



Intelligent Assets

Manufacturing Analytics
Institute for Manufacturing, University of Cambridge

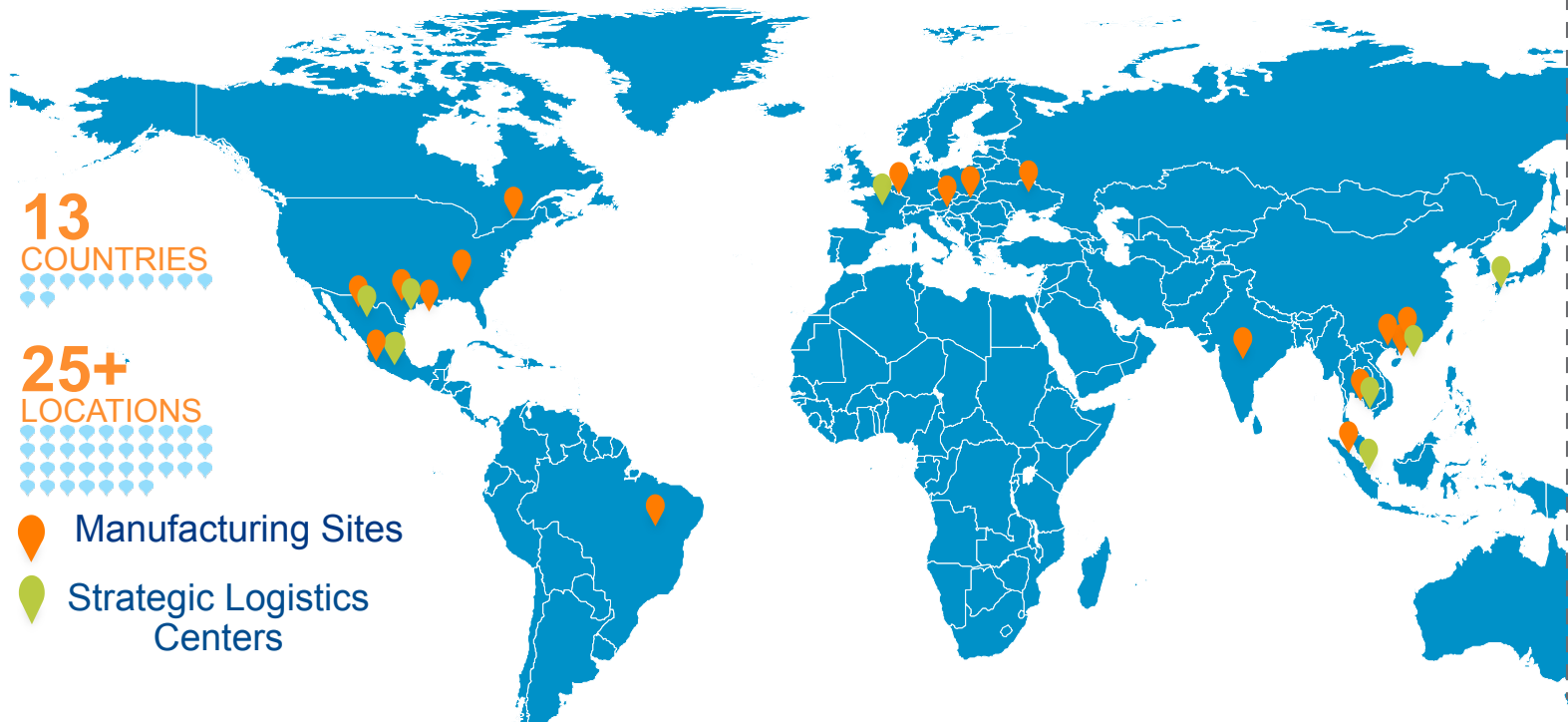
1st February 2016

Daniel Keely



Cisco's Supply Chain

Global. Complex. Diverse.



13
COUNTRIES

25+
LOCATIONS

 Manufacturing Sites

 Strategic Logistics Centers



**Diverse
Portfolio**

Mass production
to highly
configured

30,000+ orderable items

20,000+ virtual team

3,200+ orders daily

220,000+ items shipped daily

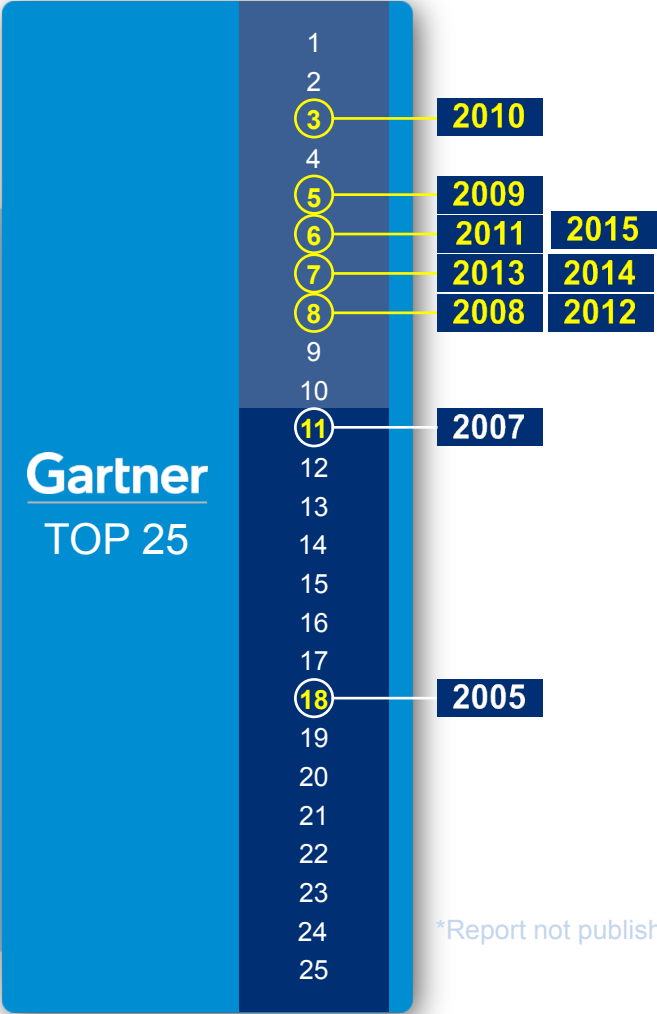
700+ active suppliers

62,000 components



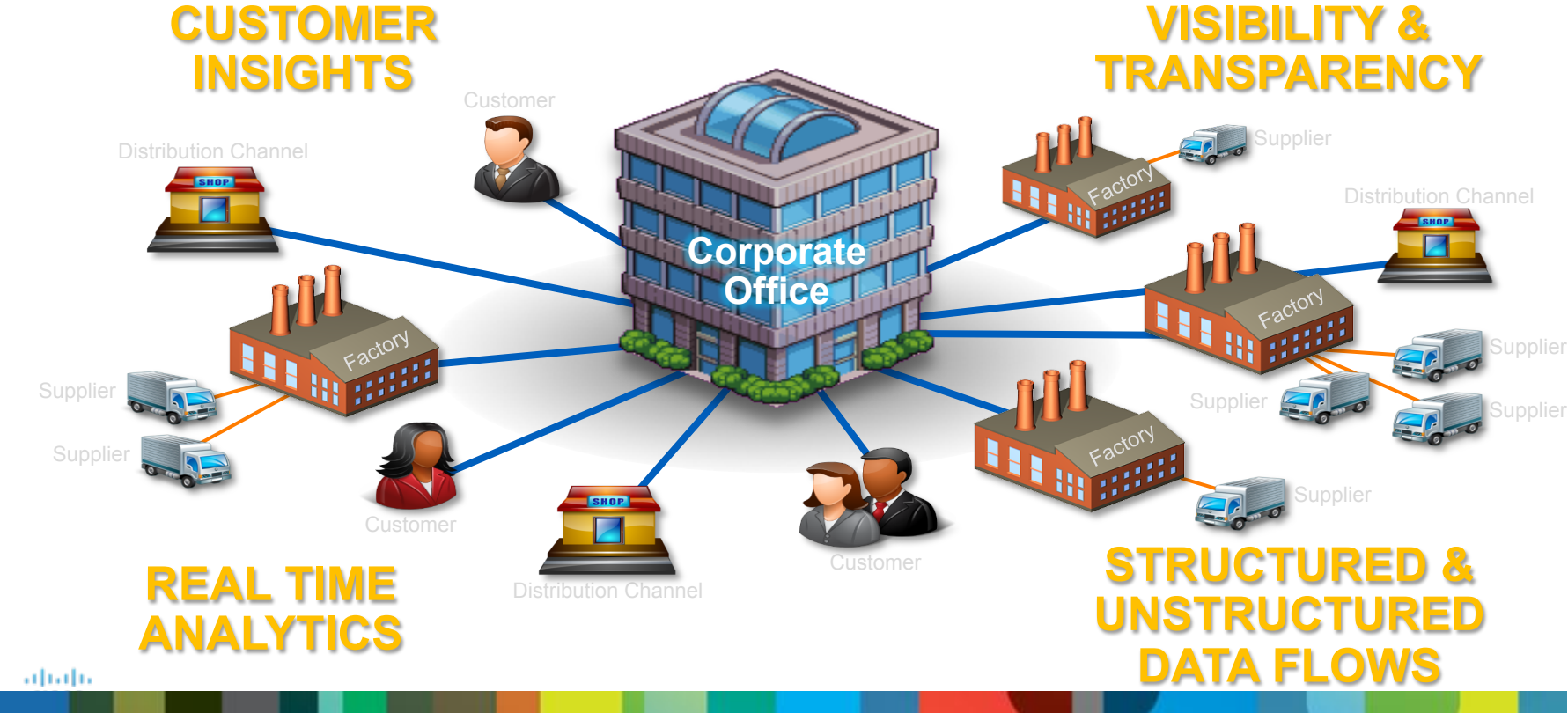
Cisco Supply Chain Industry Recognition

- 1. Amazon
- 2. McDonalds
- 3. Unilever
- 4. Intel
- 5. Inditex
- 6. Cisco Systems**
- 7. H&M
- 8. Samsung
- 9. Colgate - Palmolive
- 10. Nike



*Report not published in 2006

The role of Data Analytics



Data Analytics

Driving New Levels of Operational Excellence

**ENHANCED
CUSTOMER
EXPERIENCE**

**SPEED TO INFORMED
DECISION MAKING**



“If you went to bed last night as an industrial company, you’re going to wake up today as a software and analytics company”

Jeff Immelt, CEO GE (talking about rapid adoption of IT into the manufacturing industry)

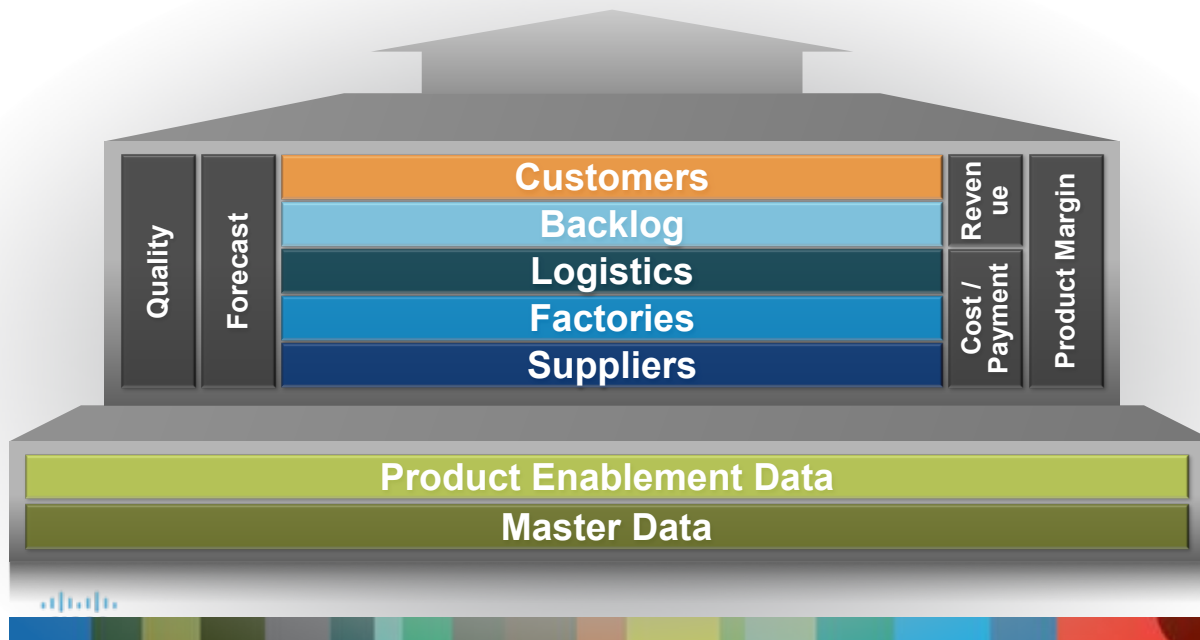
“the industrial world is changing dramatically, and those companies that make the best use of data will be the most successful.”

Architecture to drive Operational Excellence & Customer Experience

ANALYTICS

INTELLIGENCE COLLABORATION

DECISION SUPPORT




Capital equipment expense


Transformation costs


Human resources


Capacity constraints


Customer dissatisfaction / unhappiness

Reinvest in Innovation

Journey to an analytics driven supply chain



**Data
Acquisition**



**Technology
& Tools**



**Process
& Governance**



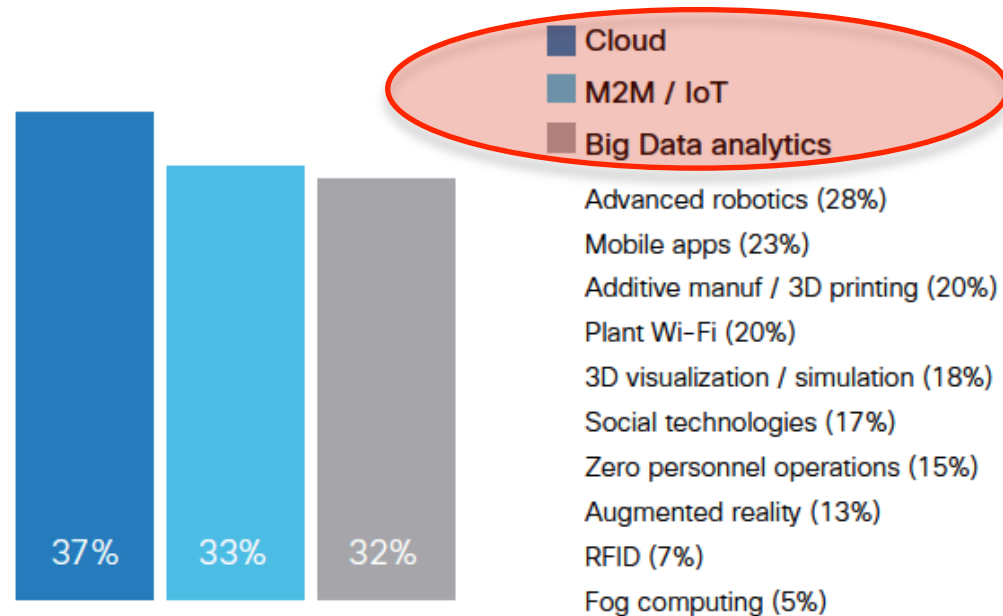
**Skills
& Roles**



Survey Question: Which technologies can most change how you manage production over the next three years?

Cisco Digital Manufacturer survey, 2015. [625 respondents]

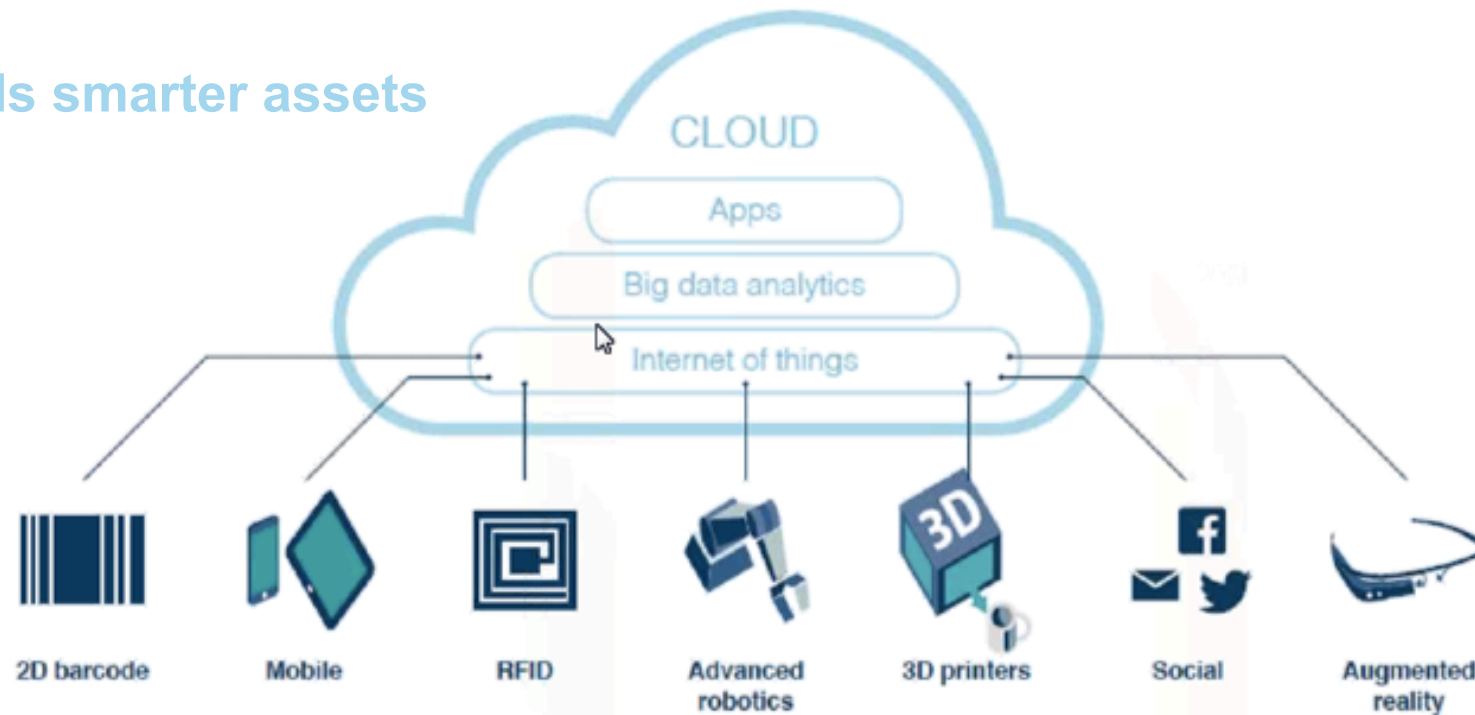
Digital (not manufacturing) technologies will have greatest impact



Promising technology for the factory and connected supply chain

Traditional technological <-> Digital innovation

Towards smarter assets

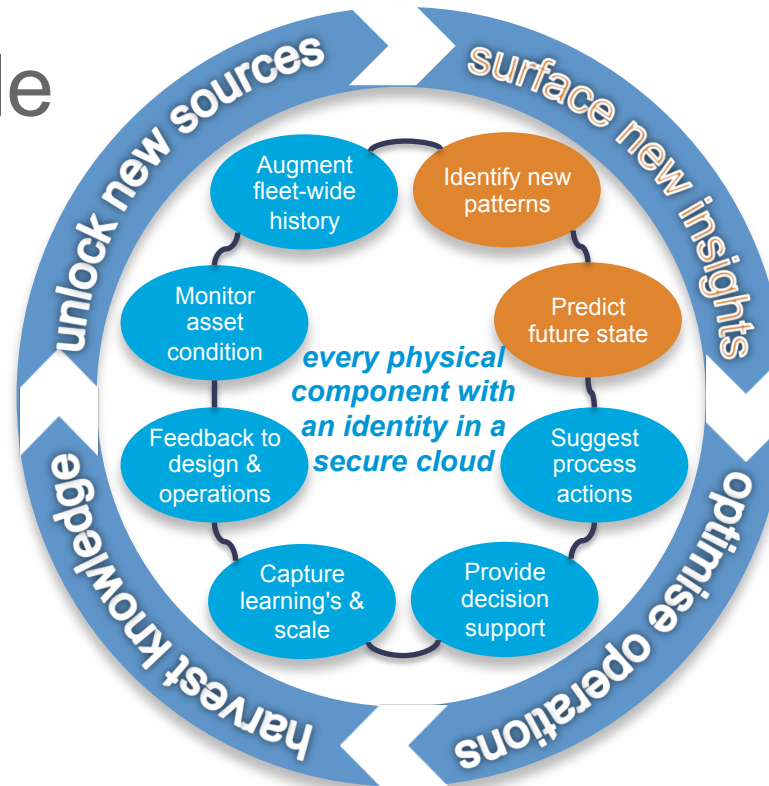


Creating Intelligent Assets

imagine if components, products and structures started telling us what they needed to remain safe, productive and efficient...
imagine if operational capabilities adapted based on this info...



Digital Profile System



“a rapid increase in the number of intelligent assets is reshaping the economy, and this development will create significant value” *Intelligent Assets*, World Economic Forum 2016

A platform for taking advantage of intelligent assets using analytics to create new value

- Managing through-life digital profiles - giving physical objects a digital identity and 'record of life'
- Sensing, data acquisition and 'hyper aware' analytics – insight into asset health & performance
- Visualisation and Collaboration – transforming decision support
- Process automation – dynamic optimisation of operations
- Open web objects representing physical assets: enabling business applications to tap into the new wealth of asset information

Through-life insight example: life sciences



Analytics impact:

- Production insight
- Product Distribution
- Collaborative decision support

Through-life insight example: electronics



Analytics impact:

- Knowledge of install base, performance
- End of life strategy options
- Grey & Counterfeit market risk

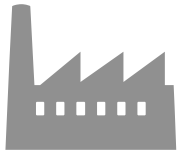
Through-life insight example: medical equipment



Analytics impact:

- Clinical asset management
- Availability, scheduling
- New service offerings

Through-life insight example: energy mgmt



1000 units installed with sensors at the factory site



Real time data monitoring of factory operational systems - energy, H2O, air pumps and HVAC



Sensors and analytics measure, monitor and manage energy use to run operations during the **lowest cost times**

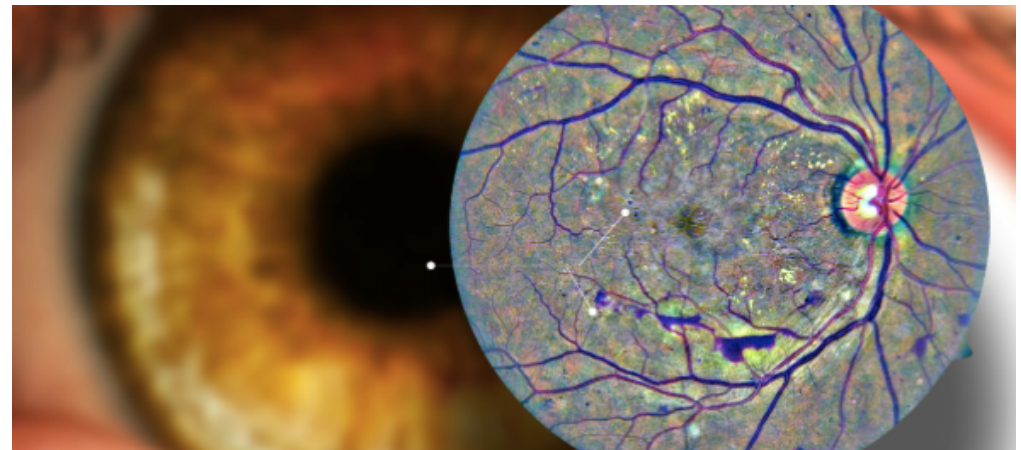


Energy management approach moves from “always on” to **“available when needed”**

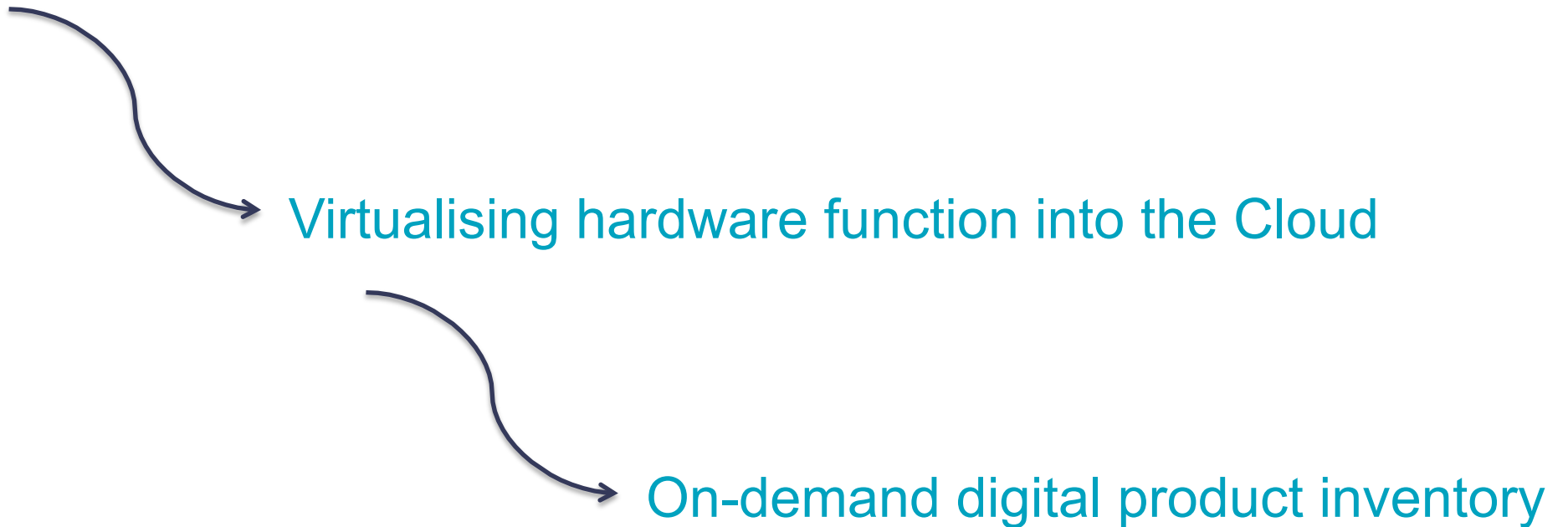
Insight to re-think business models

Cisco British Innovation Gateway

KYMIRA



From Intelligent Assets to Digital Products



A few considerations for adoption

- Digitisation strategy to direct technology investments and transformation of business models to capture the value of *through-life* data and intelligent assets
- Through-life may challenge x-organisational focus and measures
- Architecture and platform able to take advantage of traditional technological & digital innovation merger, and rapidly evolving technologies e.g. IoT, analytics, machine learning
- Managing potential ownership, access or IP conflicts as perceived value is created through data collection and analysis
- Creating win-win propositions to avoid customer push-back or legal barriers as a result of security, privacy or trust concerns