The robot is a distributed technology

Shell

Wireless Communications

Vision System

Arm

CPU

Speakers, Microphones, & Audio Sensors
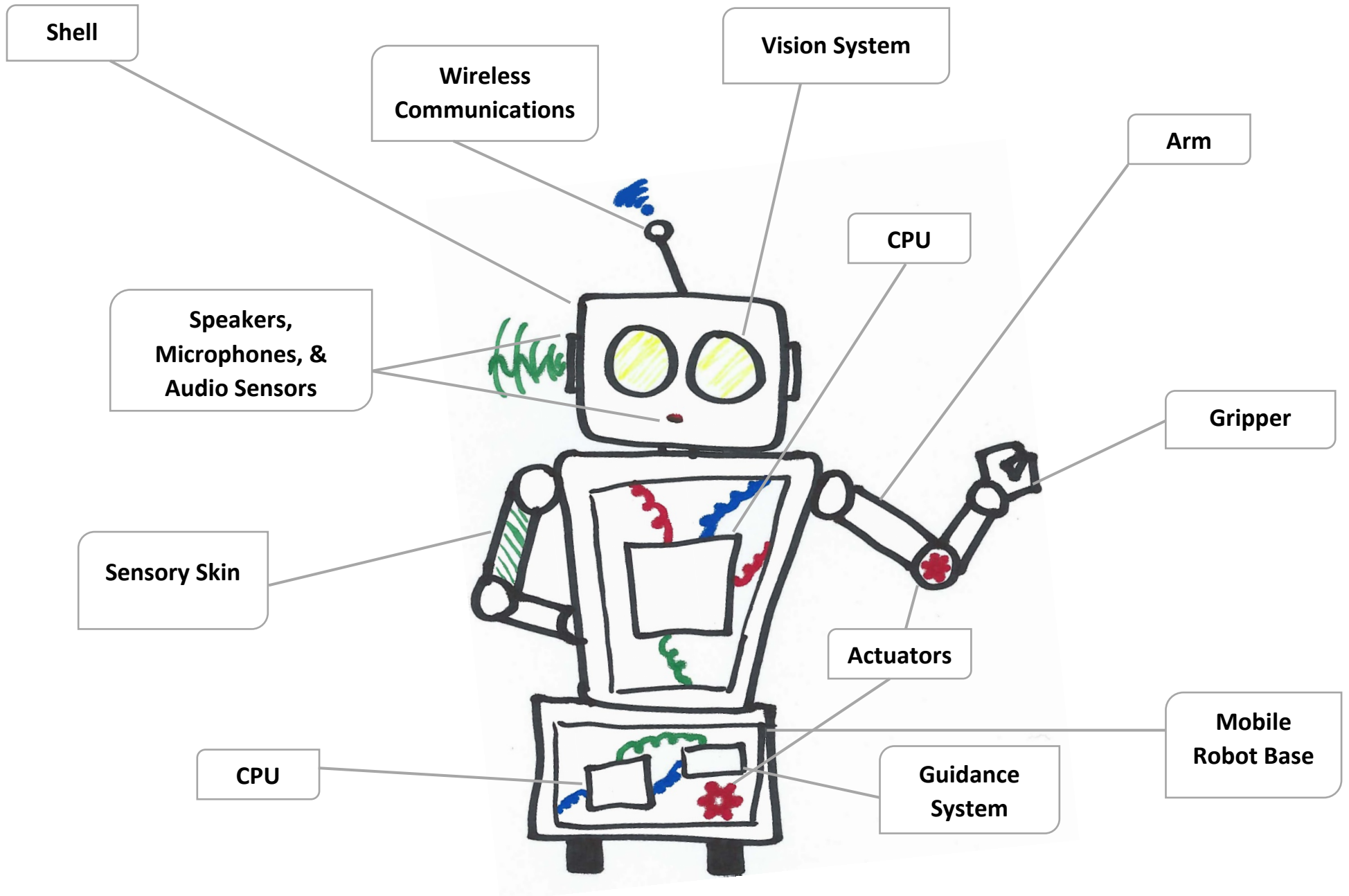
Gripper

Sensory Skin

Actuators

Mobile Robot Base

CPU

Guidance System

Where is ethical responsibility in a distributed technology?

Shell: 3D-printed in-house by PARTNER 1 in GERMANY

Vision System: Purchased from developer in DENMARK and adapted in-house

Wireless Communications: Purchased from supplier in KOREA

Arm hardware: Purchased from manufacturer in GERMANY
Arm software: Adapted from ROS (worldwide - online)

CPU hardware: Purchased and adapted in-house
CPU software: In-house CPU

Speakers, Microphones, & Audio Sensors: Purchased from supplier

Gripper: Purchased from manufacturer in GERMANY

Sensory Skin: Developed by Arm manufacturer in collaboration with university in GERMANY
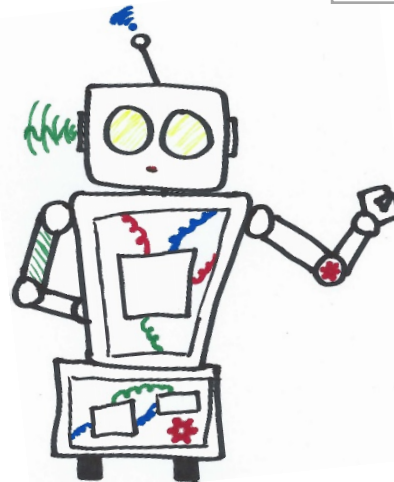
Actuators: Purchased from supplier in KOREA

CPU: Purchased by PARTNER 2 from supplier in USA

Guidance System: Developed in UK in collaboration with PARTNER 2

Mobile Robot Base: Developed separately by PARTNER 2 in UK
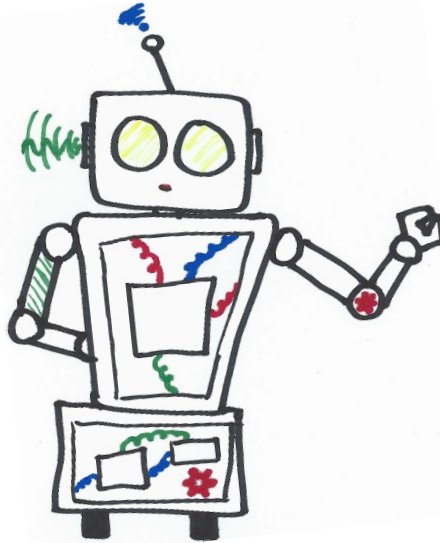
When do ethics come into question?

At conception?

Prototyping?

Applied research?

When it goes to market?

Application and integration?

Software development?

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After a problem arises from use?

Who is liable when something goes wrong?

Manufacturers or suppliers of components?

University researchers?

Institution which purchased the robot?

Professional users?

Robot developer?

Institution which sold and implemented the robot?

Consumer users?