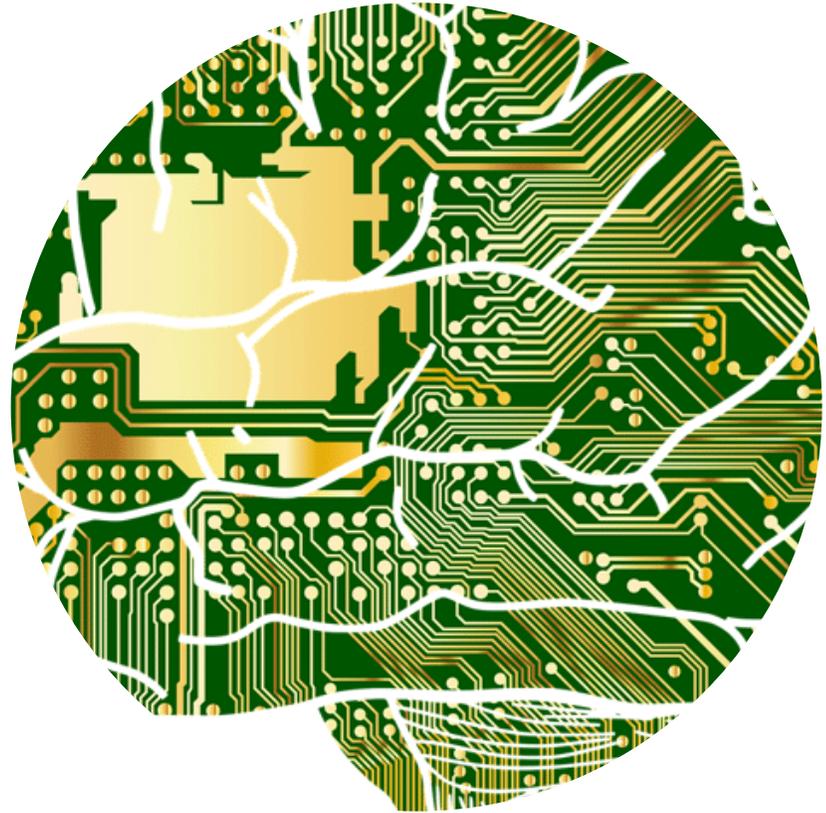
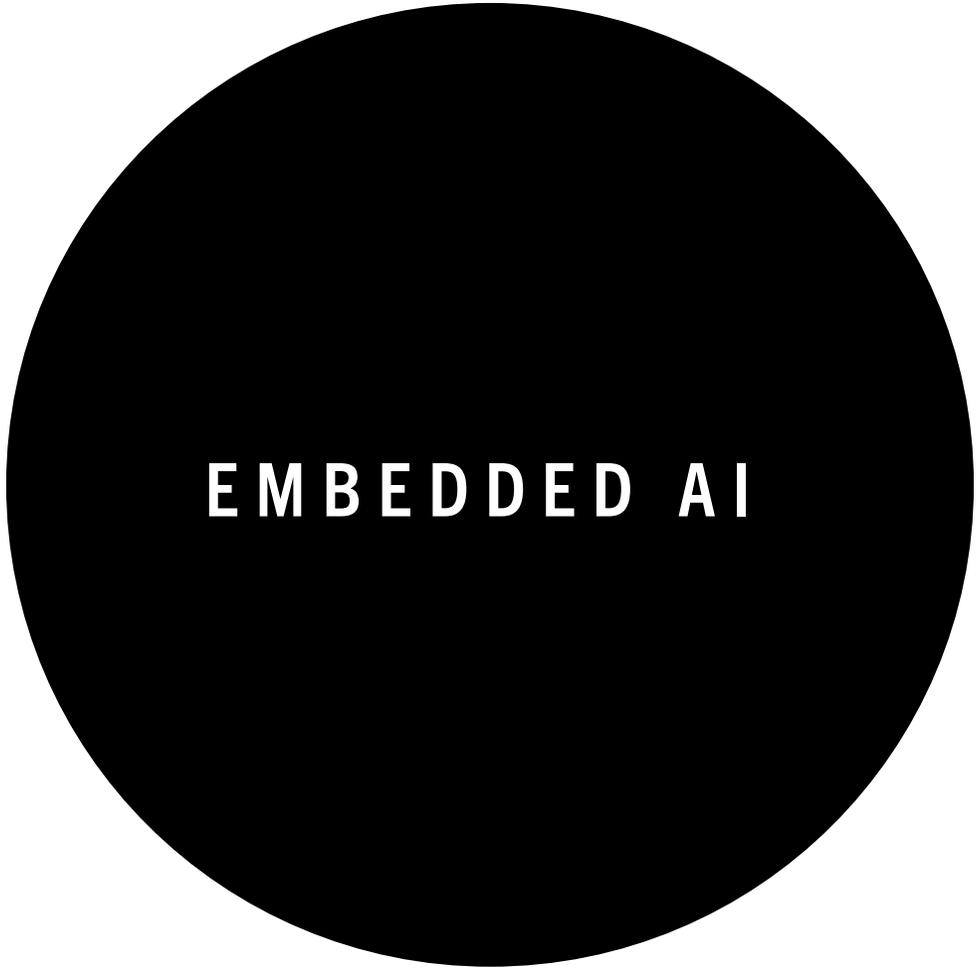


EMBEDDED AI: RISE OF THE INTELLIGENT DEVICE

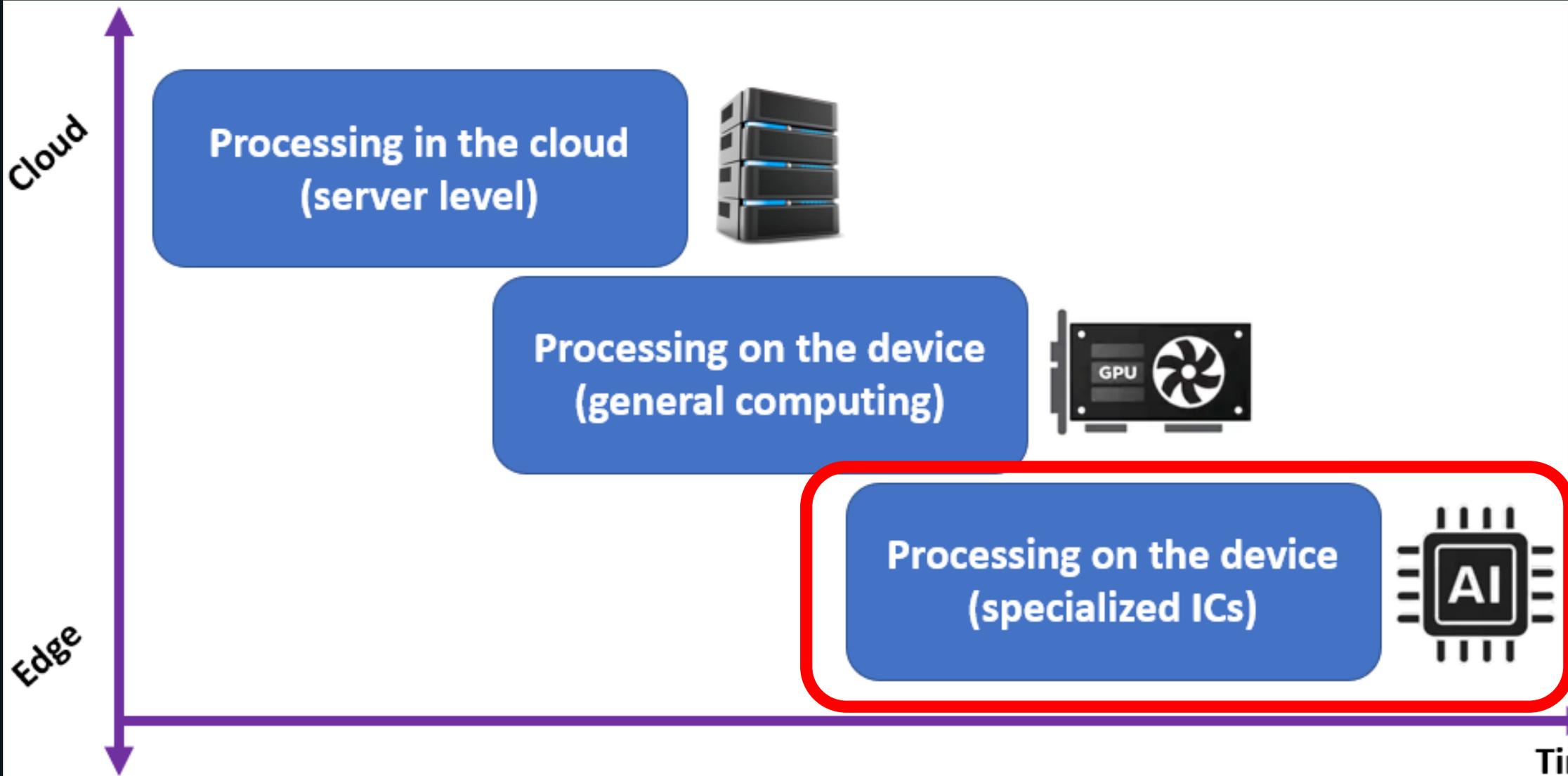
Embedded Artificial Intelligent RG





EMBEDDED AI

- **Embedded artificial intelligence (AI) is the application of machine and deep learning in software at the device level.** Software can be programmed to provide both predictive and reactive intelligence, based on the data that is collected and analyzed.
- Embedded AI can be defined as the capability of **embedded systems or resource-constrained devices** that are usually isolated to carry out tasks that require human intellectual capacity.



Device

AI functions

Function 1

Function 2

⋮

Function n

Sending
reference results



Subscription to
E-AI services

E-AI system

Module file
uploading/deleting

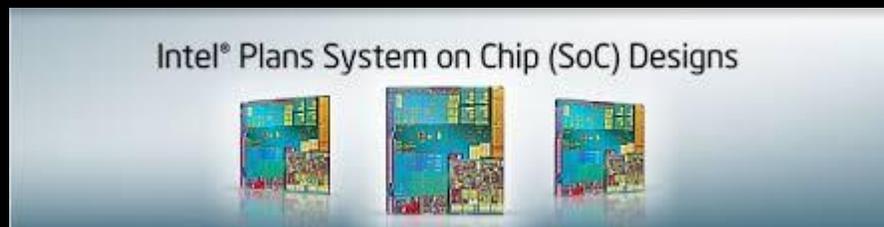
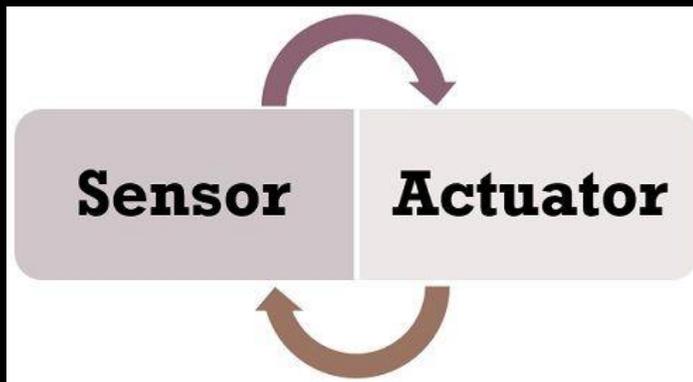
Model Module

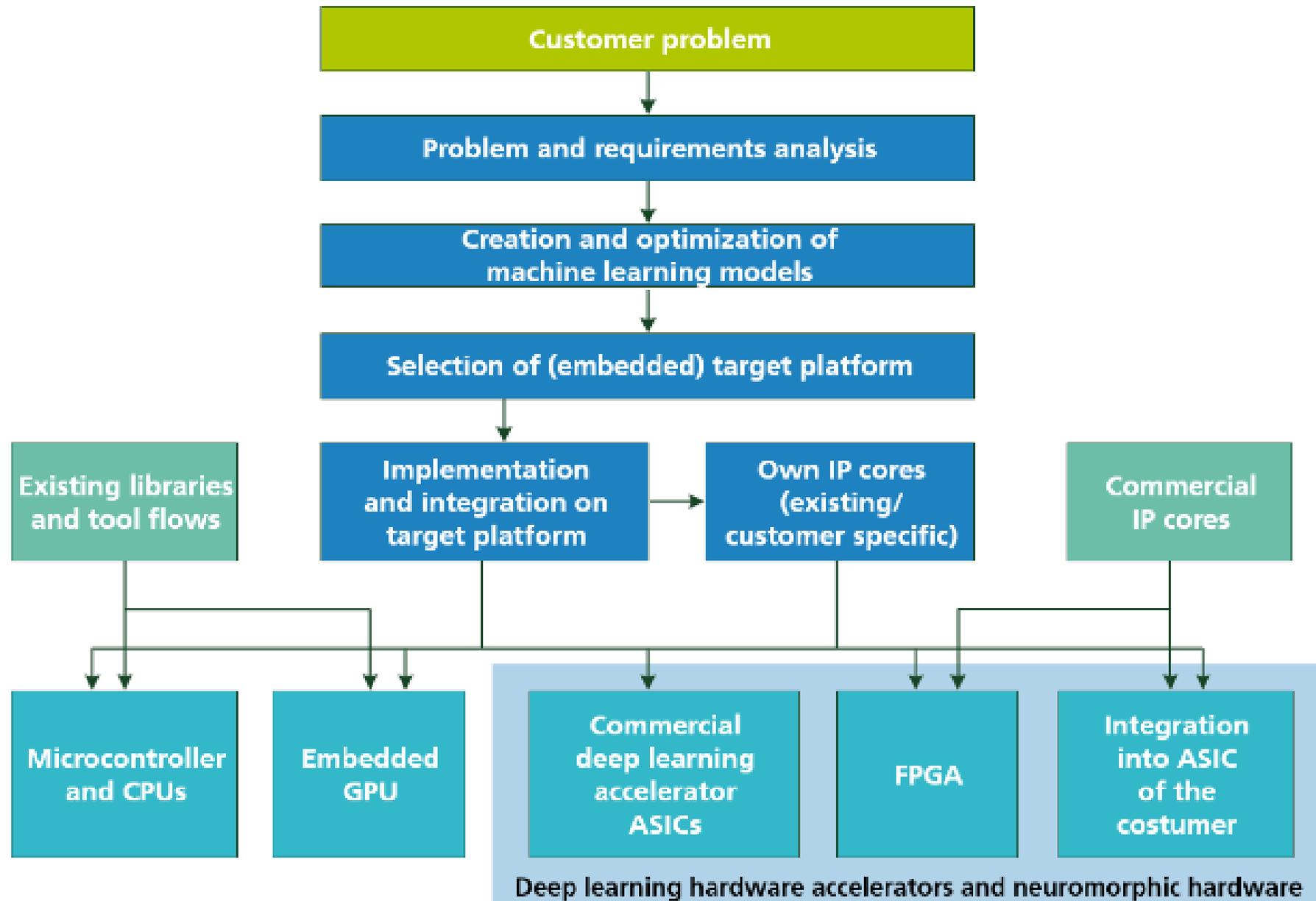
Data Module

Data collection
and pre-processing

Computing
Module

PLATFORM DEVICE

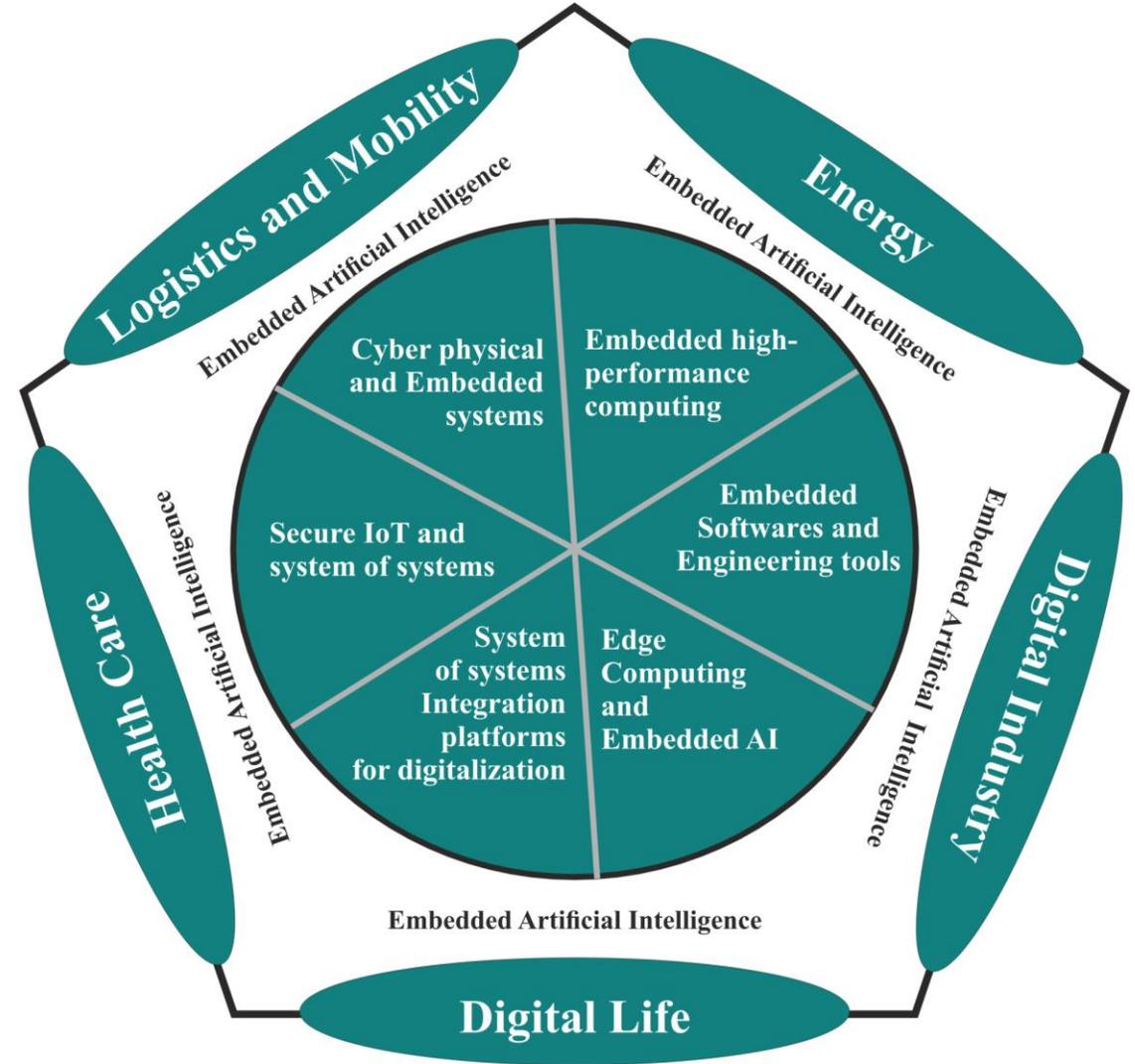




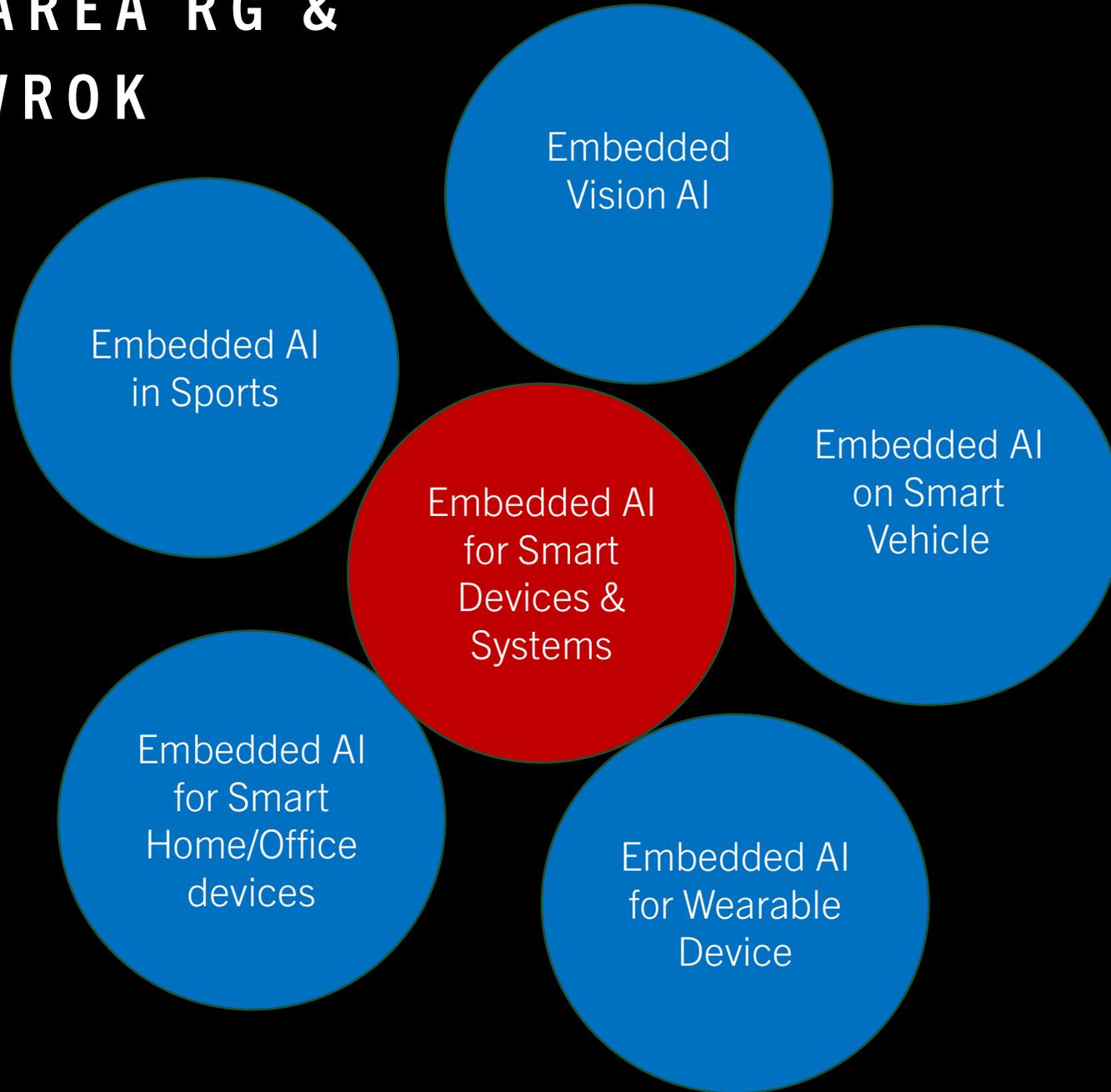
BACKGROUND

- The **edge AI chip** market is growing much faster than the overall **chip market**, with the number of edge AI chips to be sold in **2024 estimated to be 1.5 billion**.
- The global AI chipset market was estimated at USD 12.04 billion in 2020. The projections show that it would reach USD 125.67 billion by 2028, corresponding to a CAGR growth of 34.08% in the considered period.
- **Embedded artificial intelligence (AI) will enable new**, inexpensive, and low power AI solutions that are not possible using cloud-based AI technologies alone.
- **Embedded AI requires knowledge and skills beyond** traditional embedded systems, data science, and machine learning (ML). It requires knowledge of devices, sensors, and advanced, near real-time signal processing methods for video, audio, motion, or other signals. Specialized software tools and frameworks are required to develop embedded AI applications.

EMBEDDED AI FRAMEWORK FOR BUSINESSES

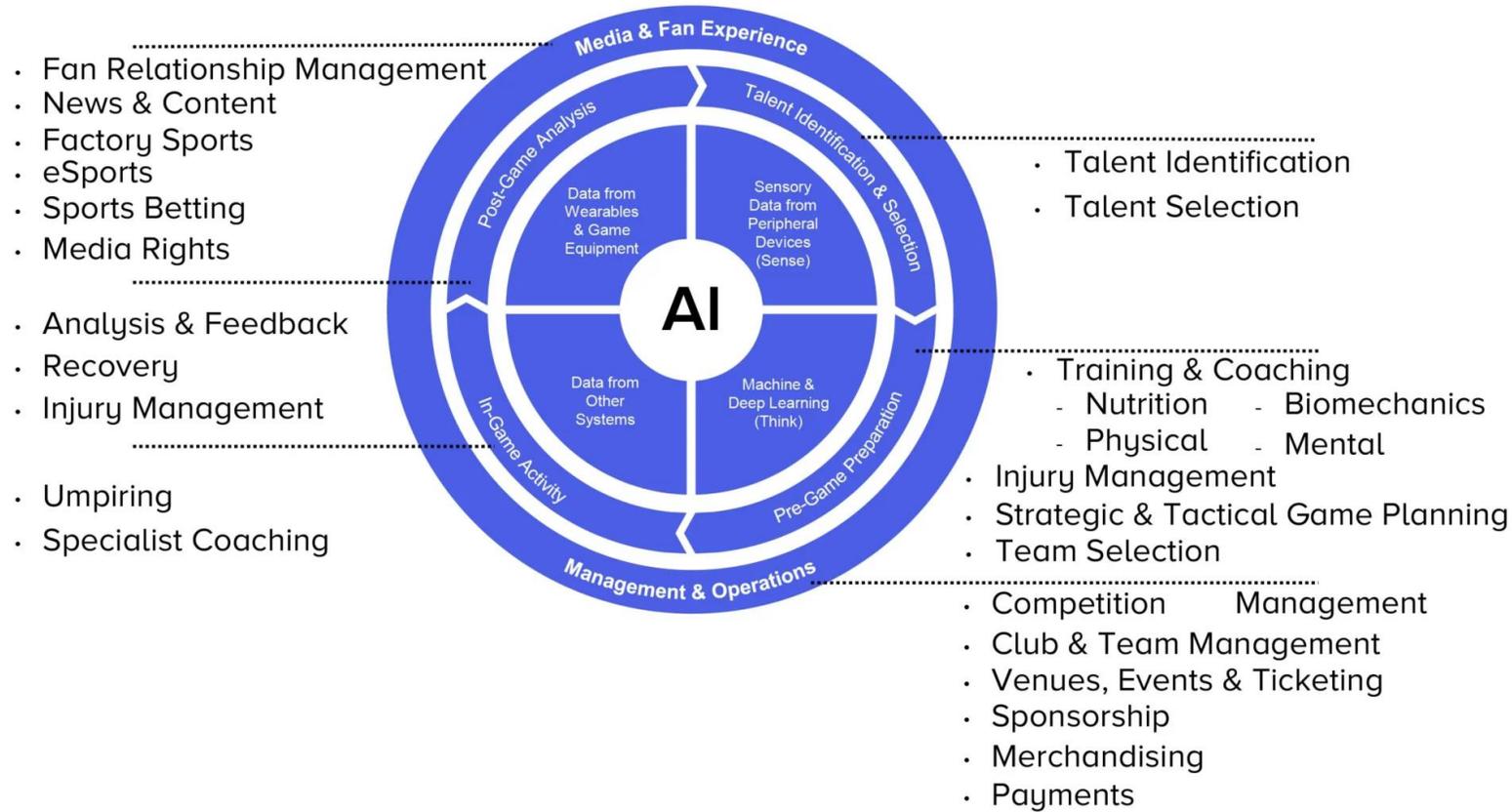


FOCUS AREA RG & FRAMEWROK

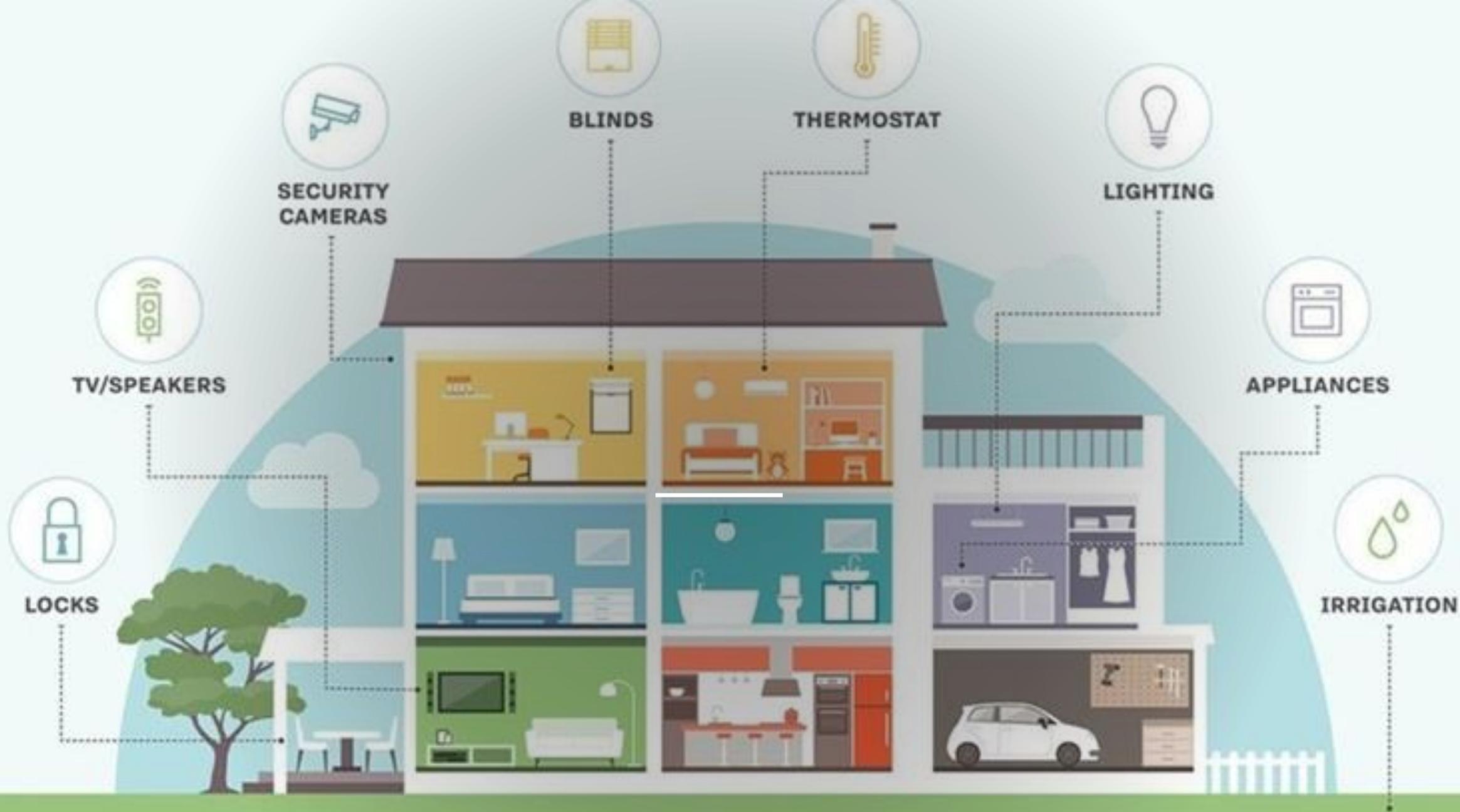


EMBEDDED AI IN SPORTS

"AI framework for sports industry"



- 1. Create Predictive Models of Player Performance**
- 2. Analyze Game Footage and Identify Patterns and Trends**
- 3. Personalized Training**
- 4. Create Better Sports Equipment**
- 5. Prevent Injuries**



EMBEDDED-AI DEVICES FOR SMART HOME

EMBEDDED-AI DEVICES FOR SMART HOME/OFFICE

The main objective of the functions is:

Improve the quality of life and
convenience in the home.

More efficient use of energy
(home/office)

Safety and Security



EMBEDDED AI FOR WEARABLE DEVICE

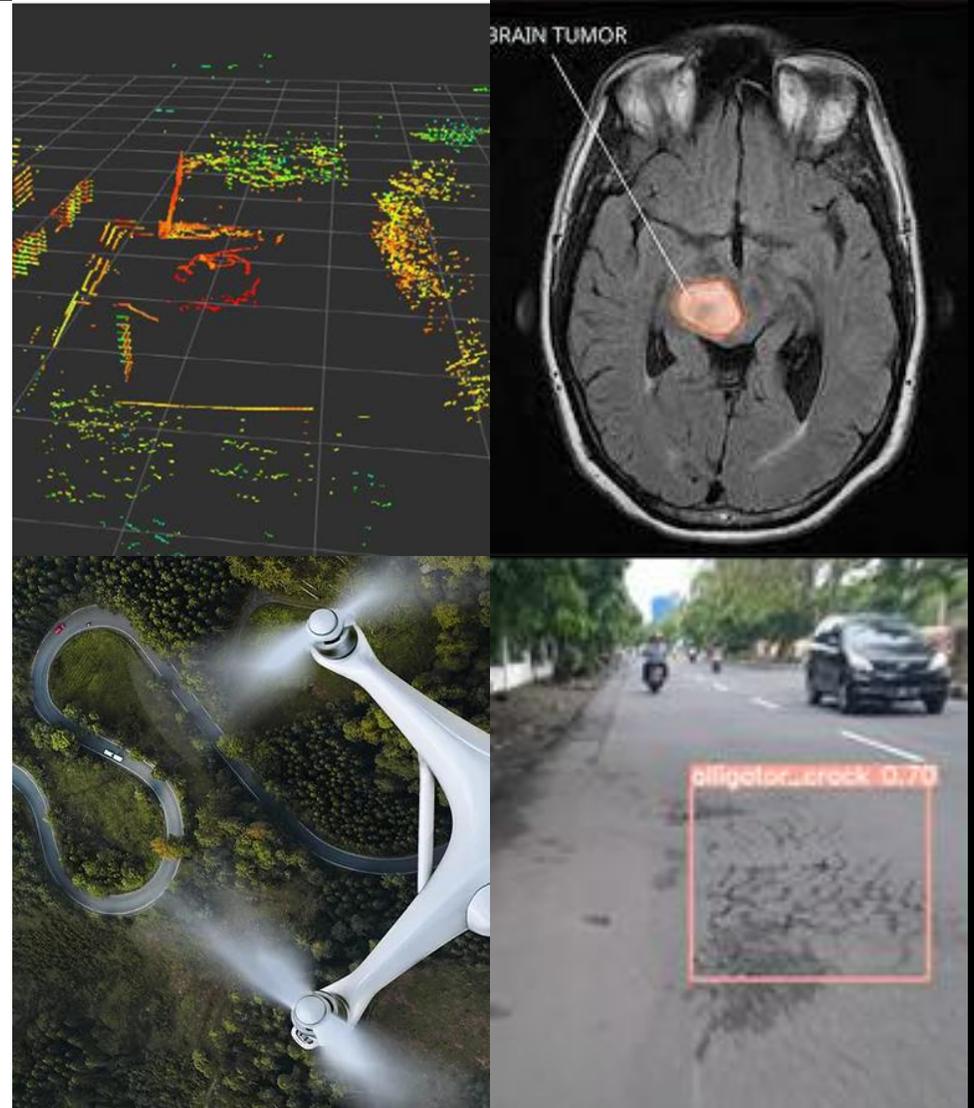
Top industries using wearable technology



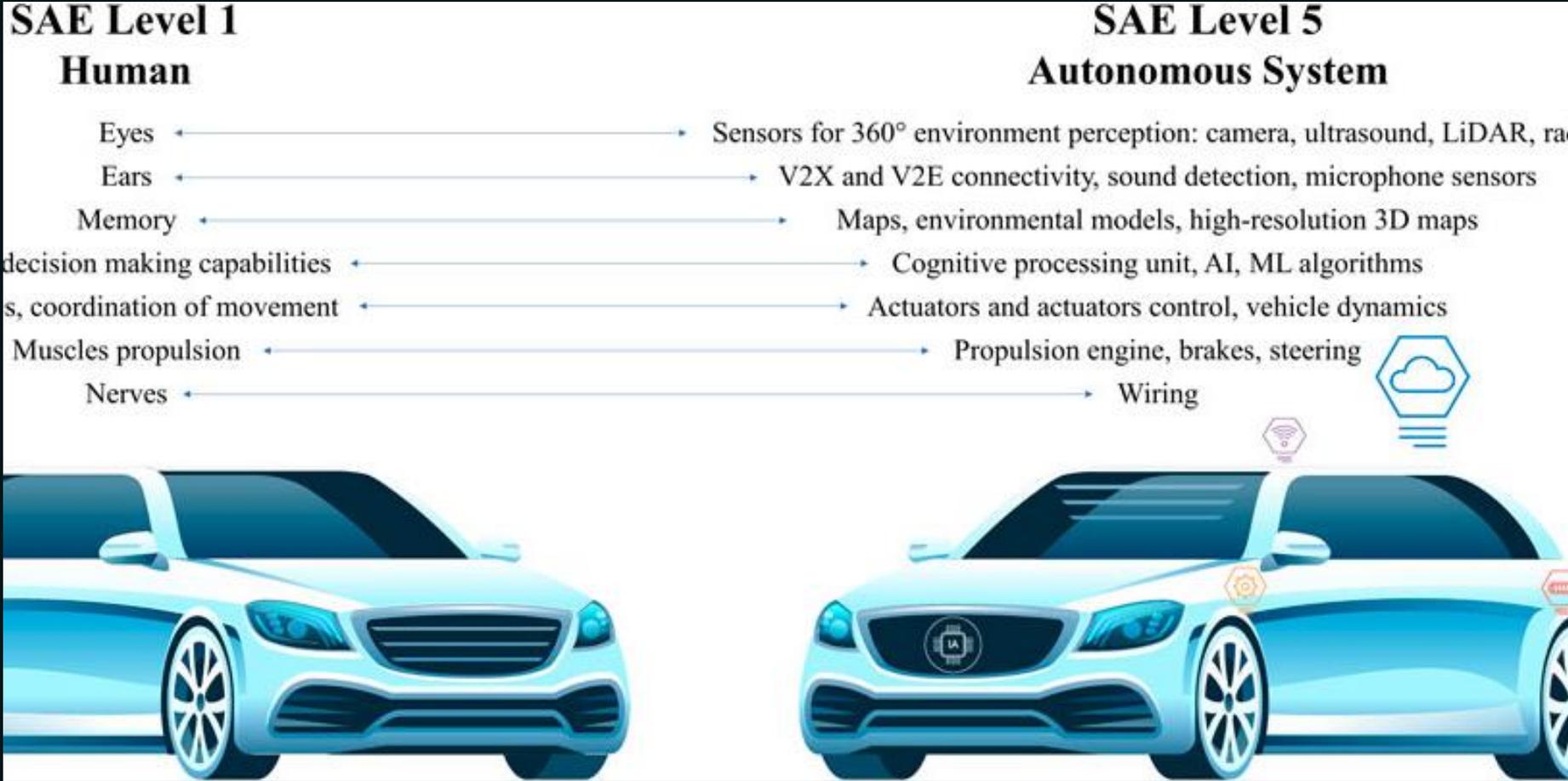
- **Emb-AI enabled wearables in healthcare**
- **Emb-AI enabled wearables in fitness**
- **Emb-AI Wearables cognitive assistance**

EMBEDDED VISION AI

- Drone Vision Payload
- Embedded AI for Biomedical Imaging
- Embedded AI for Area Mapping Device
- Embedded AI for road inspection device
- Embedded AI for Disaster/Rescuer



Embedded AI on Smart Vehicle



REVIEW article

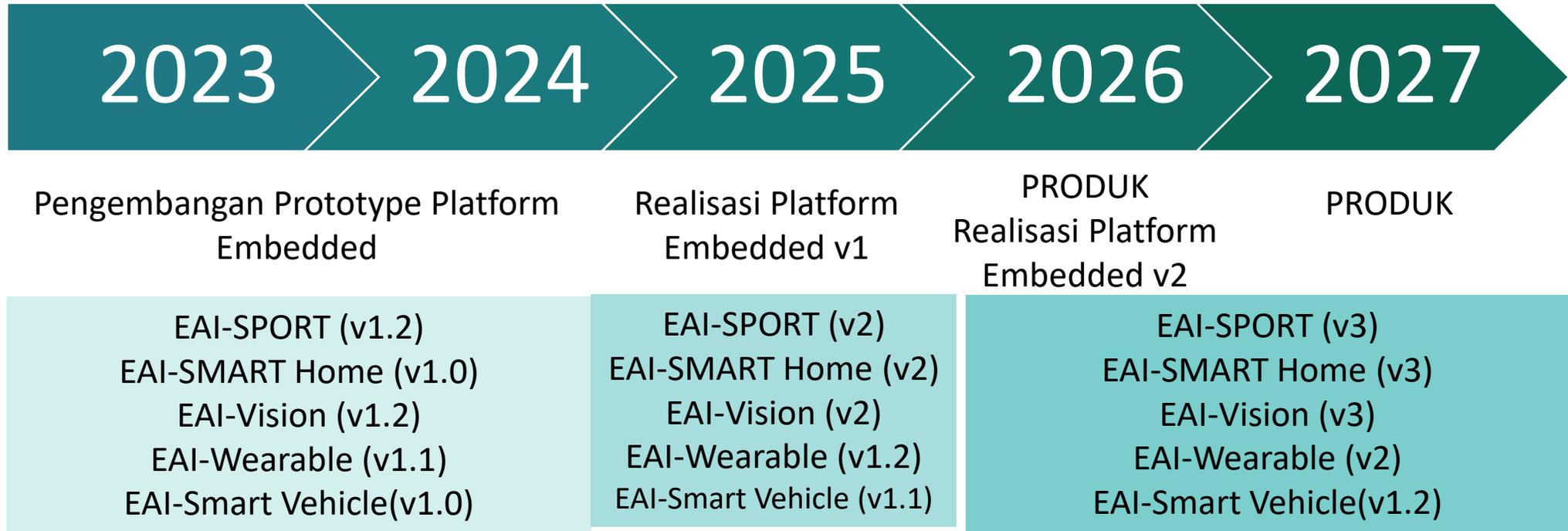
Front. Future Transp., 26 August 2021

Sec. Transportation Systems Modeling

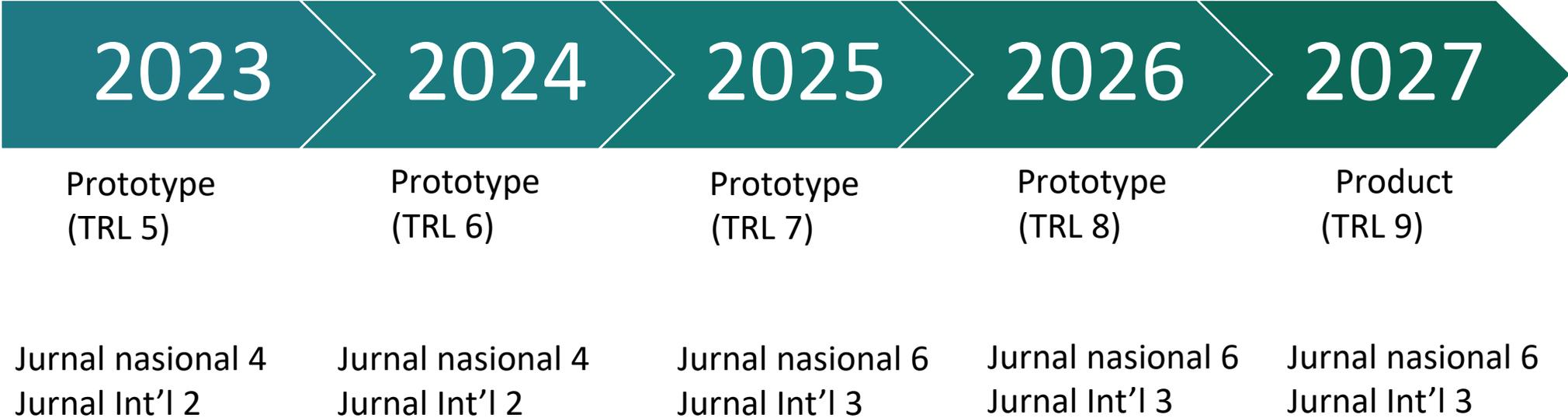
<https://doi.org/Intelligence/10.3389/ffutr.2021.688482>

Automotive Embedded in Electric Connected Autonomous and Shared Vehicles Technology for Sustainable Green Mobility

ROADMAP



LUARAN



Pemilihan riset unggulan TIK diharapkan dapat mengawal secara proaktif riset unggulan yang membutuhkan koordinasi, fasilitasi, monitoring dan evaluasi serta pengawalan. Untuk mensinergikan riset dengan industri diperlukan adanya pemilihan riset unggulan yang menjadi prioritas bidang TIK yang mampu menjadi penggerak ekonomi, inovasi, kemandirian dan daya saing bangsa, yaitu melalui pengembangan piranti TIK menuju *internet of things* dengan mengembangkan sains dan teknologi chips, *smart devices*, *integrated Big Data*, RFID, serta teknologi dan ekosistem 5G.