PONTIFÍCIA UNIVERSIDADE CATÓLICA DE SÃO PAULO

Núcleo de Estudos do Futuro

PUC . SP . Brasil

Programa de Pós-Graduação em Administração e Programa de Pós-Graduação em Economia FEA/PUC-SP

Cátedra Ignacy Sachs PUC-SP | NEF

EFISUS

BOLETIM DE ESTUDOS DO FUTURO, INOVAÇÃO E SUSTENTABILIDADE

Internet Of Things

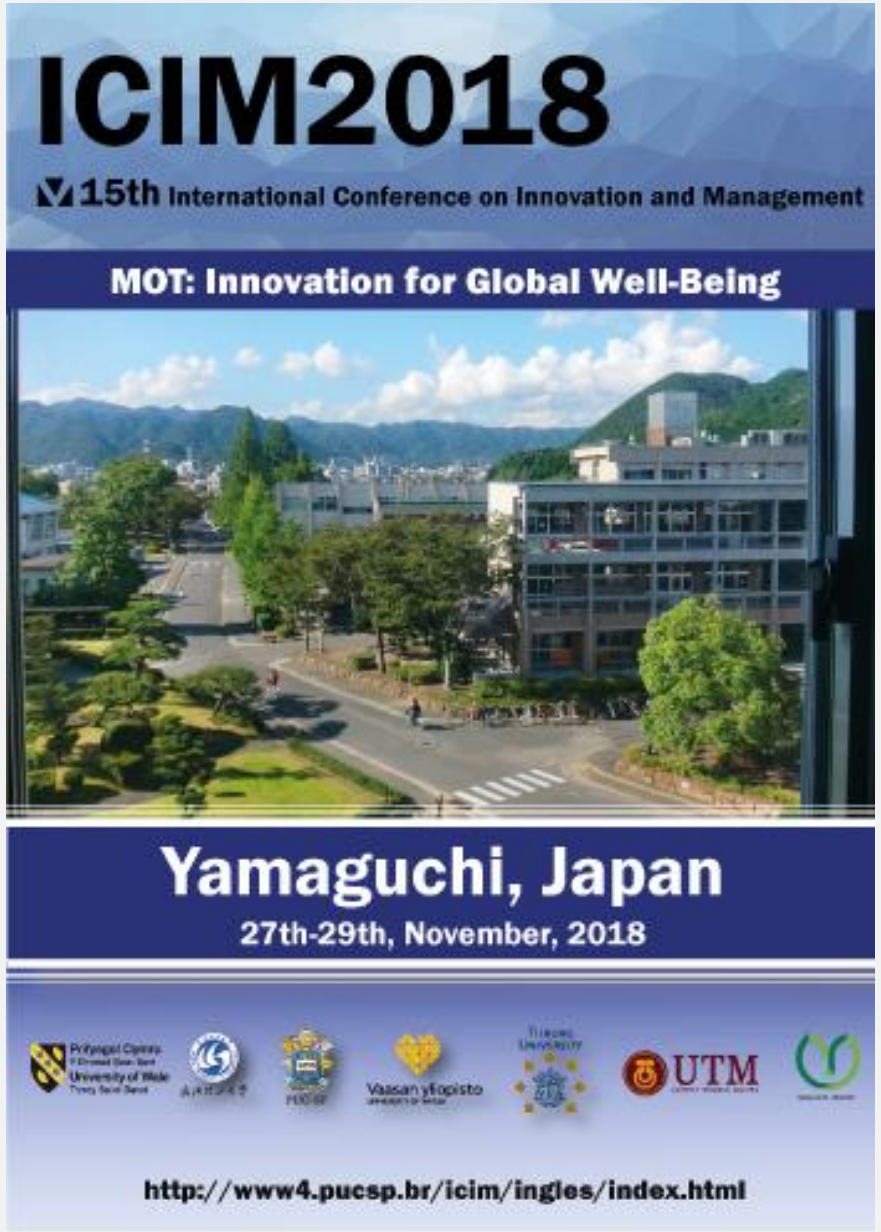
José Luiz Alves Da Silva

PONTIFICIAL UNIVERSITY CATHOLIC OF SÃO PAULO

PUC-SP in numbers
Campuses: 05
Undergraduate Programs: 36
Sequential Programs: 01
Master Programs: 28
MBA and Specialization Programs: 197
Doctorate Programs: 22
Research Groups: 238
Professors: 1.421
Undergraduate Students: 13.225
Master and Doctorate Students: 3.413
MBA and Specialization Students: 5.714
Administrative and Technical Staff: 1.542
Alumni: 372.000

ARNOLDO HOYOS AND JOSÉ LUIZ ALVES

ICIM 2018



ICIM 2017

SDGs

SDGs (ODSs)


1 ERRADICAÇÃO DA POBREZA
2 FOME ZERO
3 BOA SAÚDE E BEM-ESTAR
4 EDUCAÇÃO DE QUALIDADE
5 IGUALDADE DE GÊNERO
6 ÁGUA LIMPA E SANEAMENTO
7 ENERGIA ACESSÍVEL E LIMPA
8 EMPREGO DIGNO E CRESCIMENTO ECONÔMICO
9 INDÚSTRIA, INOVAÇÃO E INFRAESTRUTURA
10 REDUÇÃO DAS DESIGUALDADES
11 CIDADES E COMUNIDADES SUSTENTÁVEIS
12 CONSUMO E PRODUÇÃO RESPONSÁVEIS
13 COMBATE ÀS ALTERAÇÕES CLIMÁTICAS
14 VIDA DEBAIXO D'ÁGUA
15 VIDA SOBRE A TERRA
16 PAZ, JUSTIÇA E INSTITUIÇÕES FORTES
17 PARCERIAS EM PROL DAS METAS
OBJETIVOS DE DESENVOLVIMENTO SUSTENTÁVEL

SDGs (ODSs)


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE AND JUSTICE STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
THE GLOBAL GOALS
For Sustainable Development
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY

SDGs (ODSs)


OKAYAMA UNIVERSITY
×
SDGs
Japan.
Committed
to SDGs
岡山大学
SUSTAINABLE
DEVELOPMENT
GOALS

SDGs (ODSs)

What are "paradigm shifts" the SDGs containing? – What does human being need further?

- Profits with a view to the future

← Cherishing immediate profits

- Individuals with altruism

← Maximizing selfishness

- Recognizing limitation of the earth

← Simple expansionism

SDGs (ODSs)

Quais são os paradigmas que mudam com os ODSs?

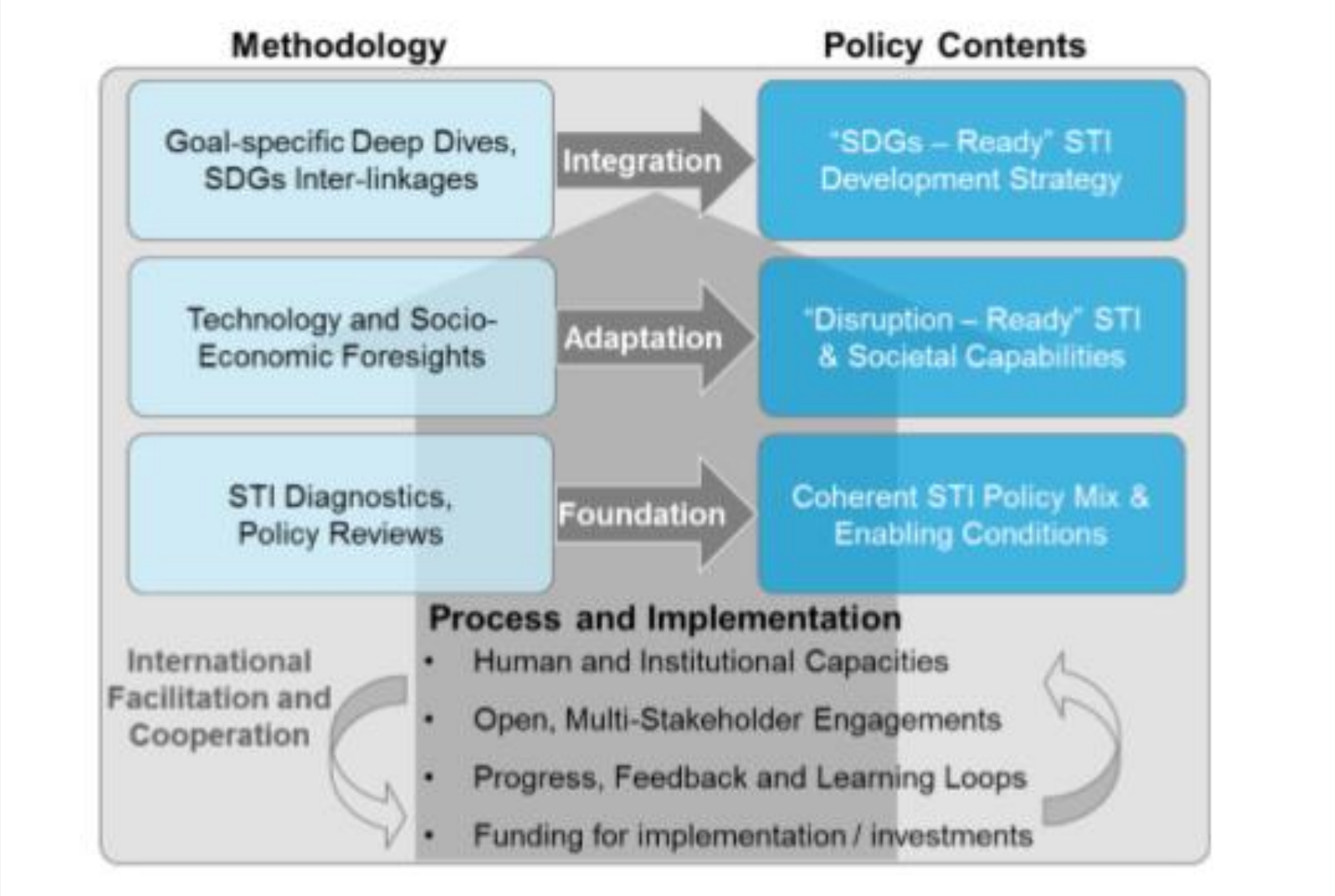
O que o ser humano precisa mais?

Lucros com vista ao futuro, Aproveitando os lucros imediatos

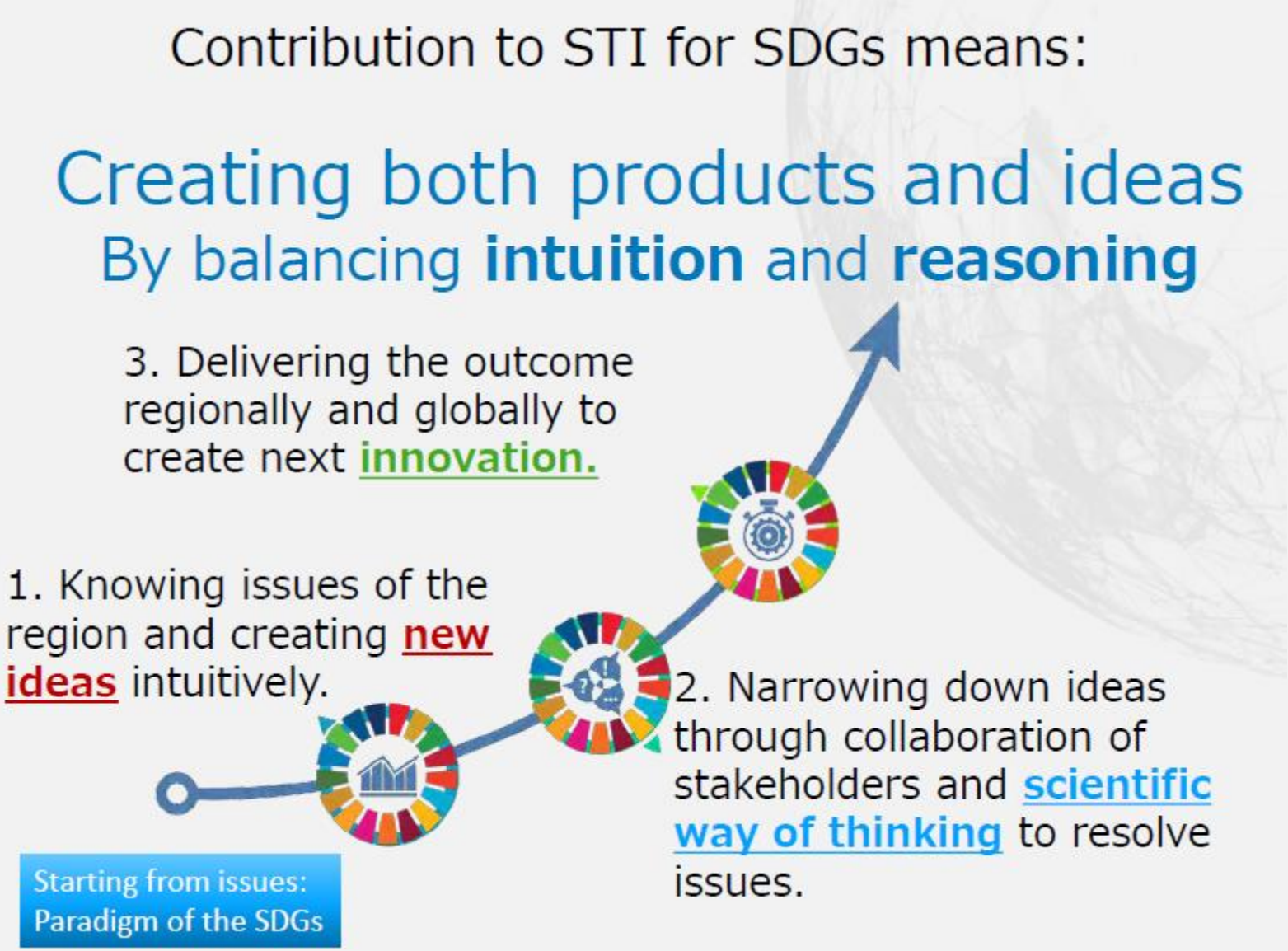
Indivíduos com altruísmo, Maximizar a auto-estima

Reconhecer a limitação da terra x expansão simples

STI x SDGs (Science, Technology and Innovation Framework for SDGs)



STI x SDGs (Science, Technology and Innovation Framework for SDGs)



STI x SDGs (Science, Technology and Innovation Framework for SDGs)

Possible need of care in education of "evidences" out of Western societies

Asian norms	Western norms
• Valuing uniformity and harmony • →Argument is not recommended • Decreasing hostility	• Valuing diversity and individualism • →Culture of argument, where EVIDENCES are NEEDED, is developed • determining a winner

Modified from: Richard E. Nisbett "The Geography of Thought: How Asians and Westerners Think Differently - And Why"

The importance of evidences and "scientific" thinking

"system 1"

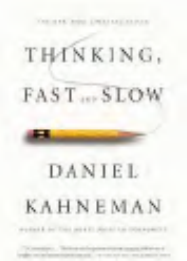
= Fast thinking

- Intuitive
  - Affected by emotions
  - Can answer to complex tasks but inaccurate
  - Misunderstand the causative relations

"system 2"

= Slow thinking

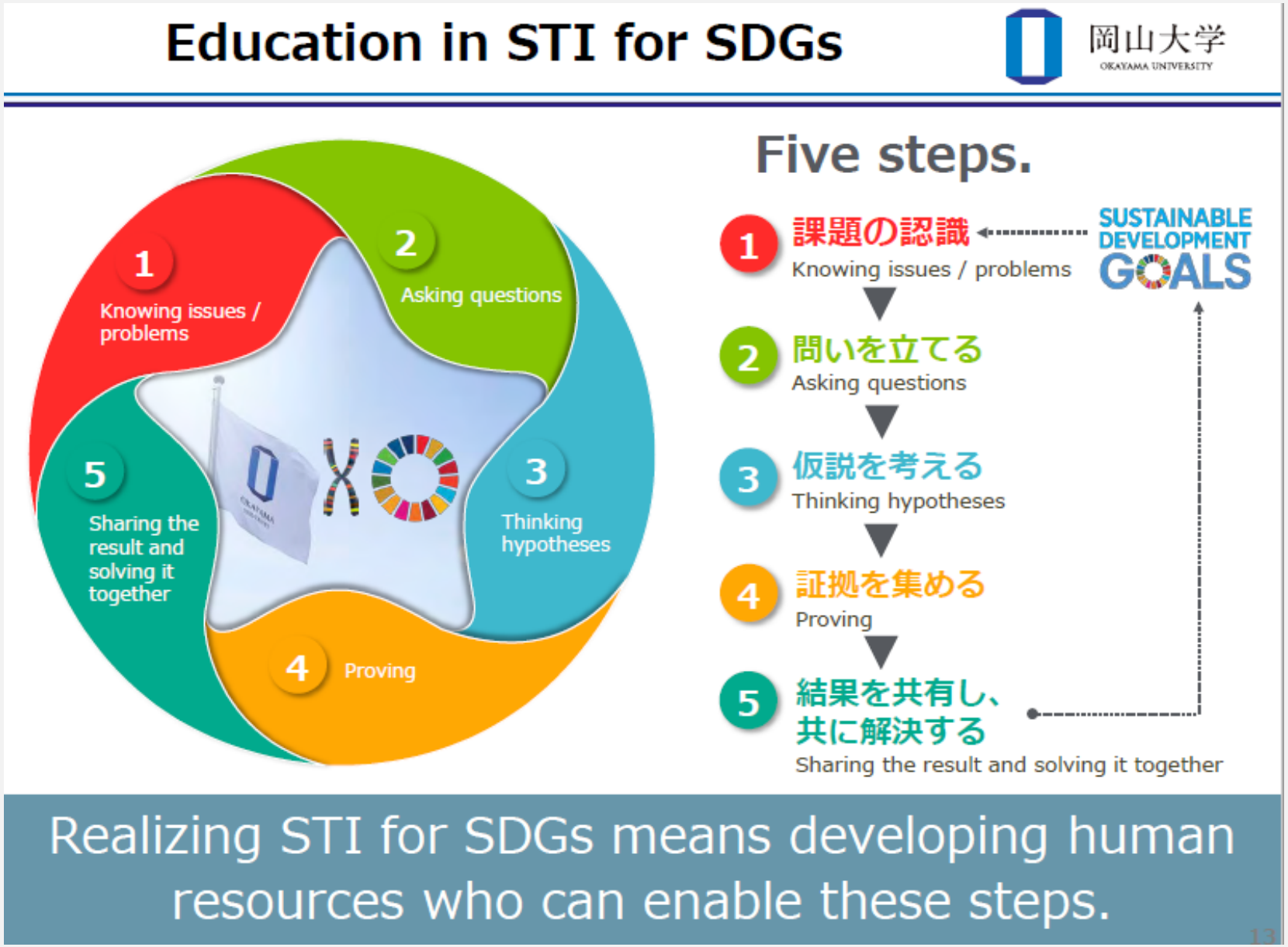
- Logical
  - Function of self-control
  - Need of attention and efforts



Can make correction according to logical / statistical data = ***EVIDENCES***

Modified from Daniel Kahneman's "Thinking, Fast and Slow"

STI x SDGs (Science, Technology and Innovation Framework for SDGs)

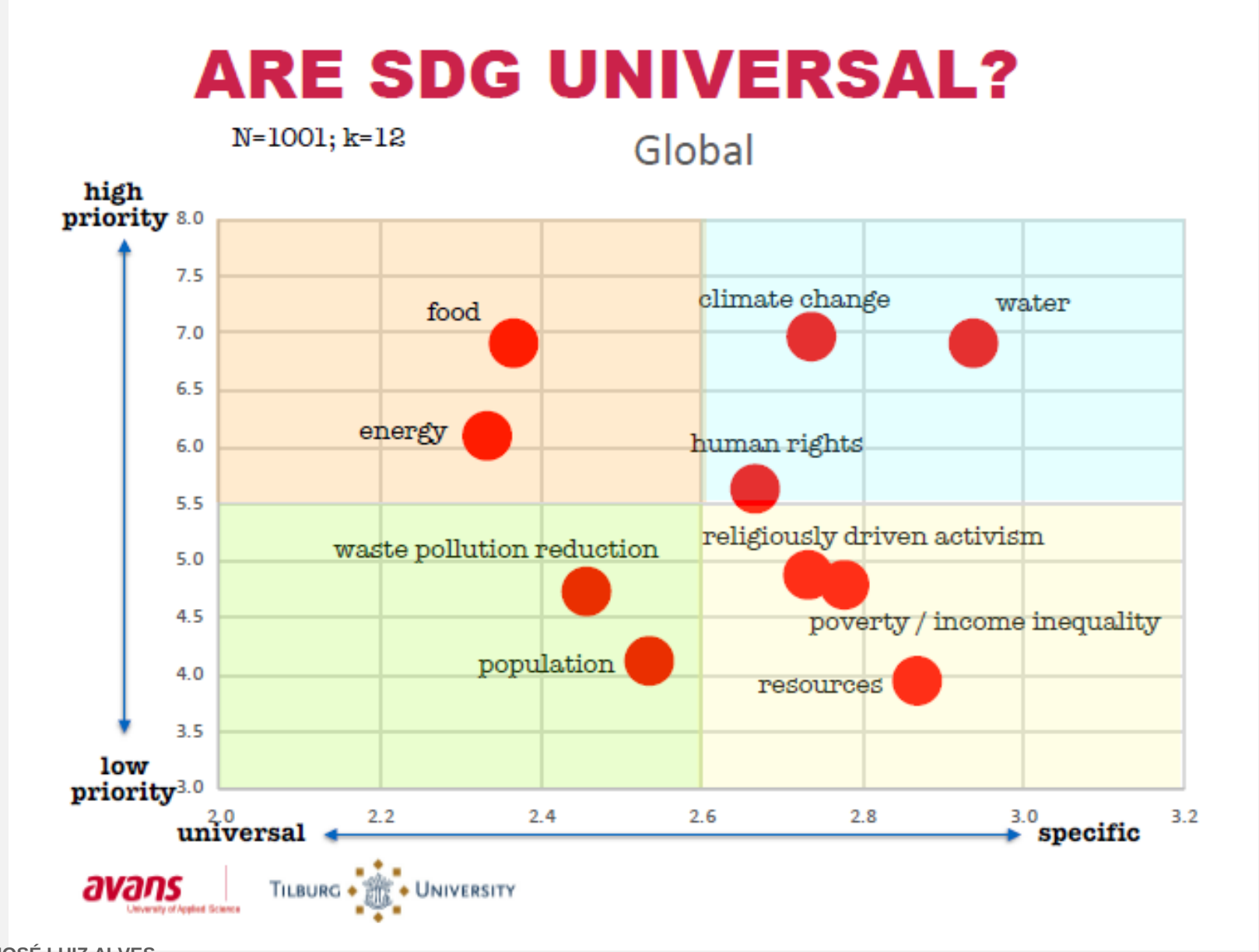


SDGs (ODSs)

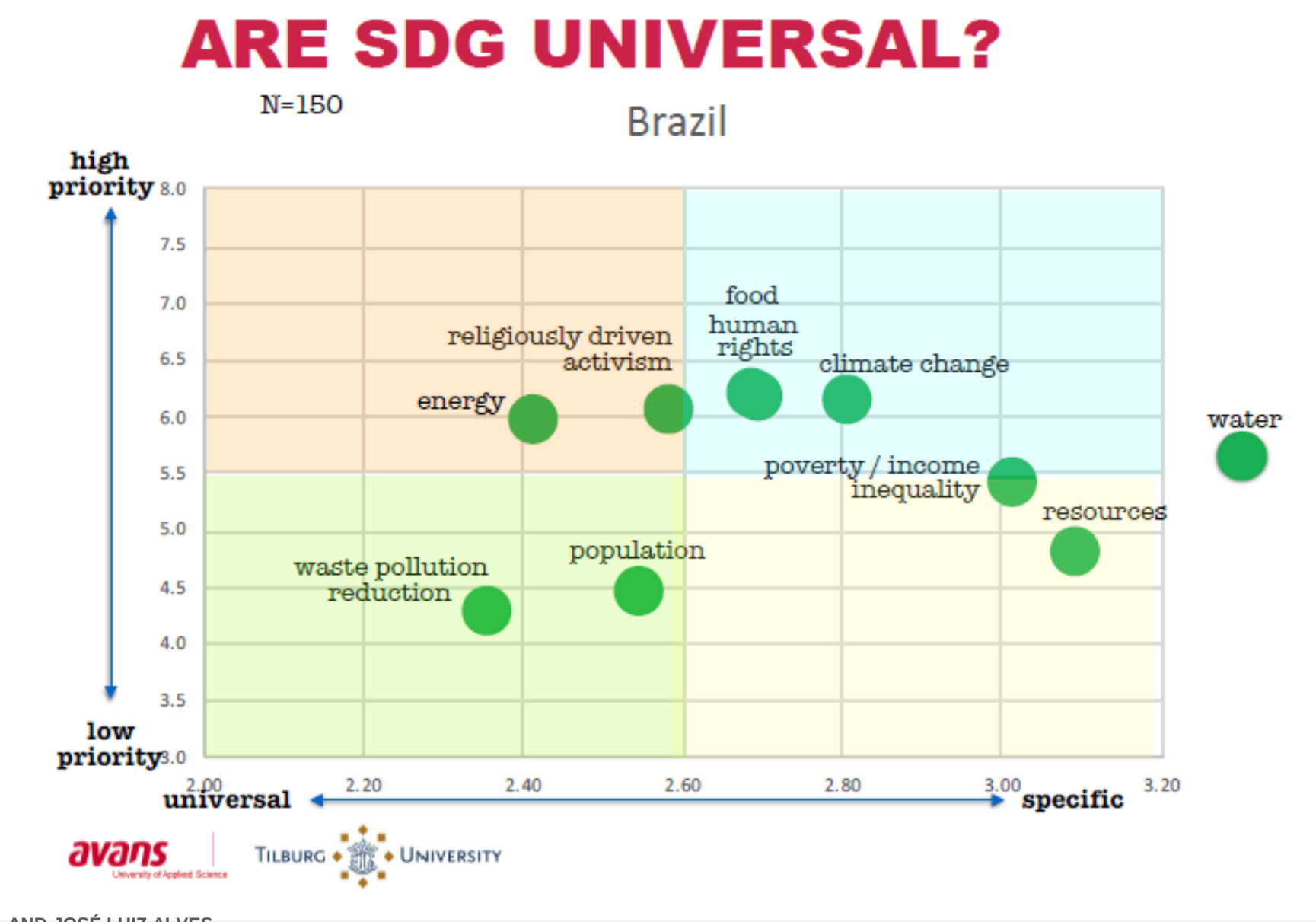
AGENDA FOR THE FUTURE

	10 Sustainable priorities...	... derived from SDG goals
people	Food: availability & safety	2: no hunger
	Human rights & labor conditions	5: gender equality
	Population: growth & ageing	3: good health and well-being
	Poverty & income inequality	1: no poverty 10: reduced inequalities
	Religiously driven activism	16: peace and justice
planet	Climate change, global warming, Co2 emissions, ozone layer	13: climate action
	Waste & pollution reduction	12: responsible consumption & production 15: life on land
	Water: availability & purification	6: clean water & sanitation 14: life below water
profit	Energy: availability & use	7: affordable and clean energy
	Resources usage, availability of raw materials,	8: decent work and economic growth 9: industry, innovation and infrastructure
	Re-use, recycling	9: industry, innovation and infrastructure

SDGs (ODSs)


ARE SDG UNIVERSAL?
N=1001; k=12
Global
high priority
low priority
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.0
2.2
2.4
2.6
2.8
3.0
3.2
universal
specific
food
energy
climate change
water
human rights
waste pollution reduction
religiously driven activism
poverty / income inequality
population
resources
avans
University of Applied Science
Tilburg University

SDGs (ODSs)


ARE SDG UNIVERSAL?
N=150
Brazil
high priority
low priority
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.00
2.20
2.40
2.60
2.80
3.00
3.20
universal
specific
food
human rights
religiously driven activism
climate change
energy
water
poverty / income inequality
resources
population
waste pollution reduction
avans
University of Applied Science
Tilburg University

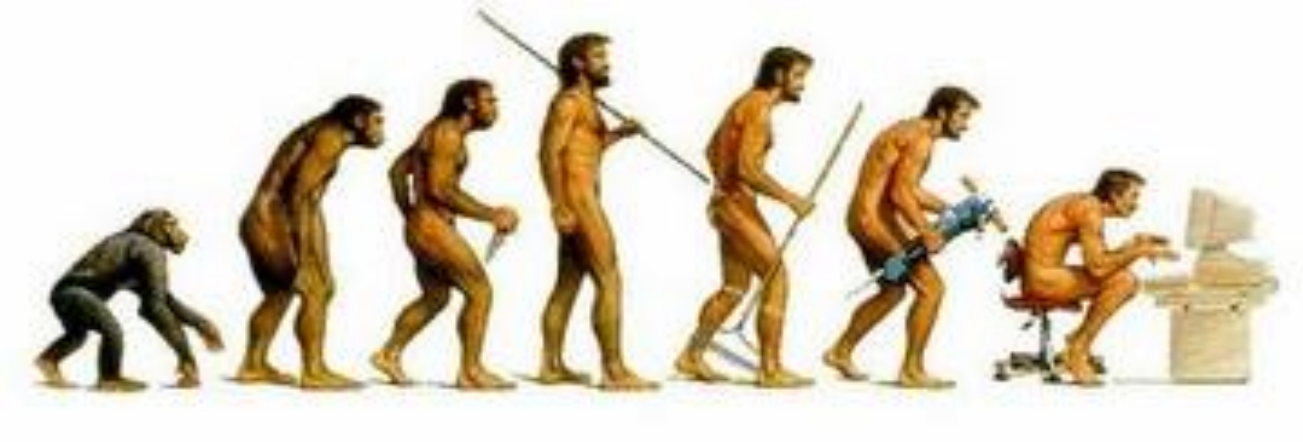
IoT

TECHNOLOGY ADVANCED

SONY / MOTOROLA / APPLE / MICROSOFT / GOOGLE

StartTac, 1996

Iphone, 2007



Google

Stanford, 1998
Page & Brin

Apple II, 1977
Macintosh, 1984
IPhone, 2007

ORACLE

Santa Clara, 1977/82

CISCO

San José, CA, 1984

Video Games, Sony,
Nintendo, Microsoft

napster

Napster, 1998
Fanning e Parker

Microsoft

Albuquerque, 1975
Bill Gates e Paul Allen

Windows_1.0, 1985
Internet Explorer, 1995

facebook

Harvard, 2004
Zuckerberg, Saverin

LINUX, 1991
Linus Torvald

WalkMan, 1997, Sony

Ipod, 2001

SolarCity

TESLA

OpenAI

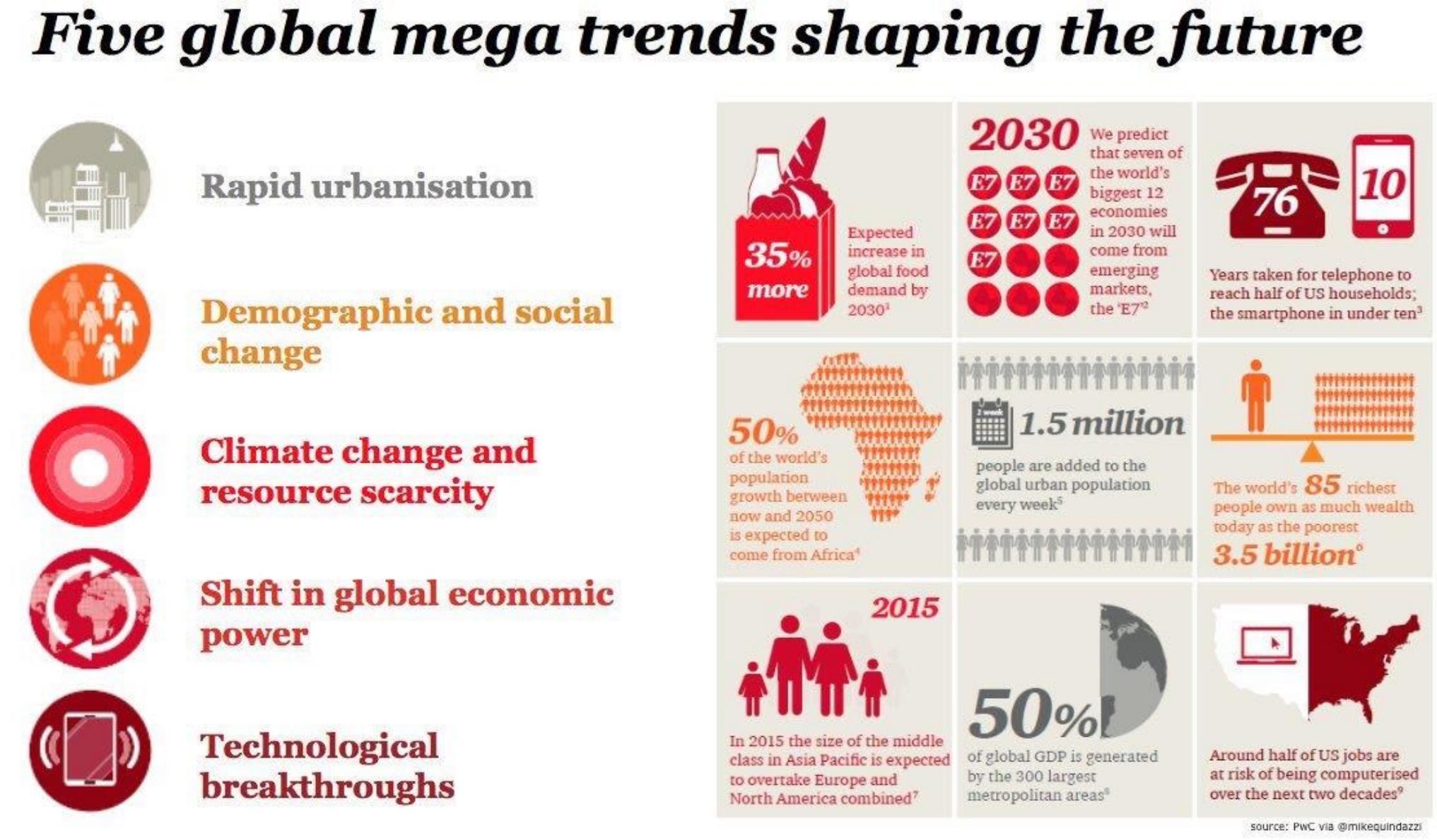
USA, Elon Musk

amazon

Seattle, 1994, Jeff Bezos

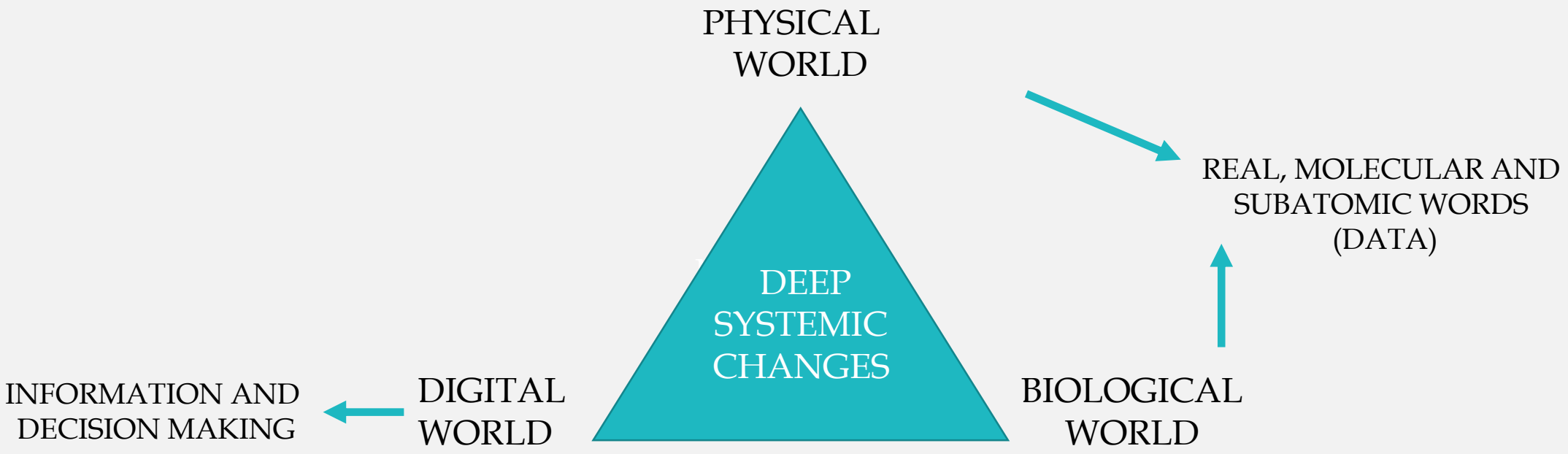
GAFA – BIG FOUR
Schmidt, Simon, and Galloway

SOCIETY AND MAJOR CHALLENGES



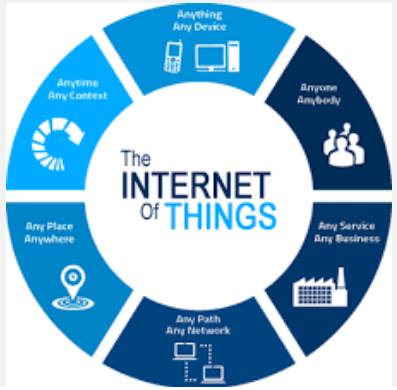
THE FOURTH INDUSTRIAL REVOLUTION ABSTRACT

This revolution is different in scale, scope and complexity from any that have come before.
FUSING THE PHYSICAL, DIGITAL AND BIOLOGICAL WORLDS,
the developments are affecting all disciplines, economies, industries and governments, and even
CHALLENGING IDEAS ABOUT WHAT IT MEANS TO BE HUMAN.



THE FOURTH INDUSTRIAL REVOLUTION – DISRUPTIVES TECHNOLOGIES

DECISION MAKING



DATA (PHISICAL / BIOLOGICAL

INFORMATION

NEW MATERIALS

RENEWABLE ENERGIES

KEVIN ASHTON

(Born in 1968 · England)

As the person that created the term IoT, Kevin Ashton, mentioned already in 2009:

IoT has the potential to change the world, just as the Internet did. Maybe even more so.

https://www.rfidjournal.com/articles/view?4986

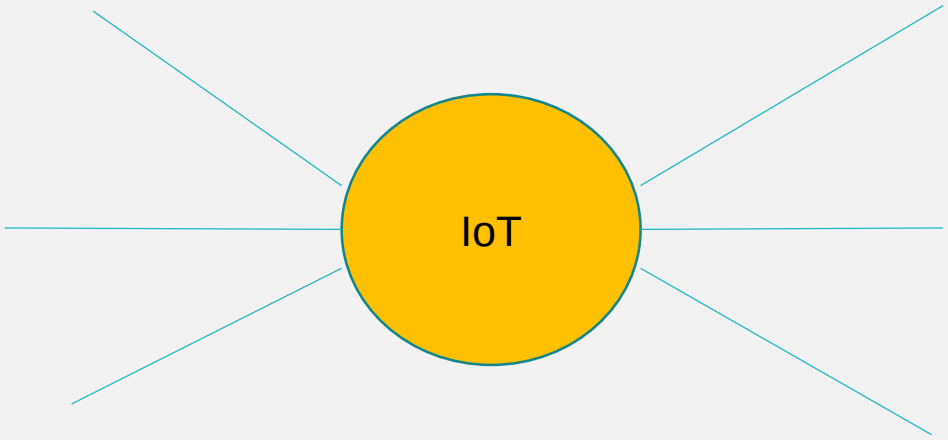
SENSORS

DIGITAL WORLD

CELULAR / PDAs /
LAP-TOPS / TABLETS

DIGITAIS MACHINES
ROBOTS

CARS / ATMs
CAMERAS / SENSORIALS



PHISICAL AND BIOLOGICAL
WORLD BRIDGES

RFID

NFC

PILLS

SUBCUTANEOUS

BARCODES

QRCODE

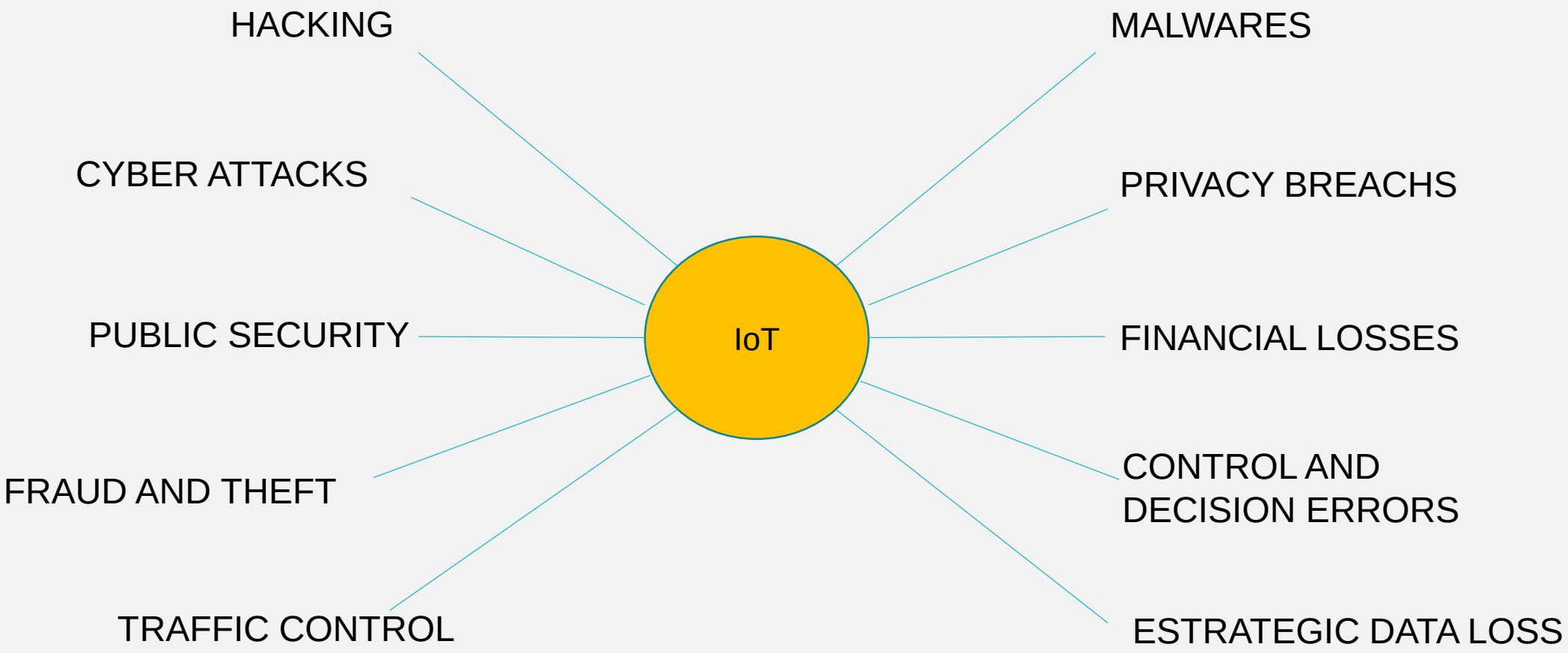
BLUETOOTH

SATELLITE

DATA AND INFORMATION: Real Time Decision

Today: around 1,5 Tri
of things in the World

EXPECTED RISKS



SEGURITY INFORMATION AND MAJOR PLANNING REQUIRED

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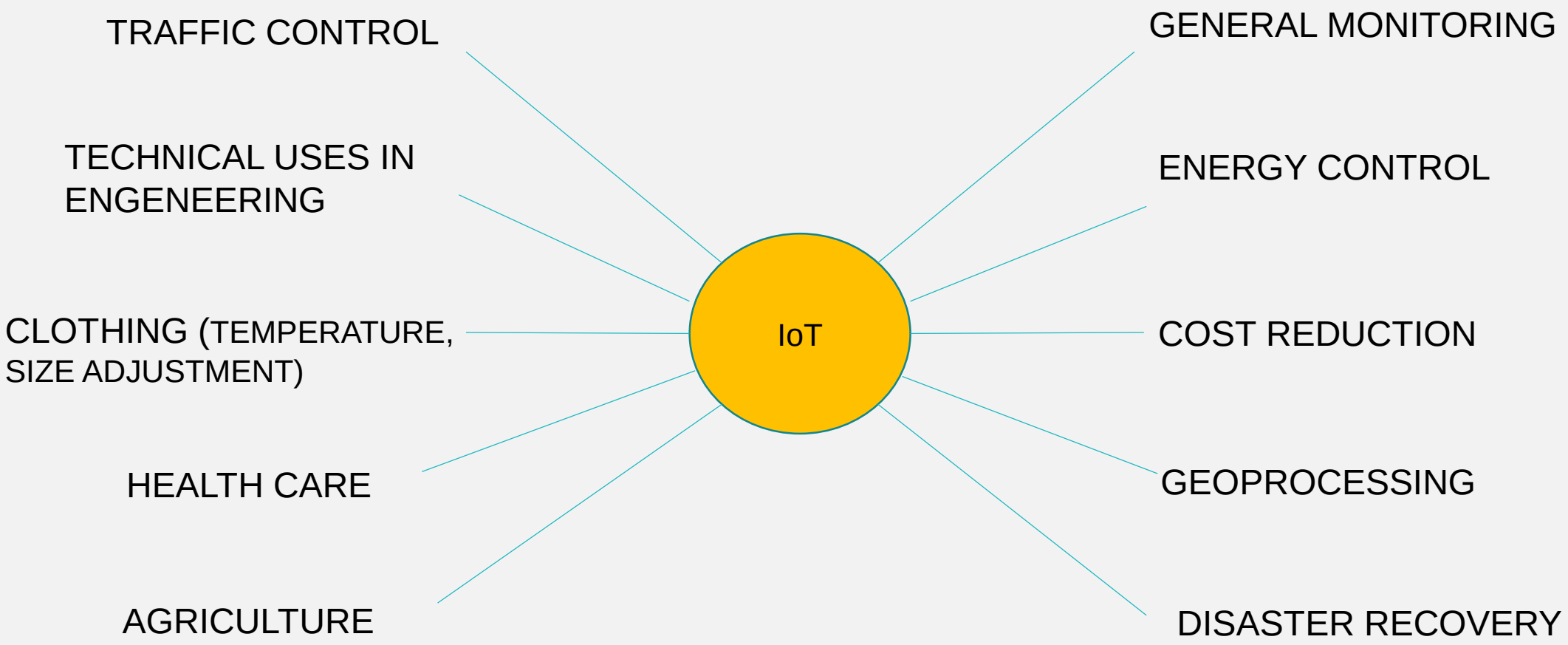
EXPECTED USES



INFORMATION FOR DECISION MAKING

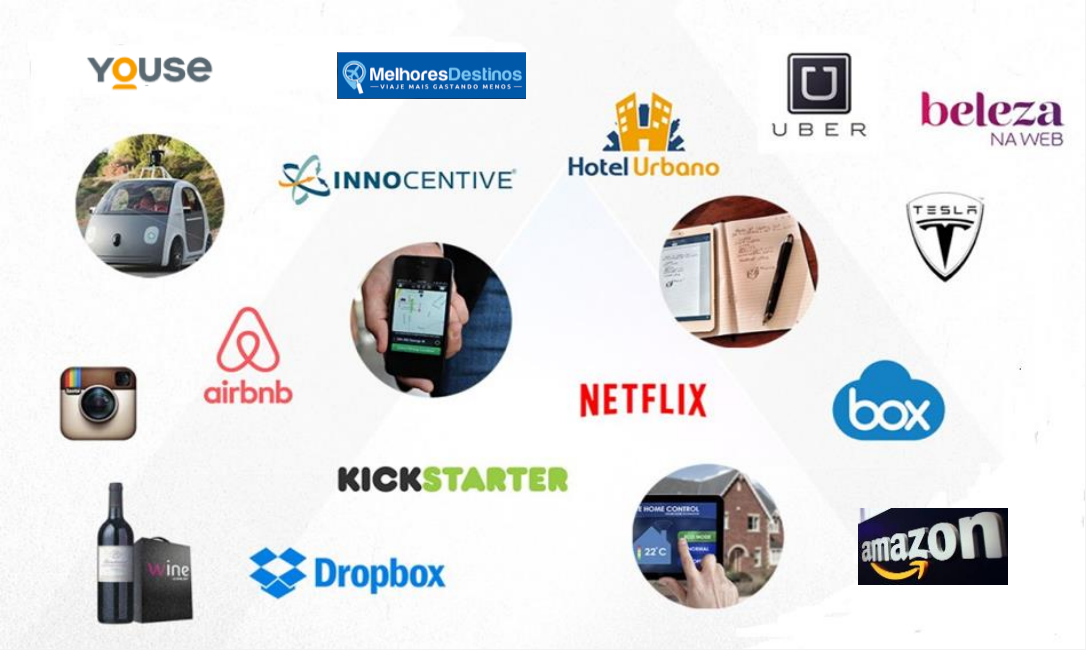
CONCLUSION

NEW BUSINESS MODELS

AND

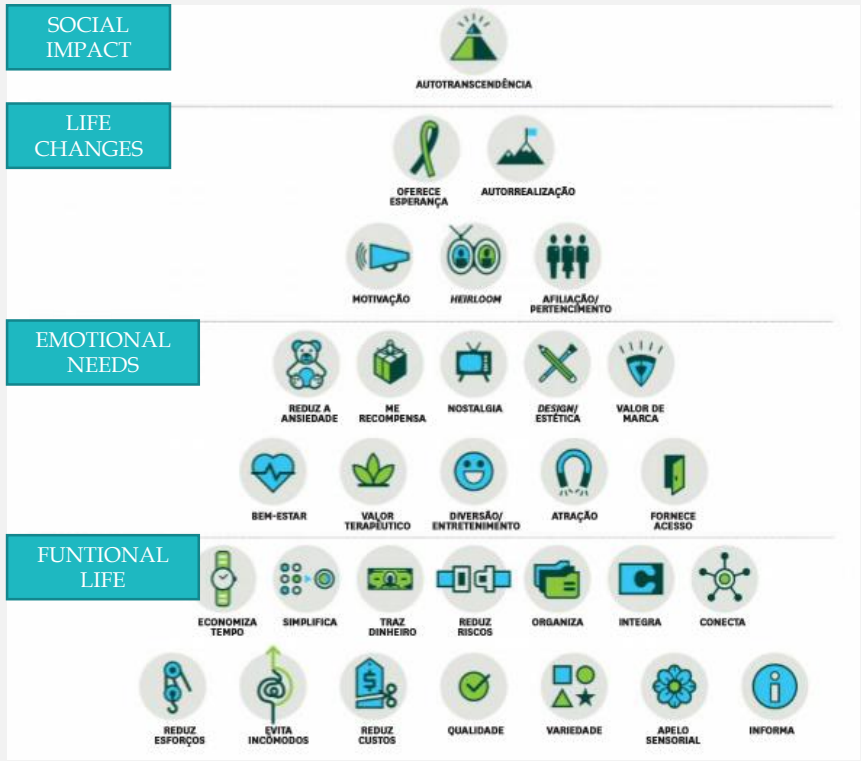
NEW BEHAVIORS

SOCIETY CHANGES



NEW BUSINESS MODELS

Initial Research Basis: Litteris Consulting



NEW VALUE ELEMENTS

Source: HBR Vol. 94

IoT is the access door to this “New Brave Word”

The Smartphone itself is the largest "IoT personal sensor" already available

CONCLUSION:
SHARED ECONOMY

BIG COMPANIES
X
START-UPs

BREAKDOWN OF
INTERMEDIARIES
X
ACCESS VIA
PLATAFORMS

ACCESS TO
TECHNOLOGY FOR
ANYBODY

PROFIT REDUCTION
X
VALUE
CHAIN BREAKDOWN

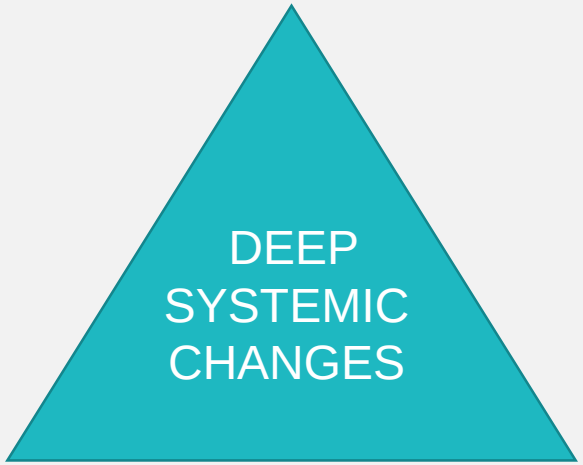
DIRECT ACCESS TO
FUNDING/
CROWDFUNDING

SHARING
RESOURCES BY
USERS

THE IoT in the 4th INDUSTRIAL REVOLUTION
ABSTRACT

The objective of this article is to present the
IoT AS THE MAIN TECHNOLOGICAL PERSONAL ADVANCE.
Connected with AI and Big Data, they are responsible for the
SPECIAL BEHAVIORAL CHANGES in curse in our society.

NEW OPPORTUNITIES AND
INDIVIDUAL FREEDOM



SHARED
ECONOMY

VALUE CHAIN
BREAKDOWN

ARNOLDO HOYOS AND JOSÉ LUIZ ALVES

HOW TO BE PART OF IT ?

QUESTION:

WHICH IS OUR CALLING, OUR VOCATION ?

STAYING CONNECTED AND AWARE OF THE CHANGES AND THE RISKS

↓

TO AVOID DECISION BY OTHERS (PEOPLE OR MACHINES)

↓

TO CHOOSE, TO CHOOSE, TO CHOOSE

↓

OPTION: DON'T BE SURPRISED

QUESTION:

WHICH IS OUR AMBITION ?

AND ABOUT VALLUES?

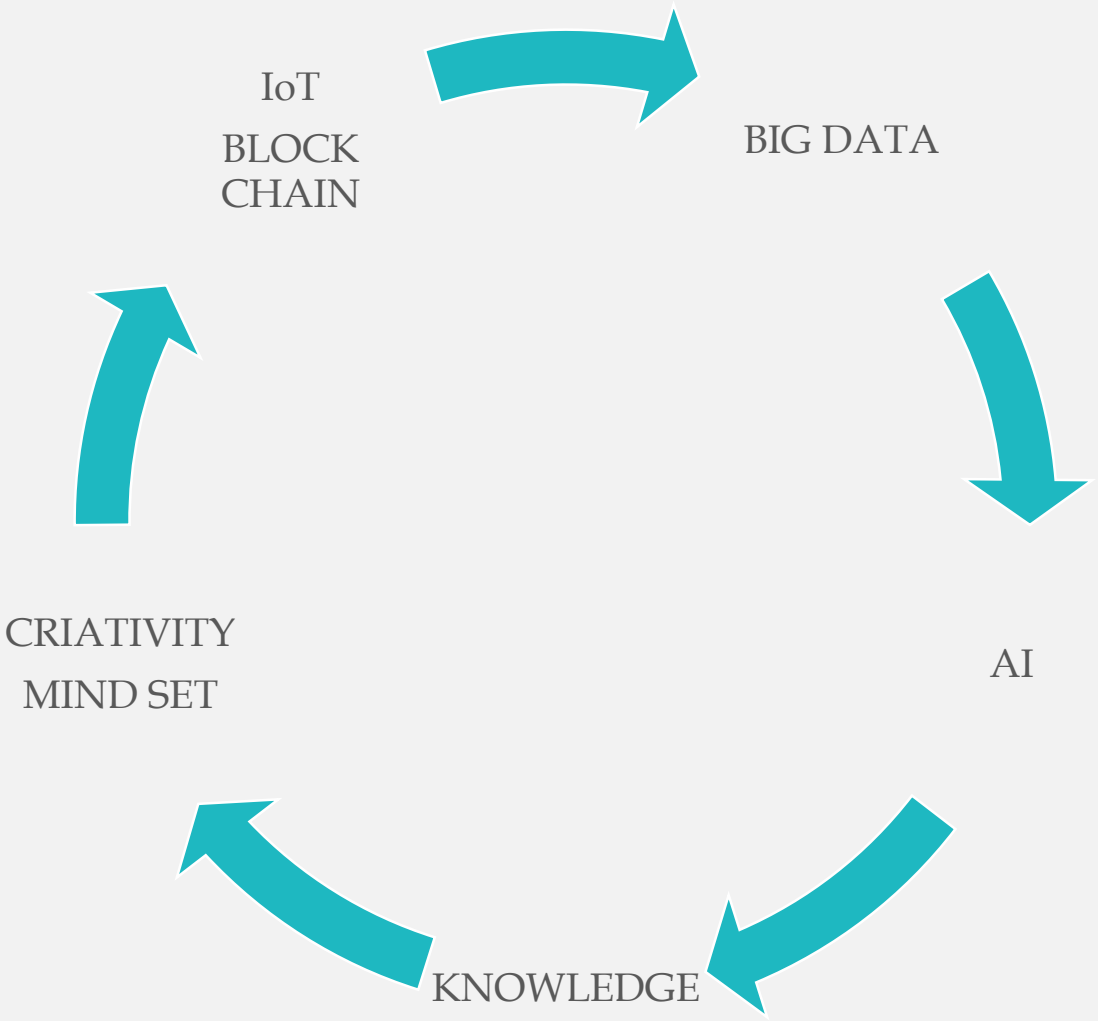
MORALITY, ETHIC, INEQUALITY

ALVIN TOFFLER: the illiterate of the 21st century will be who couldn't learn, unlearn and relearn

MoT

Management of Technology

MOT



ARNOLDO HOYOS AND JOSÉ LUIZ ALVES

THANK YOU !

arnoldodehoyos@yahoo.com.br

jl.alves@uol.com.br