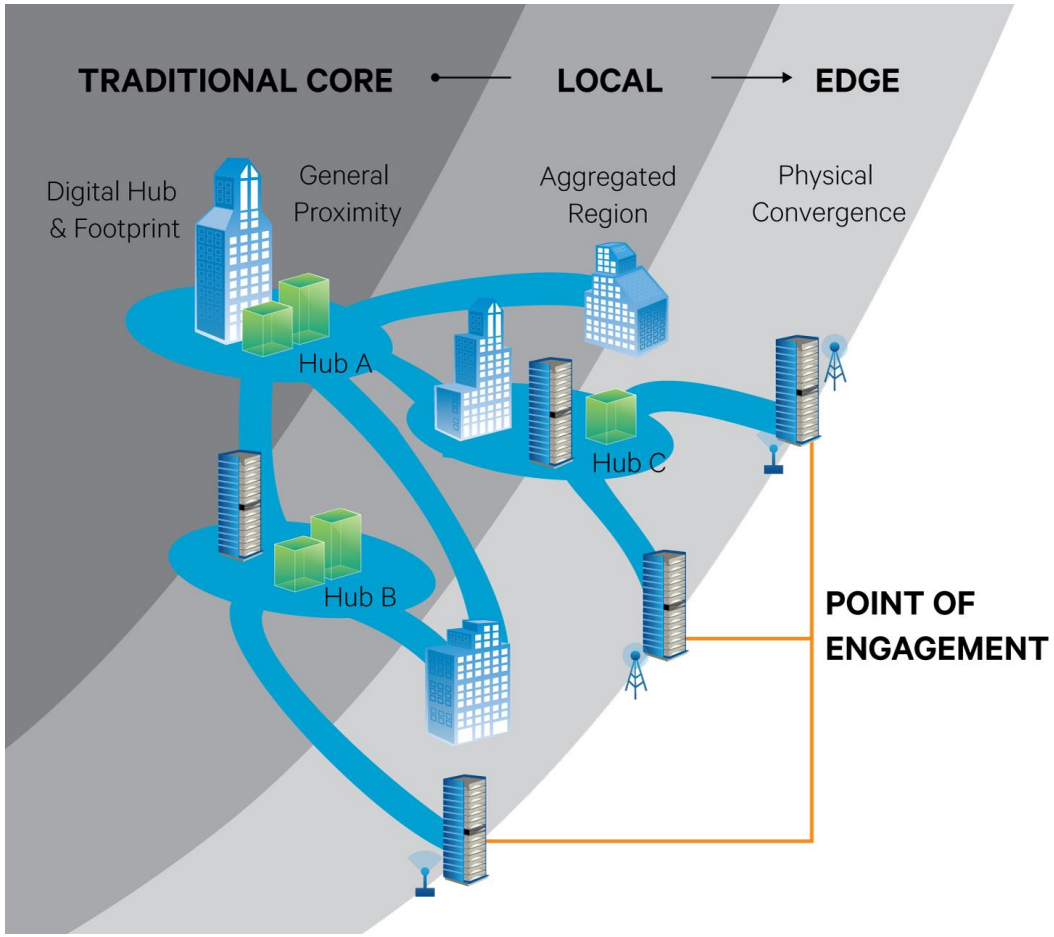
What's Your Edge?

Architects of Continuity™

Igor Grdic
Country Manager
Central Southern Europe

The New Order



Traditionally, data was generated at the Core and consumed at the Edge.

This model is now changing, with the large and growing number of smart devices and sensors generating a massive amount of information at the Edge.

Just a fraction of the content created at the Edge will be sent to the Core. Most of it will be processed and filtered at Edge sites.

We Can Group The Major Use-cases Into 4 Archetypes

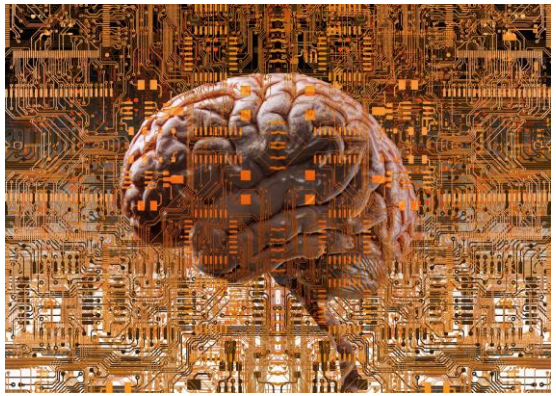
Data Intensive

Amount of data too great to be transferred over the network

- Virtual Reality
- HD Content Distribution
- High Network Costs
- Smart Home/Buildings
- Smart Factories

Human Latency Sensitive

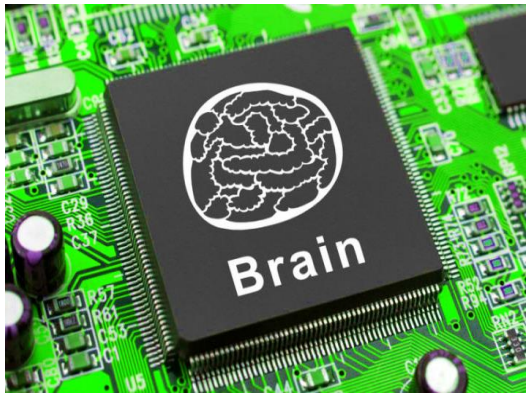
Optimization for human consumption



- Website Optimization
- Augmented Reality
- Smart Retail
- Natural Language Processing

M2M Latency Sensitive

Optimization for machine consumption



- Real Time Analytics
- Arbitrage Market
- Smart Security – Facial Recognition
- Smart Grid

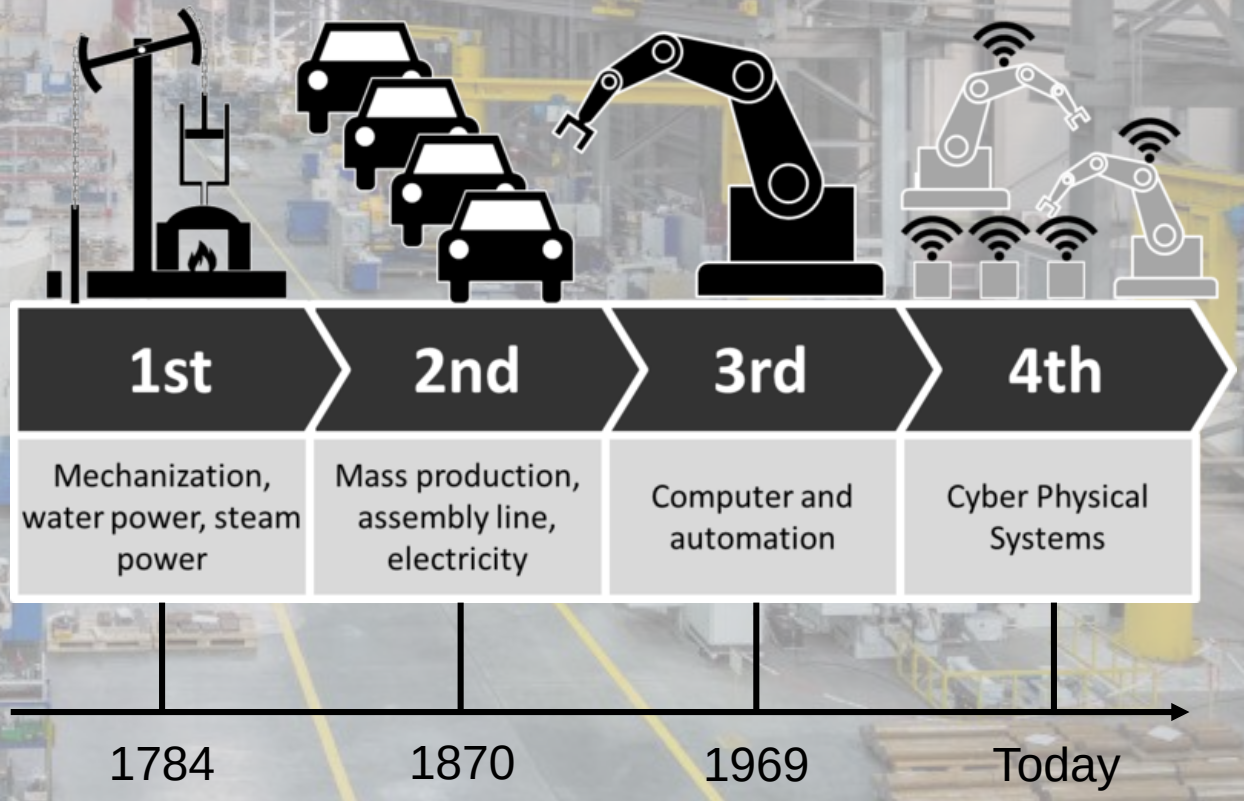
Life Critical

High risk of injuries caused by machines interacting with humans

- Digital Health
- Autonomous cars
- Drones
- Smart Transportation & Logistics
- Autonomous Robots

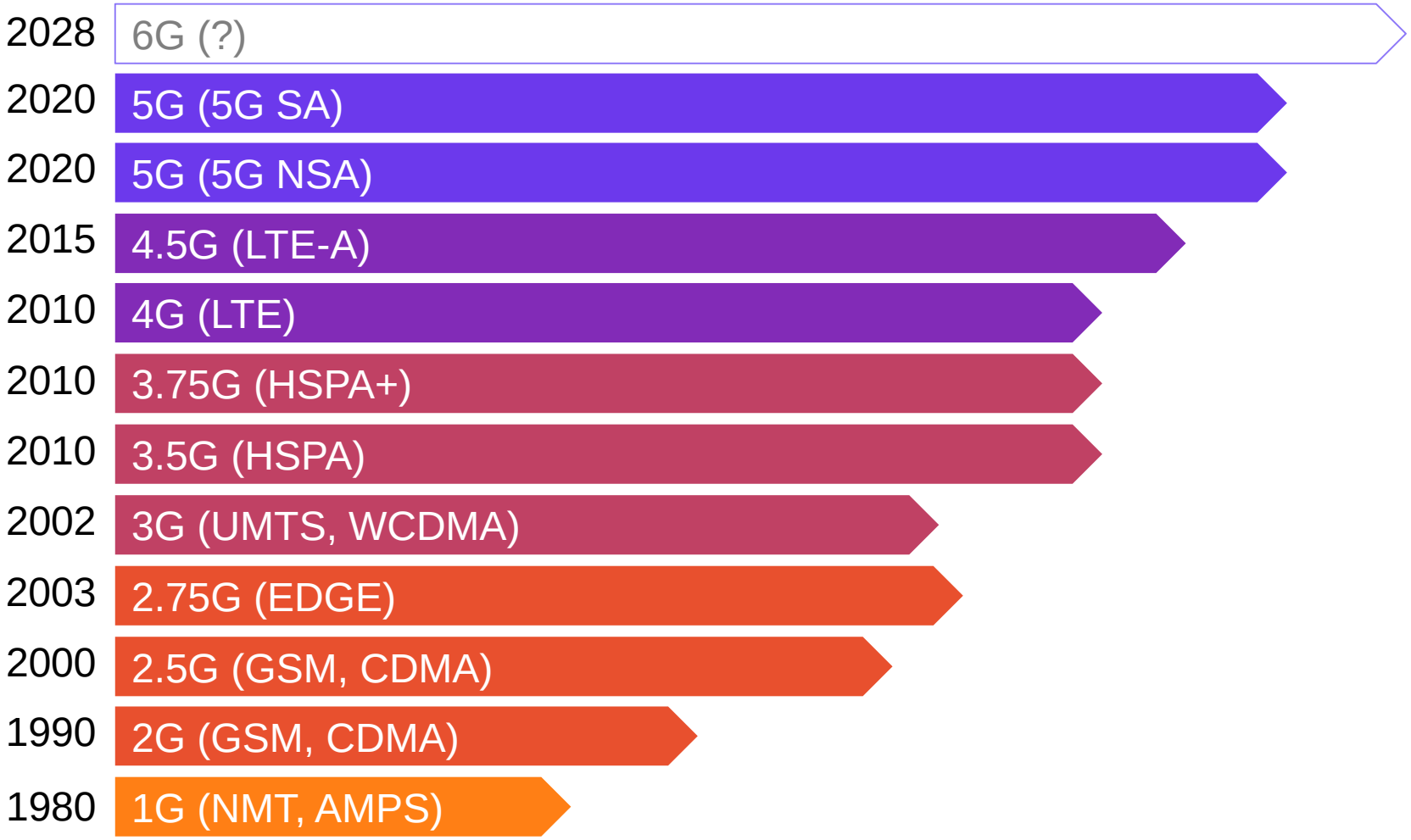
The Fourth Industrial Revolution

- **Aerospace, Defence & Security**
- **Industrial Manufacture**
- **Engineering & Construction**
- **Chemicals**
- **Electronics**
- **Transportation & Logistics**
- **Automotive**
- **Metals, Minerals and Petrochemicals**
- **Forest, Paper & Packaging**
- **Agriculture**
- **Processing & Preparation**




5G
is coming fast

Radio Technology Evolution



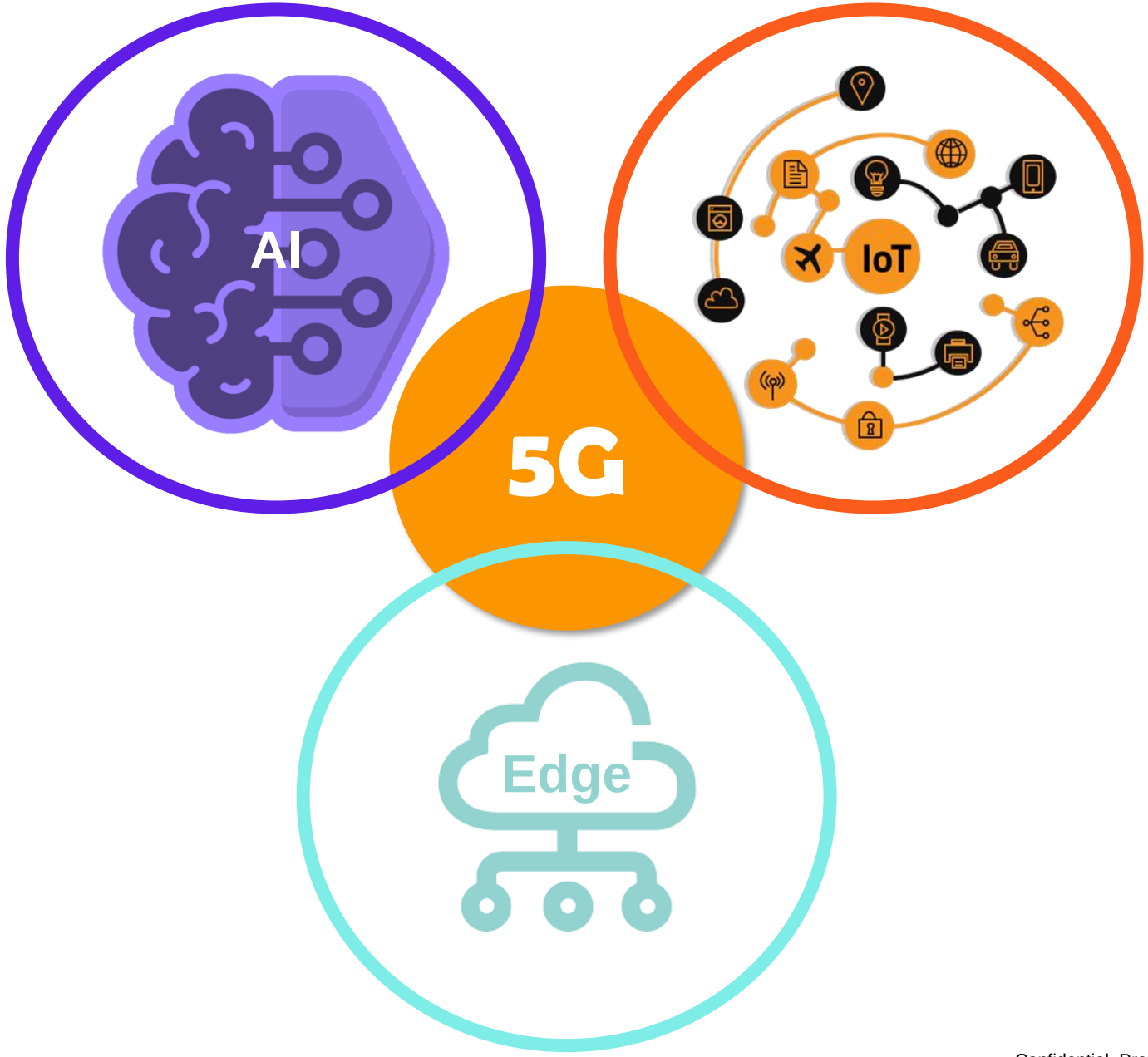
	Speed	Enabler
6G (?)	1Tbps	uRLLC
5G (5G SA)	1Gbps-20Gbps	eMBB, IoT
5G (5G NSA)	1Gbps-20Gbps	eMBB, IoT
4.5G (LTE-A)	100Mbps-1Gbps	VOIP
4G (LTE)	100Mbps-300Mbps	Streaming
3.75G (HSPA+)	28Mbps-168Mbps	Multimedia
3.5G (HSPA)	5.7Mbps-56Mbps	Multimedia
3G (UMTS, WCDMA)	144kbps-2Mbps	Video Call
2.75G (EDGE)	135kbps	WAP
2.5G (GSM, CDMA)	110kbps	MMS
2G (GSM, CDMA)	64kbps	SMS
1G (NMT, AMPS)	2kbps	Voice Only

The 5G Era

Internet of Things
- 50bn sensory connections est by 2022
- Manufacture, Healthcare, Automotive, Agriculture Smart Cities & Smart Home

Artificial Intelligence
- Analysis of sensory data and behaviours
- Machine Learning and Automation of tasks

Edge
- Processing tasks closer to the End User
- Provisioning Functions and Compute through the Distributed Cloud



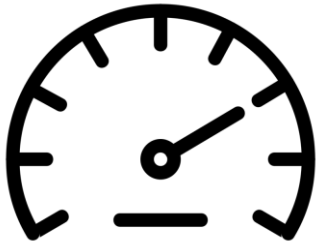
What advantages will 5G bring?

10x Latency Decrease

Latency target >1ms

10x Connection Density

Signalling efficiency for IoT connectivity

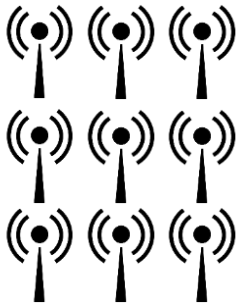


10x Throughput

Uniform, multi-Gbps peak rates

3x Spectrum Efficiency

More bits per Hz with new antenna technologies



100x Traffic Capacity

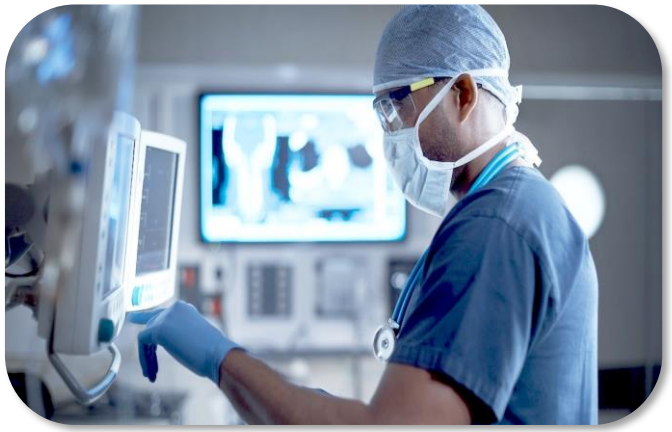
Hyper densification using small cells

Digitalisation

Data centers as the foundation for a digital infrastructure ecosystem

Media & Entertainment

Manufacture



Healthcare

Agriculture

Smart Cities

Education

Data centers as the foundation for a digital infrastructure ecosystem

As business models shift from physical to digital, the ability to **gather**, **analyze**, **protect**, **leverage** and **move** data becomes the lifeblood of business.

Datacenters have evolved to meet the needs of the digital world. This evolution is making them more adaptable, intelligent, and autonomous. The need for resilience is fueling investment in modernized facilities.

Our focus on *Data Centers, Communication Networks, Commercial and Industrial*

Enabling reliability, efficiency and scalability from the core to the edge. Delivering reliability and simplifying complexity in IT, Telco and Industrial environments.

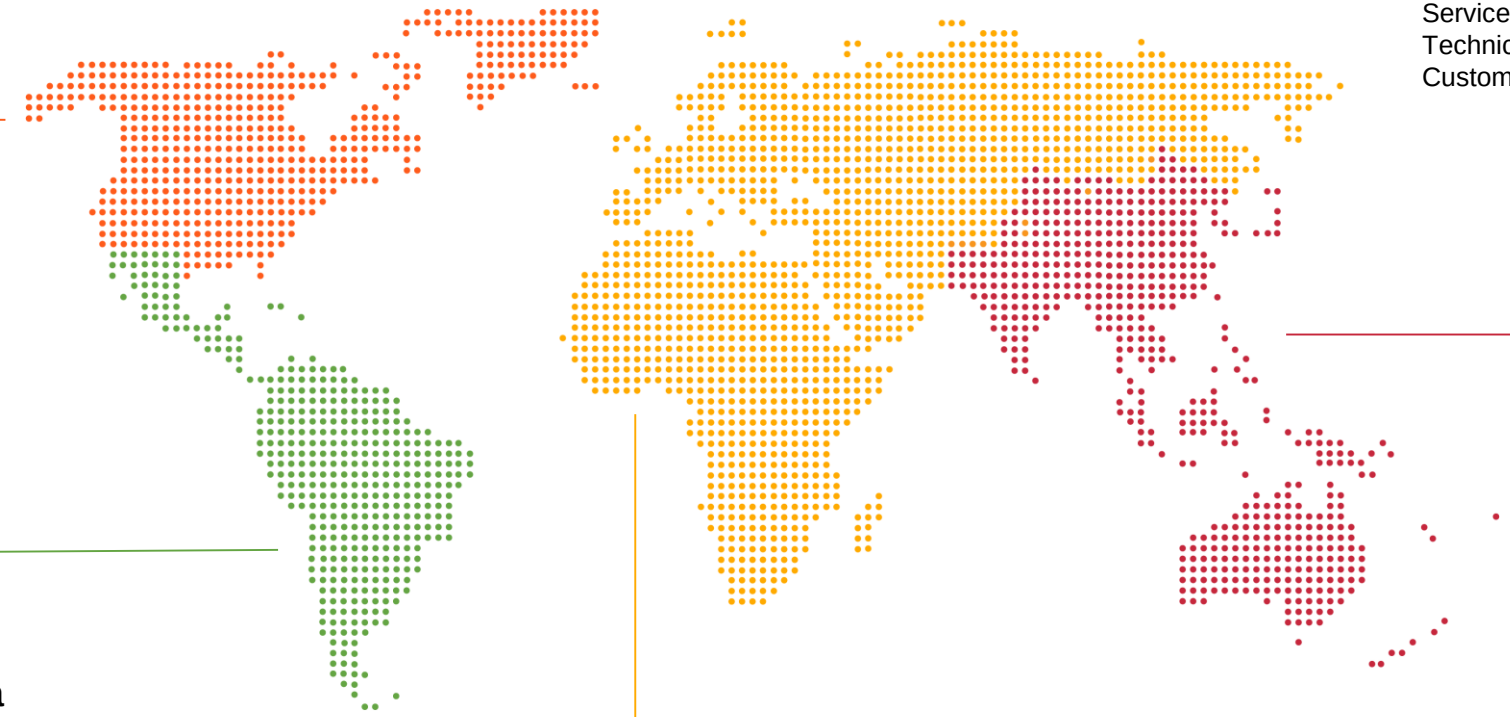
- Product, system and integrated solutions for: Enterprise, Colocation, Hyperscale and Edge
- Future-forward solutions supporting 5G and a variety of sites including: Small Cell, Macro Site, Central Office and Data Center
- Products, solutions, services and expertise for: Healthcare, Rail/Mass Transit, Power Generation and Oil and Gas

Our Presence

Meeting our customers demand for data – wherever they are.

Worldwide

Manuf. And Assembly Locations	19
Service Centers	270+
Service Field Engineers	2700+
Technical Support/Response	330+
Customer Experience Center/Labs	17



US and Canada

Manuf. And Assembly Locations	7
Service Centers	120+
Service Field Engineers	850+
Technical Support/Response	120+
Customer Experience Center/Labs	4

Latin America

Manuf. And Assembly Locations	1
Service Centers	20+
Service Field Engineers	300+
Technical Support/Response	25+
Customer Experience Center/Labs	2

Europe, Middle East, and Africa

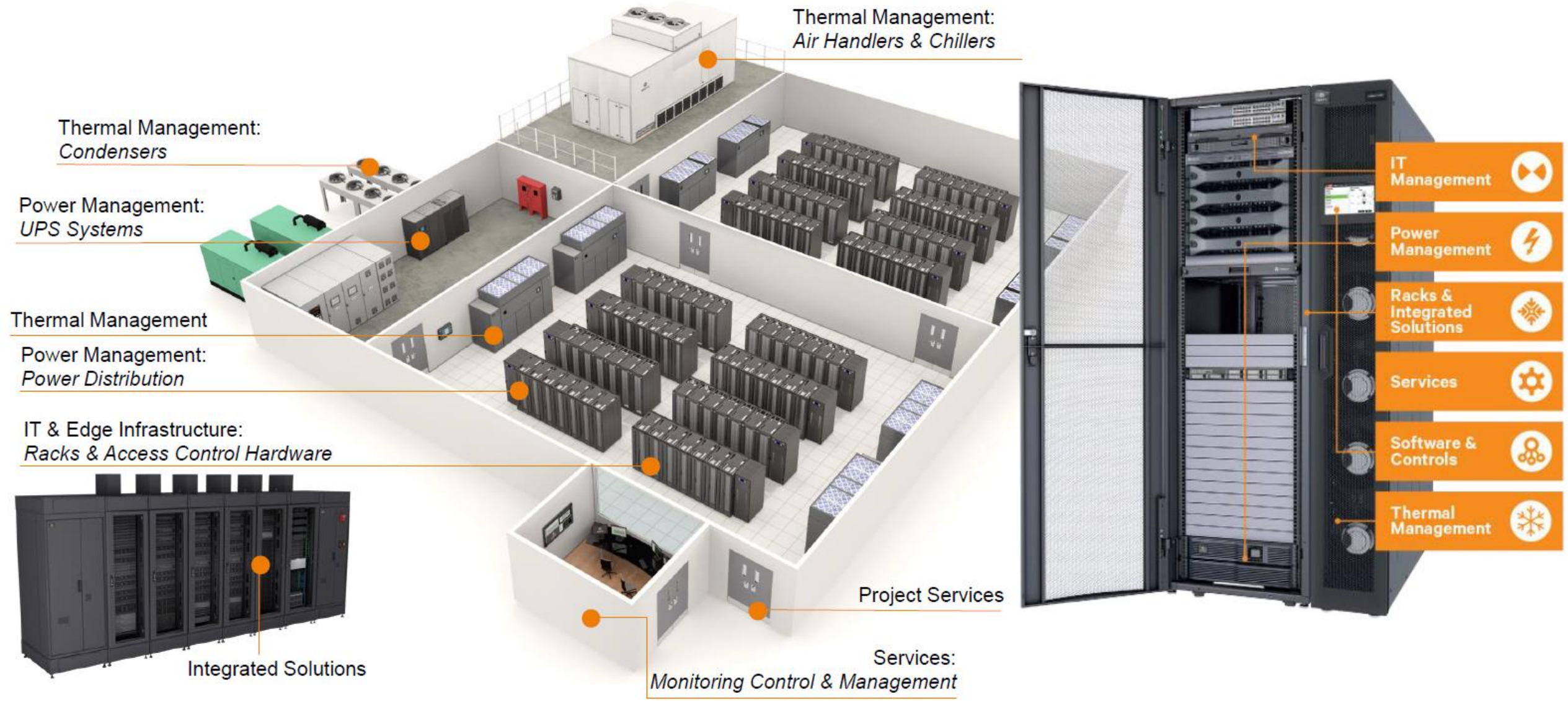
Manuf. And Assembly Locations	5
Service Centers	70+
Service Field Engineers	600+
Technical Support/Response	95+
Customer Experience Center/Labs	6

Asia Pacific

Manuf. And Assembly Locations	6
Service Centers	60+
Service Field Engineers	950+
Technical Support/Response	90+
Customer Experience Center/Labs	5

Vertiv Offerings in the Data Center

Comprehensive Product Portfolio

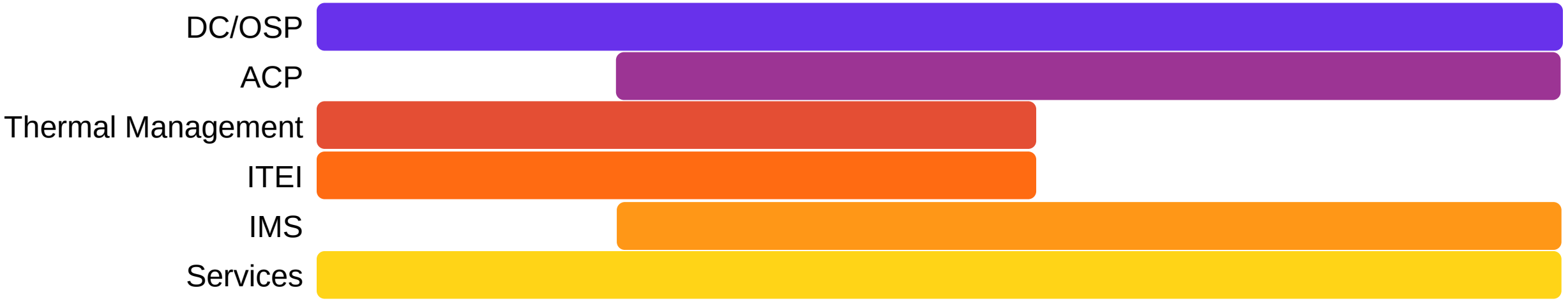


Vertiv as a Technology Enabler

Communications Technology

Edge Technology

Smart Facilities Technology



All-In-One solutions for EDGE – SmartMod data center

- 20 – 200+ kW
- Factory assembled and tested prior to shipping.
- Minimal onsite installation requirements
- Rapid & simple deployment (“plug and play”)
- Tier II & III configurations, „Tier Ready”
- Standardized and configurable
- Enabling simultaneous deployment of multiple sites

EMEA References 2019 - 2020

Nigeria (2019)

- Control Center and Field Auxiliary Rooms,
- Blast-proof module construction,
- Compliant with strict O&G Customer design standards,

Algeria (2019)

- Proof-of-Concept 5G EDGE site,
- High density solution (20kW/rack),
- Creative design minimizing on-site deployment time,

KSA (2019)

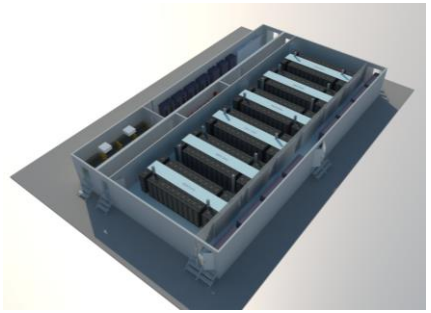
- 3.6MW High Performance Computing Data Center,
- Heat density up to 180kW/rack,
- Compliant with strict US Design Standards and AVL

KSA (2019)

- SmartMOD MAX all-in-One Data Center,
- 24 racks / 90kW IT capacity / TIER III design,
- **16 weeks EXW lead time,**
- 60Hz and SASO standard compliant

Belarus (2019)

- 150 racks / 1.2MW colocation Data Center,
- Uptime Institute Tier III design,
- Phase II of 2015 project,



Russia (2019)

- 8x 1.2MW Power Modules,
- Standardized design for hyperscale deployment,
- Lithium Ion batteries / Liebert eXL UPS,

Germany (2019)

- 180kW / 16 racks Enterprise Data Center,
- Design compliant with German regulations,
- Minimized footprint with roof-mounted condensers

Croatia (2019)

- Design & Build Data Center construction,
- ~2100m2, 4-story building, 1.2MW IT
- ~20 months turnkey schedule,

EMEA References 2019 - 2020

Qatar (2020)

- 900kW IT capacity / 120 racks / 2N power distribution / N+2 cooling,
- Expansion of existing Data Center campus,
- 11 months turnkey schedule,

Poland (2020)

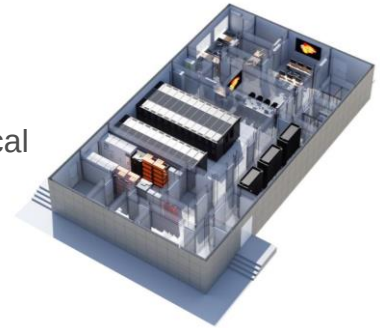
- 10x 1.2MW / 7x 2.0MW Power Modules (phase 1),
- Wholesale colocation for Hyperscale Account
- 6 months delivery schedule,

Qatar (2020)

- 4MW IT / 700 racks / scalable to 8MW
- TIER III compliant power and cooling architecture,
- Dual-fluid cooling and A/B/C distributed redundant power supply,
- 14 months turnkey schedule,

Qatar (2019)

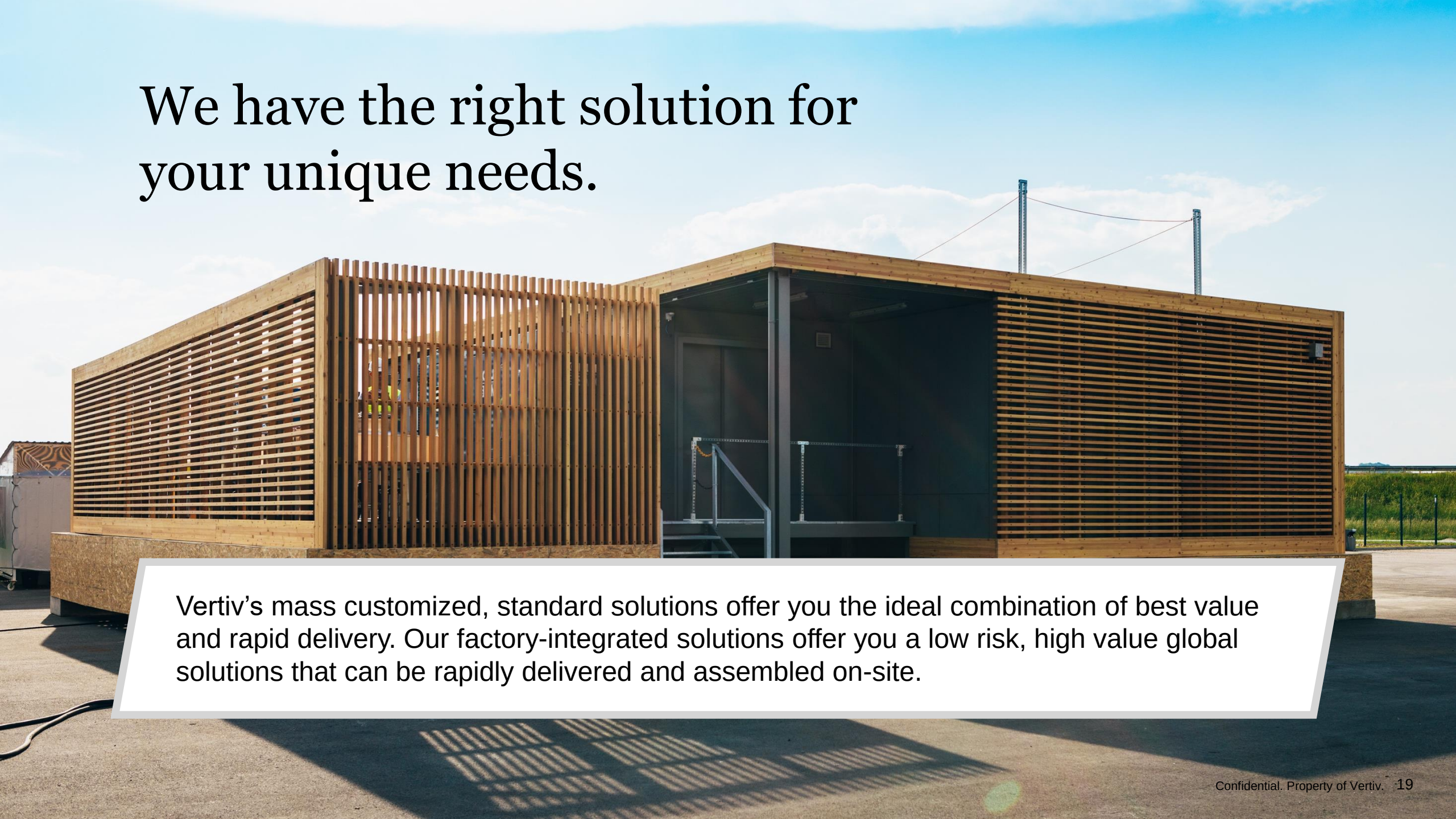
- 320m2 Data Center and Control Center,
- 36 racks / 150kW IT capacity / Color-coded critical systems,
- External cladding matching the surrounding Technology Park buildings,
- 9 months turnkey schedule,



Saudi Arabia (2020)

- 3x 1200kW / 1x 600kW Power Modules,
- 60Hz and SASO compliant design,
- 16 weeks EXW availability,

We have the right solution for your unique needs.



Vertiv’s mass customized, standard solutions offer you the ideal combination of best value and rapid delivery. Our factory-integrated solutions offer you a low risk, high value global solutions that can be rapidly delivered and assembled on-site.

THANK YOU !

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