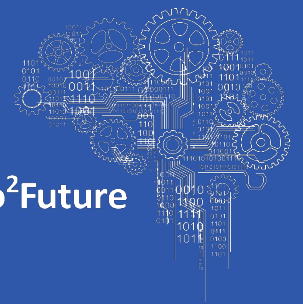# CRP: Cognitive Products

Common Research Programme: Demonstrator Project 1
Enabling direct interaction and data acquisition

Pro²Future

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MOTIVATION & GOALS

Bringing **cognitive intelligence** (Cognitive Human-Worn Devices) **closer** to the **human**:

- Human-Machine interaction based on implicit interaction
- Process and workflow-sensitive, embedded, accompanied assistance
- Assistance based on skill level
- Sensor selection according to work situation
- Multi-modal, direct, unobtrusive user feedback
- Digitalisation of analog production areas, semantical annotation of work area
- Battery powered wireless devices

Project FactBox

Project Name	CRP DP1/SeeIT
Project ID	DP1.2/MFP1.4
Duration	39 Months

Area 1
Perception and Aware Systems

Area X
Common Research Programme

Project Lead
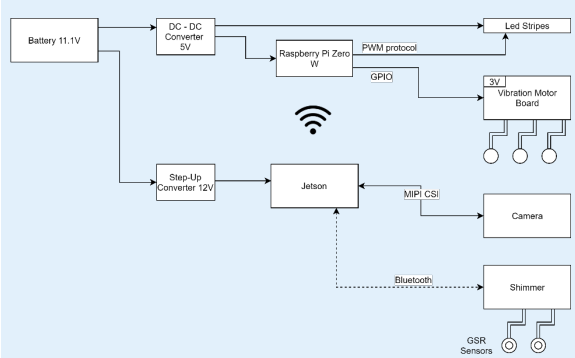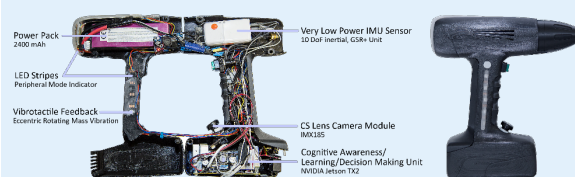Prof. Dr. Alois Ferscha

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PowerTool

Drilling unit embedded with assistive intelligence driven by NVIDIA Jetson TX2 providing:
Multimodal user feedback:
- 18 individually addressable RGB-LEDs
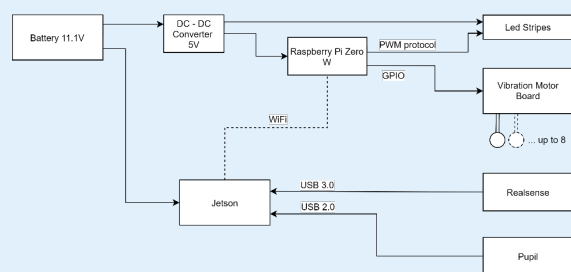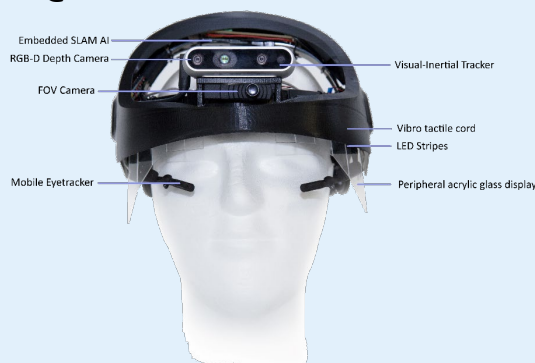- 3 individually controllable vibration motors

Sensors:
- IMX185 Camera 1080p@60fps
- Shimmer 9DOF inertial measurement sensor with GSR+ Unit

Cognitive Headgear

Head-mounted, cognitive assisting unit driven by NVIDIA Jetson TX2 embedding multimodal feedback and sensor data:
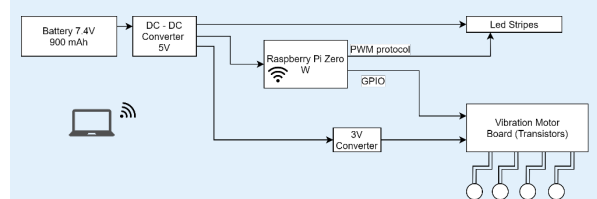- Peripheral led stripes for minimal obtrusion
- 8 vibration motors evenly distributed around the head for haptic feedback
- Intel RealSense D435 RGB-D depth camera with 77° FOV
- High-speed mobile eyetracker @200 Hz

Cognitive Armsleeve

Low-cost, unobtrusive, lightweight, multimodal feedback unit embedding:
- 6 individually addressable peripheral led stripes
- 4 individually controllable vibration motors
- Adjustable for different arm sizes
- Powered by 900 mAh LiPo battery