SNIA CSTI | CLOUD STORAGE TECHNOLOGIES

Journey to the Center of Massive Data: Digital Twins

Live Webcast

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Today's Presenters

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SNIA - By the Numbers

Industry Leading Organizations

180

Active Contributing Members

2,500

IT End Users & Storage Pros Worldwide

50,000

SNIA CSTI | CLOUD STORAGE TECHNOLOGIES

What We Do

Educate vendors and users on cloud storage, data services and orchestration

Support & promote business models and architectures: OpenStack, Software Defined Storage, Kubernetes, Object Storage

Understand Hyperscaler requirements Incorporate them into standards and programs

Collaborate with other industry associations

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Agenda

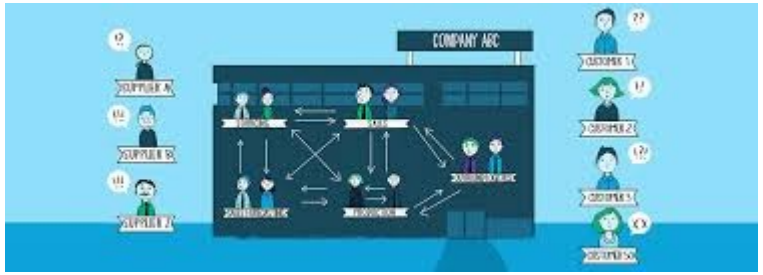
- Introduction to Digital Twin usage
- What is the Edge IoT Need
- Data analytics problems solved by digital twins
- How digital twins are being used today, tomorrow and beyond
- Use cases: adaptive agile factories, massive data generation across industries, and system of systems processes
- Why this is a technology and trend that is here to stay

Business Problem: Make Operations Better

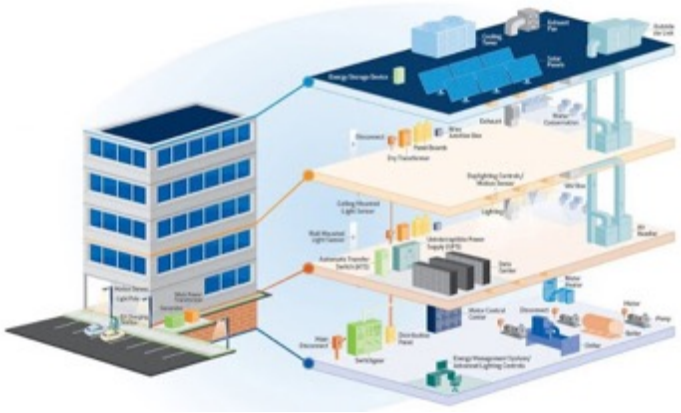
GO FAST … safely

Defects

Right Size Org

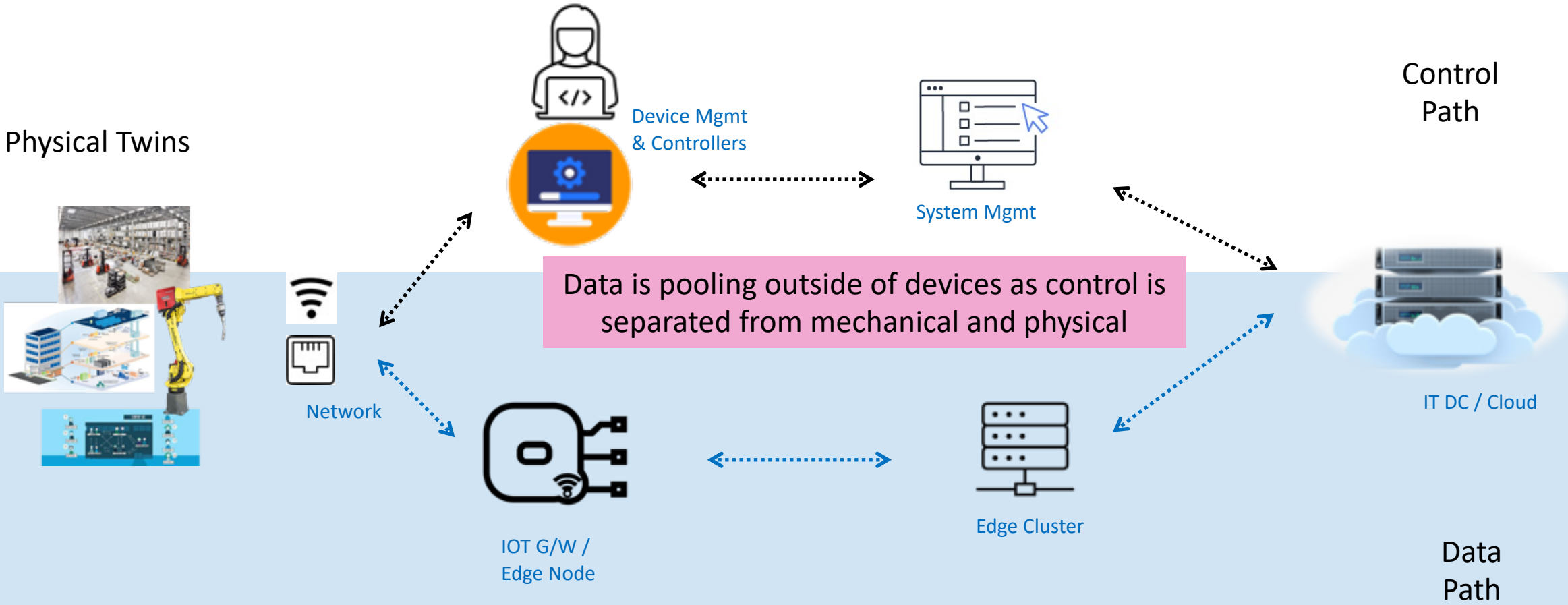


Reduce Co2



Wait, Won’t Data Save Us?

Trend: SW Defined Everything Creates Lots of Data



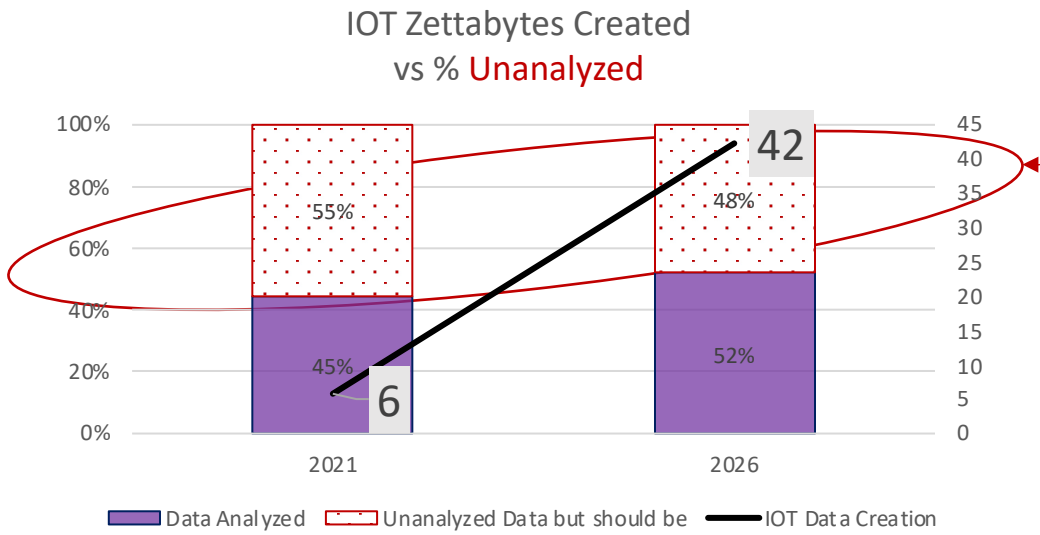
We've Got More Data Than We're Handling

The average factory generates **1TB of production daily**, but only 1% is analyzed and acted upon in real time. Using available data and AI can help predict interruptions to minimize downtime and maximize throughput. Being able to process data where it's generated lets you quickly act on insights. IBM

Digital Twins Defined in < 2 Minutes

https://youtu.be/J-edZjYQors

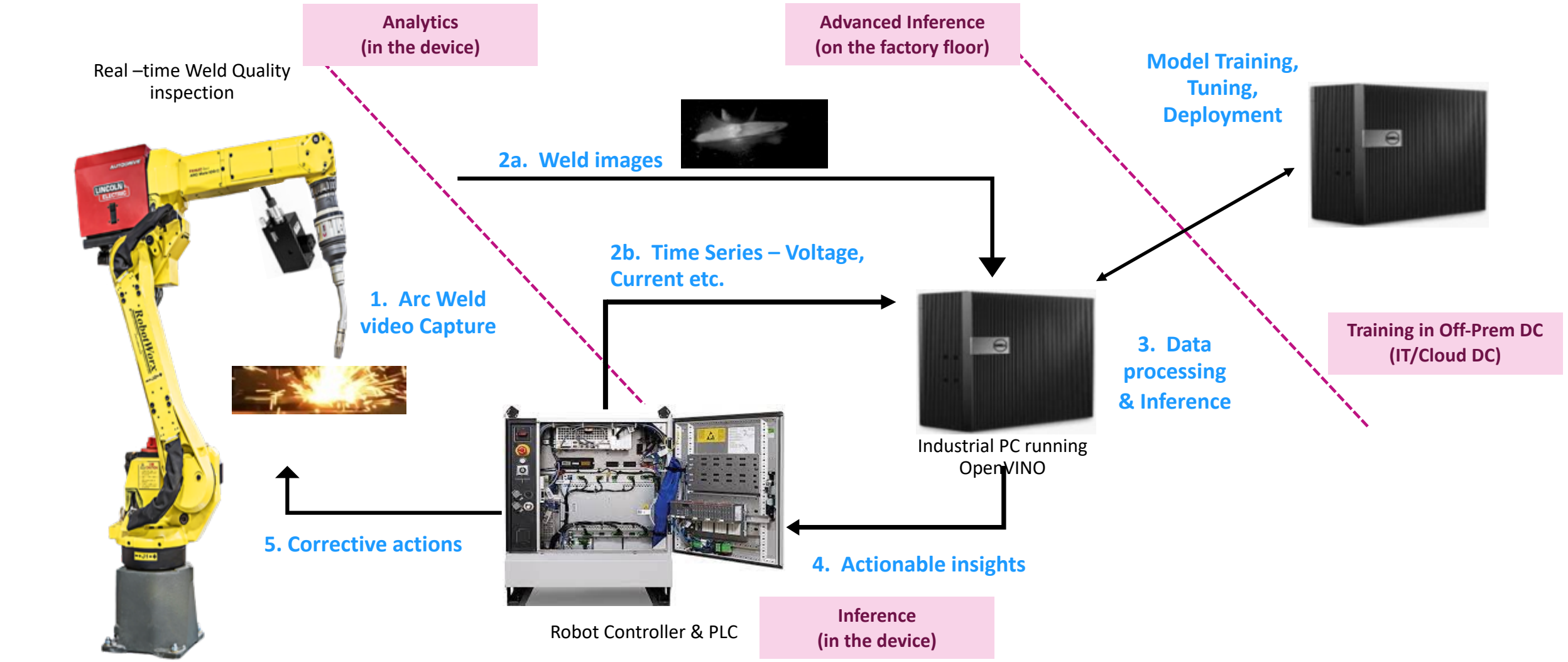
Problem: Incompatible & Unstructured Data is Hard to Unlock



Source: IDC Global Datasphere, Intel Judgment

Surely AI Will Save Us?

Big & Little Tech is Responding with AI Everywhere



Why Then Do We Need Digital Twins?

We’re Only Human After All!

Tame
Complexity

Force Data
Integration

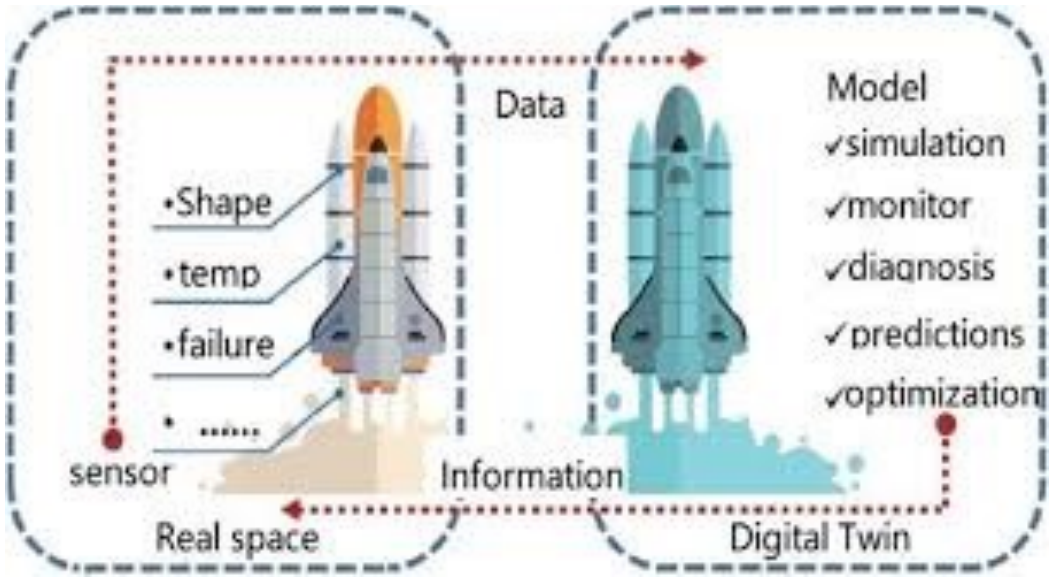
Visualize State
(past, present, future)

Normalize
Control

Digital Twin: Definitions are Plentiful

- A digital twin is **a digital representation of a real-world entity or system**. The implementation of a digital twin is an encapsulated software object or model that mirrors a unique physical object, process, organization, person or other abstraction - Gartner

Physical Twin - Digital Twin form a 1:1 relationship

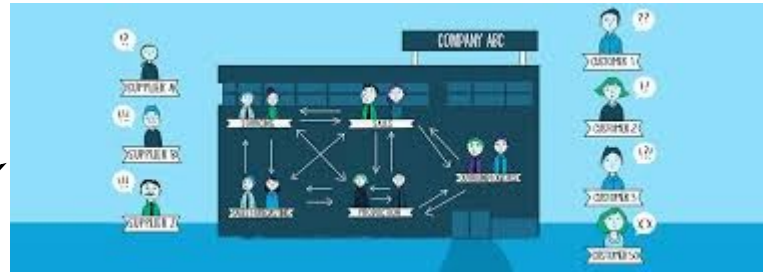


Different Kinds of DTs

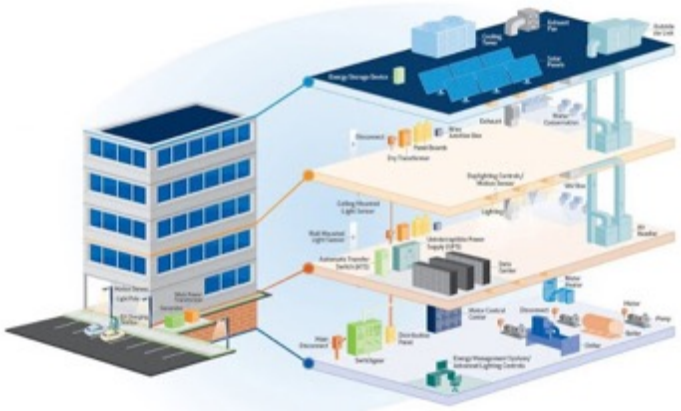
Discrete

Process

Organizational



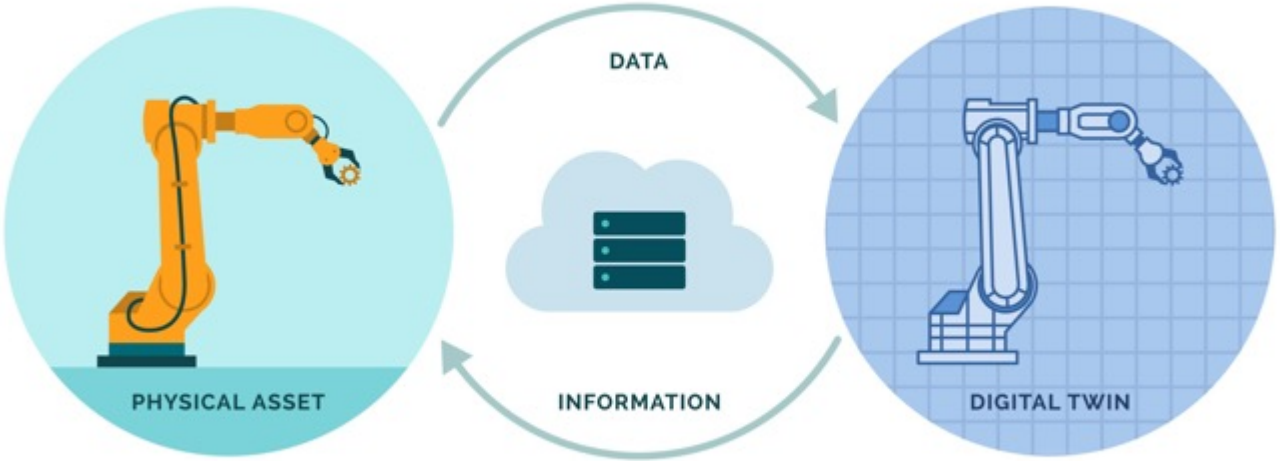
Composite



What Do DTs Do?

Ingests Data

- Direct & Interpreted (AI)
- Streaming & Static



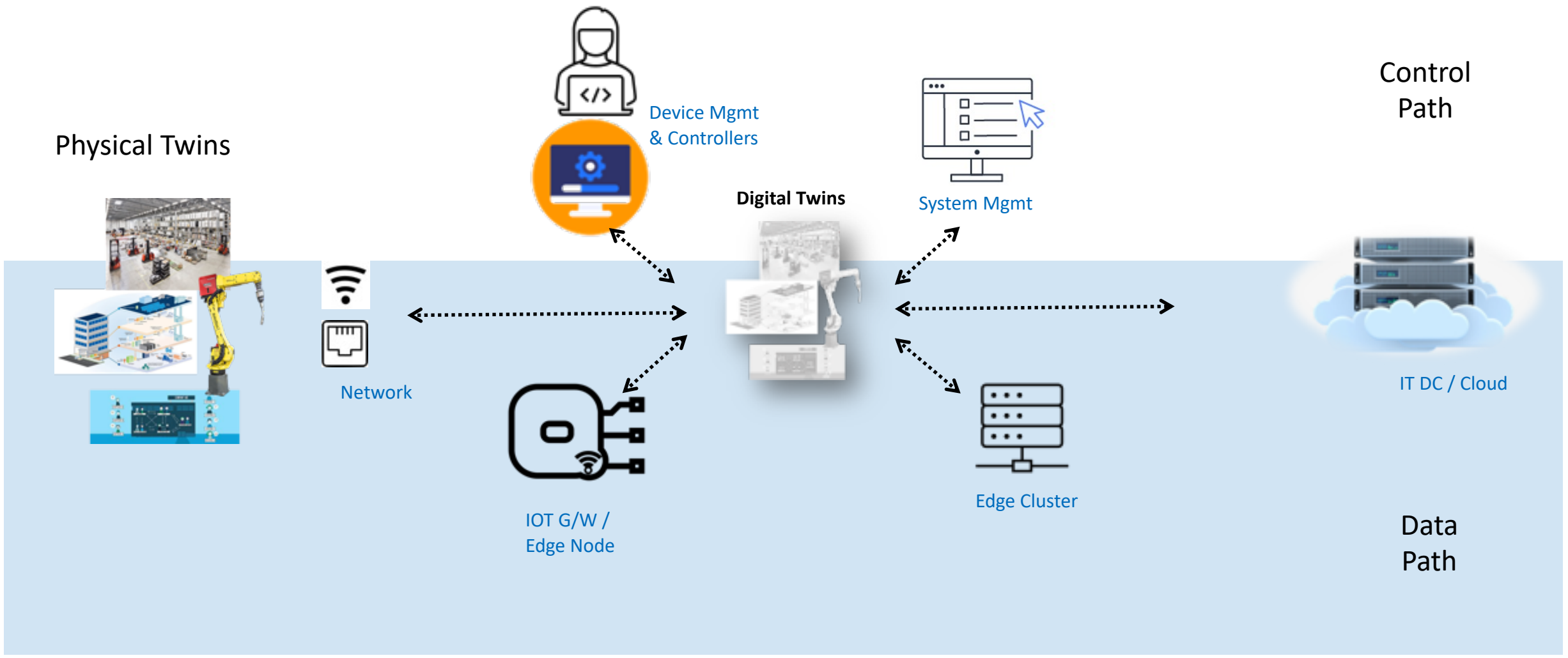
Visualizes State
(Past, Present, Future)

- Dashboard
- Rendered
- Immersive

Normalizes Control (enhances & automates)

- Informs Human
- Translates Policy
- Asserts direct & indirect control

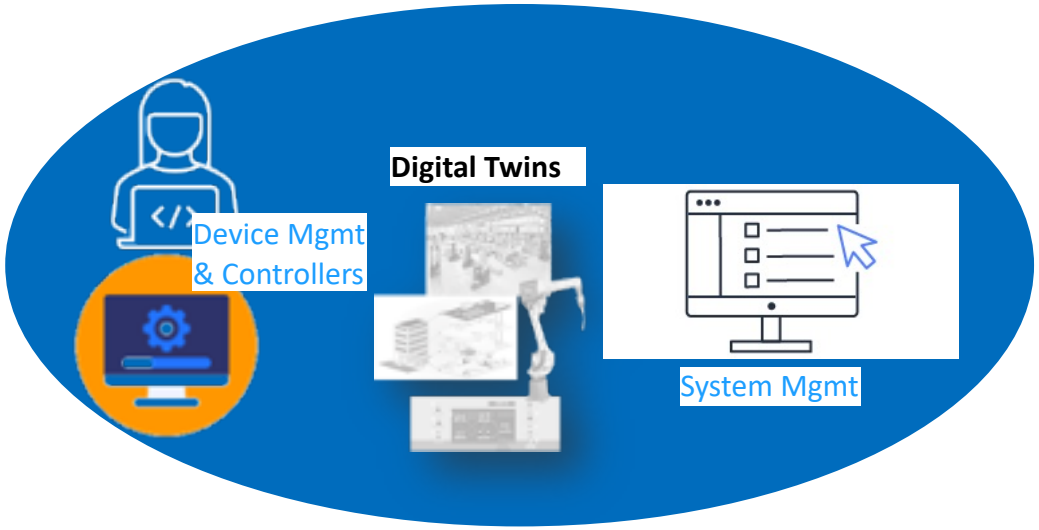
Digital Twins: Consumption and Use Cases



Likely Packaging Combinations

No single approach

Use Models: Management SW Expansion



Physical Twins

Network

IOT G/W /
Edge Node

Edge Cluster

IT DC / Cloud

Use Models: Edge Platform Expansion

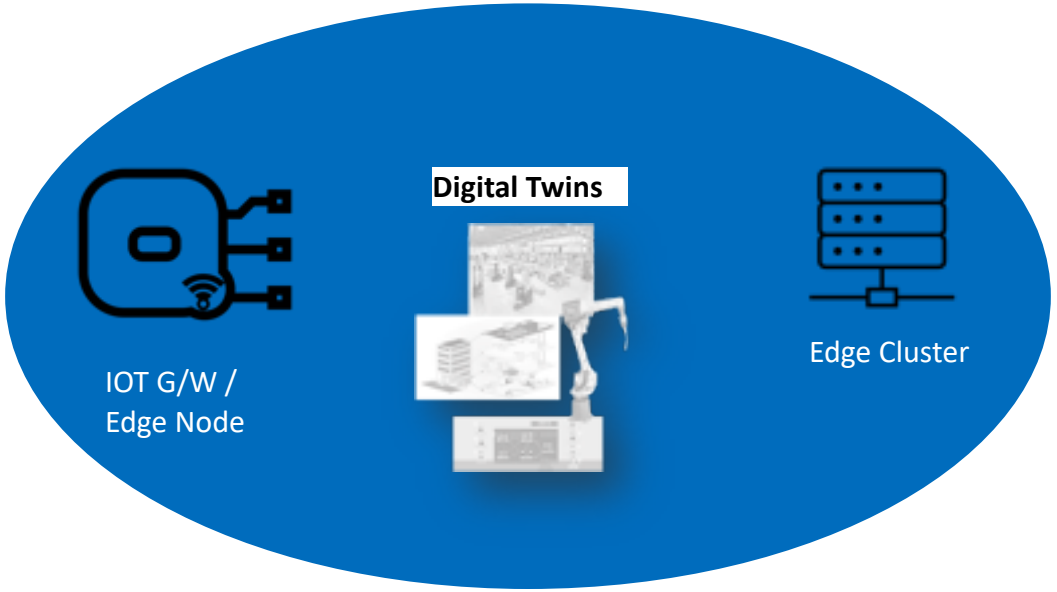
Physical Twins

Network

Device Mgmt
& Controllers

System Mgmt

IT DC / Cloud



Use Models: Cloud DTaaS (human time)

Physical Twins

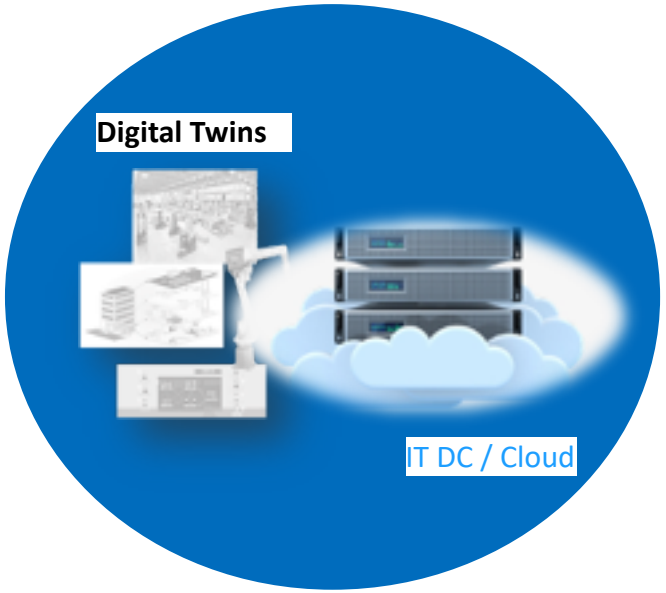
Network

Device Mgmt
& Controllers

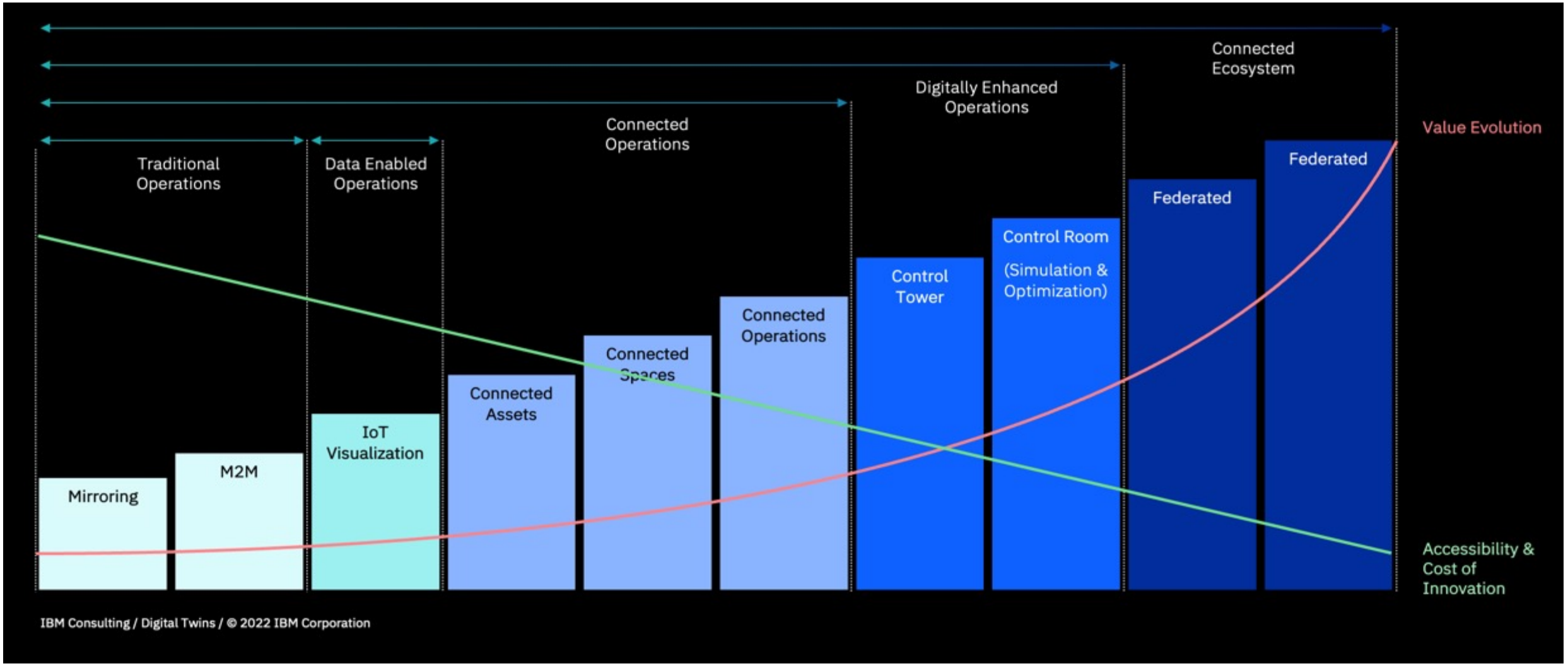
IOT G/W /
Edge Node

System Mgmt

Edge Cluster

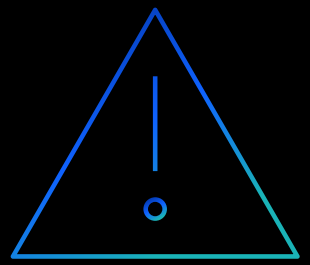


Digital Operations is a Journey



Fusing Physical and Digital to Transform Industries

Lesson 1: Avoid Proof-of-Concept Purgatory



Avoid Proof-of-Concept Purgatory

Establish a digital vision and deliver value one step at a time with a strategic roadmap of value-based use cases.

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Delayed Value

IT-Centric
IT focused initiatives often delay value because they fail to evaluate the convergence of IT and OT

IoT Tinkering
PoCs consume time and resource energy with limited benefit.

Data First
Data is growing exponentially and will never be “clean”. It costs a significant amount of money to store / cleanse data.

Not Designed to Scale
Proof-of-Concepts not designed to scale.

Rapid Value

Strategy
Prioritize and gain consensus.
Prioritize organizational benefits.
Manage enterprise change.
Extend existing investments.

Value
Implement an MVP to deliver value quickly and magnify benefits at scale.

Focus on the right Data
Leverage AI to find the parameters that matter and leave the rest behind. Unlock machine to machine communication.

Designed to Scale
Outcomes focused benefits that scale regardless of operational variability.

Lesson 2: Start Small and Scale Quickly

IBM Consulting
Digital Twin
Fast-Start >>>

Overview

	Visioning	Design	Delivery
	Exploration, validation and refinement of the client's opportunity	*Rapid design workshop focused on bringing the 'Big Idea' to life*	*Build, deliver, deploy MVP*
Duration	2 days in person	3 days in person	3-6 months
Activities	– Inspiration Board: Industry & Trends – Define a common vision – Ideate and prioritise opportunities – Identify key personas – Big Ideas, objectives and key results – Data discovery	– Explore personas and empathy mapping – Pain points – Golden thread – High-fidelity design – Data requirements – High-level business case	– Detailed design – Development – Lab and user testing – Deployment
Outcome	Clearly articulated opportunity statement for the 'Big Idea'	High-fidelity designs, high level business case and plan for MVP	MVP in operation
	IBM hosted and facilitated	**IBM** hosted and facilitated	**IBM/Client** build

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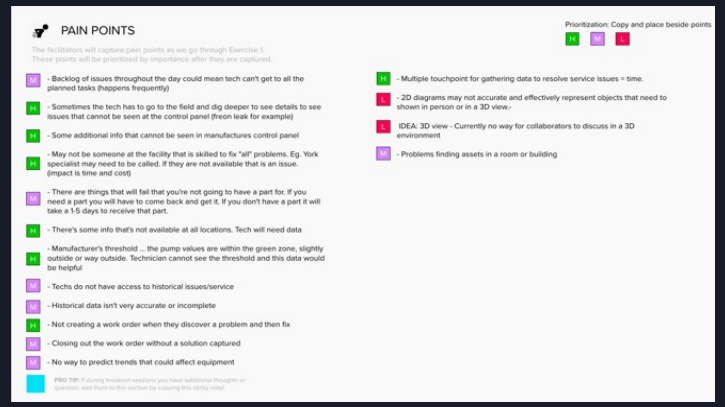
Move from Concept to Pixel Perfect Design in Days not Months

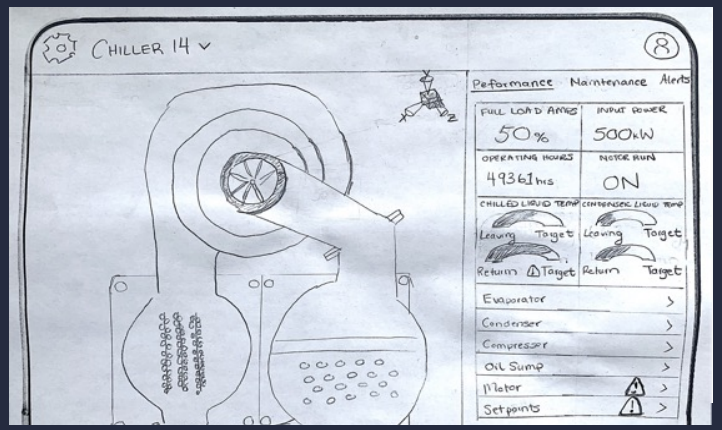
Day 1



Pain Points & Golden Thread

Align users, technical and business teams to ensure clarity and priority

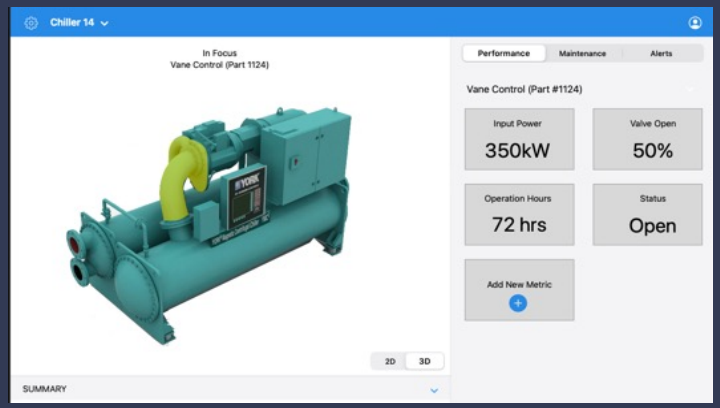
Day 2



Sketches & Low Fidelity

Iterate quickly on navigation structure and key features, while confirming technical viability

Day 3



High Fidelity & Next Steps

Establish user champions, and business and technical teams confident about impact and adoption.

Lesson 3: Successful Transformation at Scale Requires a Cultural Shift

Successful Transformation at Scale requires a cultural shift

Build enthusiasm through experiencing the Art of the Possible

Imagine a path to Digital Twin value with Enterprise Design Thinking side-by-side with industry experts, demonstrating a wide range of solutions for your users' most pressing pain points.

Learn by Doing (e.g. IBM Garage)

Adopt new, agile ways of working and experience the new ideas with cross-functional stakeholders that become change agents that permeate throughout the organization to drive adoption

Introduce New Skills and New Ways of Working

Infuse new skills including new cloud, AI, and data science skills to better support programs as technology changes the way roles are executed across the enterprise

Break down traditional enterprise silos

Engage cross-functional teams of maintenance, operations, reliability and IT experts to develop a vision for strategic transformation and ongoing governance for change to ensure a more holistic, broader, and interconnected approach.

Q & A

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Thank You!

