton from MIT uses the term 'Internet of Things' for the first time

The Industrial Internet Consortium publishes the First industrial internet connectivity framework

8.4 Billion Connected "Things" in use worldwide  
(world population: 7.5 Billion)

Gartner

Turing, Tesla, Morse



The Internet of Things is generating unimaginable amounts of data

24.4B

connected “things”

BY 2026

# The perfect data i-mobility storm

IoT effect

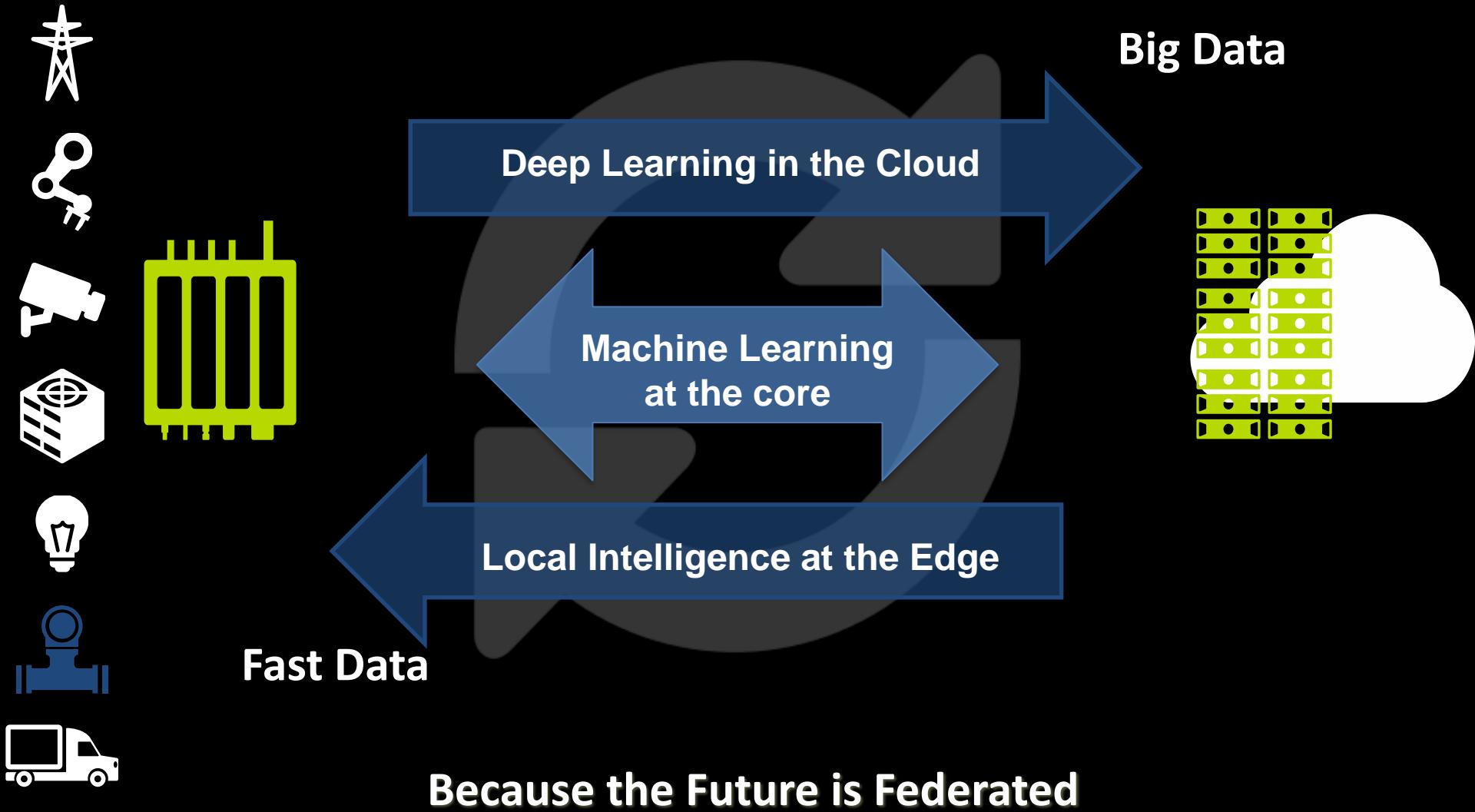
Bandwidth  
constraints

Regulatory  
compliance

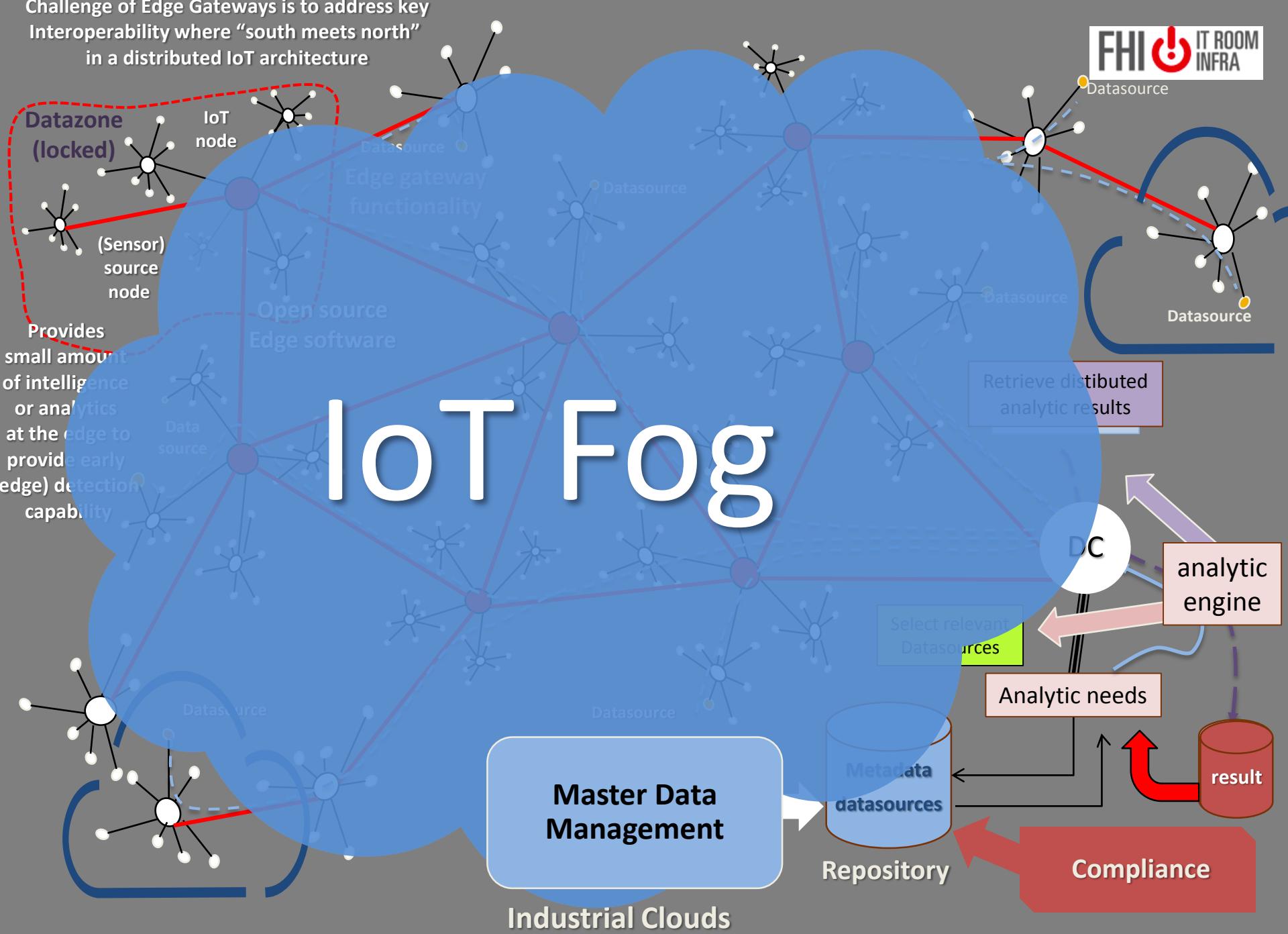
Migration  
to the edge

Legacy  
data

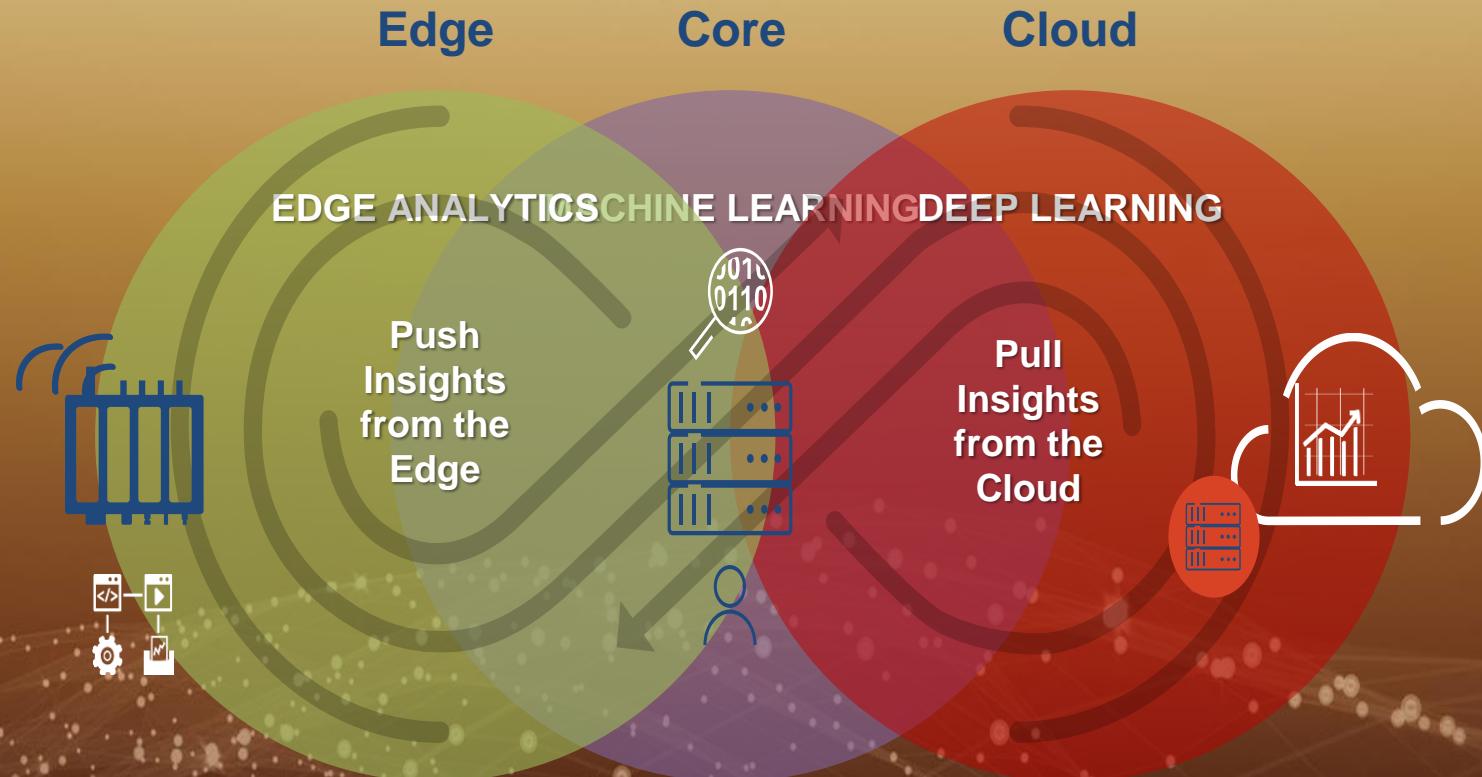
# Technologies enabling distributed architectures



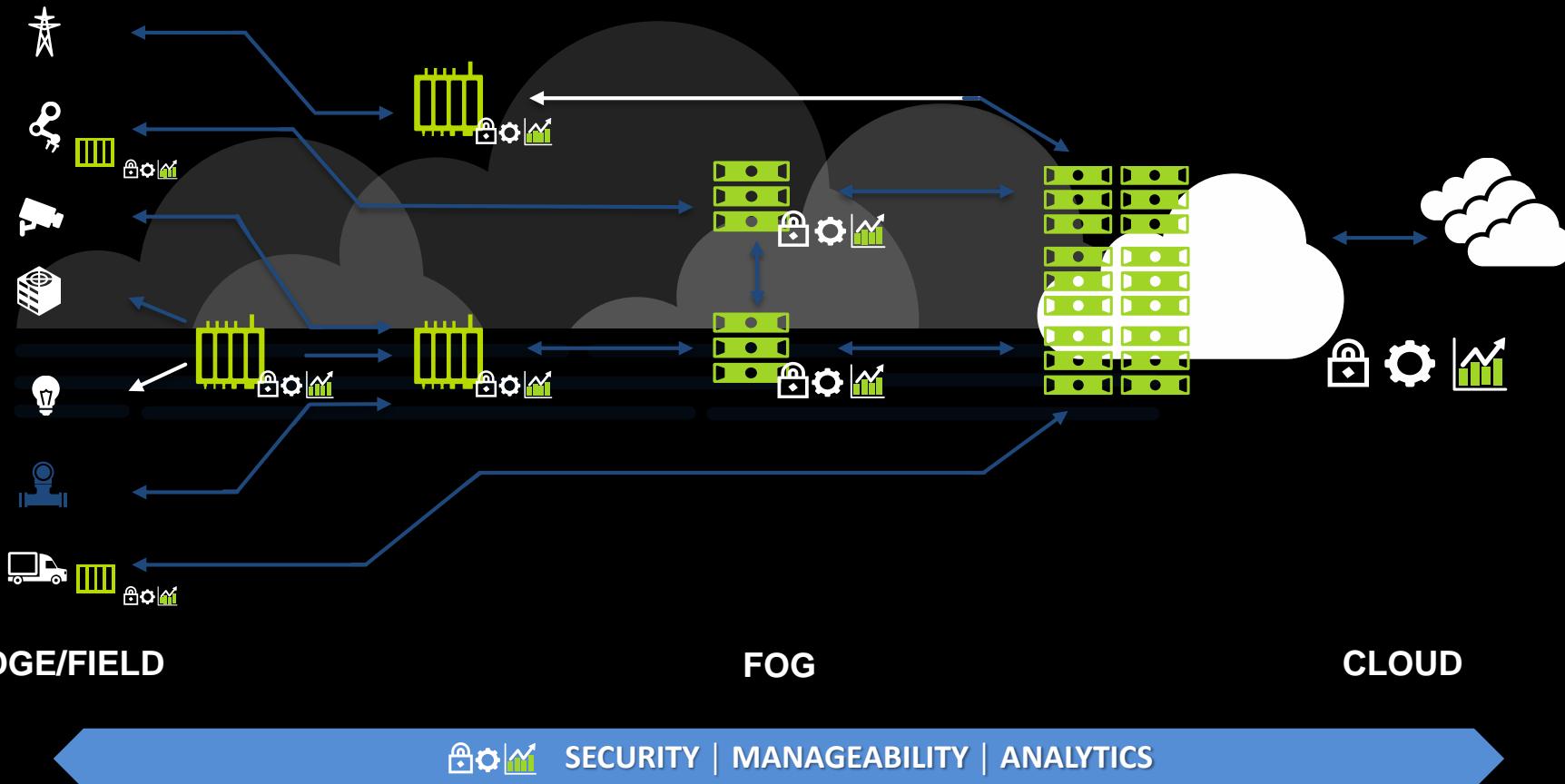
Challenge of Edge Gateways is to address key Interoperability where “south meets north” in a distributed IoT architecture



# Making things smarter across the IoT ecosystem



# Internet of Things is een geïntegreerd concept, geen verzameling dingen . . .



# Fogs: Architectuur en hierarchie

**Fogs kunnen recursief in elkaar passen, waarbij:**

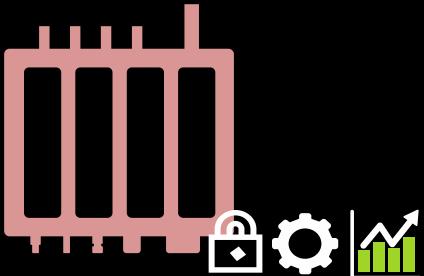
- De laagste fogs sensor-data verzamelen en analyseren en het resultaat naar een hoger gelegen fog doorgeven
- Buitengelegen fogs ontvangen die resultaten en verwerken die in hun eigen functionele gebied.

Bijvoorbeeld - een fog kan de scope van een enkele auto zijn:

- De auto onderhoudt zijn eigen edge informatie in zijn eigen private cloud op de bordcomputer
- De verzamelde onderhoudsinformatie deelt hij met de dealer fog.
- Wanneer de auto thuis geparkeerd staat, is hij een onderdeel van zowel de wijk-fog waarmee de auto kan communiceren als de huis-fog van de eigenaar.
- De wijk-fog is weer een onderdeel van de stads-fog die op hoger niveau weet wat in de wijken de status is.
- Etcetera . . .



# Value of the edge



Adding compute at the Edge offers **3 advantages**

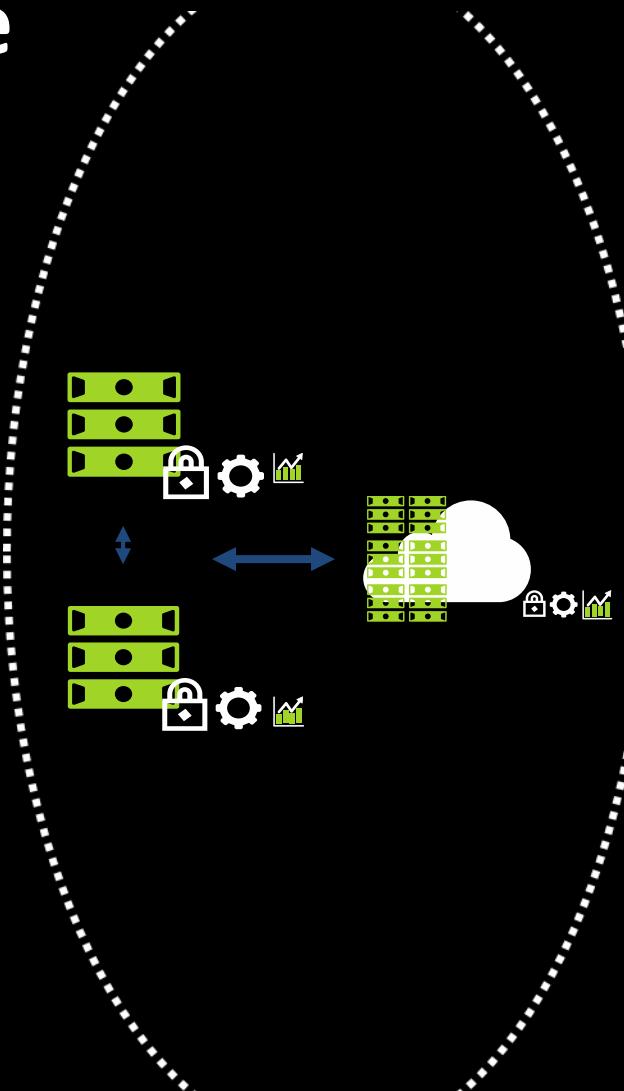
Real-time  
decision making  
through Edge  
Analytics

Reduced  
data transfer  
cost through  
compression  
and cleansing

Improved  
security and data  
continuity through  
local operations

# Value of the core

Extending capabilities  
of the cloud closer to  
edge data sources



Compute, store  
and network for  
on/off premise IoT  
data and applications  
for efficiency

Ingesting  
information for  
consolidation,  
sharing, treatment  
and archive

Filter, stream,  
analyze and  
forward data for  
deep analysis to  
cloud and back  
to edge

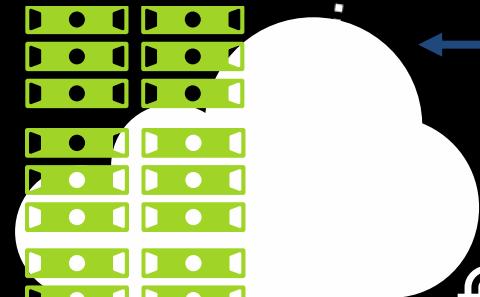
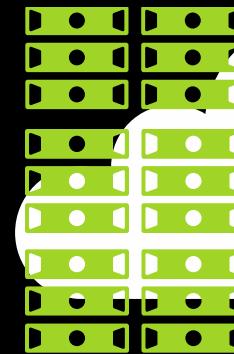
# Value of the cloud

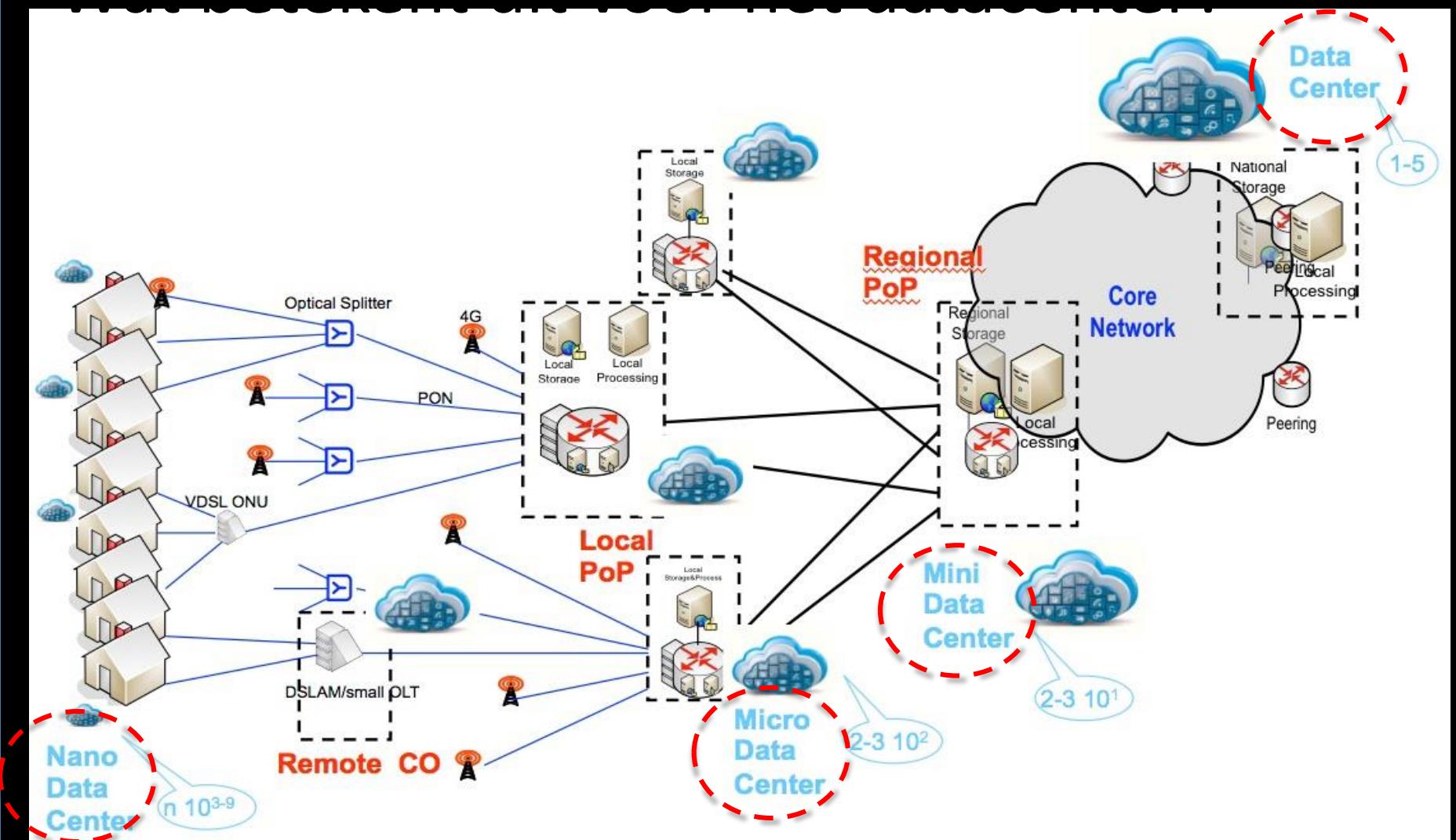
Which complements existing cloud / data center **advantages**

Data analytics  
to get to greater  
insights for your  
business

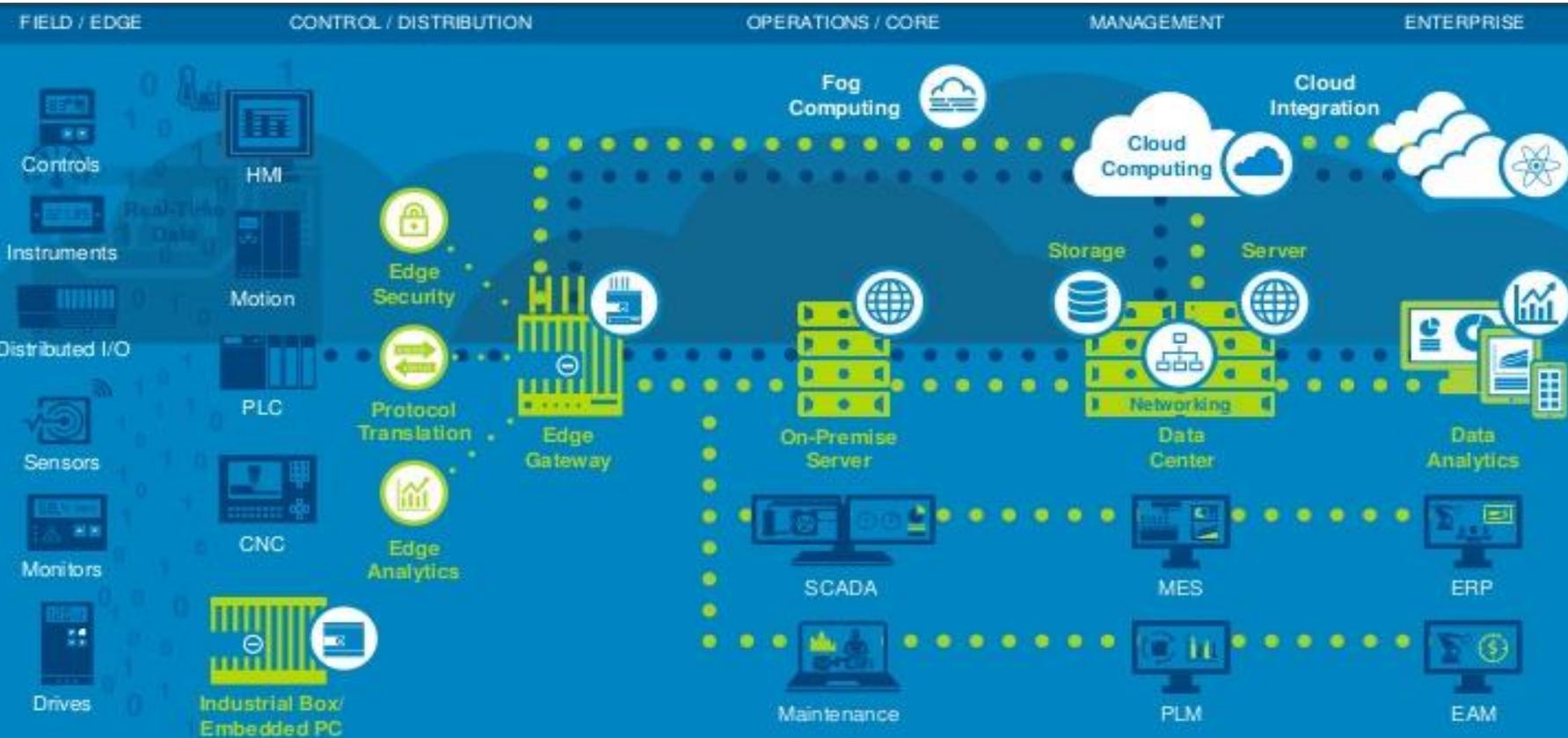
IT system  
integration to  
reduce data  
silos

Data continuity  
improved on a  
broad scale





# IoT zal de diversiteit van datacenters vergroten en verschuiven naar de edge . . .



# Contactgegevens

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- **Twitter:** [@hansdellemc](https://twitter.com/hansdellemc)
- **Blogs:** [www.datacentered.nl](http://www.datacentered.nl)