HEXAGON

Burkhard Böckem

CHIEF TECHNOLOGY OFFICER

R&D strategy

Product innovation

Technology leadership

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Innovation

Technology:
Unmatched Technology Portfolio

Products that create impact

Reality:

Enhanced with insights
Improved by actionable information

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Culture of innovation

Driven
by customer demand

Delivered
beyond expectations

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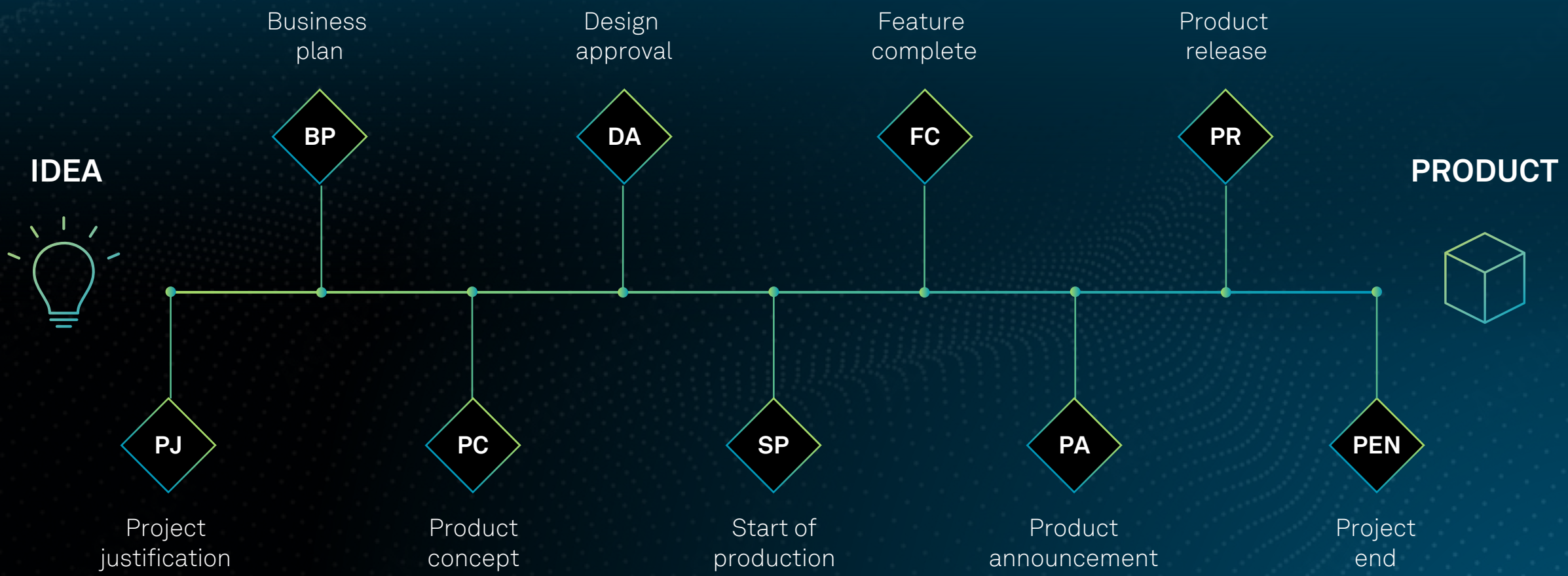
Hexagon Innovation Process



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Powered by innovation

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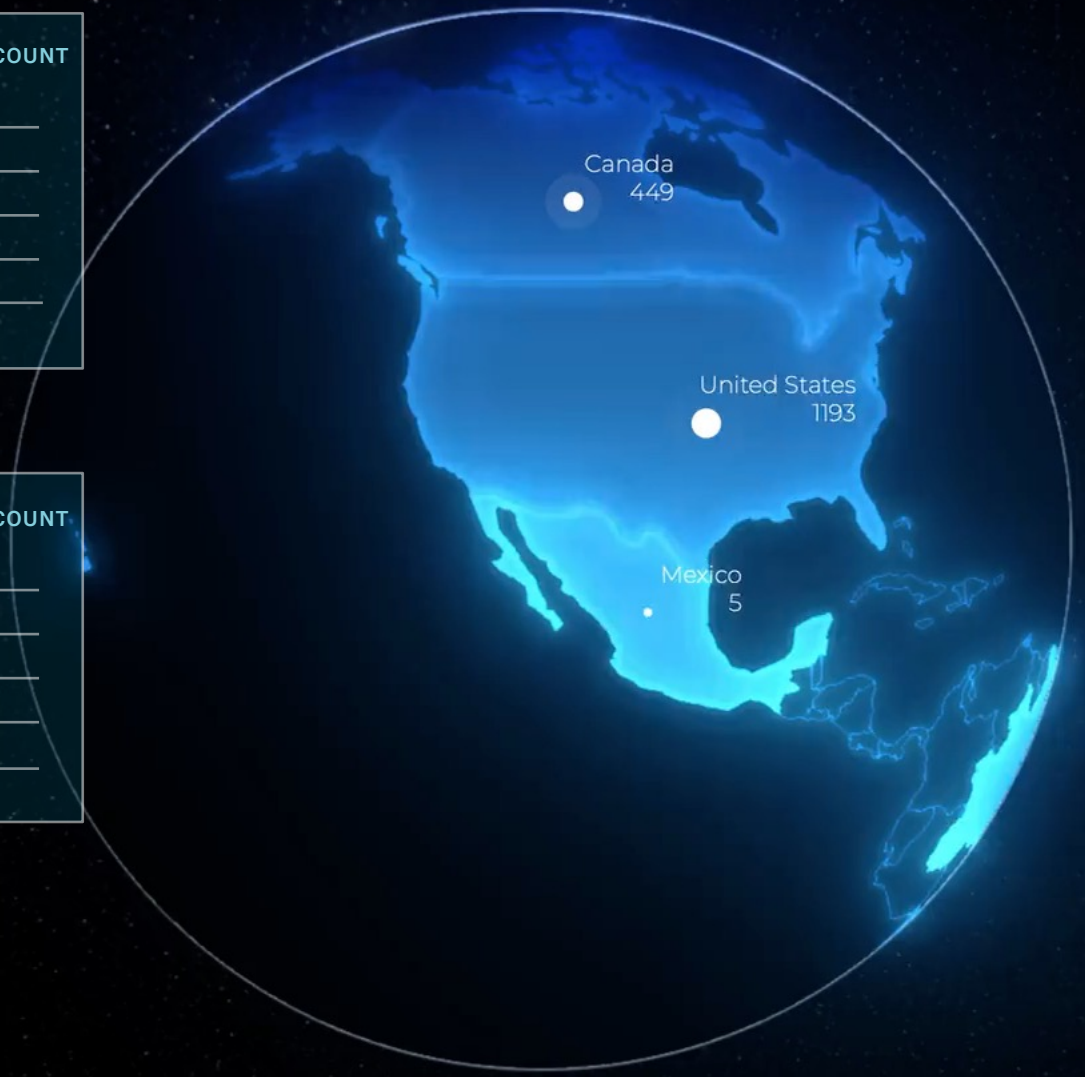
CONTINENT	R&D HEADCOUNT
Asia Pacific	2240
Africa	154
Europe	2603
North America	1645
South America	131
Total	6777

DIVISIONS	R&D HEADCOUNT
Autonomous Solutions	740
Geosystems	1934
Manufacturing Intelligence	1560
Asset Lifecycle Management	1592
Safety, Infrastructure, Geospatial	559
Innovation Hub	392



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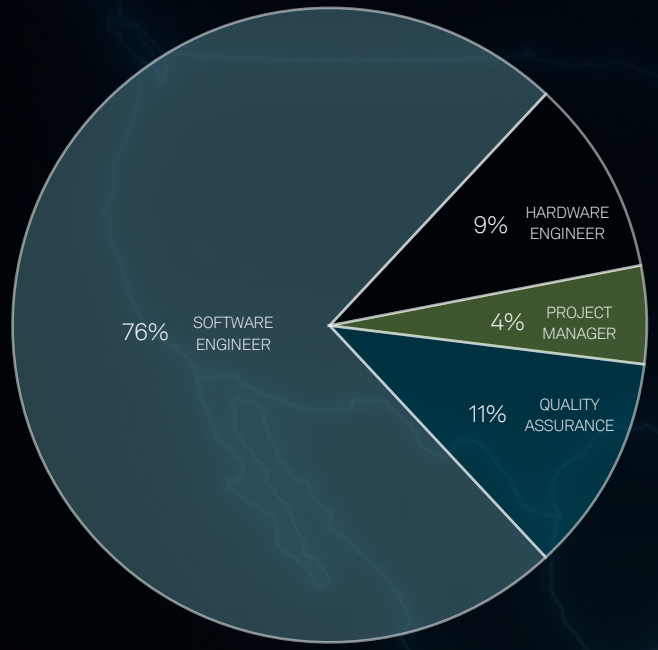
SKILLSET



GROSS R&D INVESTMENT 2023YTD

Total gross R&D Investment (mEUR)

610

Gross R&D cost / sales

15 %

Powered by innovation

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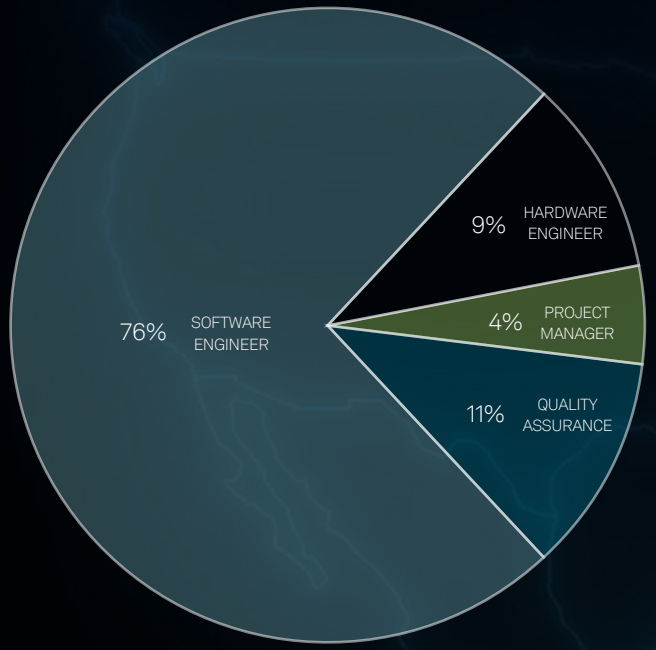
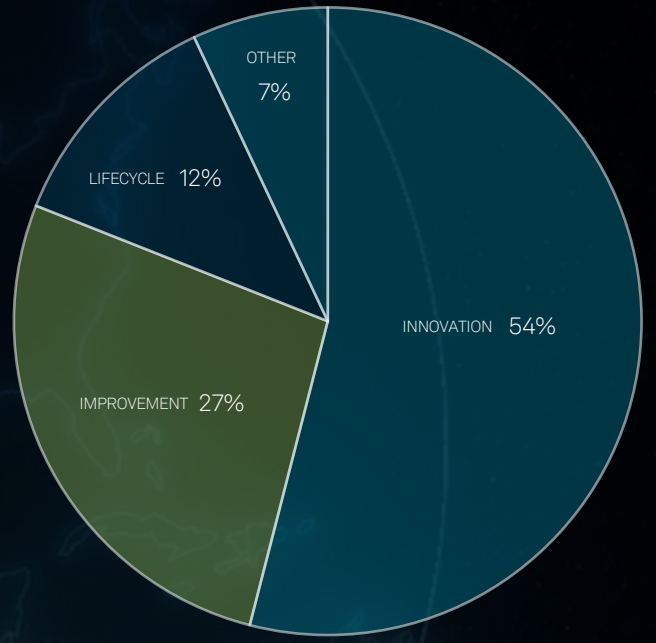


PROJECT TYPES



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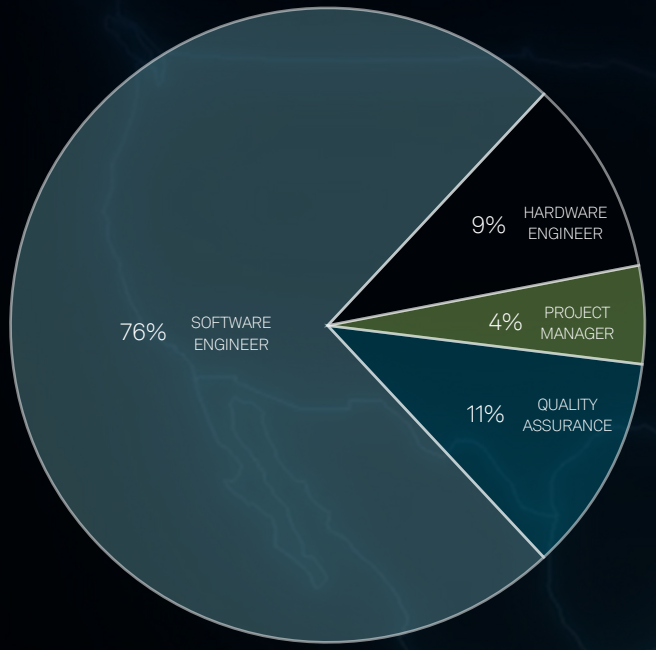
RELEASES 432

SKILLSET



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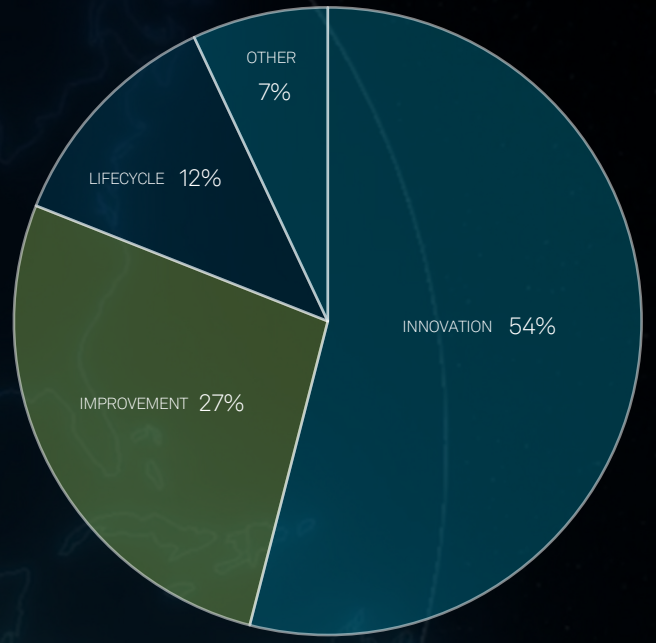


PATENTS

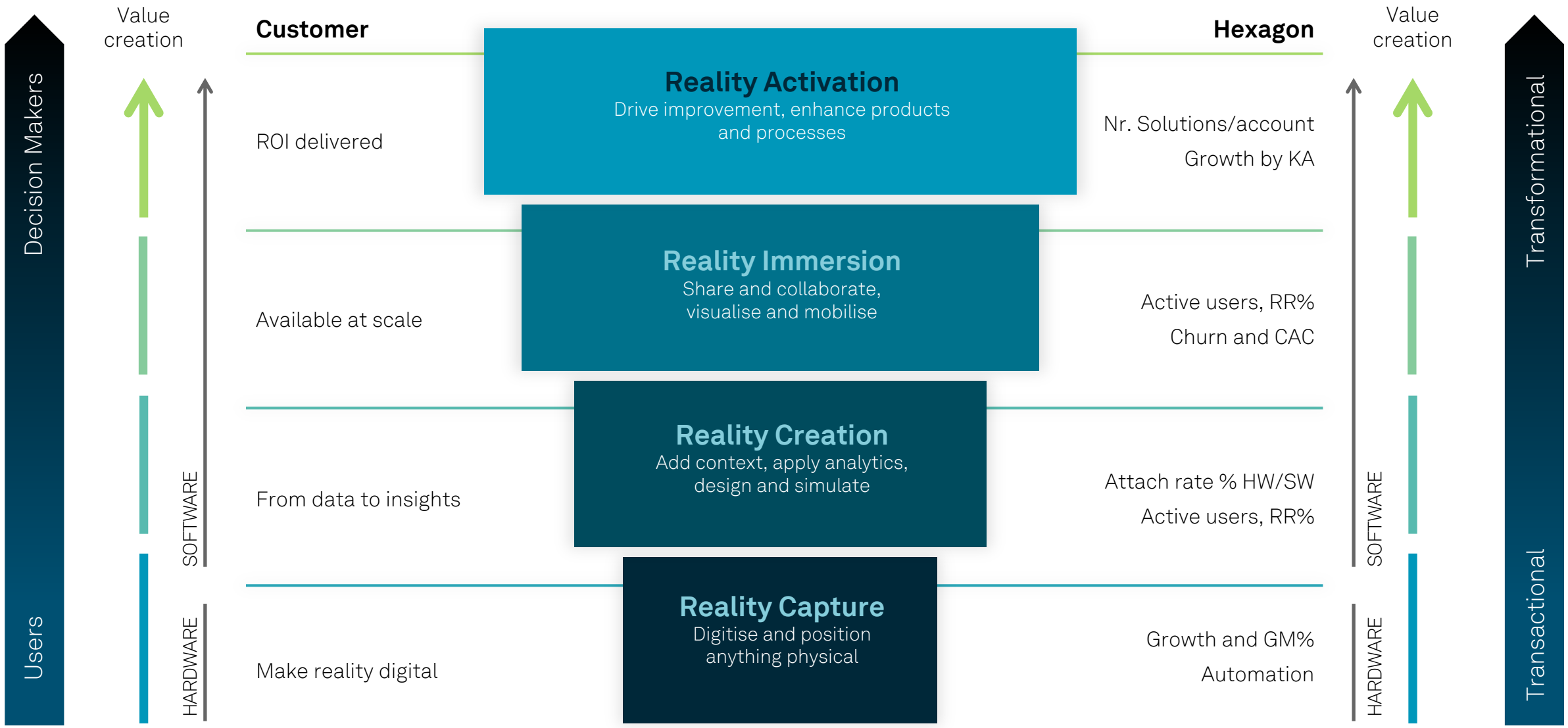
Total patents	2023 year to date
5528	59

GROSS R&D INVESTMENT 2023YTD

Total gross R&D Investment (mEUR)	Gross R&D cost / sales
610	15 %

Award-winning innovation

Core competencies drive value creation



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The 3D data value creation opportunity translates into the R&D portfolio

Reality Capture

Measurement, scanning and positioning capabilities

Reality Creation

Apply AI and analytics, design and simulate, add industrial context

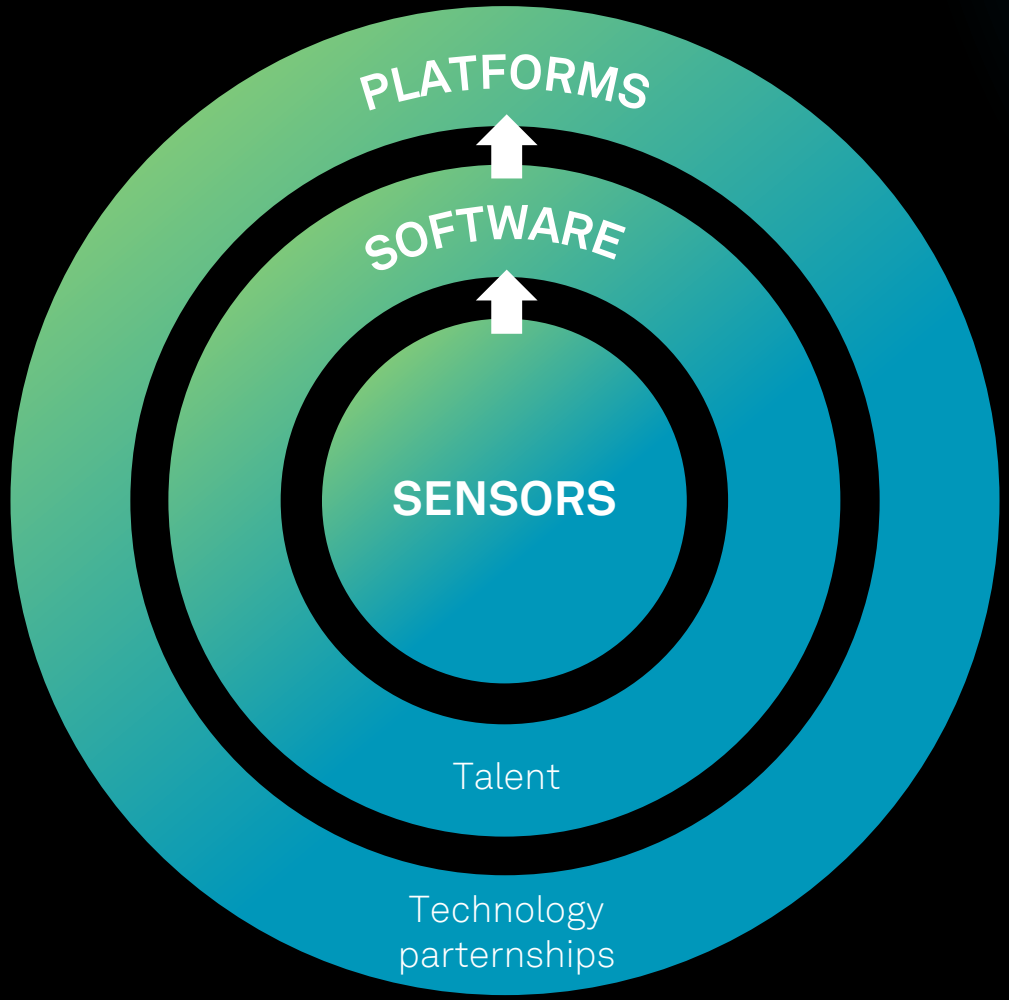
Reality Immersion

Share and collaborate information, visualisation tools

Reality Activation

Improve outcomes, steer and control processes, reality delivers ROI

R&D Strategy



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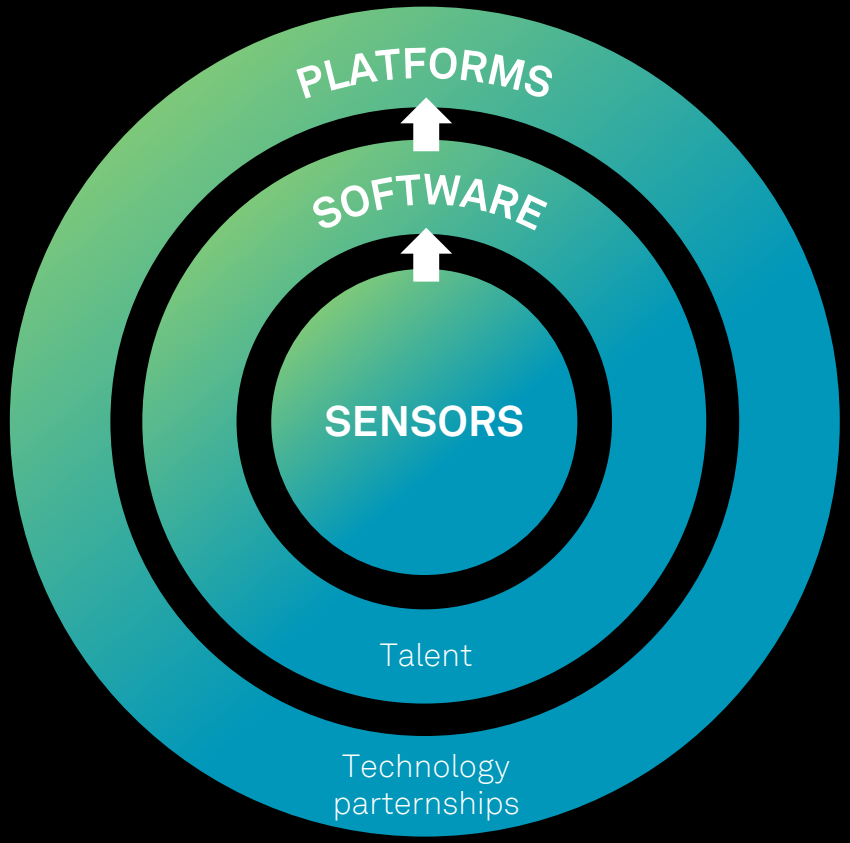
R&D Strategy



R&D Execution	Business impact
Cloud native platforms Combined data strategy and AI	Higher degree of revenue, drive usage/insights, ease deployment, enable cross-selling of components, data continuity, recurring revenue
Visualisation and collaboration technologies	Expand reach of 3D data, grow user base, recurring revenue
Next generations devices, connectivity, edge processing and full ecosystems	Continued GM% accretion (lower cost, modularity, higher performance)
Fused sensor technology & robotics enabled portfolio	ROI for customer through automation and higher throughput drives commercial impact
Acquire best R&D talents	Highly differentiated and best in class portfolio leads to commercial wins
Technology partnerships	Proximity to scaling innovation while Hexagon focuses on core and TAM

R&D strategy: Diversifying the products portfolio

STRENGTHEN

Maintain technology leadership

Strengthen our technology leadership position

Maintain our loyal relationship with our long-term customers

GROW

Expand through innovation

Investing in growth by bringing in new software new features

Making the software deployable on different platforms

TRANSFORM

by technology disruption

Technology disruption where none of the competitors nor start-ups can follow

R&D Investment Priorities: Diversifying the product portfolio

35%

Strengthen

Maintain technology leadership

50%

GROW

Expand through innovation

15%

TRANSFORM

by technology disruption

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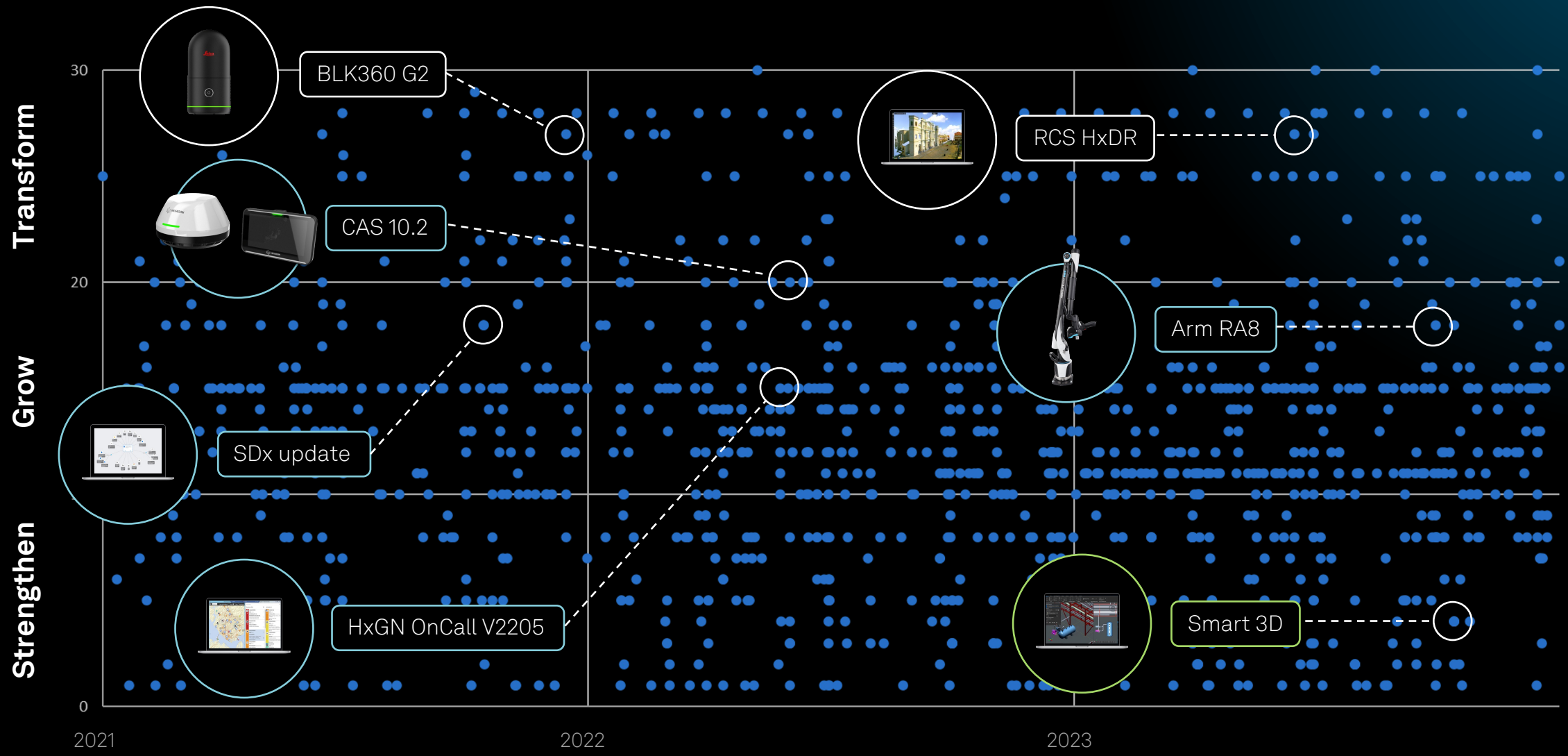
Roadmap development 2021 – 2023

1200+ product releases



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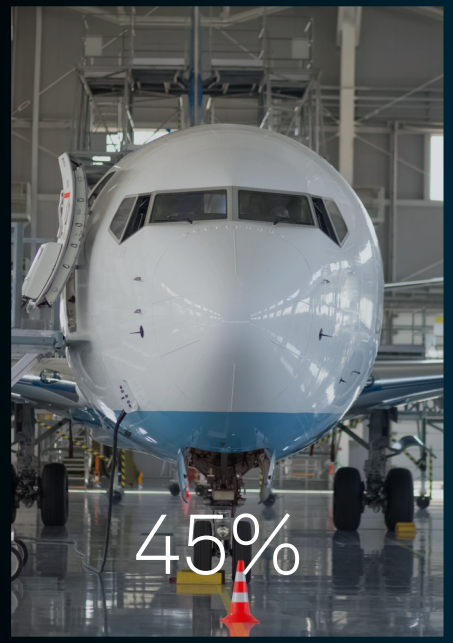
Strengthen: Market leadership



Manufacturing Intelligence

Asset Lifecycle Intelligence

Geosystems

Autonomous Solutions

Safety, Infrastructure, Geospatial

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Manufacturing Intelligence

AIRBUS

PRODUCTS

CMMs, Arms (RA8 V3)

Metrology Software

Production Machining Suite

Multiphysics Software Suite

Asset Lifecycle Intelligence

PRODUCTS

Smart Materials

Caesar II

Smart 3D

Smart PID Plant

Plant State Integrity

Geosystems

ferrovial

SKANSKA

PRODUCTS

Leica Total Stations

Leica GNSS Systems

Surveying Workflow Software

HxGN GeoCloud

Autonomous Solutions

KONGSBERG

PRODUCTS

OEM7

GAJT-700

GNSS Correction Services

Safety, Infrastructure, Geospatial

PRODUCTS

HxGN OnCall

HxGN Networks

Luciad

M.app Enterprise

Qognify VMS

Grow: Market leadership

Manufacturing Intelligence

Asset Lifecycle Intelligence

Geosystems

Autonomous Solutions

Safety, Infrastructure, Geospatial

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SDx: Digital twin

SDx – Smart digital twin solution

Outcomes

Reduced project costs

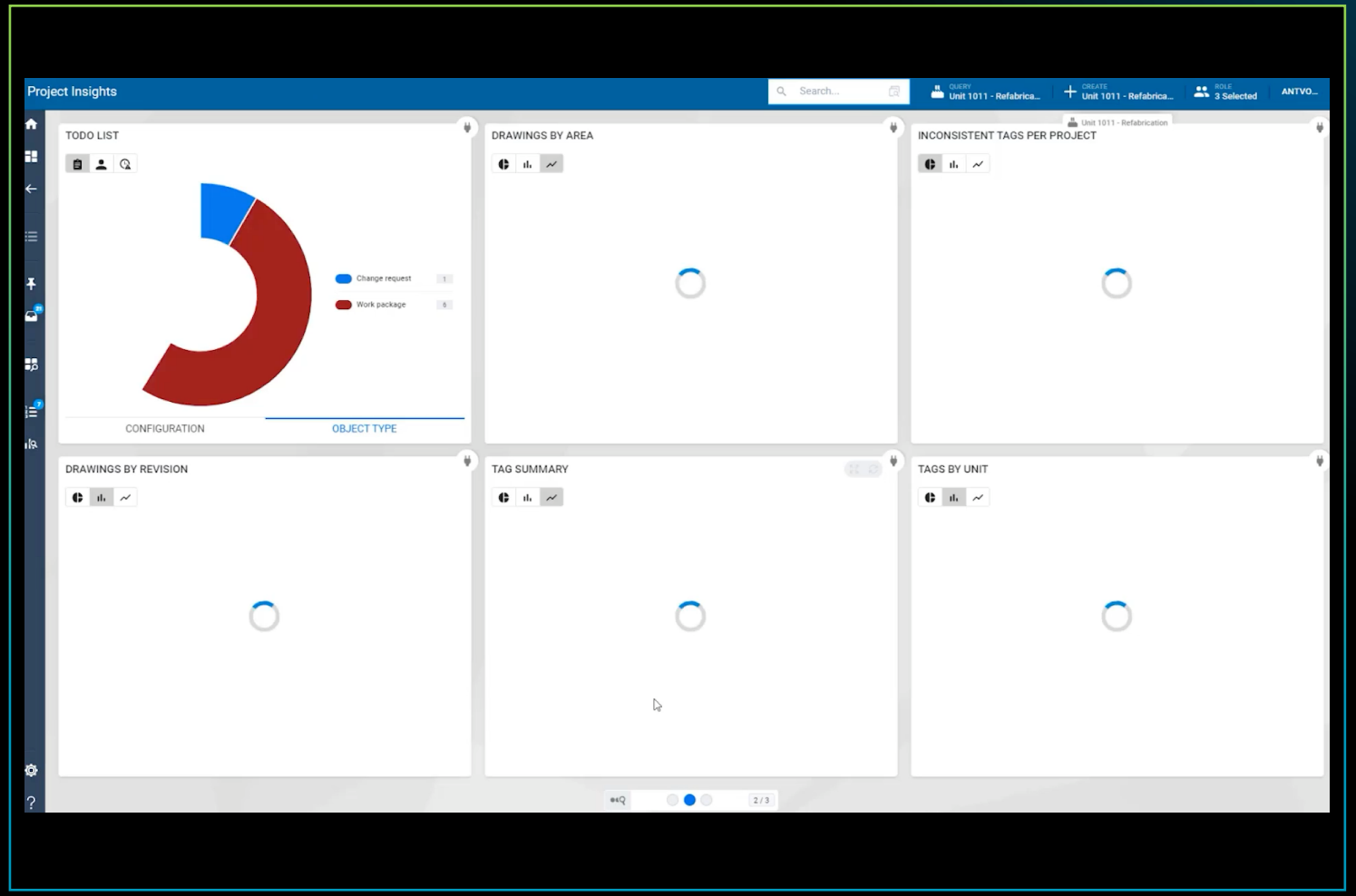
Reduced downtime

Reduced risk and elevate safety

Improved project execution

Increased efficiency

Increase profitability



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Autonomy

Autonomous platform

Outcomes

Solving labor shortages

Increasing safety of life

Reducing fuel consumption

Increasing operational efficiency

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R&D Efficiency

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R&D Efficiency

Software

- Single Sign-On
- Data Integration
- Cloud Processing
- Marketplace
- Collaboration
- iPaaS
- Governance
- Data Hub
- Process automation
- Service Co-pilot
- eCommerce
- Digital Reality
- Self-Service
- Visualisation
- Security
- Licensing

AI

IoT

Hardware

- Encoder
- Tilt
- GrandSLAM
- Edge Processing
- Radar
- GNSS
- Imaging
- Connectivity
- ATR
- Control
- Inertial
- LiDAR
- Security

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R&D Efficiency

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Total Station

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Leica Geosystems
Autofocus
30x / 40mm Lens
mergeTEC

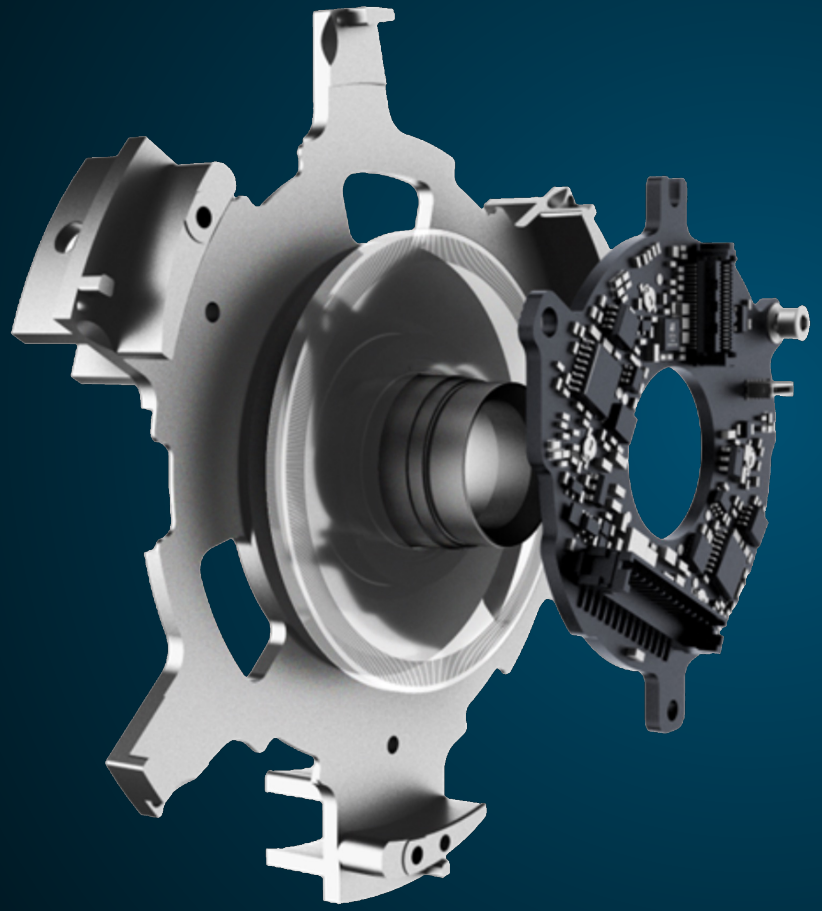
R&D Efficiency: Encoder Platform

~85,000
encoders produced every year

Up to 10X
Less expensive to make than buy

Proprietary technology

Fully integrated



Total Stations

3D Disto

Laser Scanners

Portable Arms

BLK Family

Laser Tracker Systems

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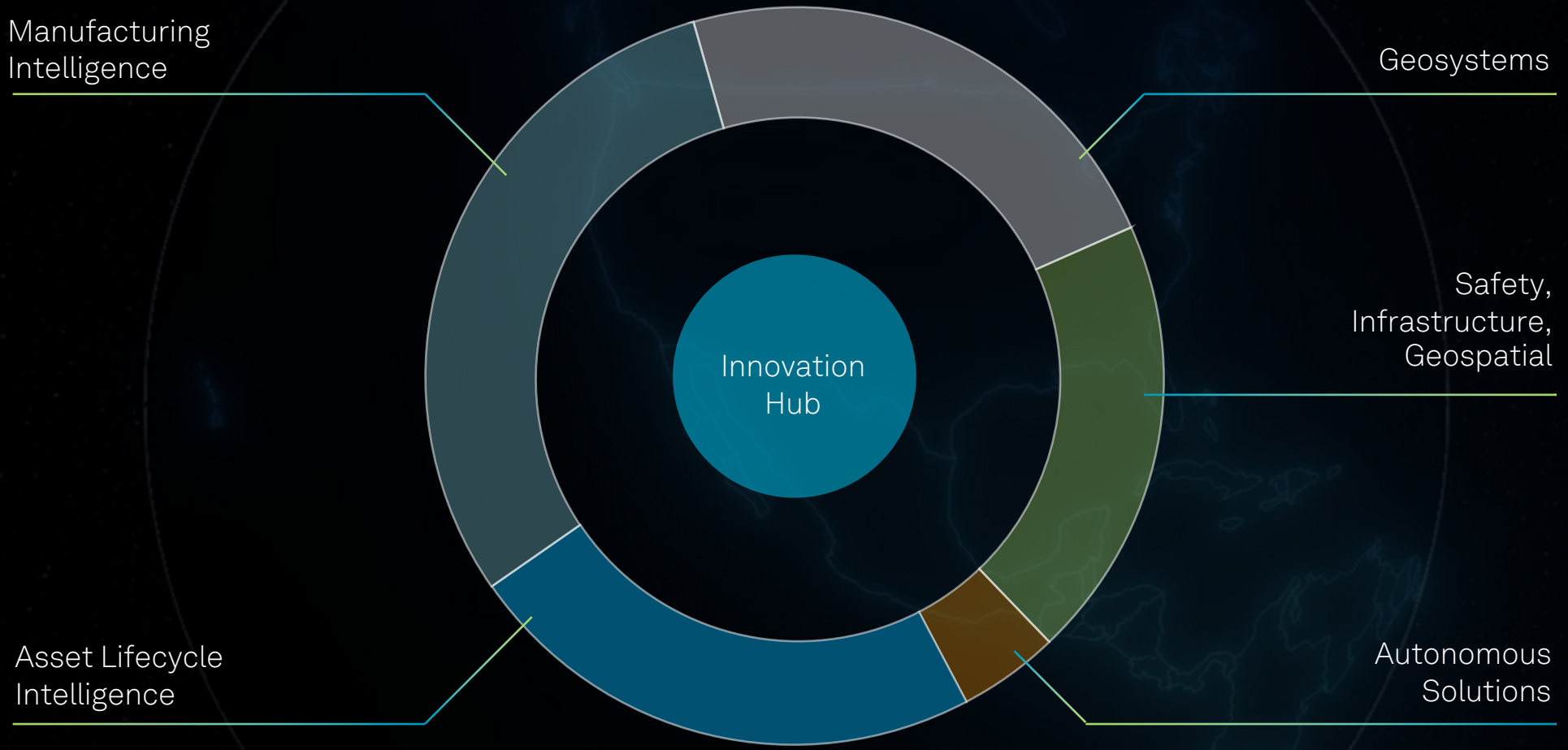
Manufacturing Intelligence
Geosystems
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Autonomous Solutions
Asset Lifecycle Intelligence
Innovation Hub

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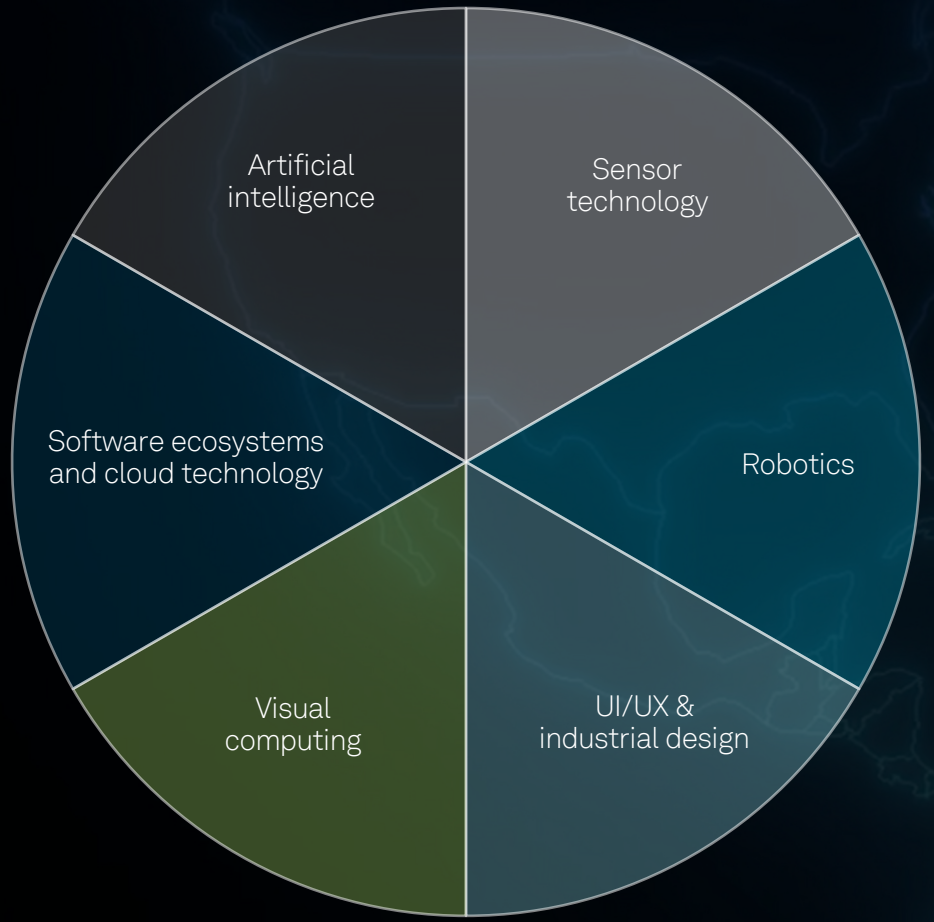
Innovation Hub



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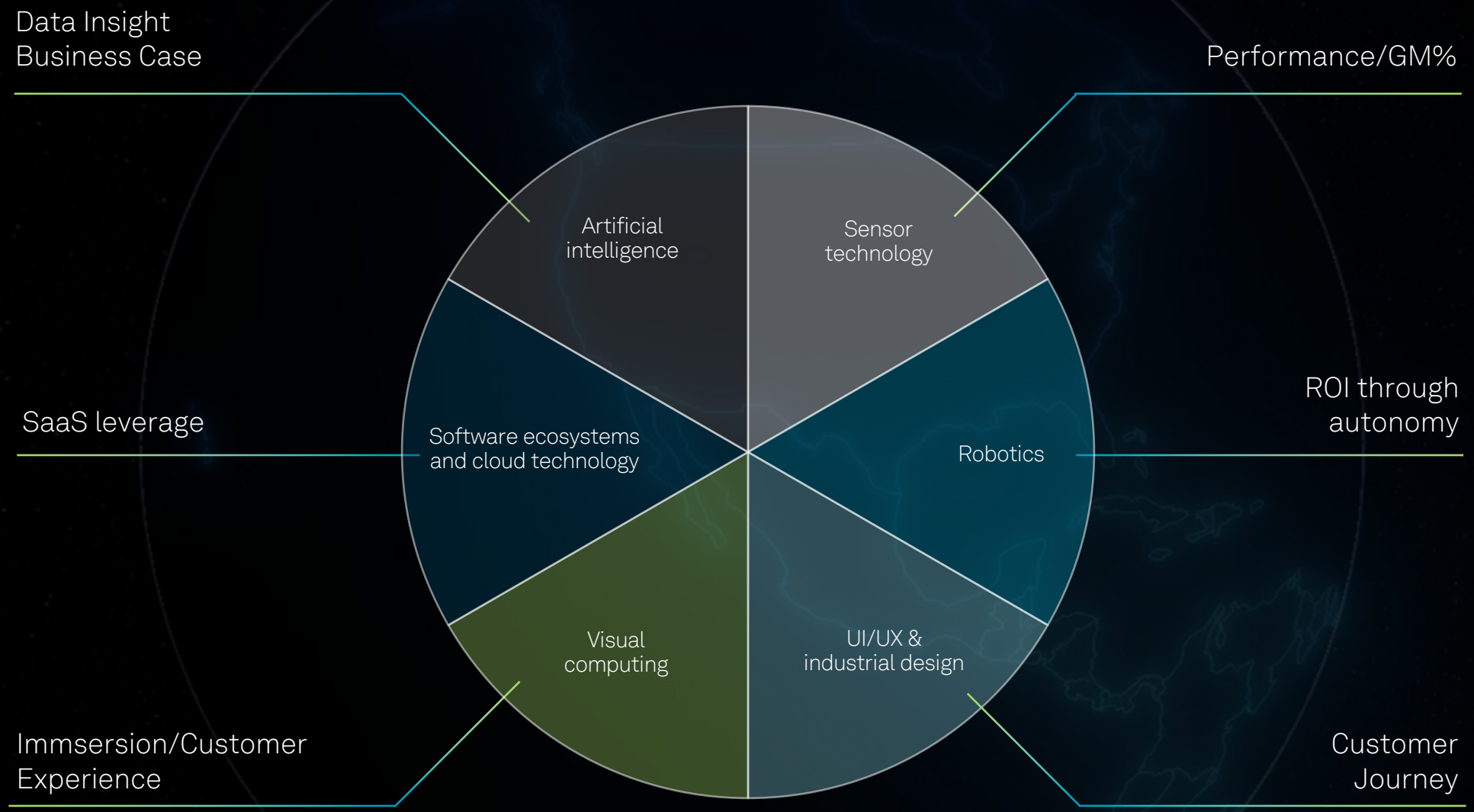
Innovation Hub – Future impact of business



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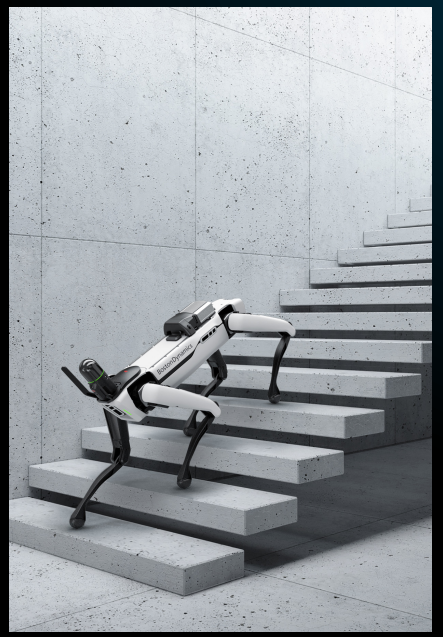
Transform the market

Artificial intelligence

Visual and spatial computing

Industrial metaverse



Robotics

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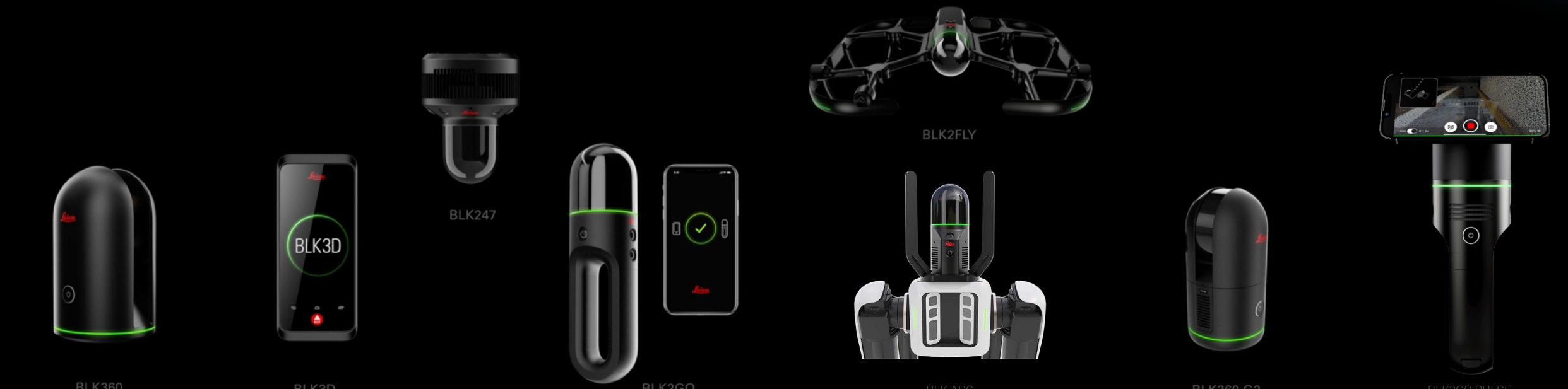
Defy Expectations: Evolution of a market leader



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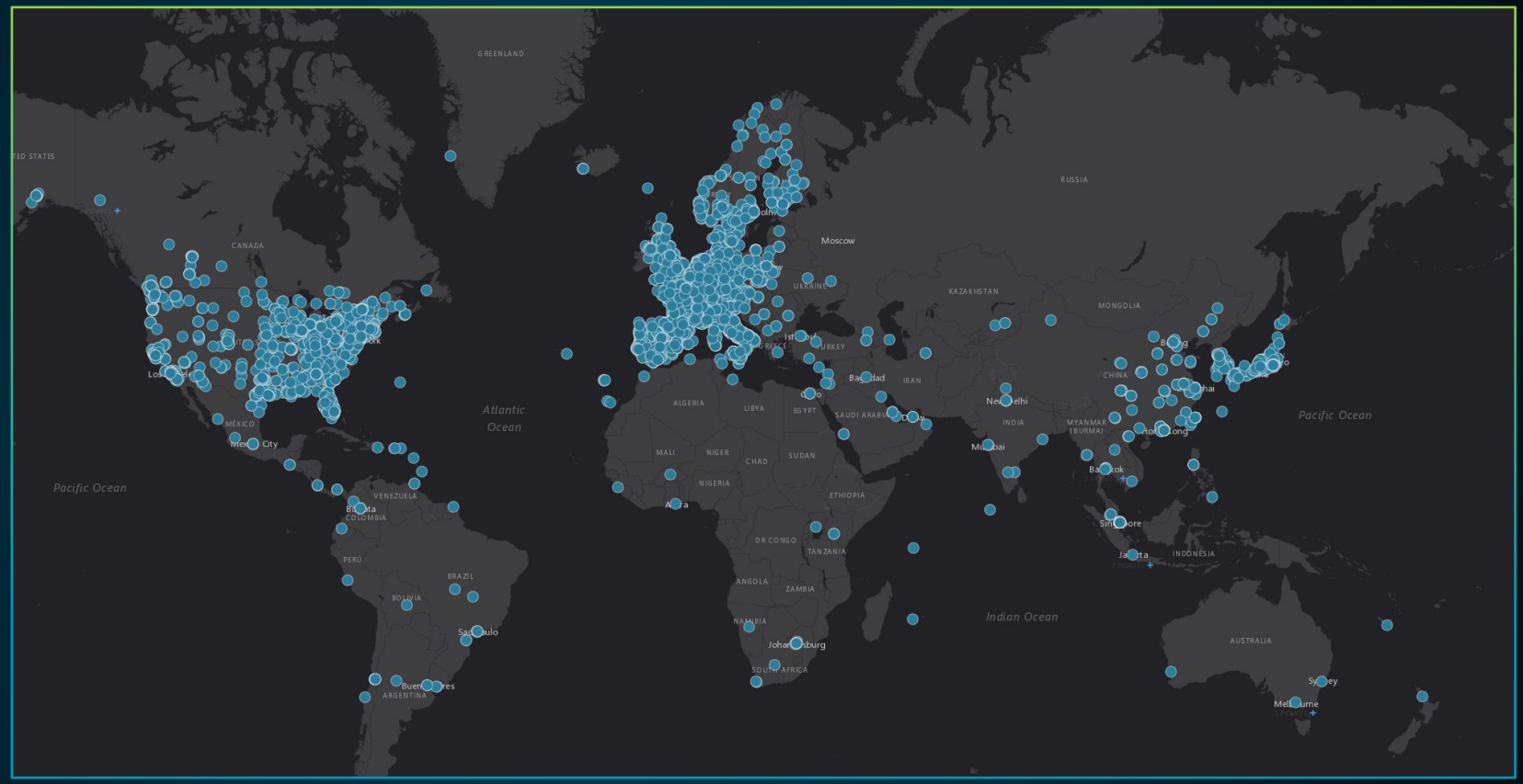
Defy Expectations: BLK transformation metrics

75%
Gross profit

50%+
customers new to Hexagon

Global distribution of products



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R&D Efficiency

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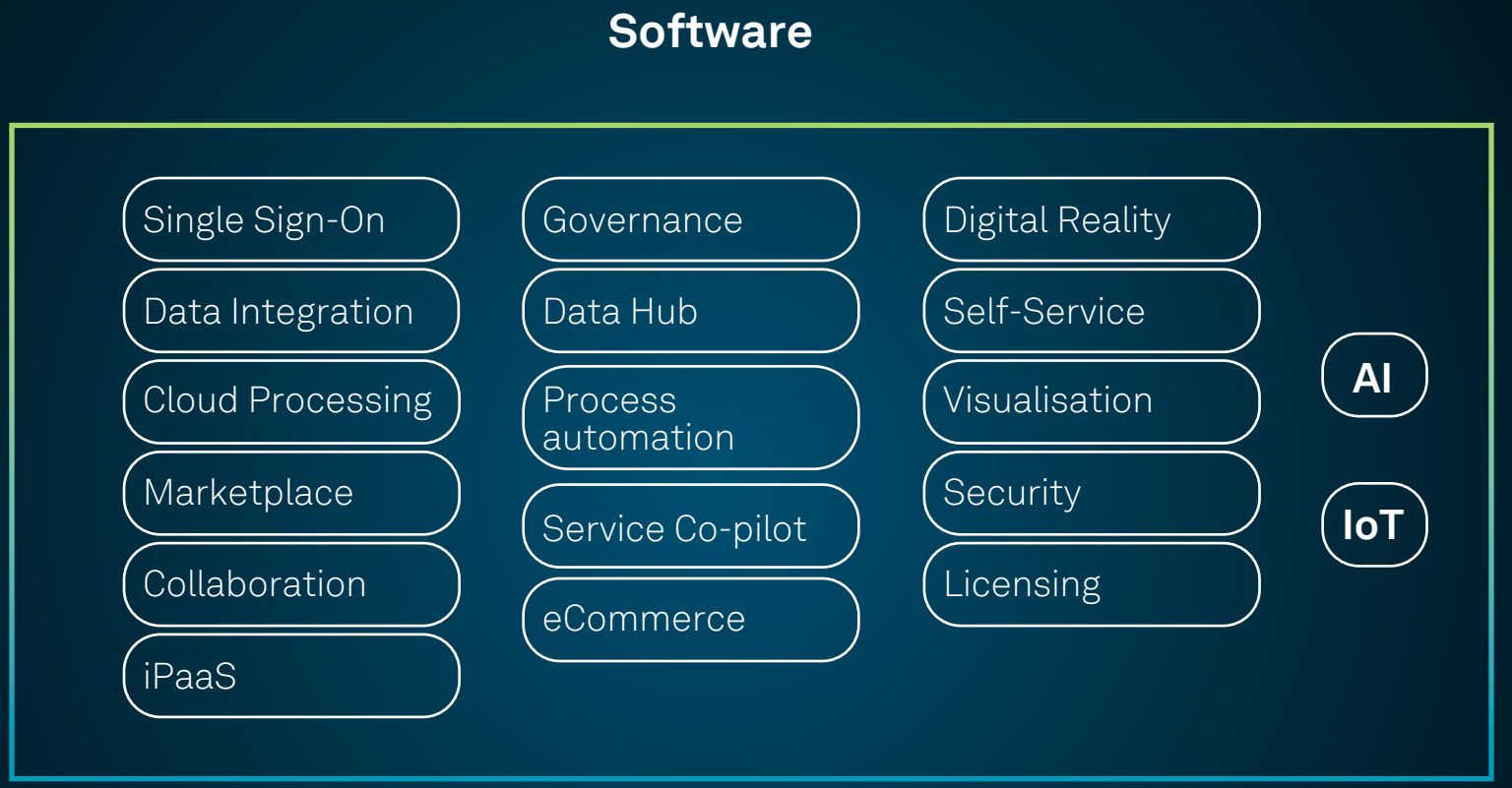
R&D Efficiency

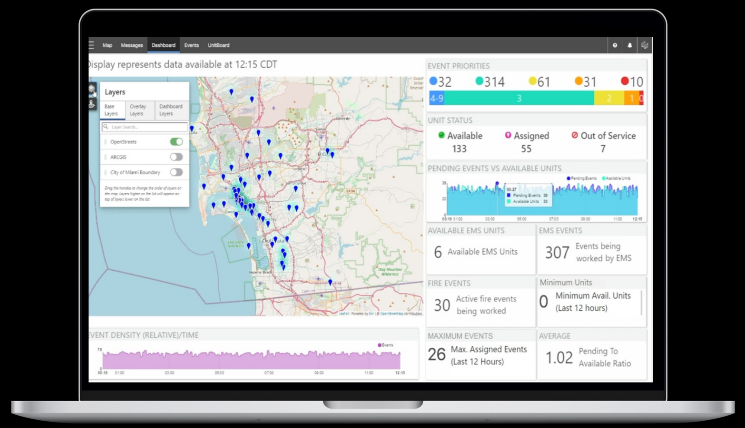


R&D Efficiency: Software Platform

HxDR
DIGITAL REALITY

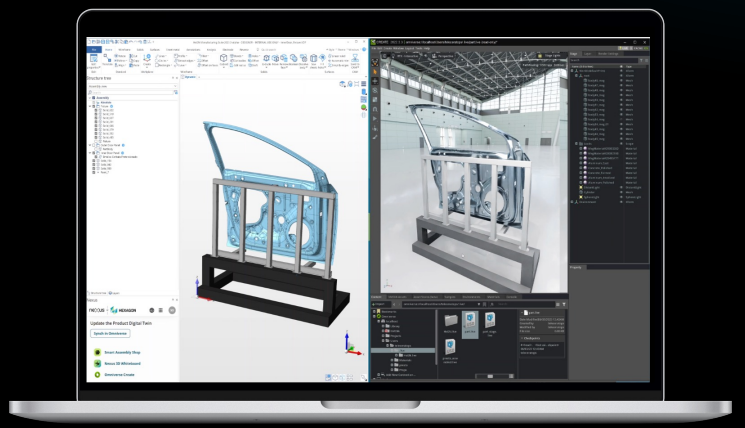
SDx

EAM



OnCall

Power of One



nexus

HEXAGON

nexus BY HEXAGON

COLLABORATION

30,000+
active
Nexus users

CONNECTIVITY

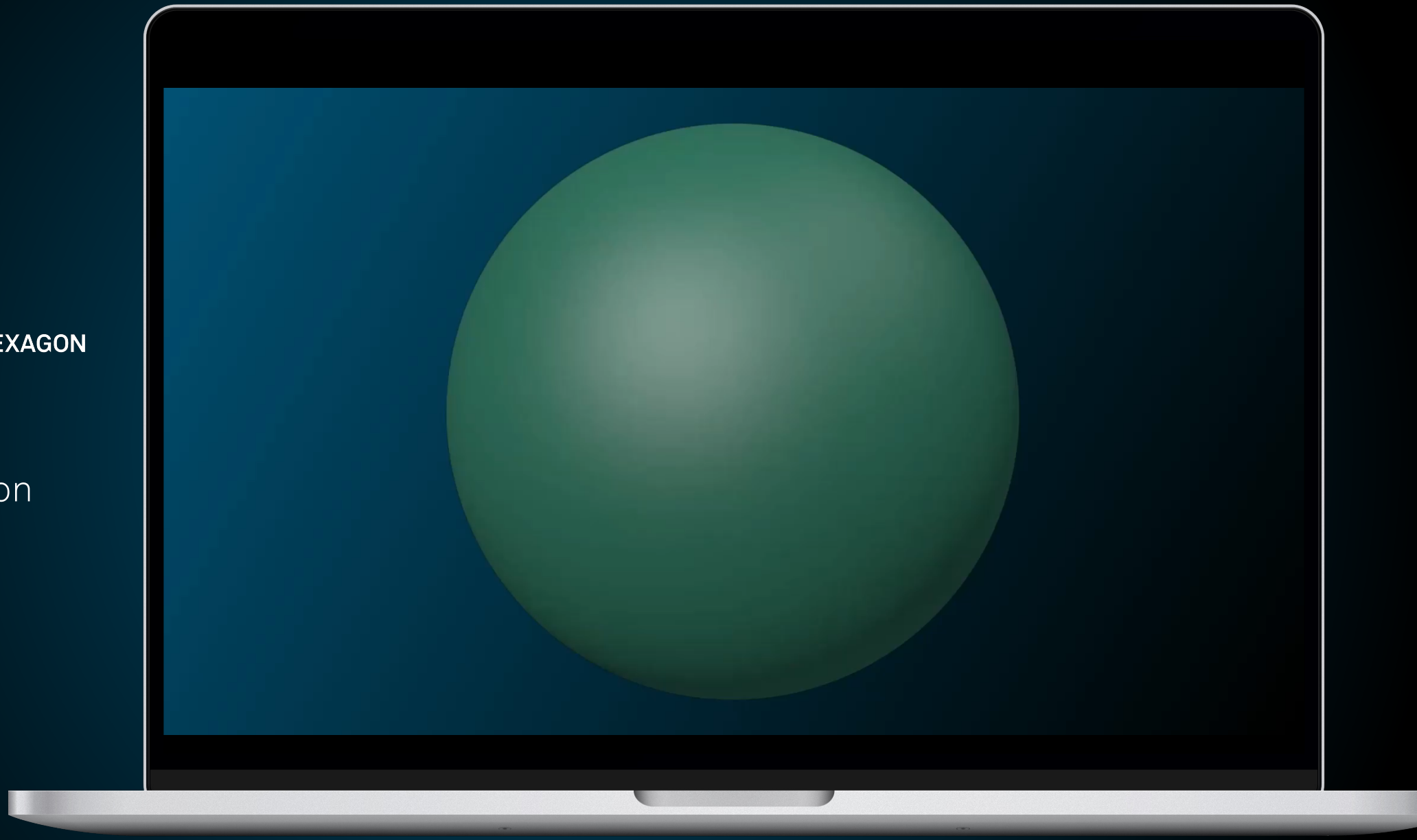
2,000+
IoT devices
managed

DIGITALISATION

146,000+
digital workflows
per month

nexus BY HEXAGON

Enabling
fast innovation



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HxDR
DIGITAL REALITY

Collaboration and visualisation

20,000+
users

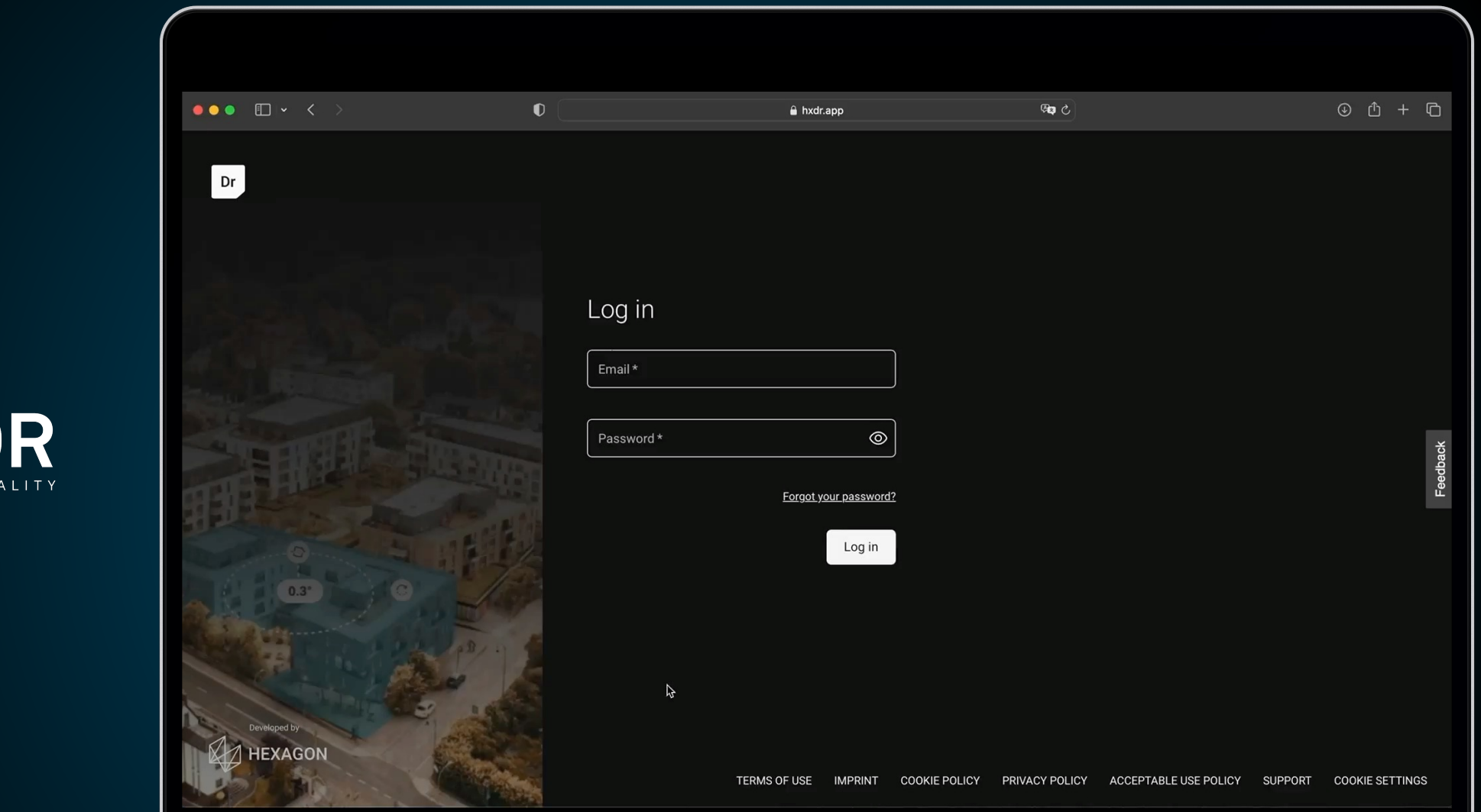
Scalable cloud storage

1600 TB
of data

Automated processing

1 TB
processing daily

HxDR
DIGITAL REALITY



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HxDR
DIGITAL REALITY

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Featured partnerships

Microsoft

aws

SONY

NVIDIA

HEXAGON

HAAS

Hexagon x NVIDIA

Industrial metaverse connected platforms

Reality capture digital twin

USD

USD

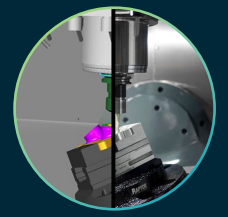
USD

Capture devices & content

nexus

Machine & product digital twins

Real data
Shopfloor & quality



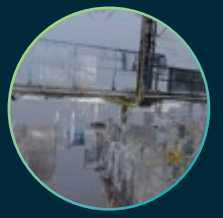
Virtual data
Design & simulation

HxDR

DIGITAL REALITY

Factory & city digital twins

Auto processing



Direct upload to cloud

Visualisation

NVIDIA Omniverse™

Accelerated computing

Generative AI

Physics

RTX

USD

OpenUSD

Partnership in action

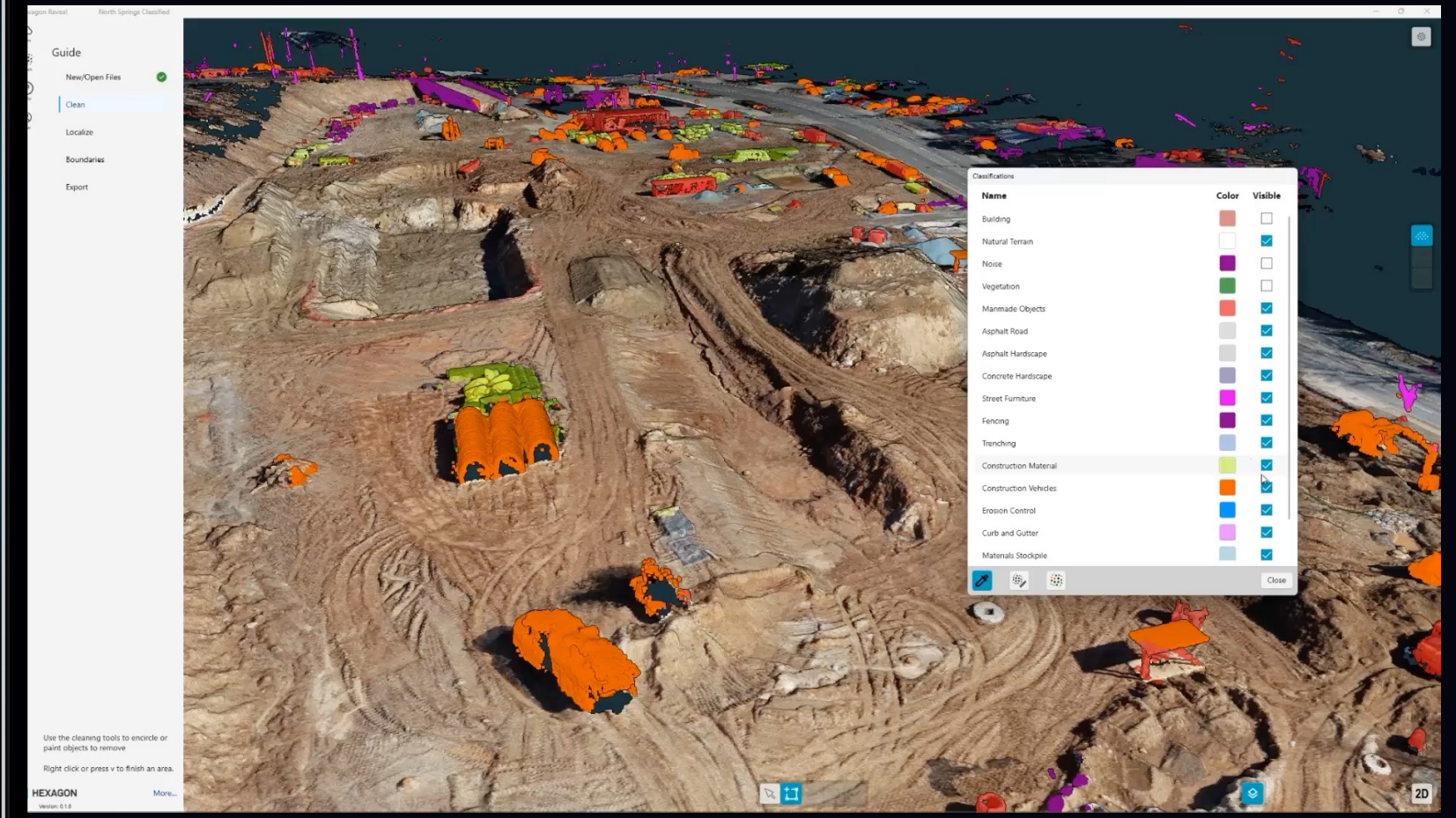
HxDR DIGITAL REALITY

nexus®

NVIDIA Omniverse™

HEXAGON

Industrial metaverse



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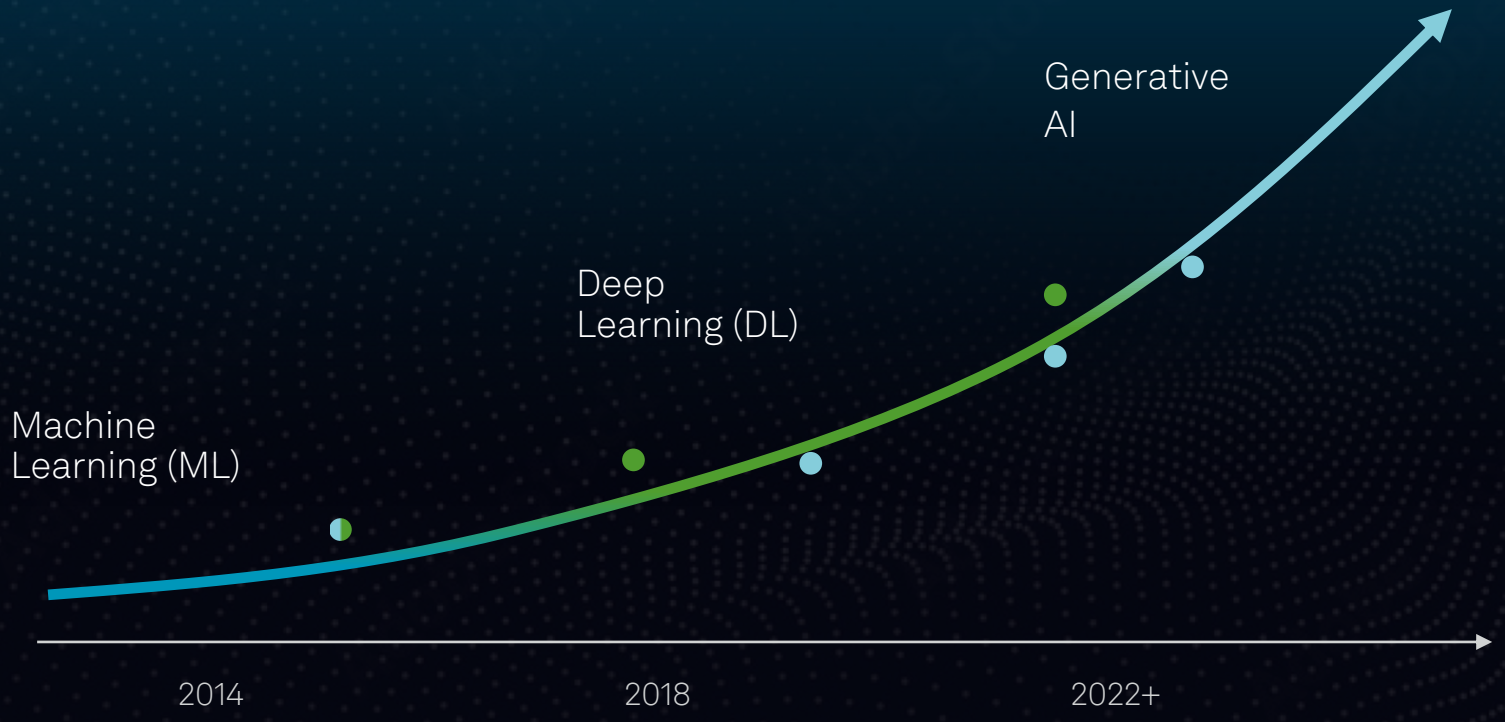
Artificial
Intelligence

Artificial Intelligence journey at Hexagon



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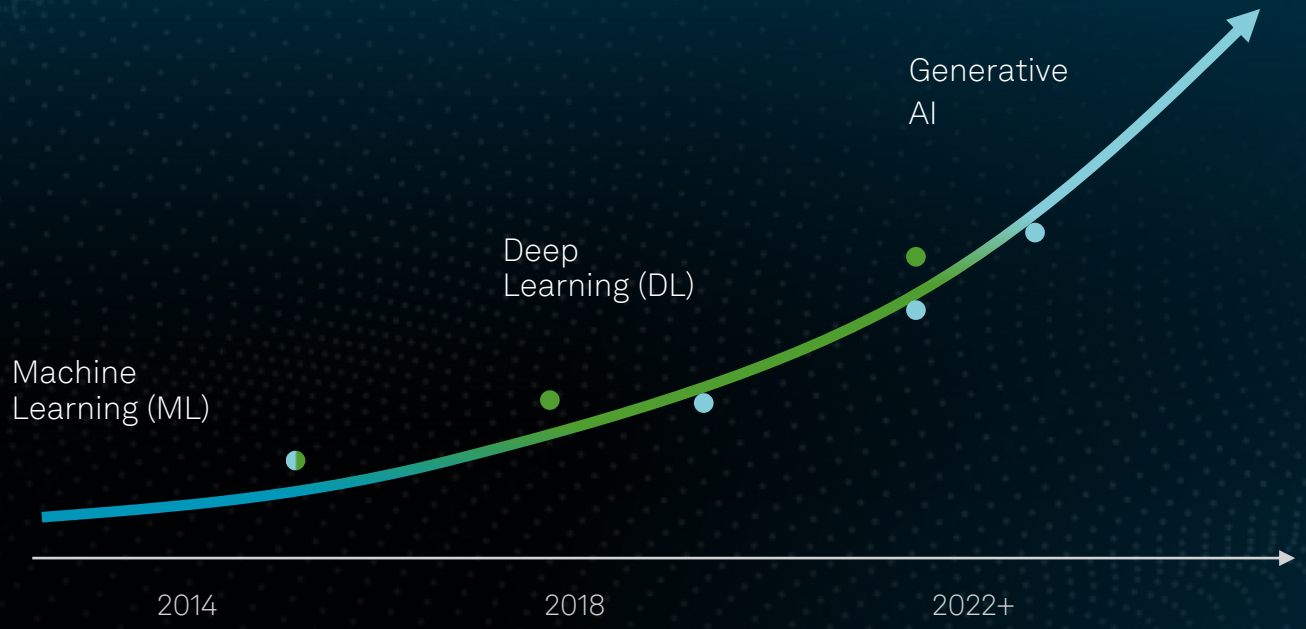
Artificial Intelligence journey at Hexagon



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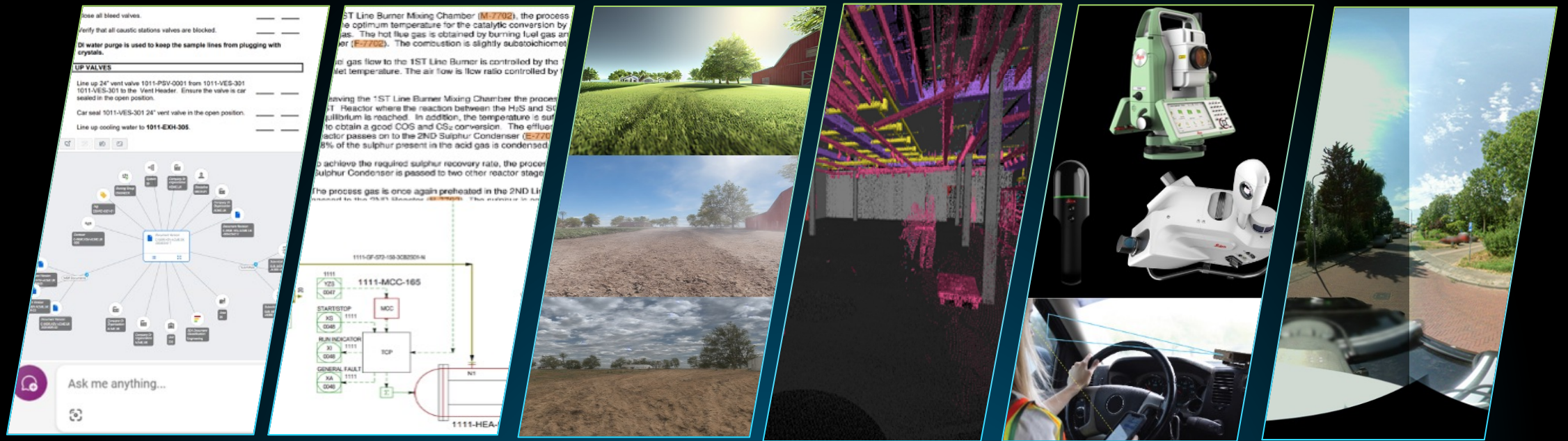
Artificial Intelligence in Hexagon

Domain Specific (Various AI techniques)



CoPilots | Documents | Scenes | Scans | Devices | Sensors

Microsoft NVIDIA aws

Universal Applicability (Generative AI)

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Robotics

Robotics

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R&D strategy

Product innovation

Technology leadership

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