

Smarter technology for all

Real-time analytics and Edge AI

Mobile World Congress 2021



NEARBY
COMPUTING

Lenovo

AI is Transforming Key Industries

MANUFACTURING

- **Predictive Maintenance / Digital Twin**
- **Quality Control / Visual Inspection**
- Demand forecasting
- Inventory management, supply chain & logistics
- Production line, robotics & process optimization

RETAIL

- **Loss Prevention**
- **Logistics / Shelf restocking**
- **Omni-channel & in-store analytics**
- Customer engagement / sales automation
- Check-out automation
- Shopping recommendation & merchandising
- Transaction payment systems

4 industries
Account for
57% of AI
use-cases

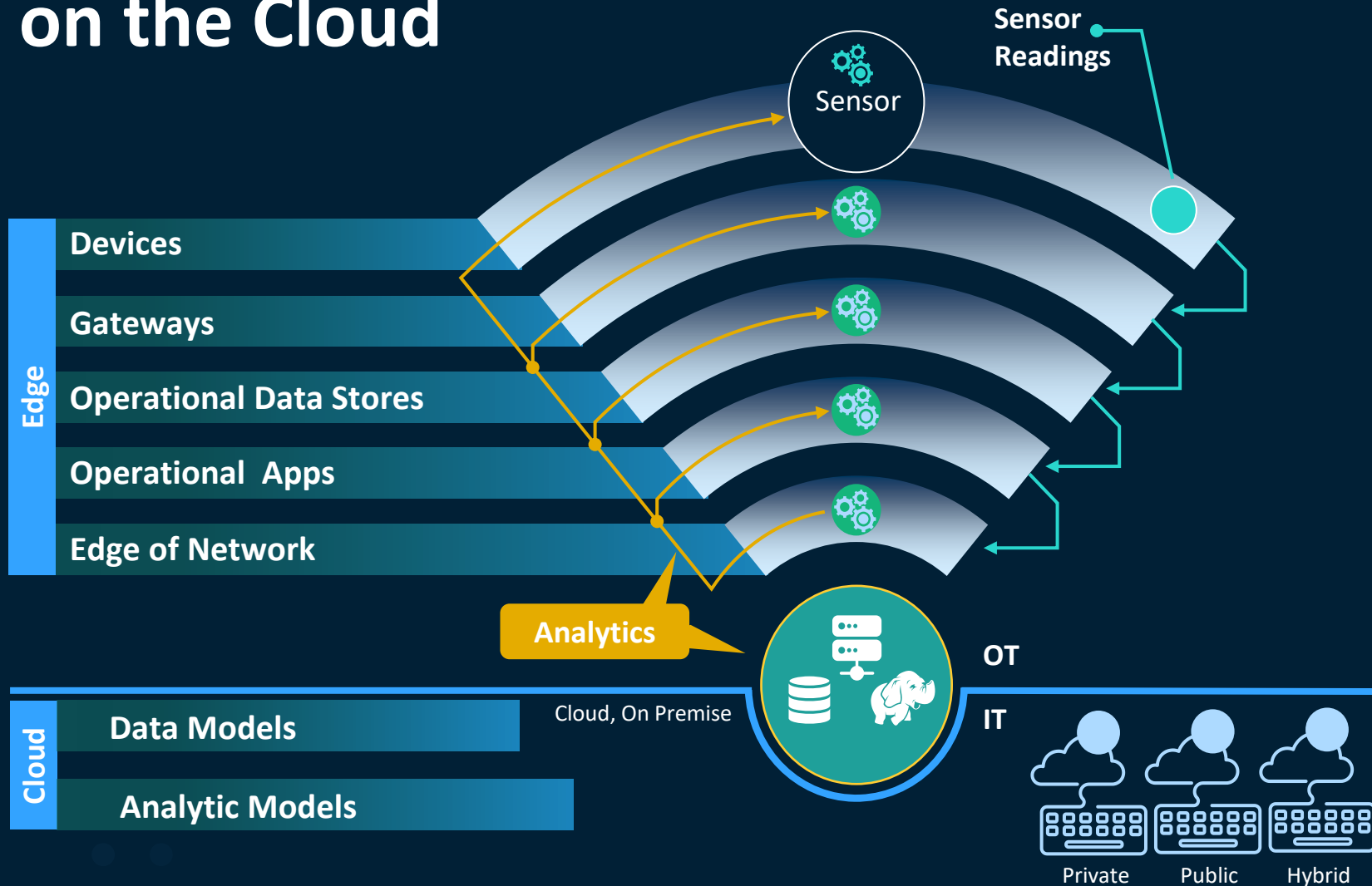
FINANCE

- **Credit decisions & Risk Management**
- **Fraud detection & Threat Intelligence**
- **Algorithmic trading**
- Process automation
- Personalized banking / customer service & sales automation
- Regulatory intelligence

HEALTH

- **Medical Imaging / diagnosis treatment**
- **Clinical decisions support (CDS)**
- Customer service agents
- Process & back-office automation
- Inventory management, supply chain & logistics

At the Edge and on the Cloud



- More than 15 billion IoT devices will connect to the enterprise infrastructure by 2029

- 40% of all enterprise workloads will be deployed in Cloud Infrastructure and Platform Services by 2023, up from only 20% in 2020.

- Edge computing tackles a growing demand to address lower latency, process the growing amount of data on the edge and support resilience to network disconnection.

Streaming Analytics

Capturing Value **Almost Immediately** – as the Events Occur

- Streaming Analytics is the **application of analytics to data while it's in motion, and before it's stored** – and includes data manipulation, normalization, cleansing and pattern of interest detection
- **Provides insights into** Connected things (IoT devices), sensors and devices, and networked machines
- **Analyzes data as close to the event location as possible, before its value is diminished** due to information lag and before the volume of data overwhelms traditional analytics
- **Identifies and examines patterns as events occur**, so immediate actions can be taken on those events of interest as they happen



Streaming Analytics

Operational Challenges

Variety/Volume

- Variety of data types
- Millions of records to ingest and process
- Sensor data can be noisy and contain missing values

Reliability

- Ensure events processed once/only once
- Auto restarts on detected failures
- Maximize uptime for operations

Scalability

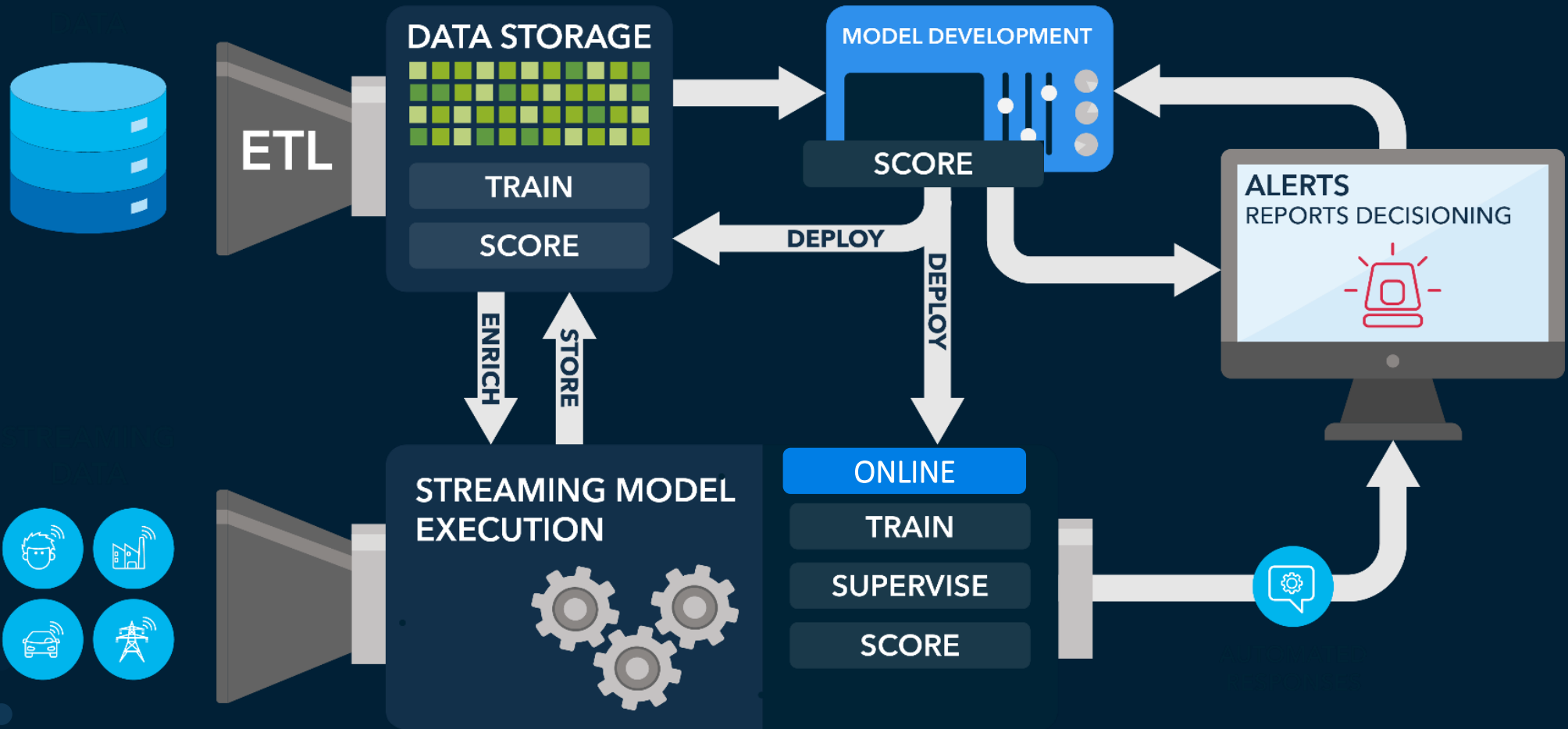
- Auto-scaling for dynamic workloads
- Scale up and out dynamically
- Intelligently determine data to store

Operational

- Streaming Analytic Deployment
- Governance
- Automated processes

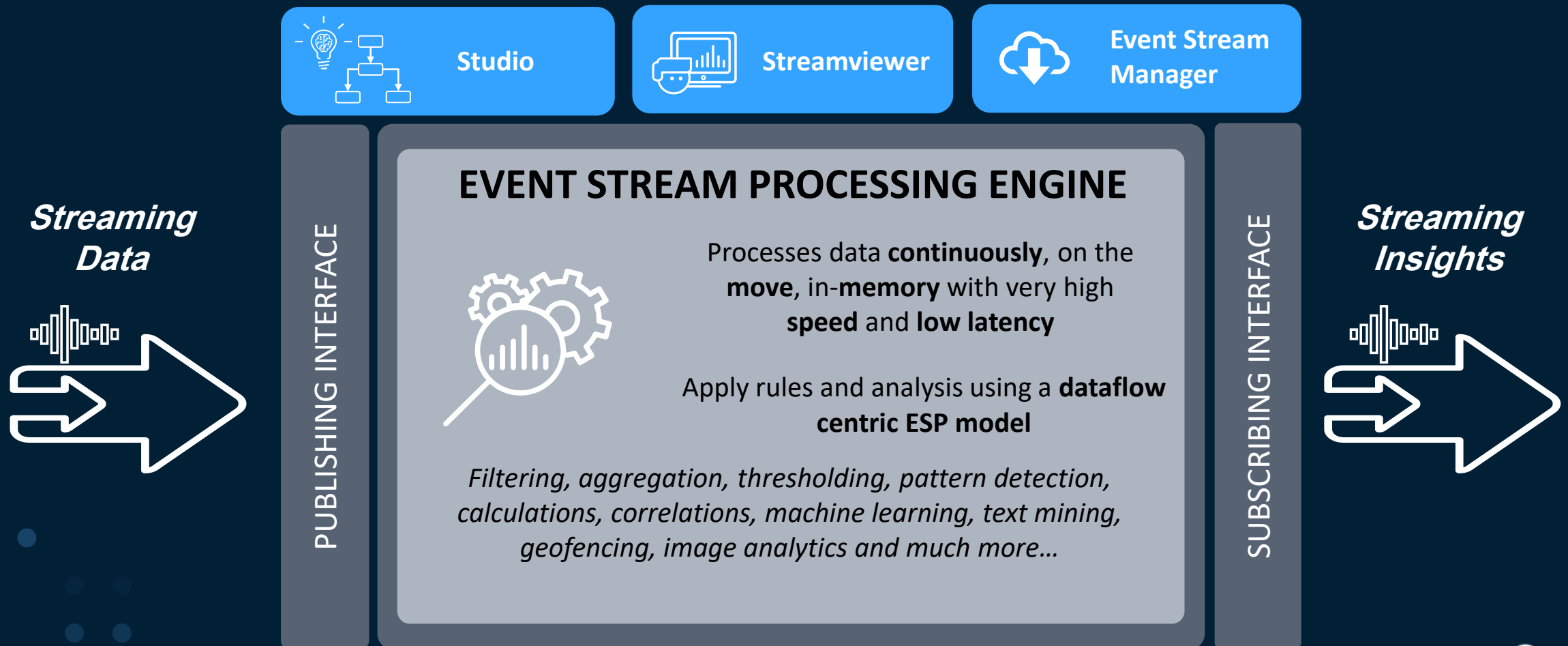
IoT Analytics Lifecycle

Sense > Understand > Act



SAS® Event Stream Processing (ESP)

Streaming Architecture Overview



Trusting Lenovo for your Intelligent Transformation

Bringing AI & Edge capabilities to organizations of all sizes.

**Managing & securing edge devices
is in our DNA.**

Lenovo builds 3 devices every
second from the desktop to the data
center, securing each one with
unique ThinkShield technology.

**Personalized service
at a global scale.**

4 AI Innovation Centers for 1:1
customer engagements, serving 160
countries globally with more than
20,000 business partners.

Performance where it matters.

Lenovo servers are #1 in World
Record benchmarks & is the #1
supercomputer provider in the
world.

Lenovo

AI inferencing from Edge to Core



Diverse Portfolio

From ultra compact gateways to data center grade products.

Highest Performance

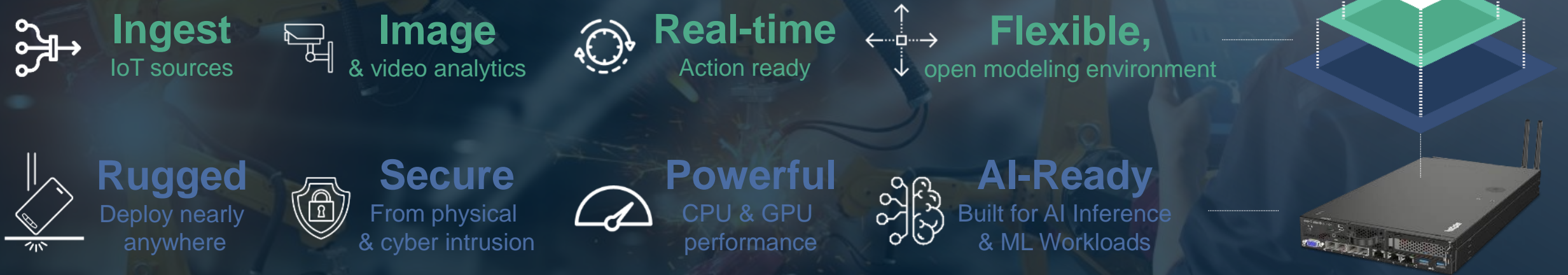
CPU & GPU rich systems for ultimate performance.

Flexible Deployment

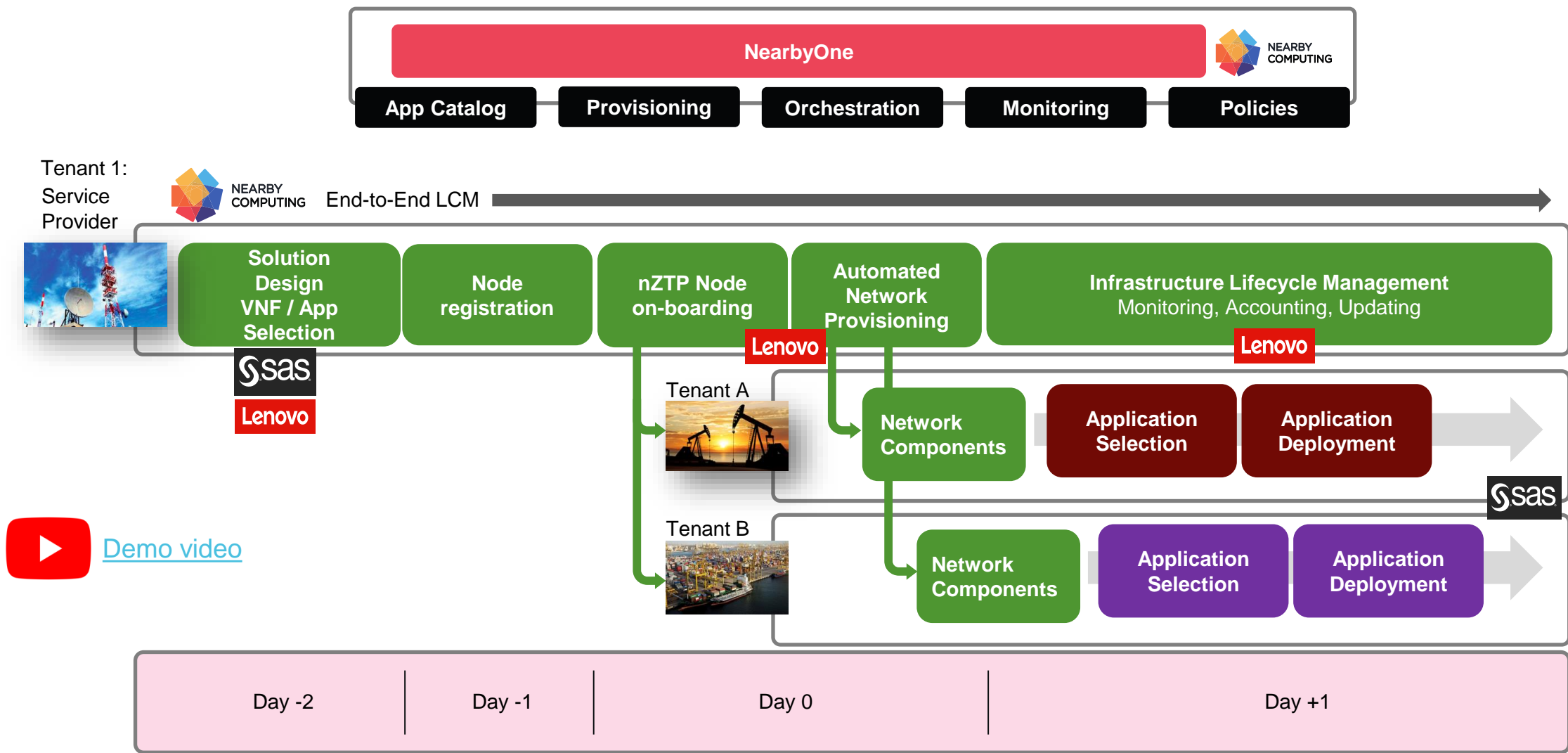
In harsh environments with ruggedized devices & unique cooling capabilities.



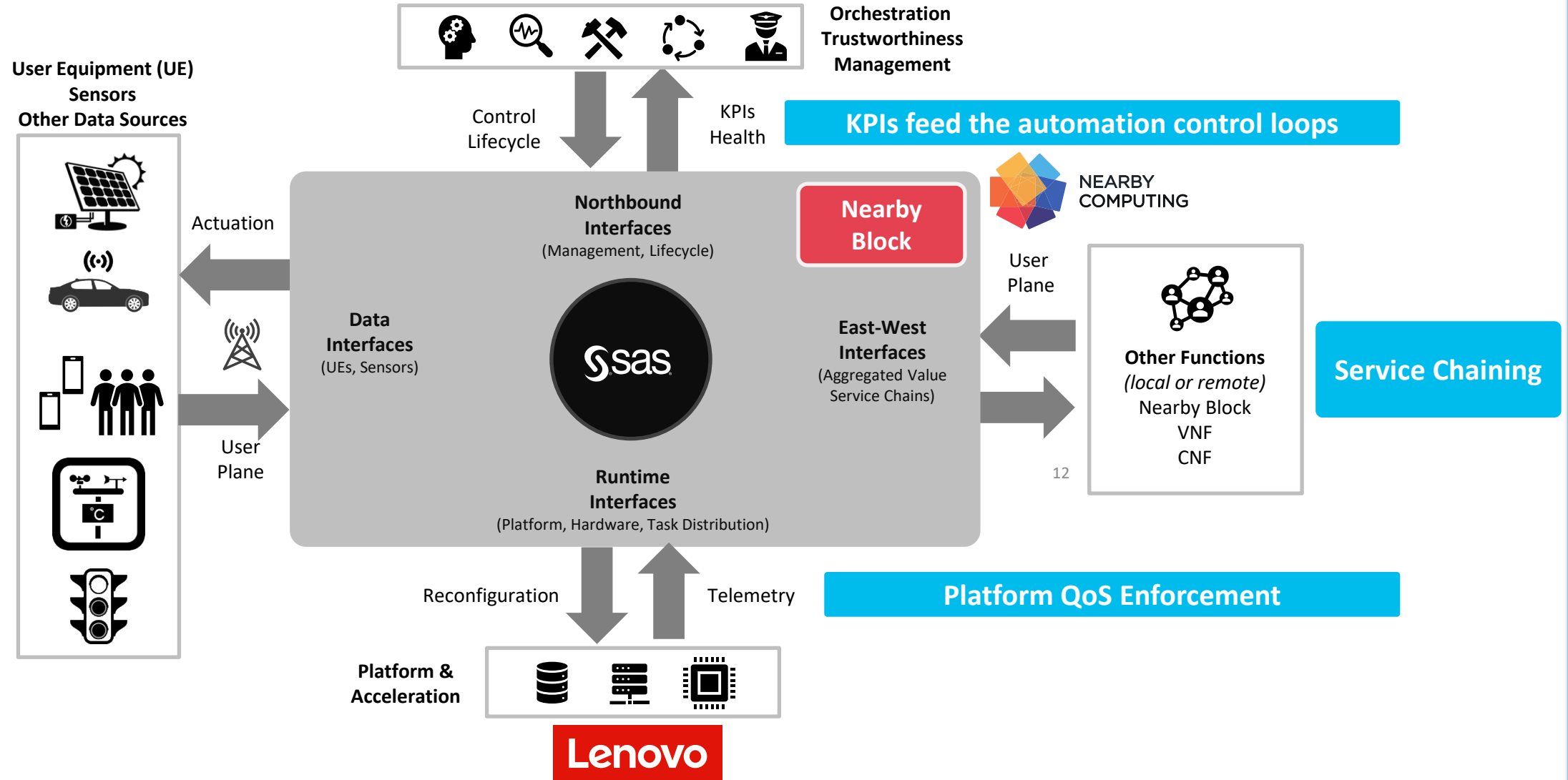
With SAS® Event Stream Processing running on Lenovo Edge AI platforms, you can analyze streaming data, uncover hidden insights with AI and make real-time, intelligent decisions.



Joint approach to deliver edge IoT analytics



Nearby Blocks: portable app encapsulation



Unified 1-click deployment for all verticals

MNOs

Service Providers

Enterprise/Public Admin

Public

Enabler

5GC integration, cloud interplay, Federation

Telco Edge Cloud

NEF for MEC traffic steering

Enabler

Enabler: Provisioning and SD-WAN interplay

uCPE

SD-WAN++

Enabler

Openness, Extensions to IoT

Smart Cities

Virtual Edge Fabric

Enabler

Fast E2E deployments, Scalable vendors

Enterprise 5G Edge

Reducing Complexity

Enabler

Management at scale, cloud interplay

Managed Services & Flexible Networks

Flexible and rapid Deployment

Enabler

Flexibility, Small footprint, Ultra-far edge

Industry Utilities

Digital Transformation

Private

Connected Retail

Creating sustainable growth in the new digital retail landscape through transformative customer experience and operational efficiencies



Connected Healthcare

Accelerating adoption to
improve patient
outcomes and taking
costs and variance out
of healthcare



Connected Manufacturing

Enabling a Fundamental
Re-thinking for Outcome-
driven Decisions for
Business and Operational
Strategies



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technology
for all

Lenovo

thanks.