



# Cognitive robots

A new era of collaboration  
between human and machine

# About NEURA



**220+ amazing employees**



**30+ nationalities**



**Designed & engineered  
in Germany**



**Recent \$100+ Mio. USD funding**



**Patented and pioneering  
Technologies**



**Award-winning products**



# About NEURA

## The Engineering Departments:

- Mechanics / Electronics Department (Hardware)
- Application Department (Software / Customer Support)
- GUI Department (Software)
- AI Department (Software)
- Humanoid Department (Hardware/Software)
- Safe Human Detection Department (Hardware/Software)
- Control Department

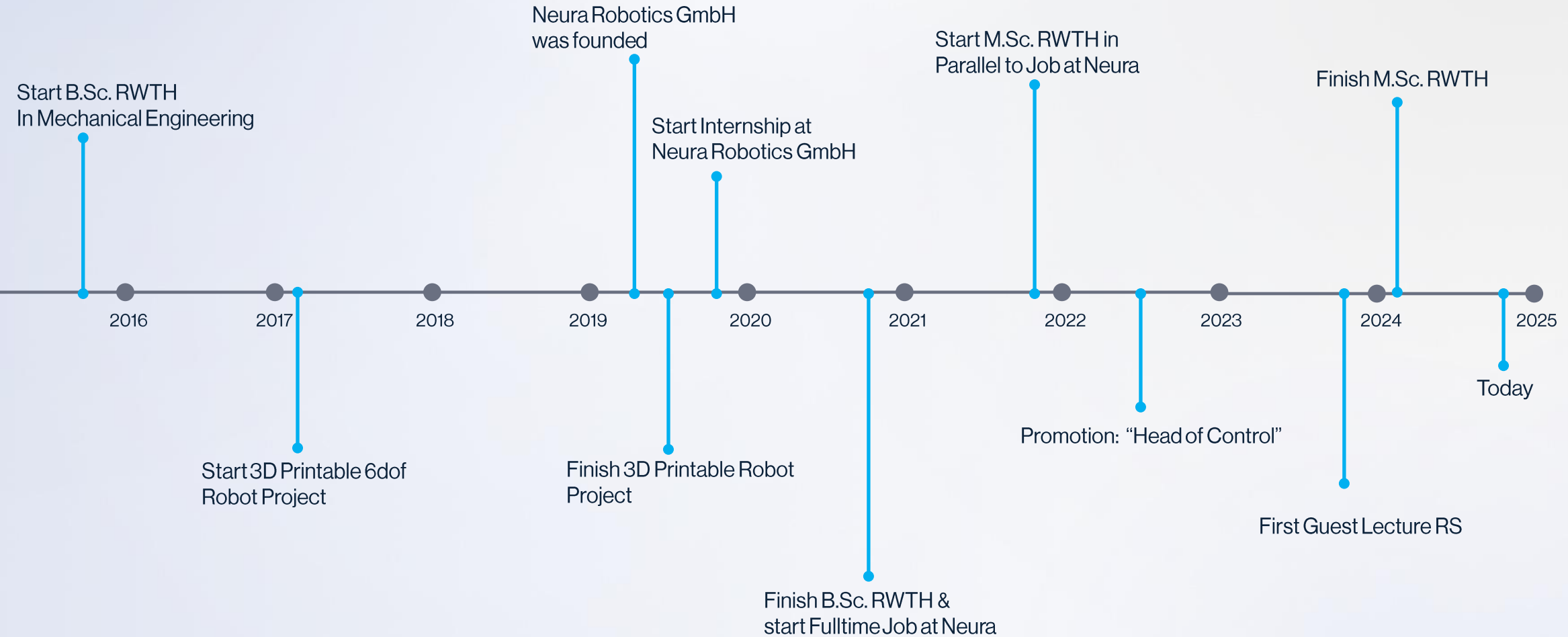
# The Control Team

**Here is where the fundamental Robotics solutions are developed**

- Kinematics
  - Forward Kinematics
  - Inverse Kinematics
  - Differential Kinematics
- System Identification
  - Kinematic Calibration
  - Dynamic Parameter Identification
  - Friction Estimation
- Dynamics (RNEA, PNEA, Linear Regressor, ...)
- Collision Detection
- Controllers (Impedance Control, Hybrid Force/Torque Control, Position Control, Hand Guiding)
- Motion Planning
- Data Science

## Introduction

# My Personal History at NEURA



Introduction

# From automation to collaboration

## Simple automation



## Industrial robots

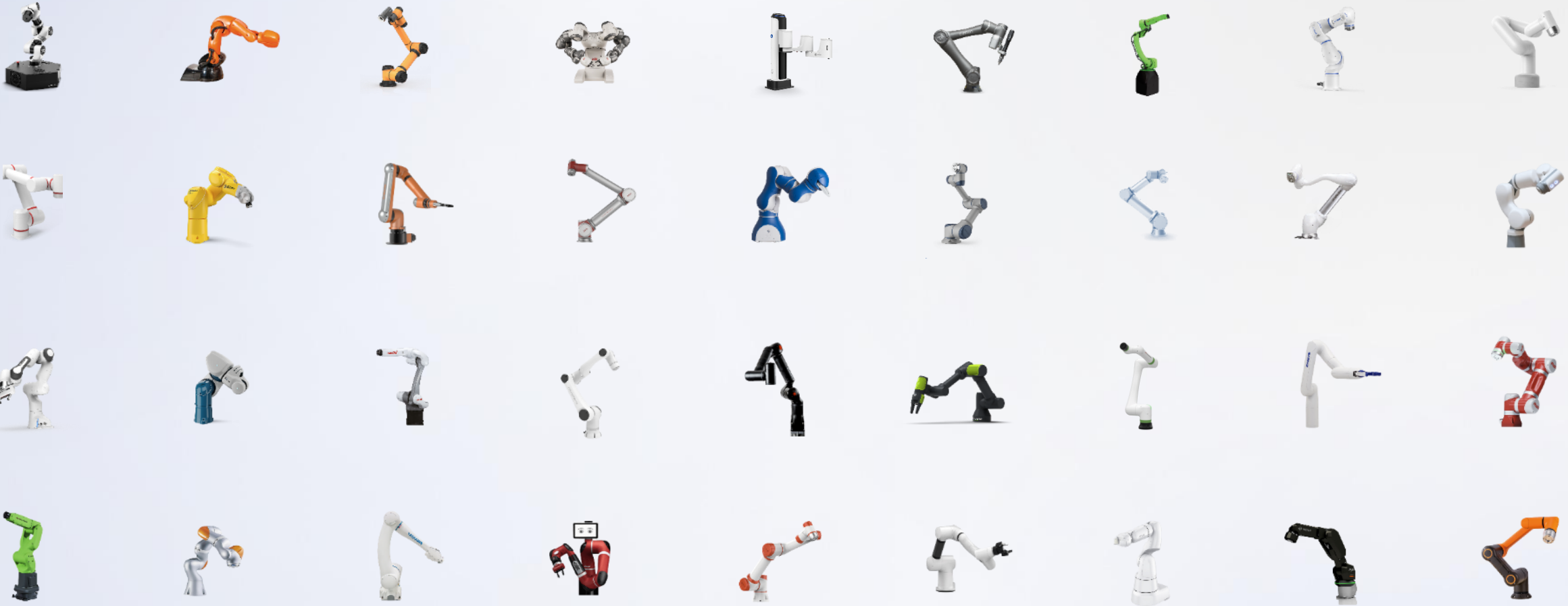


## Collaborative robots



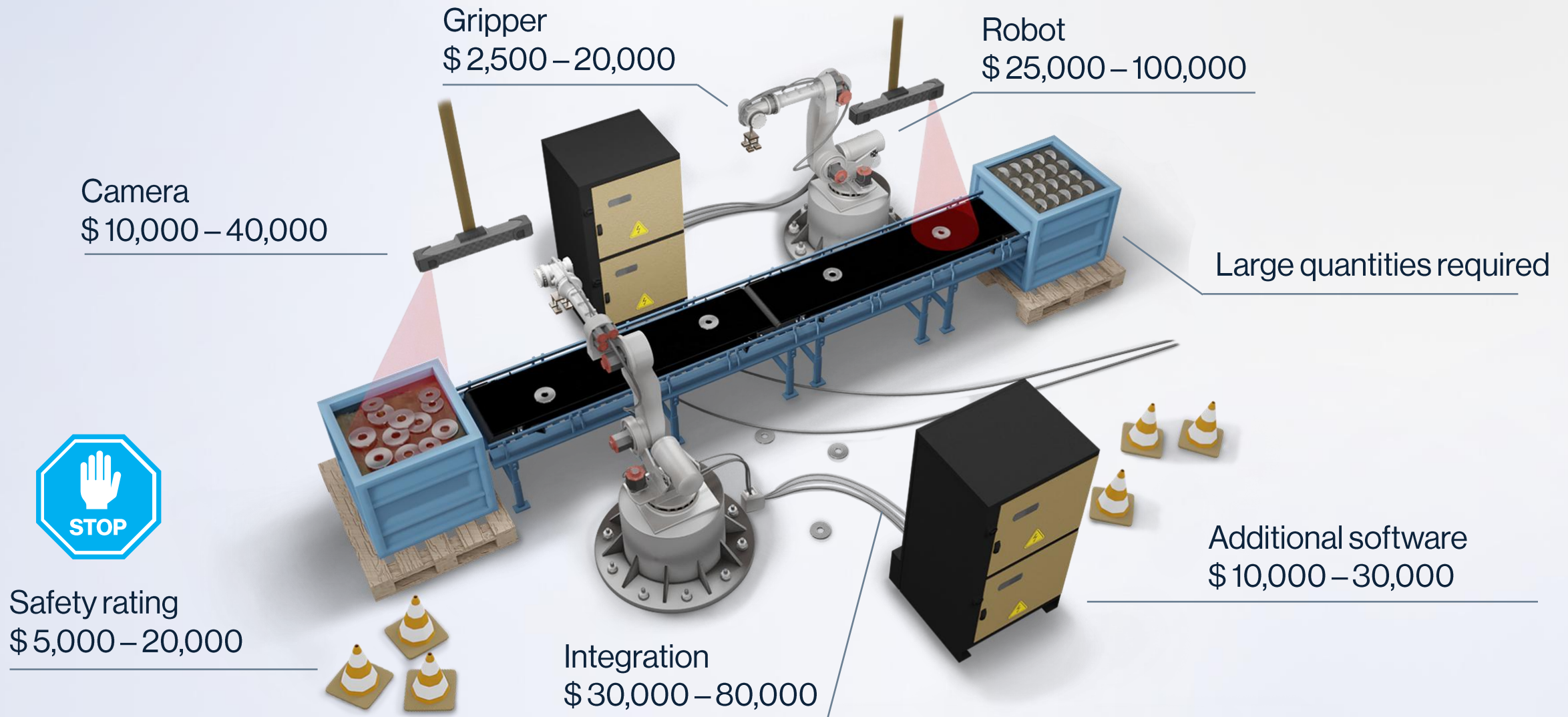
Introduction

# Plenty of cobots to choose from ...





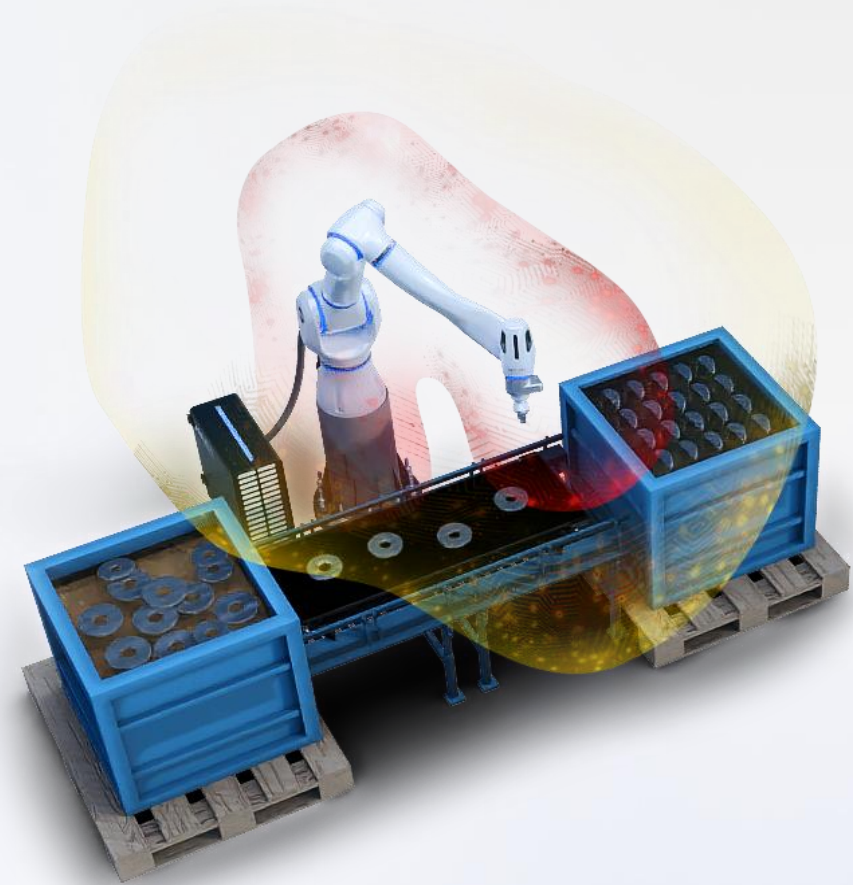
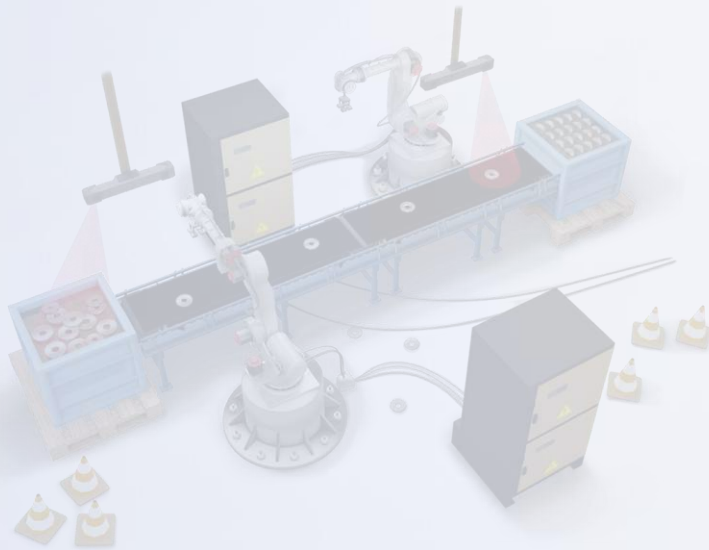
# ... yet they are far from being truly collaborative





# Comprehensive environmental perception and interaction in one device

## The future of robotics

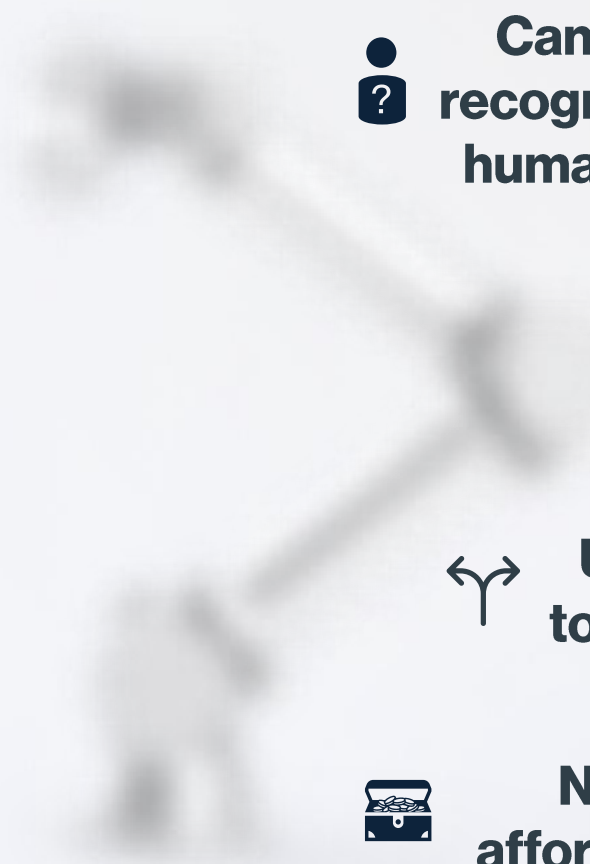



# Why we don't have more robots in our lives?



# Why we don't have more robots in our lives?

## No FULL AUTONOMY



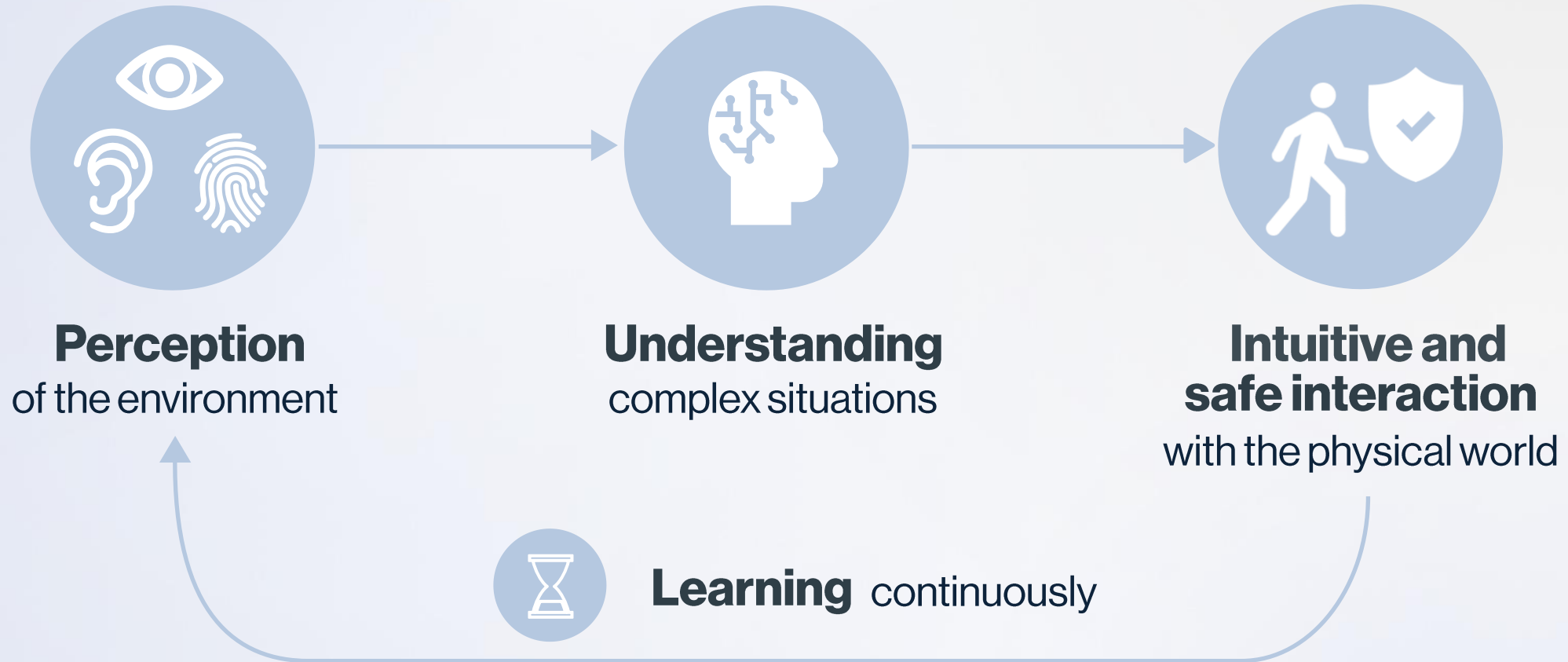
 **Can't  
recognize  
humans**

 **No integrated  
senses**

 **Unable  
to predict**

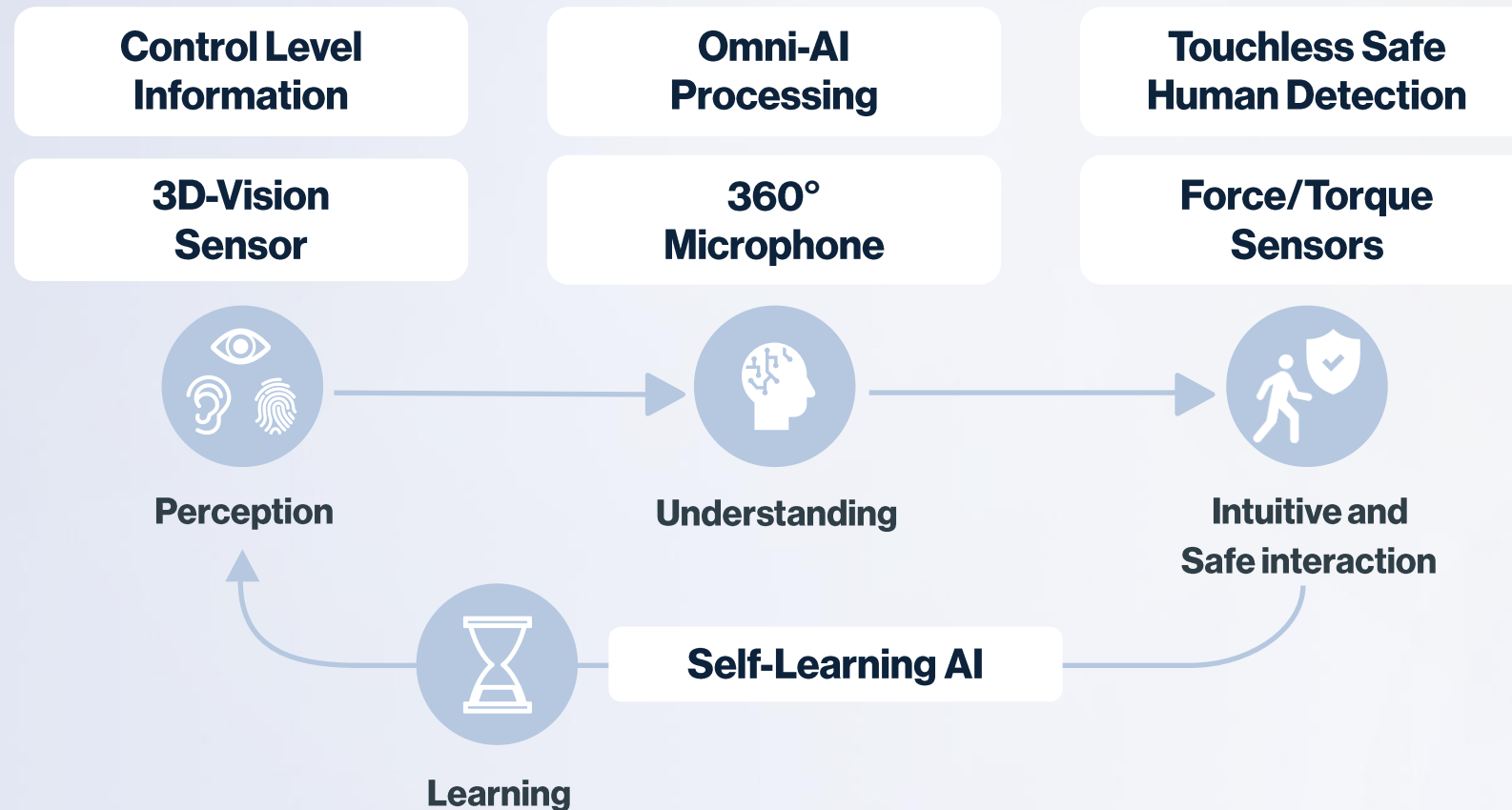
 **Not  
affordable**

# Bringing cognitive abilities to robots



# Making a quantum leap in technology

## From automated machine to independent helper

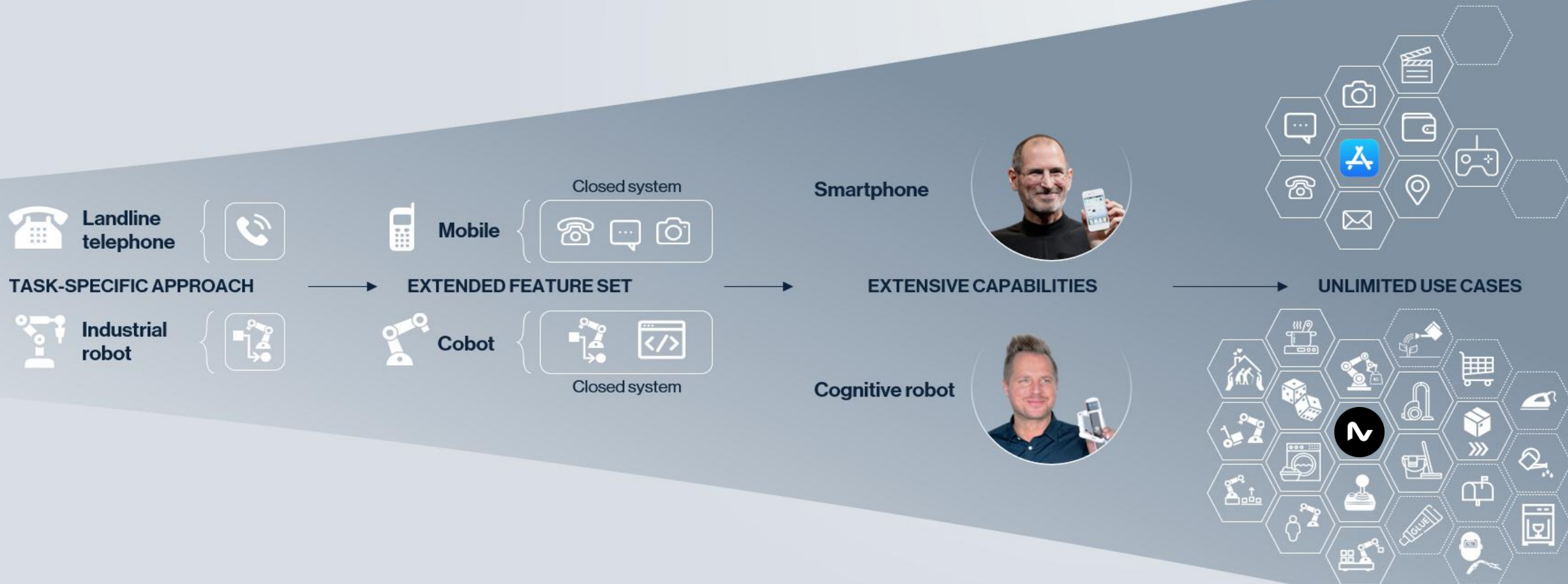








# One-device cognitive robots forming a smart platform



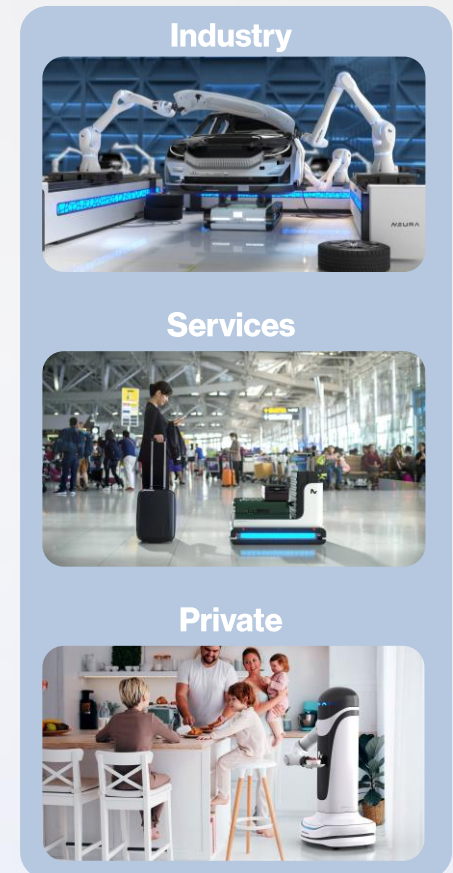
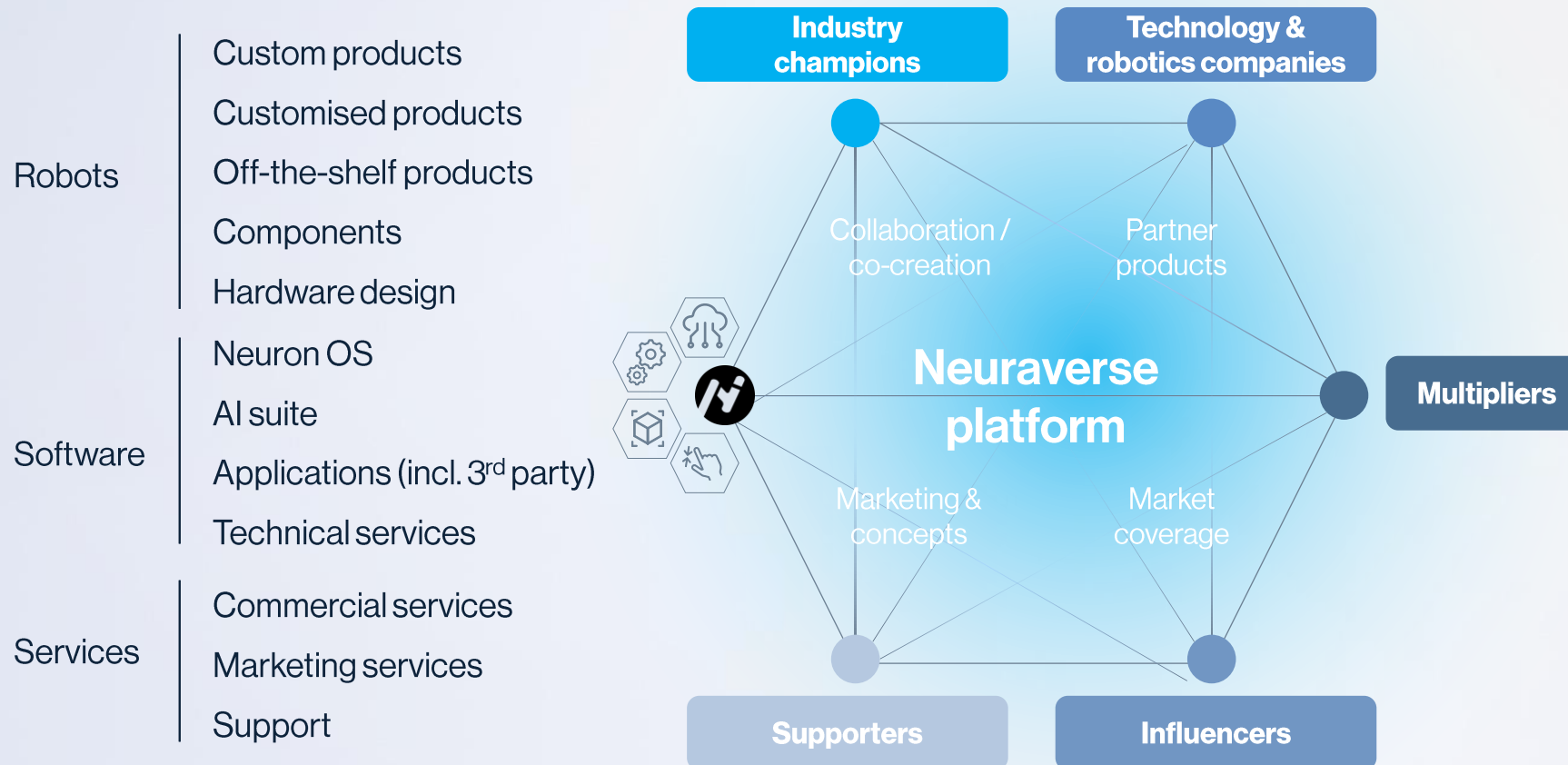
# Neuraverse.

## Creating the ecosystem to advance humanity

State-of-the-art technology ...

... fuelling a differentiated partner ecosystem ...

... to capture existing & new markets



Cognitive robots

# Comprehensive portfolio of robotic assistants

**MAV<sup>®</sup>****Multi-Sensing  
Autonomous Vehicle****LARA****Lightweight Agile  
Robotic Assistant****MAiRA<sup>®</sup>****Multi-Sensing intelligent  
Robotic Assistant****MiPA****My intelligent  
Personal Assistant**