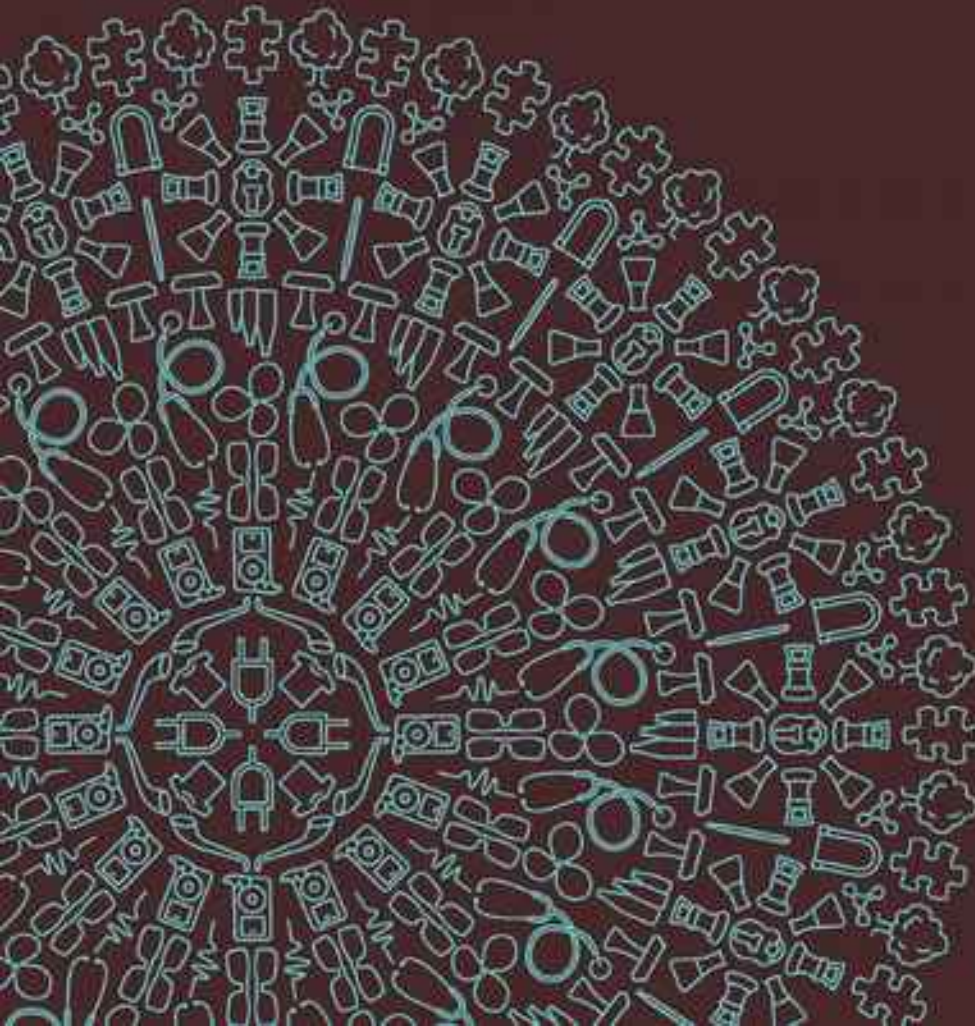BRISTOWS

Robotics, AI and the Law

3 May 2017 – BCS The Chartered Institute for IT, Bristol
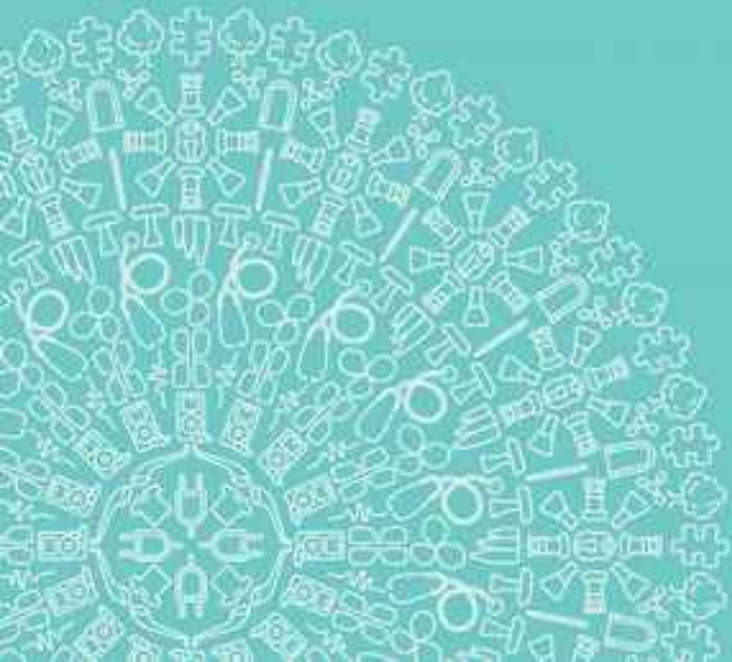
Chris Holder
Partner

Agenda

1. Scene Setting
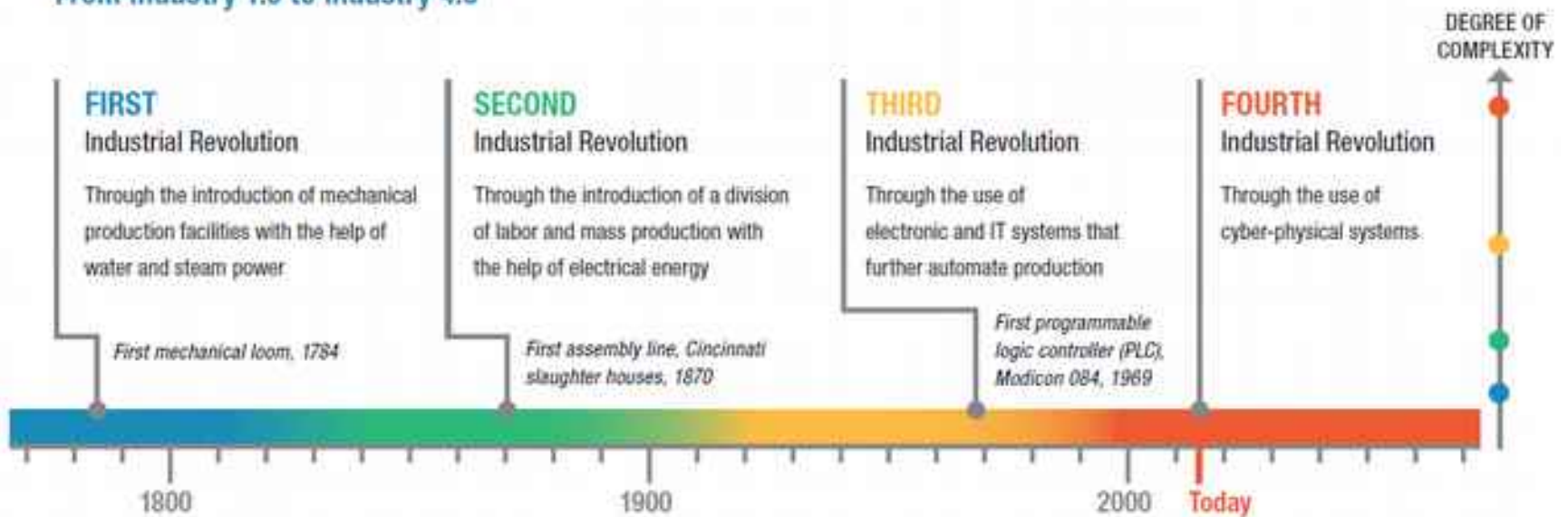2. Definitions
3. The Law
4. Future Thinking

Scene Setting

Scene Setting

Scene Setting

From Industry 1.0 to Industry 4.0

DEGREE OF COMPLEXITY

FIRST
Industrial Revolution

Through the introduction of mechanical production facilities with the help of water and steam power

First mechanical loom, 1784

SECOND
Industrial Revolution

Through the introduction of a division of labor and mass production with the help of electrical energy

First assembly line, Cincinnati slaughter houses, 1870

THIRD
Industrial Revolution

Through the use of electronic and IT systems that further automate production

First programmable logic controller (PLC), Modicon 084, 1969

FOURTH
Industrial Revolution

Through the use of cyber-physical systems

1800   1900   2000   Today

© DFKI, 2011

Scene Setting

Cyber Physical Systems

And now for some statistics…..

BoAML

- $158bn market for robotics and AI by 2020
- $14-33tn in annual creative disruption impact by 2025
- Boost productivity by 30% in many industries
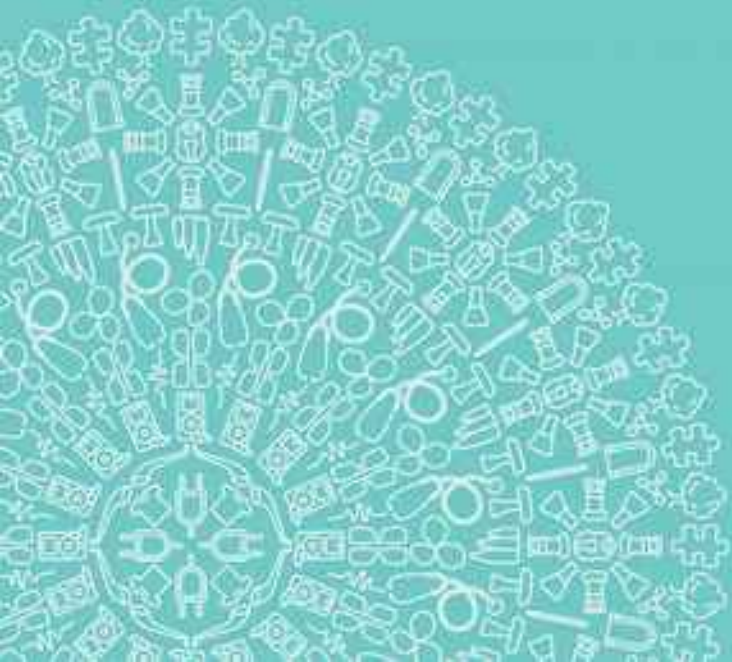- Cut manufacturing costs by 18-33%

European Parliament - Draft report on civil law rules for robotics

- 2010 – 2014, average 17% increase in sales of robots per year
- 2014 – sales rise of 29%
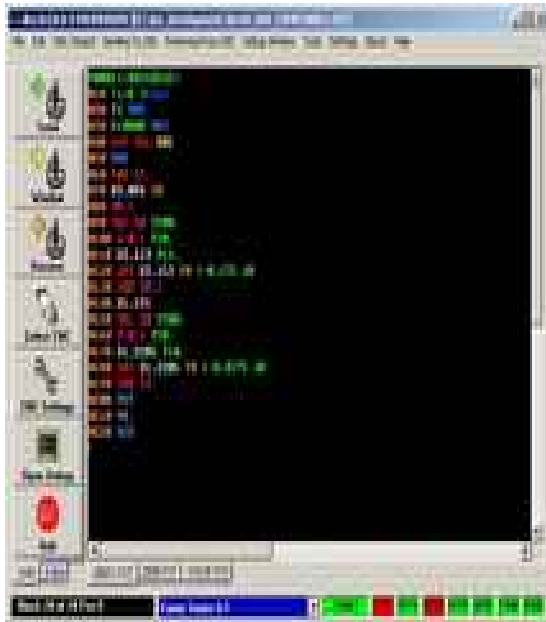- Patent filings tripled over last 10 years

Research

EC and euRobotics total investment of €2.8bn from 2014-2020

Definitions

Definitions

What is a robot?

What is AI?

What is a Robot?

Robotic Autonomous System *(RAS-SIG July 2014)*

"..interconnected, interactive, cognitive and physical tools, able to perceive

their environments, reason about events, make or revise plans and control

their actions."

What is AI?

Oxford English Dictionary

"Use of computers for tasks normally regarded as needing human intelligence."

**Oxford Living Dictionaries**

The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making and translation between languages."

Wikipedia

"AI is intelligence exhibited by machines."

So why does a definition matter so much?

- Classification

- Standardisation

- Regulation

- Legislation

- The Law
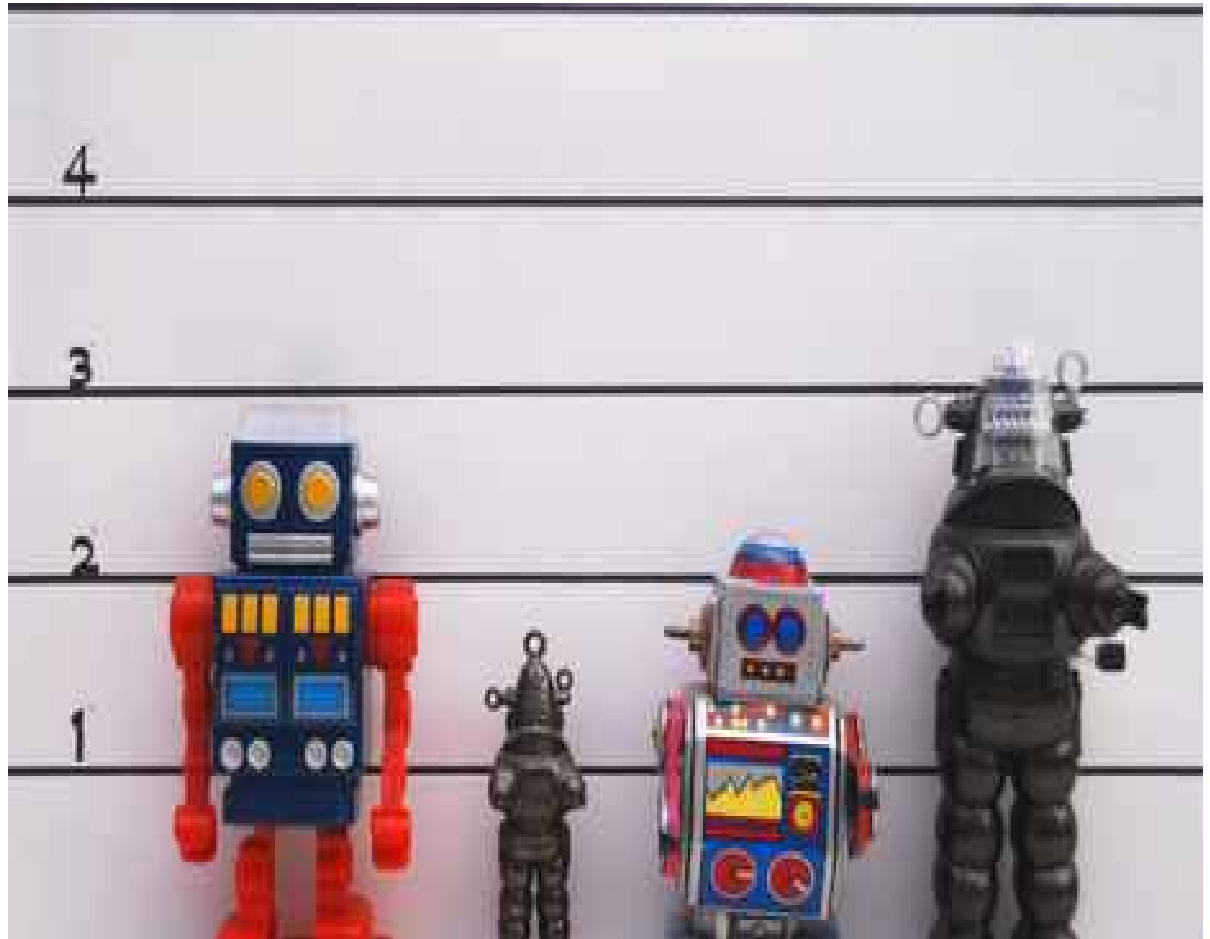
The Law

The Law

- EU funded investigation into ethical and legal issues around robotics

- 'Guidelines for Regulating Robotics' – September 2014

- Key issues:

    - Are existing legal frameworks adequate/workable in light of emerging robotics technologies?

    - How will these developments affect current norms, values and social processes?

The Law - EU

- Report makes a series of recommendations to the Commission regarding the development of laws.

- Takes account of ethics, standardisation, safety concerns, security concerns, data privacy.

- Some controversial recommendations:
  - Definition of 'smart robots';
  - Registration of 'smart robots';
  - Code of Ethics for robotic engineers;
  - Creation of 'legal status' for robots in the future.

- Proposal now in front of the Commission who may propose a Directive on Civil Law Rules on robotics.
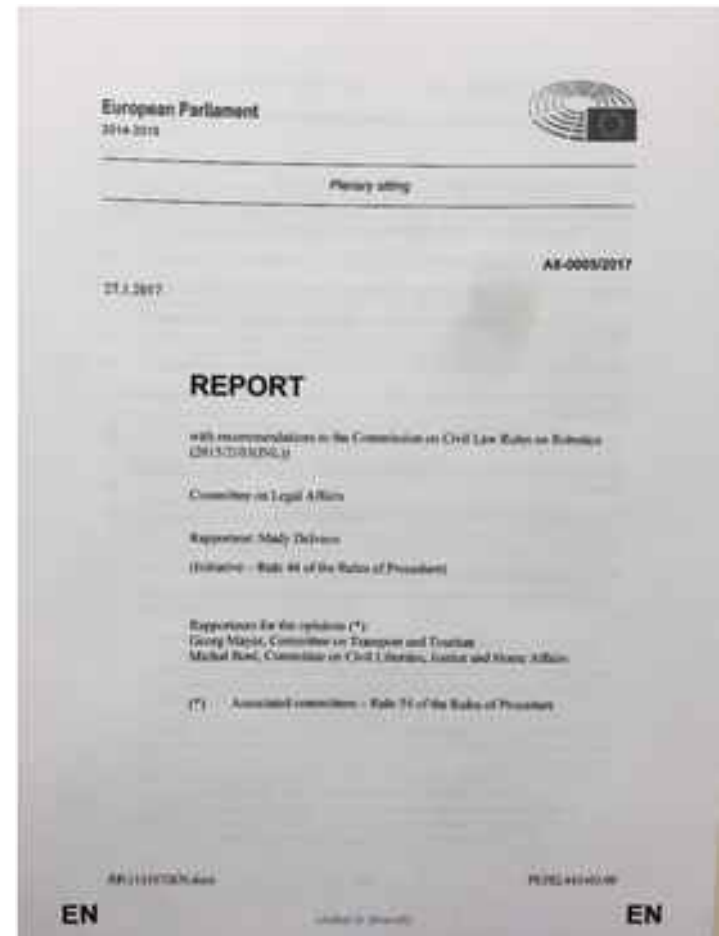
The Law – current UK thinking

House of Commons Science and Technology Committee report on "Robotics and artificial intelligence".

Looked at:

- Economic and social implications;
- Ethical and legal issues; and
- Research and funding.

..and it reached a few conclusions….

House of Commons
Science and Technology Committee

Robotics and artificial intelligence

Fifth Report of Session 2016–17

Report, together with formal minutes relating to the report

Ordered by the House of Commons to be printed
13 September 2016

The Law – current UK thinking

ECONOMIC AND SOCIAL CONSIDERATIONS

Is this really a case of humans v machines?

- Jobs to be lost?
    - Deloitte study of "most at risk".
    - McKinsey – *AI is contributing to a transformation of society which is happening ten times faster and at 300 times the scale, or roughly 3000 times the impact of the Industrial Revolution*.

- Jobs to be augmented?
    - Professor Muggleton – *AI will not replace scientists but, in much the same way as telescopes amplify what astronomers do, it will augment and amplify what scientists do….*
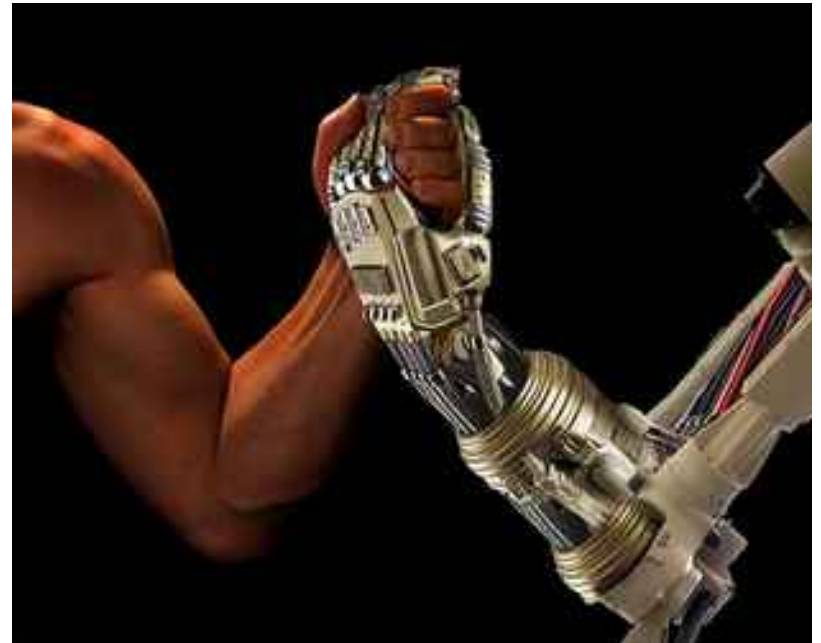
The Law – current UK thinking

ETHICAL AND LEGAL ISSUES

Six main areas of focus:

1. Safety and Control;
2. Minimising bias;
3. Privacy and consent;
4. Accountability and liability;
5. Governance and standards; and
6. Public dialogue.

The Law – current UK thinking

CONCLUSIONS AND RECOMMENDATIONS

1. Education and skills

    - STEM/computer scientists/systems engineers
    - Digital skills for workforce

2. Governance: standards and regulations

    - ELS factors
    - Setting up a standing Commission on Artificial Intelligence

3. Research, funding and innovation

    - Government lack of leadership
    - Establishment of an RAS Leadership Council

The Law – UK developments

- Vehicle Technology and Aviation Bill 2016-17
    - Bill is at report stage and third reading;
    - Date to be finalised.

- Air Navigation Order 2016 (ANO) and Regulations - 10/10/16

- Data Privacy and the GDPR

- Contracting
    - Systems integration
   - Functionality
    - Liability
    - etc

The Future
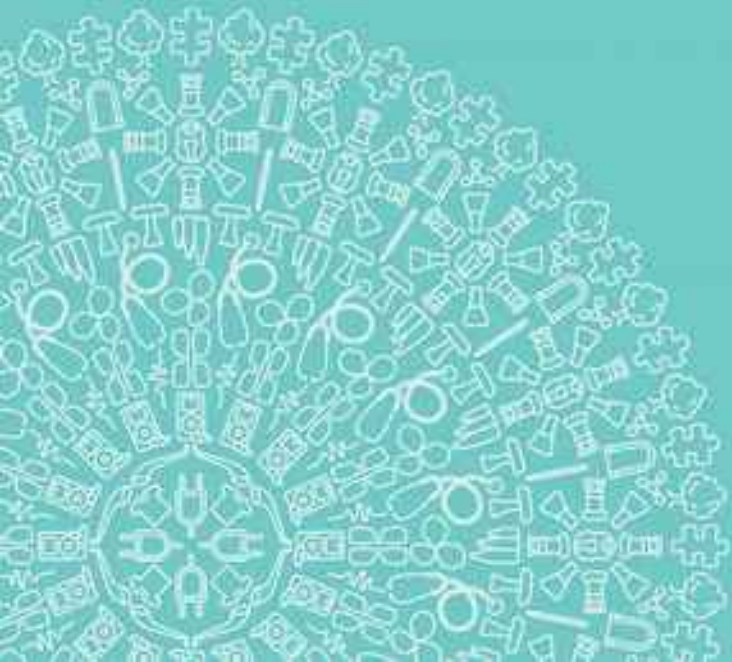
The Future….

- Will the EU Commission produce a Directive on the civil liability of robots?

- Will the UK find some leadership for this new industrial technology to allow it to develop?

- How will Courts in the UK adapt common law principles to this new technology?

- How will privacy and security fears influence the public?

- What have we forgotten to take account of????
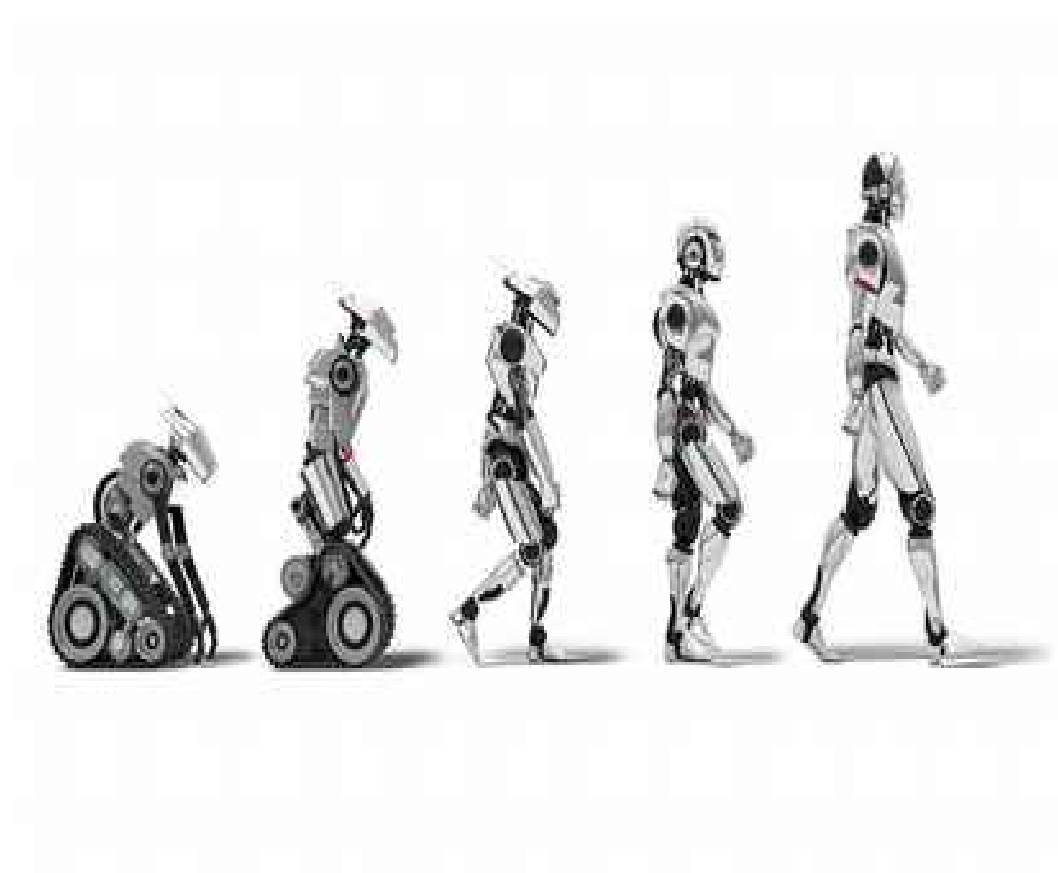
Thank you

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