soitec

ENABLING ARTIFICIAL INTELLIGENCE WITH ENGINEERED SUBSTRATES

January 2024

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DISCLAIMER

The Company's business operations and financial position are described in the Company's 2022-2023 Universal Registration Document (which notably includes the 2022-2023 Annual Financial Report) which was filed on June 14, 2023 with the French stock market authority (Autorité des Marchés Financiers, or AMF) under number D.23-0482 as well as in the Company's 2023-2024 half-year report released on November 15, 2023. The French versions of the 2022-2023 Universal Registration Document and of the 2023-2024 half-year report, together with English courtesy translation for information purposes of both documents, are available for consultation on the Company's website (www.soitec.com), in the section Company - Investors - Financial Reports

Your attention is drawn to the risk factors described in Chapter 2.1 (Risk factors and controls mechanism) of the Company's 2022-2023 Universal Registration Document.

This document contains summary information and should be read in conjunction with the 2022-2023 Universal Registration Document and the 2023-2024 half-year report.

This document contains certain forward-looking statements. These forward-looking statements relate to the Company's future prospects, developments and strategy and are based on analyses of earnings forecasts and estimates of amounts not yet determinable. By their nature, forward-looking statements are subject to a variety of risks and uncertainties as they relate to future events and are dependent on circumstances that may or may not materialize in the future. Forward-looking statements are not a guarantee of the Company's future performance. The occurrence of any of the risks described in Chapter 2.1 (Risk factors and controls mechanism) of the 2022-2023 Universal Registration Document may have an impact on these forward-looking statements.In particular, the future consequences of geopolitical conflicts, notably the Ukraine / Russia situation, as well as rising inflation, may result in greater impacts than currently anticipated in these forward-looking statements.

The Company's actual financial position, results and cash flows, as well as the trends in the sector in which the Company operates may differ materially from those contained in this document. Furthermore, even if the Company's financial position, results, cash-flows and the developments in the sector in which the Company operates were to conform to the forward-looking statements contained in this document, such elements cannot be construed as a reliable indication of the Company's future results or developments.

The Company does not undertake any obligation to update or make any correction to any forward-looking statement in order to reflect an event or circumstance that may occur after the date of this document. In addition, the occurrence of any of the risks described in Chapter 2.1 (Risk factors and controls mechanism) of the 2022-2023 Universal Registration Document may have an impact on these forward-looking statements.

This document does not constitute or form part of an offer or a solicitation to purchase, subscribe for, or sell the Company's securities in any country whatsoever. This document, or any part thereof, shall not form the basis of, or be relied upon in connection with, any contract, commitment or investment decision.

Notably, this document does not constitute an offer or solicitation to purchase, subscribe for or to sell securities in the United States. Securities may not be offered or sold in the United States absent registration or an exemption from the registration under the U.S. Securities Act of 1933, as amended (the "Securities Act"). The Company's shares have not been and will not be registered under the Securities Act. Neither the Company nor any other person intends to conduct a public offering of the Company's securities in the United States.

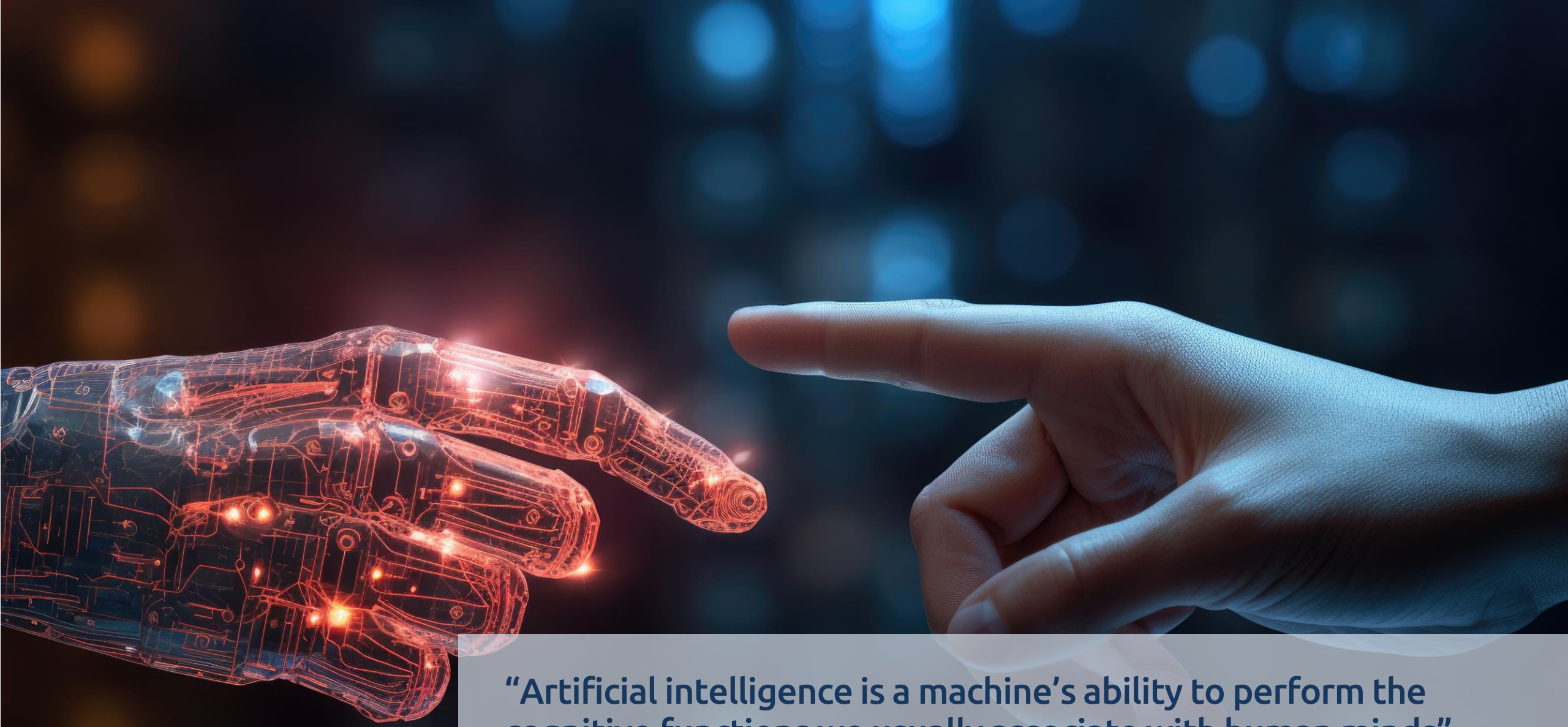
AGENDA

#01
ARTIFICIAL INTELLIGENCE FUNDAMENTALS

#02
ARTIFICIAL INTELLIGENCE ADOPTION ACROSS SOITEC END MARKETS

#03
SOITEC ENGINEERED SUBSTRATES TO ENABLE ARTIFICIAL INTELLIGENCE ADOPTION

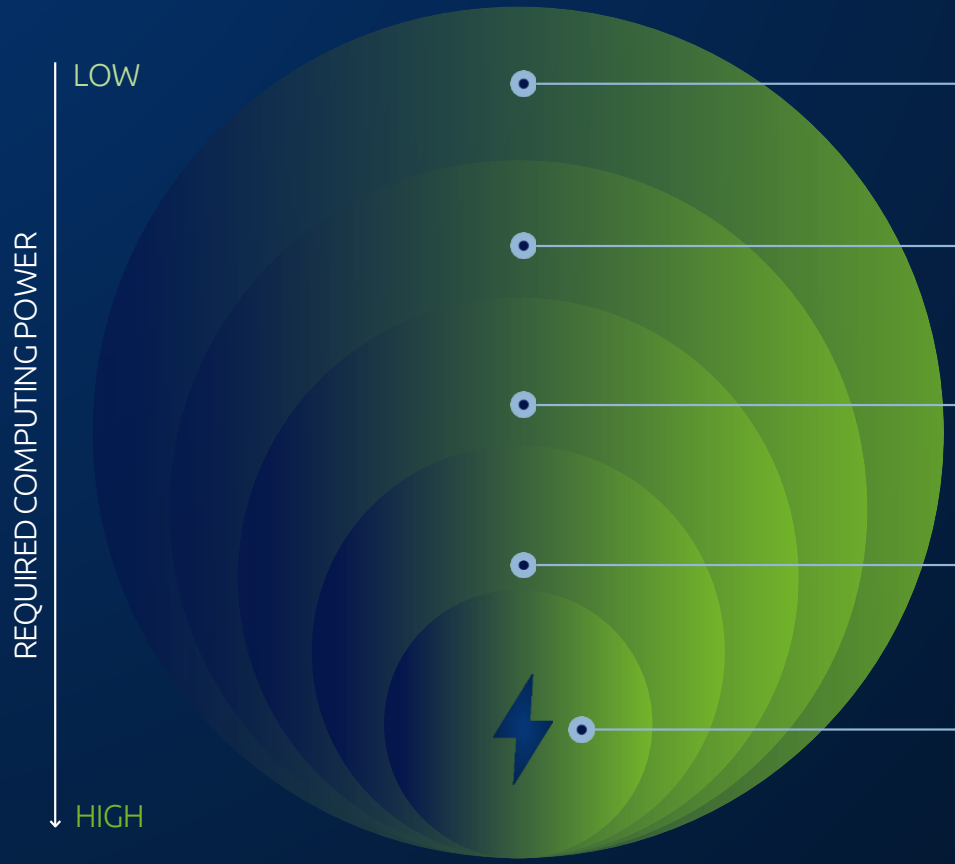
01 AI FUNDAMENTALS



"Artificial intelligence is a machine's ability to perform the cognitive functions we usually associate with human minds"

Source: McKinsey

WHAT IS ARTIFICIAL INTELLIGENCE?



ARTIFICIAL INTELLIGENCE
can 'think', to solve problems autonomously

MACHINE LEARNING
can learn from data to improve and make decisions

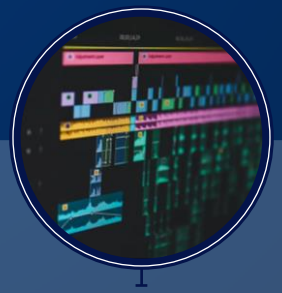
DEEP LEARNING
uses neural networks to reach conclusions with no human intervention

GENERATIVE AI
generates new data or content based on previous data

LARGE LANGUAGE MODEL
understands and generates text in a human-like fashion

Source: Accenture, SCS

ARTIFICIAL INTELLIGENCE IS TRANSFORMING OUR DAILY LIVES



Content Creation

Offering new tools for content creators

Virtual Assistants

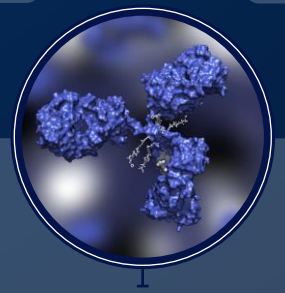
Augmenting productivity in everyday tasks

Climate Research

Helping to combat climate change

Smart Mobility

Driving Automotive Autonomy & Efficiency



Healthcare & Lifesciences

Discovering new drugs & preventive treatments

Wearables & Hearables

Delivering personal aid to overcome disabilities

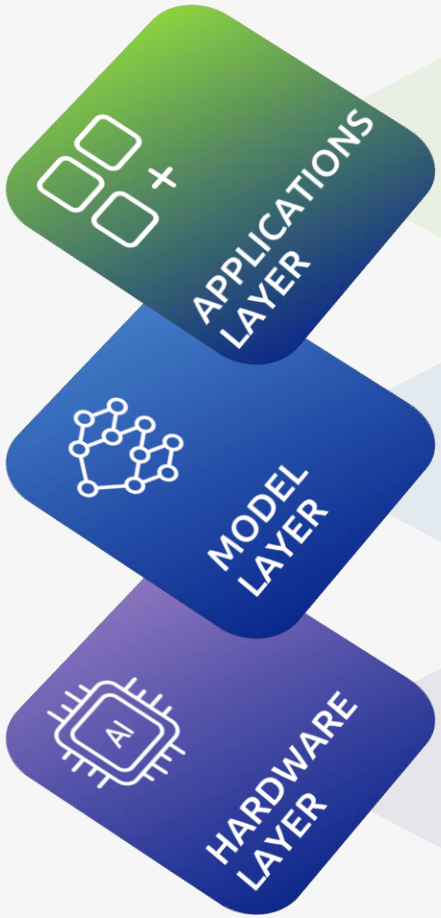
Security & Privacy

Enhancing threat detection & prevention

Industry 4.0

Accelerating automation & efficiency roadmaps

WHAT IS THE INFRASTRUCTURE ENABLING ARTIFICIAL INTELLIGENCE?



APPLICATIONS LAYER

- Architecture & Infrastructure
- Smart assistants
- Image generation
- ADAS/AD
- Smart City
- Voice recognition
- Face recognition
- Real-time sound processing
- Industry 4.0

MODEL LAYER

Large Language Models

General purpose LLM and other models such as ChatGPT, DALL-E replicating human-like thinking and decision-making processes

Domain-Specific Models

AI models trained on specific data to perform tasks with greater precision (enterprise, professional content creation, simulated data, etc.)

HARDWARE LAYER

Cloud AI infrastructure

Hyperscale datacenters and enterprise servers powered by AI accelerators running large models for highly complex tasks

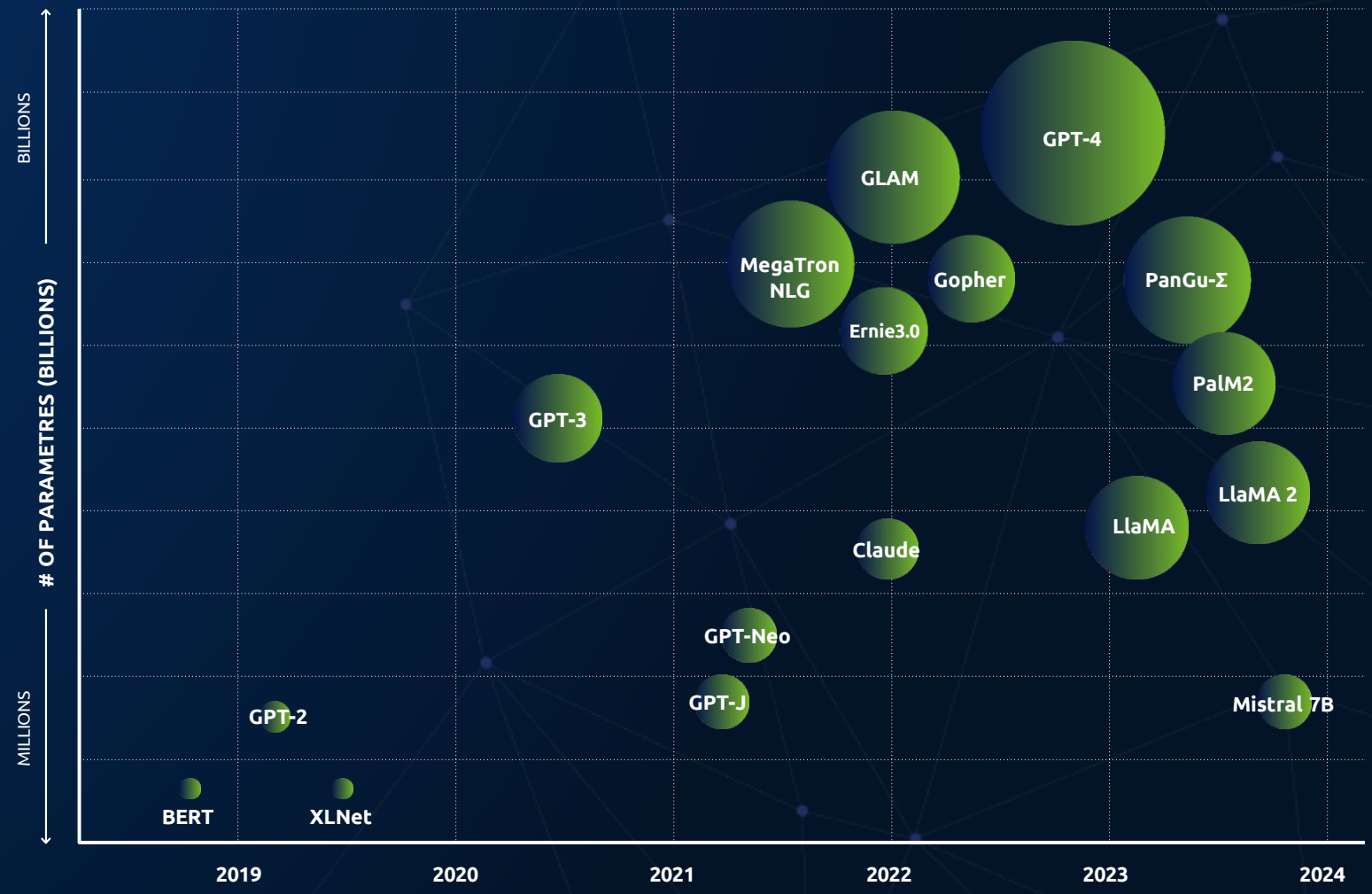
On-device Edge AI

Edge AI chips running optimized AI models at low power for lower complexity tasks

Source: Qualcomm, Red Hat

LARGE LANGUAGE MODELS TIMELINE & SIZE

EXPONENTIAL GROWTH OF LLM PARAMETERS ENABLES BREAKTHROUGH AI APPLICATIONS



= 50B parameters

Source: publicly available data

ARTIFICIAL INTELLIGENCE
EXPONENTIAL GROWTH IN COMPUTING POWER

AI ACCELERATION BEYOND 2022

$10-15T
POTENTIAL VALUE AT STAKE ARTIFICIAL INTELLIGENCE
~$10-15 TRILLION

10x
DEVICES RUNNING AI IN 2030
21B IN 2030 vs 1.8B TODAY

1.8B
CHATGPT VISITORS IN APRIL 2023


Healthcare diagnostic

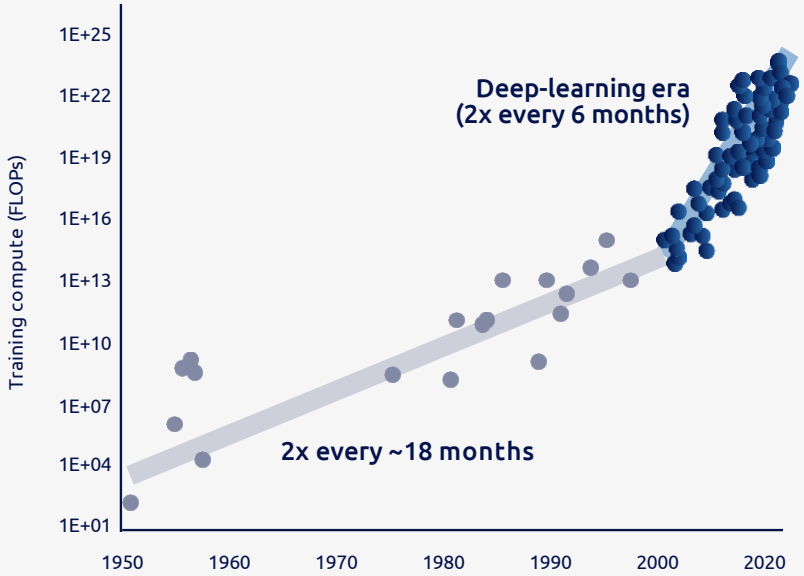

Autonomous driving


Industry 4.0


Digital creation

Source: McKinsey 2022, Transforma Insights, OpenAI

Acceleration of Computing Power Beyond Moore's Law



Source: Cornell University (Sevilla et al)

ENERGY EFFICIENCY SOLUTIONS
MANDATORY TO SATISFY GLOBAL ELECTRICITY DEMAND

GLOBAL ELECTRICITY DEMAND TO NEARLY DOUBLE BY 2050

- **~x2** — GLOBAL ELECTRICITY DEMAND FROM 2021 TO 2050
- **x2.5** — SHARE OF ELECTRICITY IN ENERGY CONSUMPTION FROM 2023 TO 2050
- **x10** — EV ELECTRICITY CONSUMPTION FROM 2022 TO 2030

Industrial applications

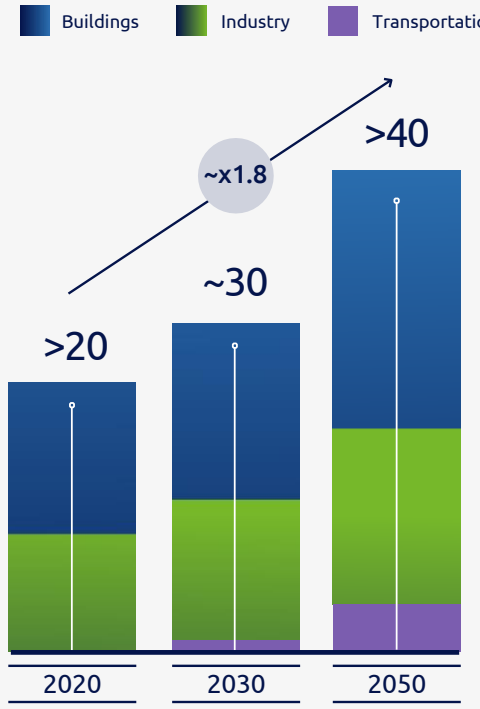
Datacenters

Smart Cities

EV charging infrastructure

Global electricity demand requires energy saving solutions

ELECTRICITY DEMAND IN TWH (STEPS[1] IEA SCENARIO)



Source: IEA World Energy Outlook 2022

(1) The Stated Policies Scenario reflects existing policies and measures, as well as firm policy ambitions and objectives that have been legislated by governments around the world

DATACENTRES

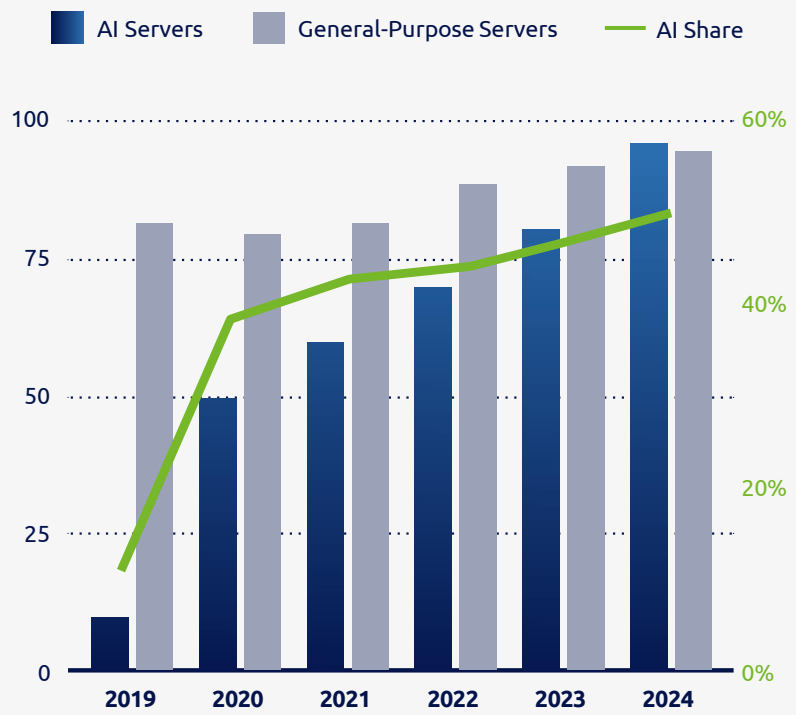
AI SERVER REVENUE SET TO OVERTAKE GENERAL-PURPOSE SERVERS

HIGH SPEED / LOW LATENCY

COMPUTING POWER

ENERGY CONSUMPTION

TOP LINE SERVER REVENUE (IN B$)



Source: IDC, Applied Materials 2021, NVIDIA, Yole server processors forecast, Soitec estimates

ARTIFICIAL INTELLIGENCE
WHY EDGE COMPUTING

FUTURE

ADDING ON-DEVICE COMPUTING

PHOTONICS AI TRAINING
IN-MEMORY COMPUTE AT THE EDGE

NOW

ADDING EDGE COMPUTING

AI TRAINING IN THE CLOUD
INFERENCE AT THE EDGE

BEFORE

CLOUD COMPUTING ONLY

AI TRAINING IN THE CLOUD
INFERENCE IN THE CLOUD

INTELLIGENCE AT THE EDGE

Virtualization

- High brightness/Fast response display
- High speed connectivity (5G)
- High power computing (SoC + GPU)
- 2D/3D sensor

AIoT

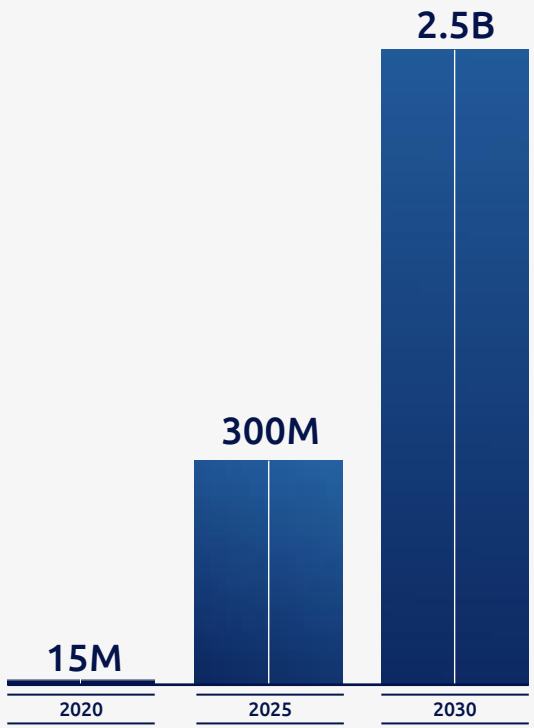
- New human-machine interface
- 2D/3D sensor
- Wide range connectivity (UWB, LPWAN)
- Mid-power computing (MCU/SoC with AI)

IoT

- 2D sensor
- Home range connectivity (Wi-Fi/Bluetooth)
- Low power computing (MCU)
- Ensures privacy

2020 >2025

PROLIFERATION OF EDGE AI DEVICES (UNITS)



Source: ABI research 2021

02

AI ADOPTION ACROSS SOITEC END MARKETS

MOBILE COMMUNICATIONS
EDGE AI SMARTPHONES

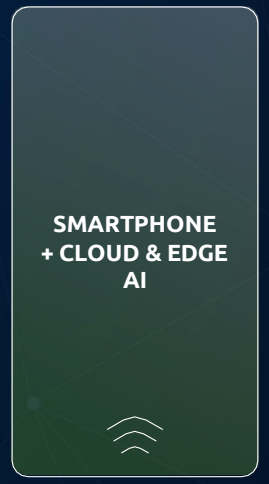
4G & 5G

CURRENT APPLICATIONS
- Computational photography
- Mobile gaming
- Voice assistant

CLOUD AI LIMITATIONS
- Latency
- Need for a reliable connection
- Privacy risk
- High power consumption in datacenters

TODAY

5G &
5G Advanced
+ mmWave



FUTURE APPLICATIONS

- Advanced computational photography
- Desktop-level gaming on smartphone
- Augmented virtual companion
- Real-time language translation
- On-device text and image generation

BENEFITS OF EDGE AI

- Zero latency
- No connection required
- Privacy secured
- Low power consumption

TOMORROW

Source: Qualcomm

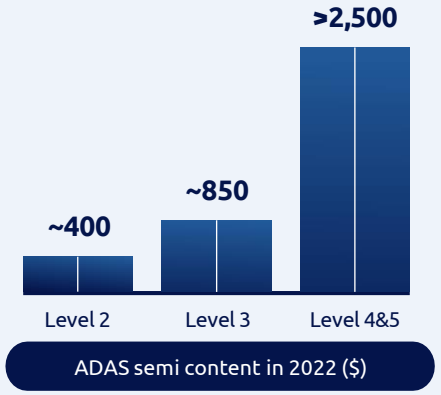
AUTOMOTIVE & INDUSTRIAL
AI TRANSFORMING THE AUTOMOTIVE BEYOND AUTONOMOUS DRIVING

ADVANCED DRIVER ASSISTANCE & AUTONOMOUS DRIVING SYSTEMS (ADAS/AD)

Advancing automation features from ADAS to AD and improving functional safety

AI APPLICATIONS
- Object recognition
- Pedestrian detection
- Traffic sign detection
- Lane-crossing detection
- Speed limitation

DATA COLLECTION, COMMUNICATION, COMPUTATION
- Front, Rear, Edge & imaging radars
- MCU / MPU
- LiDARs
- Zonal Edge computing
- Airbag / Braking system



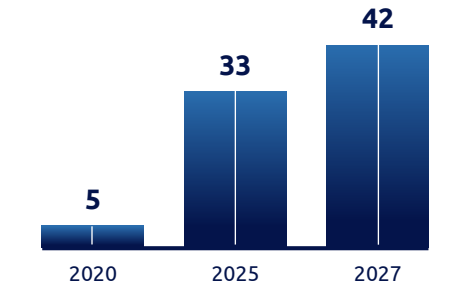
ADAS semi content in 2022 ($)

ENHANCED IN-VEHICLE EXPERIENCE

The car increasingly becoming a connected hub with in-cabin sensing and computing

AI APPLICATIONS
- Eye-tracking
- Behavior monitoring
- Voice recognition
- Virtual assistance

DATA COLLECTION, COMMUNICATION, COMPUTATION
- In-vehicle Sensors & Actuators
- Cameras
- Vehicle Networking
- Multimedia application processor
- Class D audio amplifier



Driver monitoring system shipments (M units)

Source: Yole, UBS

AUTOMOTIVE & INDUSTRIAL
ACCELERATING JOURNEY TO INDUSTRY 4.0

AI POWERED MANUFACTURING WITH EDGE AI SOLUTIONS

Improving product quality and yield with intelligent, secure and adaptable manufacturing operations

- 30% — **YIELD IMPROVEMENT**
- 15% — **WASTE REDUCTION**
- 10% — **LOWER OPERATING COSTS**

AI Scheduling Agents
Optimize complex manufacturing lines

Product Performance Optimization
Accelerate design test via performance prediction

AI-augmented root cause analysis
Speed up root-cause analysis

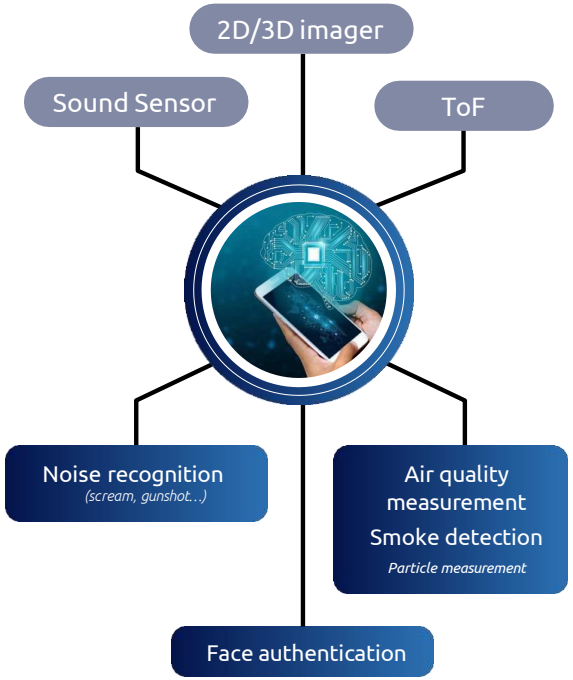
AI-enabled Product system design
Reduce engineering time and accelerate go to production

Knowledge Discovery
Identify the most relevant data within seconds

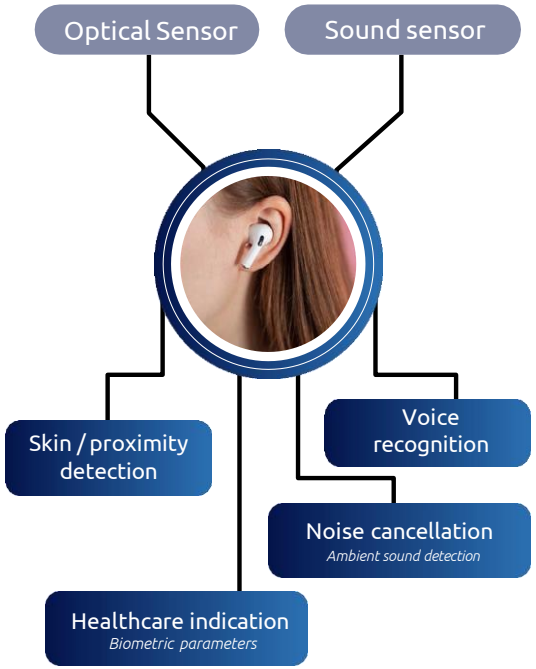
Source: McKinsey, IBM

SMART DEVICES
FROM THE EDGE TO THE ENDPOINT, AI ENHANCING MULTIPLE USE CASES

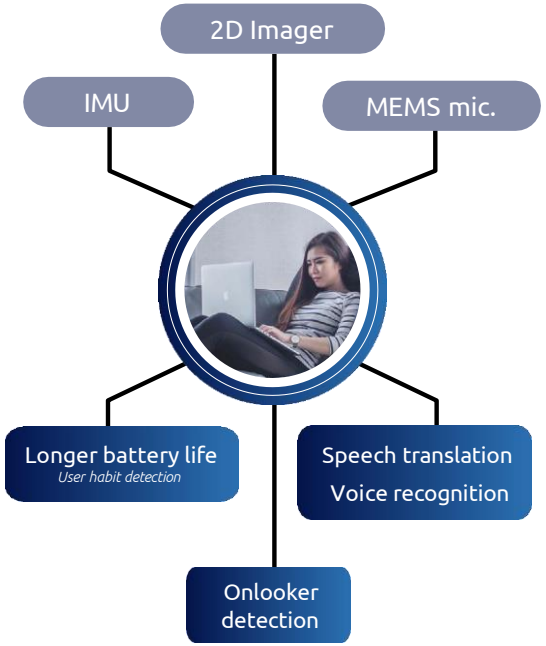
SMARTPHONE



WEARABLES / HEARABLES



LAPTOP



WHITE GOODS

AI AT THE EDGE ENABLING

Lower latency | Power saving | Enhanced user experience | Greater privacy

Source: STMicroelectronics, Soitec internal data

SMART DEVICES
BRIDGING CLOUD TO THE EDGE

SOITEC COMPUTING

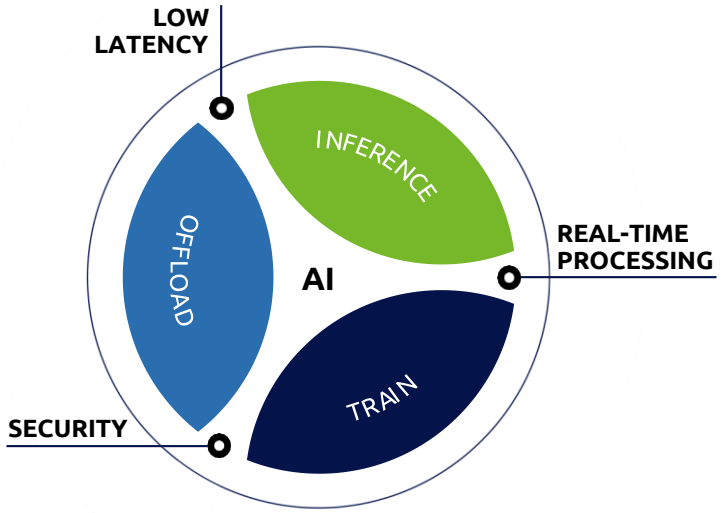
EDGE COMPONENTS

- CONTROLLER
- GPON ROUTER
- SENSOR

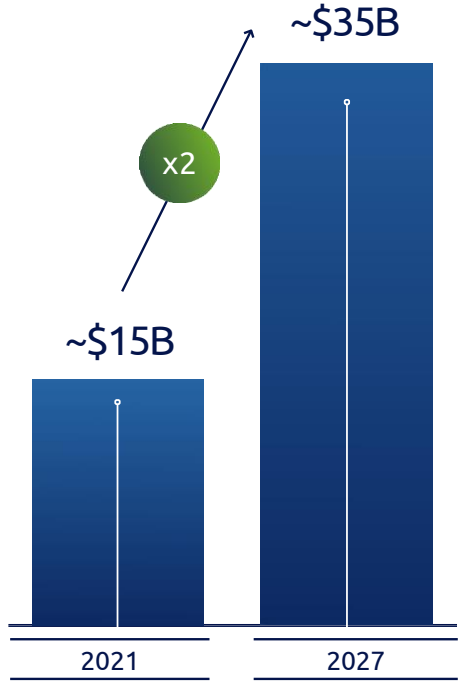
CLOUD COMPONENTS

- INTERCONNECT
- NETWORK SWITCH
- GATEWAY

WHERE SOITEC MEETS AI



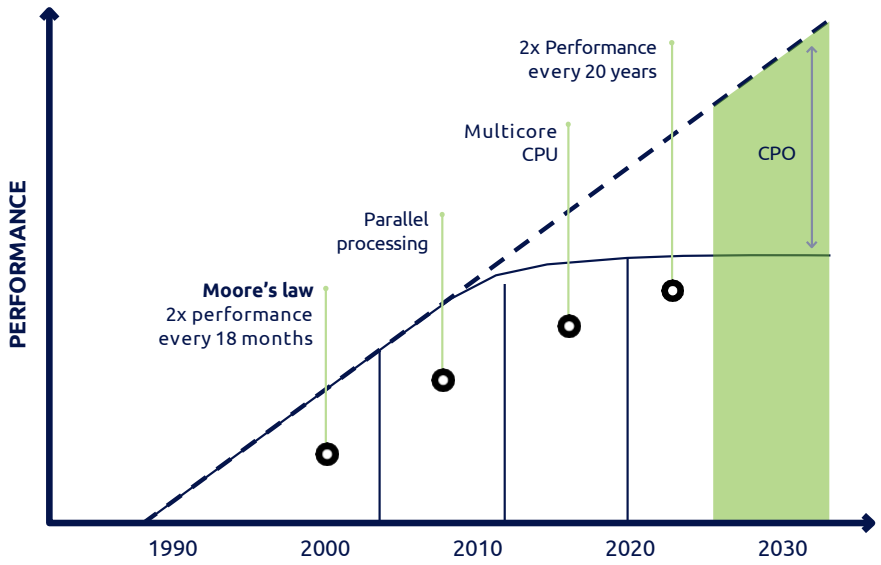
EDGE AI CHIPSET MARKET SET TO DOUBLE THROUGH 2027



Source: ABI 2022

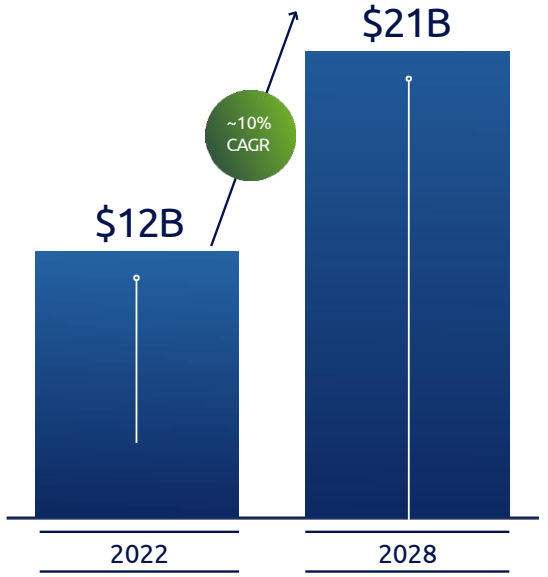
SMART DEVICES
CLOUD INFRASTRUCTURE

CO-PACKAGED OPTICS (CPO) AS A MEANS TO boost Cloud AI Connectivity



Source: Broadcom

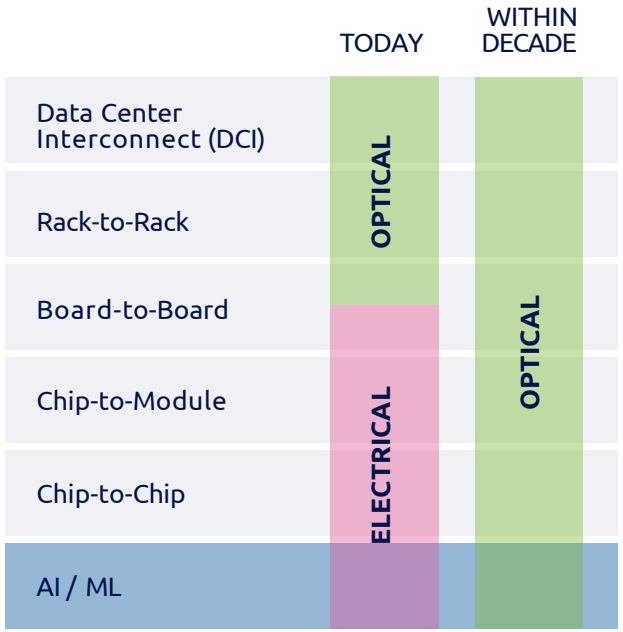
OPTICAL TRANSCEIVER MARKET GROWING ~10% CAGR OVER 2022-2028



Source: Yole

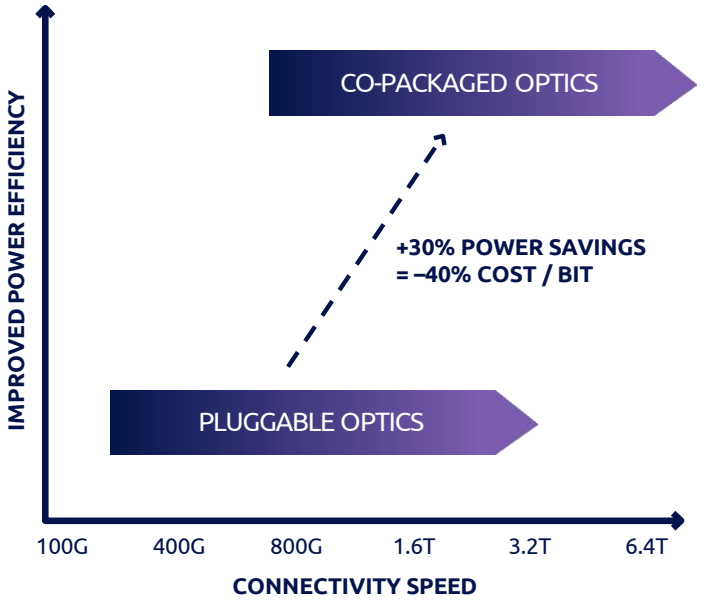
SMART DEVICES
AI / ML ENABLEMENT AS A NETWORK SOLUTION

CURRENT AI / ML INFRASTRUCTURE IS BANDWIDTH x DISTANCE LIMITED

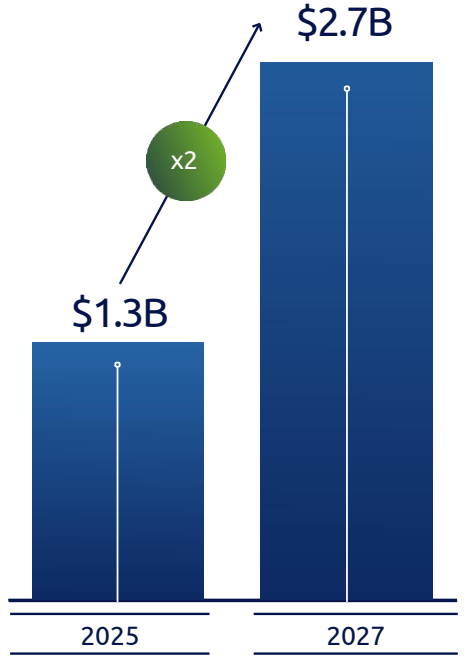


Source: Yole & Soitec

FUTURE AI / ML INFRASTRUCTURE AS A MULTI-LAYERED NETWORK



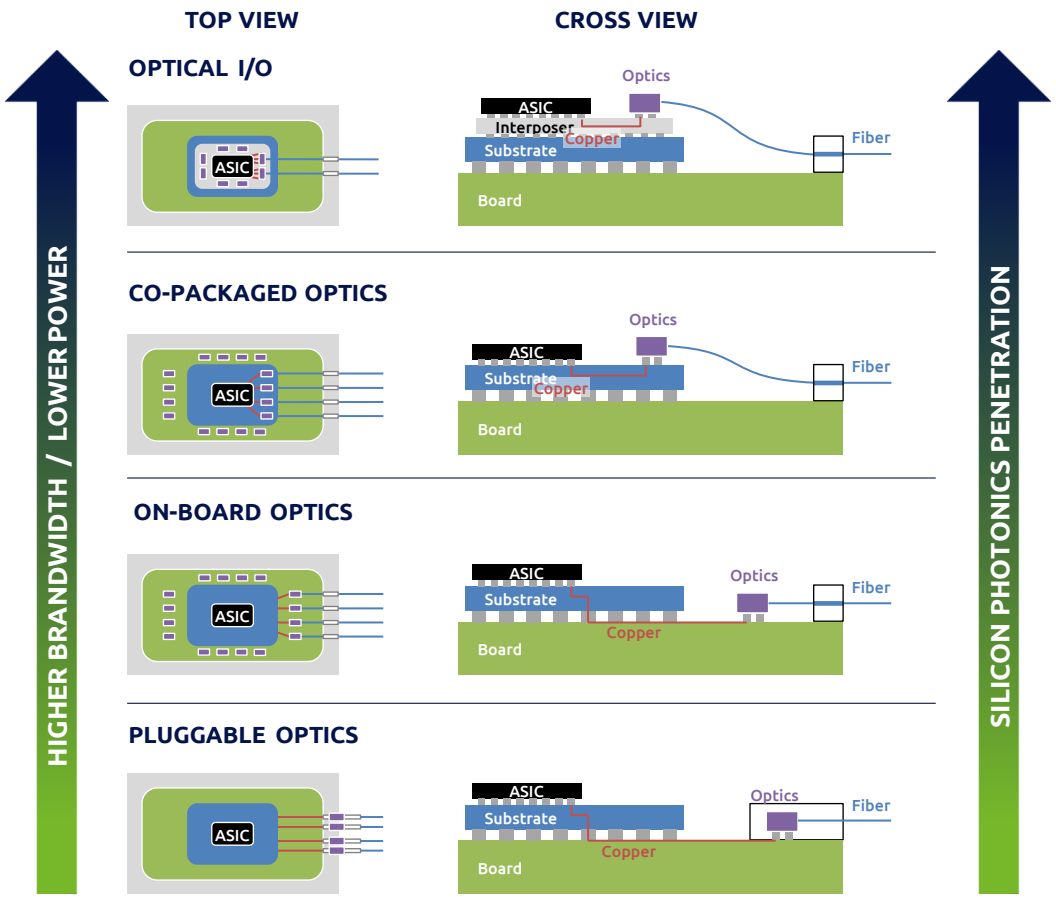
CPO MARKET TO DOUBLE OVER 2025-2027



Source: ResearchandMarkets

OPTICAL I/O FOR GPU INTERCONNECTS

LOWER LATENCY AND 30% REDUCTION IN ENERGY CONSUMPTION



EMPOWERING AI ACCELERATION WITH OPTICAL I/O GPU INTERCONNECTS

ENHANCED BANDWIDTH

Enable improved bandwidth capabilities, for rapid and efficient data transfer between CPUs and GPUs in AI workloads

IMPROVED ENERGY CONSUMPTION

Enhance faster data transfer with lower power consumption, allowing for more computational work with reduced energy usage

REAL-TIME PROCESSING

Ensuring swift communication between the CPU and GPU, crucial for real-time AI processing

SCALABILITY

Allowing systems to easily accommodate increased computational demands in AI

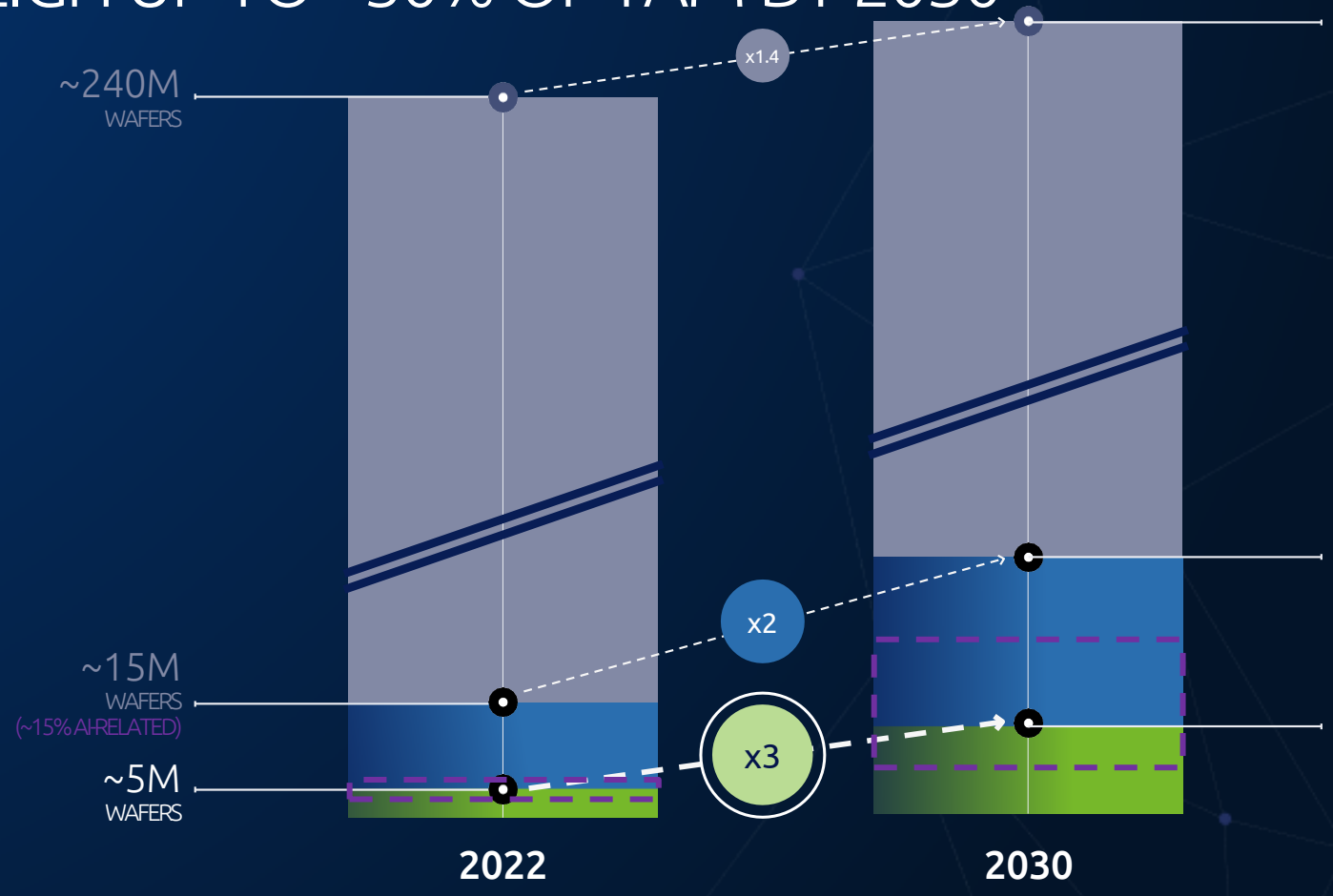
OPTIMIZED PARALLELISM

Essential in scenarios where multiple AI models or different types of computations run concurrently

03

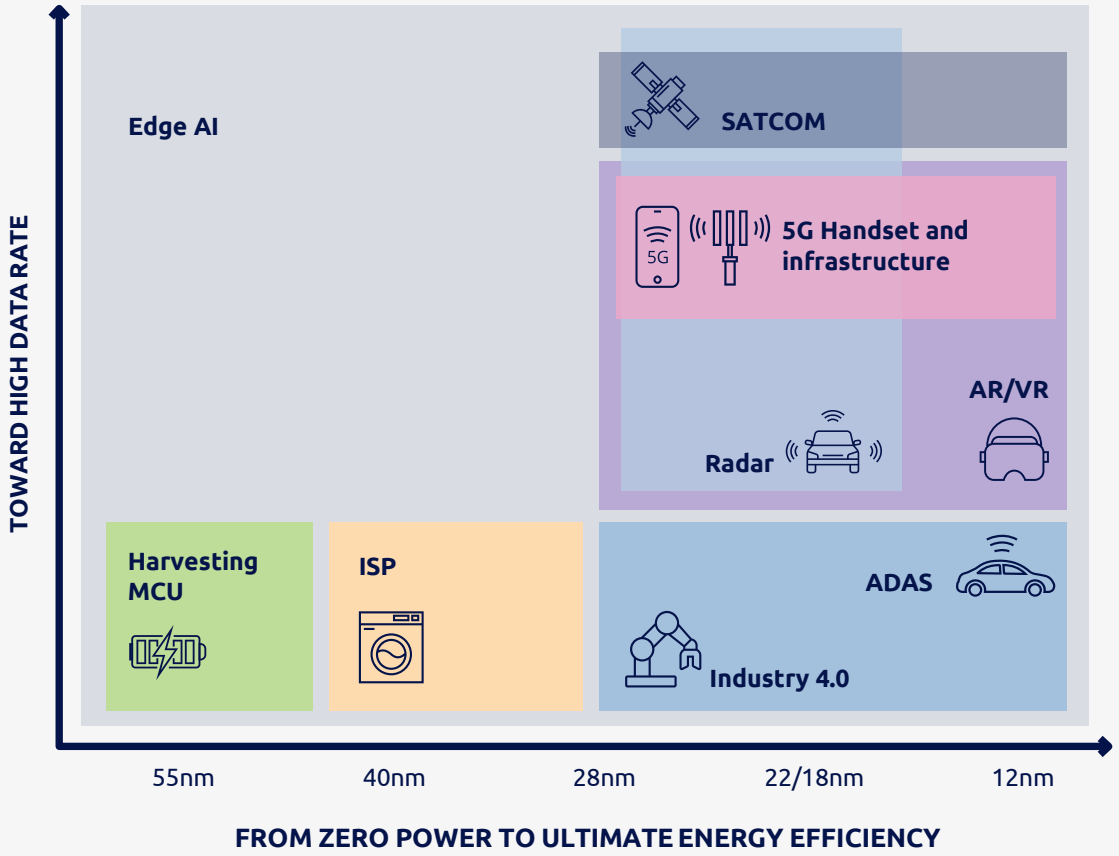
ENGINEERED SUBSTRATES TO ENABLE AI ADOPTION

SOITEC ADDRESSABLE MARKET TO TRIPLE BY 2030
AI TO WEIGH UP TO ~50% OF TAM BY 2030



Source: Yole, SEMI, Soitec estimates
Box sizes for illustration purposes

FD-SOI
MARKET SEGMENTATION



FD-SOI IS THE ANSWER FOR APPLICATIONS REQUIRING

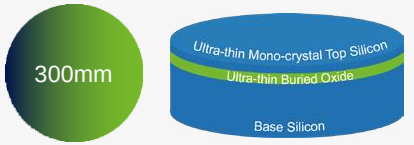
- **Performance-on-demand**
- **Battery-powered**
- **Integrated RF**
- **Embedded NVM memories**

3 MARKET DRIVERS

- **AI MCUs**
- **5G**
- **Automotive**

FD-SOI Edge AI inference hardware will support all those segments

AUTOMOTIVE & INDUSTRIAL PRODUCT PORTFOLIO
AUTO FD-SOI



AUTO FD-SOI EMPOWERS THE FUTURE OF AUTOMOTIVE AND INDUSTRIAL SMART DEVICES


ADAS


Radars

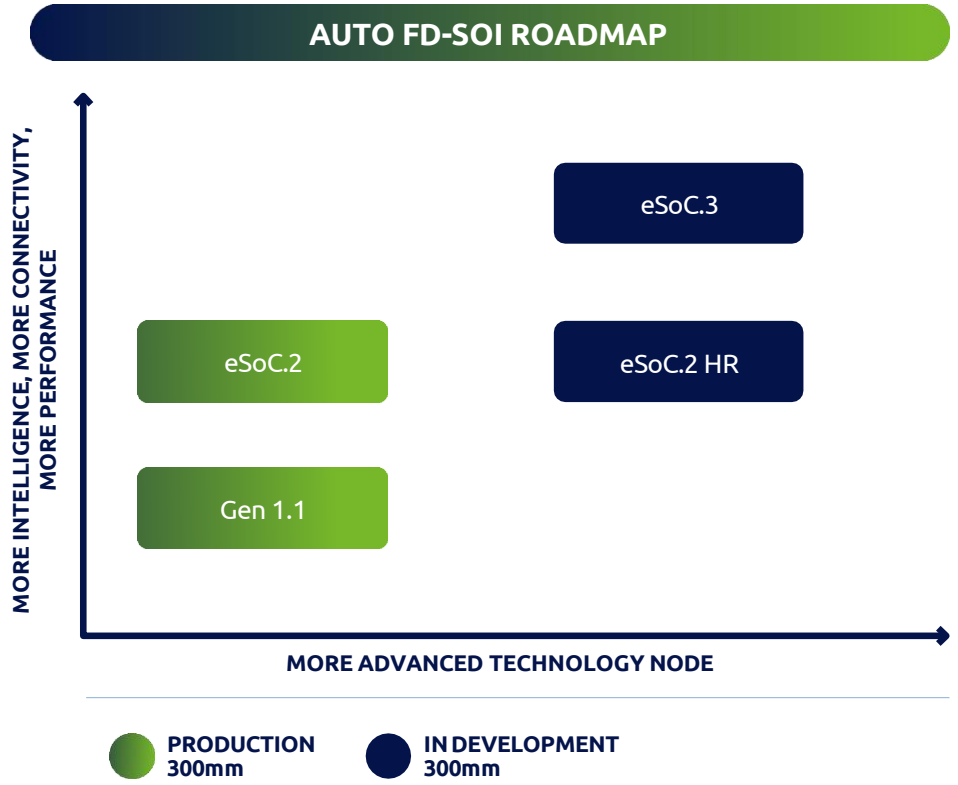

Industrial Automation

AUTO FD-SOI ENABLES SUPERIOR PERFORMANCE OVER BULK SILICON AND FINFET

SAVING POWER
~30%
GREENHOUSE GASES EMISSION REDUCTION

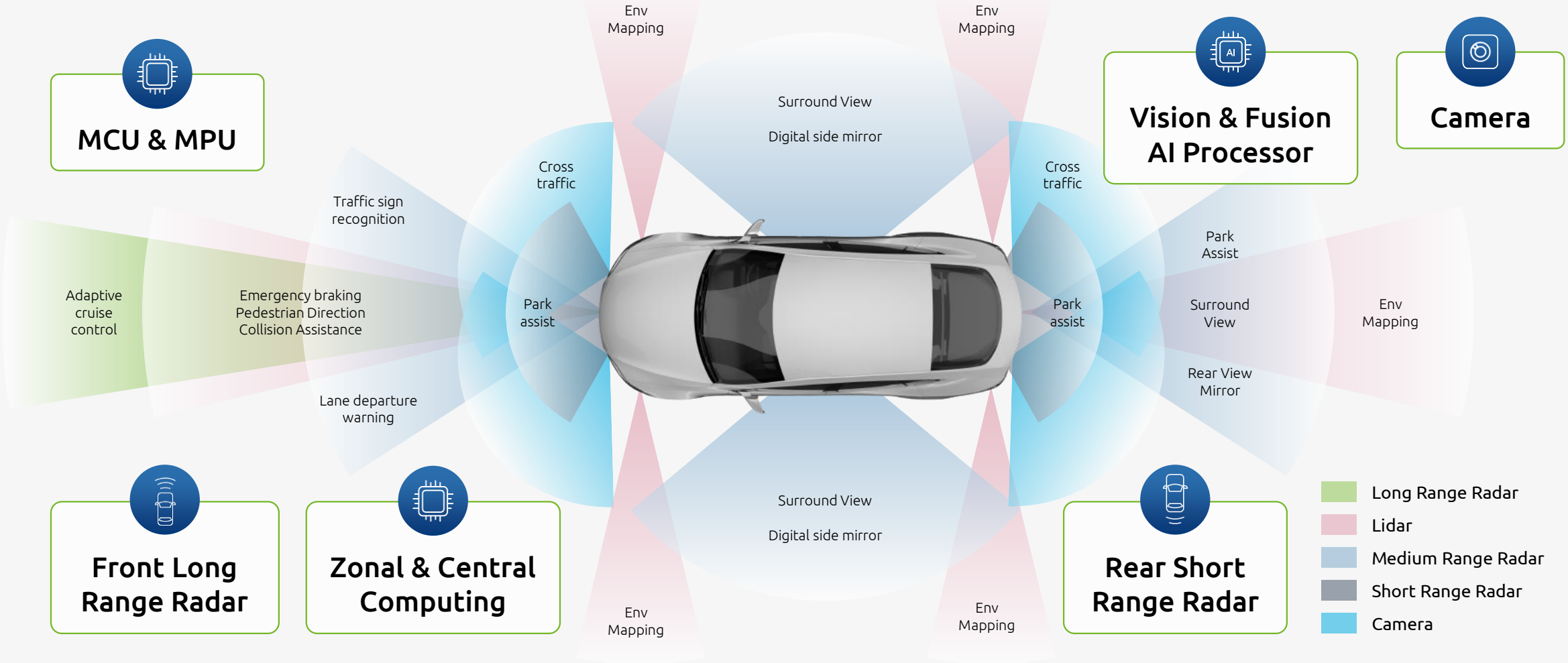
SAVING LIVES
~50%
HIGHER DETECTION RANGE IN RADARS

SAVING COST
~50%
DIE SIZE REDUCTION



AUTO FD-SOI FIELDS OF USE

ACCELERATING VEHICLE AUTONOMY, DIGITISATION AND CONNECTIVITY



SMART DEVICES PRODUCT PORTFOLIO
SMART FD-SOI

SMART FD-SOI BENEFITS ALL PORTABLE APPLICATIONS


Smart Home Devices

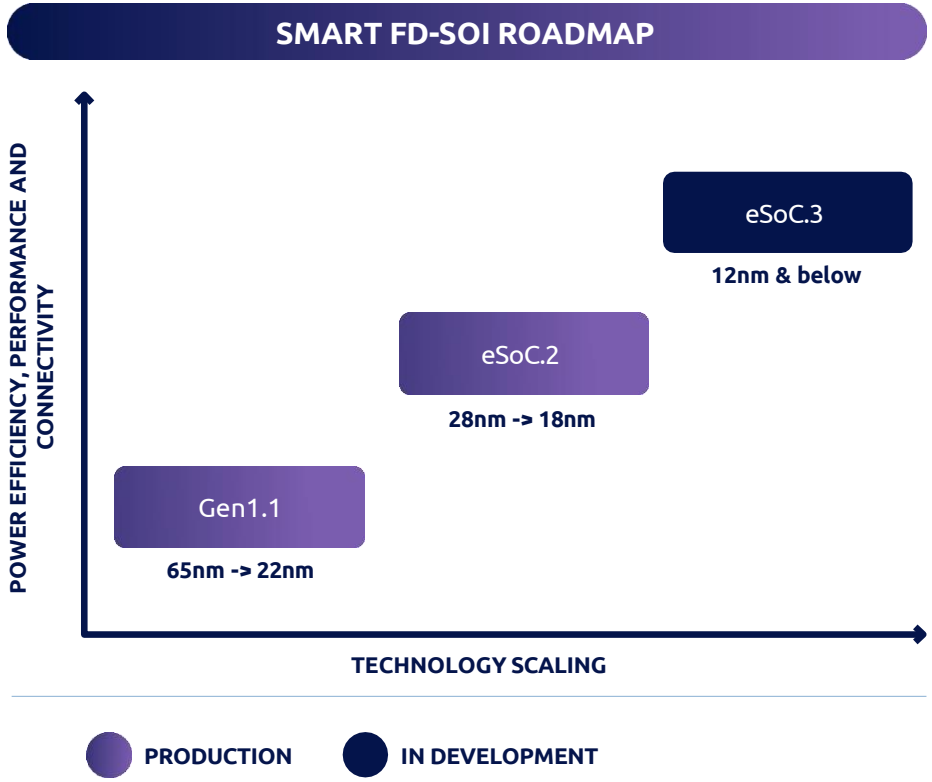

Wearables


Environmental Smart Sensors


Medical IoT

OUR SMART FD-SOI SUBSTRATE ENABLES

- LOWER ACTIVE POWER CONSUMPTION - ALWAYS ON
- PERFORMANCE ON DEMAND
- ROBUST ENERGY HARVESTING 'ZERO POWER' CAPABILITIES
- LOWEST-COST PROCESSING (INFERENCES-PER-WATT-PER-$)



SMART DEVICES PRODUCT PORTFOLIO
SMART FD-SOI – LATTICE NEXUS FPGA PLATFORM FOR EDGE AI

LATTICE FPGA NEXUS PLATFORM

- LOWER POWER CONSUMPTION
- FASTER PERFORMANCE
- SMALLER SIZE
- EMBEDDED NVM MEMORIES

FD-SOI DELIVERING HIGHEST ENERGY SAVINGS IN BENCHMARK TESTS

	Operating Frequency		
	0 MHz	**1 MHz**	**200 MHz**
28nm FD-SOI	**34.6 mW (1x)**	**36.2 mW (1x)**	**248.6 mW (1x)**
7nm FinFET	358 mW (10.0x)	360 mW (9.8x)	680 mW (2.7x)
10nm LP	244 mW (7.0x)	247 mW (6.8x)	880 mW (3.5x)

Source: Lattice

Built on FD-SOI, Lattice Nexus delivers up to 75% LOWER POWER vs similar FPGAs and small form factor packaging with sizes as small as 4x4 mm, perfect for many edge AI applications


Drones


AR/VR


Smart Speaker


Video Surveillance


Wearables

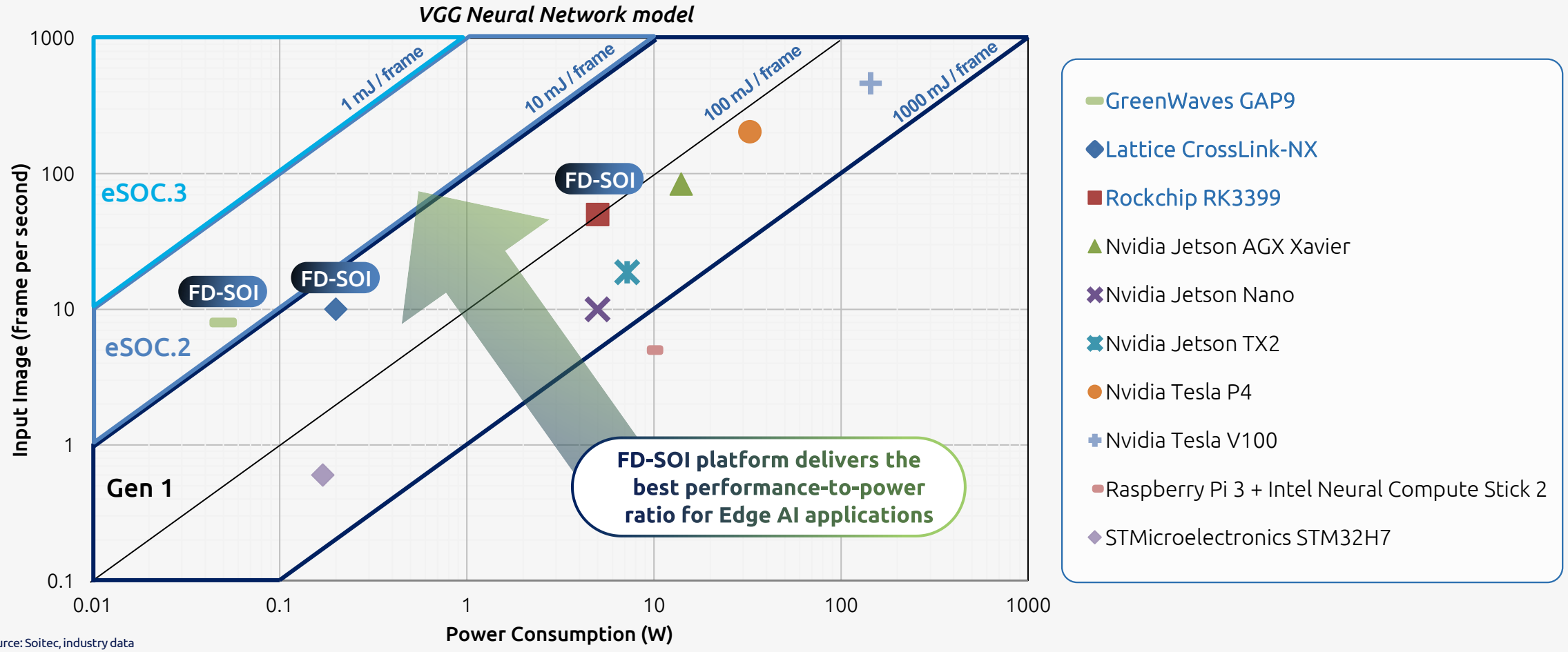

Smart Appliances


Consumer Robots


Smart Doorbell

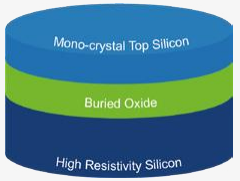

Smart Toys

EDGE COMPUTING
FD-SOI IS THE IDEAL PLATFORM FOR EDGE AI



Source: Soitec, industry data

SMART DEVICES PRODUCT PORTFOLIO
SMART PHOTONICS-SOI



SMART PHOTONICS-SOI IS TARGETING ENERGY-EFFICIENT FAST DATA TRANSFER

Pluggable transceivers
for datacenter

Co-packaged optics
For Datacenter Switches

AI/ML interconnect

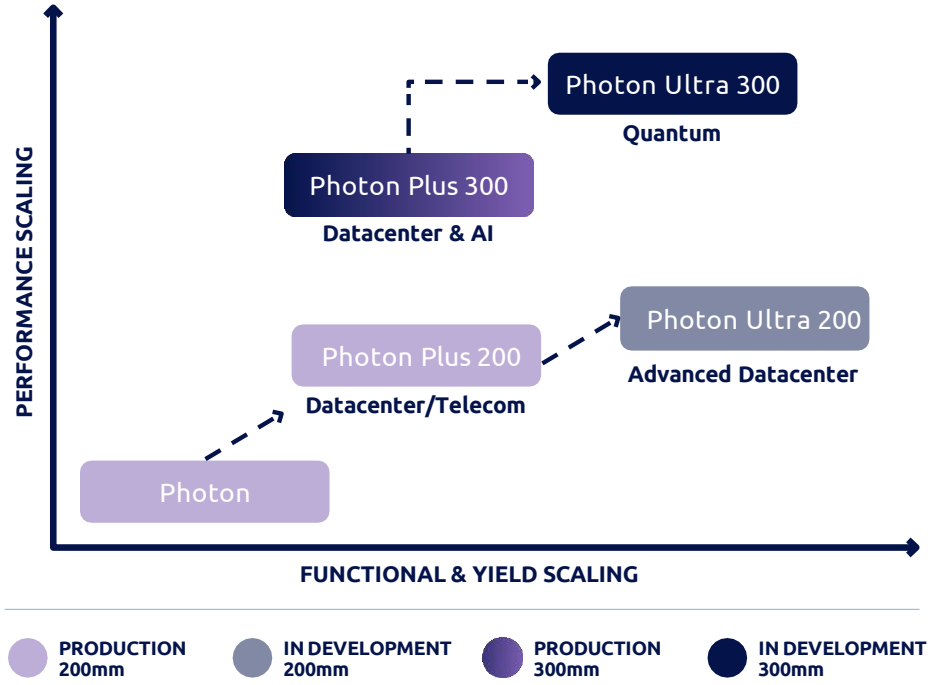
OUR SMART PHOTONICS-SOI SUBSTRATE ENABLES

FASTER DATA TRANSFER RATE

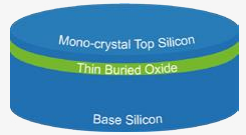
LOWER POWER CONSUMPTION

SIMPLER PACKAGING

SMART PHOTONICS-SOI ROADMAP



SMART DEVICES PRODUCT PORTFOLIO
SMART IMAGER-SOI



SMART IMAGER-SOI TARGETS 3D STACKING IMAGERS

Secure 3D Facial Recognition

Advanced Embedded Image processing

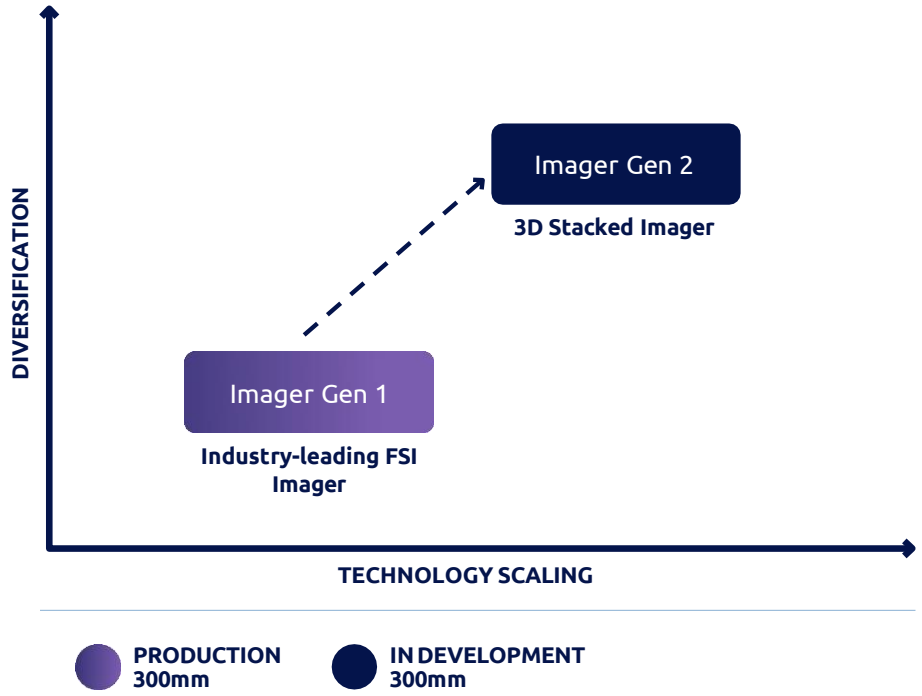
OUR SMART IMAGER-SOI SUBSTRATE ENABLES

HIGHER RESOLUTION FOR SECURITY APPLICATION

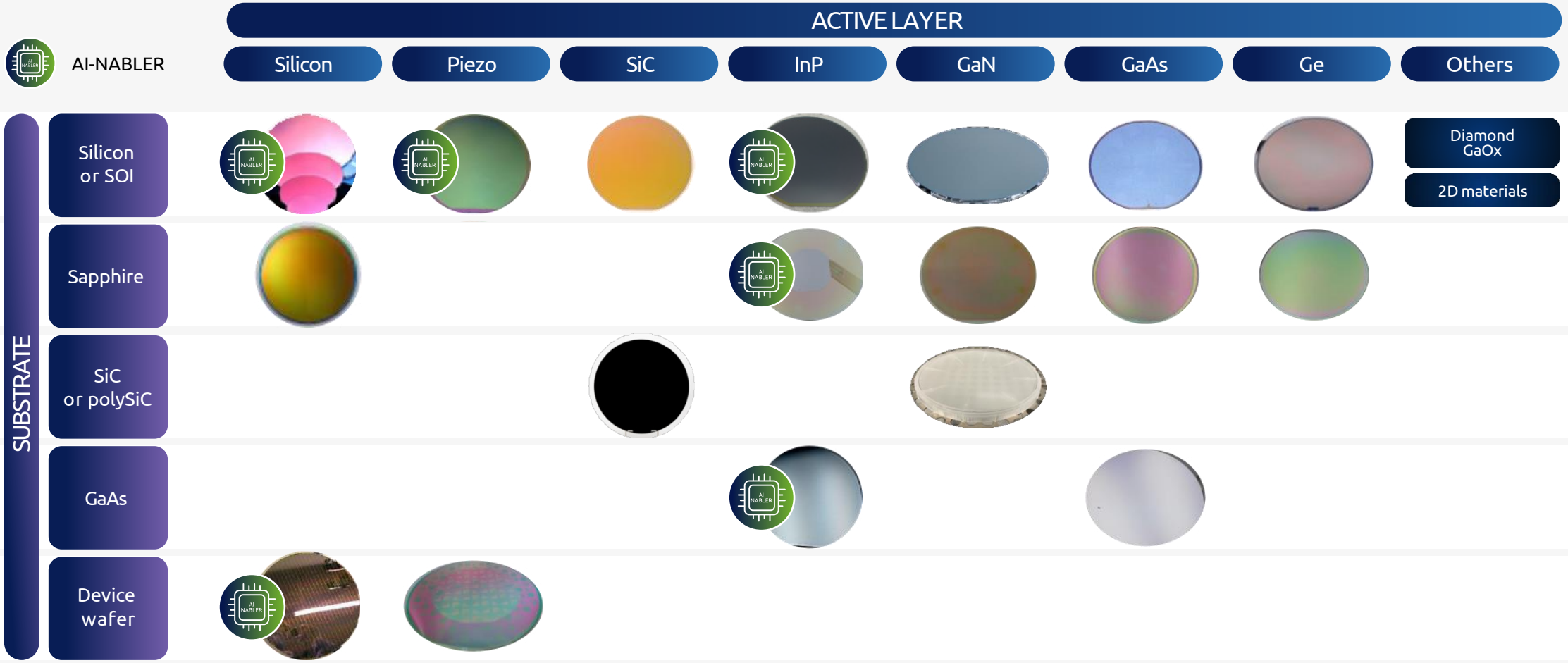
INCREASE ON-CHIP IMAGE PROCESSING

IMPROVE DETECTION EFFICIENCY AND REDUCE POWER

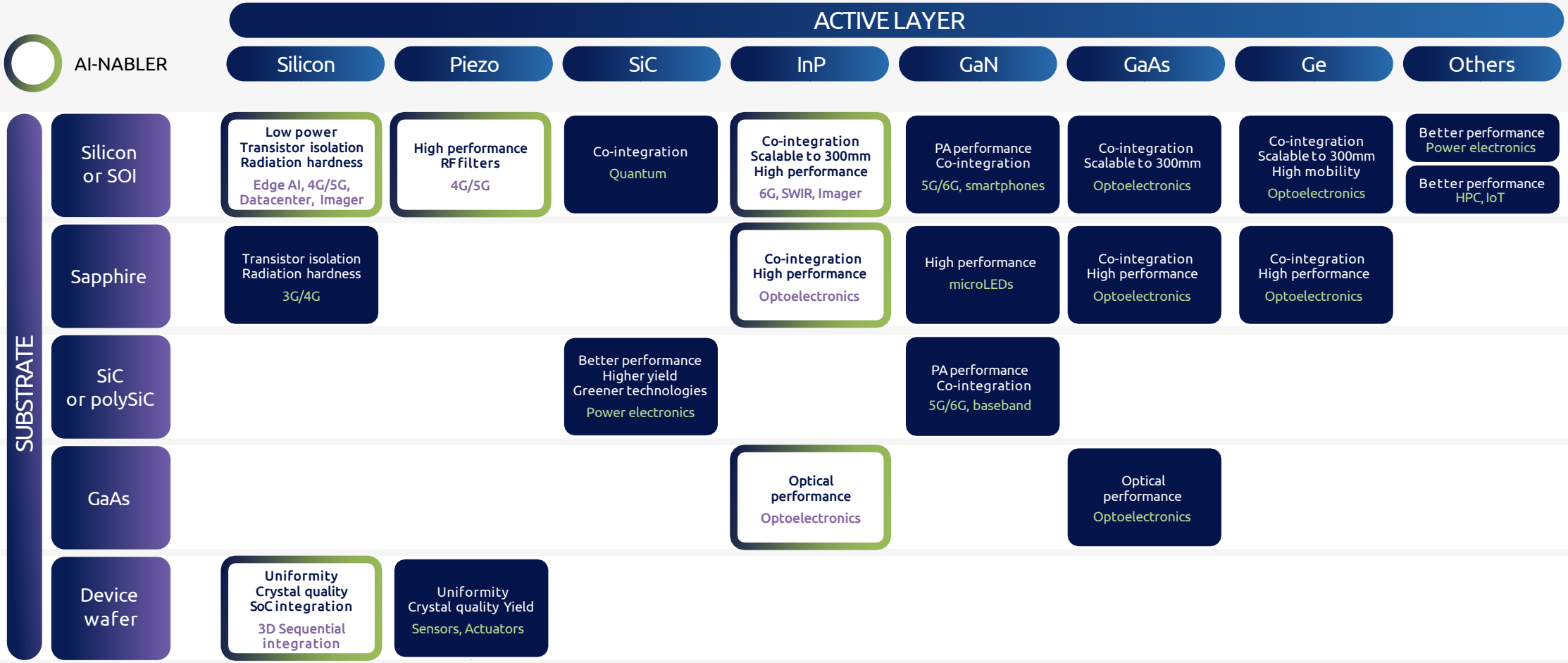
SMART IMAGER-SOI ROADMAP



AI-NABLERS
EXPANDING PRODUCT PORTFOLIO TO ENABLE FUTURE AI DEVELOPMENTS



AI-NABLERS
EXPANDING PRODUCT PORTFOLIO TO ENABLE FUTURE AI DEVELOPMENTS



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ENABLING ARTIFICIAL INTELLIGENCE
WITH ENGINEERED SUBSTRATES

THANK YOU

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