



Low Power is the New Superpower

Edge Intelligence as a Catalyst
for (European) Innovation

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The world is **changing**

2000

Analog

2010

On-demand

2020

**Anticipates and
automates**

Billions of autonomous systems
– embedded everywhere

2030+



The world that
anticipates
and automates
is here

Industrial

Factory automation

Building & Home Automation

Efficient & secure
environments

Healthcare

Patient monitoring &
diagnostics

Automotive

Software-defined
vehicles

Your digital cocoon



**Robots are
everywhere –
but they don't look
like robots**



Universal robot building blocks



Sense



Think



Connect



Act

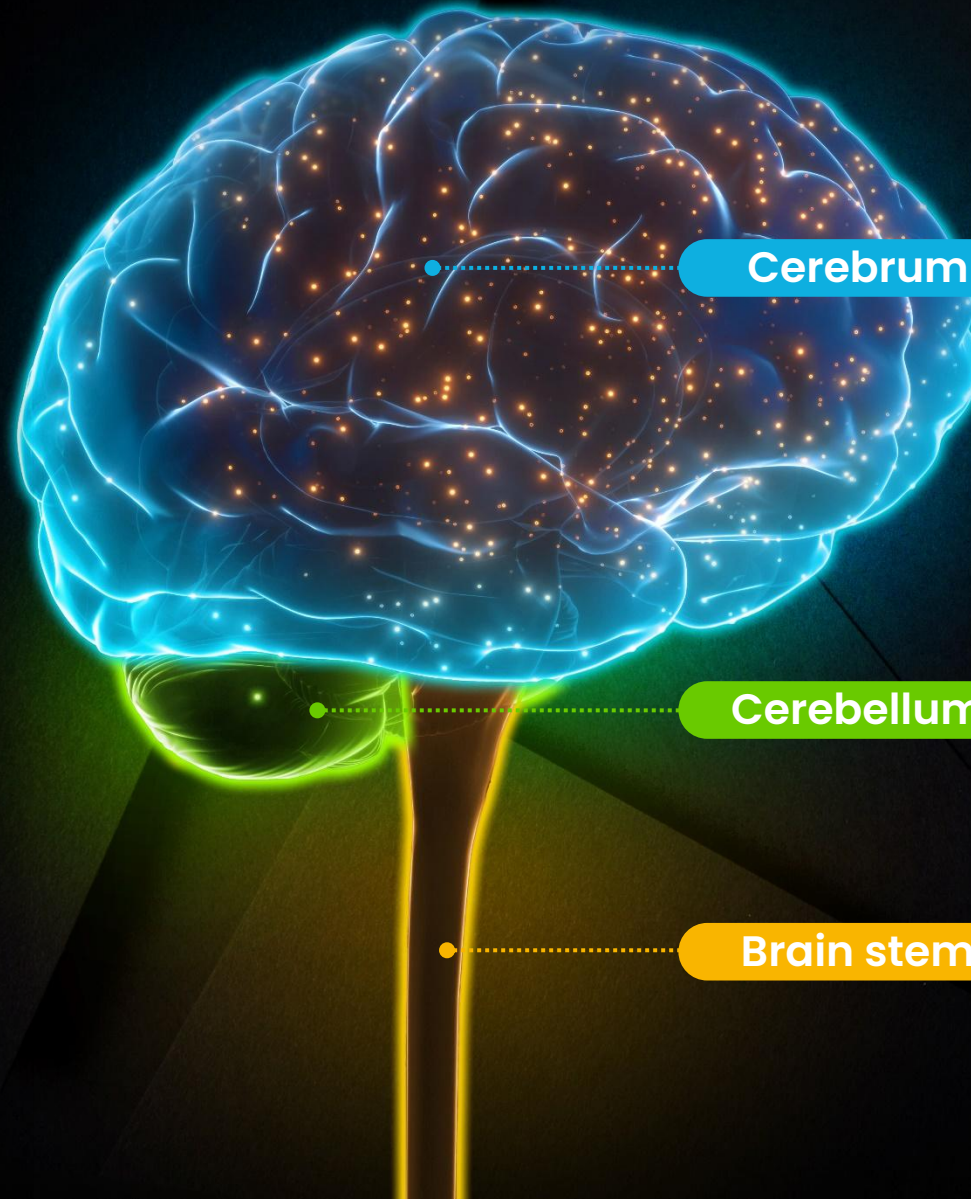
TRUST – Everything safe and secure

Scalable, low power architectures and system solutions

Trust
comes
first.



The digital
replication of
the brain
delivers the
foundation for
responsible
robots



Cerebrum

Facilitates
perception

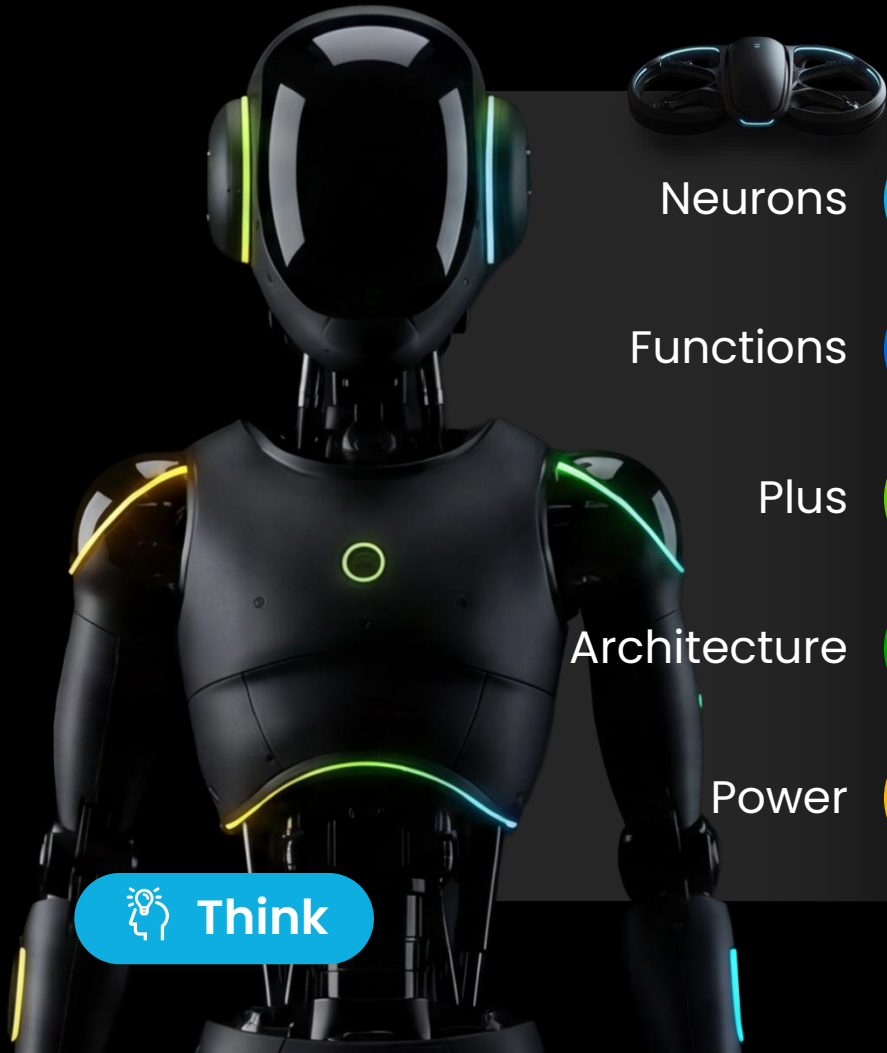
Cerebellum

Coordinates
action & vital functions

Brain stem

Regulates
real-time functions, reflexes
Routes Information
sensing....

What kind of brain does a robot need?



Neurons



Functions



Plus



Architecture



Power



Think

Human



86 billion

body functions, muscle
actuation, sensing, navigation

creativity, culture
Top of the food chain

centralized

20W

Ant



250,000

same

not so much

distributed

0.1 mW

Low power is the new **superpower**.

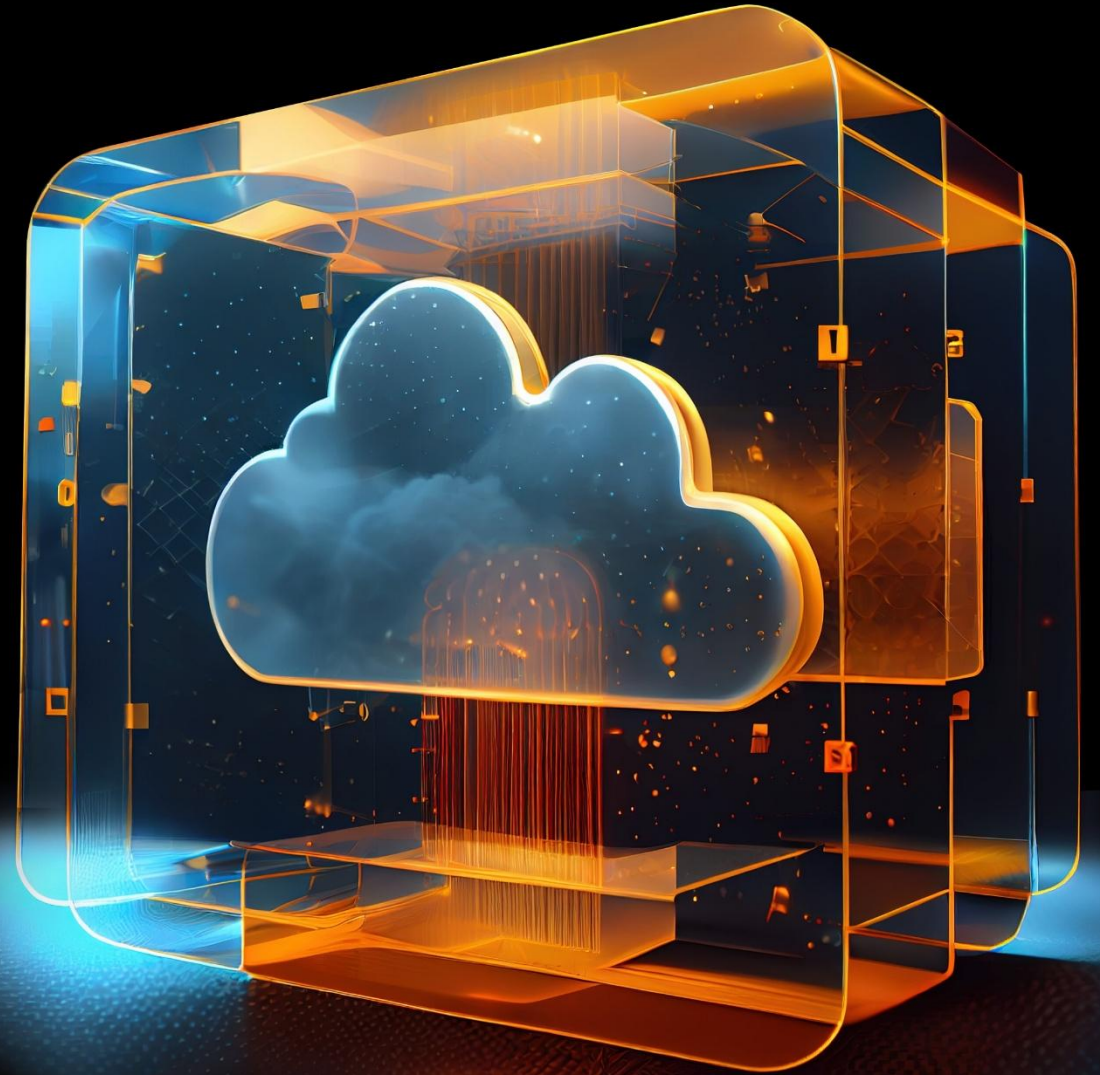
Always on.
Always waiting.

Barely sipping
energy.



Cloud AI is **not the answer**

- | Decisions must happen in real-time
- | Connectivity is not guaranteed
- | Privacy requires local processing
- | Energy budgets are limited



Edge is the hero of the **robotics age**

Where AI meets the physical world
in a safe and secure way

Real-time
decision making

Privacy and
security

Cost and connectivity
efficiency

Reliability and
sustainability

Every part of our world is becoming robotic



Cars



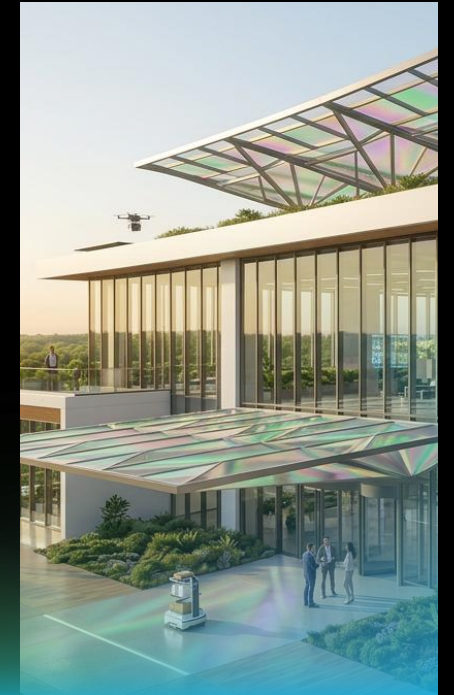
Hospitals



Homes



Factories



Buildings

Now let me make this concrete.

Real form factors already in the world

Blanc robot
Applied EV

WaterRescue Drones Project

Medical delivery drone
Jedsy



Real form factors already in the world

Infant monitoring
GE Healthcare

Rover with drone on top

Drone: Copyright NAT, Claudia Hoehne



Rising complexity of robotics

Architectural evolution

Fixed

Industrial manipulators
Multi-arm systems
Cobots



Welding
Pick & place
Assembly
QA inspection

mature

2D driving

AGVs Rovers
AMRs Surface
 drones



Intralogistics
Delivery
Inspection
Cleaning & maintenance
Hospitality
Defense

mature

3D motion

Multirotor drones
Winged drones
Submersible drones

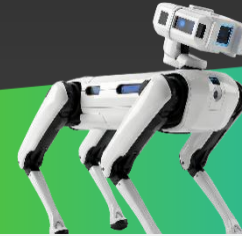


Inspection
Environment monitoring
Delivery
Defense

evolving

Legged

Quadrupeds (dog)
Bipeds (ostrich)

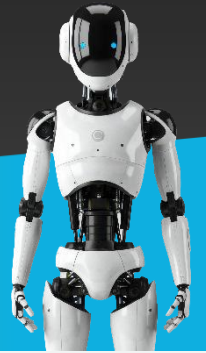


Inspection
Environment monitoring
Defense

evolving

Humanoid

Humanoid



Assembly
Service
Medical assistance
Domestic
Defense?

visionary

Where we focus: **fundamental** building blocks

Safe, secure, efficient



Wireless connectivity



Wired networking

Battery management

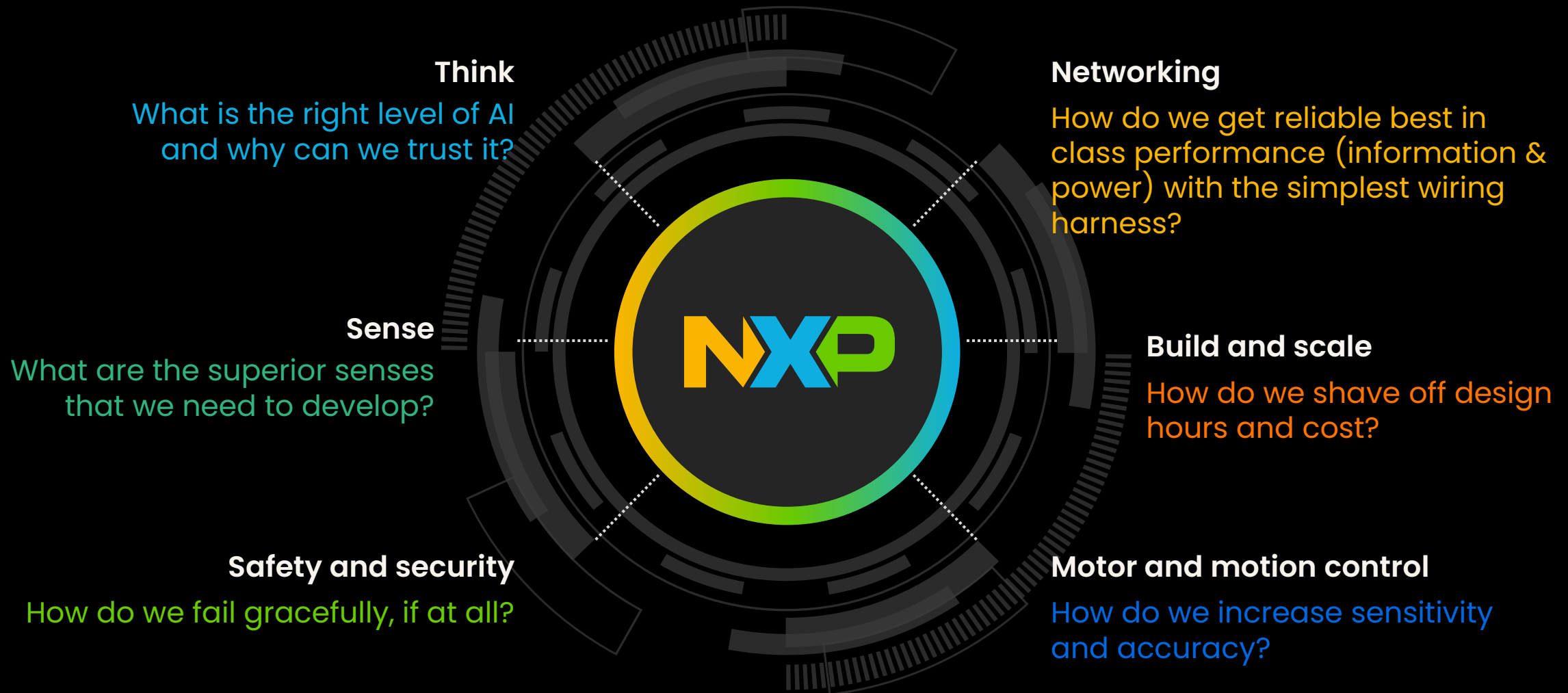
Motor & motion control

Sensing, Perception, RTLS

Voice & Audio

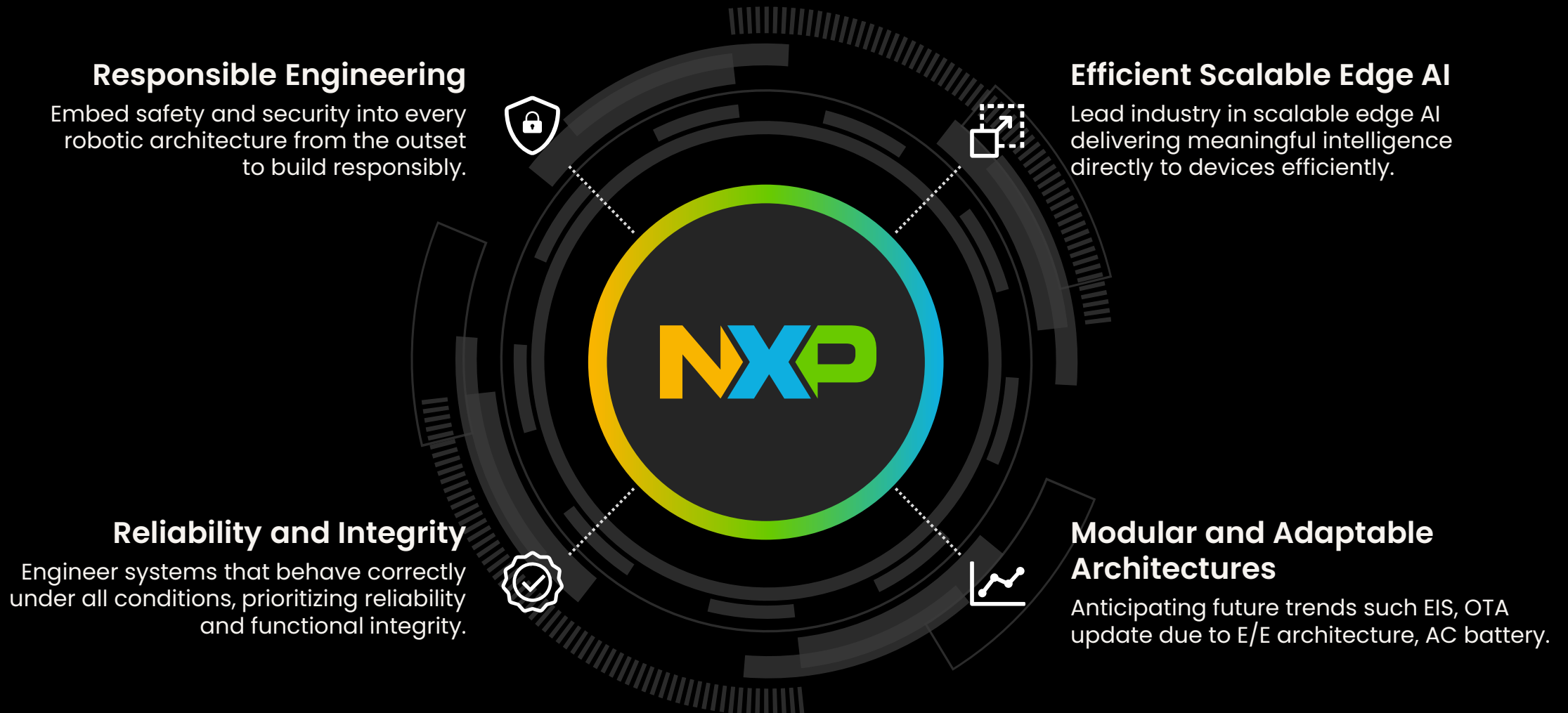


Innovating to solve robotics challenges



Engineering. Not hype.

Building the foundation for a world that anticipates and automates





Brighter
Together

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