



NS2024

POWER OF PARTNERSHIP

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Digital Innovations Coming To Commercial And Industrial From IT Leaders

Digital, Engaged, and Resilient

Accelerating Sustainable Consumption and Unlocking the Value of Grid Integrated Buildings

Samuel Harrell - Intel
Director, Energy Center of Excellence

NS2024
APRIL 15 - 17 | ANAHEIM, CA

Agenda

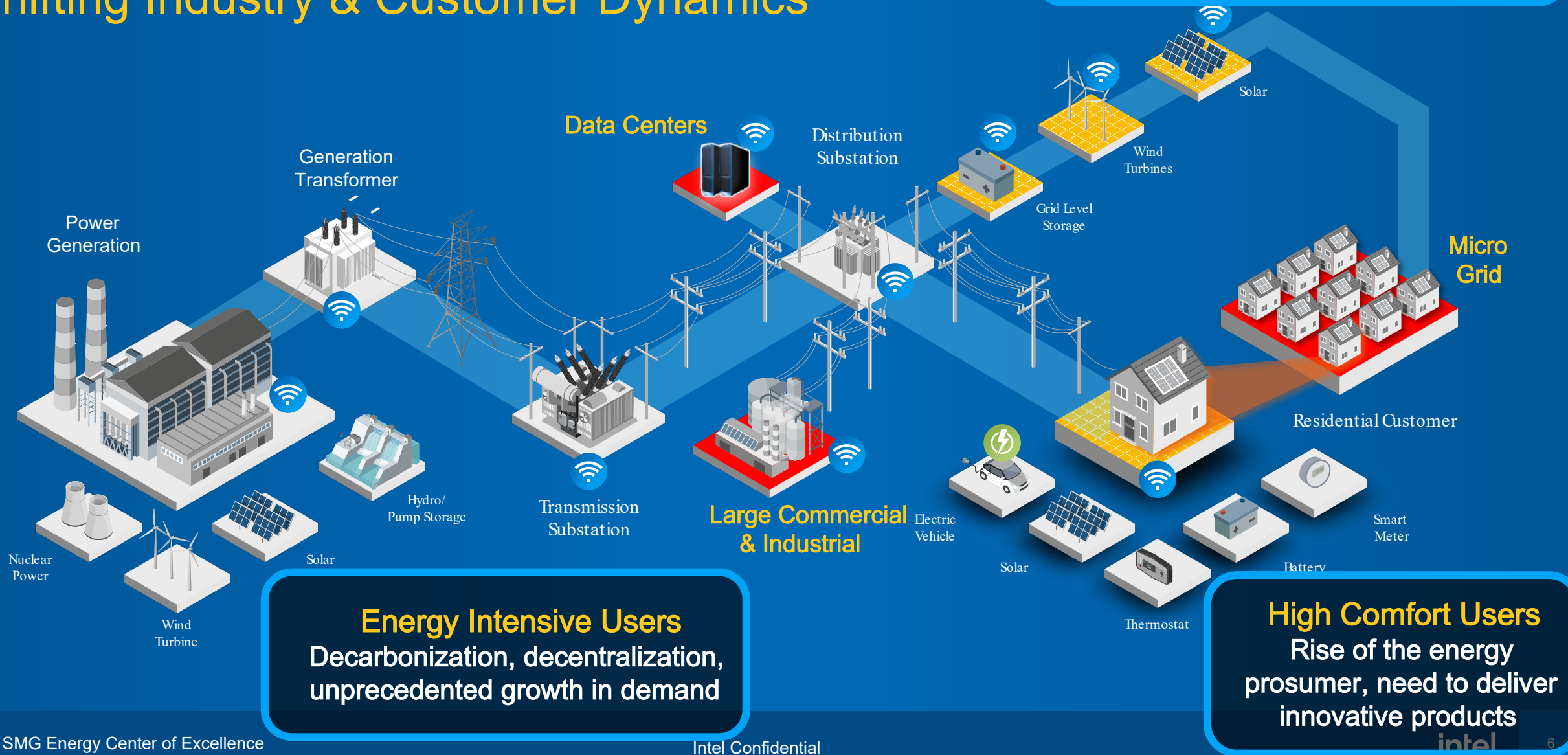
- System Disruption and Transformation
- Digital Innovation as a Disruptor
- Partner Ecosystem Engagement Model



System Disruption and Transformation

The Energy Grid A System of Systems

Shifting Industry & Customer Dynamics



Manage Grid Resiliency

Optimize Operations and Assets, With Integrated Intelligence

Use real-time insights combined with textual and geophysical data **de-risk aging assets**, improve grid performance, and **build next generation infrastructure** to manage renewable disruption.



Decarbonization through DERs and EVs

Require business and technology strategies that are inseparable.

86%



EYresearch shows that reliability and affordability are critical to consumers with **86% of consumers** (and nearly 100% of millennials) **interested in generating their own electricity.**

2021 EYResearch Study





The New Reality-

Expectations For Massive Shifts In Supply Mix

85% by 2050



Renewables are expected to become the new **baseload**, accounting for 50% of the power mix by 2030 and 85% by 2050.

McKinsey Energy Insights Global Energy Perspective 2022

Prioritizing Net Zero and Sustainable Consumption



90%

of the S&P 500 index published sustainability reports in 2019. Ten years ago, that figure was 20%.

Top Global Trends



Visible climate change



Rising customer expectations



Shift to a circular economy

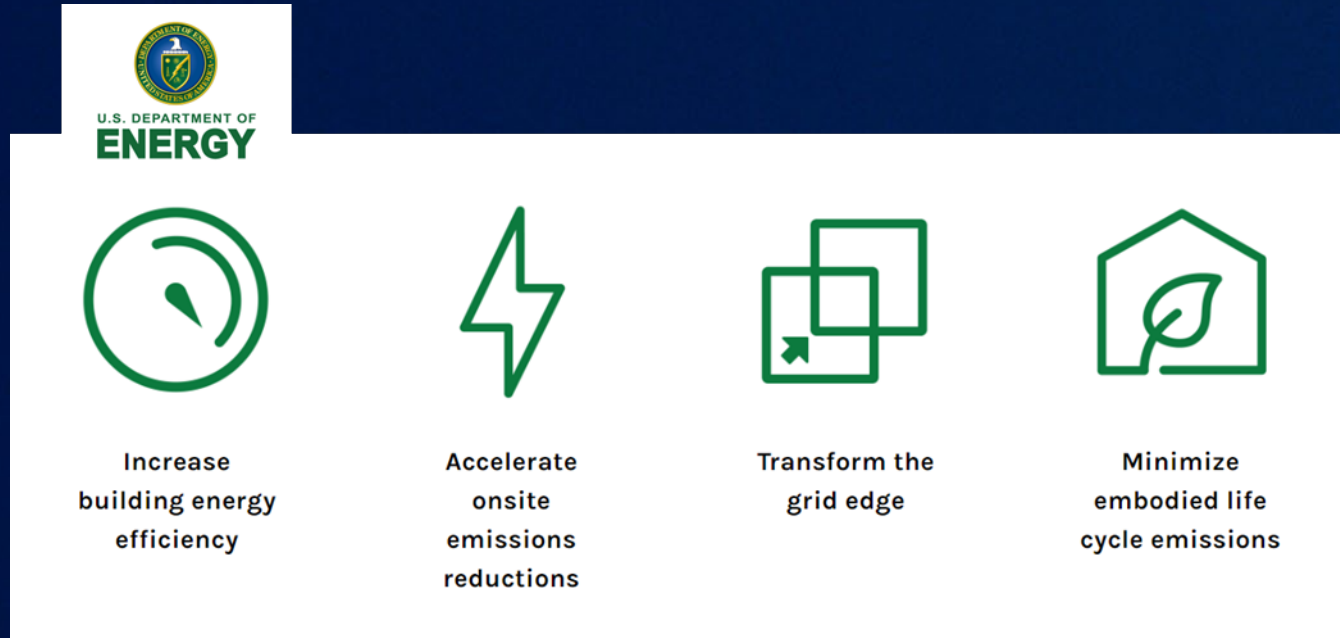
Governance and Accountability Institute,
"2020 S&P 500 Flash Report."

Reduce Building Emissions

U.S. Department of Energy Releases First Ever Federal Blueprint to Decarbonize America's Building Sector

April 2024

The Biden-Harris Administration released [Decarbonizing the U.S. Economy by 2050](#) A National Blueprint for the Buildings Sector, a comprehensive plan to reduce greenhouse gas (GHG) emissions from buildings by **65% by 2035 and 90% by 2050**.





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Digital Innovation as a Disruptor

Confronting the IT and Operational Divide

Digital Transformation Starts at the Edge

**Physical and digital
become seamless**



1

Networks are
software -defined

2

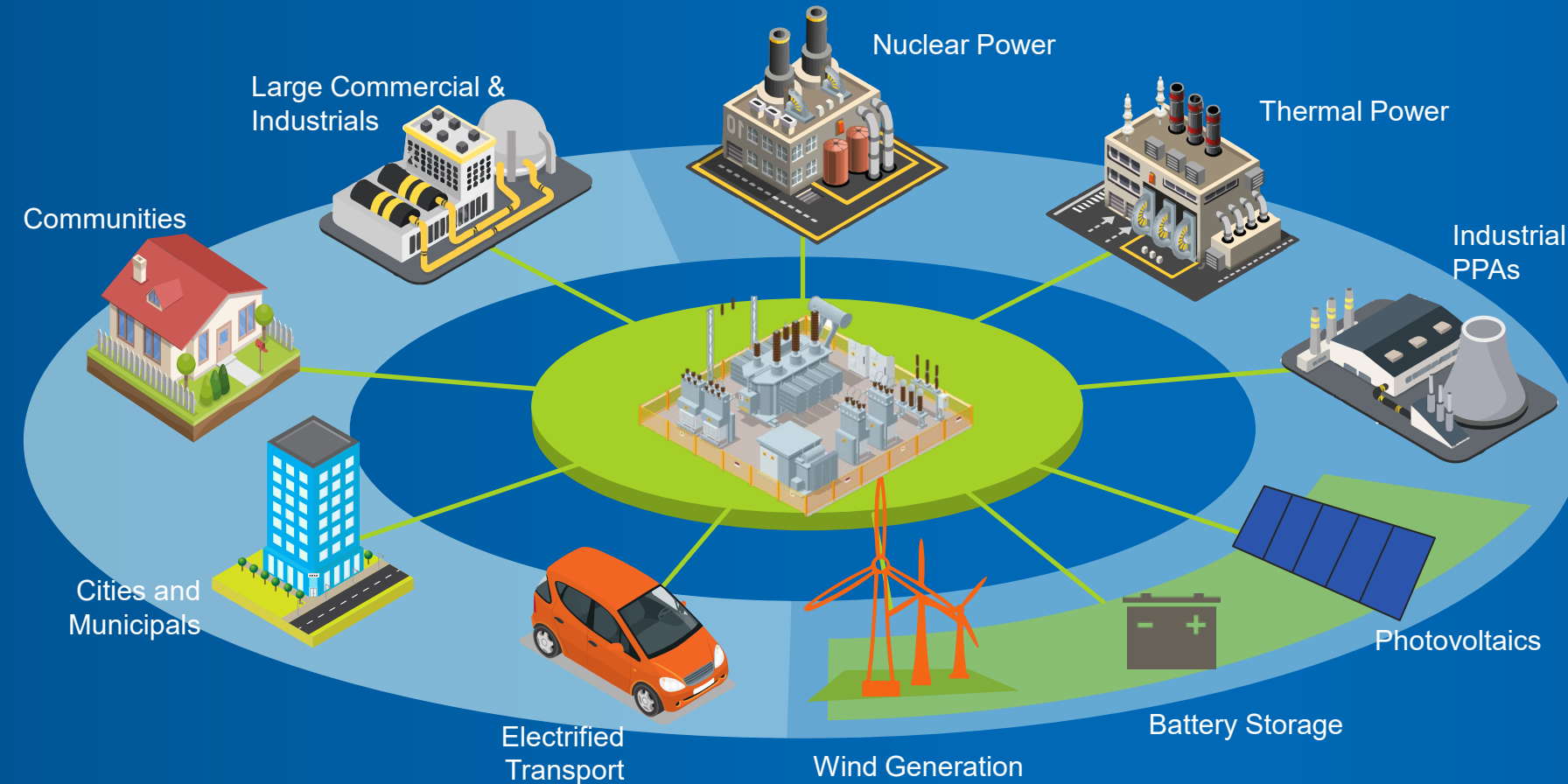
AI at every data point

3

Apps run seamlessly
from cloud to edge

Modernizing Critical Grid Systems

Central Nervous System for New Capabilities



SoftwareDefined
Automation & Control
Systems- Enhance
Reliability, Safety, Security
& Manageability



Modern comms
architecture for bi-
directional
interoperability

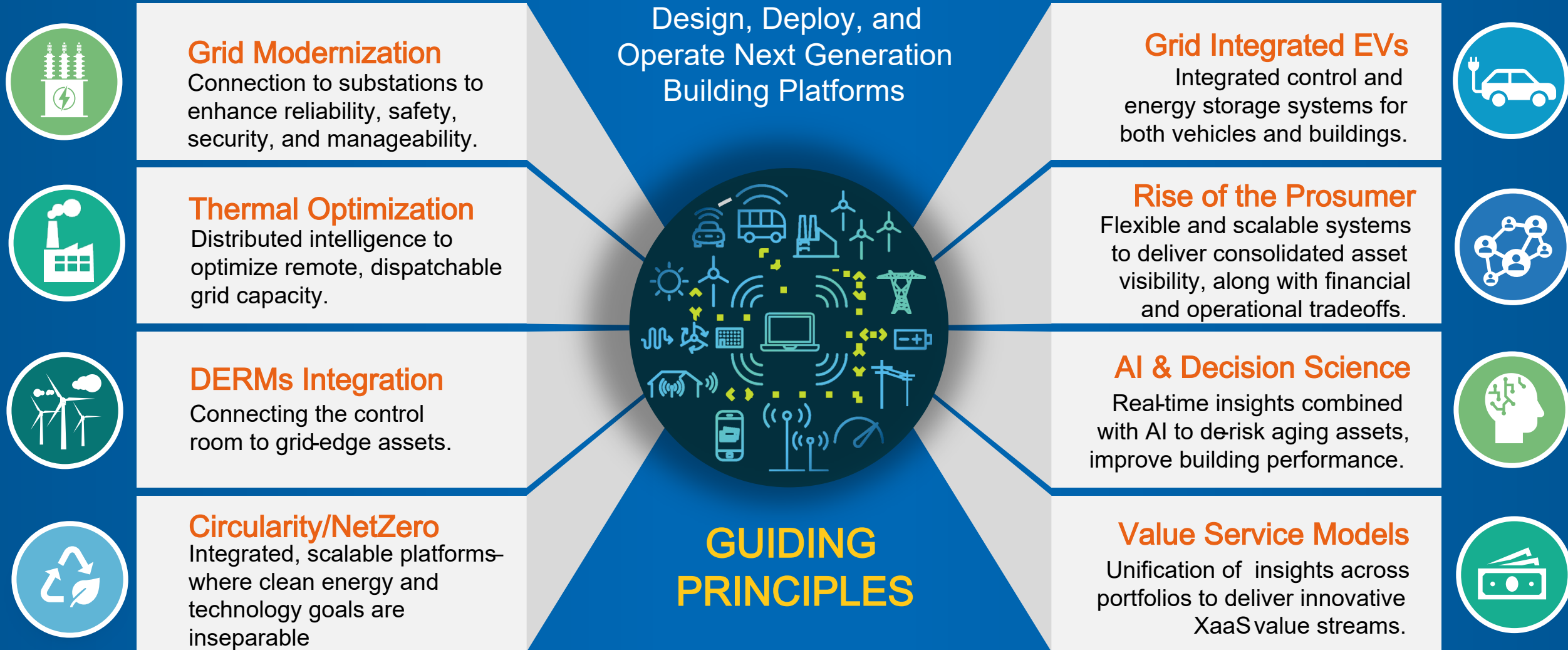


Standardized SW-
defined HW platform



Virtualization to
future-proof IT/OT
substation application
deployment

System Convergence Buildings of the Future



Maturing Sustainable Solutions on a Bi-directional Grid

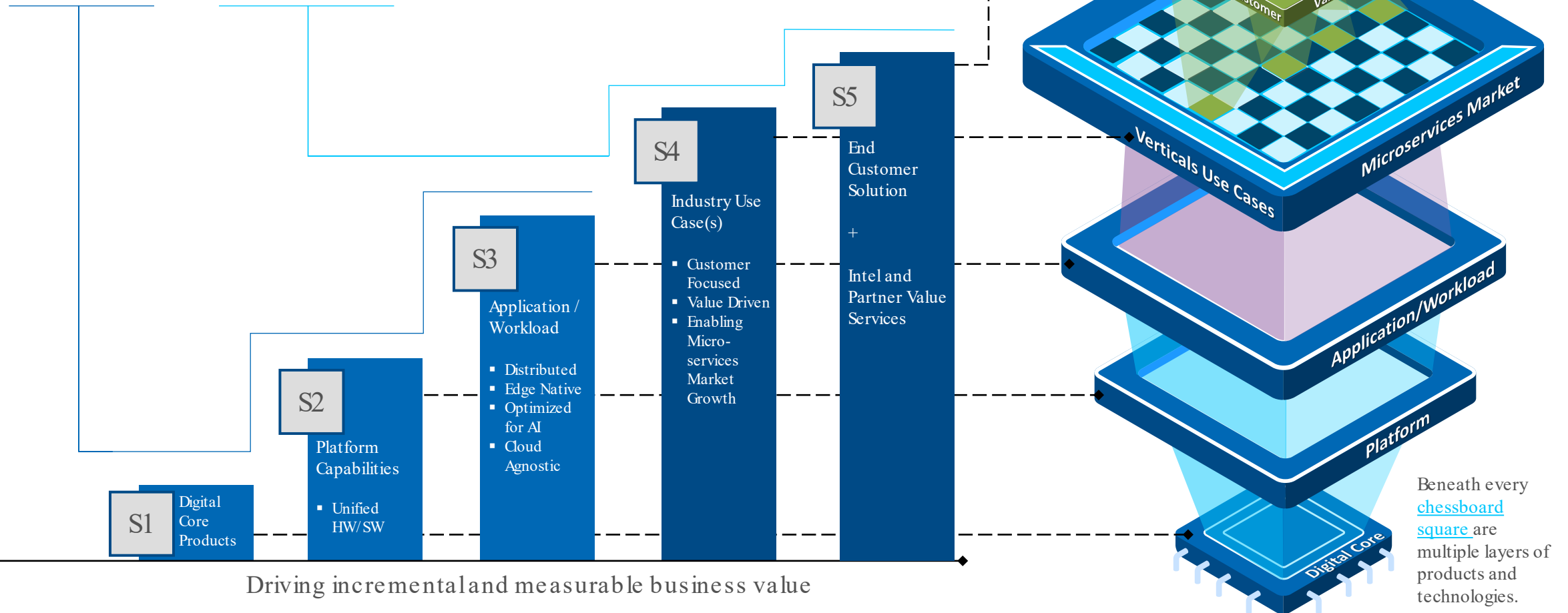




The Power of Alliances

The Anatomy of an Integrated Solution

Unified HW/SW platform - **partner ecosystem solutions** -
extract complexity from deployments



Fundamental Technology Building Blocks

1

Edge
Native
Intelligence

2

Modular
AI/SW
Deployment

3

Simplified
Solutions
Management

Intel Technologies



End User Solutions

Portfolio of cross-industry
and industry vertical
capabilities

Edge Native Platform, Silicon Enhanced HW



Edge Node
Stack



Fleet Management
(Day 0/1/2)



Life Cycle
Management



Network Security
& Unified Control



AI
Runtime



Ops & Services at
Edge

Secure, modular
infrastructure SW
for edge-in use
cases delivered
on diverse and
secure edge-
ready hardware.

Reduce Total Cost
of Ownership

Full Lifecycle
Security

Diverse Software
Support

Reduce IT/OT
Sprawl & Tech Debt

Edge
Native

AI SW Deployment and Services



Hybrid
AI



AI Model Life Cycle
Management



Privacy Preserving
Data Analytics



Application
Orchestration



Secure Software
Supply Chain



Ops & Services at
Edge

Performance
optimized HW
agnostic AI edge
native SW
enabling apps
development
ecosystem with a
complete edge to
cloud hybrid AI.

Quick & Secure
Start

AI Everywhere

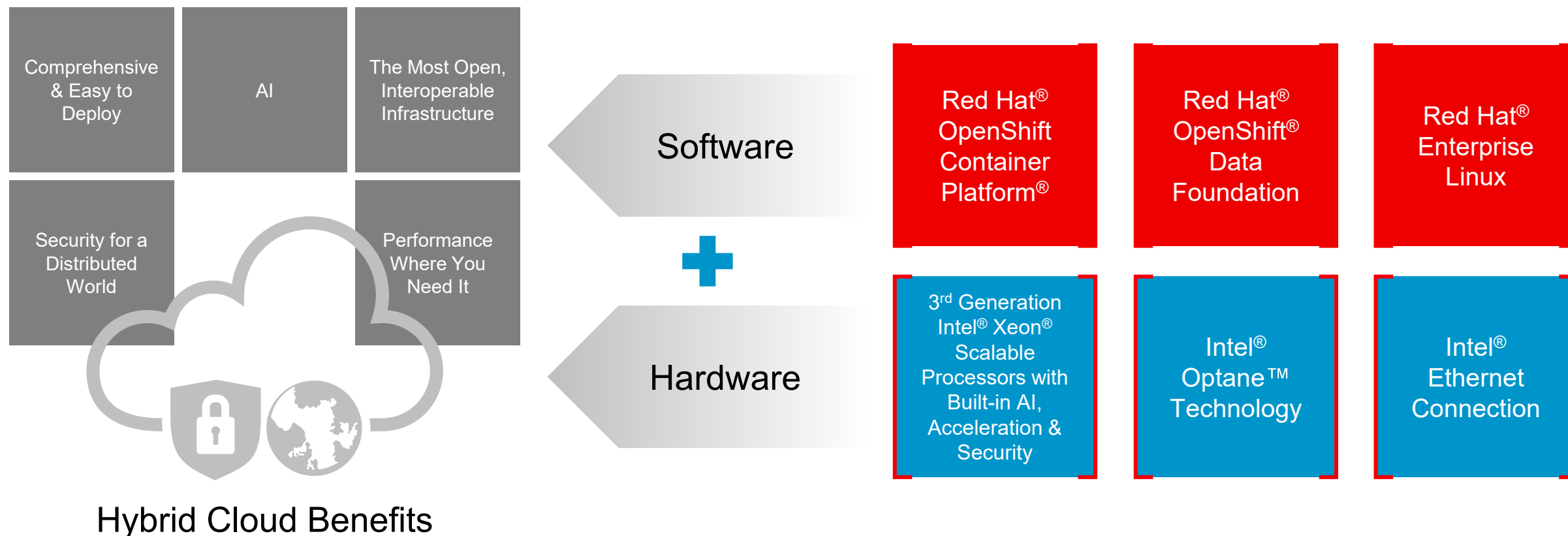
Deployment
Scale

Zero-touch
Management

Cloud to
Edge

A New Digital Infrastructure

The Intel® solution for Red Hat OpenShift Container Platform scales for today & tomorrow



Red Hat & Intel combine industry-leading technologies for a new era of digital everything

Why Build Your Business on Red Hat & Intel?

A Highly Open Hybrid Cloud Delivers Optimal Balance and Response

One vision, one enterprise-grade solution
to increase IT innovation and help secure data

Modernize, migrate and securely run mission-critical workloads between
platforms that meet changing business requirements

Open solution

Proven
availability and
performance of
data services
and apps

Interoperability
and fast
deployment

Next Generation
storage

Designed-in AI

Robust
ecosystem of
CSPs and OEMs



Simplified Solutions Management



AI
Services



Solution Life Cycle
Management



Privacy Preserving
Data Analytics



Application
Orchestration



Dynamic
Workload
Placement



Ops & Services at
Edge

Portfolio of
heterogenous
solutions and
support,
massively
connected and
optimized to
deliver business-
critical outcomes.

Seamless
Experience

Rapid
Deployment

Capability &
Compatibility

Heterogeneous
Support

Ubiquitous
Infrastructure

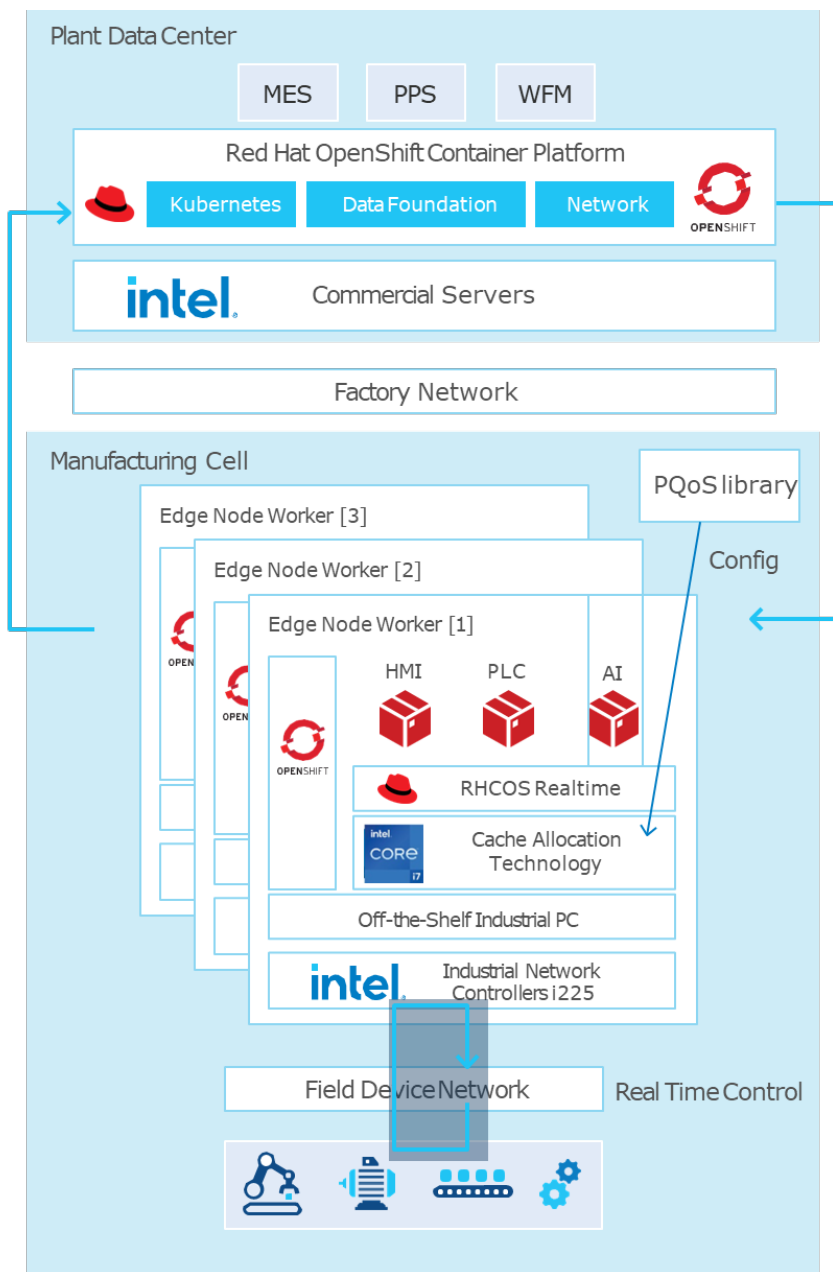
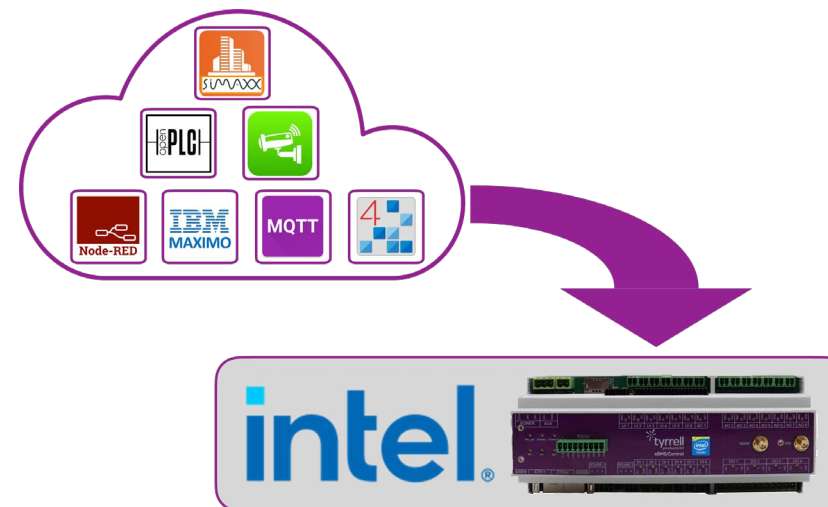
Moving Beyond Rigid, Proprietary Architectures



Telemetry

Management

The ability to reach into data wherever it resides enables solutions that help customers derive insights necessary to adapt to the data-drive present, with flexibility, automation and better operational efficiency.



Thank You

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Empowering the transformation to smart buildings



Product R&D, Distribution and
Training for System Integrators



Master System Integrator, IoT,
Support & Engineering Company



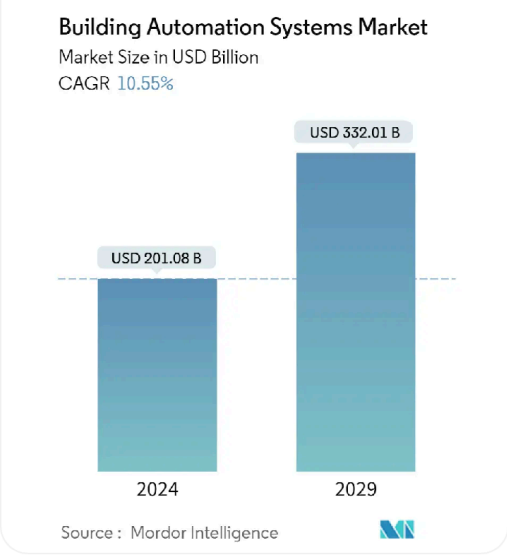
Smart Building Analytics and
Reporting Platform

Digital Innovations for Commercial and Industrial

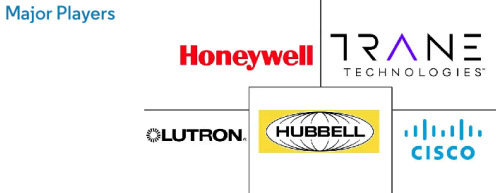


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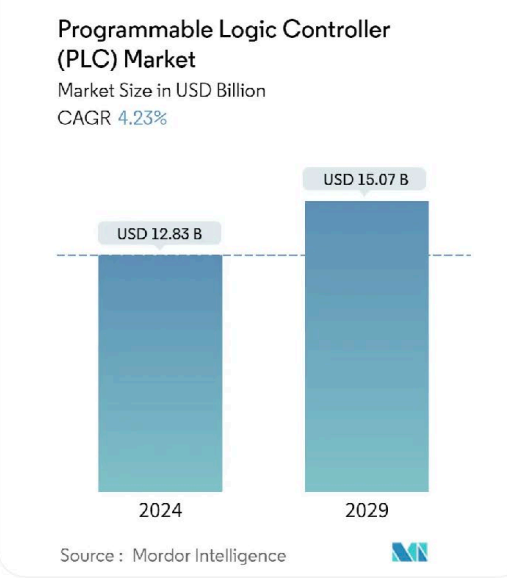
Continued Sector Expansion



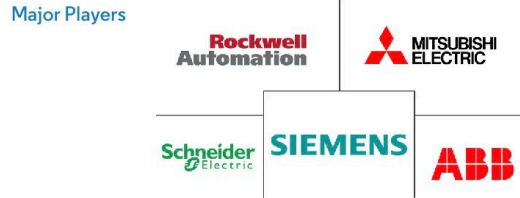
Study Period	2019 - 2029
Market Size (2024)	USD 201.08 Billion
Market Size (2029)	USD 332.01 Billion
CAGR (2024 - 2029)	10.55 %
Fastest Growing Market	Asia-Pacific
Largest Market	Europe



*Disclaimer: Major Players sorted in no particular order

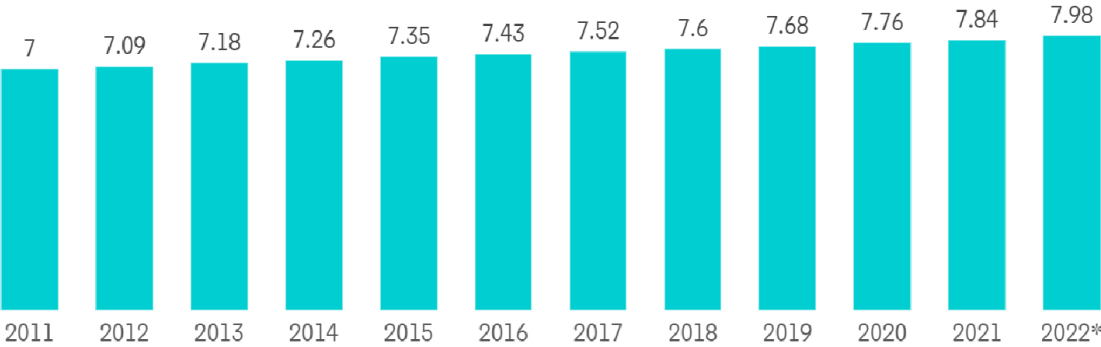


Study Period	2019 - 2029
Market Size (2024)	USD 12.83 Billion
Market Size (2029)	USD 15.07 Billion
CAGR (2024 - 2029)	4.23 %
Fastest Growing Market	Asia Pacific
Largest Market	Asia Pacific

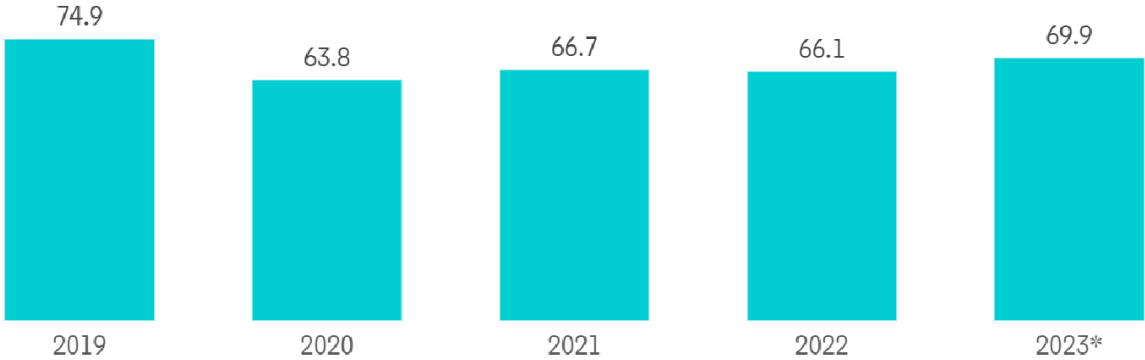


*Disclaimer: Major Players sorted in no particular order

Total Global Population in Billions 2011-2022



Number of Cars Sold in Millions Globally 2019-2023



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Cloud or not to Cloud? 



TRIDIUM 

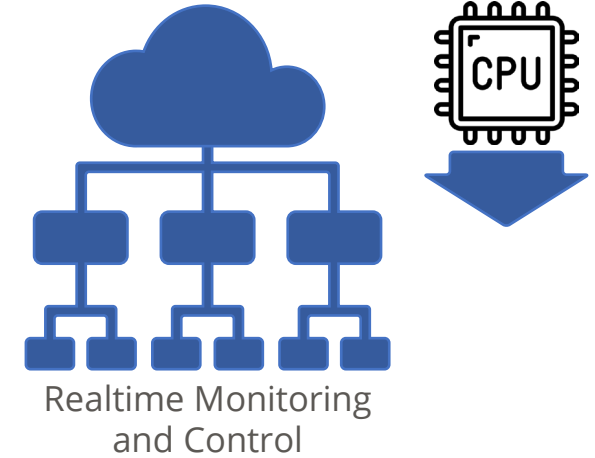
The PUSH to the EDGE



>50%

LATENCY
BANDWIDTH
ECONOMICS
DATA INTEGRITY
RESILIENCE
REGULATIONS
SECURITY

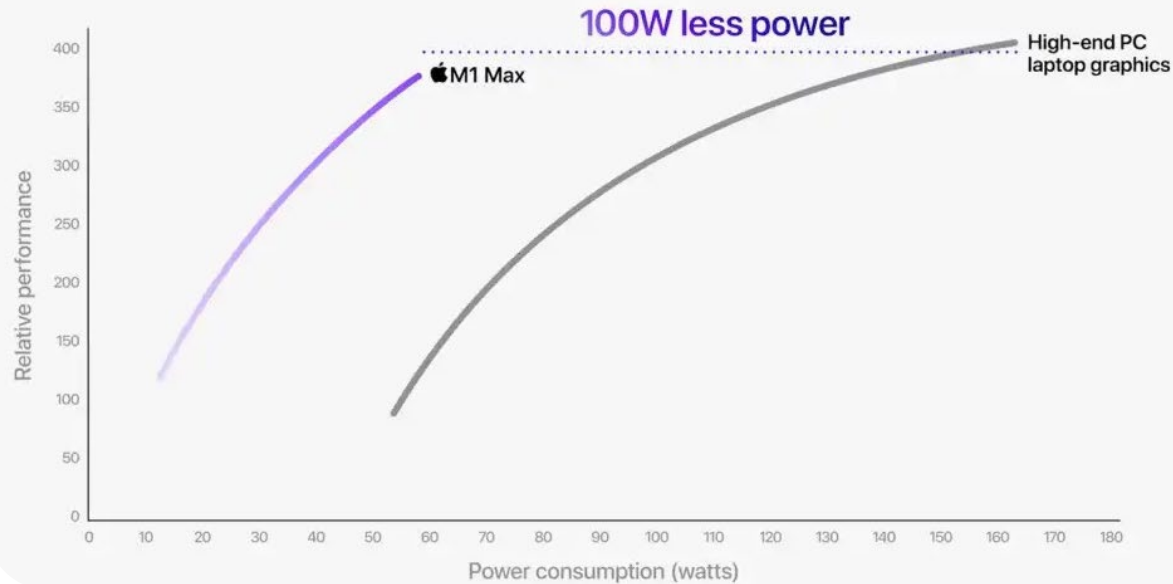
Customers desire a
cloud-like experience
distributed at the Edge



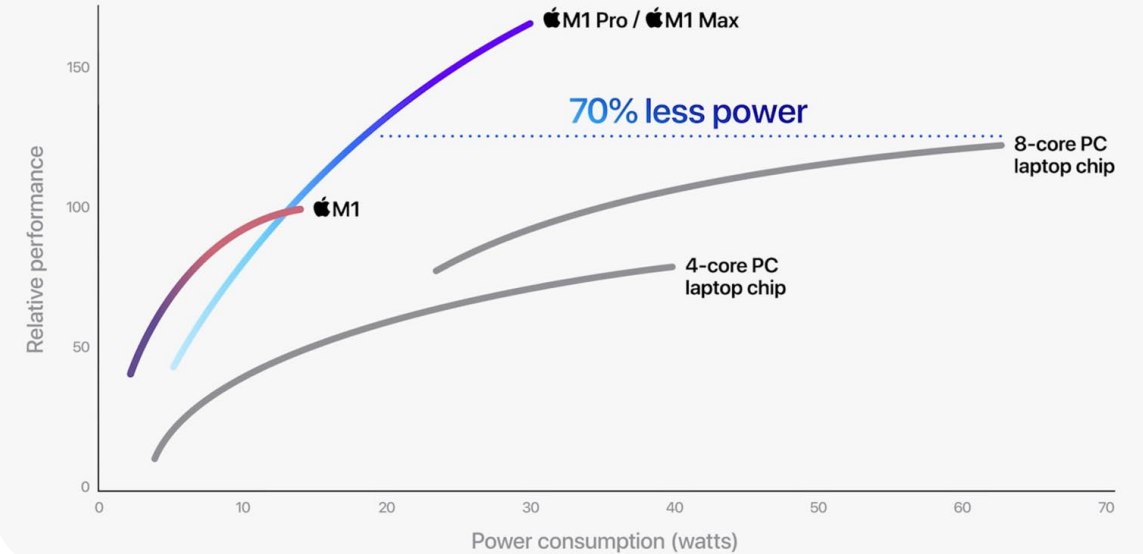
75%

Game Changer?

GPU performance vs. power



CPU performance vs. power



Heterogenous, Diverse
Design for the Edge

Edge-Native
Applications

As-a-Service Offering

Developer Friendly
Environments

Scalable, Flexible
Offerings

Software-Defined
Everything

Market Convergence



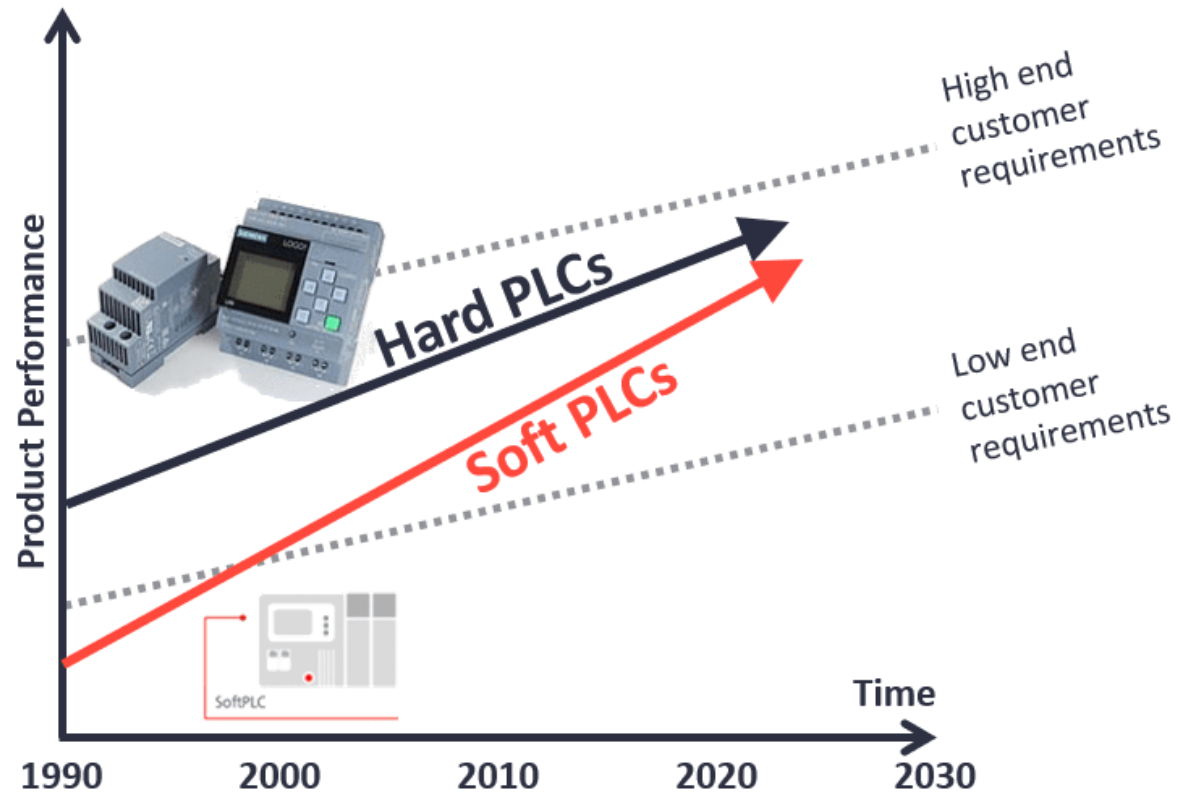
Industrial Controllers



BEMS Controllers



We are not alone..



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Investment Drivers



Increased ARR = Enhanced EBITDA

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In Summary

- ☑ *Increasing Market Demand*
- ☑ *Demand for Cloud to the Edge*
- ☑ *Data logging and Control at the edge*
- ☑ *Low power, high performance processors*
- ☑ *Convergence of adjacent market tech*
- ☑ *Investor push for ARR business models*

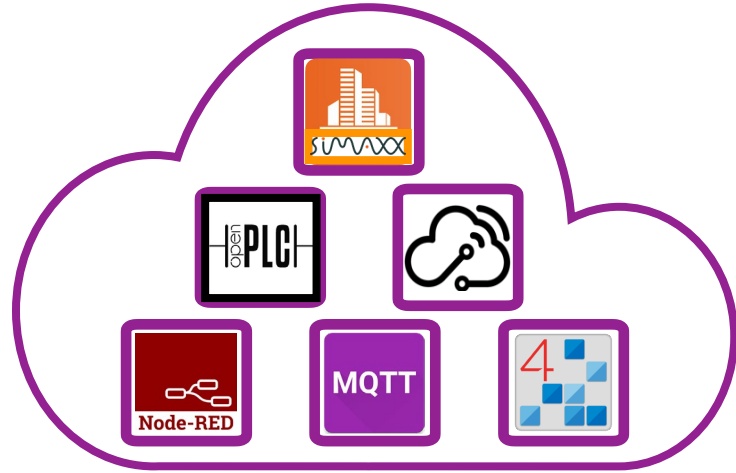
An inflection point ?



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And the winner is....Software and Hardware



Cloud Based Provisioning Powered by

intel Edge Controls for Industry



Edge Automation Powered by **intel**®

- Elkhart Lake Fanless Dual core 1.3 GHz
- 16GB DDR RAM
- 32GB eMMC
- Intel Edge Controls for Industry (ECI) with virtualisation and deterministic control



Not Just Another Controller



Unrivalled Capability with **intel**®

- Cloud Capability delivered to the edge

Fully Featured Expandable Hardware

- 8 x Universal Outputs
- 4 x 230VAC 2Amp Relay Outputs
- 6 x Universal Inputs and 6 x Digital Inputs
- 2 x Ethernet Ports
- 2 x USB3.0 Ports
- 2 x RS485 Ports
- 1 x Side RS485 IO Module Connector
- 1 x RS232 Port
- Expansion up to 93 External I/O
- M.2 Option Slot

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