



ROBOTICS: Industry 4.0 and future of work Presentation - Deloitte at USI

ROBOTICS: Industry 4.0 and future of work

Who I am



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Alessandro is an audit Director enthusiasts of new techs and leading also the Accounting Services Department in Lugano and has over 20 years experience in the audit, advisory and accounting.

Besides his audit & advisory experience within the Big, he worked as a CAO in an international listed company.

He is author of different articles in Ticino magazines. Since 2007, he has been teaching at Centro di Studi Bancari in Lugano within the AKAD School specialised in Banking.

Specialisation: Bookkeeping, accounting advisory, IFRS, Swiss GAAP, Consolidation, Internal Control System and Risk Assessment.

Professional Qualifications:

- Swiss Chartered Public Accountant
- Degree in Economics at Libero Istituto Universitario in Castellanza

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Agenda

- The quiz
- The 4th Industrial revolution: what's new – the context
- New technologies
- Impacts
- The Future of work

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The quiz

QUESTIONS:

1. When was the first robot invented?
2. Who invented it?

ANSWER

Leonardo's robot, or **Leonardo's mechanical knight**, was a humanoid automaton designed and possibly constructed by Leonardo Da Vinci around the year 1495

CLUES



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The 4th industrial revolution: what's new – the context



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Industrial revolution: what's new – the context

Key concepts

□ Escalation of the industrial revolutions

- **First** industrial revolution (late 18th century): steam engines and hydraulic power for **more efficient production**
- **Second** industrial revolution (late 19th century): electricity and assembly lines for **mass production**
- **Third** industrial revolution (60's): **computing** and programming machines and networks
- **Fourth** industrial revolution (Industry 4.0 - at the beginning now) combination of **physical with digital**

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Industrial revolution: what's new – the context

Key concepts

□ Impacts of the Industry 4.0

- Big data driving new operations and insights
- Need of a set of technologies to drive it
- Rapid and profound changes on businesses/industries, government and society
- Changing rules of competition, forms of collaboration/ways of working and structure of business and organizations

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Industrial revolution: what's new – the context

Key concepts

□ Organizations challenges

Changing ways to:

- Respond to Customer needs and serving them
- Attract and develop People with new required Talents/Skills
- Execution of the Strategy through support of the right Technology

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New technologies

Main technologies in the rise are currently:

- **BLOCKCHAIN** and
- **ROBOTICS** where robotics are
 - RPA
 - Learning machines
 - Intelligent machines/assistant

Another classification of robotics is between:

- Cobot – collaborative robot that alongside people are augmenting their abilities instead of replacing them
- Service robot – performing a growing array of tasks outside the manufacturing (such as autonomous guided vehicles, drones, medical robots ...)



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New technologies

BLOCKCHAIN Definition

“A **blockchain**, originally **block chain**, is a continuously growing list of [records](#), called blocks, which are linked and secured using [cryptography](#). Each block typically contains a [cryptographic hash](#) of the previous block, a [timestamp](#) and transaction data. By design, a blockchain is inherently resistant to modification of the data. It is "an open, [distributed ledger](#) that can record transactions between two parties efficiently and in a verifiable and permanent way". For use as a distributed [ledger](#), a blockchain is typically managed by a [peer-to-peer](#) network collectively adhering to a [protocol](#) for inter-node communication and validating new blocks. Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks, which requires collusion of the network majority.

Blockchains are [secure by design](#) and exemplify a distributed computing system with high [Byzantine fault tolerance](#). [Decentralized](#) consensus has therefore been achieved with a blockchain. This makes blockchains potentially suitable for the recording of events, medical records, and other [records management](#) activities, such as [identity management](#), [transaction processing](#), documenting [provenance](#), [food traceability](#) or voting.” **(Wikipedia)**

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New technologies

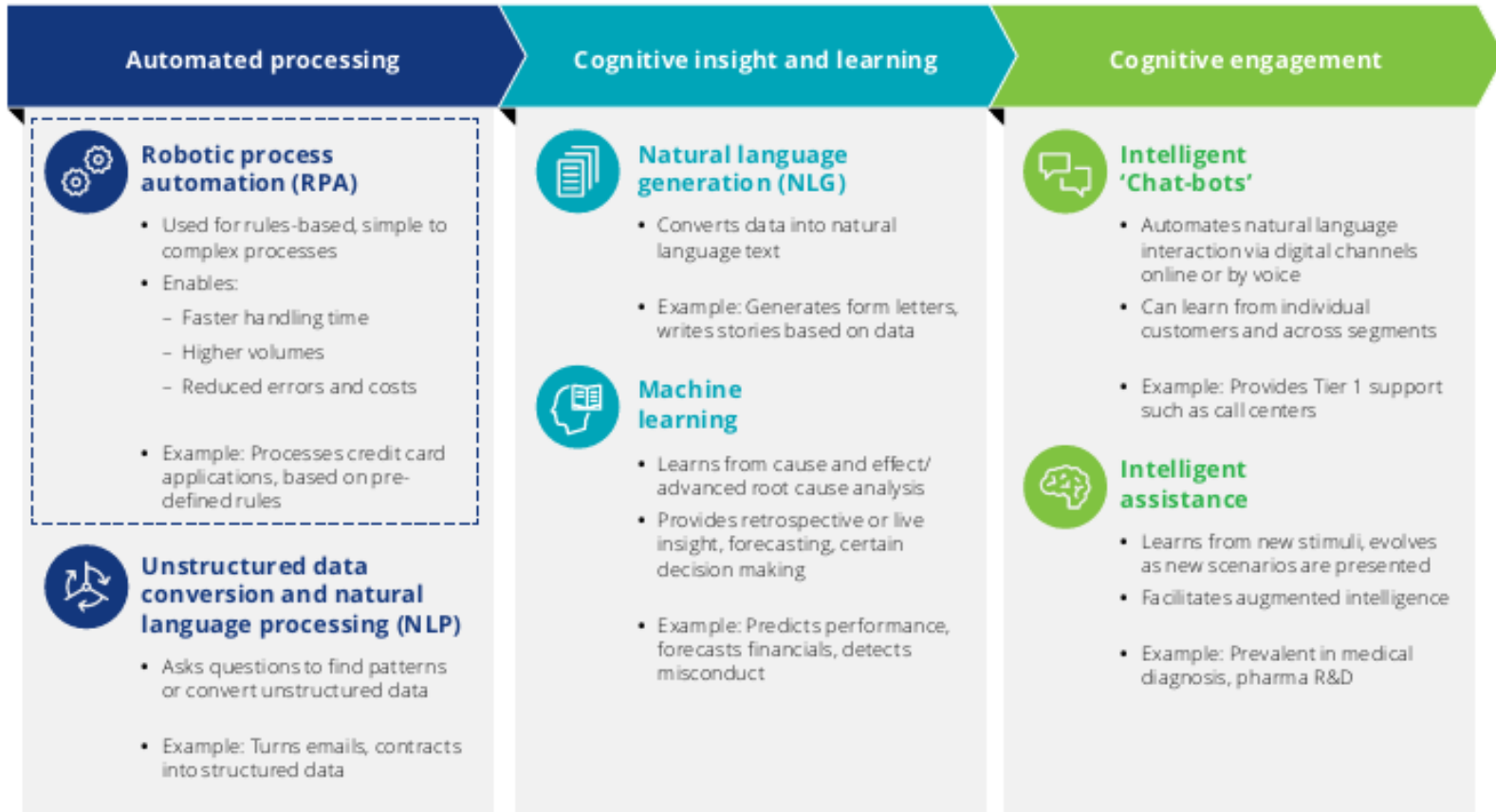
BLOCKCHAIN Features:

- Distributed/Decentralized
- Democratized – no need of a central authority/guarantor
- Based on consensus
- Peer to Peer
- Permanent
- Cryptography

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New technologies

ROBOTICS AND COGNITIVE TECHNOLOGIES



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New technologies

- What's new?
 - These technologies **are here**
 - **Rapidity and speediness** of innovation through and of these technologies are exponential compared to the past
 - Robots are **uncaged** and ready to co-operate with humans: the RISE OF THE MACHINES

The future is here.
Are you ready?

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New technologies

The future is here.
Are you ready?

Companies that are not already considering RPA and other forms of automation as a component of a broader worker ecosystem will miss significant opportunities for efficiency, quality enhancement, risk mitigation, innovation, and, ultimately, growth.

- These technologies are **not an efficiency-booster and job-killers**
- Their promise is to “**unleash**” **value creation and capture in a time of increasing performance pressure.**

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Impacts

New technologies require and simultaneously affect:

- New / revised / adapted Strategy
- New Business models
- New Organizations
- New Skills and Talent

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Impacts

New technologies are in fact impacting the work on :

- **What**
- **How**
- **Who**

is working / will work

2 significant examples:

a. Old fashion work disappearing but new professions appearing: ATM & Ticket box

b. For a better world - significantly increasing safety: DRONES

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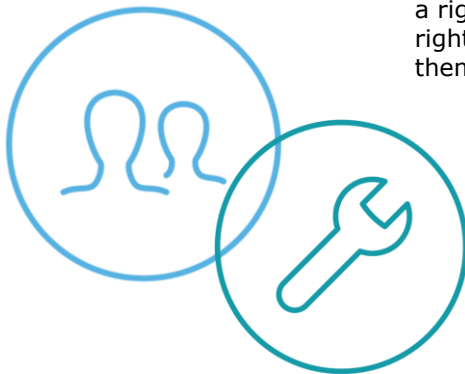
The Future of work

WHAT, HOW and WHO

- jobs will require greater capacity for creativity, problem solving and soft skills
- human and machine intelligence are complementary, not conflictuary

HUMANS and MACHINES

a right combination where both work together to find the right solutions to most pressing problems, approaching them from different and complementary directions



ROBOTS

improved learning and dexterity make robots more versatile, able to perform different tasks with minimal reprogramming

APPLICATIONS

new robots generation may ultimately eclipse traditional industrial robots

interest for new generation of robots is widening and well beyond manufacturing: strategy, marketing, customer service and IT- the so-called **ROBOTS UNCAGED**

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The Future of work

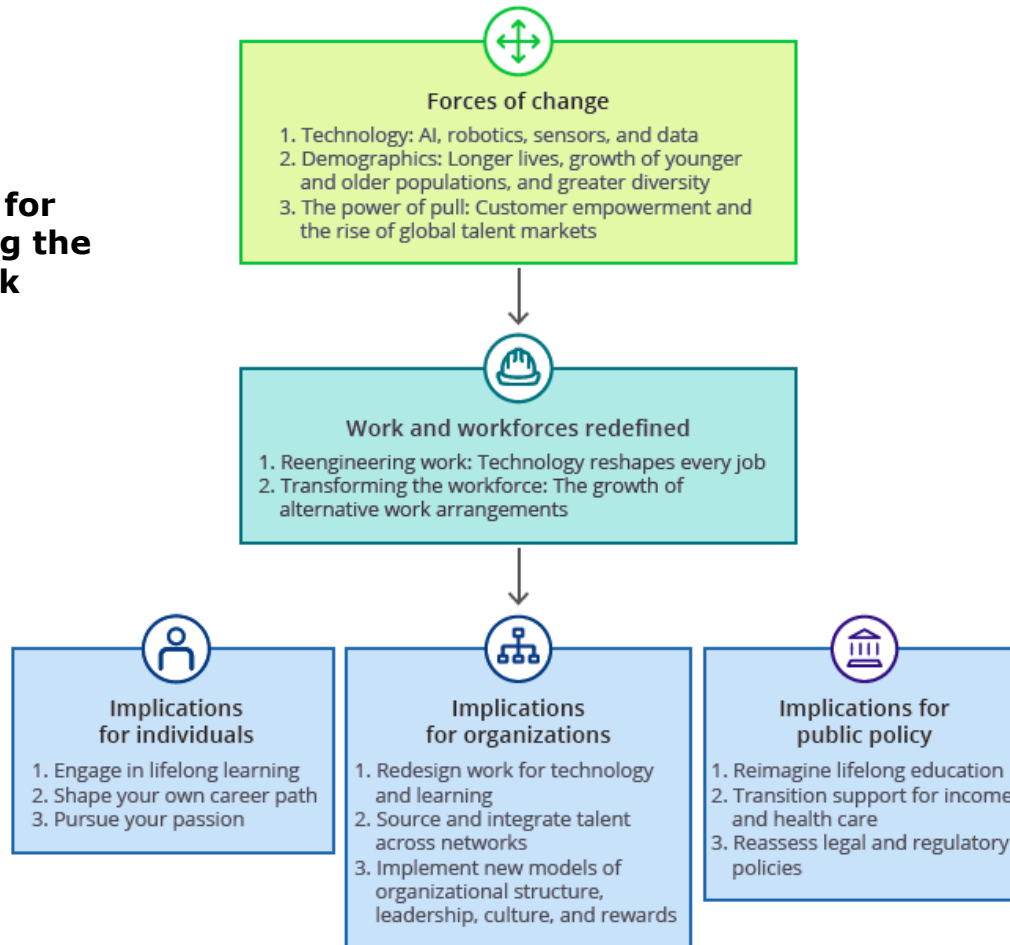
Benefits, Challenges and Opportunities

- faster/better/cheaper as robot's capabilities improving
- reconsideration of where locate **manufacturing** as automation makes it less dependent on salary level, closer to R&D centre, and larger markets, but need to reconfigure the supply chain
- **product customization** and innovation, more economically and efficiently
- **customer service** to enhance customer experience
- **operations** reconfigured to increase employees' safety, productivity and satisfaction by increasing production flexibility and reducing also lead-times
- **HR** impacted on strategic workforce planning in terms of talent to manage / co-work with robots and robots supporting workers performing physical demanding jobs but also routine jobs unleashing creativity and resourced to value-added tasks
- **IT** will have a key role in evaluating robotics technology, upgrading and integrating systems and address cybersecurity and privacy issues
- **risk management** to consider technological risks connected to cybersecurity and privacy as well as operational risks such as continuity and safety; and legal and regulatory risks (evolving regulations and standards); and last but not least financial risks (capital intensiveness due to a massive investment in rolling robots)

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The Future of work

A framework for understanding the future of work





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