



CYBER CITY ANALYST



GENETIC DIVERSITY OFFICER



WALKER / TALKER

Sharing from experience: competencies for "intelligent dialogues" with emerging technologies

20° INTERNATIONAL CONFERENCE ON
Intelligent Tutoring Systems
GENERATIVE INTELLIGENCE and ITS

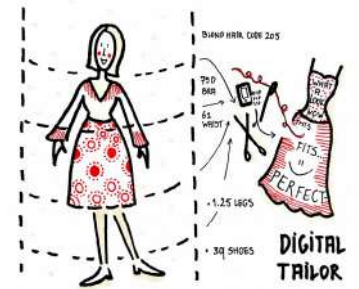
Gianna Martinengo
CEO and Founder of
d_kt_s
Digital Knowledge Technologies Services



A.I. ASSISTED
HEALTHCARE
TECHNICIAN



VIRTUAL STORE
SHERPA



DIGITAL
TAILOR



MASTER OF
EDGE COMPUTING



ETHICAL
SOURCING
OFFICER



HIGHWAY
CONTROLLER



CHIEF
TRUST
OFFICER

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DIDA^{EL}

KNOWLEDGE COMMUNICATION TECHNOLOGIES

MILAN

ROME

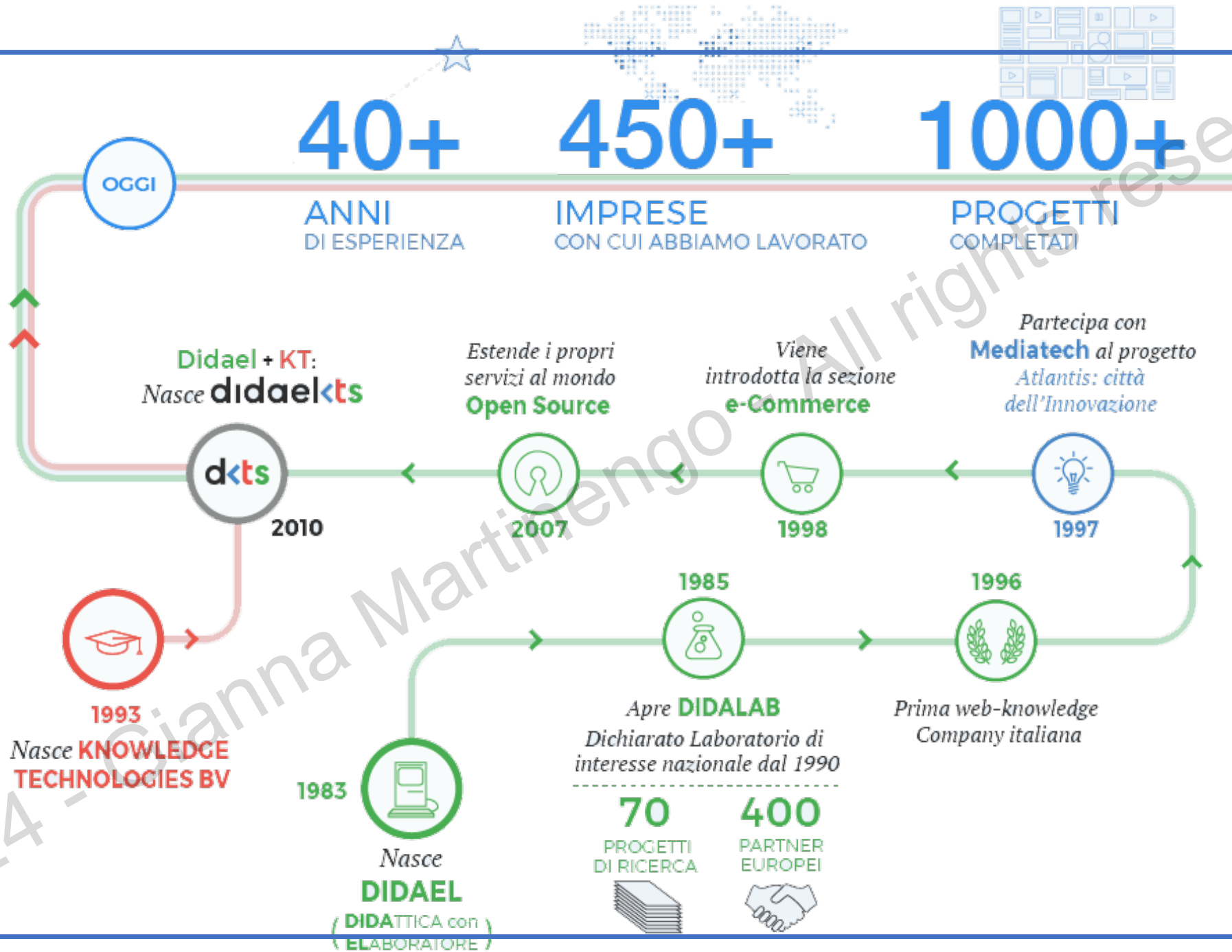
BRUSSELS

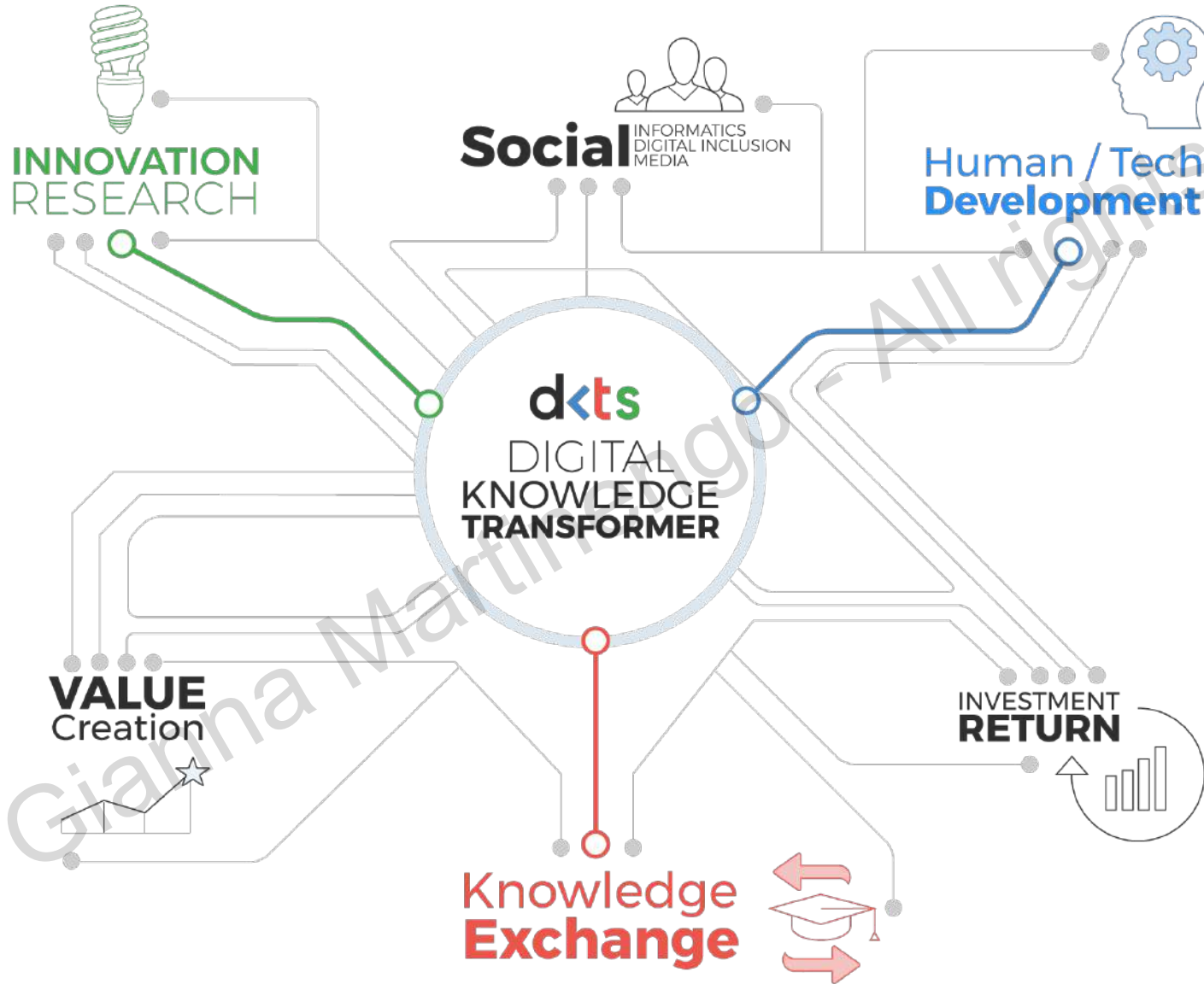
The logo for dKTS features the lowercase letter 'd' in black, followed by 'K' in blue, 't' in red, and 'S' in green.

Inspired by users, driven by science

40 years of research and applications

Inspired by users, driven by science





Women&Tech® ETS

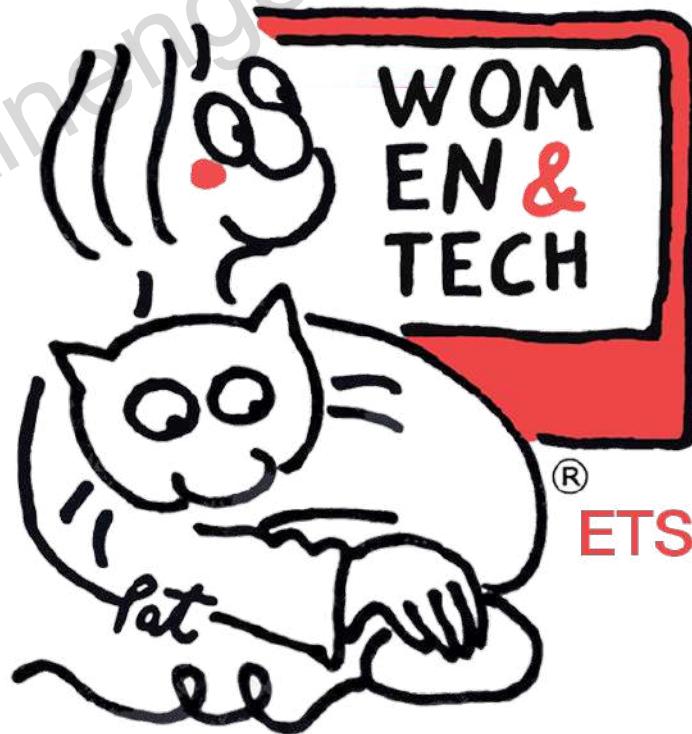
ASSOCIAZIONE STEM₂STEAM

Science, Technology, Engineering, *Arts*, Mathematics

www.womentech.eu



Women&Tech® è un marchio registrato



1999:
Lombardy Region,
Equality
conference

1999-2008:
Women&Technolo
gies, CSR project
of DKTS

2009: WTproject
turns into an
Association

2022:
Women&Tech
becomes a
national entity of
the Third Sector

2024: AI based
Website

The 9 lessons learnt from Chat GPT

1. Transactions are long conversations not a one-shot question-answer
2. The system has memory of the verification interaction phases: Grid -stateful- vs Web -stateless- services.
3. Taking the turn can be a mixed initiative since 1970 in Tutoring Dialogues (J. Carbonell)
4. Interactions are not based on a predetermined model of the artificial partner, two identical questions give different results, the 'oracle' is constantly being updated
5. Prompt engineering is replaced by rapid conception and refinement, even the human learns



The 9 lessons learnt from Chat GPT

6. Conversations can become multi-agent = social
7. Intelligence is collective, not individual
8. Roles - guardian, tutee, teacher, expert, novice...- are often exchanged and diversified, shared between human and artificial agent societies
9. Consequently: counselling, outreach, courses are radically changed by adopting a similar approach (multiple sources of knowledge and practices)



Our strategy for a new business

Thanks to what we learnt by our experience and research activity, at the end of 2022, our company was ready to provide:

- Consulting
- Applications and services for interactive platform-based systems
- Websites based on the principles stated in this presentation

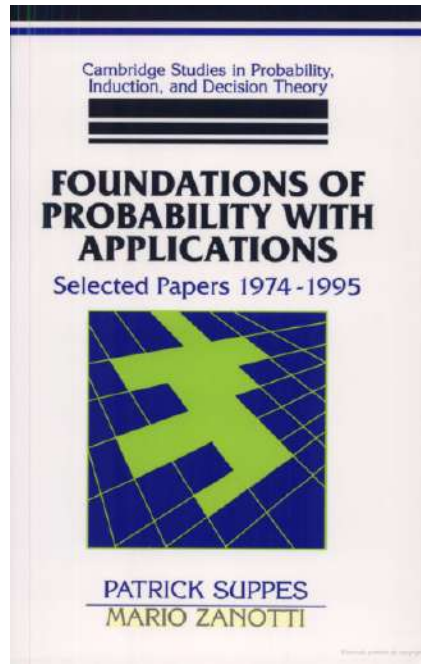


Our strategy for a new business

Our approach is based on “learning by doing” and side by side activity:

- Introduction to AI: what it is , how it works
- What can we do for you specifically?
- Side-by-side coaching
- Identification of scope of intervention
- In-depth cognitive activity to find corporate KB
- Analysis of materials collected
- Prototype development
- Experimentation and discussion of results
- Possible adoption





Ventura Hall: Stanford's Institute for Mathematical Studies in the Social Sciences (1959)





The **DidAlab** Research Laboratory (1985) headed by Prof. **Stefano A. Cerri** was co-founded

Marvin Minsky (MIT), pioneer of artificial intelligence, visited the **DidAlab** Research and Development Laboratory (1989)

Dialogue and interaction between people mediated and enhanced by technology.

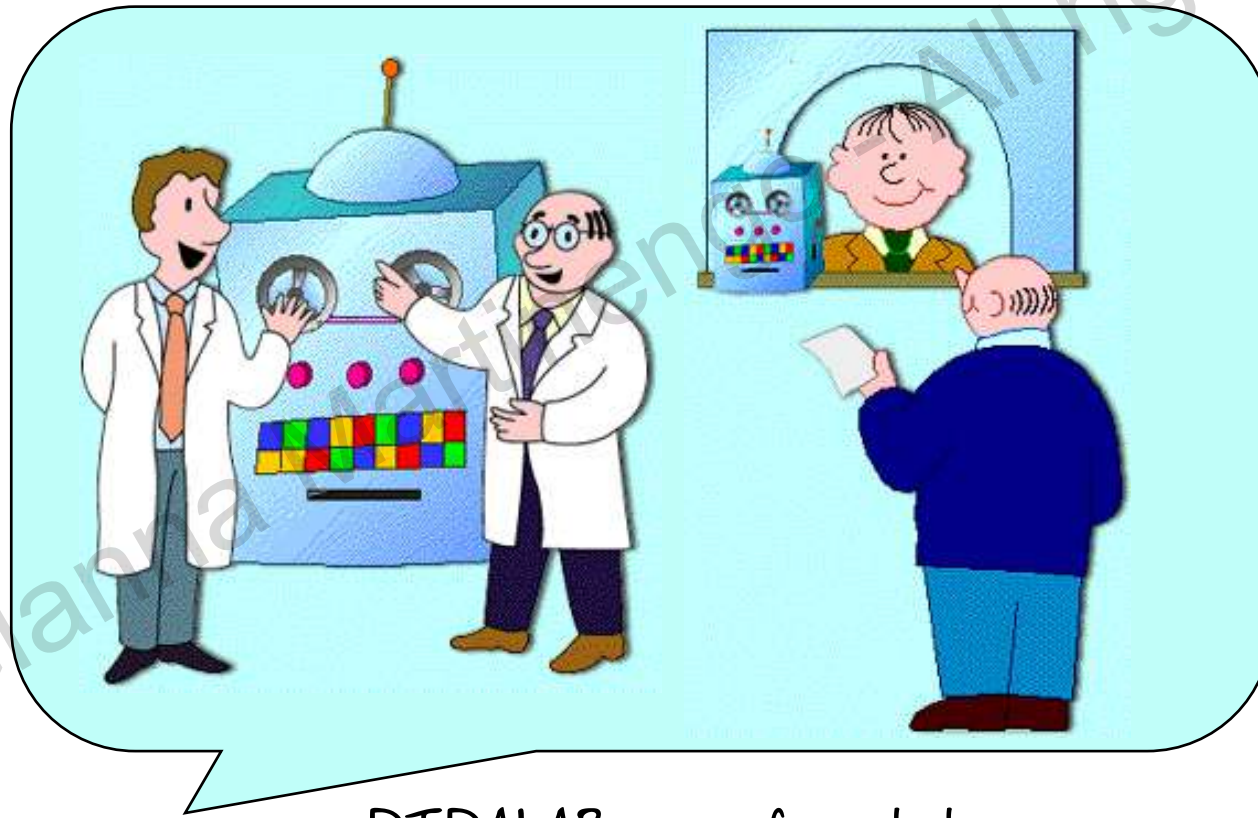


DIDAEEL was founded
Milan, 1983



GIANNA MARTINENGO
Fondatrice & Presidente DIDAEEL KTS
Ideatrice Women & Technologies

From Knowledge-Based Information Systems to Interactive Artificial Intelligence: DIDALAB and KT



DIDALAB was founded
Milan, 1985



GIANNA MARTINENGO
Fondatrice & Presidente DIDALAB KTS
Ideatrice Women & Technologies

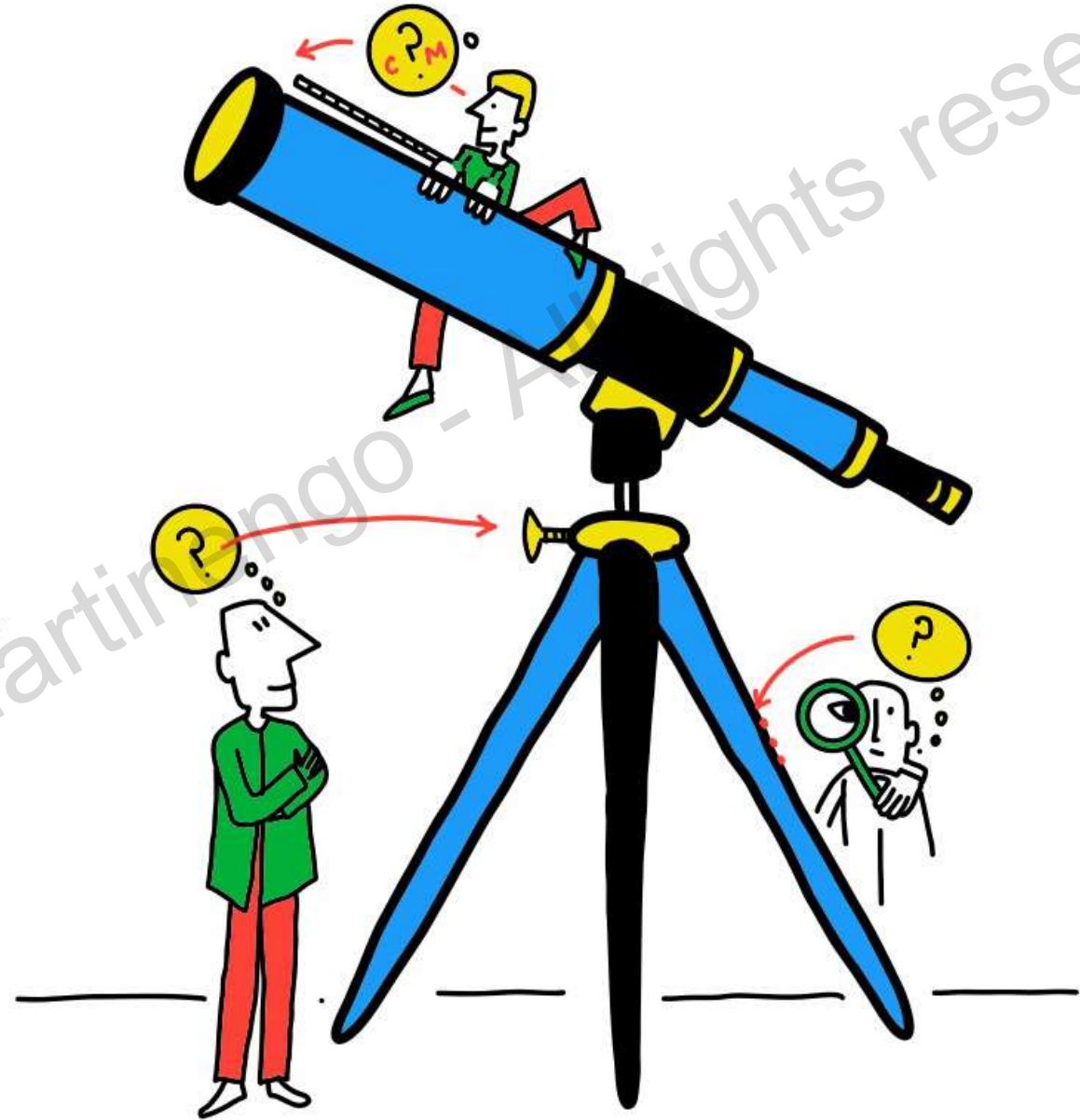
Knowledge-based information systems (agents)

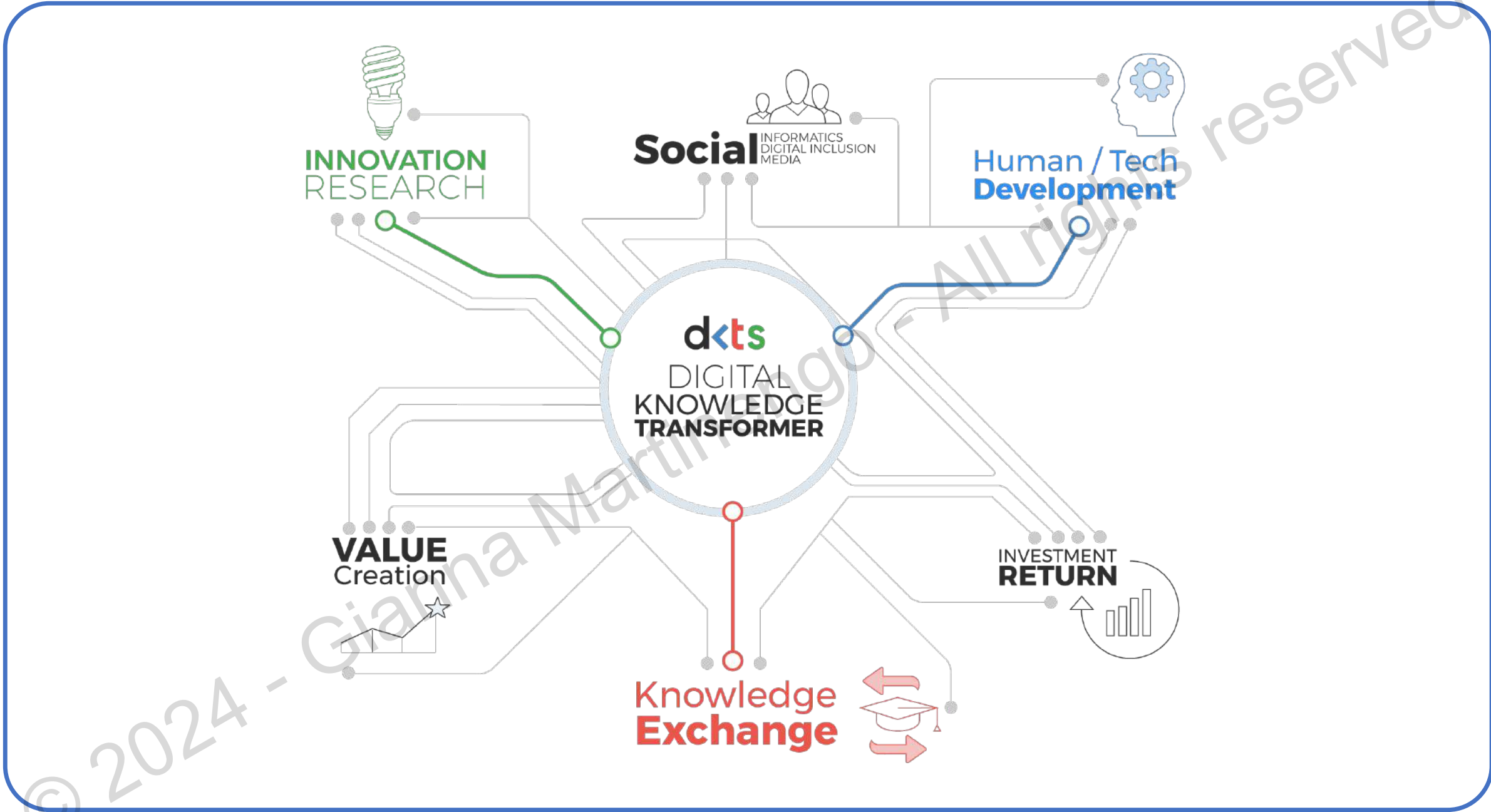
- Modern information systems include not only **databases, but also tools such as Google or Yahoo or many other social networks, as well as recommender systems** (proactive information systems). In general, tools for the **collaborative construction of knowledge** from information available on the Web operate in the context of billions of artificial and human agents exchanging messages.



“ COMPUTER SCIENCE
IS NO MORE ABOUT
COMPUTERS THAN
ASTRONOMY IS ABOUT
TELESCOPES ”

EDSGER DIJKSTRA





**INNOVATION
RESEARCH**

Social
INFORMATICS
DIGITAL INCLUSION
MEDIA

**Human / Tech
Development**

d_kt_s
DIGITAL
KNOWLEDGE
TRANSFORMER

**VALUE
Creation**

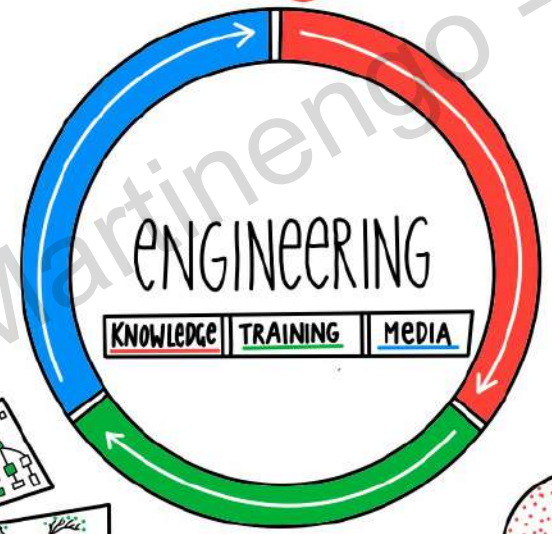
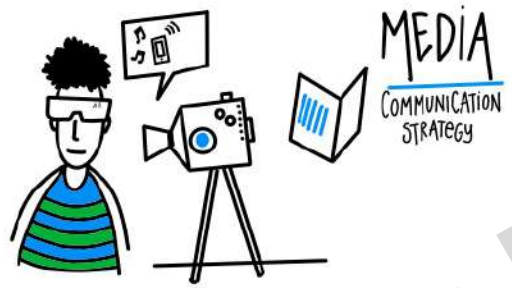
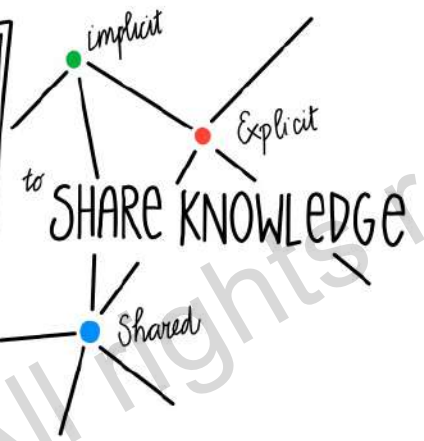
**INVESTMENT
RETURN**

**Knowledge
Exchange**

KNOWLEDGE

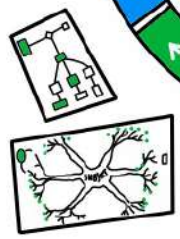
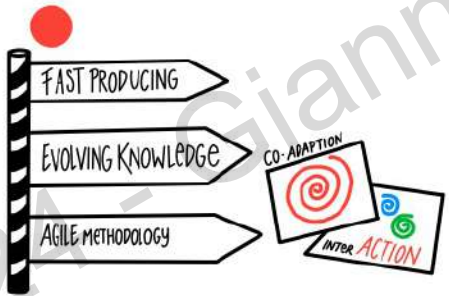
THE PROCESS THAT TRANSFORMS DATA & INFORMATION BY LINKING THEM TO THE CONTEXT OF USE.

A METHODOLOGY is needed FOR:



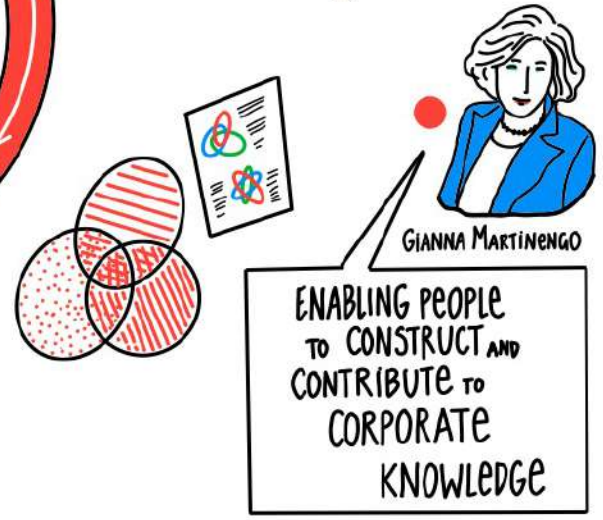
KNOWLEDGE ENGINEERING

- is needed
- * TO CLASSIFY
 - * TO STRUCTURE
 - * TO MODEL
 - ★ DECLARATIVE DOMAIN
 - ★ PROCEDURAL DOMAIN
 - ★ RELATIONAL DOMAIN

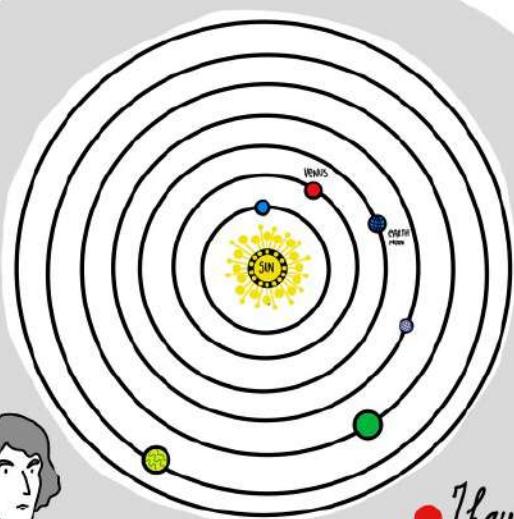


TRAINING

LEARNING THEORIES

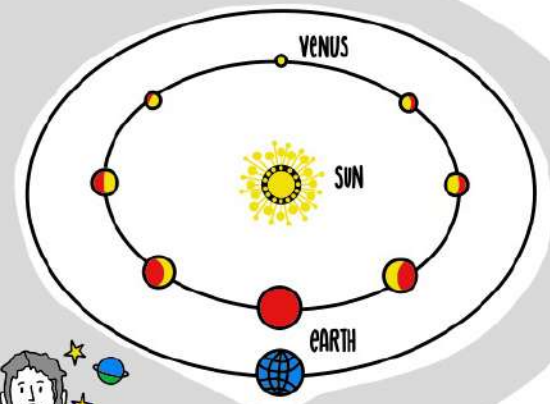
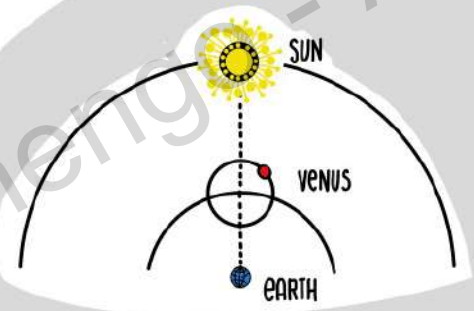


INTELLIGENCE



• THE EARTH IS NOT FLAT

• *I have heard this before ...1620*

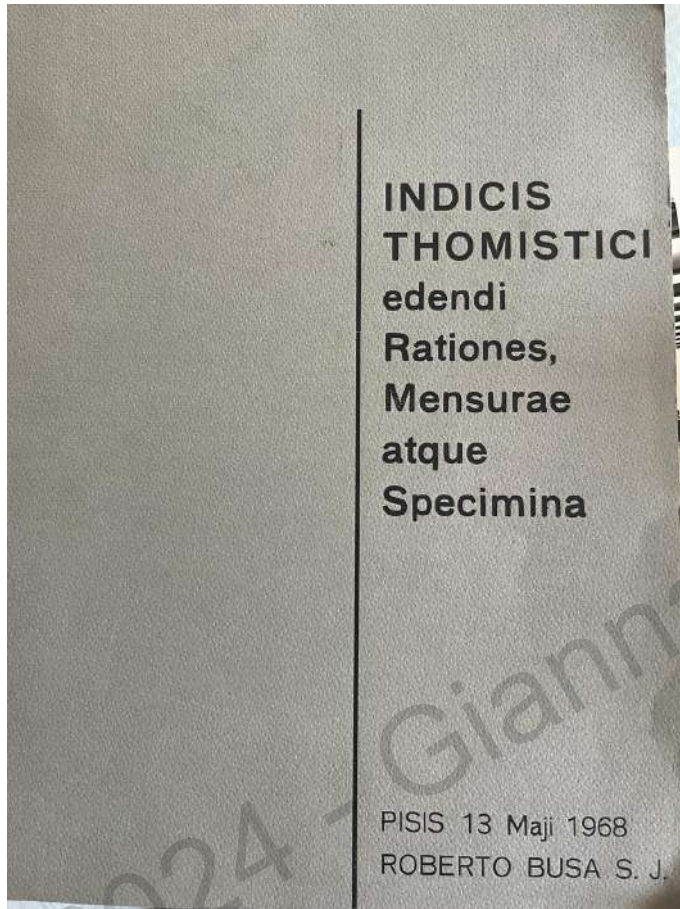


• to MOVE FROM OPINIONS TO SCIENTIFIC CONSTRUCTIONS



- OBSERVE
- DESCRIBE
- MEASURE
- INTERPRET

Padre Busa: a pioneer (1940s)



Roberto Busa, Servus Jesus, has implemented, over decades of work, the **INDEX THOMISTICUS**, which is widely described, encouraged and praised by various Popes, further as by many scientists He was a real pioneer.

The most difficult work of the INDEX THOMISTICUS **was to construct the concordances of the words** of St. Thomas: 170 magnetic tapes of medieval Latin texts.

Busa's hypothesis: *"Semantics of words comes FROM CONTEXT, from proximity to other words"*... ChatGPT.

The role of CNUCE and IBM (1968-69)

The complete processing of the Index Thomisticus in Pisa (1968-69), from the cards to the tapes to the sorting of words and concordances, was implemented on IBM 7090 and 1401 by a group of programmers from University of Pisa at CNUCE, coordinated by Stefano A. Cerri. Later the work was continued and finished in Boulder, Colorado, funded by IBM.



Social Informatics: conjectures

July 26, 2006. TOKYO

Intelligence is a social phenomenon (eg: Di Castri)

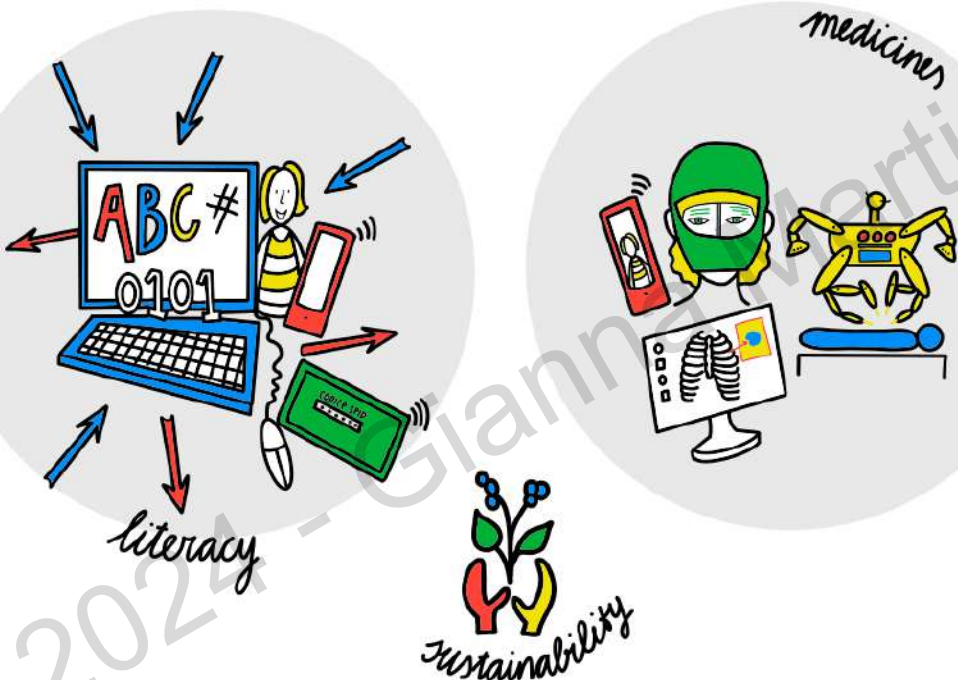
- Traditional AI (individualist):
 - making machines more « intelligent »
 - studying intelligence by simulations
- Current AI (social):
 - making Societies (human+artificial Agents) more intelligent
 - studying societie's intelligence by simulations

Social intelligence depends on Interactions (eg: Stefano A.Cerri)

- Interaction is a poorly understood phenomenon

MODERN COMPUTING IS SOCIAL

THE APPLICATION OF INFORMATION TECHNOLOGY
TO THE RESOLUTION OF SOCIALLY RELEVANT
PROBLEMS SUCH AS MEDICINES AND LITERACY



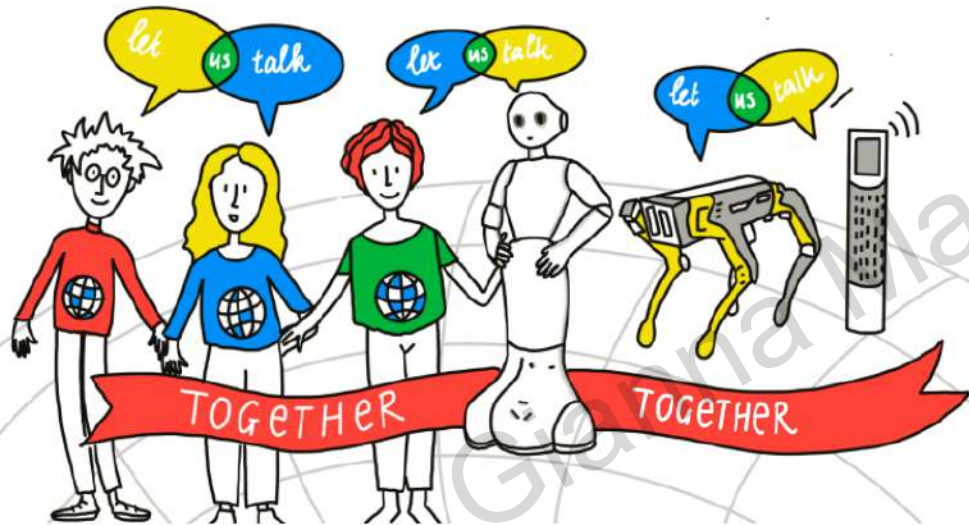
Modern Computing is Social for three main reasons:

it aims to improve the lives of individuals and communities, interacting with each other.

MODERN COMPUTING IS SOCIAL

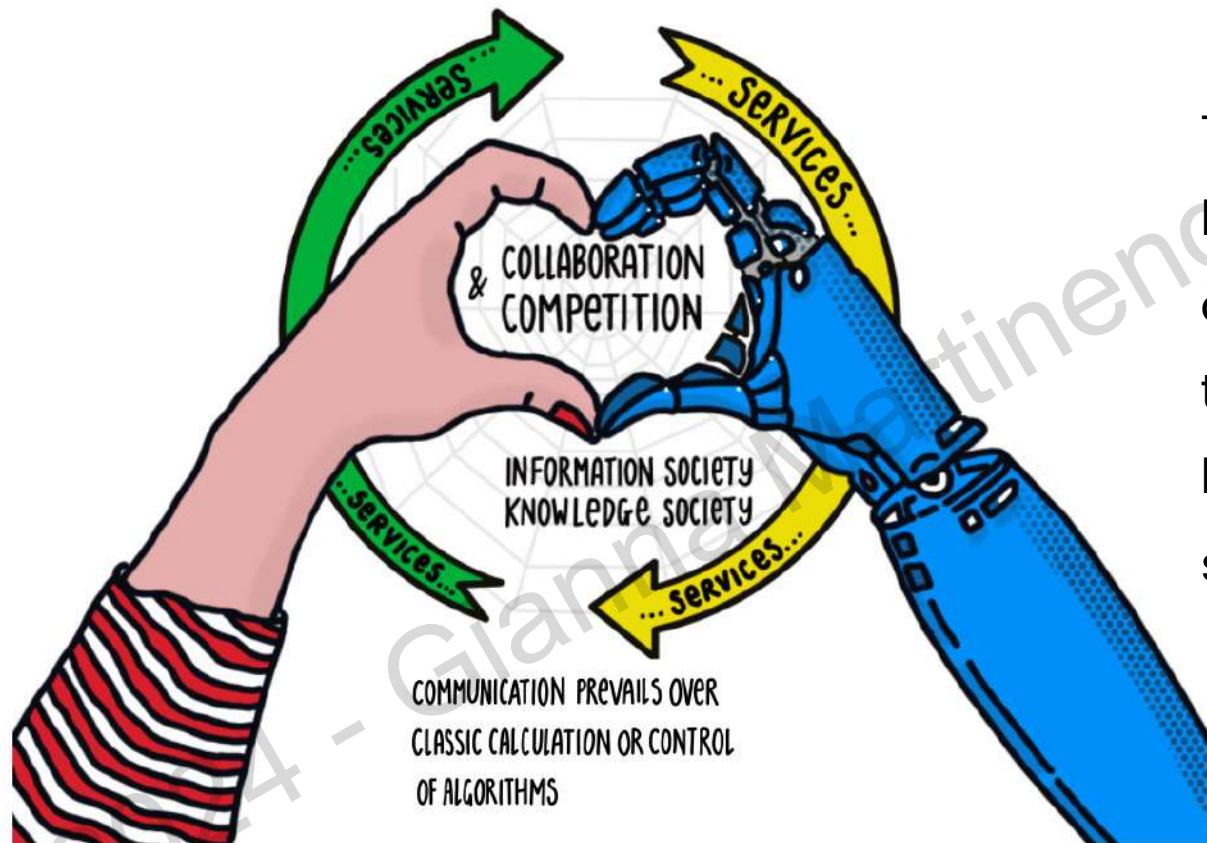
COMMUNICATIONS

HUMAN AGENTS AND AUTONOMOUS ARTIFICIAL
AGENTS COLLABORATE AND COMPETE



Next, it is immersed in and connoted by Social, which allows any user or enterprise to extract information that can be turned into business insights and opportunities or new knowledge..

MODERN COMPUTING IS SOCIAL



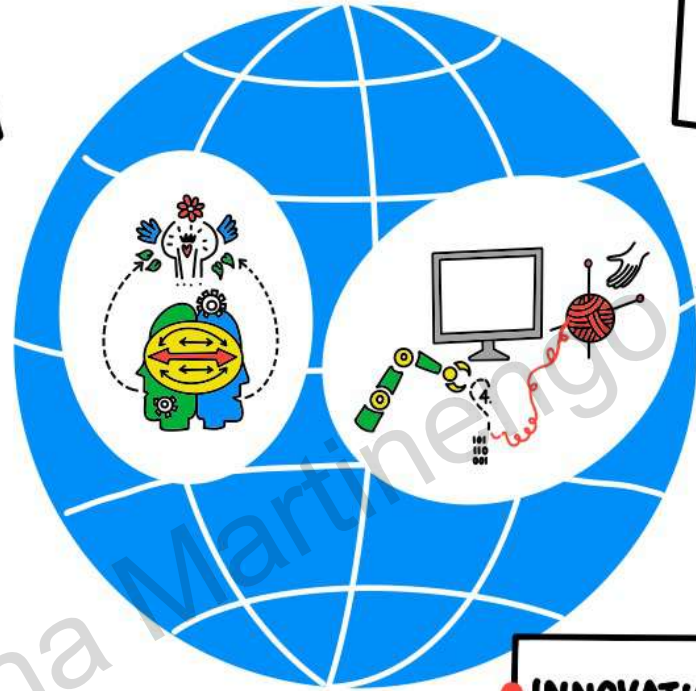
Thirdly, it is a constant dialogue between humans and automata- as I had the opportunity to observe and define back in the 1980s-a dialogue that, moreover, is becoming increasingly effective and sophisticated..

CULTURE OF INNOVATION & CHANGE

WHY IS IT NECESSARY.
INDISPENSABILE?

HOW TO
INNOVATE?

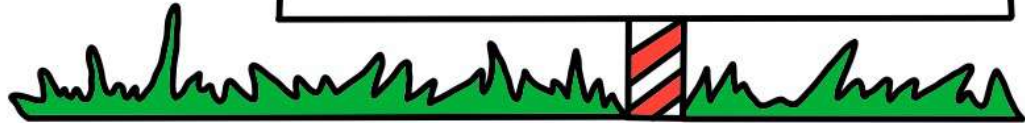
WHY IS IT
DIFFICULT?

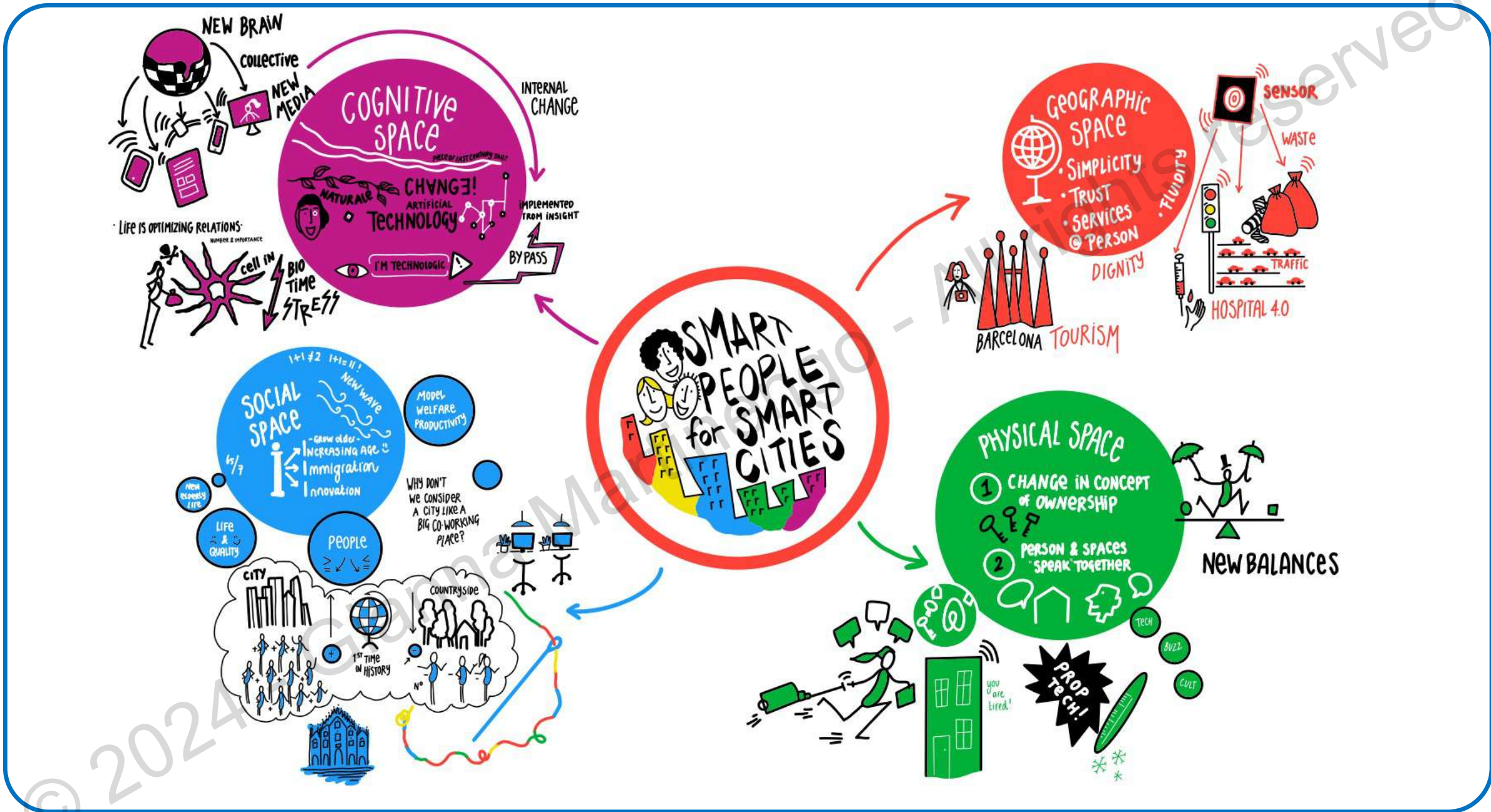


WHAT IS THE
METHOD?

WHAT IS THE
SPIRIT?

- INNOVATION IS **NOT A ONE OFF**
- INNOVATION IS **NOT ALWAYS IMPORTED**
- INNOVATION, INTERACTION REQUIRE AN **AGILE METHOD.**





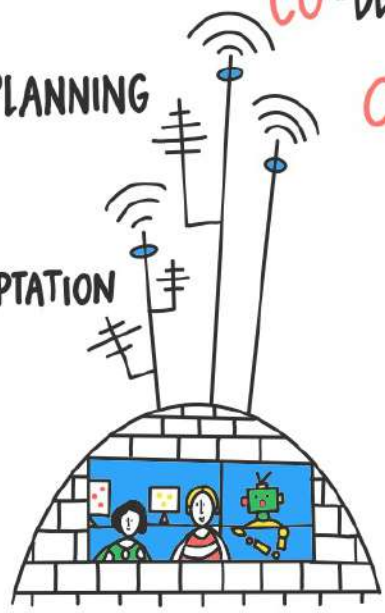
2030

THE LEVERS OF CHANGE

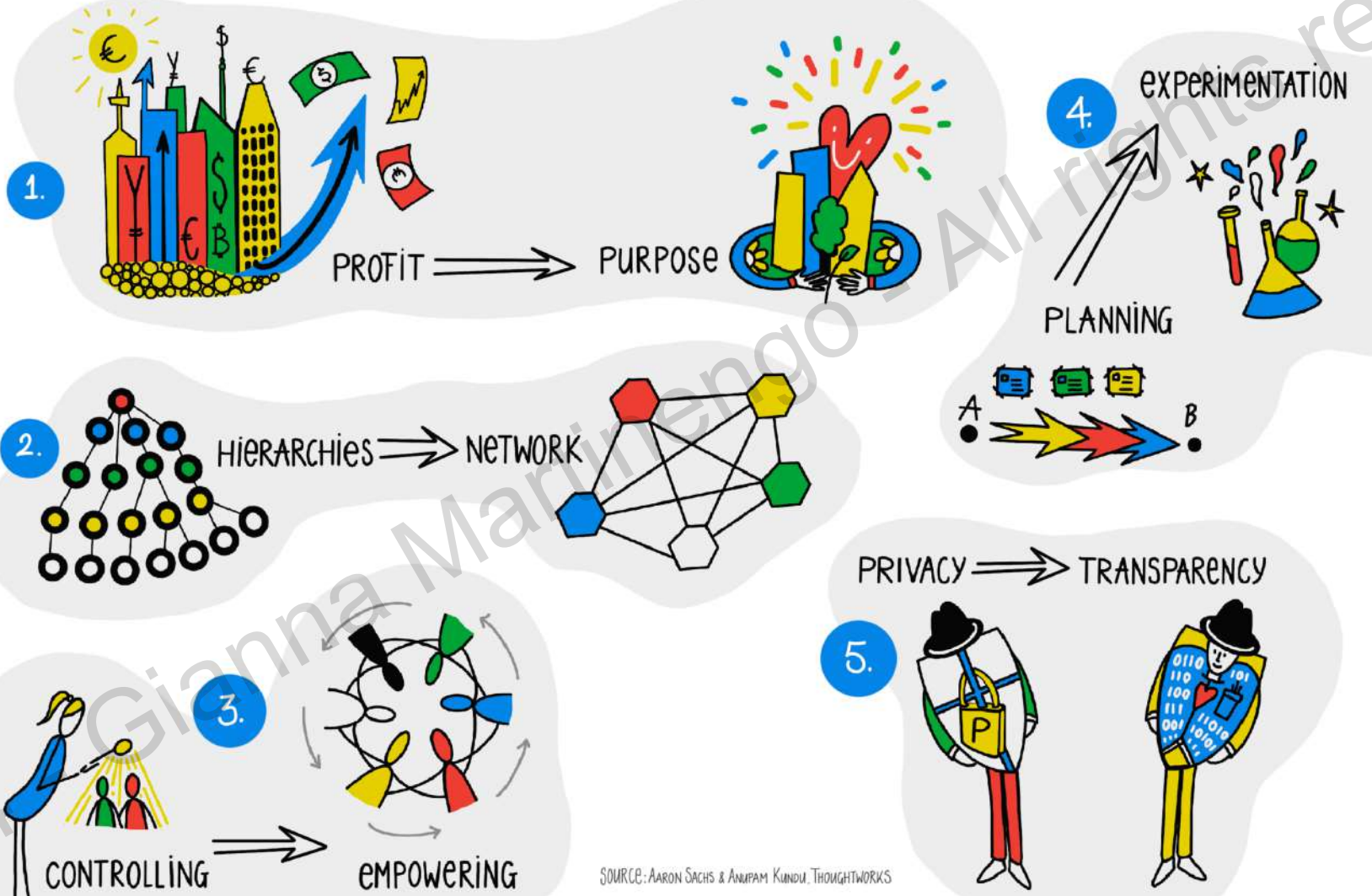
FROM **e** TO **CO**



CO-PLANNING
CO-DESIGN
CO-ADAPTATION
CO-DECISION



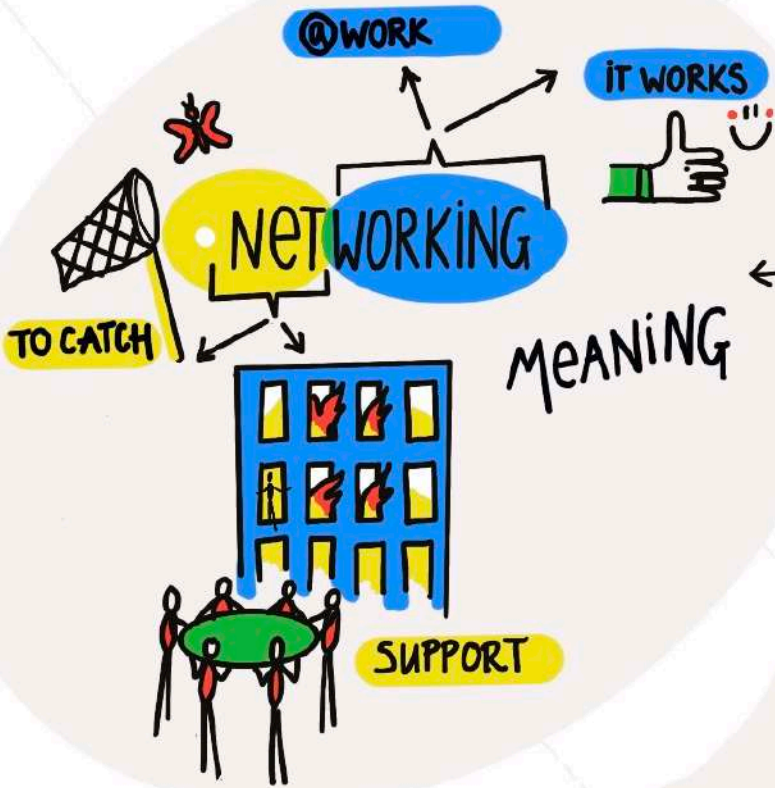
MINDSET SHIFTS FOR ORGANIZATION TRANSFORMATION

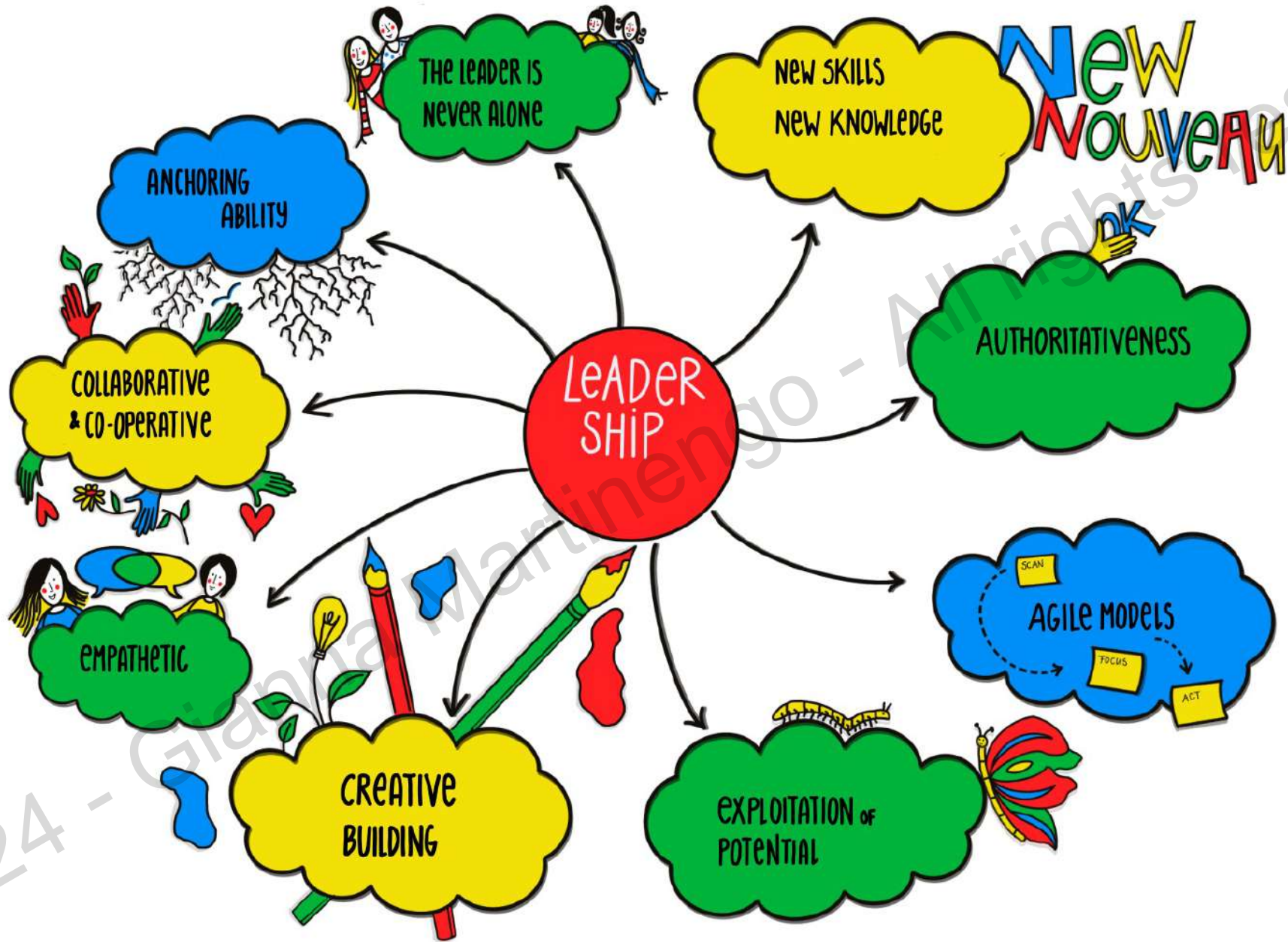


SOURCE: AARON SACHS & ANUPAM KUNDU, THOUGHTWORKS

NET WORKING

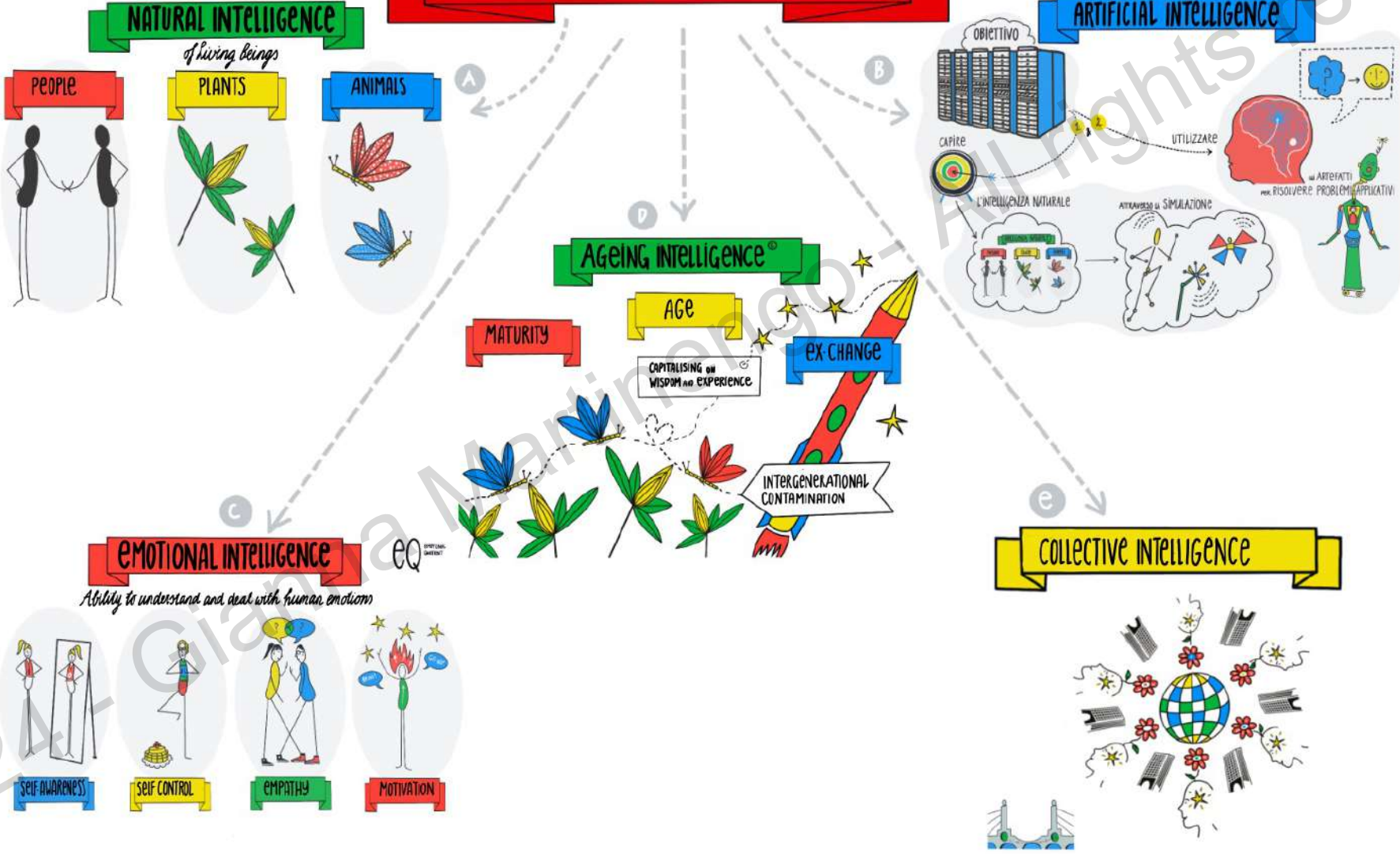
3 Levels





INTELLIGENCE

understand, foresee and decide

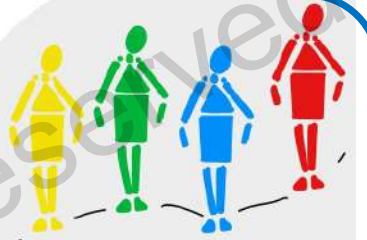
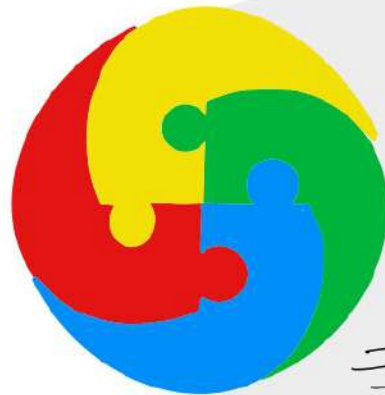
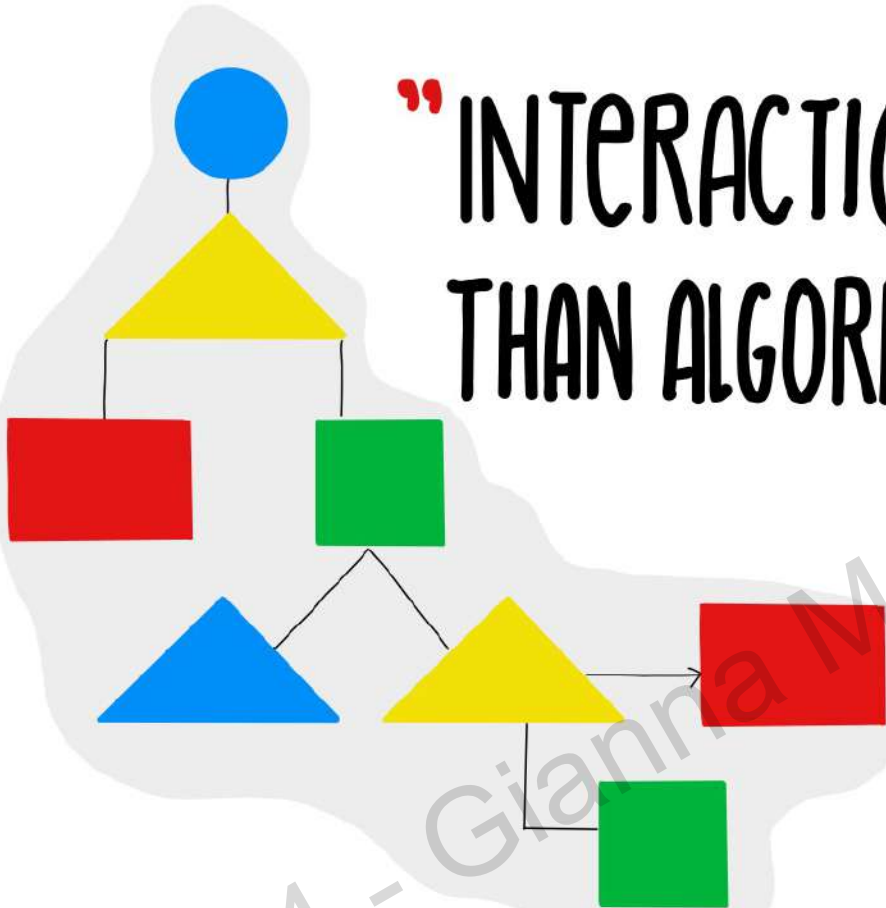


GENERATIONS WORKING TOGETHER



**"INTERACTION IS MORE POWERFUL
THAN ALGORITHM."**

PETER A. WEGNER



STOA Science and Technology International Advisory Board, EU Parliament
by Gianna Martinengo (President of DKTS) - 24/06/2021, 15:00-16:30 CET;
https://www.europarl.europa.eu/cmsdata/265641/INAB%202023-02-20_original.jpg

«AI (and software) systems <should be considered> as individual collective drugs because benefits and dangers are on the human receivers of services, not on system's behaviors resulting from its anatomy (eg: algorithms) or physiology (eg: consumer's goals).

New software life cycle: Assessment of any software should be delegated to a European Authority, based on regulatory sandboxes, evidence-based experiences as are clinical trials for EMA».



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COMPETENCES

BASIC

INNATE

TRANSVERSAL

TECHNICAL
PROFESSIONAL

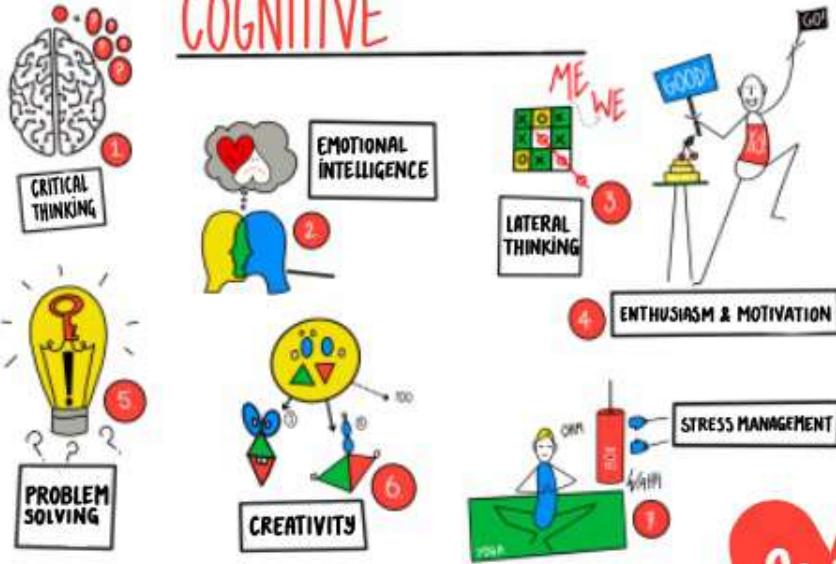
RELATIONAL

COGNITIVE

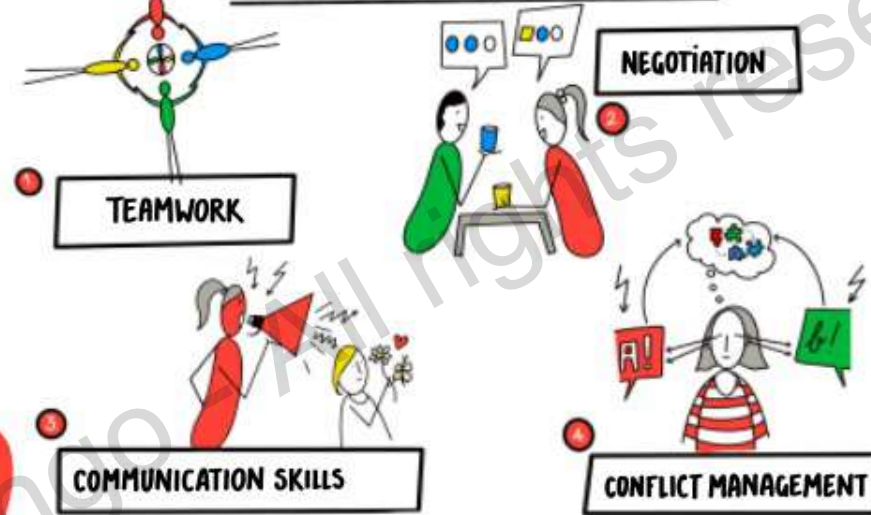
MANAGERIAL

IMPLEMENTATION

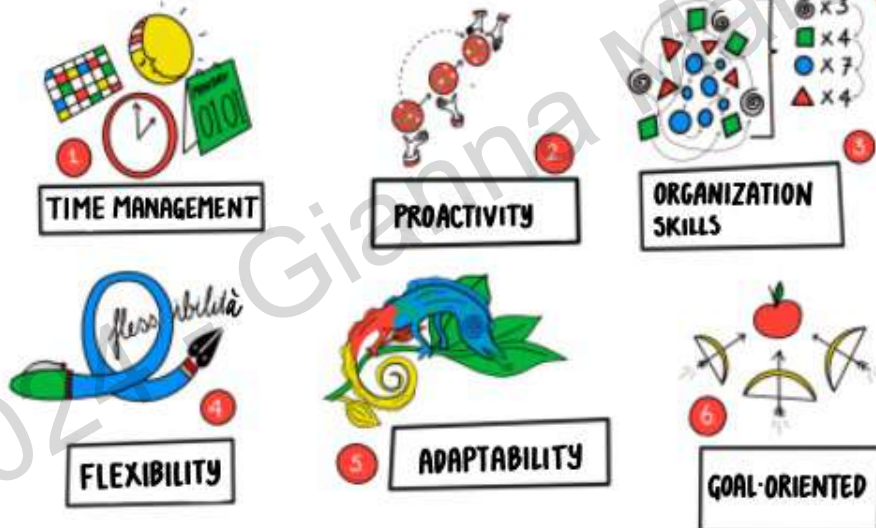
COGNITIVE



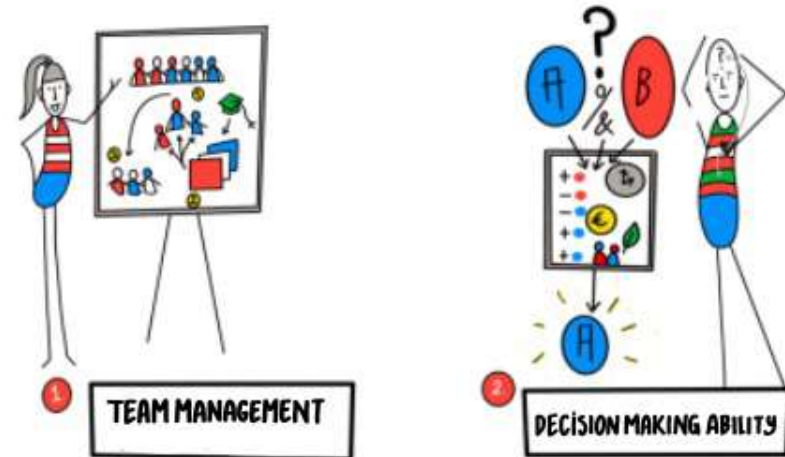
RELATIONAL

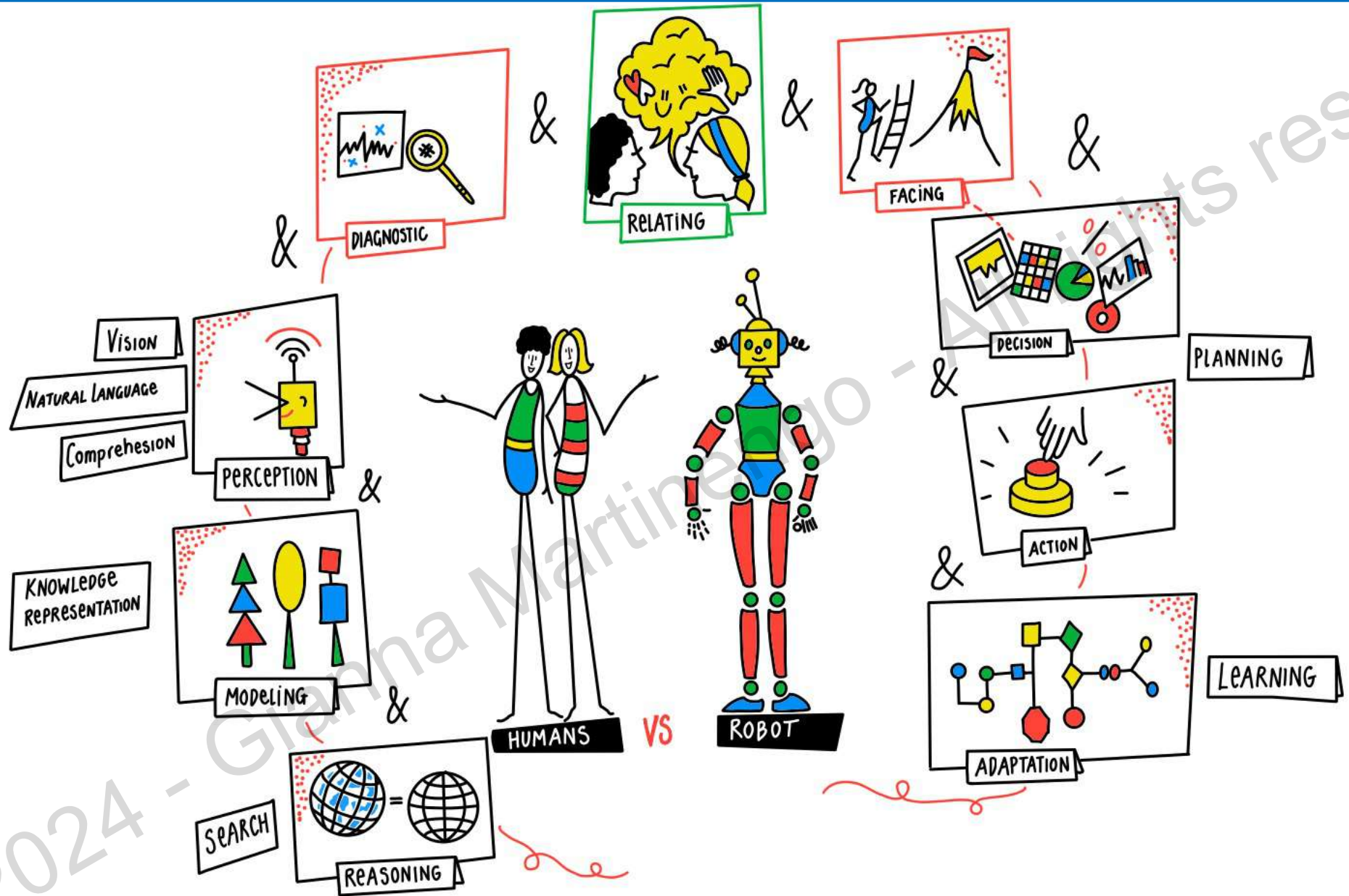


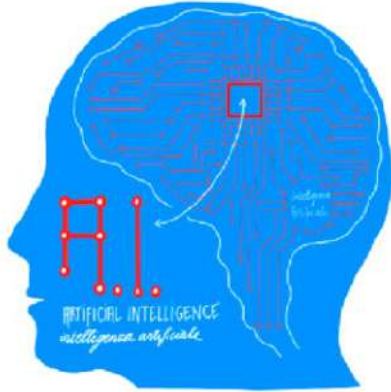
IMPLEMENTATION



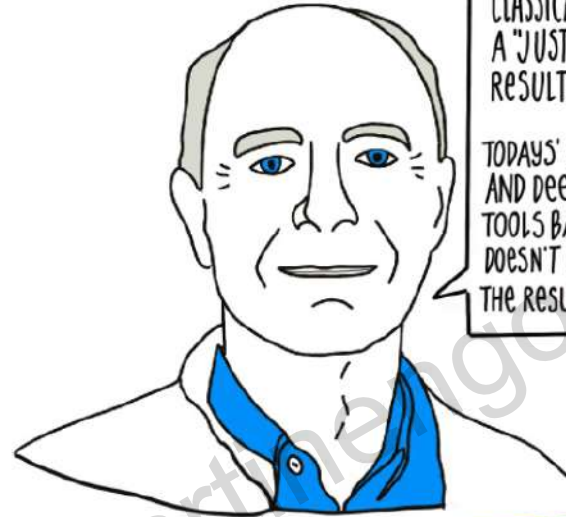
MANAGERIAL







STEFANO A. CERRI
PROF. EMERITO INFORMATICA
UNIVERSITÀ DI MONTPELLIER



"CLASSICAL A.I. COULD OFFER
A "JUSTIFICATION" FOR ITS
RESULTS.

TODAYS' A.I.; NEURAL NETWORKS
AND DEEP LEARNING, i.e. SUB-SYMBOLIC
TOOLS BASED ON STATISTICS
DOESN'T OFFER JUSTIFICATION FOR
THE RESULTS IT OBTAINS.



WHAT DOES IT
SAY? DO YOU
BELIEVE THIS?
OK?

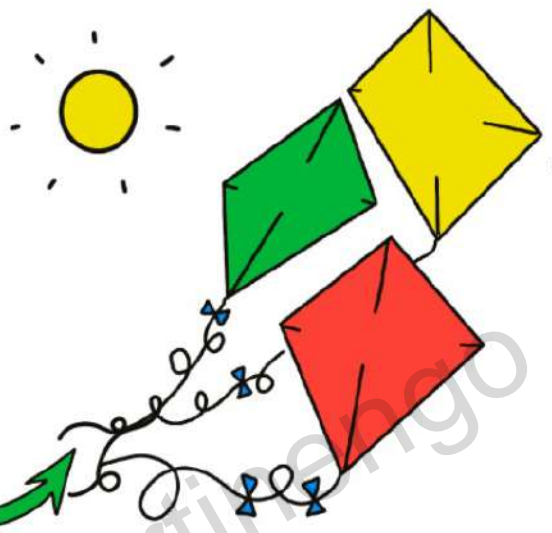
ETHICS

WE TALK ABOUT ETHICS &
A.I. BECAUSE WE DO NOT
TRUST A.I. RESULTS
WITHOUT JUSTIFICATION

A.I. CONTROLLED
& VALIDATED BY HUMANS

ETHICS & ECONOMICS

THE CONCEPT OF EFFECTIVE INNOVATION CANNOT, THEREFORE, BE SEPARATED FROM ETHICAL BEHAVIOUR

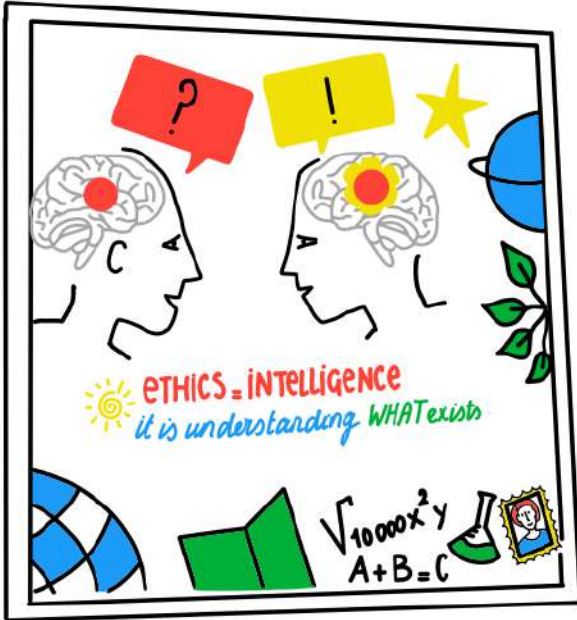


SOCIAL INNOVATION

SOCIAL NEEDS ARE MET AS... 

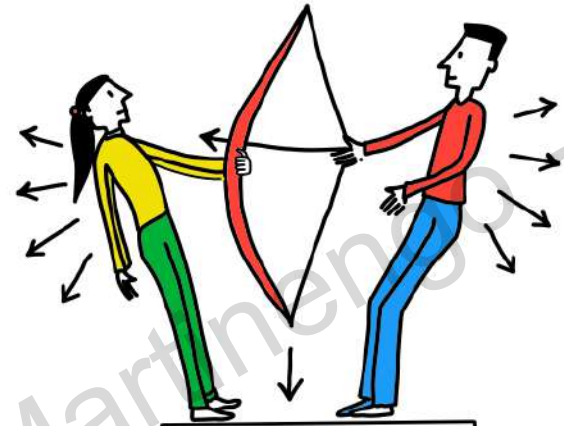
&
A COLLECTIVE OUTCOME OF A COMMUNITY ON THE GROUND 

e T H I C S

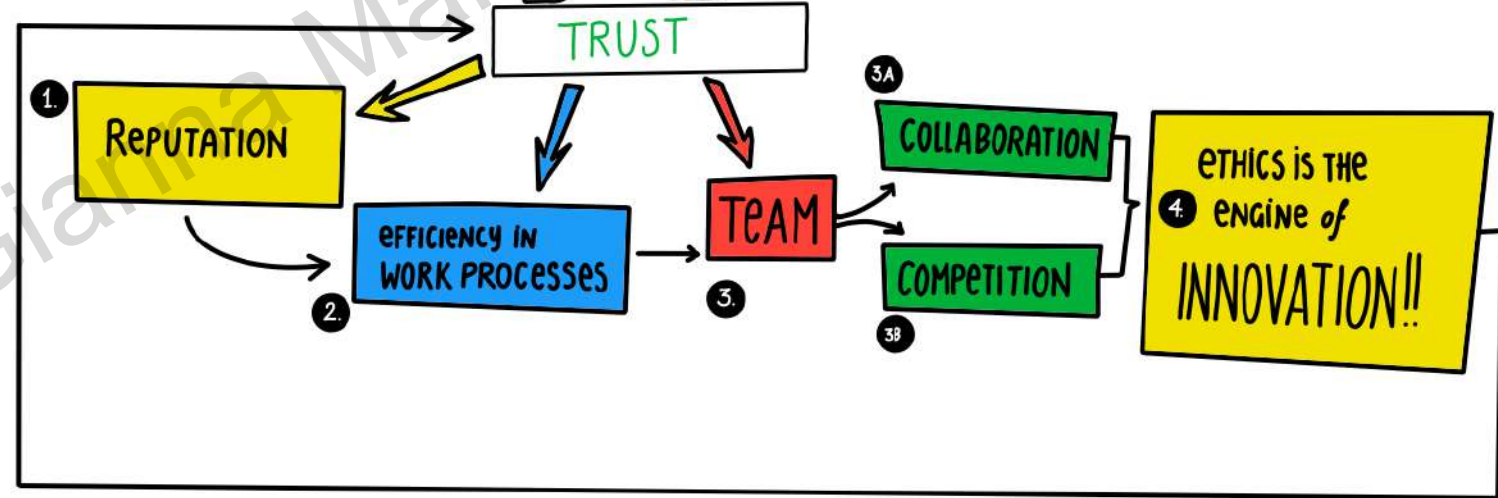


ETHICS is INTELLIGENCE

ETHICAL BEHAVIOUR



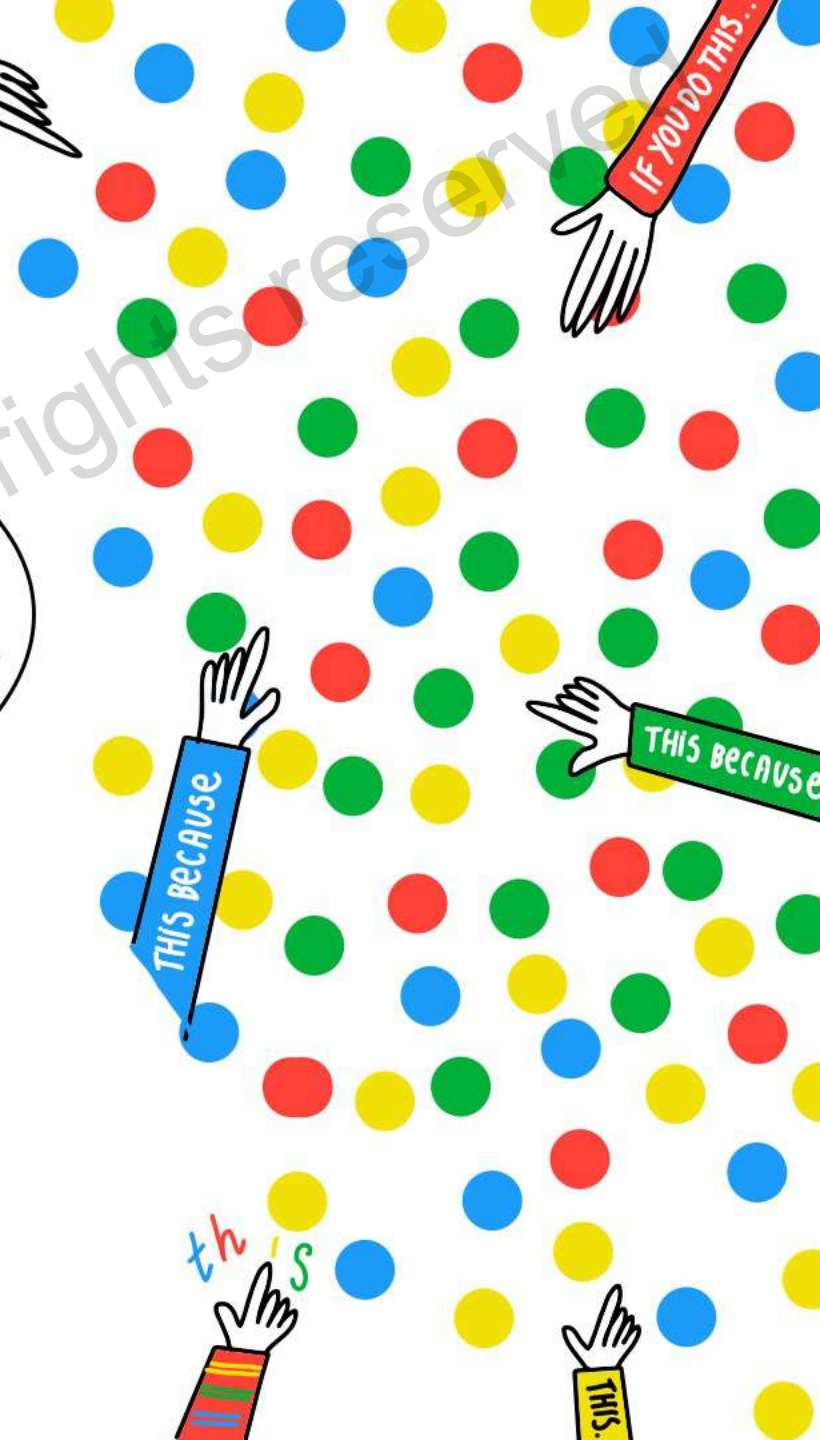
CONTRAT DE
DEFIANCE
CONFIANCE
Michela Marzano





ETHICAL CHALLENGES

"THE REAL ISSUE IS NOT ONLY WHAT WE CAN DO WITH ARTIFICIAL INTELLIGENCE, BUT WHAT A.I. WILL BE ABLE TO DO OF US"



- LEADERSHIP
- SOLIDARITY
- SHARING
- LISTENING
- EMPATHY
- TRUST
- REPUTATION
- INCLUSION & DIVERSITY
- GENEROSITY
- EMPOWERMENT
- KINDNESS
- RESPECT

SOCIAL ECONOMY
from Community to Togetherness



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