IIoT & Predictive Analytics for Manufacturing Virtual Conference

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Ask a question!
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tweet using #iiotvirtualconf

Now starting 10am (US Eastern)
9am (US Central)
8am (US Mountain)
7am (US Pacific)

Market overview
The current state of IIoT in Manufacturing & Market Trends

Moderator: Lucian Fogoros, IIoT World
Speaker: Benson Chan, Strategy of Things

STRATEGY OF THINGS

First Session – Market Overview
The current state of IIoT in Manufacturing & Market Trends

Time: 10:00 AM – 10:45 AM (ET)
Moderator: Lucian Fogoros, Co-founder & Managing Editor at IIoT-World
Speaker: Benson Chan, Senior Partner at Strategy of Things

CLEARBLADE®
ENGINEERING THE CONNECTED WORLD

Second Session - IIoT Platforms
Choosing the Right IIoT Platform Strategy from sensors to data

Time: 10:50 AM – 11:35 AM (ET)
Moderator: Lucian Fogoros, Co-founder & Managing Editor at IIoT-World
Speaker: Aaron Allsbrook, Chief Technology Officer at ClearBlade

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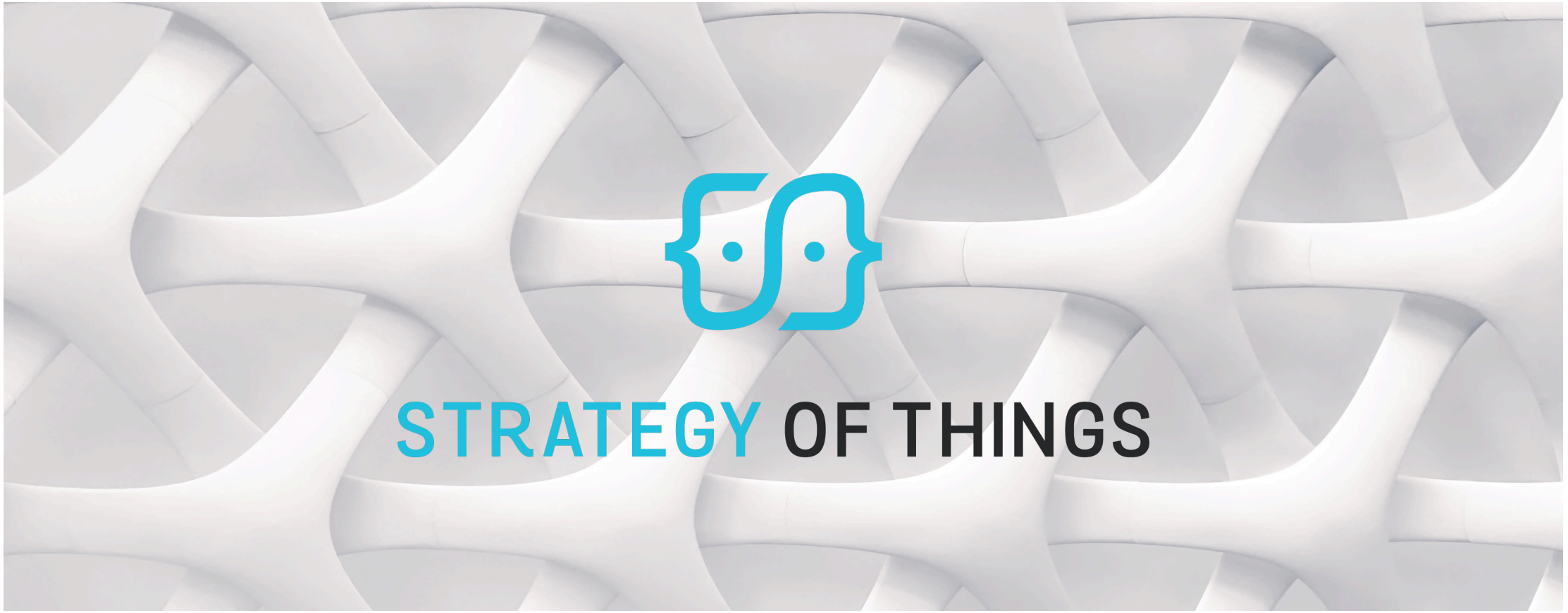
Third Session - Transform your data into strategic business value with predictive analytics

Time: 11:40 AM – 12:25 PM (ET)
Moderator: Lucian Fogoros, Co-founder & Managing Editor at IIoT-World
Speaker: Serg Posadas, Vice President of Industry Solutions at Clockwork Solutions

IIoT World

Panel Discussion

Time: 12:30 PM – 1:00 PM (ET)
Moderator: Lucian Fogoros, Co-founder & Managing Editor at IIoT-World
Speakers:
Benson Chan, Senior Partner at Strategy of Things
Aaron Allsbrook, Chief Technology Officer at ClearBlade
Serg Posadas, Vice President of Industry Solutions at Clockwork Solutions



Benson Chan
November 14, 2017

About us

Strategy of Things helps businesses and enterprises innovate for a hyper connected world. We are transformation management consultants advising solution creators and users on people, business, strategy, technology and innovation.

Advisory	What problems should I solve with IoT and how do I go about it? *Strategy and Planning.*
Research	How do I keep up to date and have the latest best practices? *Insights and knowledge transfer.*
Innovation Lab	How do I know if I am developing the right solutions with the right tools? *Rapid prototyping and customer validation.*
Acceleration	How can I implement and roll out the solution? *Implementation, go-to-market and change management.*

Topics

- What is IIoT and why it matters?
- What are we seeing now?
- What should you do now?
- Q&A

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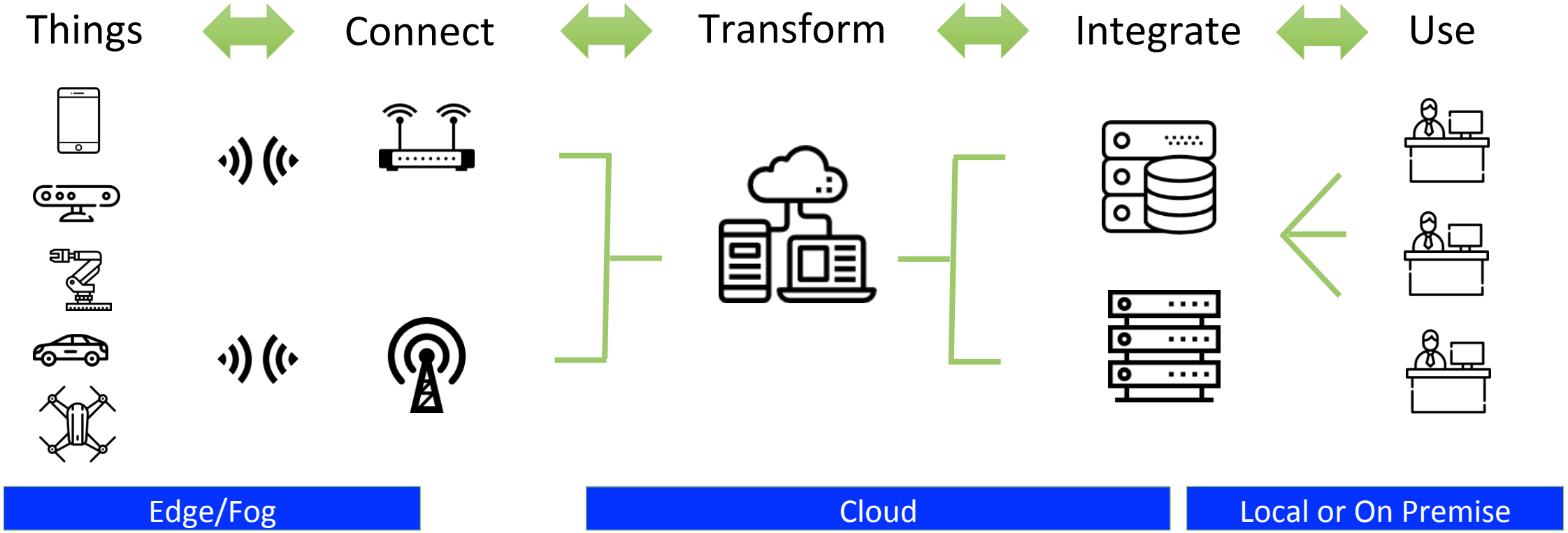
What is the Industrial Internet of Things (IIoT)?



Things
- Sensors
- Actuators
- Meters
- Devices

Wireless Technologies
- Short range (BT, NFC, Wi-Fi)
- Long range (cellular, LPWAN)
- Radio

Edge Mgmt
- Controllers
- Processors
- Storage

IoT Platform
- Collect
- Normalize
- Process/Rules/Policies
- Analyze + Respond
- AI and automation
- Store

Execution Systems
- Business Applications
- Operations Applications
- Industrial Applications

IIoT is a combination of hardware, software, open standards, connectivity, data and business models

Use Case/Industry Segments

- Manufacturing
- Oil and Gas
- Smart City
- Healthcare
- Automotive
- Transportation
- Enterprise

Presentation Components

- Mobile OS
- Web Browser
- Virtual Reality
- Aug. Reality
- Voice Interface
- Vehicle Interface
- Wearable Interface

Platform Components

Infrastructure
- Compute
- Storage
- Database

Manage Edge
- Register
- Provision
- Monitor/Track

Manage Data
- Ingest
- Transform
- Store

Secure
- Access Ctrl
- Authenticate
- Encrypt

Integrate
- API
- Services

Optimize
- Rules
- Analytics
- ML/AI

Operate
- Admin
- Workflow
- Billing

Build Applications
- Tools & Framework
- Personalize/Rules
- Visualize/Model

Report
- Metrics
- Logs
- Notifications

Messaging Protocols

- MQTT
- REST
- CoAP
- HTTP
- AMQP
- DDS
- XMPP
- WebSocket
- Other

Connectivity and Gateway Components

- Wifi
- Bluetooth
- Zigbee
- Z-wave
- 5G/4G/3G/2G
- NB-IoT
- Weightless
- Symphony
- RPMA
- SigFox
- LoRa

Devices and Things

- Robots
- Vehicles
- Drones
- Edge Platforms
- Sensors
- Actuators
- Edge Devices

IIoT vs IoT – key differences in requirements

Secure

Interoperable

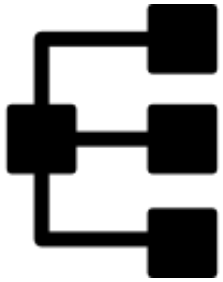
Scalable

Precision

Programmable

Low Latency

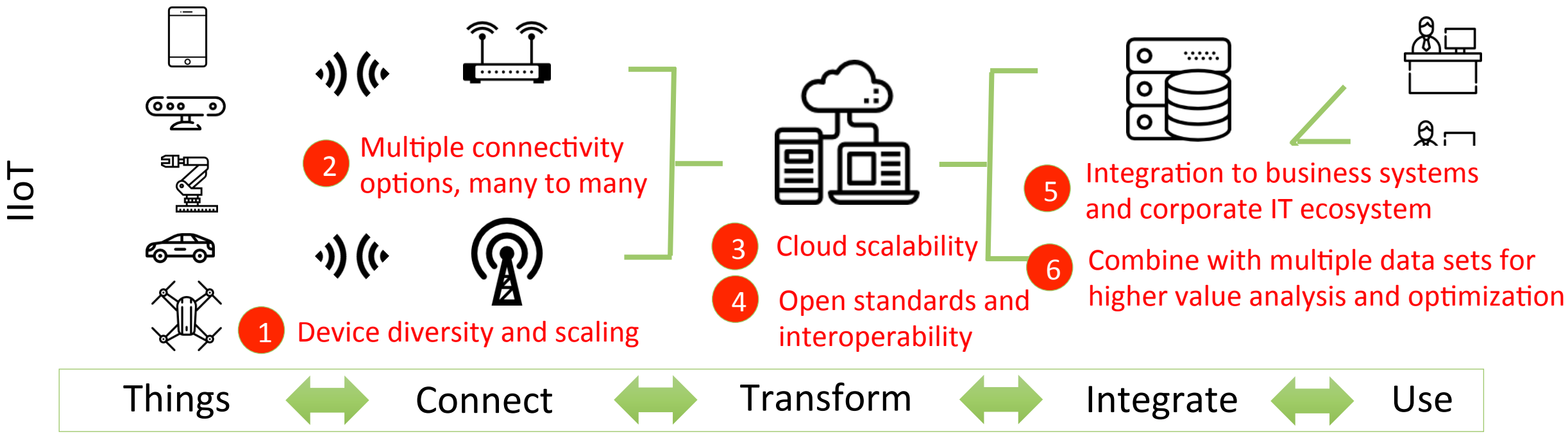
Reliable

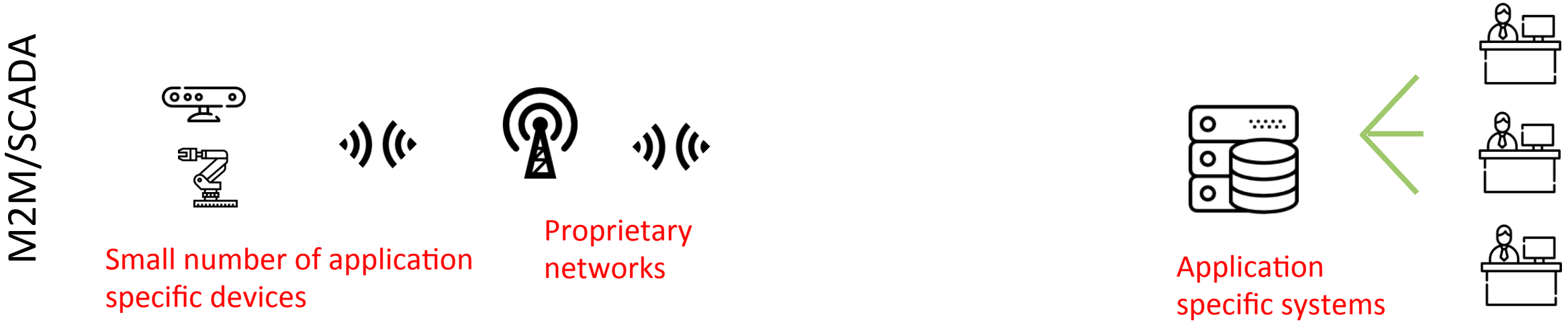


Fault Tolerant

Automated

IIoT vs M2M/SCADA





What's driving IIoT?

Low Cost Embedded Systems

Purpose-Built Low Cost Long Range Wireless Technologies

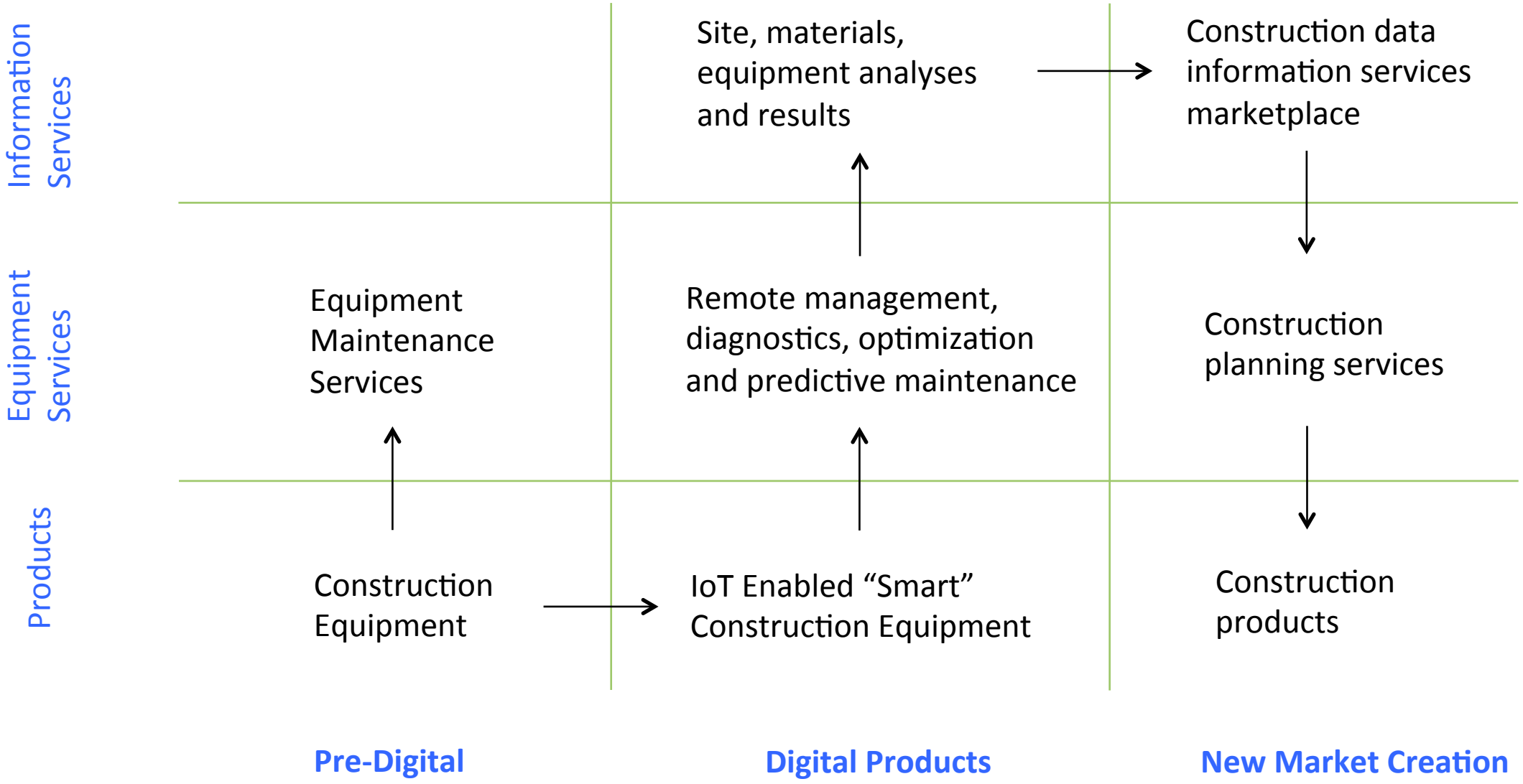
Cloud-Native
- Infinite Scalability
- High Agility
- Pay As You Go

Big Data
Machine Learning

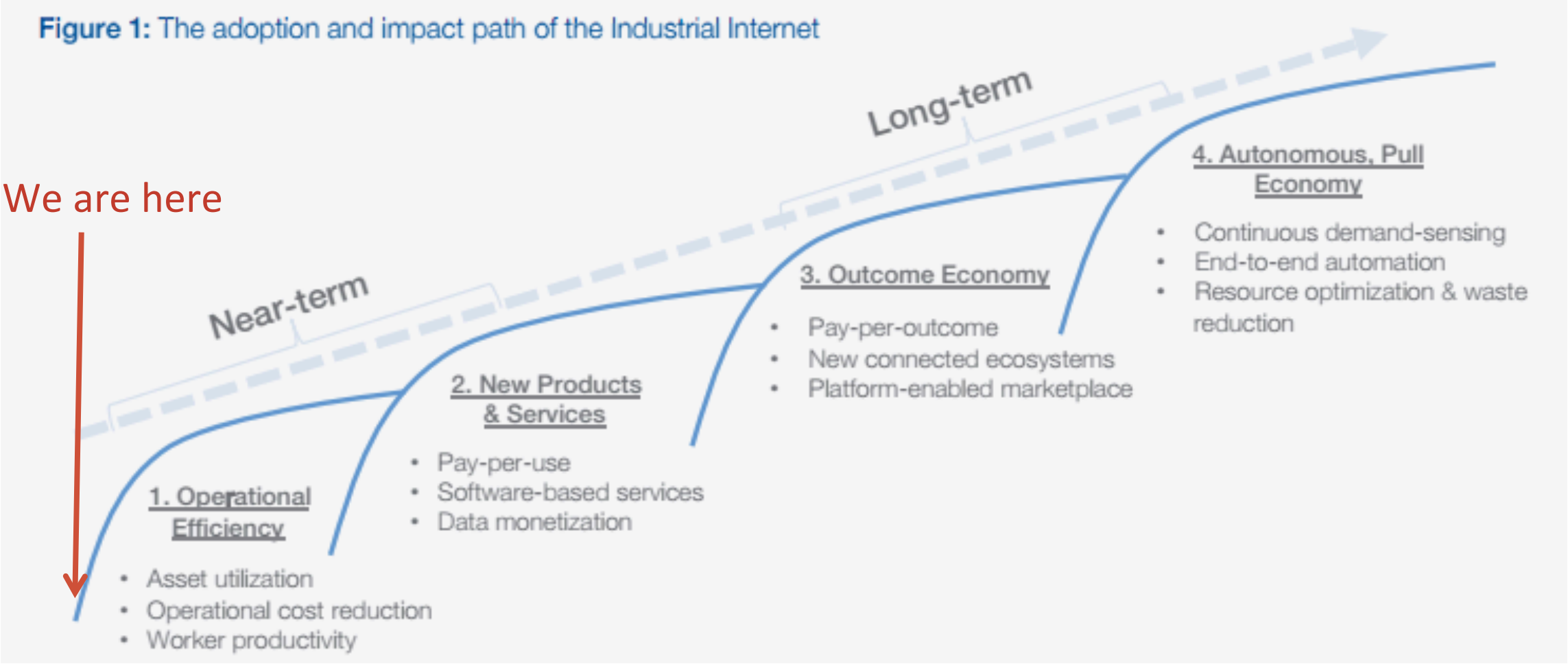
Transformative Applications
New Business Models

4th Industrial Revolution

What's so special about IIoT?



Market states and characteristics



Source: Industrial Internet of Things: Unleashing the Potential of Connected Products and Services
World Economic Forum report, in collaboration with Accenture, January 2015

Topics

- What is IIoT and why it matters?
- What are we seeing now?
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IIOT Trends Snapshot

Use Cases

Security

Infrastructure

Data Analytics

Connectivity

Organization Structure/Skills

Use Cases – Top Three in Manufacturing

Source | Produce | Distribute | Sell/Market | Service

Infrastructure and operations

Production Asset Predictive Maintenance

Production Asset Tracking

2

$45B (2017, IDC)

Efficiency and cost savings

Manufacturing Operations Mgmt - performance optimization and monitoring, planning

1

3

Field Service Maintenance

$105B (2017, IDC)

New Value Generation

- Solves an immediate problem
- Tangible Value and ROI
- Easy to understand

Total Global Spending in IIoT for Manufacturing = $183 B, IDC
https://www.idc.com/getdoc.jsp?containerId=prUS42799917

Infrastructure Trends

IoT/IIoT Platforms

- 450+ platforms (IoT Analytics, 2017)
- “Fragmented” stacks
- “Land grab” among the “horizontal” players
- Ecosystems matter!

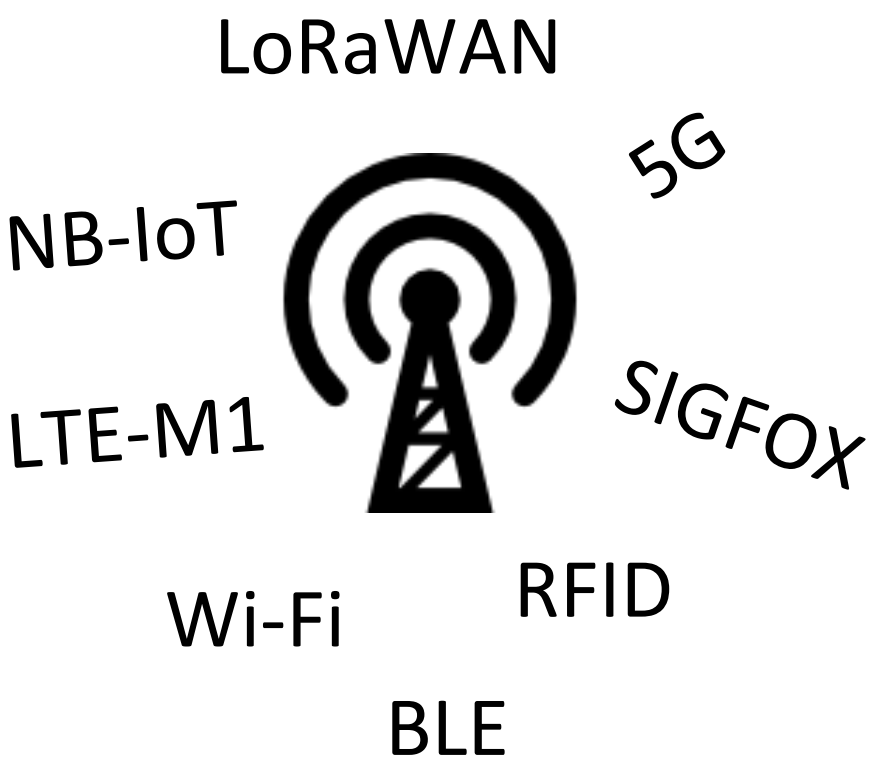
Edge or Fog

- Increasing attention towards edge processing
- $18 B by 2022, from $3.7 B in 2019 (451 Research, 2017)
- Industrial = $2.3 B by 2022

Interoperability

- IT/OT convergence
- Industrial Internet Consortium driving collaboration among industry groups
- IIC testbeds, reference architectures

Connectivity Trends



- No "Silver Bullet" technology that is universal for all use cases
  - Multi-modal approach required

- Low Power connectivity battle brewing
  - SigFox vs LoRaWAN
  - NB-IoT vs LTE-CAT M1
  - LPWAN vs Cellular

Security Trends

Ecosystem Responsibility

- Chips --> Cloud
- H/W and S/W
- Policies and regulations
- Security isn't cheap

Innovative Approaches

- Overlay virtual networks (enclaves)
- Things behavior
- Learning/Adaptive

Internet of Trusted Things

- Identity Management
- Traceability
- Security platforms

Data Analytics Trends

No Data Strategy

- "Collect now, figure out later"
- Most data is never looked at or used
- "I don't know what I'm looking at"

Machine Learning

- Everyone has "machine learning"
- Deep learning technologies coming to market

Edge vs Cloud

- Not everything needs to go to the cloud

Organizational Structure/Skills

New Skills

- "Rosetta Stones" – IT, OT and Business
- Digital (S/W, DevOps, Integration)
- Data Science/Analyst
- Security
- Machine Learning

Organizational

- IIoT transformation office
- Innovation culture
- IT-OT collaboration

Change Management

- Change catalysts
- Organizational development

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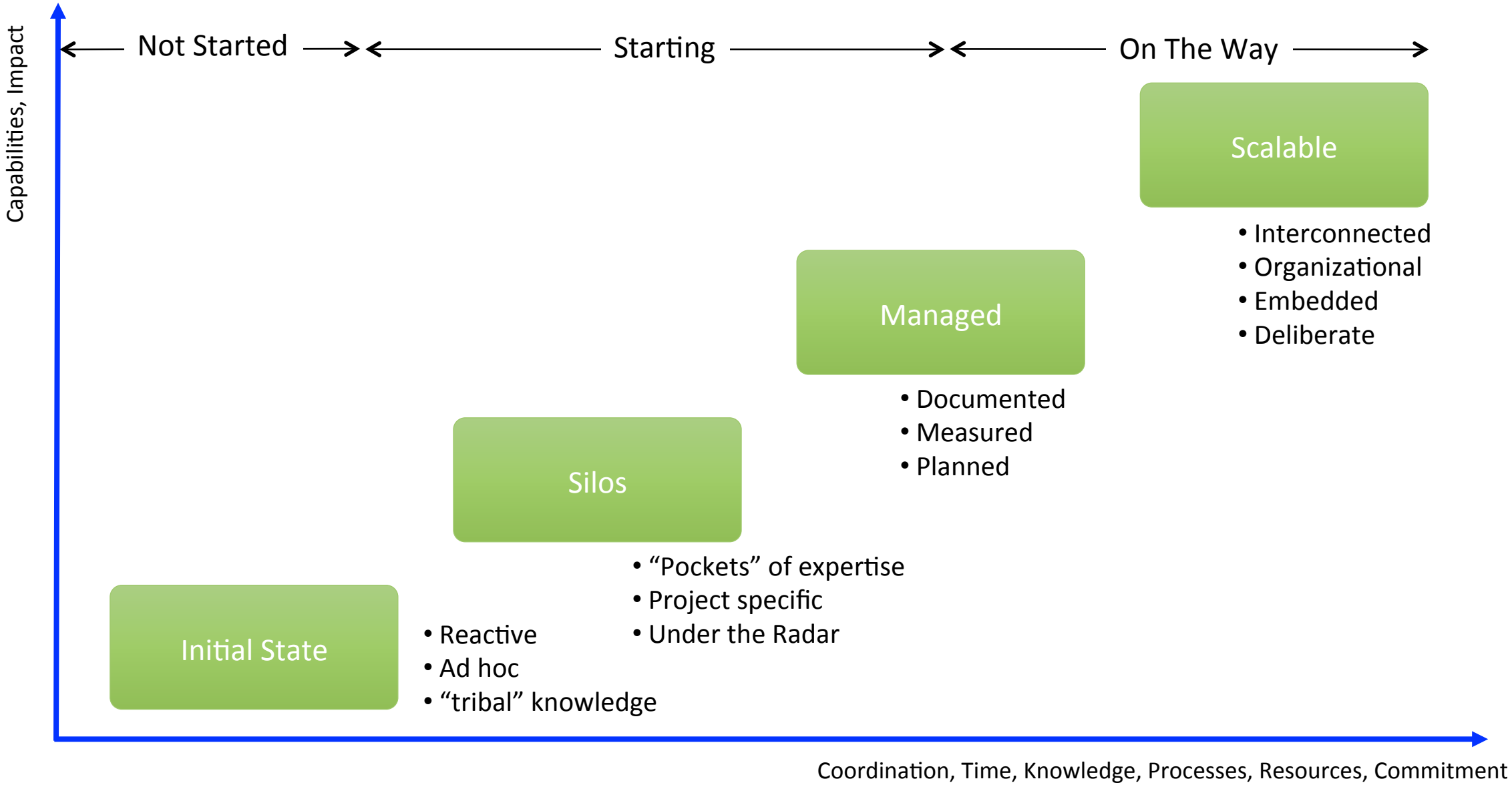
Developing IIoT competence is a journey



What you should do now

Not Started

- Get smart on IIoT
- Start small with learning and pilot projects. Add on to existing project.

Starting

- Assess your capabilities and find the gaps
- Build a strategy and plan
- Build connections between IT, OT and engineering
- Prepare infrastructure for IIoT and fix gaps

On The Way

- Design your organization for transformation
- Develop IIoT catalysts within the organization
- Build an IIoT innovation and experimentation sandbox
- Hire and develop critical IIoT skills now

Assess your IIoT "readiness" across the organization

Processes and Policies
- Business
- Manufacturing/Operations
- Channel and Suppliers

Customers and Markets
- Existing and new customers
- Channels
- Customer success

Products and Services
- "Product" form factors
- Value consumption models
- Delivery capabilities

Source → Design → Build → Ship → Sell → Service

Procurement

Information Technology

People and Organization

Finance, Legal

Facilities, Infrastructure, Fleets, etc.

Infrastructure (IT and OT)
- Architecture
- Systems and technologies
- Integration and interoperability
- Cybersecurity

Financial
- Profitability
- Revenue recognition
- Analytics and optimization

People
- Specialists (digital, s/w, analytics, security, etc.)
- Skills and training
- Organization (structure, roles, etc.)

Business Execution
- Vision/Strategy/Execution
- Offerings and services
- Go To Market/Channels

Legal and Regulatory
- Privacy
- Data security liabilities
- Product/services liabilities

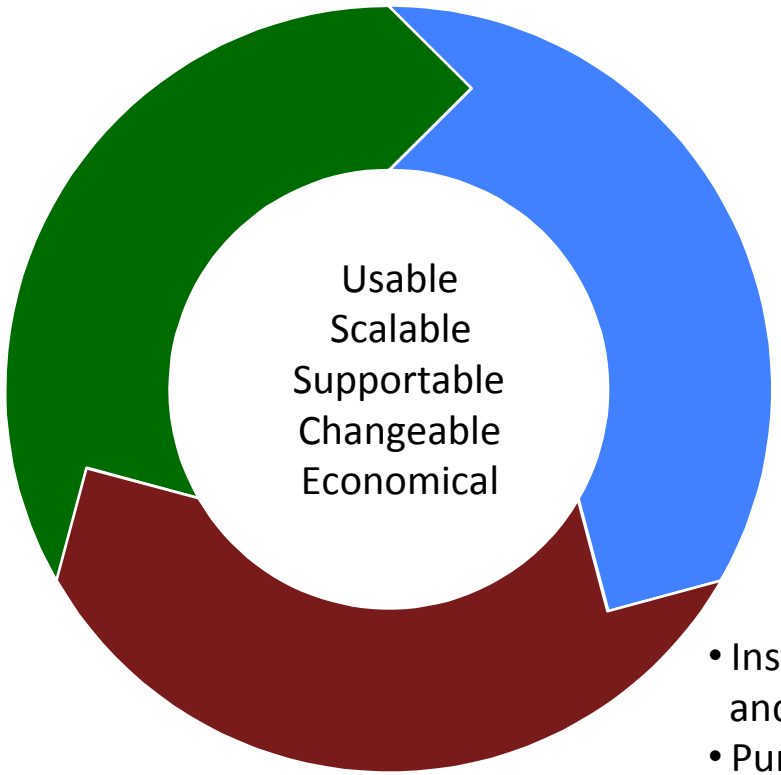
IIoT project success – ten best practices

- Solve a problem people care about
- Plan conservatively
- Fix outdated processes and policies
- Partner for success
- Augment your capabilities with outside resources
- Address resistance to change
- Define project success and goals beyond the solution
- Drive shared ownership and accountability
- Establish a learning culture
- Be flexible and adapt

Futureproofing your investments

Plan and Design

	Short Term (1 year)	Med Term (3-5 yrs)	Long Term (5+ yrs)
Do Not Future-proof			
Transition when convenient			
Future-proof			



Source and Build

- Stocking of spare units
- Placing large "Last time" orders before solution is EOL
- Sourcing refurbished versions of the solution
- Use leasing as sourcing strategy
- Negotiating contractual arrangements with the vendor to continue the solution line

Support and Monitor

- Install firmware updates to maximize functionality and extend useful life.
- Purchase warranty and extended warranty and maintenance service contracts to ensure support
- Develop in-house maintenance and repair capability
- Negotiate special one-off engineering support services with the vendor or their designated contractors

Source: strategyofthings.io/future-proofing-iot

Questions?

STRATEGY OF THINGS

Benson Chan
Senior Partner
benson@strategyofthings.io
925-699-7562