Hewlett Packard Enterprise

GETTING FROM POC TO PRODUCTION

SCALING IIOT WITHOUT THE COMPLEXITY OF A GORDIAN KNOT

Matthias Roese, Chief Technologist Manufacturing, Automotive & IoT

October 29th, 2019


AUTOMATION TO AUTONOMY


New York City, Fifth Avenue, 1905
Can you spot the car?


5TH. AVE. EASTER '13
New York City, Fifth Avenue, 1913
Can you spot the horse?
24933 NY 1913
35153
30191
570415
2529-9

A RECENT STUDY SHOWS

INDUSTRY OF THINGS WORLD

Planned AI investments next 12 mths

0.48% of revenue

For comparison – average IT spending in the manufacturing industry:

1.95% of revenue

63% say AI will not be a Job Killer

New jobs created by AI will balance or outweigh jobs made redundant by AI

n= 858

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AI/IOT APPLICATION AREAS AND GOALS

Functions/activities where AI has been/will be implemented

% of respondents

Goals of AI

% of respondents

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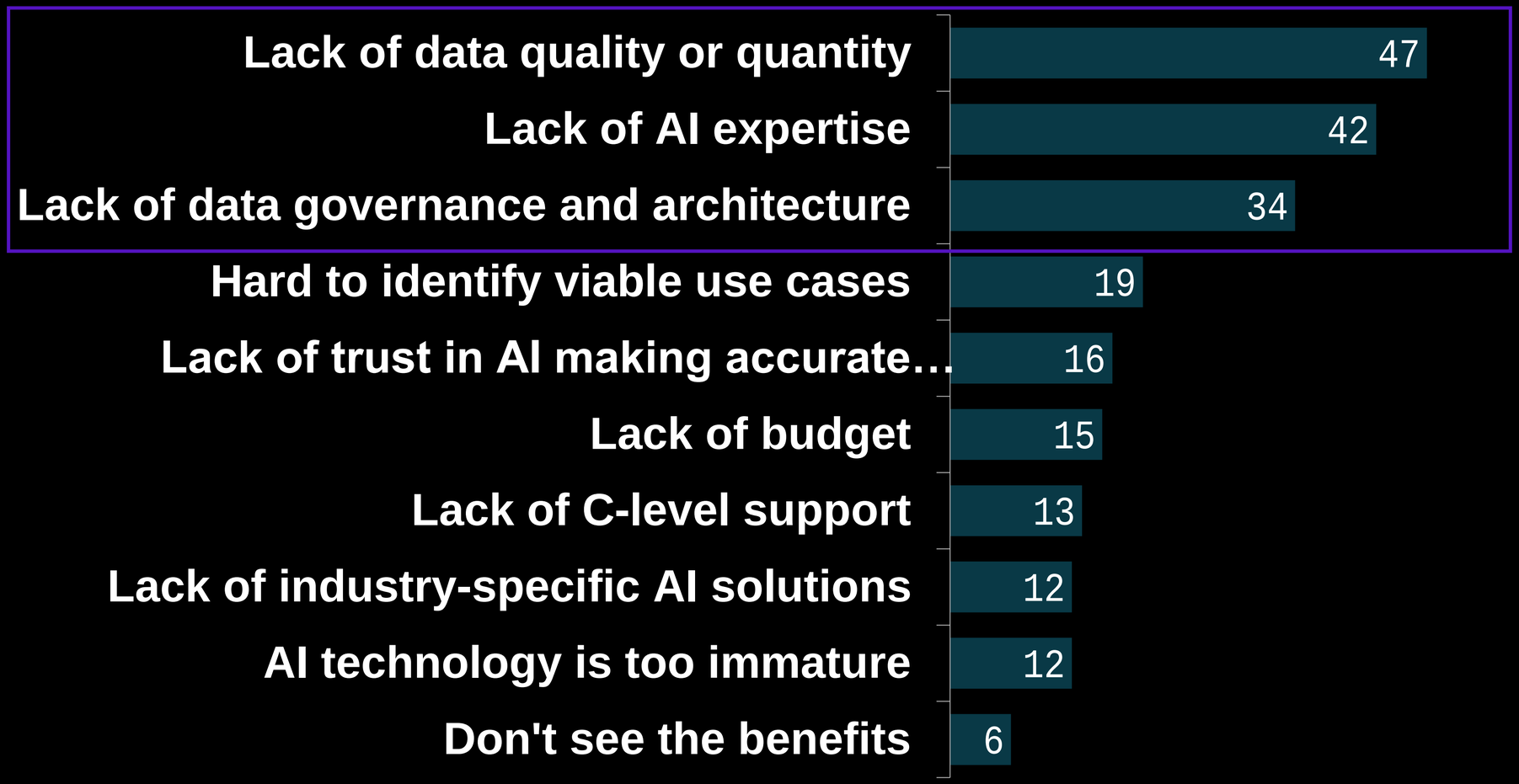
OBSTACLES FOR AI/IOT ADOPTION



% of respondents

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IT'S NOT JUST THE END OF MOORE'S LAW ..

Moore's Law	Programming	Data lakes	Imperative	Scarce memory
▼	▼	▼	▼	▼
New physics	Training	Data everywhere	Declarative	Abundance

DEFY CONVENTIONS

Data burden	Proprietary	Central authority	General purpose	Hindsight
▼	▼	▼	▼	▼
Opportunity	Open	Distributed	Built for purpose	Foresight

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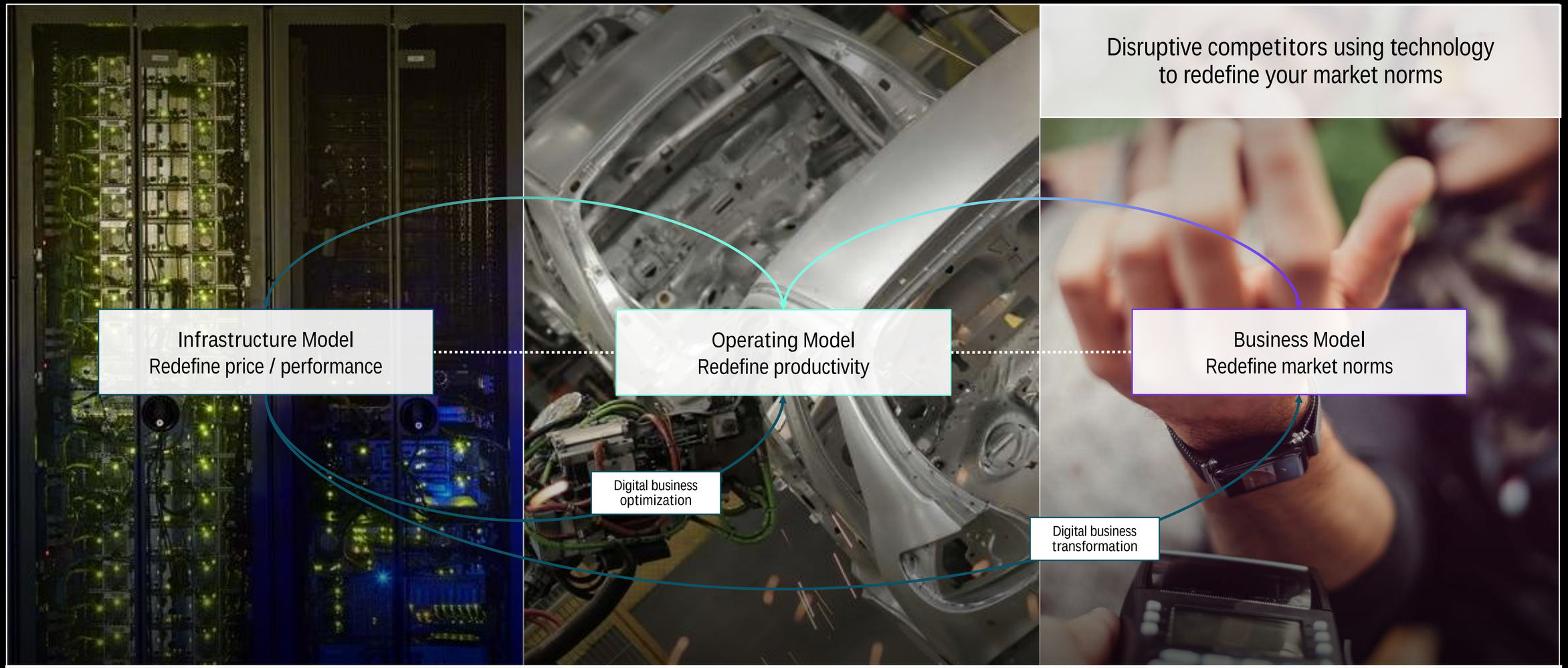
TOM FISH BURNE

OPTIMIZATION OR TRANSFORMATION?



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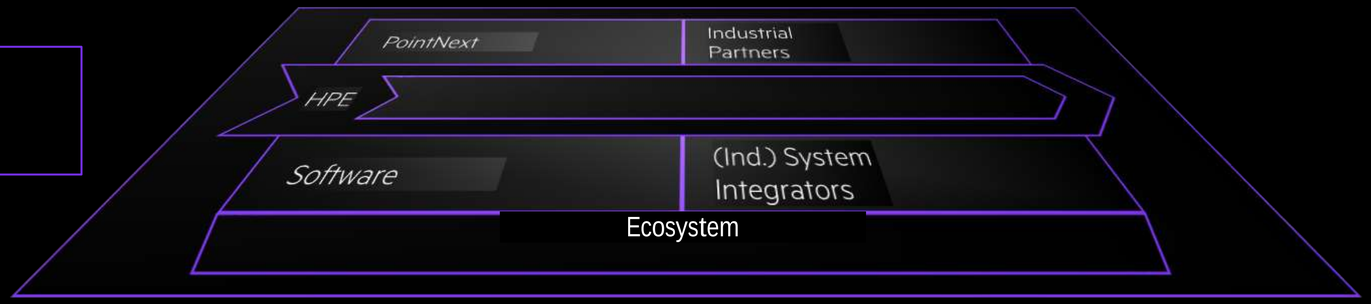
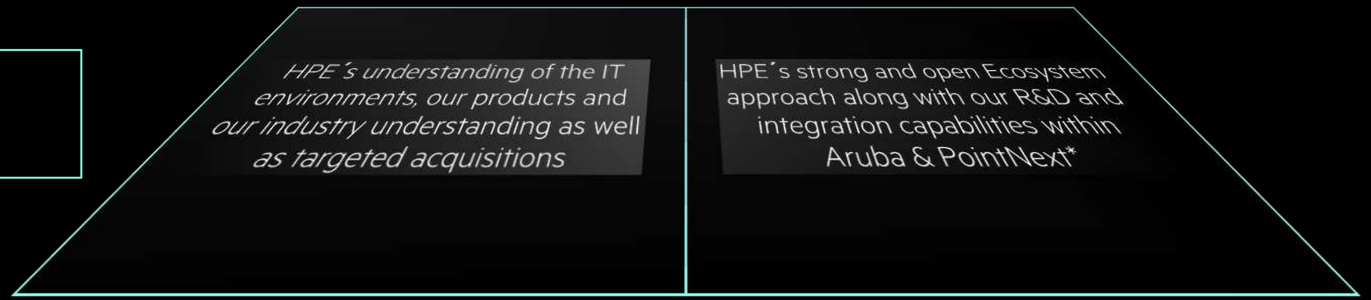
INDUSTRIAL DIGITALIZATION

Status Quo & Demand

Approach



Our Uniqueness



Business-driven
Sets the requirements

IT/OT converged solution

Architecture-driven
Integrating innovation

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360° ENTERPRISE SERVICE BUS

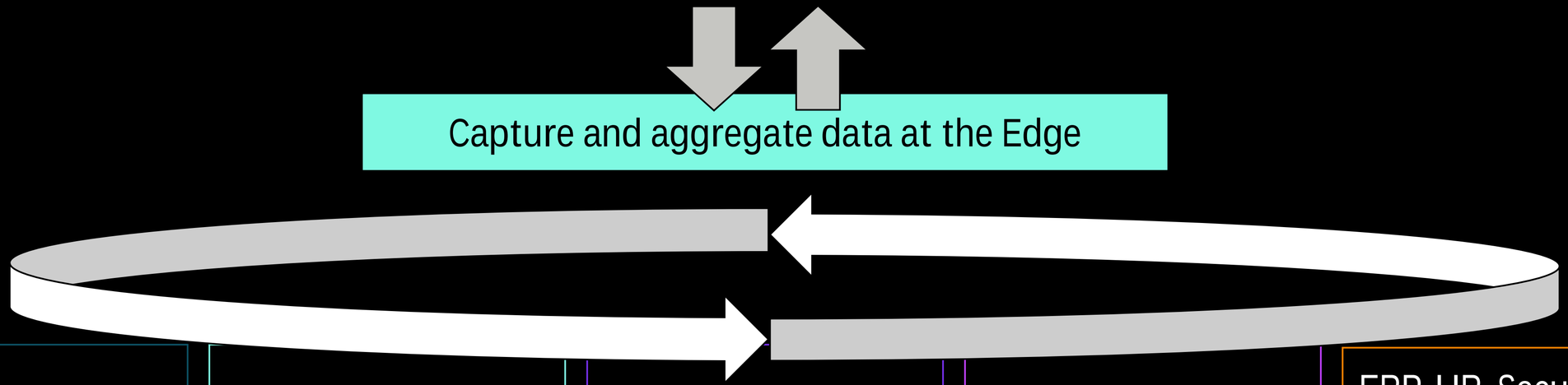
Product Improvements

Manage Complexity

Future ready

Data Handling and Accessability

Manufacturing Systems, Documentation, Commercial Analysis Tools, other Apps



Industrial Data

Supply Chain Data

Asset Data

Documentation, R&D

ERP, HR, Security and other Enterprise Data

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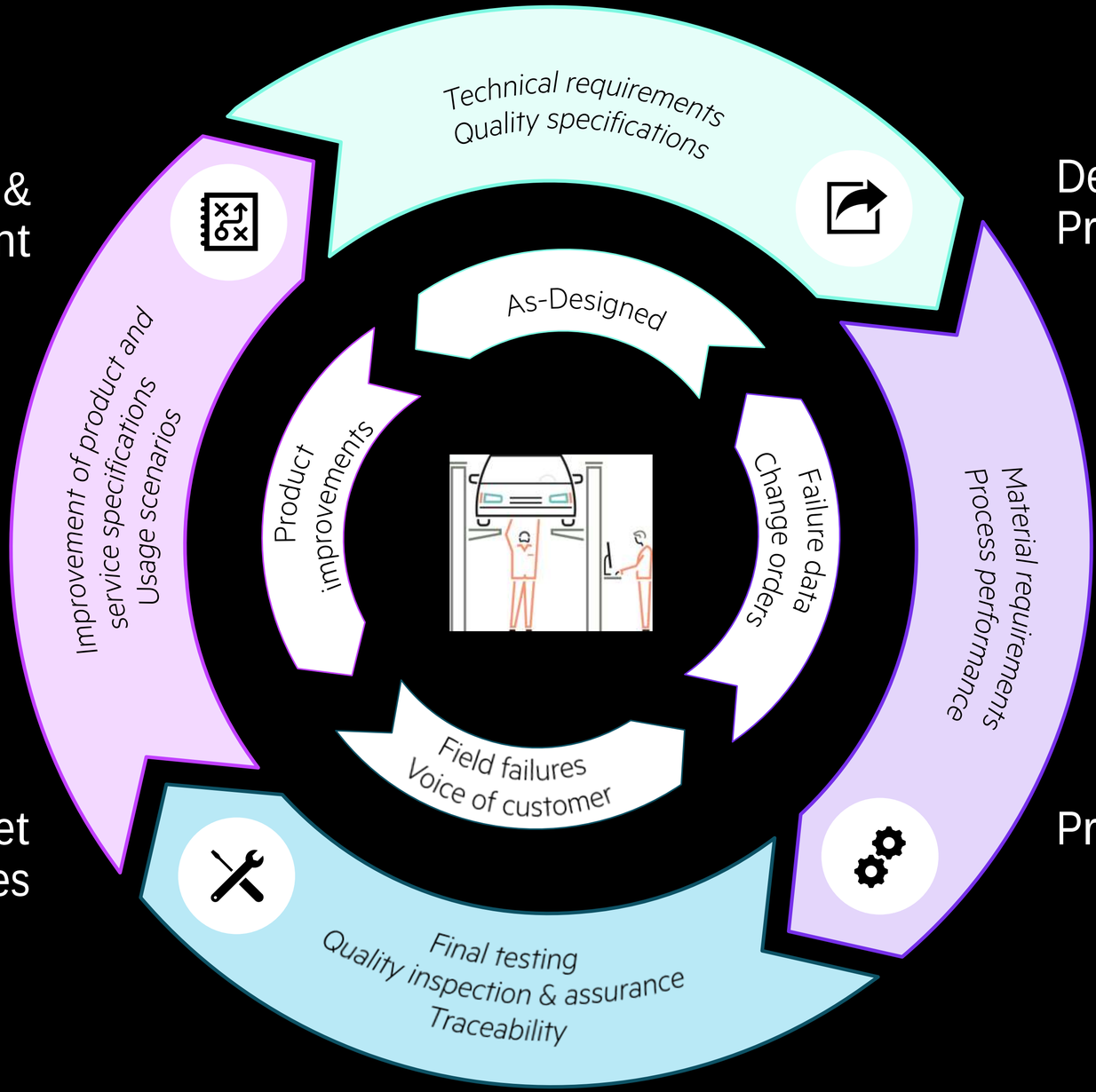
INDUSTRIAL IOT - CLOSED LOOP MANUFACTURING



PRODUCTION TODAY VS. TOMORROW

Production today

- Many data silos, resulting from heterogenous production plants and app landscape
- Unflexible planning & production due to digital breaches in process chains
- Ineffective IT security architecture based on traditional security concepts
- Non-User unfriendly Human-Machine interaction

Production tomorrow

- Holistic digital replication of production – historic, real time and predictive
- Consistent digital value chains – vertical and horizontal
- Data and identity centric security architectures
- Dynamic information visualization, for instance with help of Augmented Reality

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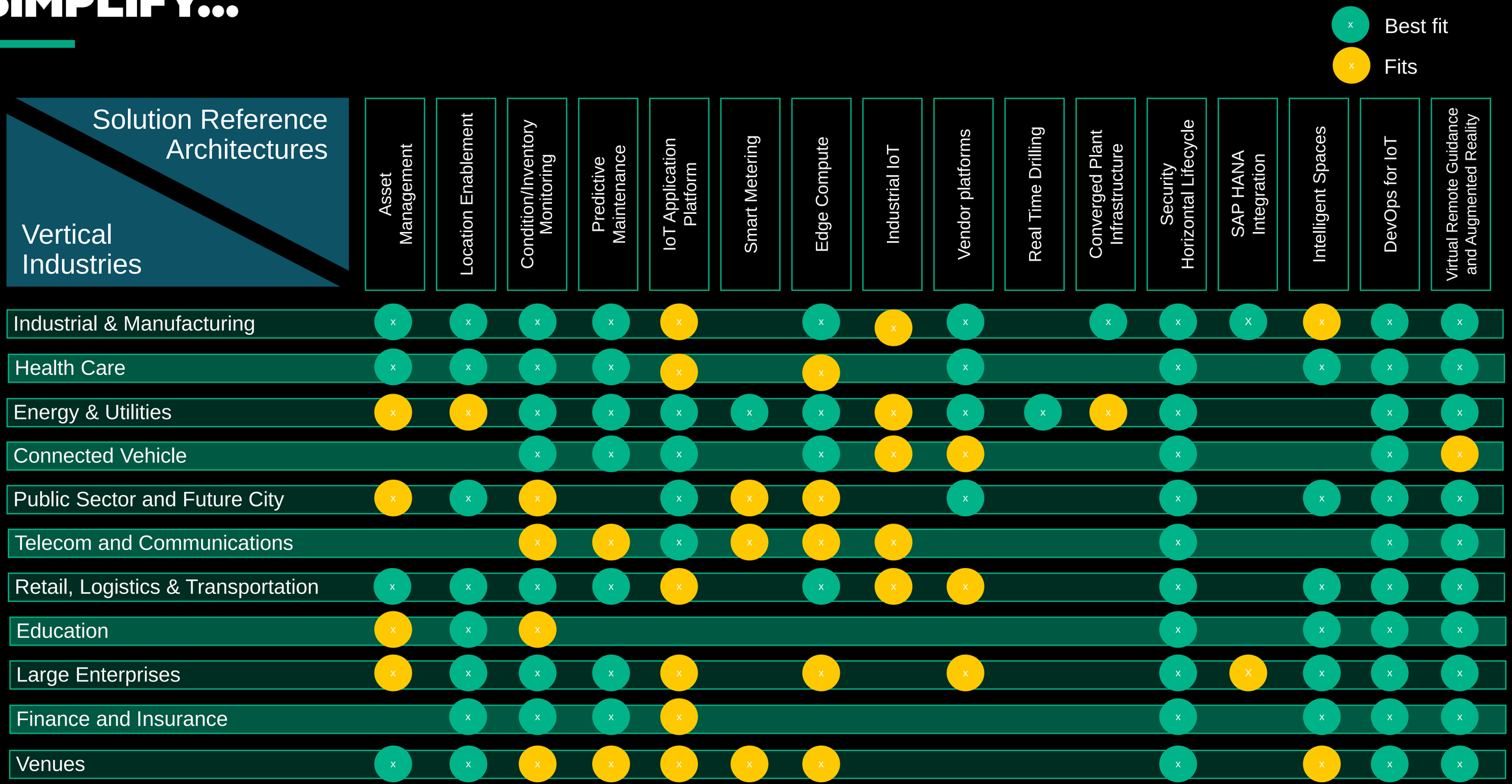
SIMPLIFY...



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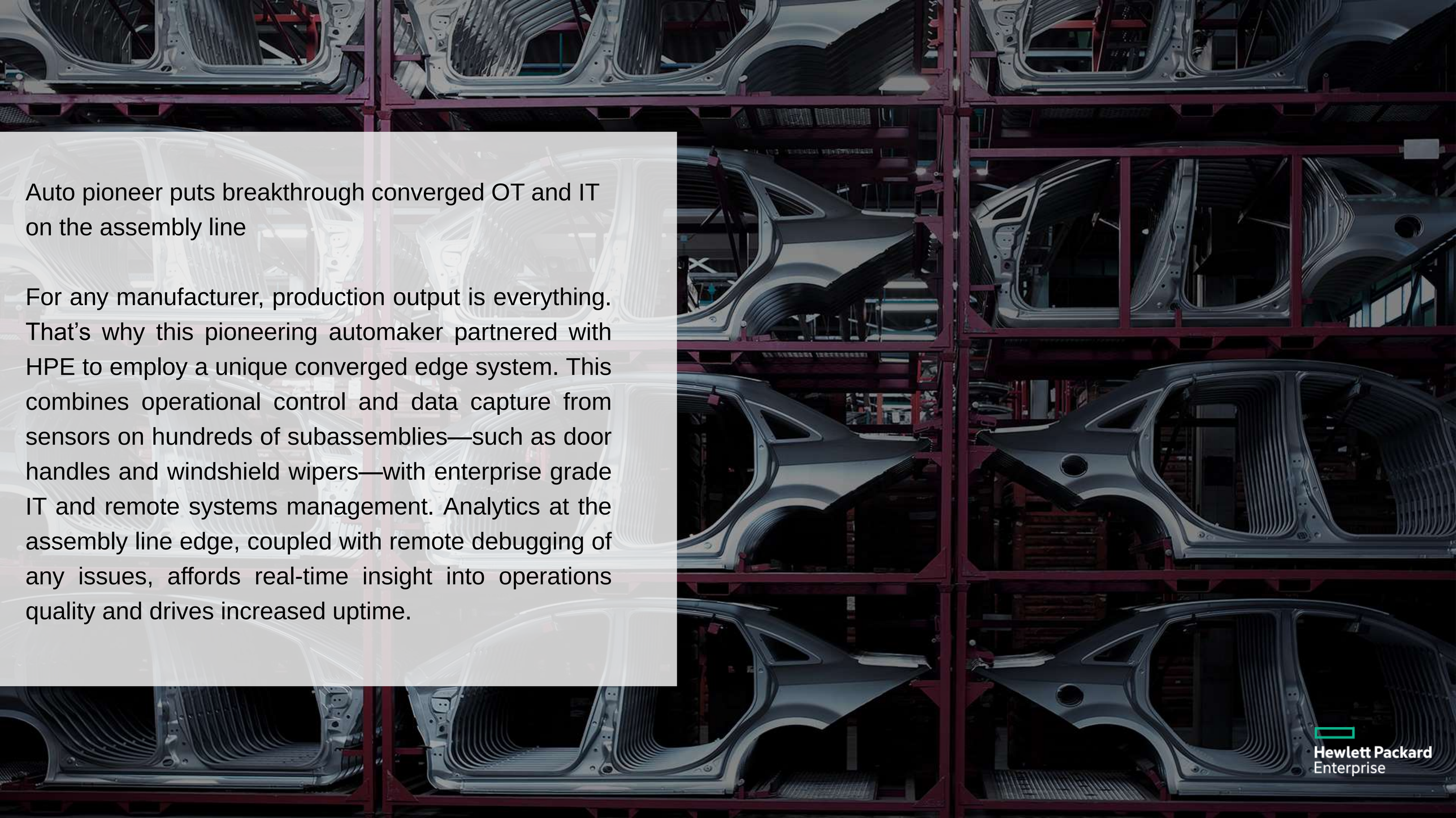

Auto pioneer puts breakthrough converged OT and IT on the assembly line

For any manufacturer, production output is everything. That’s why this pioneering automaker partnered with HPE to employ a unique converged edge system. This combines operational control and data capture from sensors on hundreds of subassemblies—such as door handles and windshield wipers—with enterprise grade IT and remote systems management. Analytics at the assembly line edge, coupled with remote debugging of any issues, affords real-time insight into operations quality and drives increased uptime.

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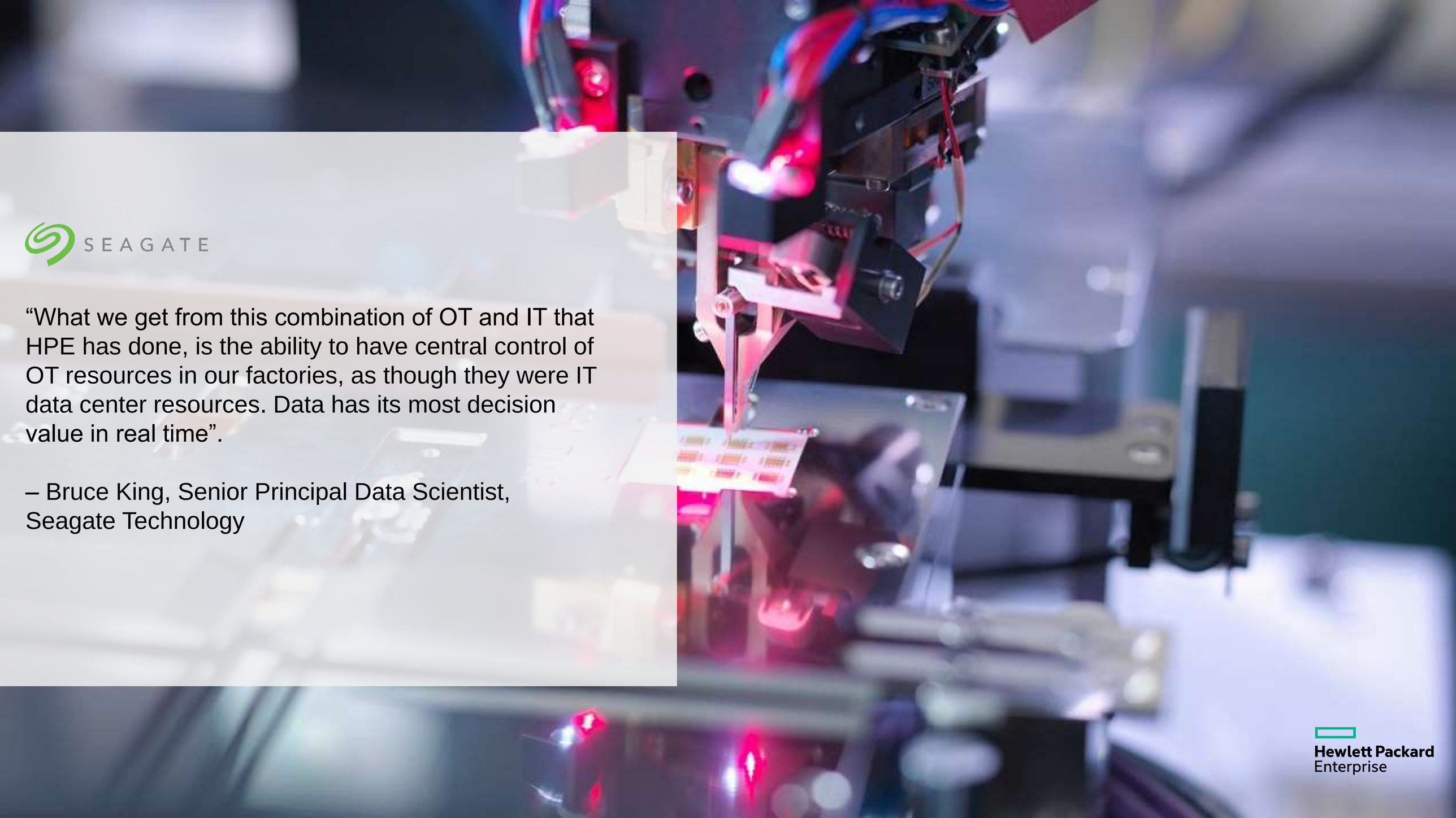

SEAGATE

“What we get from this combination of OT and IT that HPE has done, is the ability to have central control of OT resources in our factories, as though they were IT data center resources. Data has its most decision value in real time”.

– Bruce King, Senior Principal Data Scientist, Seagate Technology

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Official Team Partner

AMG PETRONAS MOTORSPORT

“We get data all the time. From all the different simulation tools that we have. At the track, obviously we generate data as well. From that information we have at the track, we'll be turning around and always evolving our product.”

– Matt Harris, Head of IT,
Mercedes-AMG Petronas Motorsport

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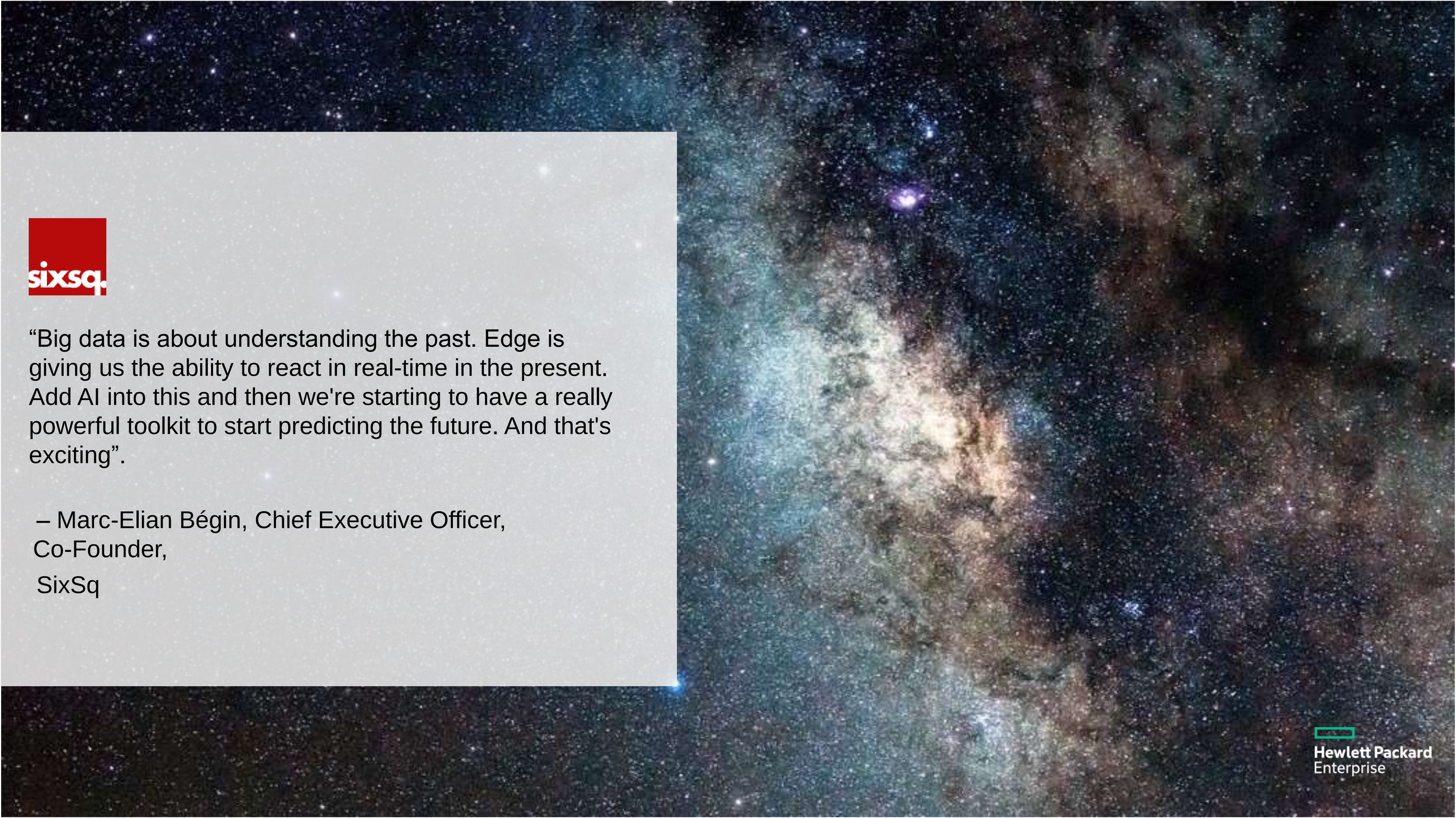

“Big data is about understanding the past. Edge is giving us the ability to react in real-time in the present. Add AI into this and then we're starting to have a really powerful toolkit to start predicting the future. And that's exciting”.

– Marc-Elian Bégin, Chief Executive Officer, Co-Founder,

SixSq

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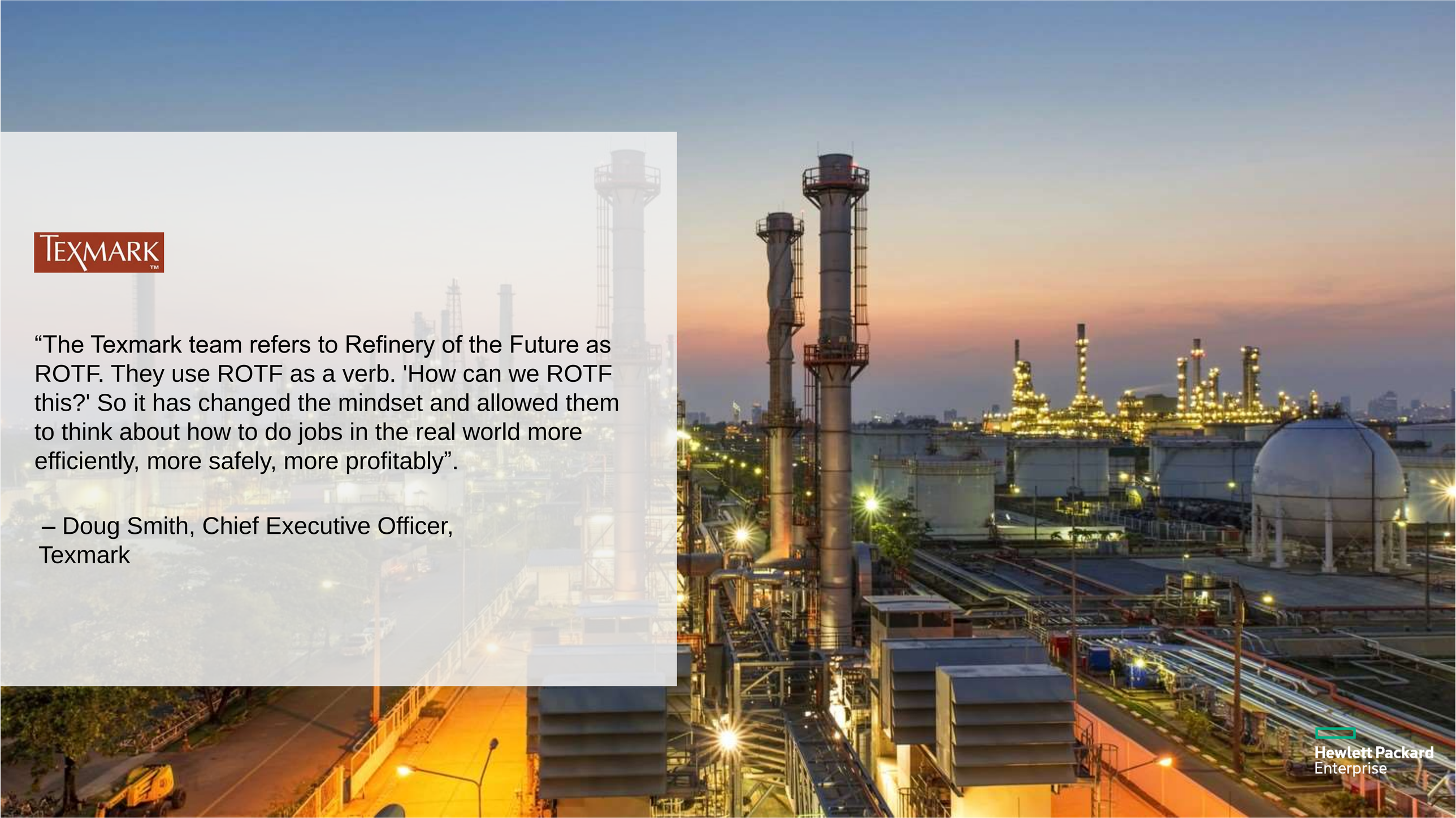
TEXMARK
“The Texmark team refers to Refinery of the Future as ROTF. They use ROTF as a verb. 'How can we ROTF this?' So it has changed the mindset and allowed them to think about how to do jobs in the real world more efficiently, more safely, more profitably”.
– Doug Smith, Chief Executive Officer, Texmark
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Open Minds – Create Business Models – Enable Transformation

Ideation Workshop

- Mind-opening engagement with business representatives on new ideas
- „Imagine if“-scenarios, Problem-tag-cloud, Step-by-step idea generation & shaping, assessment & impact rating

Business Model Workshop

- 360° evaluation of generated and scored ideas, purely business-driven and client-centric.
- (Re-)Inventing business models

Transformation Workshop

- The TW methodology defines and scopes the transition strategy.
- Outlining a roadmap, focusing on relevant customer initiatives, identifying quick wins

3-in-a-row Workshop series providing focused customer guidance towards digitization

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RWTH EUROPEAN 4.0 TRANSFORMATION CENTER

RWTH European 4.0 Transformation Center

The European 4.0 Transformation Center (E4TC) is a unique platform combining hands-on implementation at e.GO Mobile AG and cross-discipline integration of capabilities and experiences on RWTH Aachen Campus.

We apply various digitalization technologies to support transformational strategies. RWTH Aachen Campus and its operational facilities provide the Living Demonstrator background to explain and transfer this experience efficiently. Members of the European 4.0 Transformation Center can jointly realize and display comprehensive processes and solutions. We advise industrial companies on their own transformation programs based on this comprehensive perspective and detailed know-how.

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ARENA2036

ARENA2036 – Active Research Environment for the Next Generation of Automobiles

A Public Private Partnership
bridging development & research in the area of lightweight construction
and innovative versatile production technologies
Founded 2013

Challenges for lightweight construction:

- Combination of fiber-reinforced plastics (FRP) with lightweight metal-based materials
- Integration of multi-functional features within construction components such as acoustic and thermal insulation, as well as thermal, sensory and electrical conductivity

Innovative versatile production technologies:

- Open for new lightweight materials targeting resource efficiency
- Open regarding the variance of models and technologies
- Dynamic production lines, incl. robot and human interaction
- Intelligent products interacting with production areas

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STARTUP AUTOBAHN – BUILDING THE ECOSYSTEM

Start-up Scouting for Mobility and Industrie 4.0

International Accelerator Program offering mentoring,
co-working space and access to Labs at ARENA2036 facilities
Stuttgart – Silicon Valley - Singapore

The Spirit of Silicon Valley in the hub of mobility engineering provided by

DAIMLER · Hewlett Packard Enterprise · Universität Stuttgart · PORSCHE · BASF We create chemistry · Deutsche Post DHL Group · ARENA2036 · PLUGANDPLAY Silicon Valley in a Box®

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“Genius is one percent inspiration, ninety-nine percent perspiration.”

Thomas Alva Edison

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Enterprise

THANK YOU

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