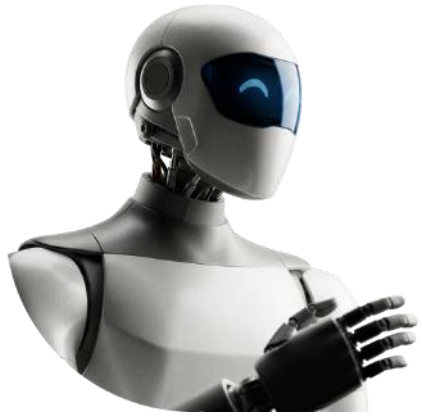


Humanoid robots

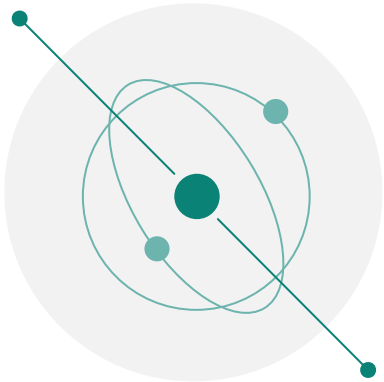
The future of physical AI is built on chips

Public

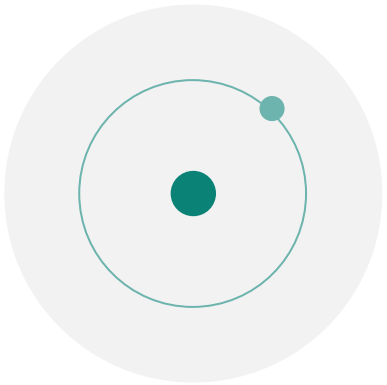
The next era of AI is emerging – Physical AI



Physical AI



Agentic AI

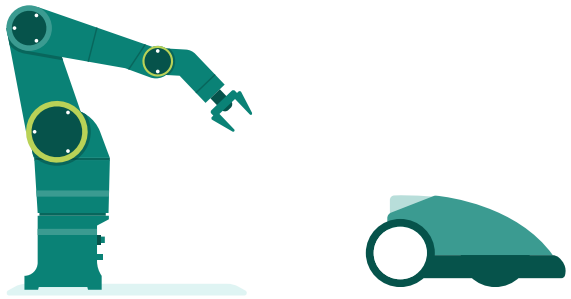


Generative AI



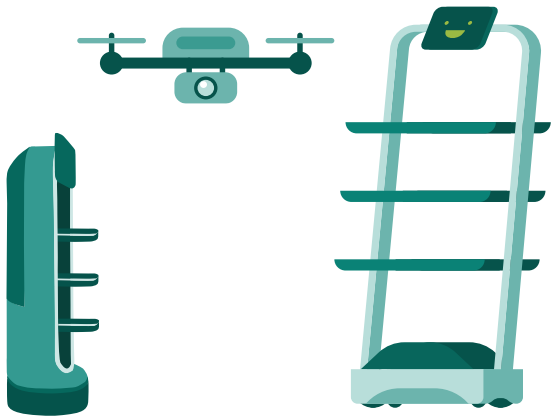
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Robotics: An evolving application across different industries



Established robotic assistance

- Cobots (Industrial)
- Logistic robots
- Lawn mowing robots
- Robot vacuums
- Drones (Consumer)
- Drone (Agriculture, Inspection)



Up and coming robotic assistance

- Inspection robots
- Hospitality robots
- Drones (Transportation
- Cobots (Consumers)



Human level robotic assistance

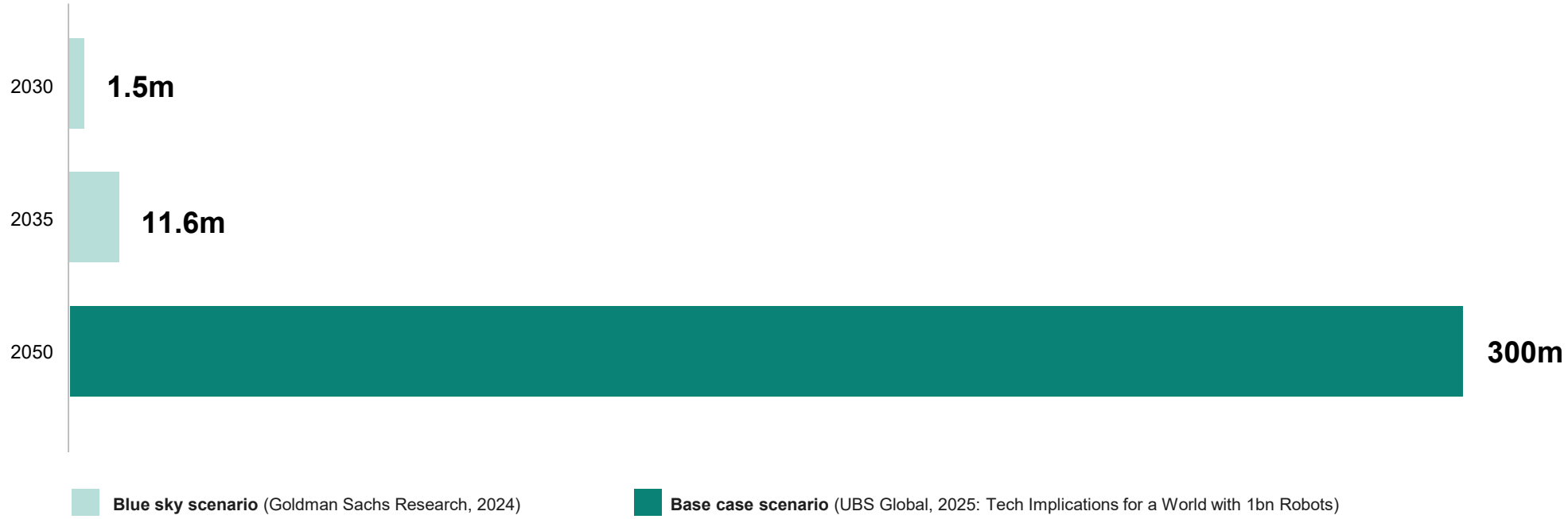
- Humanoid robots
- Exoskeletons
- Logistic robots (Outdoor)

Past | Present | Future

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Humanoid robots: The rising robotics segment

Forecast for global humanoid robot shipments (industrial and consumer, in millions)



AI & Tech Innovations

End-to-End AI Integration, streamlining AI development with a direct input-to-output model. Unprecedented progress e.g., Established OEMs vs. Startup Culture

Cost Reductions on Hardware

Notable reduction in BOM costs, likely by 40% according to Humanoid Robotics makers. Optimization in design and manufacturing techniques

Industrial spillover

Poised to leverage technological advancements and economies of scale developed in the EV sector, particularly in areas such as actuator control and ADAS and Functional Safety (FuSa)

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Robot form factors evolve, but the underlying electronics foundations remain the same

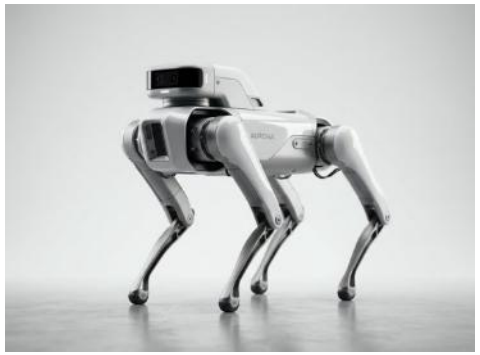
Humanoid



Mobile manipulator



Legged robots



Fixed industrial



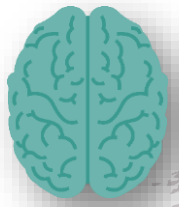
Common electronics foundation

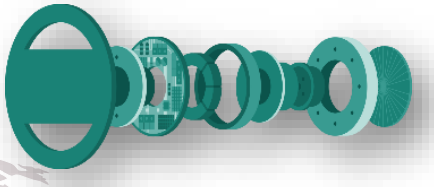
- **Sensing**
- **Compute and Control**
- **Battery management system (BMS)**
- **Connectivity**
- **Motor control**
- **Charging**

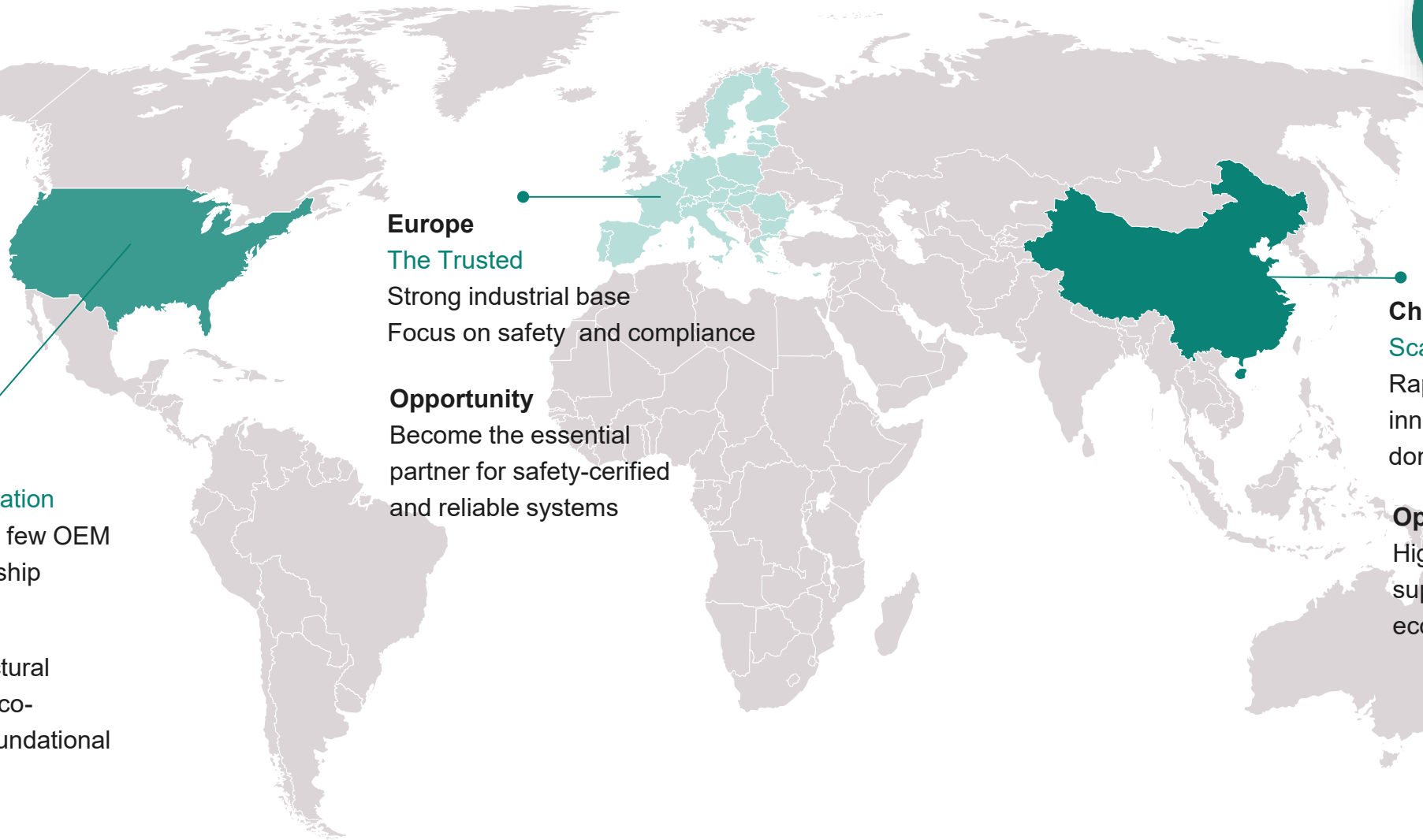
Source: ABI research (2025), Goldman Sachs (2025)

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Europe builds trust, the US builds platforms, and China builds cost-competitive ecosystems







Americas

Vertical Integration

Dominated by few OEM and AI leadership

Opportunity

Deep architectural partnerships, co-developing foundational systems

Europe

The Trusted

Strong industrial base

Focus on safety and compliance

Opportunity

Become the essential partner for safety-cerified and reliable systems

China

Scale through Speed

Rapid development, innovation and growing domestic ecosystem

Opportunity

High volume component supply for the broader ecosystem

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Infineon solutions for every humanoid robot functional block

Battery charging

AC-DC conversion
Microcontroller:
XMC™ 1000, PSOC™ 4, PSOC™ Control C3P
Power MOSFETs/HEMTs:
OptiMOS™, CoolMOS™
CoolGaN™ & CoolSiC™
Gate drivers: EiceDRIVER™

Wireless charging
Wireless charging ICs
Authentication: OPTIGA™ Trust

USB-C Charging
USB-PD Charging ICs

Battery management System (BMS)

Battery management
Microcontroller: XMC™, PSOC™, AURIX™
Cell monitoring and balancing ICs: TLE90xx
Isolated transceiver ICs
Current sensing: XENSIV™ Current Sensors

Memory
Serial F-RAM (Ferroelectric RAM)

Protection
OptiMOS™ & OptiMOS™ Linear FET
XDP™ 7xx Protection & Hot Swap ICs ICs

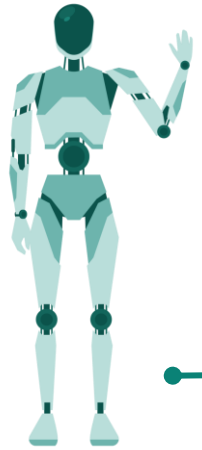
Battery authentication
OPTIGA™ Authenticate S

Power management

Voltage conversion
LDO & Step-down switching regulator
Single and dual MOSFETs: OptiMOS™

Power management Ics
XDP™ P11xx Digital Power Controllers

ESD Protection
Low capacitance and multi-purpose ESD diodes



Charger
Wireless charging
BMS
Smart power
BLDC motor control
Sensing
Wireless communication
Security
Artificial intelligence
HMI

Motor control

Microcontroller
XMC™ 1000, 4000, 7000
PSOC™ Control C3M
PSOC™ 4 & 6
AURIX™ TC3, TC4

Power MOSFETs
OptiMOS™, StrongIRFET™ MOSFETs
CoolGaN™ HEMTs

Gate Driver & Integrations
EiceDRIVER™
MOTIX™ Motor control ICs

Magnetic Sensors
XENSIV™: Position and Current Sensors

Memory
Standard SPI NOR Flash
Serial F-RAM (Ferroelectric RAM)

PMICs
OPTIREG™

Compute and control

Microcontroller
XMC™ 4000, XMC™ 7000
PSOC™ 6, PSOC™ Edge
AURIX™ (Functional Safety)

HMI & IoT Controller
PSOC™ 4 & 6, PSOC™ EDGE

Memory
SEMPER™ NOR Flash
HYPERRAM™ (pSRAM)

PMICs
OPTIREG™

Sensors

XENSIV™ 24/60 GHz radar
Obstacles and gesture detection, materials differentiation, speed over ground

REAL3™ 3D IR ToF sensors
Objects recognition, obstacles avoidance, navigation and tracking

XENSIV™ MEMS microphones
Sound detection / HMI, objects detection and tracking

Dexterous Hand Sensor
XENSIV™ 3D magnetic sensor
XENSIV™ Pressure sensor
PSOC™ 4 & PSOC™ 6 w/ CAPSENSE™

Ultra-wide-band UWB

Connectivity & Security

Ethernet Switches
BRIGHTLANE™

CAN transceiver
TLE9251VLE, TLE9351VSJ

USB – Serial bridge
EZ-USB™

Wi-Fi & Bluetooth® / BLE
Connected MCUs: PSOC™ 4 BLE, PSOC™ 6 BLE, BT®/BLE SoC and modules
Combos: AIROC™

Embedded-SIM Connectivity
OPTIGA™ Connect IoT

Security
OPTIGA™ Trust M, TPM

Memory
Standard SPI NOR Flash

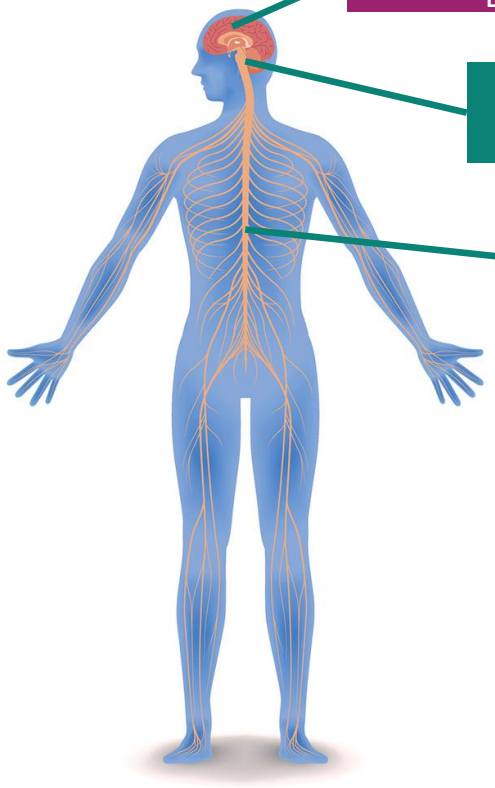
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Architecture

Public

Humanoid stack vs. Human Architecture



Central Nervous System

Cerebral Cortex
Layer 3

Cerebellum
Layer 2

Spinal Chord
Layer 1

High Level Reasoning [1–5Hz]

- Natural Language Interaction
- Scene Understanding
- Symbolic / Goal Planning
- Task Planning / Scheduling

Perception and Planning [30Hz]

- Scene Registration & Self-localization (world model)
- Object Recognition & Localization
- Grasp & Motion Planning
- Locomotion

Real-Time Control Framework [100Hz–1KHz]

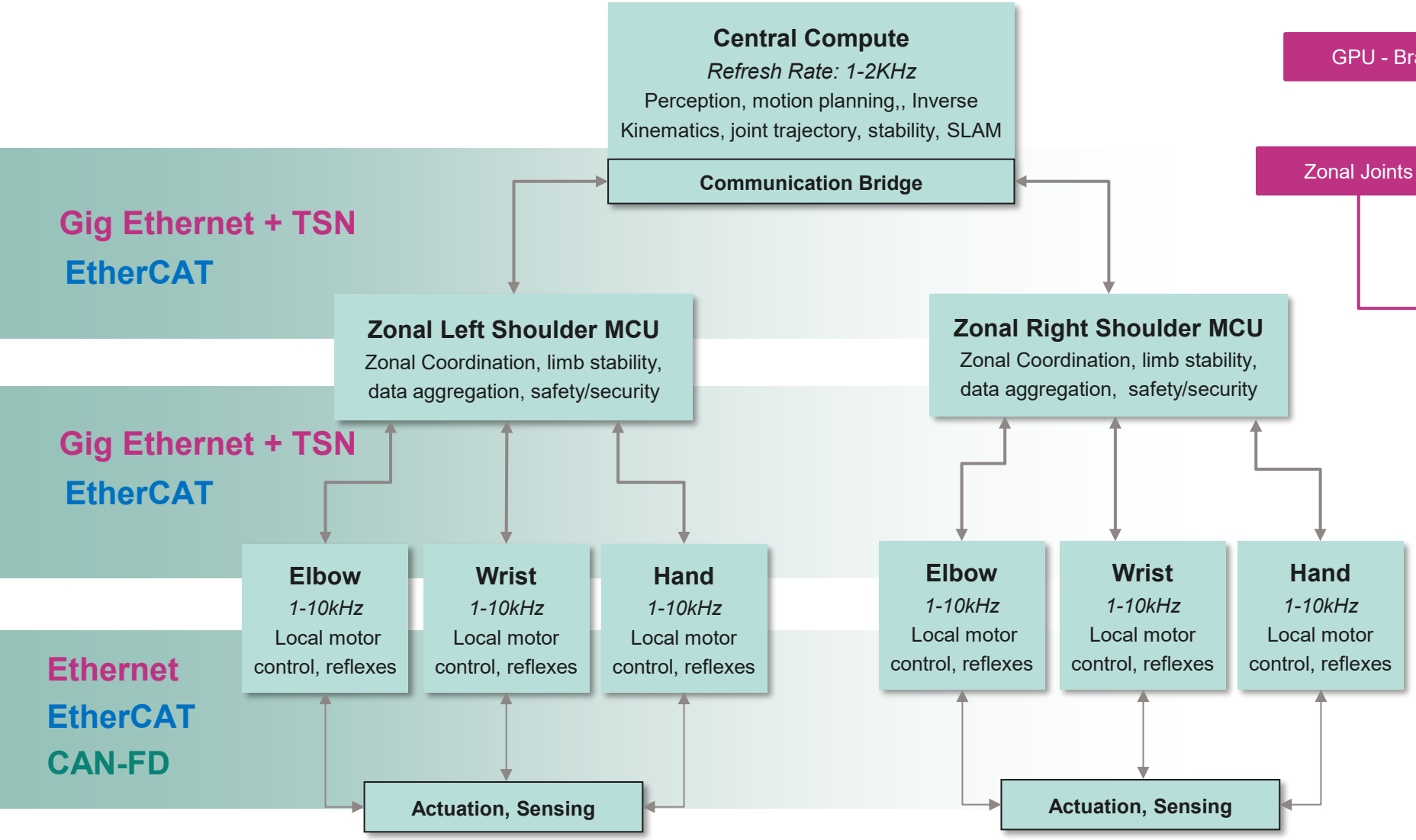
- Model Predictive Control / AI Control Policy
- Velocity Controller
- Position Controller
- Impedance Controller
- Torque Controller

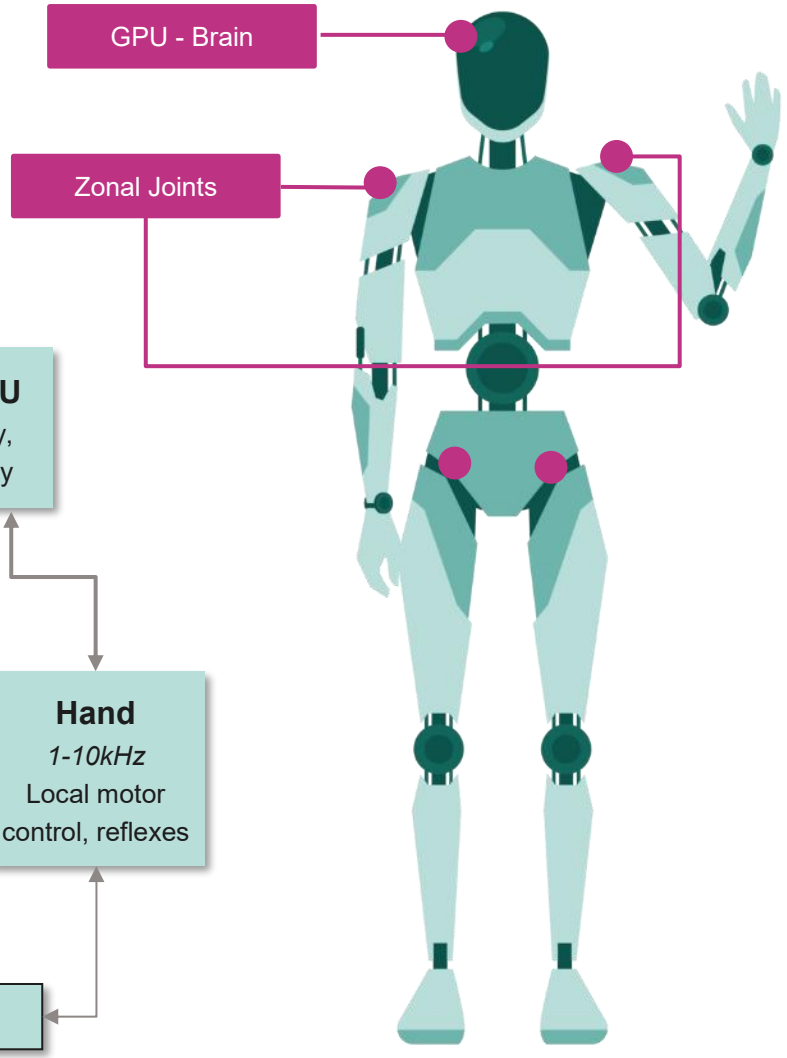
Hardware Abstraction Layer

- IMU
- Audio & Mic
- Actuators
- Haptics / Touch Sensors
- Cameras
- Position Sensors (encoders)

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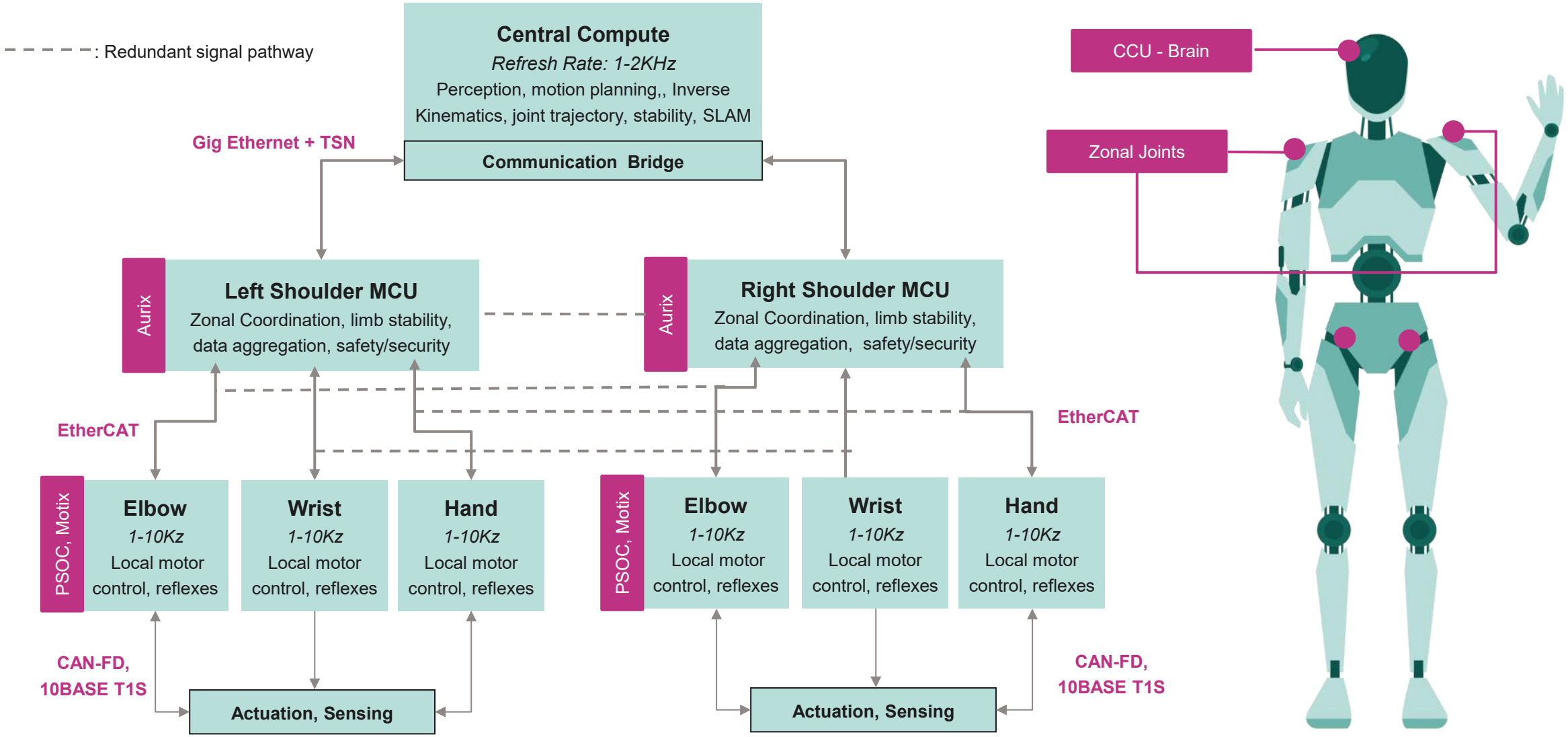
Communication backbone





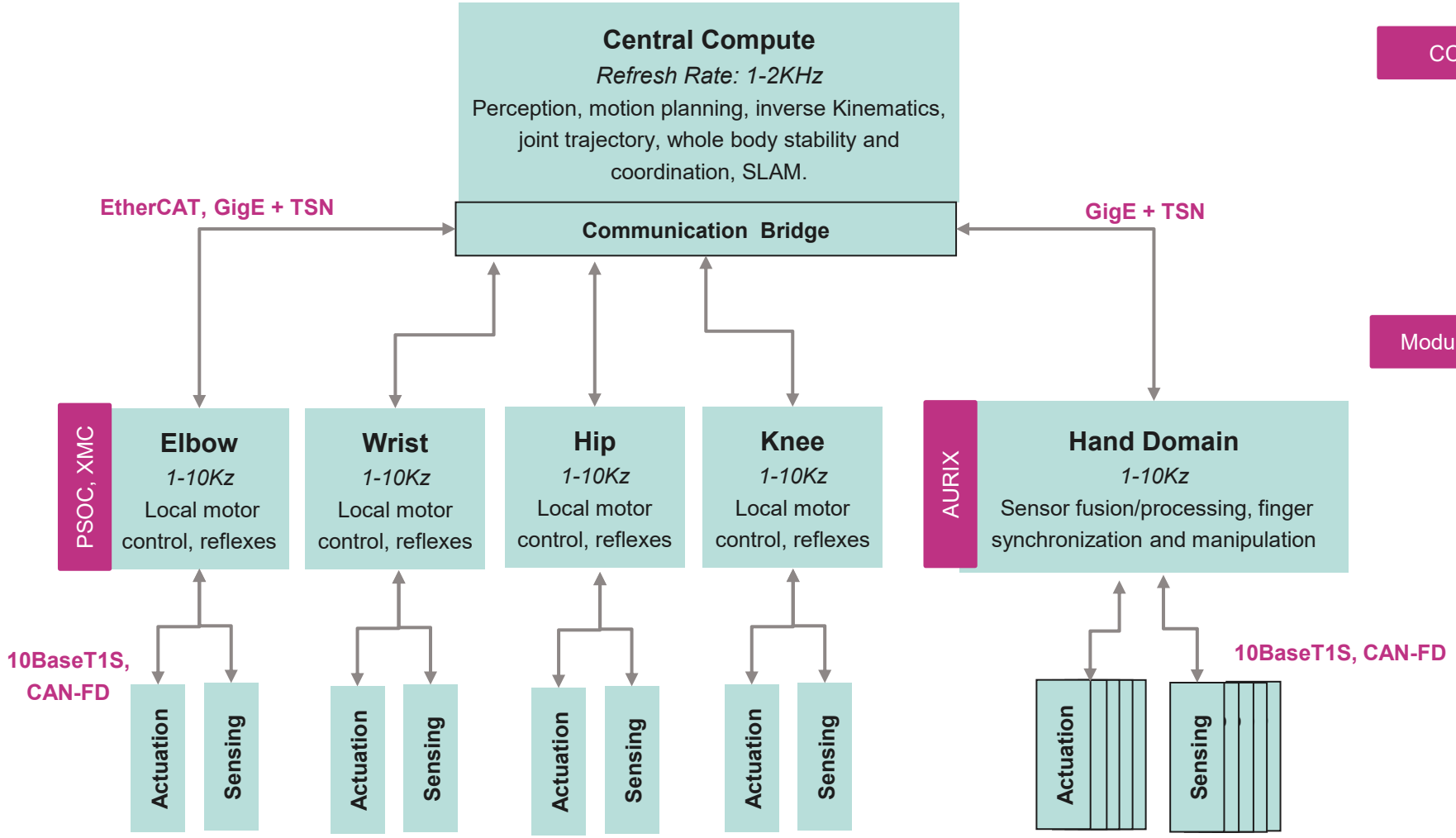
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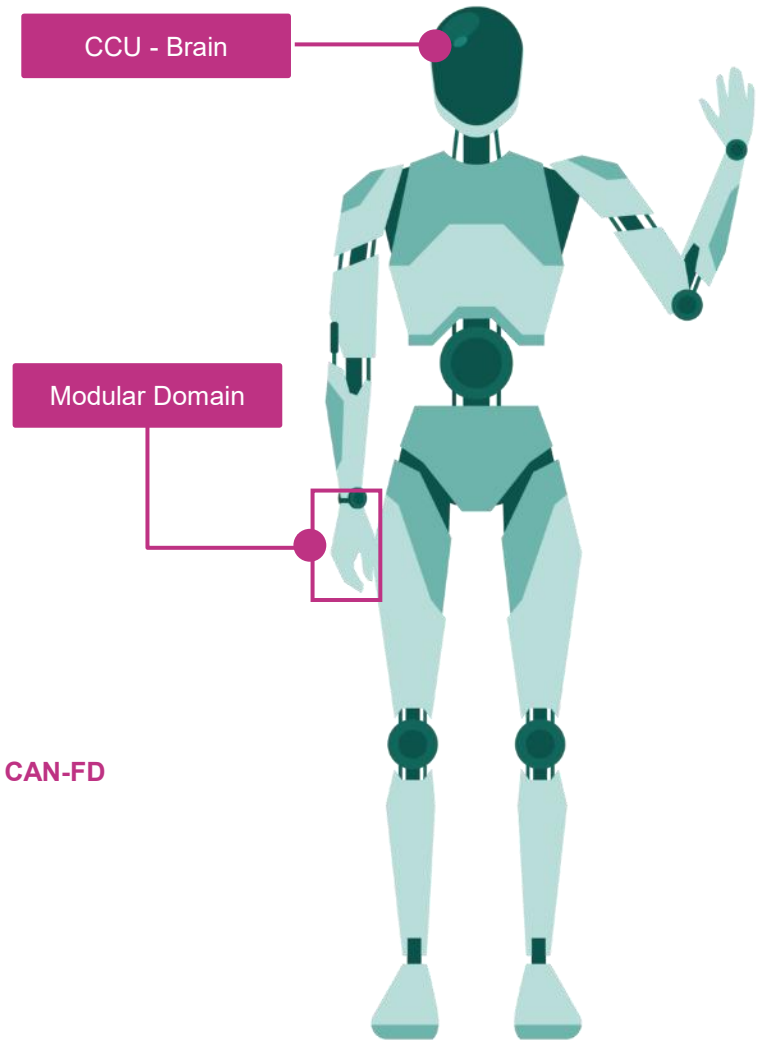
Humanoid Architecture: Zonal Processing



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Humanoid Architecture: Centralized Processing + Modular Domain





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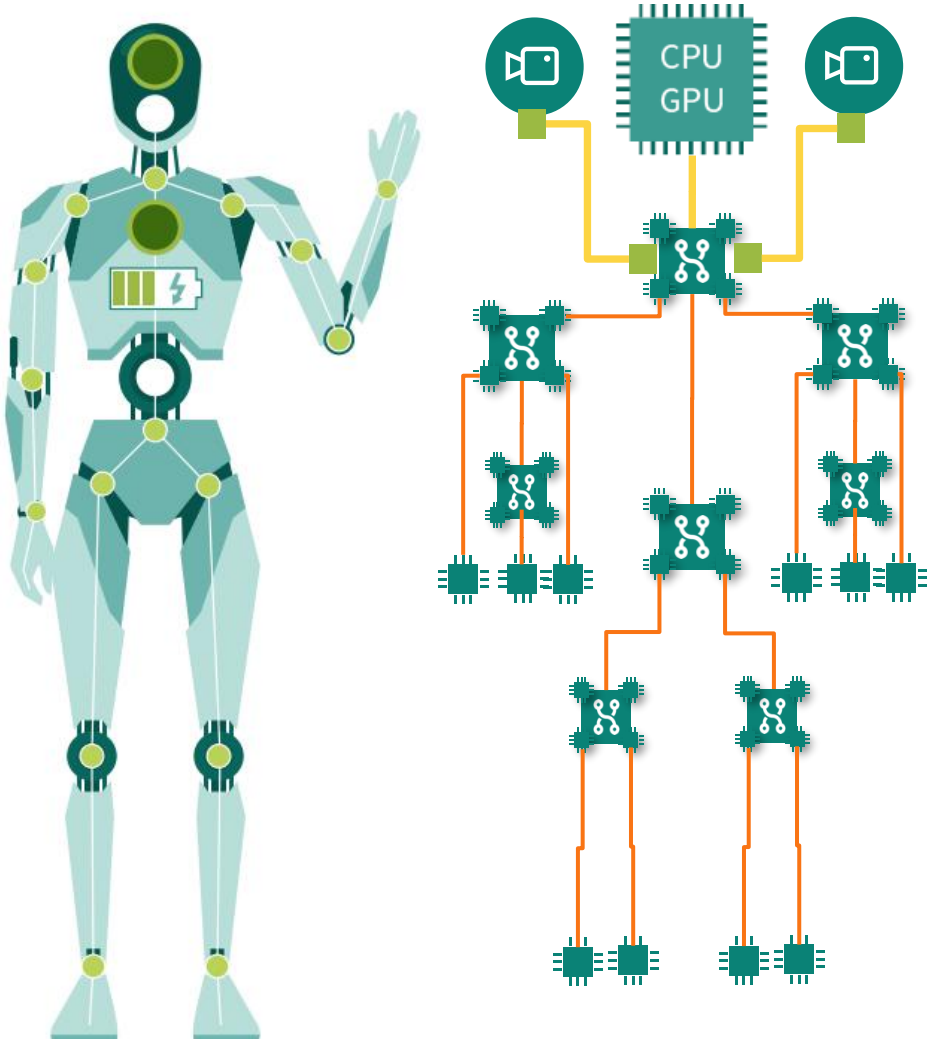
Manage the bandwidth problem and reduce cable complexity in the robot design with Ethernet!

Ethernet infrastructure provides:

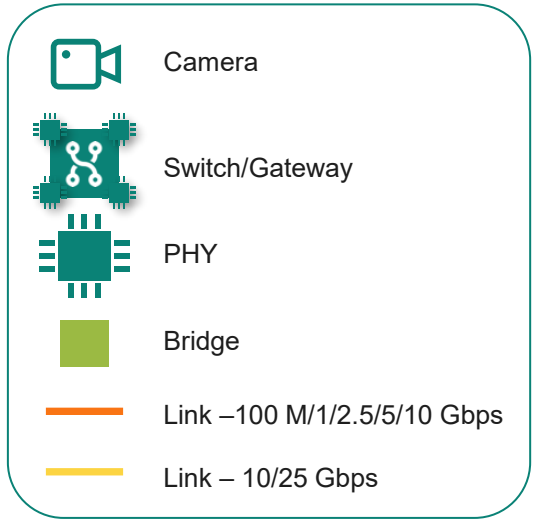
- Higher bandwidth
- Lower latency
- Determinism with TSN
- Industry-standard interfaces & protocols
- Lower costs

Infineon Ethernet products provides:

- Roadmaps and innovation
- Single Pair Ethernet
- Lower power consumption
- High quality
- Functional safety

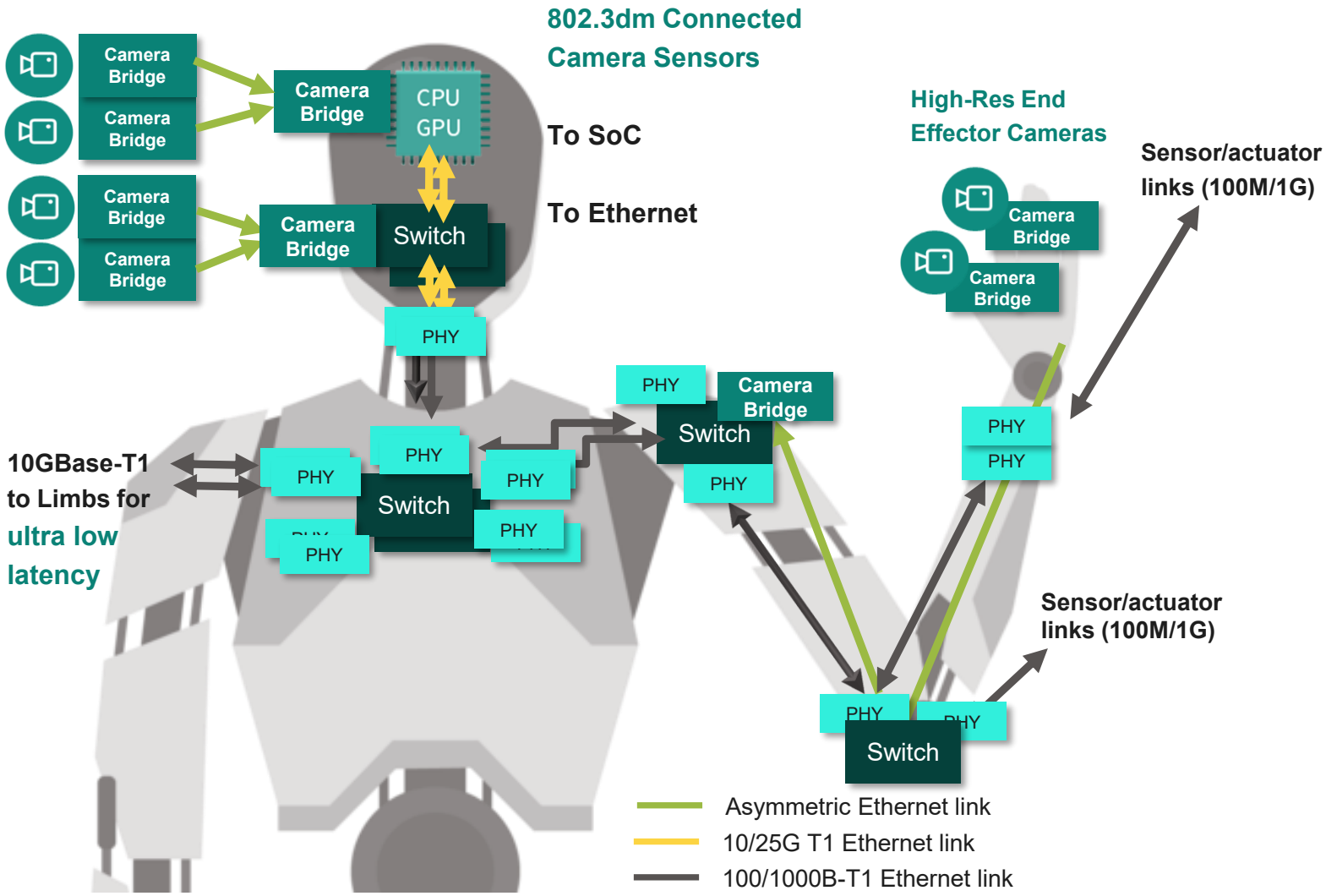


Ethernet Switch:
BRIGHTLANE™



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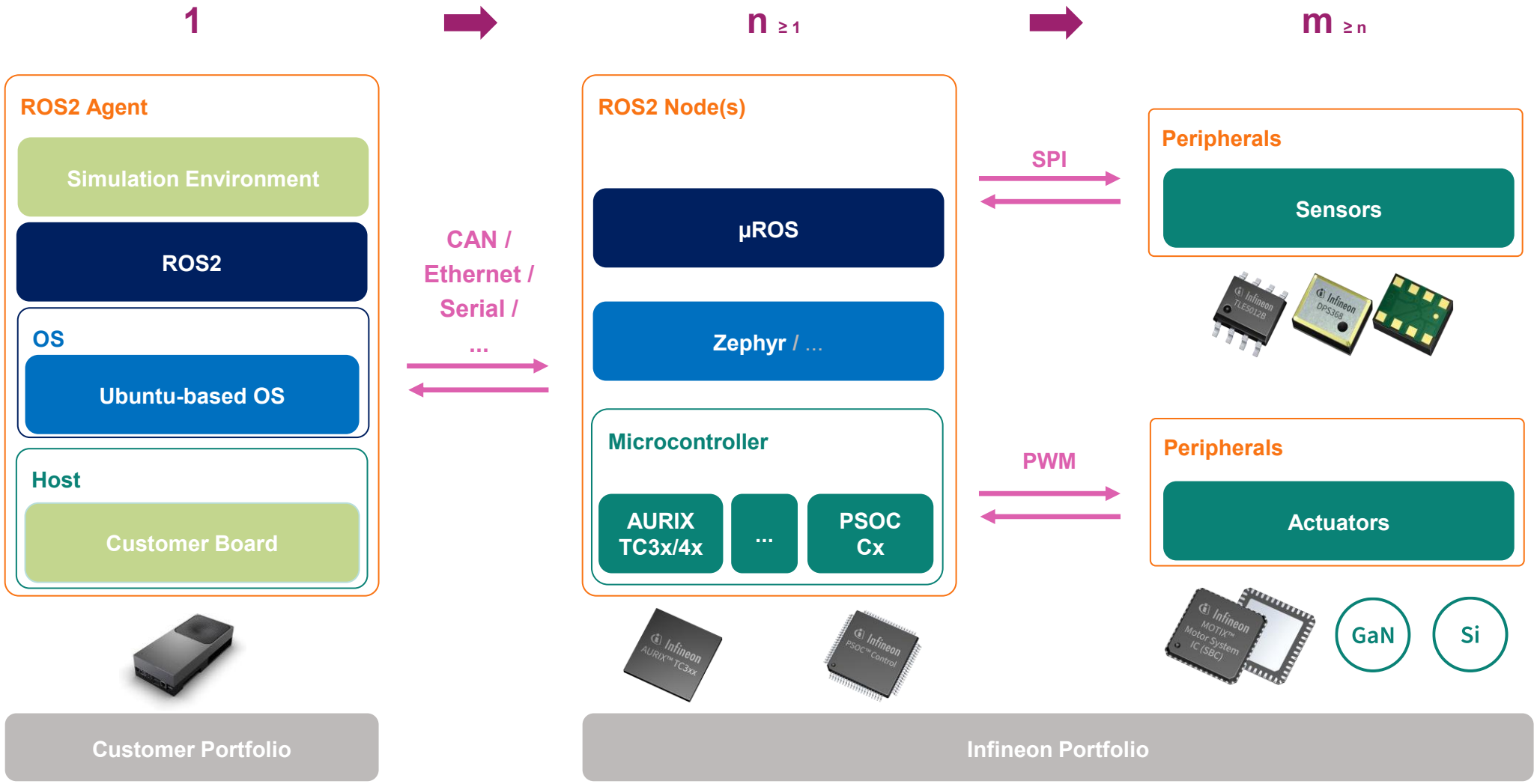
Zonal Ethernet:
One scalable network from sensors to central compute



- **Connect high-bandwidth sensors with the right link speed**: 100M/1G for general sensors, 2.5/5/10G for high-res cameras
- Aggregate in zones, **scale on a backbone: Zonal switches + 10/25G backbone reduce wiring and simplify architecture**
- Built for automotive robustness: **deterministic low latency, redundancy options, and a roadmap aligned to future asymmetric camera links** (802.3dm)

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ROS System Architecture – High Level



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Made with AI

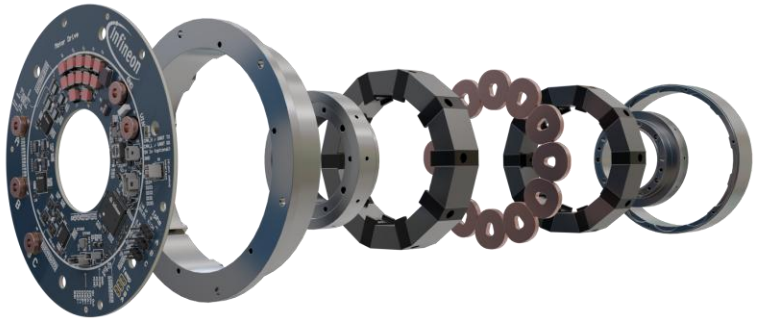
Motor control

Infineon offers a comprehensive Si and GaN portfolio for 70+ joints
Compact motor control systems, enabling all relevant power classes from 25 W – 10 kW
Extensive MCU portfolio and Communication Solutions

GaN Si

High power density	High dynamics	High dexterity
up to 3.3 kW per in^3	Switching frequencies with up to 500 kHz	Fully integrated motor control 4x4 mm

Joint module motor control

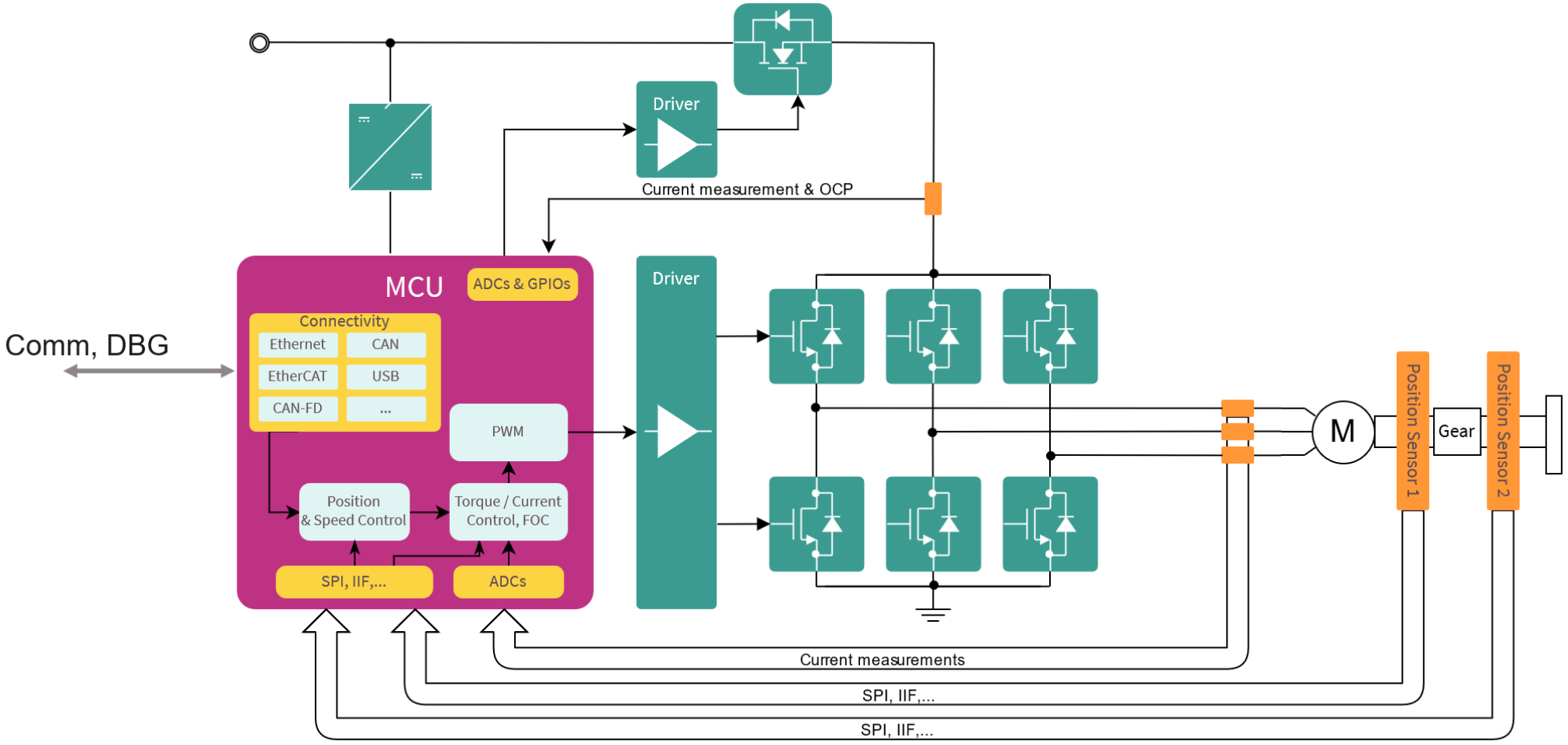


Spec & Requirement

- **Motor & Driver**: hollow shaft motor is popular with circular driver board
- **Reducer**: harmonic drive (100:1) in arm, planetary reducer (10:1) in leg
- **Encoder**: two encoders to detect motor and reducer's speed & position
- **Challenge:**
  - Limited space with many components inside
  - Peak power requirement: 3 times (rated power) & 3S
  - >30 joint modules per robot, need to control joint module's weight

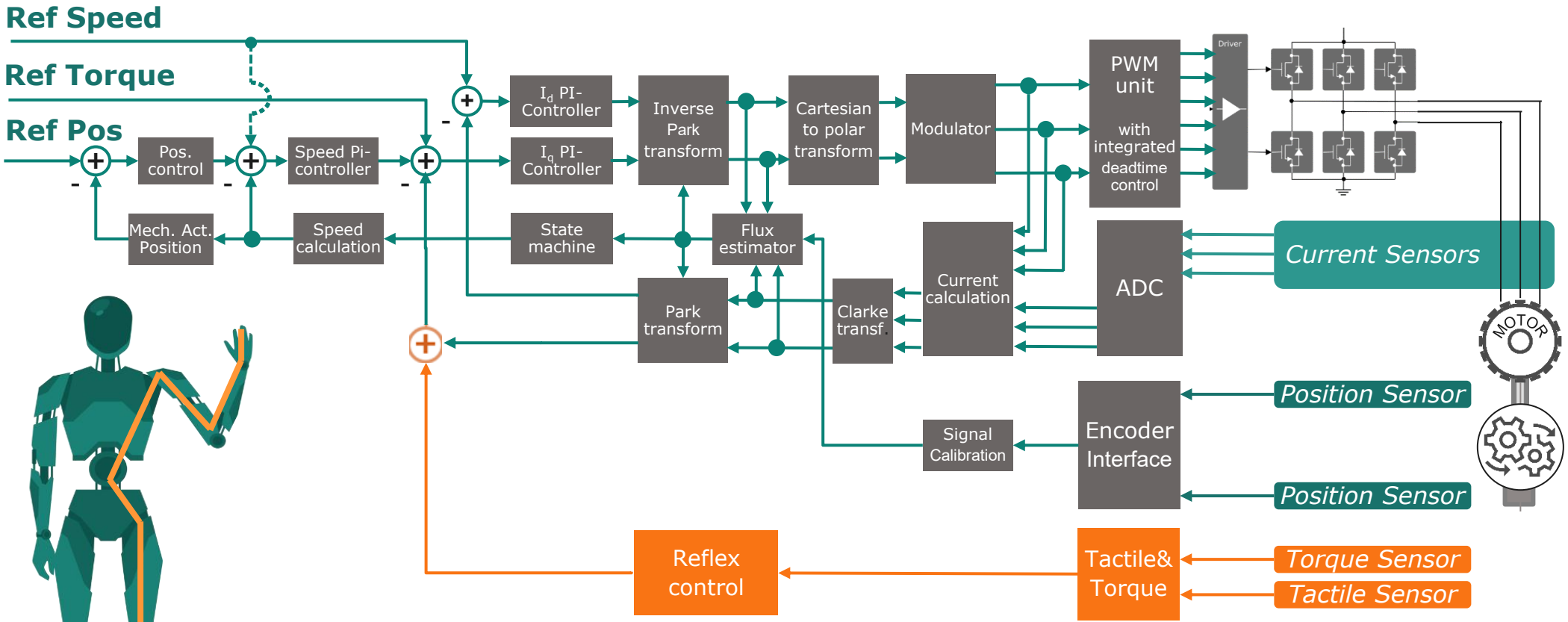
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Motor Control Diagram



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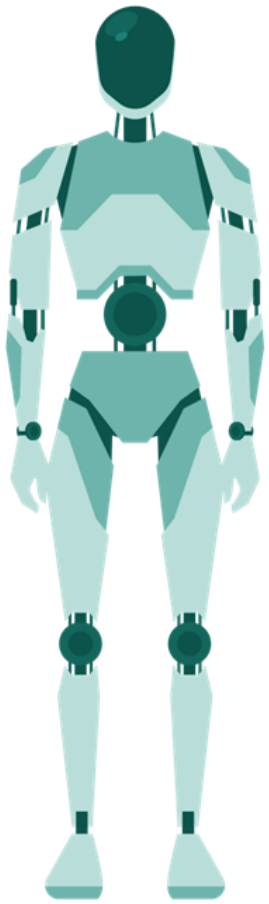
Accurate movement requires precise sensors. Motor control relies on current sensing, while position & torque sensors describe motion.



- Sensor oriented FOC is state of the art motor control
- In phase current sensing enables high frequency
- Accurate movement needs position sensors with resolution <<1°
- Additional torque sensing offers further control options

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Motor requirements for humanoid robot joints

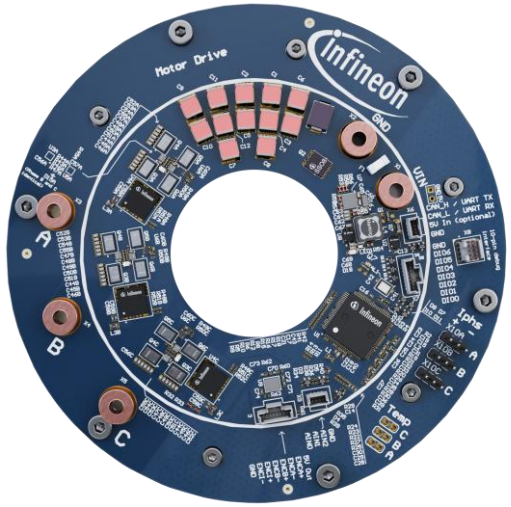


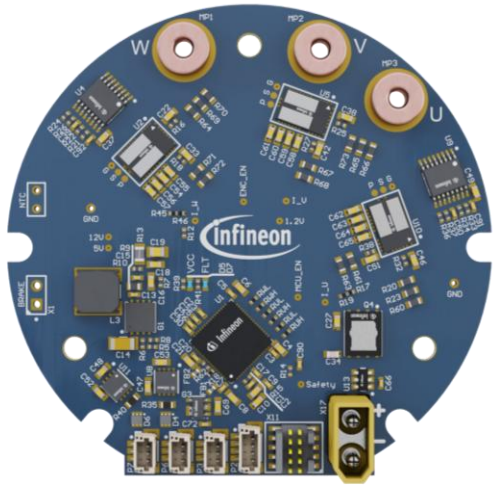
Key Consideration by Joint Type

Joint Type	Requirements	Design Focus	Typical Motor Type	Typical Motor Parameters
Hips/Knees	High torque, shock absorption	Planetary gears (<10:1), liquid cooling, low Rs & Ld,q	BLDC PMSM	Power: 20-3000W Torque: 10-500Nm
Ankles	Dynamic response for balance	Low inertia, series elastic actuators (SEAs)	BLDC Servo Motors	Power: 10-500+W Torque: 5-200Nm
Shoulders **Elbows**	High torque Speed-accuracy tradeoff	Harmonic drives, high gear ratio (30:1)	BLDC Servo Motors	Power: 10-500W Torque: 5-200Nm
Waist Rotation	Precise movement Smooth motion	Harmonic drives	Servo Motors BLDC	Power: 2-100W Torque: 1-50Nm
Wrists	Compact and light, Smooth and accurate tilt	Harmonic drives, high gear ratio (30:1)	BLDC, Servo Motors DC Stepper	Power: 10-50W Torque: 0,5-20Nm
Head/Neck	Precise movement Smooth motion	Harmonic drives Very high gear ratio (50:1)	Servo Motors DC Stepper	Power: 5-50W Torque: 0,1-10Nm
Fingers	Compact size, low weight, accurate, dexterous	Coreless motors, tendon-driven mechanisms	DC Stepper, BLDC Coreless DC Motors	Power: 1-10W Torque: 0,05-2Nm

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Scalable system solutions





Microcontroller

AURIX™ or PSOC™



Gate drivers

EiceDRIVER™



Power switches

OptiMOS™ or CoolGaN™



Current and position sensor

XENSIV™



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Infineon offers complete solutions for compact, efficient and precise motor control systems



Microcontrollers

PSOC™ Control C3



XMC™



AURIX™



Discrete

MCU + GDU: MOTIX™

Gate Driver

EiceDRIVER™ & MOTIX™



DSO-8 MLPQ 4x4 TSSOP-28



VQFN-48 SOT-23 PG-TSNP

& many more packages

Discrete

GDU + Switch: MOTIX™

MCU + GDU + Switches: MOTIX™

Switches

OptiMOS™



CoolGaN™



& many more packages

Discrete

Sensing

XENSIV™ Position Sensor

TLE5501, TLE5014(D)
High resolution: TLE5009(D)
& TLx5012B(D)



XENSIV™ Current Sensor

TLI4971, TLx5570/72



Discrete

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Infineon's new Demo boards!

Size down your motor controls and boost efficiency

Small form factor

- ✓ Enables embedding the inverter within the motor, addressing space constraints
- ✓ Ideal for compact and tightly integrated humanoid robot designs

Improved system efficiency

- ✓ Reduces motor core losses, especially at higher switching frequencies (fsw)
- ✓ Leads to longer operational times and better performance of humanoid robots

Simplified and flexible system design

- ✓ GaN integrated power stage combined with a new controller & current sensors
- ✓ Flexible enough to fit any form factor, easing the integration process
- ✓ Reduces the complexity of system design, allowing developers to focus on other aspects of the robot

Features:

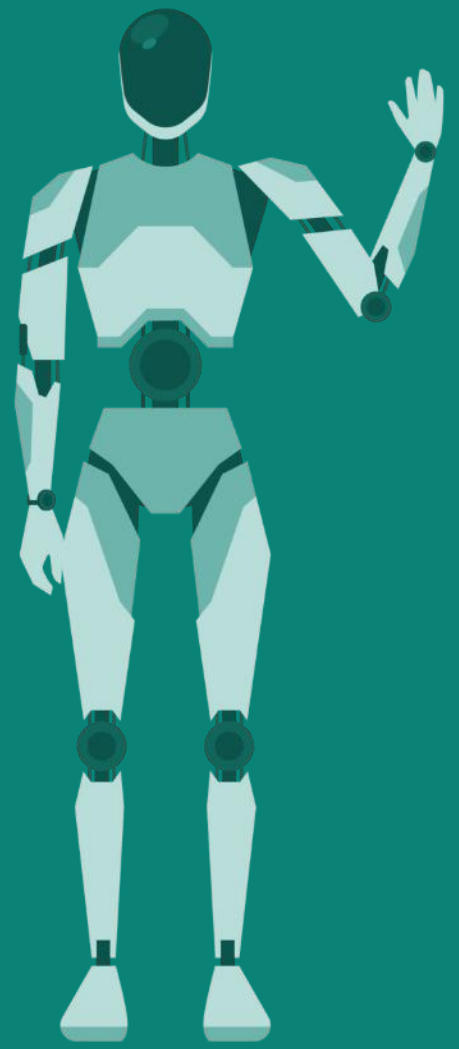
- Complete Motor Control system (inverter + controller + aux circuits)
- Sensored or sensorless FOC with CAN / UART communication
- TMR current sensors with fast OCP shutdown
- High-side inrush current limiting with fast short-circuit disconnect
- Two position sensor interfaces for multiturn-absolute encoder
- Demo Software available in ModusToolbox™

GaN Version



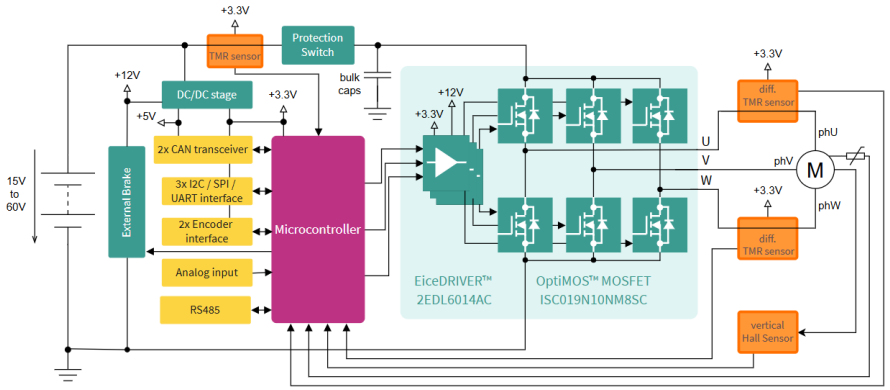
Si Version





100V SI motor drive reference design for humanoid robotics

REF_HUMA_MTR_25A_SI



Front Side



Back Side



Technical details

Parameter	Value
Input voltage	15~60 V_{DC}, 48 V typical
Output current	≥25 A_{RMS}
Output power	≥1 kW
Peak efficiency	99% (target)
Switching freq.	100 kHz
Dimensions	≤ ⌀ 66 mm

Learn more	
Sales name	REF_HUMA_MTR_25A_SI
IFX components	ISC019N10NM8SC 2EDL6014AC IQD020N10NM5SC IRL80HS120 IRLML6401 1EDL8011 1EDN7512B TLE5571-AES3C3-I-S0001 (TMR) TLI5572-AE04E1-R-E0001 (TMR) PSC3M5FDS2LHQ1 TLE9251VLEXUMA1 TLS4125D0EPV50 TLS202B1MBV33 TLE49012-S0001 TDA48001G4B
Focus application	Humanoid robotics

Features

ModusToolbox™ Motor Suite ready

- All in one system (inverter + controller + aux circuits)
- Sensored or sensorless FOC with CAN/UART communication
- TMR current sensors with fast OCP shutdown
- High-side inrush limiting with fast disconnect in short-circuit
- Two position sensor interfaces for multiturn-absolute encoder

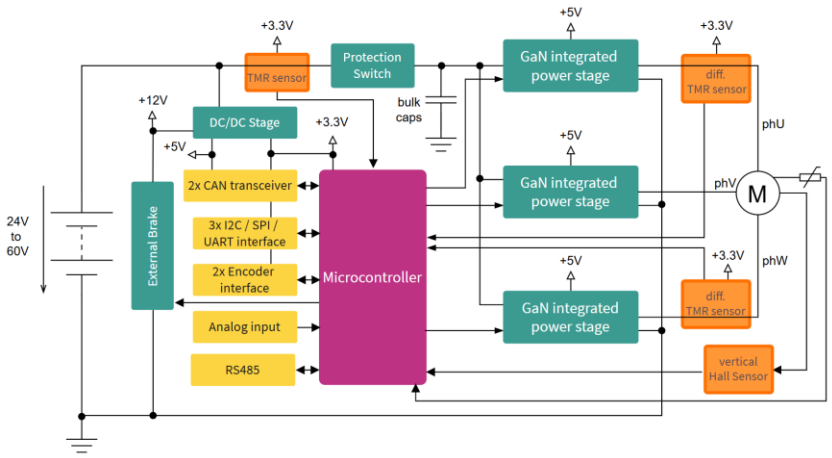
Benefits

- Form factor enables embedding of inverter within motor
- Application focused design, with scalability mindset
- Improved system efficiency due to motor core loss savings @ higher f_{sw}
- PSoC C3 MCU + small form factor dual-channel driver + dual-side cooled OptiMOS for flexible system design

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100V GaN motor drive reference design for humanoid robotics

REF_HUMA_MTR_48V_25A



Front Side



Back Side



Technical details

Parameter	Value
Input voltage	24~60 V_{DC}, 48 V typical
Output current	≥25 A_{RMS}
Output power	≥1 kW
Peak efficiency	99% (target)
Switching freq.	100 kHz
Dimensions	≤ ⌀ 66 mm

Learn more	
Sales name	**REF_HUMA_MTR_48V_25A**
IFX components	IGJ022H10SA2 (100V) IQD020N10NM5SC IRL80HS120 IRLML6401 1EDL8011 1EDN7512B TLE5571-AES3C3-I-S0001 (TMR) TLI5572-AE04E1-R-E0001 (TMR) PSC3M5FDS2LHQ1 TLE9251VLEXUMA1 TLS4125D0EPV50 TLS202B1MBV33 TLE49012-S0001 TDA48001G4B
Focus application	Humanoid robotics

Features

ModusToolbox™ Motor Suite ready

- All in one system (inverter + controller + aux circuits)
- Sensored or sensorless FOC with CAN/UART communication
- TMR current sensors with fast OCP shutdown
- High-side inrush limiting with fast disconnect in short-circuit
- Two position sensor interfaces for multiturn-absolute encoder

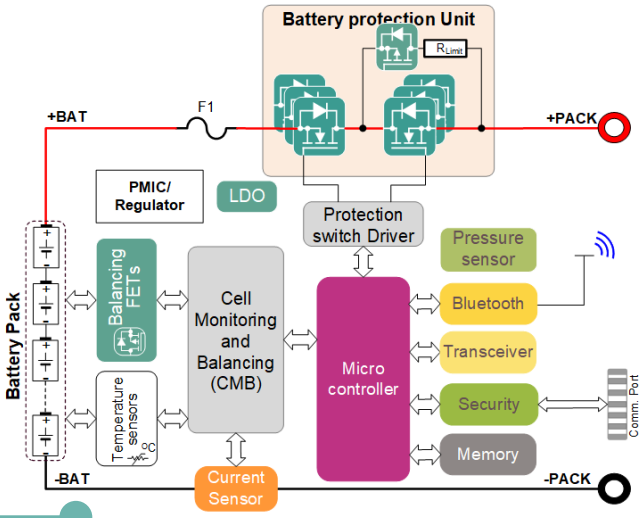
Benefits

- Form factor enables embedding of inverter within motor
- Application focused design, with scalability mindset
- Improved system efficiency due to motor core loss savings @ higher f_{sw}
- GaN integrated power stage + new controller and current sensors enable a simple and flexible system design to fit any form factor

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Keep all on under control with proven Battery Management Systems (BMS) solutions

BMS



Protection

Balancing MOSFETs



SOT23 SOT323 SOT363 SC59

Small Signal MOSFET

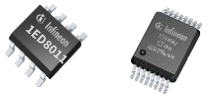
Protection FETs



TOLT TOLL D2PAK SS08

OptiMOS™ 6, LinearFET™, CoolGaN™

High-side Drivers



DSO-8 DSO-16

EiceDRIVER™

& many more packages

Cell Balancing & Monitoring

TLE9012DQU
- 12-Cell Voltage monitoring



TQFP-48

TLE9018DQU
- 18-Cell Voltage monitoring



TQFP-80

MCU



PSOC™ 4 & 6



XMC™ 7000



AURIX™



TLE925X

CAN Transceiver

& many more packages

Bluetooth

AIROC™ Bluetooth® LE
CYW20820
CYW4373E



Security

OPTIGA™ - SLE95401



Current sensor

XENSIV™ TLI4971, TLx5570//72



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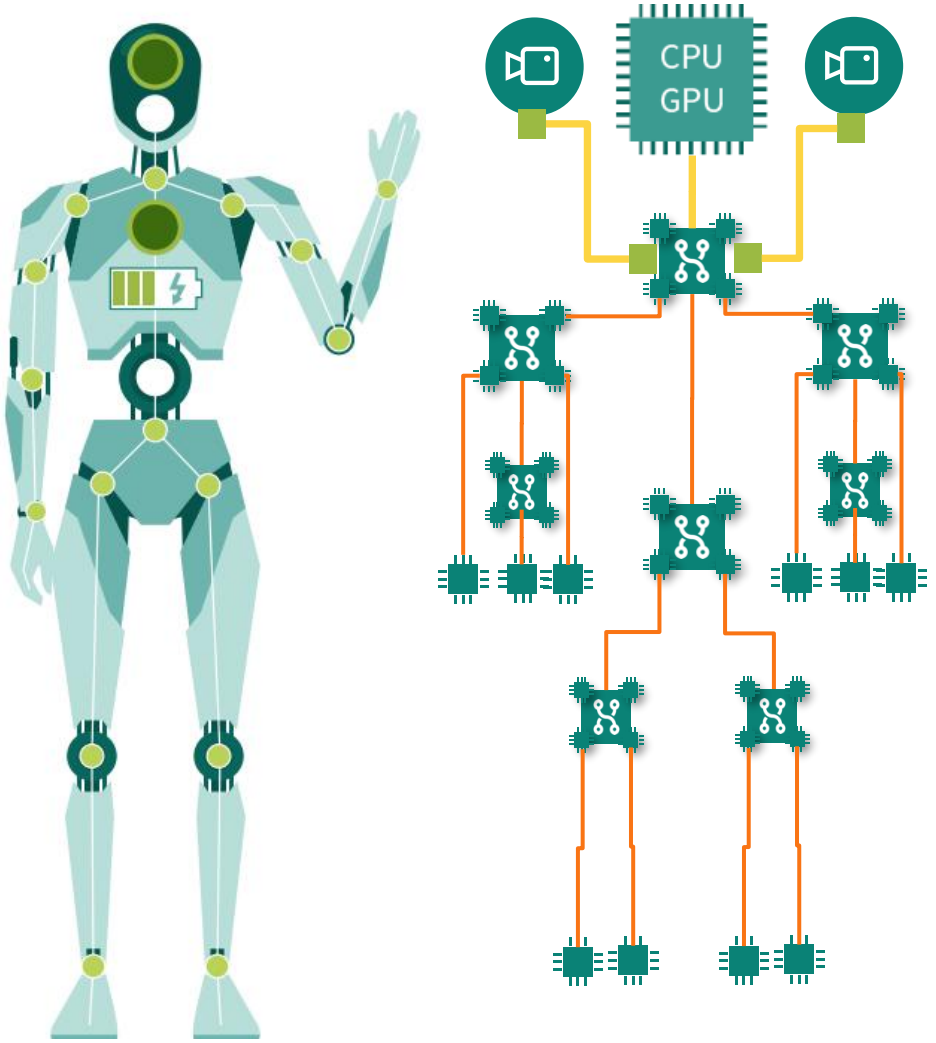
Manage the bandwidth problem and reduce cable complexity in the robot design with Ethernet!

Ethernet infrastructure provides:

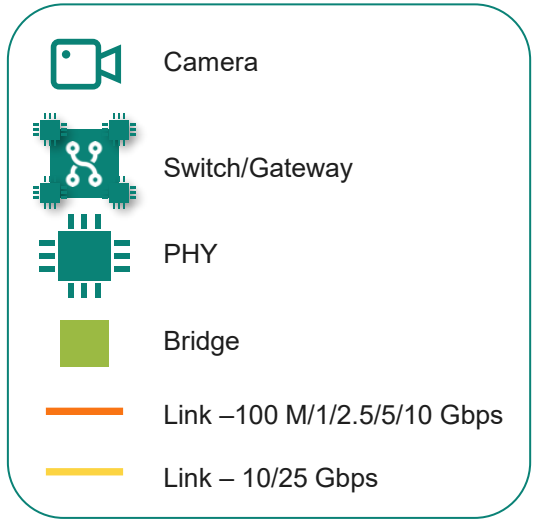
- Higher bandwidth
- Lower latency
- Determinism with TSN
- Industry-standard interfaces & protocols
- Lower costs

Infineon Ethernet products provides:

- Roadmaps and innovation
- Single Pair Ethernet
- Lower power consumption
- High quality
- Functional safety

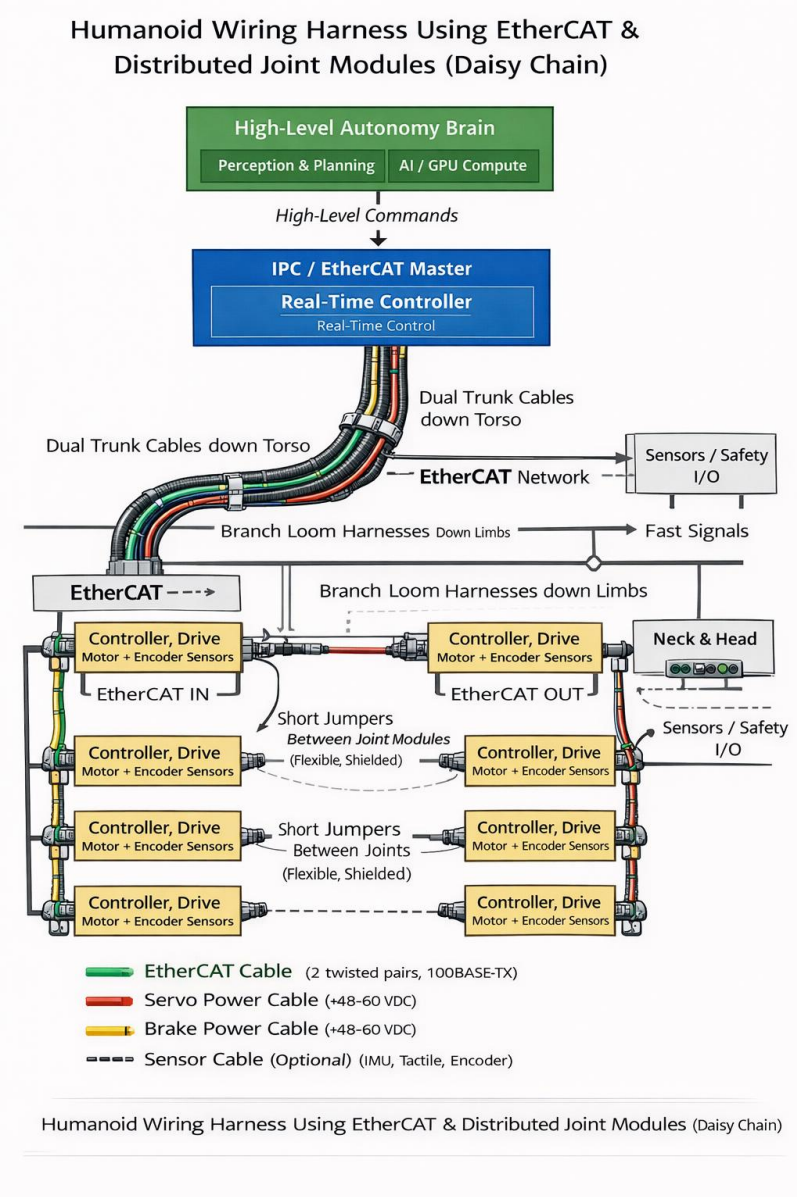


Ethernet Switch:
BRIGHTLANE™

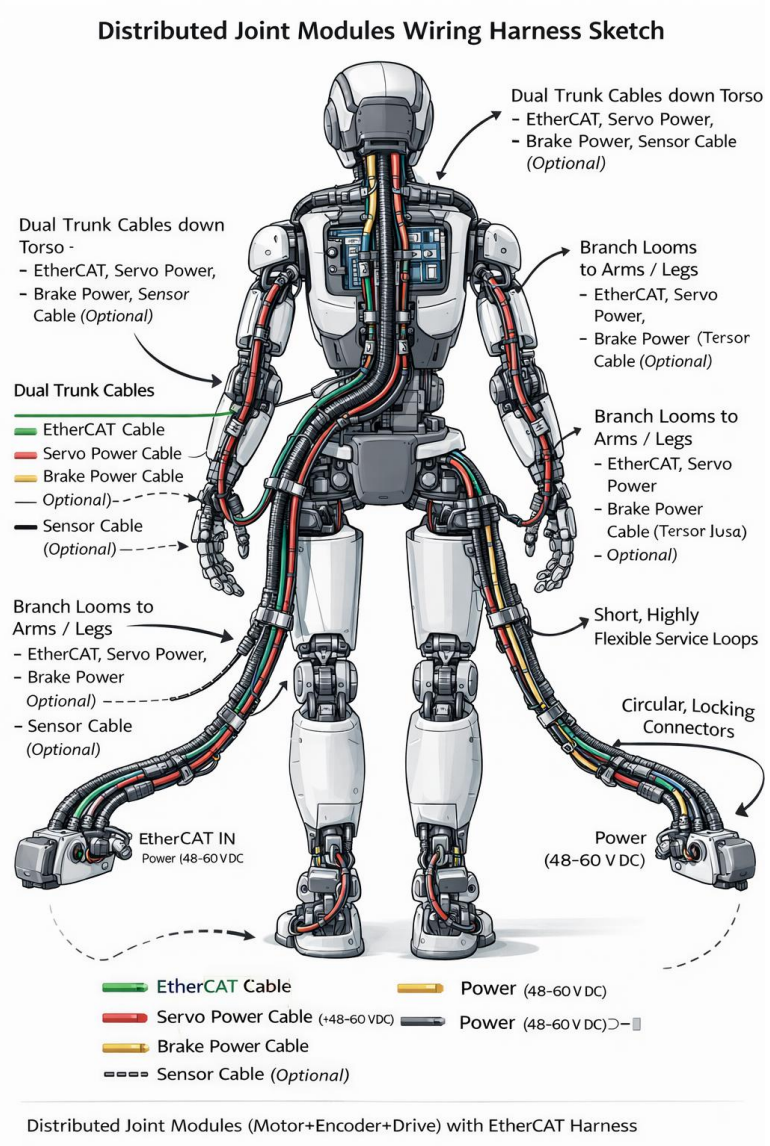


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Humanoid Robotics today



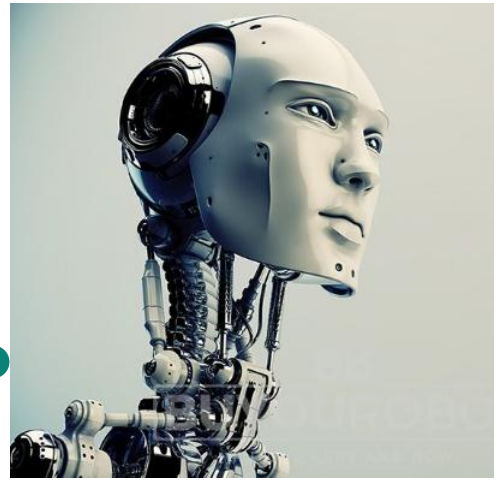
Humanoid Wiring Harness Using EtherCAT & Distributed Joint Modules (Daisy Chain)



Distributed Joint Modules (Motor+Encoder+Drive) with EtherCAT Harness

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Connect what matters in a save, fast and reliable way!



HMI

Cap-sense & Display

PSOC™ 4 & 6 family

PSOC™ Edge family

Memory

Memory

EXCELON™ Ferroelectric RAM

Non-volatile SRAM and SRAM

SEMPER™ Quad-SPI NOR flash

Wired & Wireless Connectivity

Ethernet*

Wi-Fi 5

Wi-Fi 6

Main Control and Safety Companion MCU

PSOC™ Control C3

XMC™ 7000

AURIX™

Low-latency real-time capable, secure and functionally safe MCUs

MPU Brain

NVIDIA Jetson™

Rockchip™

**All Ethernet PHY, switch and bridge products and related software may only be used in automotive, industrial and robotics applications."*

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Dex Hand

Infineon offers a comprehensive Si and GaN portfolio for 70+ joints
Compact motor control systems, enabling all relevant power classes from 25 W – 10 kW
Extensive MCU portfolio and Communication Solutions

GaN Si

High power density

up to 3.3 kW per in^3

High dynamics

Switching frequencies with up to 500 kHz

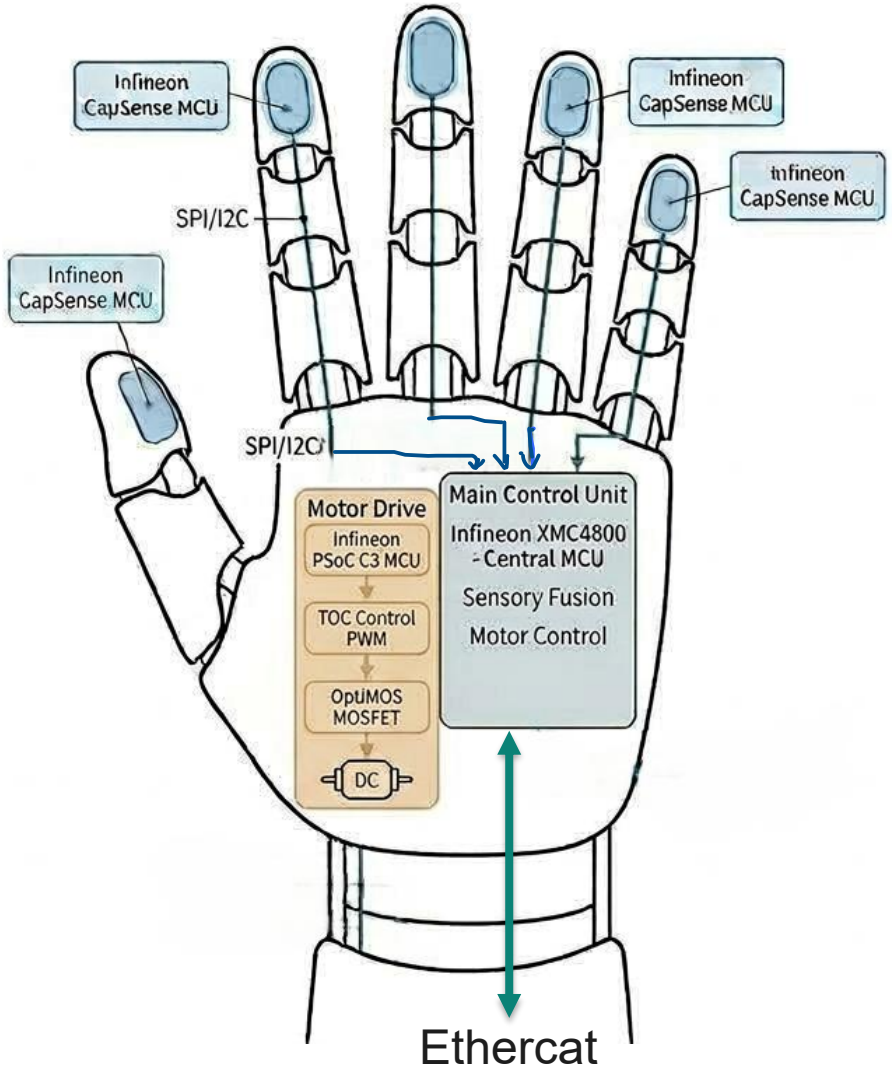
High dexterity

Fully integrated motor control 4x4 mm

Dexterous Hand

Tactile sensing

- Humanoid has to grasp, hold, and manipulate objects with delicacy, precision and speed. Tactile sensors enable:
  - Stable grasping
  - Dexterous manipulation
  - Texture and object recognition
  - Material perception
- Humanoid & AMR has to interact safely with humans:
  - Detecting and responding to human touch during shared tasks, such as handing over objects
  - Ensuring safety during physical contact
  - Interpret human touch gestures to understand intent or emotion and respond accordingly

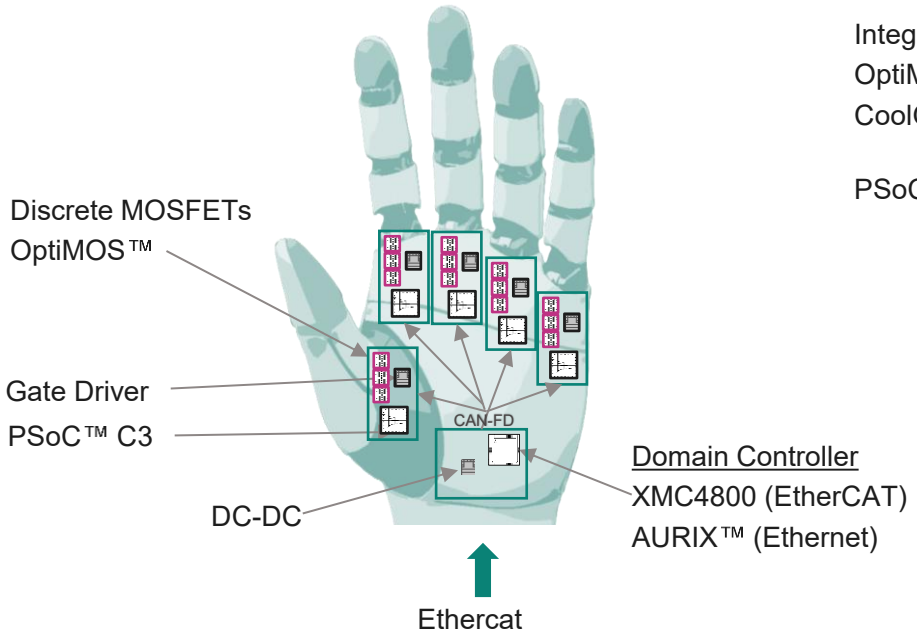


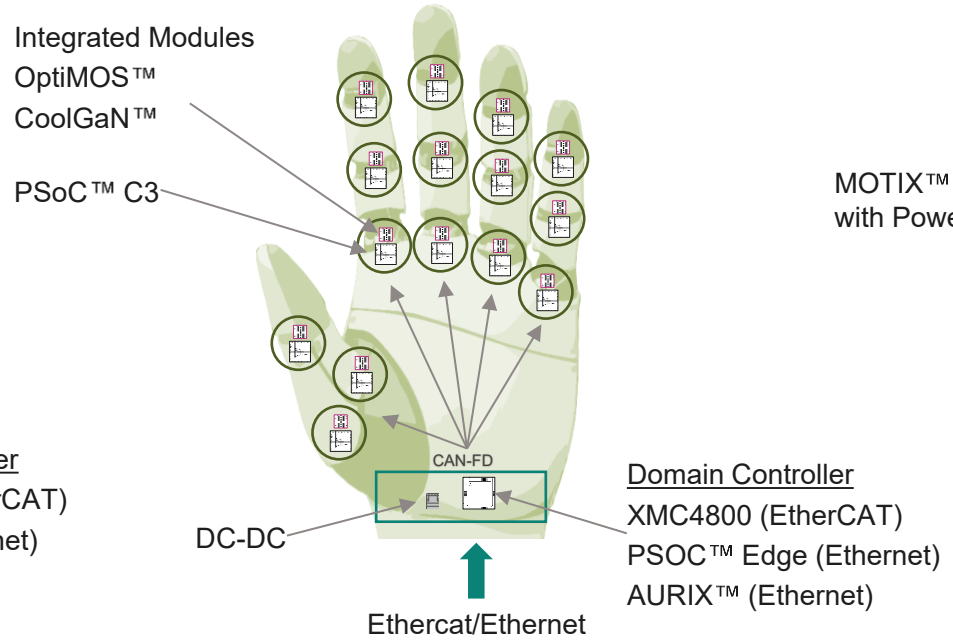
Motor drive

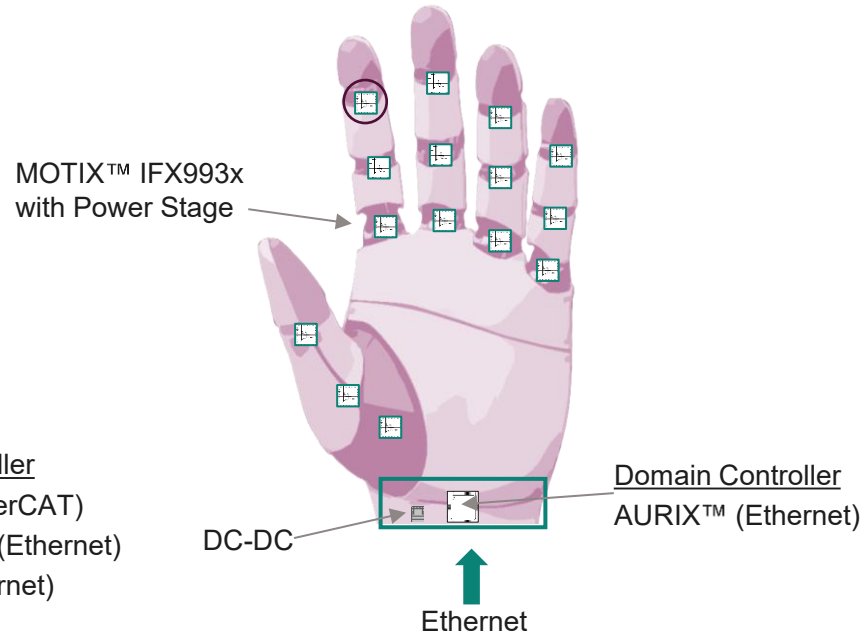
- Motor drives in the dexterous hands of humanoid robots are designed to simulate human hand anatomy, aiming to achieve high-precision manipulation, strong grasping capabilities, and adaptability in complex, unstructured environments.
- Object Rotation and Translation: Motors enable delicate reorientation of objects (e.g., rotating a cylinder or a screw) using finger coordination.
- Finger Gaiting: The drive system controls the frequent opening and closing of fingers to "walk" them along the object's surface for continuous reorientation.
- Fine Positioning: The motor drive allows precise translation and rotation of objects along multiple axes, mimicking human dexterity for tasks such as assembly

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Humanoid Dexterous Hands: Semi and fully integrated solution paired with right fit MCUs enable advanced solutions







Discrete / centralized

- **Hand palm concepts** with low degrees of freedom (DOF) esp. for grippers
- One central MCU with **Ethercat or Ethernet interface**
- Individual motor drive PCB for each joint
- Discrete solution offers **flexibility and can scale**, but uses plenty of space

Semi-Integrated / hybrid

- Concept proposal **medium amount of DOF** based on Integrated Power Module (IPM), Half-Bridge or B6-Bridge
- **Located in the palm**: multiple medium µC typically drive 2-4 motors per µC
- Single large PCB or one for each finger
- Usage of gear, linkages or tendon systems

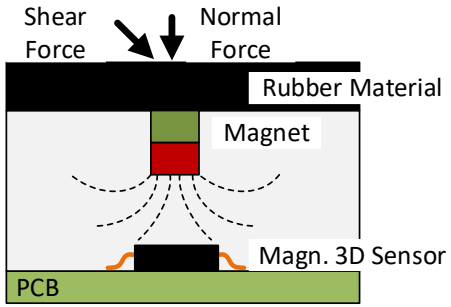
Monolithic / decentralized

- Optimized proposal for **high amount of DOF**
- **Smallest footprint** (PCB of 10-12mm in diameter)
- **Fully integrated in finger** joint on motor distributing power dissipation
- **Reduction of mechanics and complexity**
- Hybrid transmission possible: fully direct or with geared / linkage systems

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Force and touch sensors

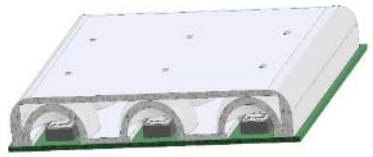
Magnetics



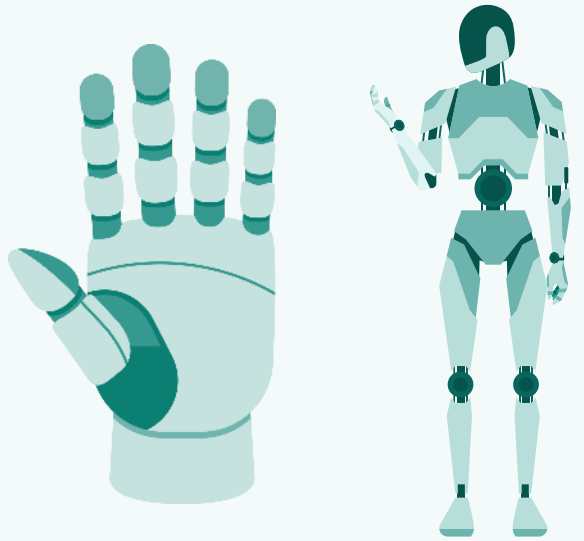
Magnet embedded in **flexible finger tip** above Hall sensor

Pressure





Array of pressure sensors used as tactile skin

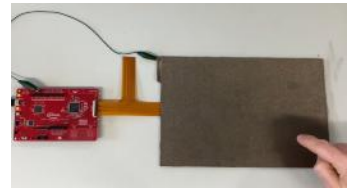


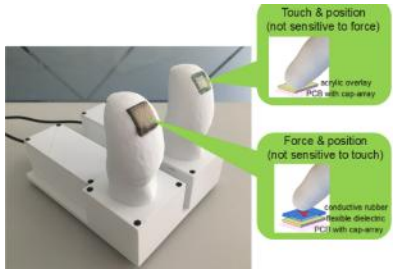
- **Different sensors** available for force and tactile sensing
- **Winning technology** not yet determined
- **Coexistence of multiple solutions** in parallel

Infineon provides multiple options

Please engage with customers and partners to identify ideal solution!

Capacitive





Capacitive electrodes embedded in flexible material

Sound/vibration



Rubber tip sliding across surface to detect material

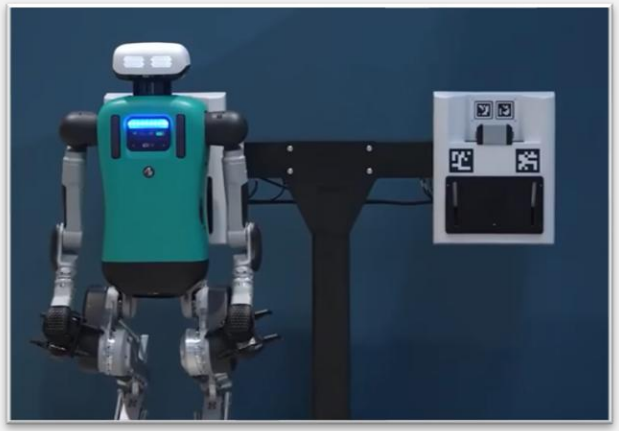
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Power management

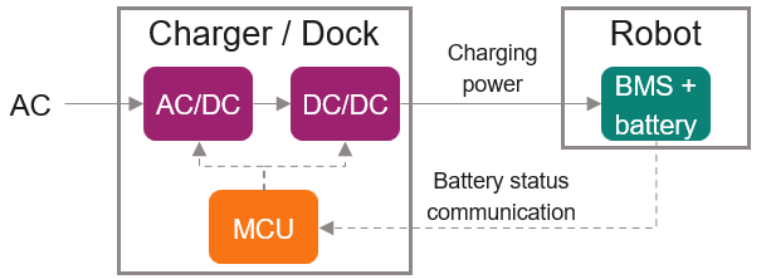
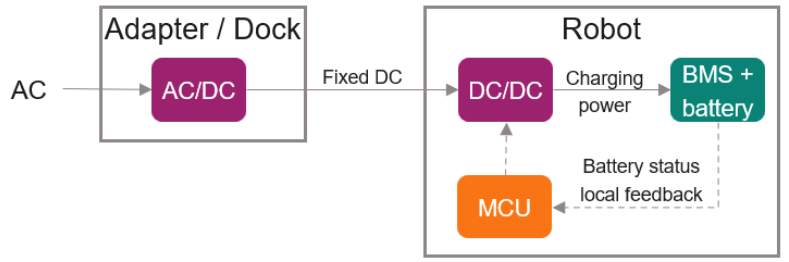
Humanoid Robot Charging Concept

	Wireless Charging	Offboard battery charging	Wired charging	
Description	The removable battery is taken out of the robot and charged externally using a dedicated charger or charging cabinet. This approach can support battery swapping to minimize robot downtime.	Transfers power wirelessly from a charging pad or station to the robot through inductive coupling. The battery remains installed and the robot can autonomously dock for charging without physical electrical contacts.	**External charger** The battery remains installed in the robot while an external charger provides the regulated charging output through a cable, connector, or charging contacts. The main charging power conversion is located outside the robot.	**Onboard DC charging** An external AC/DC adapter or charging station supplies DC power to the robot through a cable or docking contacts. An onboard DC/DC charging stage regulates the power delivered to the battery.
Example	 Source of picture	 Source of picture	 Source of picture	

Note: These charging concepts are **not mutually exclusive**. A robot with swappable batteries may support charging with the battery installed (wired), as well as offboard charging of removed battery packs.

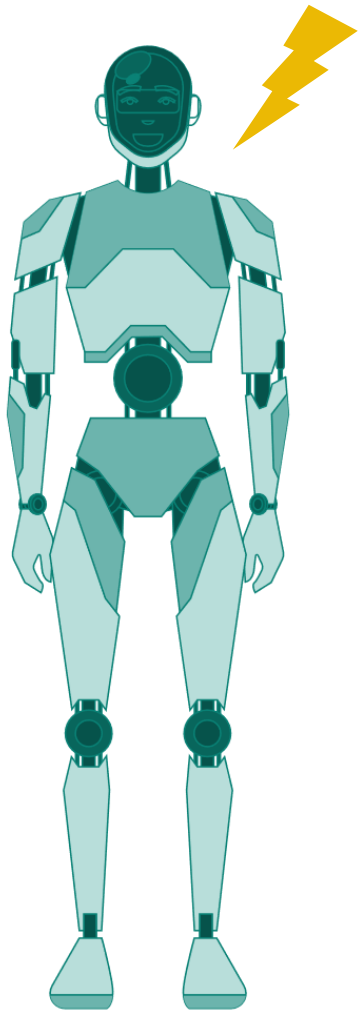
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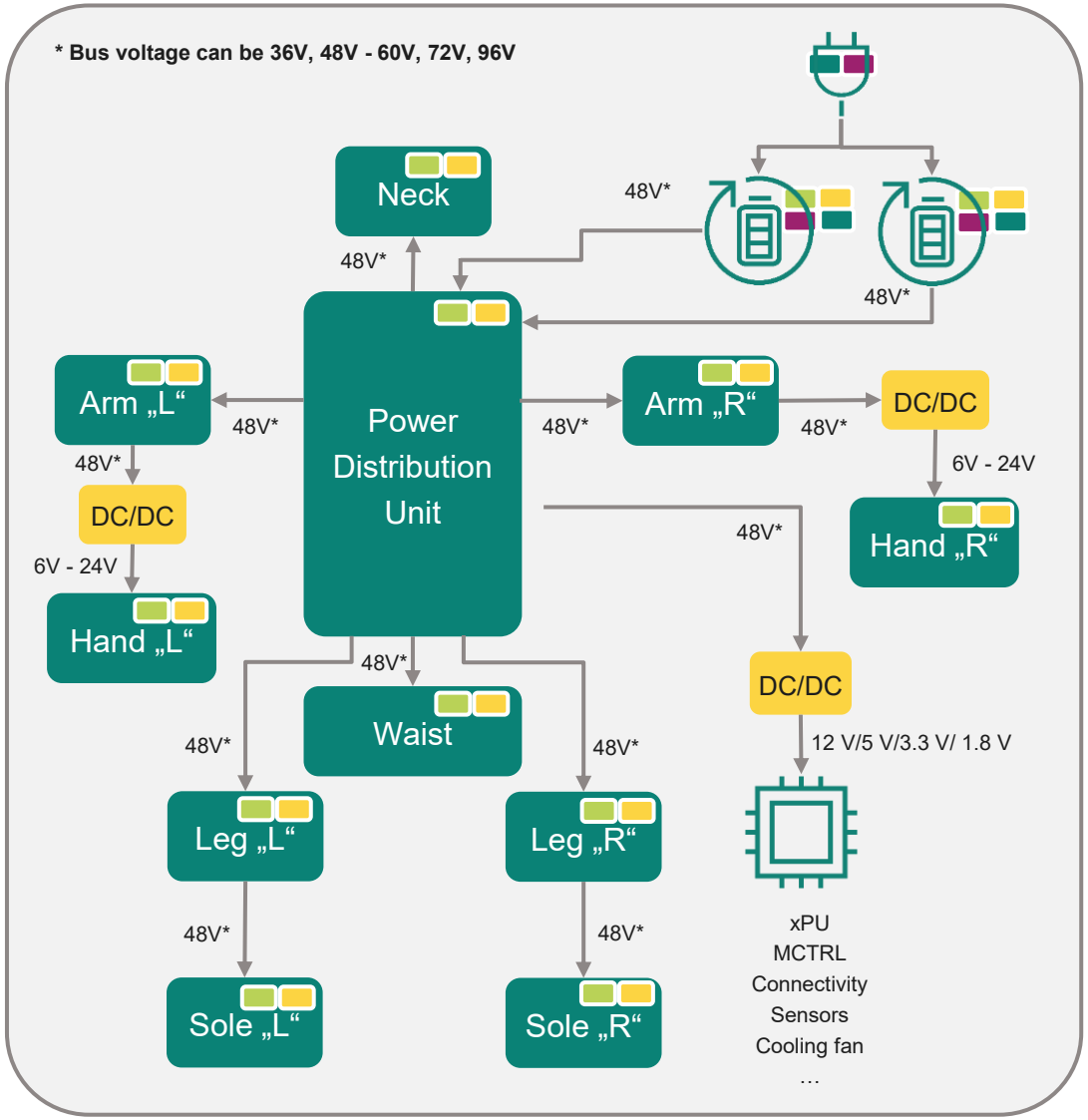
Wired Charging:
External Charger and Onboard DC Charging

	External Charger	Adapter + Onboard DCDC Charging
Architecture		
Dock Output	Wide Vout range	Fixed or standardized DC voltage
BMS ↔ Charger Communication	Typically crosses the robot–dock interface as dock charger needs to know battery charging requirements; Charge profile control is done by charging MCU	Can remain entirely within the robot; Charge profile control is done by PDU MCU
Robot Weight	Lower — charging power stage stays offboard	Higher — robot carries the DC/DC, magnetics, capacitors, thermal design, etc.
Battery Design Change	May require dock charger or protocol changes	Mainly affects onboard DCDC charging; dock can remain unchanged
Main Advantage	Lower robot weight, volume, and cost	Decouples charging infrastructure from battery design; charging is fully controlled by the robot; Exra DC input for robot possible
Main Disadvantage	Dock must understand and control battery charging	Robot carries a power stage that is only needed during charging
Best Fit	Fixed robot + fixed dock; robot weight / cost is critical	Multiple robot / battery variants

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Stay on the save side when operating your robot!
Power distribution and protection offering in Humanoid Robots





Power distribution and protection

Power Protection ICs	– XDP™ Hotswap Controllers – XDP™ eFuses
Power Conversion / Management ICs	– OPTIREG™ LDO, Switcher and PMIC – Switching Regulator – PoL voltage regulators – XDP™ Digital Power Controllers – IBC Module – Digital multiphase controllers

Power conversion and BMS

Gate driver ICs	– EiceDRIVER™ Gate Driver
Power Switches	– CoolGaN™ – OptiMOS™ – LinearFET™

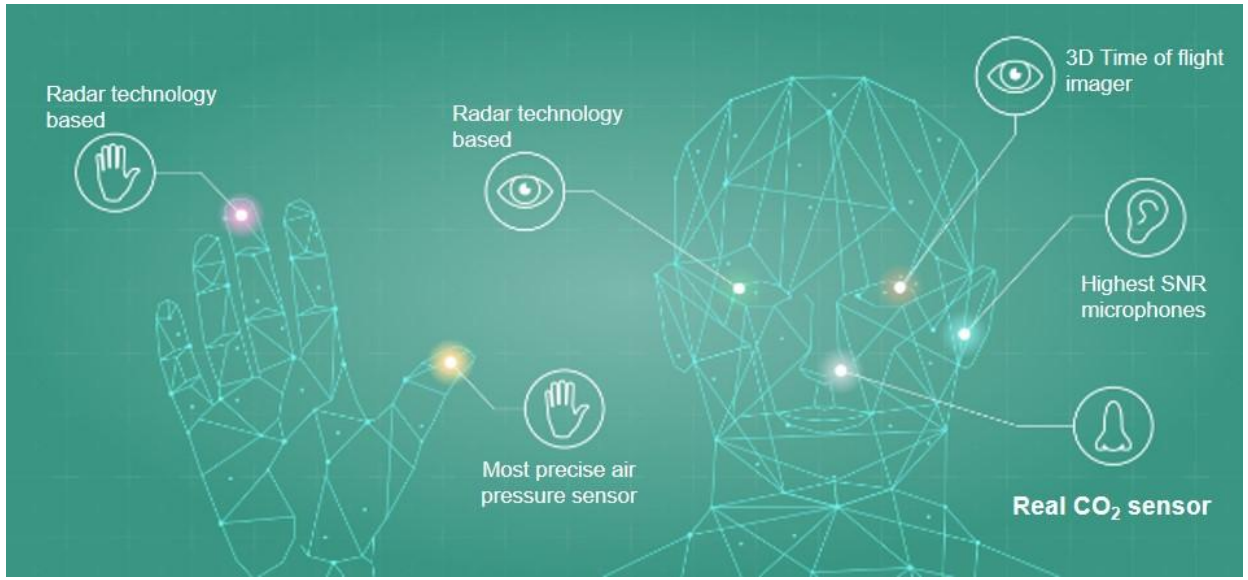
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Made with AI

Sensors

Advanced sensor solutions
Eyes and ears for robots



Radar


BGT24LTR22


BGT60TR13C


BGT60ATR24C

- XENSIV™ 24 & 60 Ghz radar

Time-of-Flight

REAL3™ hybrid ToF



- Object detection & obstacle avoidance
- SLAM capable for navigation

Silicon microphones



- Sound detection for HMI
- Objects detection for navigation

Other sensors

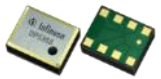
CO2 sensors

- Air quality monitoring for smart air purifier & controlled ventilation



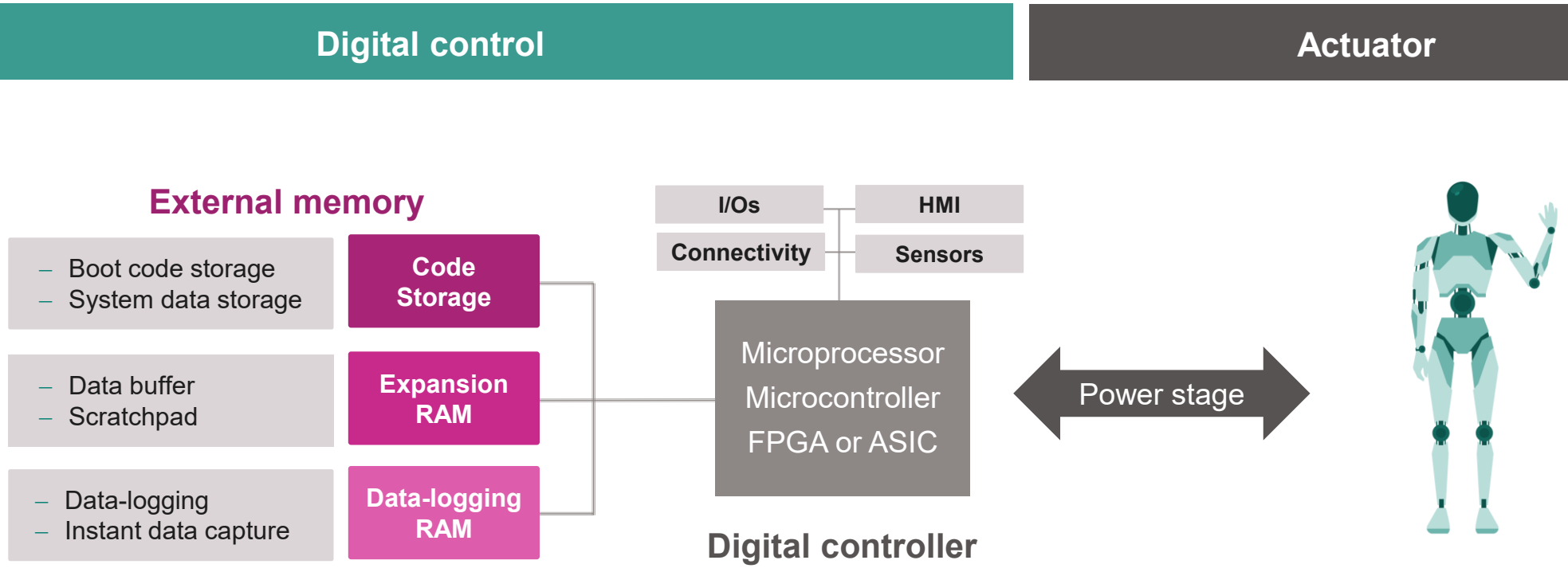
Pressure sensors

- Touch sensing for Grippers
- Height / altitude sensing



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Robotics memory use cases



Code Storage – stores instructions for the application processor to execute and function

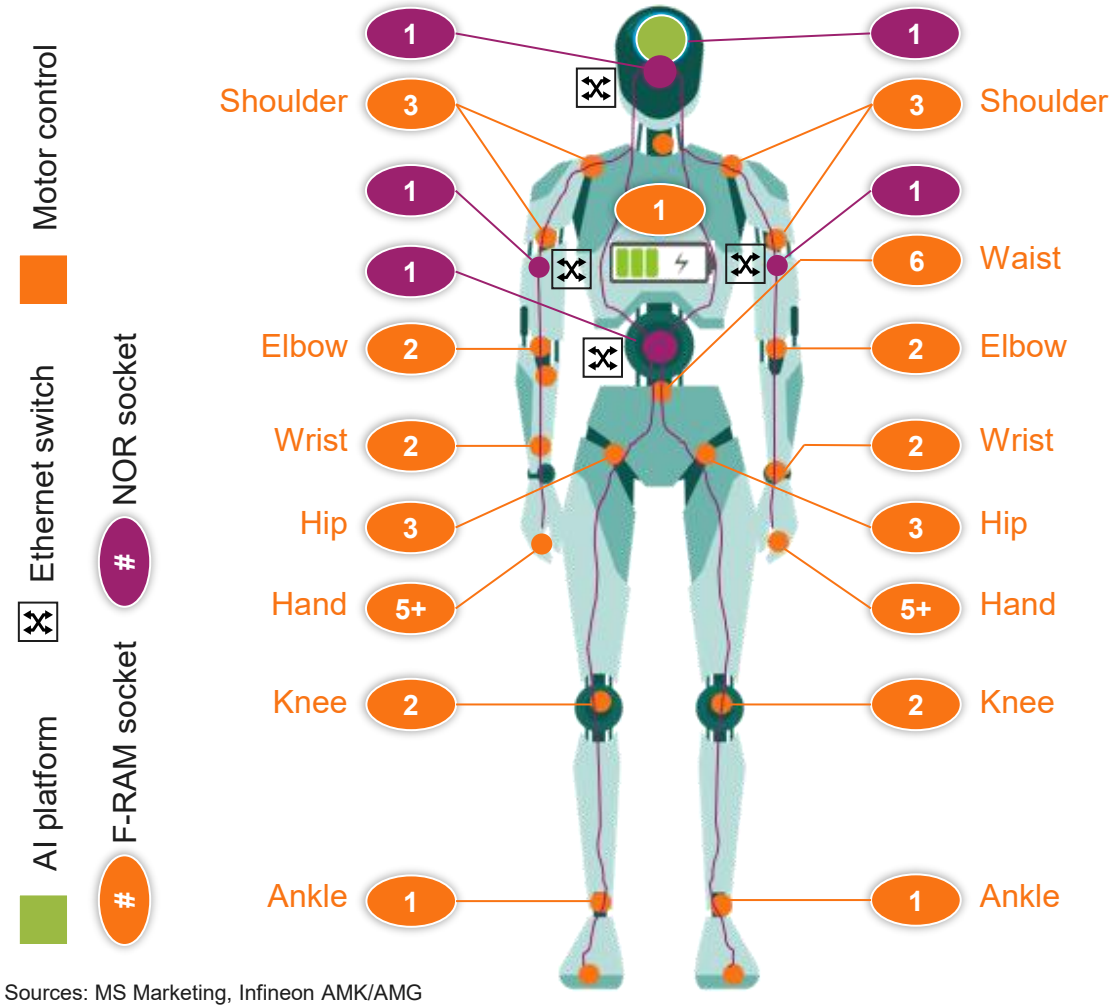
Expansion RAM – adds system RAM for more processing power

Data-logging RAM – continuously records system state during operation and on power failure

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Infineon offers differentiated memory products to enable safe and reliable humanoid robots

Memory attach in humanoid robots



Sources: MS Marketing, Infineon AMK/AMG

Focus NOR Flash and F-RAM products

- **High density (512Mb) SPI NOR Flash**:
  - Bootloader and code storage for main AI SoC platform (xPU)
  - Over-the-Air (OTA) image recipient for the whole humanoid exoskeleton
- **Mid-density (32Mb – 128Mb) SPI NOR Flash:**
  - Firmware storage for Ethernet switches on advanced process nodes (7-nm)
  - 3 – 4 memories per bot
- **Serial F-RAM (64Kb – 256Kb):**
  - More than 30 memories per bot
  - Continuously logs encoder data, sensor data, actuator setting, diagnostic messages, etc. once every few milliseconds in the **motor control** system
  - Continuously logs voltage, current, environmental variables, state-of-charge, state-of-health, and other battery health parameters in **BMS**

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Support Material



Made with AI

More information to be found here:

Motor Control solutions

Product

- MCU
- OptiMOS™
- CoolGaN™
- Xensiv™

Quick links
Infineon product offering for humanoid robots

Microcontrollers
- XMC1000
- XMC4000
- XMC7000
- PSOC™ 4
- PSOC™ 6
- PSOC™ Control C3
- PSOC™ Edge
- AURIX™ TriCore™
- TRAVEO™

Sensors
- XENSIV™
- XENSIV™ magnetic sensors
- XENSIV™ current sensors
- XENSIV™ radar sensors
- XENSIV™ MEMS microphones
- XENSIV™ pressure sensors
- REAL3™ ToF 3D image sensors

ICs
- Wireless charging ICs
- OPTIREG™ PMICs
- Cell monitoring & balancing ICs
- Isolated UART transceiver ICs
- ISOFACE™ digital isolators
- LDO voltage regulators

Discrete switches
- OptiMOS™ MOSFETs
- StrongIRFET™ MOSFETs
- CoolGaN™ HEMTs
- CoolMOS™ MOSFETs
- CoolSiC™ MOSFETs
- TRENCHSTOP™ IGBTs

Memory
- SRAM
- nvSRAM
- EXCELON™ FRAM
- SEMPER™ Quad-SPI NOR flash

Gate driver ICs
- EiceDRIVER™
- MOTIX™ 3-phase BLDC

Security
- OPTIGA™ Trust
- OPTIGA™ Connect
- OPTIGA™ Authenticate

Connectivity
- AIROC™ combos
- AIROC Wi-Fi
- AIROC Bluetooth®
- PSOC™ 4 BLE
- PSOC™ 6 BLE

Controllers
- EZ-USB™ serial bridge
- CAPSENSE™
- XDP™ Protection ICs
- XDP™ Digital power controllers

Diodes
- ESD protection
- AF Schottky diodes

Integrated solutions
- MOTIX™ Motor control ICs
- CIPOS™ IPMs

Modules
- Si/SiC modules
- IGBT modules

Infineon robotics application
- Robotics landing page
- Robotics development platform

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The future of physical AI is built on chips



www.infinoen.com/robotics

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