



L'evoluzione delle tecnologie e nuove possibilità di gestione integrata ospedale e territorio

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cneto CENTRO NAZIONALE
TOLLERANZA E
TECNICA
OSPEDALIERA



POLITECNICO
MILANO 1863

DIPARTIMENTO DI ARCHITETTURA,
INGEGNERIA DELLE COSTRUZIONI
E AMBIENTE COSTRUITO



Camogli (GE), 2 - 3 dicembre 2019

Congresso Nazionale 2019

CNETO, Fondazione Action for Health Institute,
Politecnico di Milano, ABC...Salute

Dare valore alla salute

Dalla medicina curativa alla medicina proattiva
 Nuove strutture e sistemi integrati per la salute

Patrocinato e supportato da



REGIONE LIGURIA



Ordine Ingegneri Genova



WE LIVE IN THE FUTURE
AND WE SEE TOMORROW AS HISTORY

2005 - POPE BENEDETTO XVI ELECTION



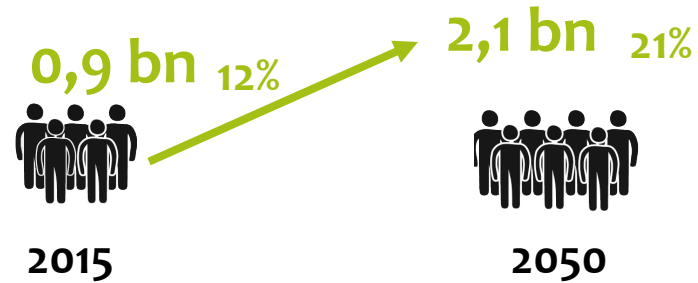
2013 - POPE FRANCESCO ELECTION



GLOBAL MEGATRENDS SHAPING OUR FUTURE MARKETS

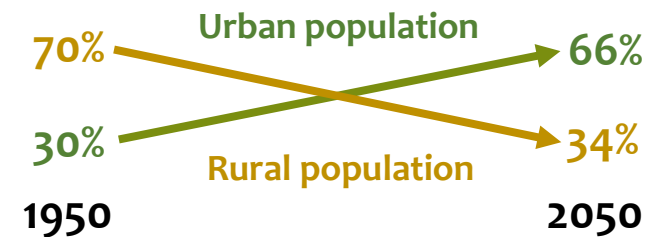
Demographic change

>20% of global population over the age of 60 in 2050



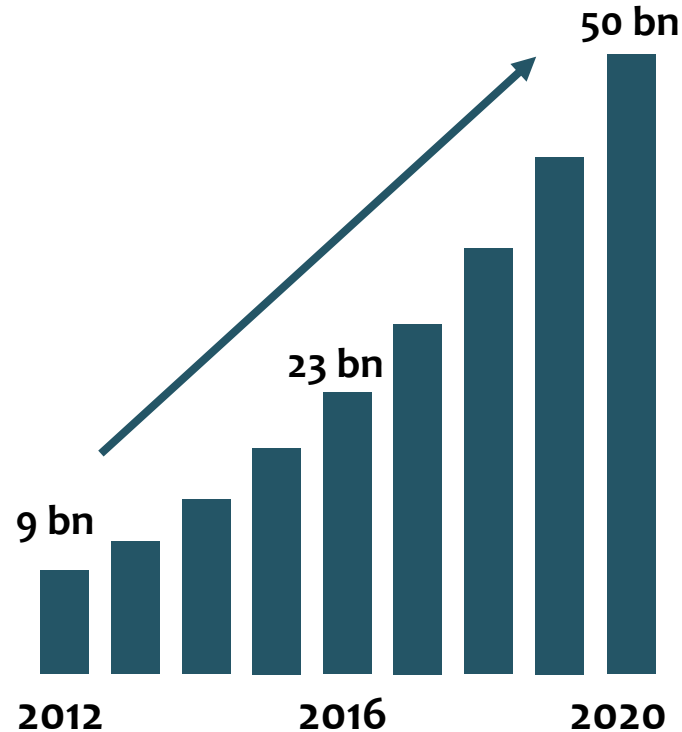
Urbanization

~70% of global population will live in cities by 2050



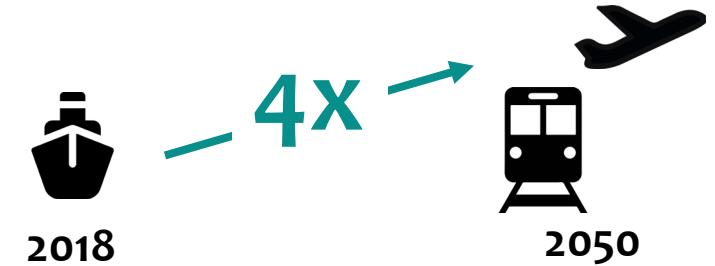
Digitalization

50bn IoT devices connected by 2020



Globalization

Global trade will increase 4-fold until 2050



Climate Change

Solar & wind power generation will increase six-fold until 2050 strongly driving electrification



HUMAN BRAIN VS ARTIFICIAL INTELLIGENCE



CALCULATION SPEED

~ 200Hz

4,4 billions of HZ

SPEED OF INTERNAL COMMUNICATION

120 m/s

300.000 m/s (light speed)

NUMBER OF COMPUTATIONAL ELEMENTS

86 billions of numbers

19,2 billions id transistors

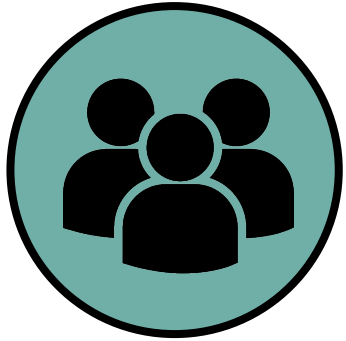
MEMORY CAPACITY

10^9 bit

10^{19} bit

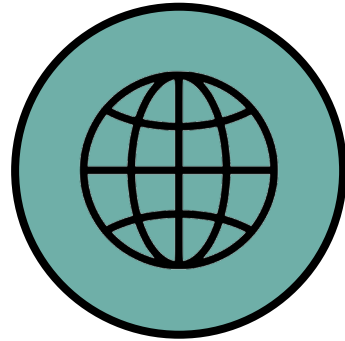
GLOBAL DIGITAL SNAPSHOT

TOTAL
POPULATION



7.476
BILION

INTERNET
USERS



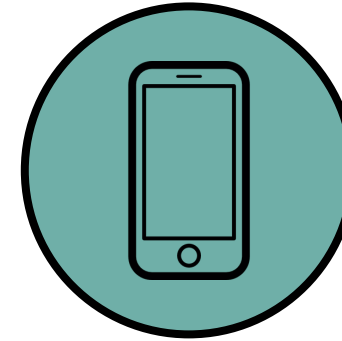
3.773
BILION

ACTIVE SOCIAL
MEDIA USER



2.789
BILION

UNIQUE
MOBILE USERS



4.917
BILION

ACTIVE MOBILE
SOCIAL USERS



2.549
BILION

URBANISATION

54%

PENETRATION

50%

PENETRATION

37%

PENETRATION

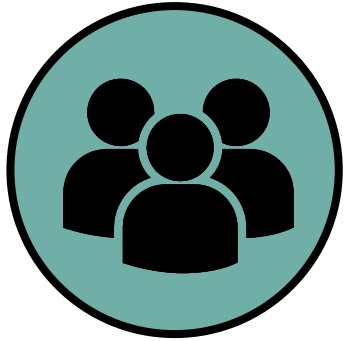
66%

PENETRATION

34%

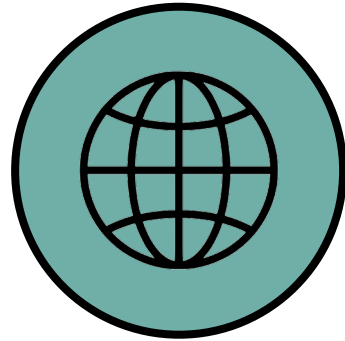
DIGITAL IN ITALY

TOTAL
POPULATION



59.80
MILION

INTERNET
USERS



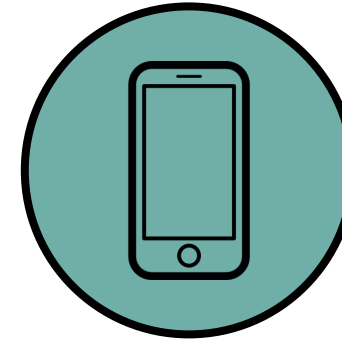
39.21
MILION

ACTIVE SOCIAL
MEDIA USER



31.00
MILION

UNIQUE
MOBILE USERS



50.77
MILION

ACTIVE MOBILE
SOCIAL USERS



28.00
MILION

URBANISATION

69%

PENETRATION

66%

PENETRATION

52%

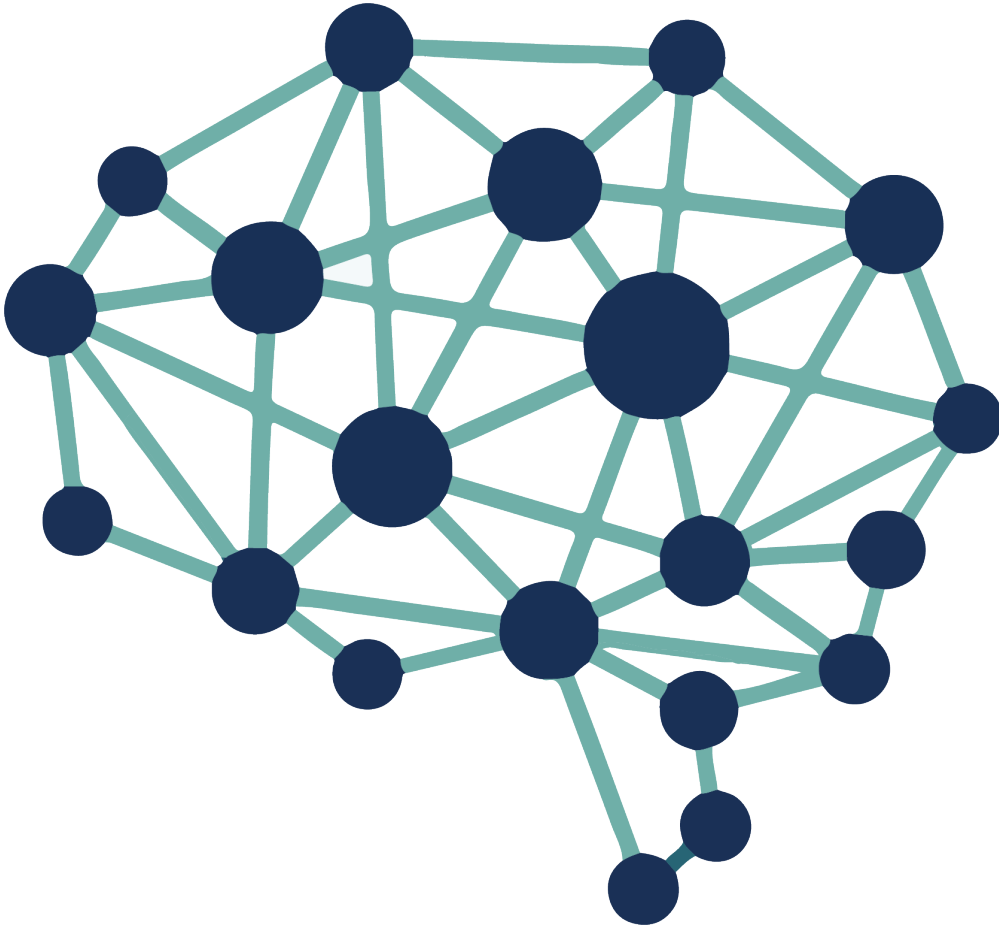
PENETRATION

85%

PENETRATION

47%

ARTIFICIAL INTELLIGENCE



It generally means the ability of a computer to perform functions and reasoning typical of the human mind.

(learning and decision algorithms)

HOW WE ARE EVOLVED?

Livello 1

inanimate objects that do not exchange information with the environment

Livello 3

smartphone and pc memories can be increased and performance improved with the addition of new software

Livello 5

A.I. understanding to create and innovate, over the limit of knowledge traveling from the external world. compatible with human being

Livello 2

provides the presence of control systems and the ability to store the memory (Smart TV)

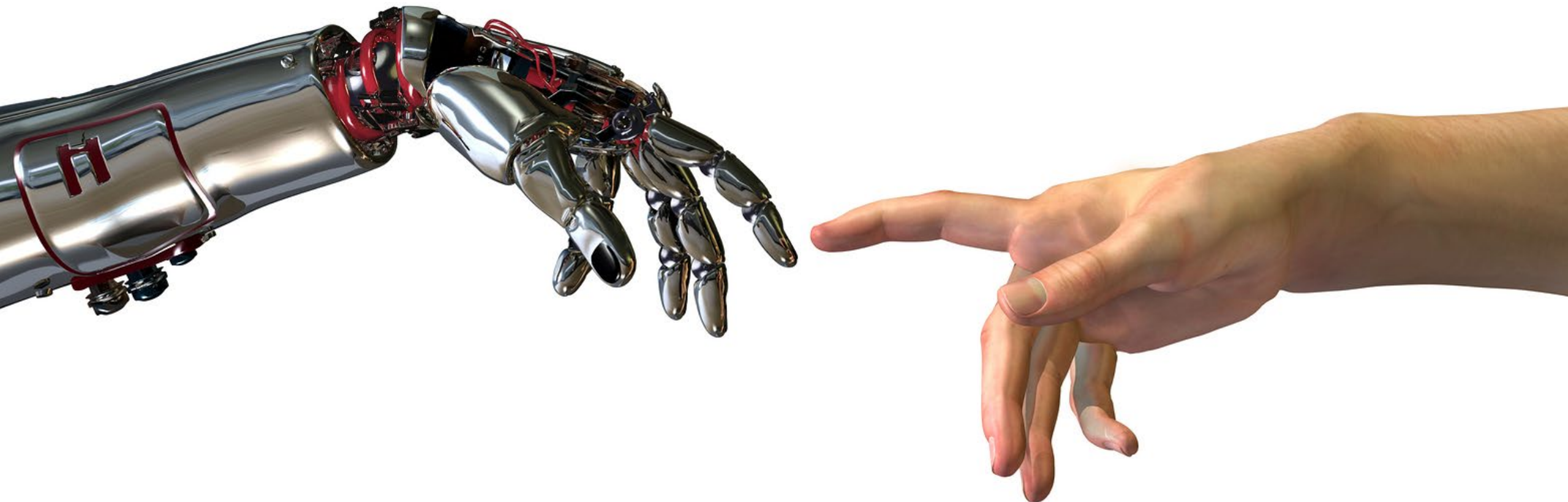
Livello 4

systems able to "automate" with exchange of information in cloud (RoboEarth, Google Brain, Ibm, Watston)

Livello 6

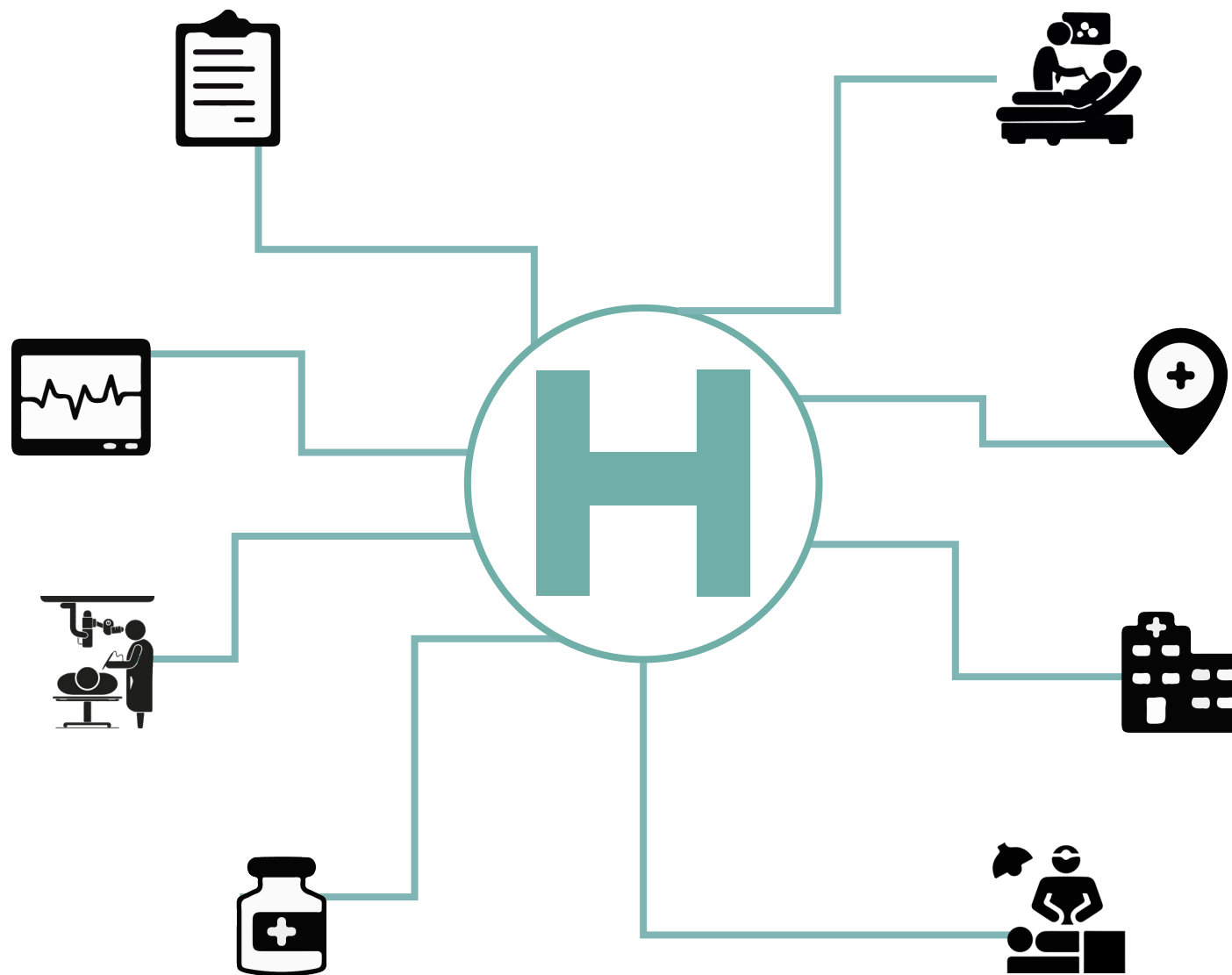
the highest level is an intelligence superior to the human one, with unlimited capacity to create knowledge

MAN VS MACHINE: DIALOGUE OR COMPETITION?

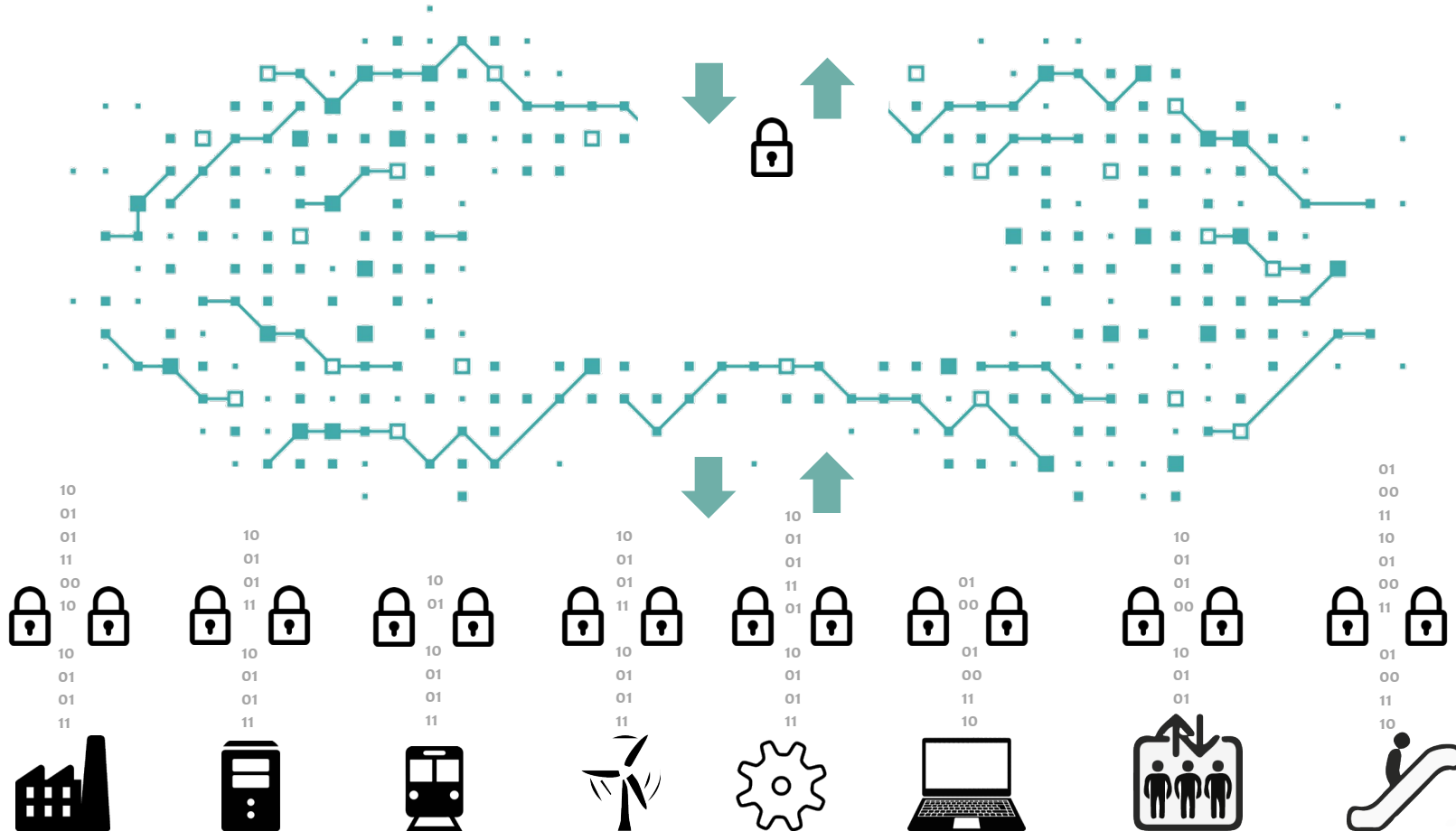


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INTERNET OF THINGS: HEALTHCARE STRUCTURES



SMART INFRASTRUCTURES



SMART INFRASTRUCTURES

Vertical solutions

stadiums



Ports /
Interports



Cities /
Urban areas



Logistics
sites



University
campuses



Islands



Smart Road



Hospitals



Smart grid



Smart mobility



Smart building



Smart totem



Smart data



Smart platform

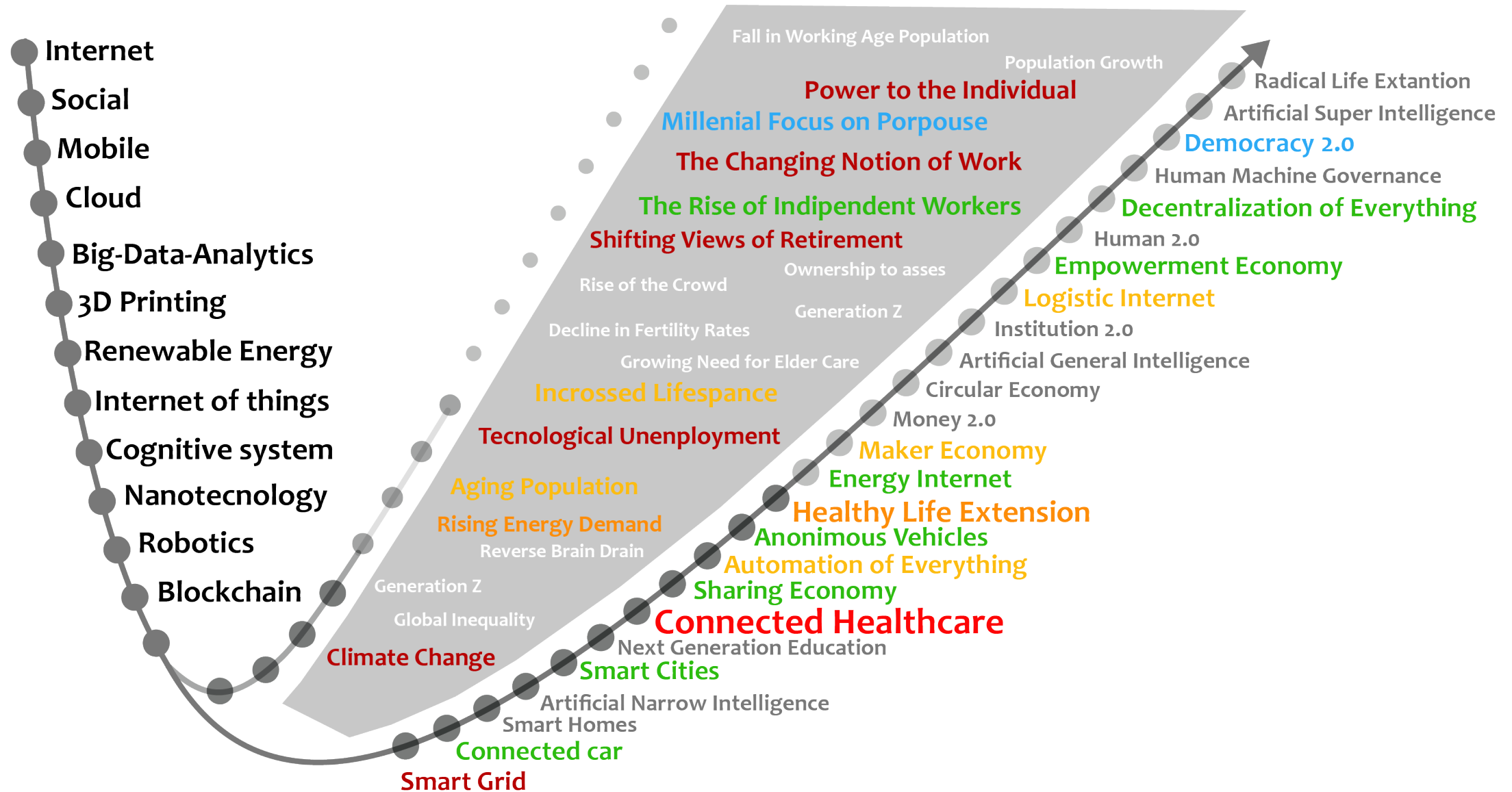


low

medium

high

TECNOLOGY AS ENABLER



THE NEW ERA OF MEDICINE: PRECISION MEDICINE

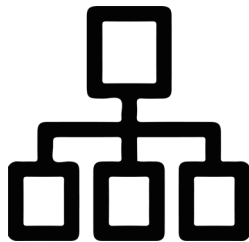
The healthcare ecosystem meets the same criteria as other ecosystems



Production of in vitro and in vivo diagnostic data
(CT, MR, PET, ECG, Genomica)



Data transfer and storage (Workflow H and territory) cloud



Diagnosis and treatment algorithms

FROM SCIENCE FICTION TO REALITY IS JUST A MATTER OF TIME: ARTIFICIAL INTELLIGENCE

L'EVOLUZIONE DELLE TECNOLOGIE E NUOVE POSSIBILITÀ DI GESTIONE INTEGRATA OSPEDALE E TERRITORIO

GRAZIE PER L'ATTENZIONE



FONDAZIONE
ACTION FOR HEALTH
INSTITUTE

FEDERICO GOLLA