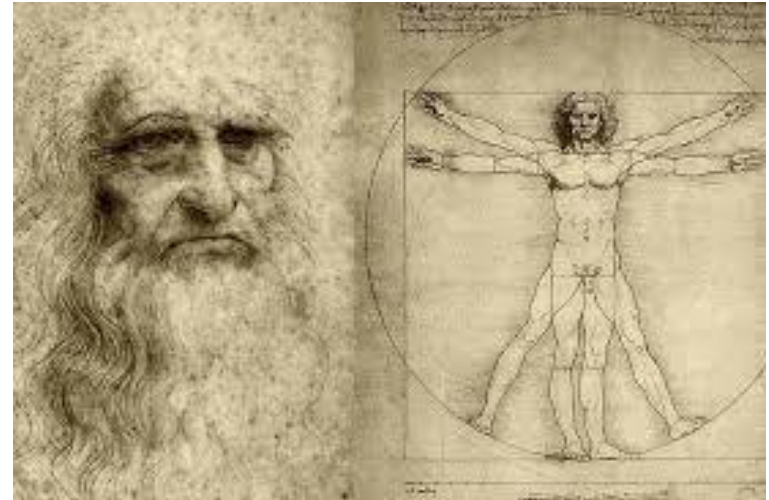


# Robotics and AI to further Humanism and Democracy

A personal perspective from  
Uwe L. Haass

# Humanism: Leonardo Da Vinci as prototypal Renaissance man

- The Renaissance 1300 – 1600 was the "rebirth" of classical ideas, such as "Humanism".
- Leonardo da Vinci 1452 – 1519 is probably the most prominent representative.
- He was a master of invention, drawing, painting, sculpting, writing, engineering.



# Leonardo was a master of Mechanics

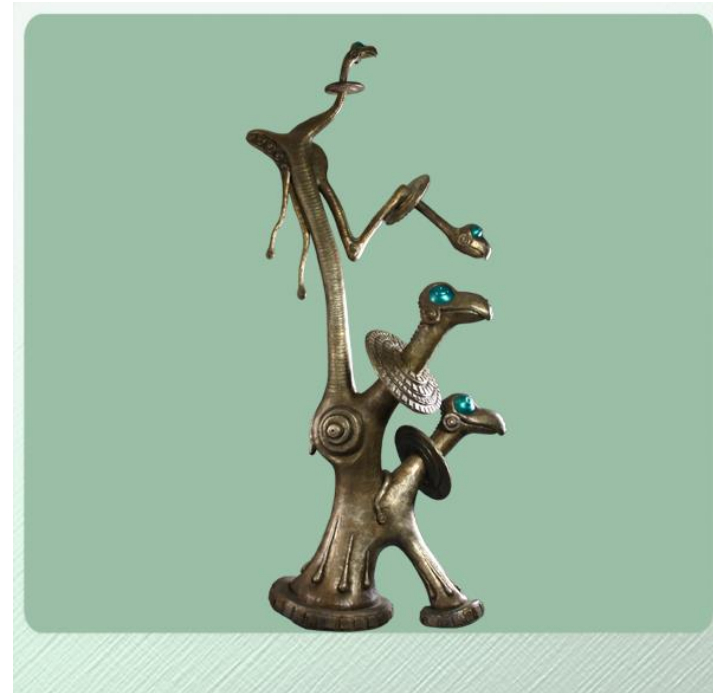
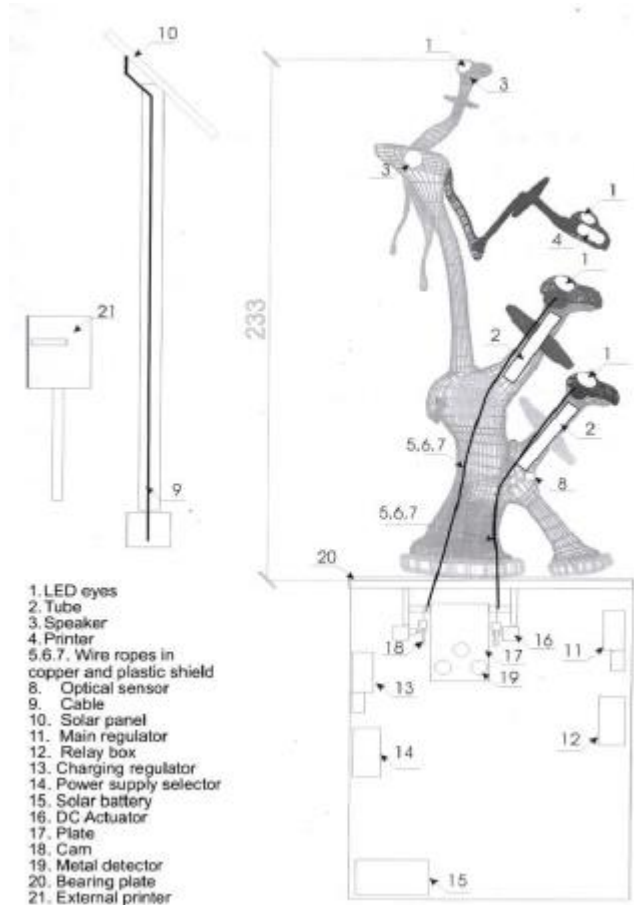


- Mechanics is the oldest discipline in physics and requires basic math.
- *During the Renaissance, people must have considered mechanics as awe-inspiring as we do vis-à-vis AI and Robotics.*
- Leonardo never used mechanics to exploit or abuse people in peace times.



Leonardo's Lion (1515) – a robot that was able to walk

# Robot “swallowing empty beverage cans” designed and located in Belgrade, Serbia



**Artist:** Biljana Biba Vicković,  
**Engineers:** Svemir Popić, Miloš D Jovanović, and  
Aleksandar Rodić



Biba Vicković,, the artist



## The robot

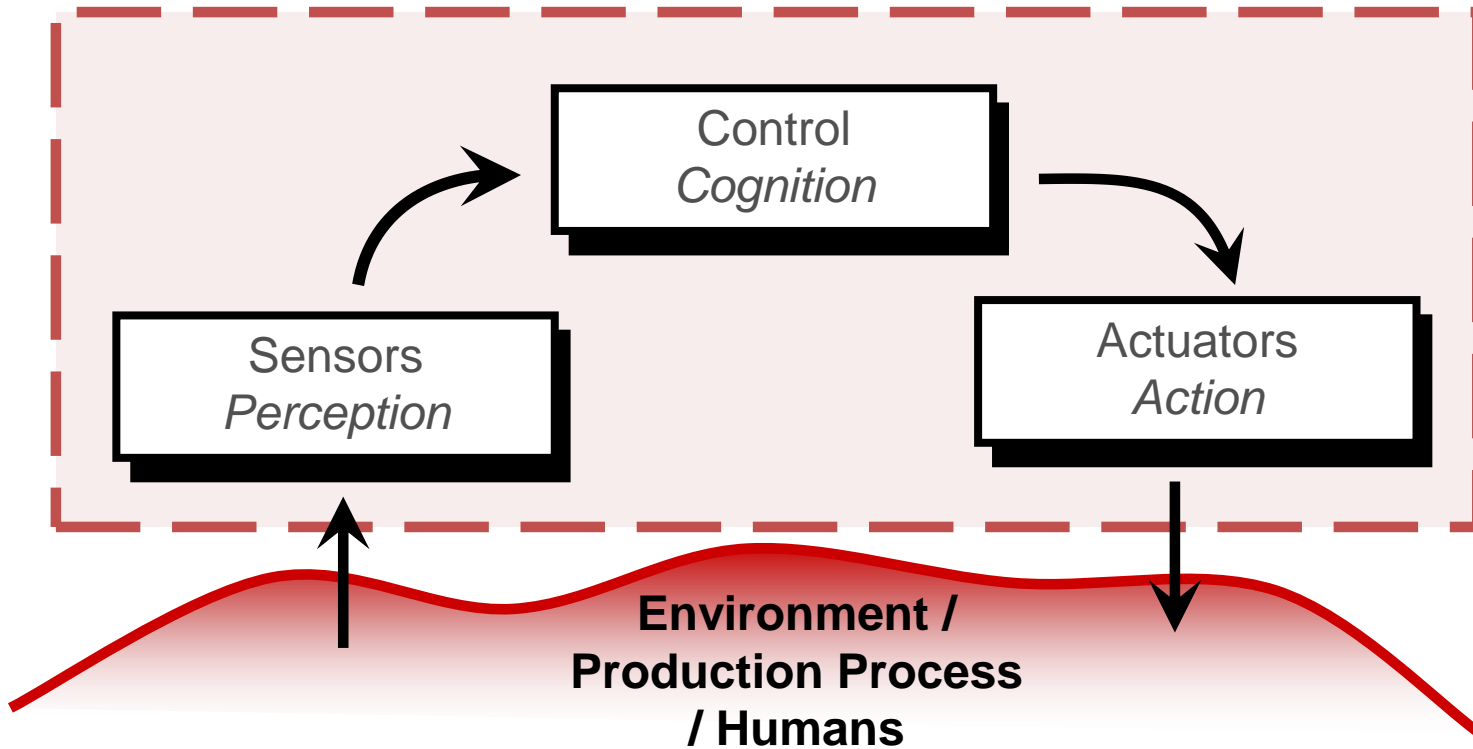
- helps recycling
- tickets are printed
- interactive screen with educational quiz



7 June 2019

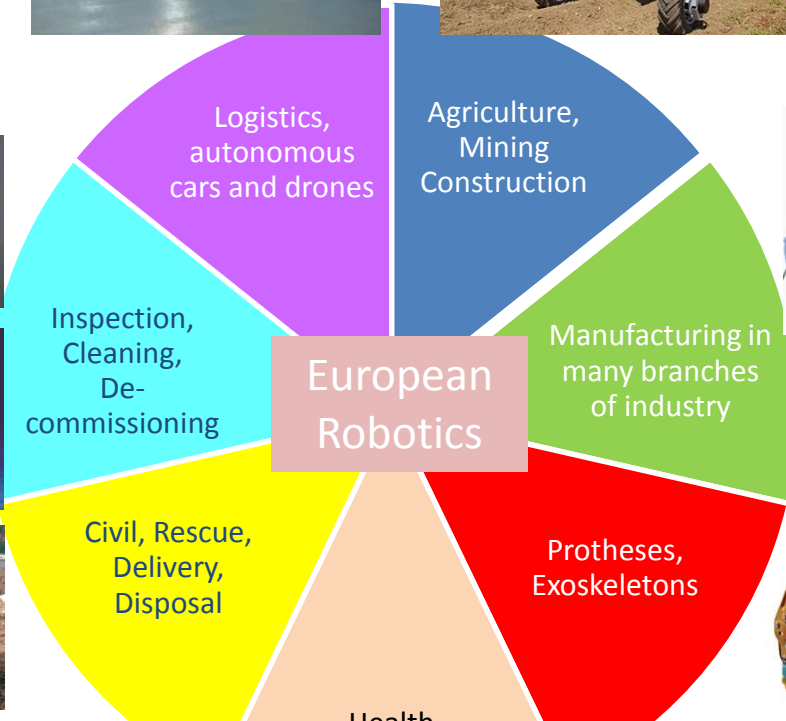
Robotics for Humanism and Democracy / U. Haass

# Artificial Intelligence as Cognitive Control of Robotics



Cognition behaves similar to the way humans behave, including learning, decision making and a certain autonomy.

# Many applications for robots, many opportunities for economy and society



Credits: Bosch, KUKA, ABB, Ottobock, FhG, Bluebotics, Hocomo, SSSA, Robocluster, subsea7, OCRobotics, AUS Reutlingen, ETH Zürich

# Industrialisation: a History of Exploitation and Social Upheavals

<b>Industry 1.0</b>	<b>Industry 2.0</b>	<b>Industry 3.0</b>	<b>Industry 4.0</b>
Steam Engine	Electricity	Microelectronics	Internet
Textile Industry	Mass Production	Office automat.	Robotics
Coal	Cars		AI
1800	1900	1970	2020

“Industrial Revolution”

We should make sure that human catastrophes of the *Industrial Revolution* do not re-occur with Industry 4.0



# How AI can be a force for good?

- I started with the Renaissance.
- AI again is interdisciplinary – like in the Renaissance.
- With AI, new ethical challenges appear.
- The protection of human self-determination is one of the most relevant.
- IFR suggested that by 2020, 1.7 million new AI-powered robots will be installed in factories.
- AI revolution bears many opportunities for well-being and social welfare – we must not do the same mistakes as during Industry 1.0 and 2.0
- Join the development of opportunities: →

# What needs to be done?

## Checklist for AI Projects (selection):

- Robotics for dirty, dangerous, difficult jobs – and helping in societal challenges (aging population, ...)
- Can AI help prevent climate change, preserve resources such as energy, biology, atmosphere, environment?
- Can we trust the AI system?
- Are human rights, and rights of employees preserved?
- Can the system explain its decision?
- Do people understand AI? (compare with mechanics in the Renaissance)
- Who owns the algorithms and patents? → open science