

ICIM2018

15th International Conference on Innovation and Management



PONTIFICIAL UNIVERSITY
CATHOLIC OF SÃO PAULO

BRAZIL

INTERNET OF THINGS (IoT) OPPORTUNITIES AND IMPACTS OF WELL-BEING

ARNOLDO JOSÉ DE HOYOS GUEVARA

JOSÉ LUIZ ALVES DA SILVA

ADMINISTRATION PROGRAM



SCHEDULE

- **GENERAL OVERVIEW (History, Technology and Challenges)**
- **THE TECHNOLOGICAL ADVANCES**
- **IoT – OPPORTUNITIES AND IMPACTS**
- **CONCLUSION (New Business Models and Behavior Changes)**

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




ICIM 2018

ICIM2018

15th International Conference on Innovation and Management

MOT: Innovation for Global Well-Being



Yamaguchi, Japan
27th-29th, November, 2018

Prifysgol Cymru Y Ddrud Dewi Sant University of Wales Trinity Saint David
UNIVERSITY OF WALES
PUC-SP
Vaasan yliopisto UNIVERSITY OF VAASA
TILBURG UNIVERSITY
UTM
FACULTY OF BUSINESS

<http://www4.pucsp.br/icim/ingles/index.html>

ICIM 2017

ICIM2017

14th International Conference on Innovation and Management

INNOVATION ON THE FOURTH INDUSTRIAL REVOLUTION

TRANSFORMING
EDUCATION
TRANSFORMING
LIVES



Swansea, UK
27th-29th, September, 2017

Prifysgol Cymru Y Ddrud Dewi Sant University of Wales Trinity Saint David
UNIVERSITY OF WALES
PUC-SP
Vaasan yliopisto UNIVERSITY OF VAASA
TILBURG UNIVERSITY
UTM
FACULTY OF BUSINESS

<http://www4.pucsp.br/icim/ingles/index.html>

GENERAL OVERVIEW

THE HISTORY

THE ADVANCED TECHNOLOGY

AND SOCIETY CHALLENGES



UP TO THE THIRD INDUSTRIAL REVOLUTION

FROM COLLECTOR TO AGRICULTURE AND LIVESTOCK

13.000 to 10.000 a.C.



URBANIZATION AND EMERGENCE OF CITIES

3.500 to 3.000 a.C.
(Mesopotamia / Egypt)



1ST INDUSTRIAL REVOLUTION- MECHANICAL ENERGY

1.760 to 1.840



2ND INDUSTRIAL REVOLUTION -ELECTRICITY AND ASSEMBLY LINE

1.890 to 1.930



3RD INDUSTRIAL REVOLUTION - COMPUTERS AND INTERNET

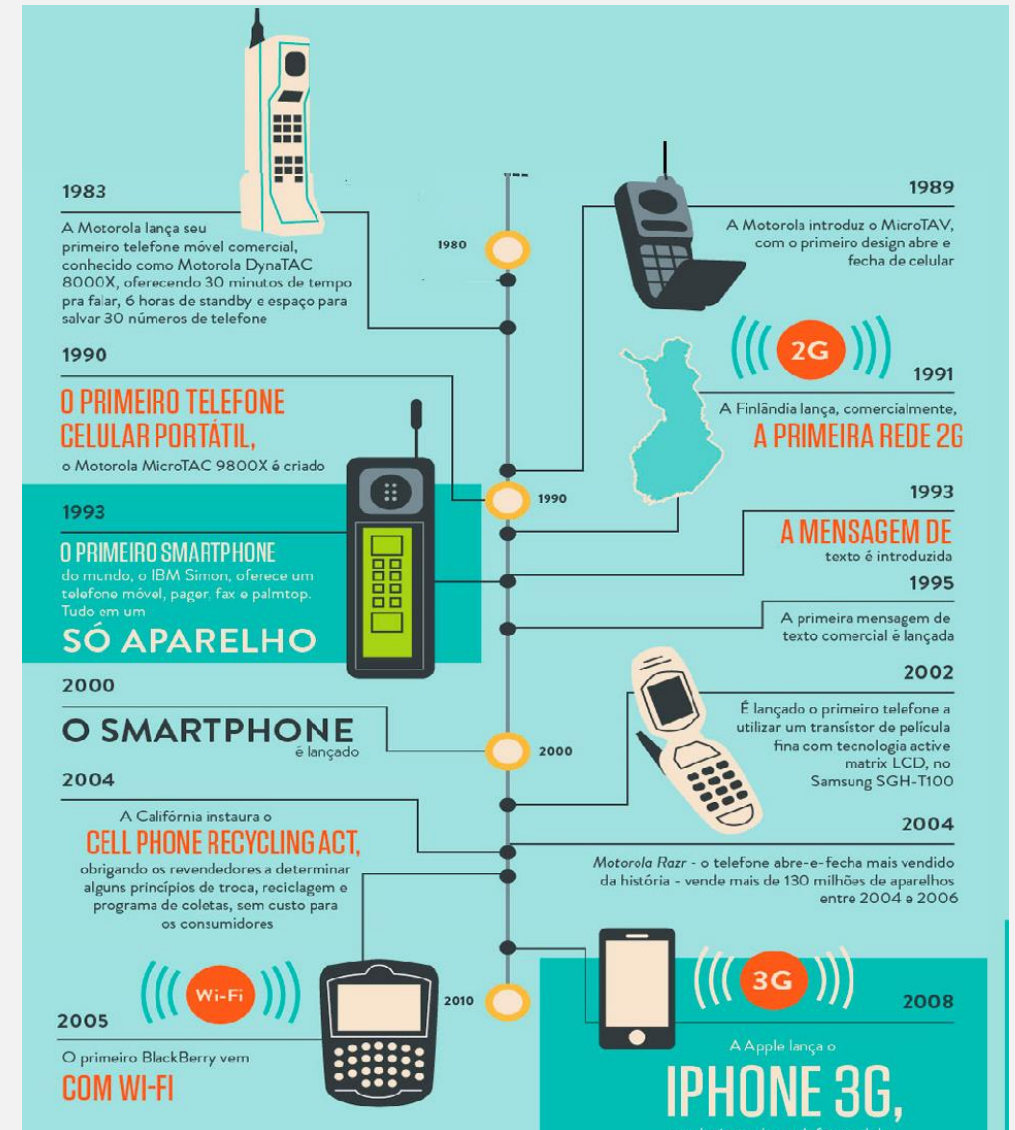
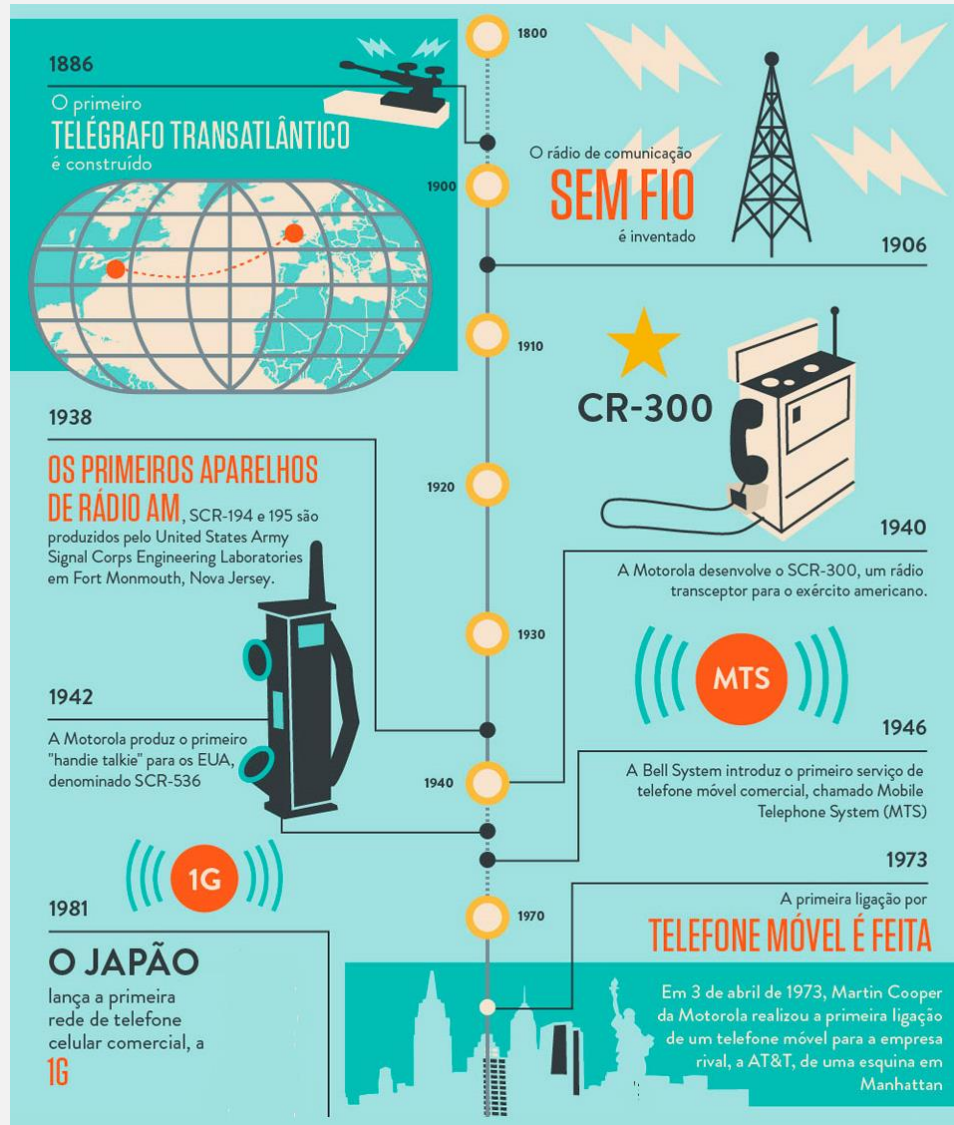
1.960 to 1.990



ADVANCED MOBILITY

MOTOROLA / AT&T / APPLE

1942 – 1973 – 1981 – 1983 – 1993 – 2008



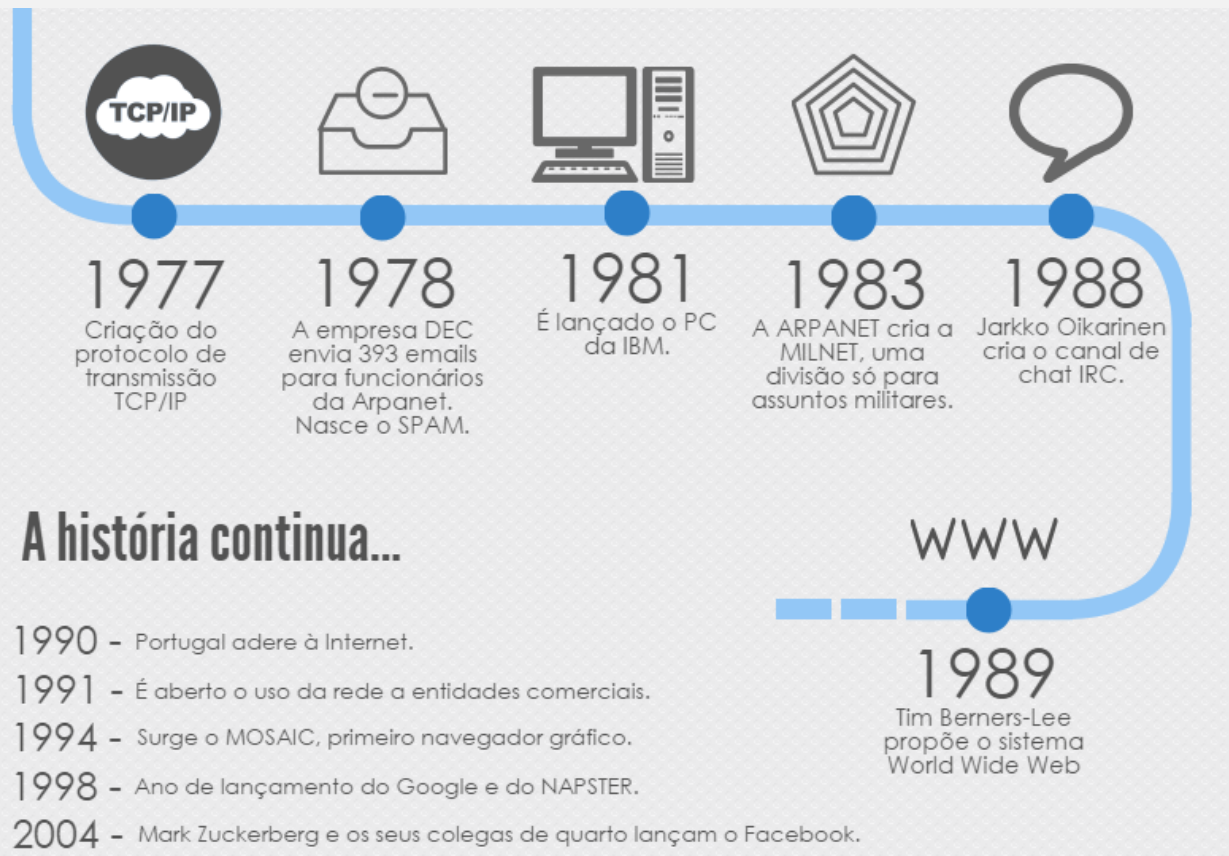


Personal Autonomy

INTERNET

CERN (*Conseil Européen pour la Recherche Nucléaire*) - [Meyrin](#), [Genebra](#)

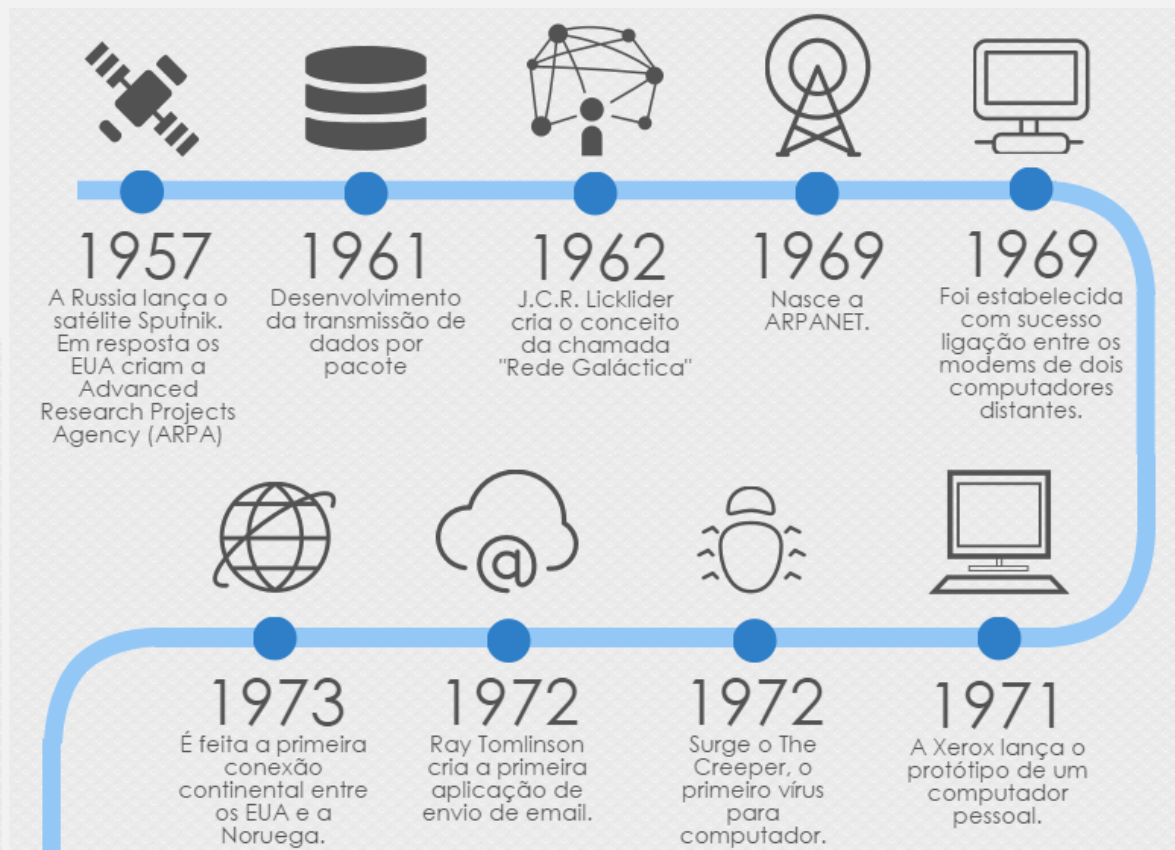
1989



A história continua...

- 1990 - Portugal adere à Internet.
- 1991 - É aberto o uso da rede a entidades comerciais.
- 1994 - Surge o MOSAIC, primeiro navegador gráfico.
- 1998 - Ano de lançamento do Google e do NAPSTER.
- 2004 - Mark Zuckerberg e os seus colegas de quarto lançam o Facebook.

ARNOLDO HOYOS AND JOSÉ LUIZ ALVES



[Sir Tim Berners-Lee](#)



E- Commerce



TECHNOLOGY ADVANCED

SONY / MOTOROLA / APPLE / MICROSOFT / GOOGLE



StartTac, 1996



Iphone, 2007

ORACLE
Santa Clara, 1977/82



San José, CA, 1984



LINUX, 1991
Linus Torvald



Video Games, Sony,
Nintendo, Microsoft



WalkMan, 1997, Sony



Napster, 1998
Fanning e Parker



Ipod, 2001



USA, Elon Musk



Seattle, 1994, Jeff Bezos

GAFA



Apple II, 1977
Macintosh, 1984
iPhone, 2007



Albuquerque, 1975
Bill Gates e Paul Allen

Windows_1.0, 1985
Internet Explorer, 1995



Stanford, 1998
Page & Brin



Harvard, 2004
Zuckerberg, Saverin

Five global mega trends shaping the future



Rapid urbanisation



Demographic and social change



Climate change and resource scarcity



Shift in global economic power



Technological breakthroughs



Expected increase in global food demand by 2030¹

2030

We predict that seven of the world's biggest 12 economies in 2030 will come from emerging markets, the 'E7'²



Years taken for telephone to reach half of US households; the smartphone in under ten³

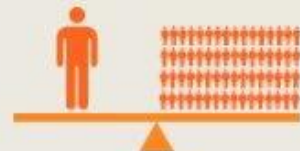
50%

of the world's population growth between now and 2050 is expected to come from Africa⁴



1.5 million

people are added to the global urban population every week⁵



The world's **85** richest people own as much wealth today as the poorest **3.5 billion**⁶

2015



In 2015 the size of the middle class in Asia Pacific is expected to overtake Europe and North America combined⁷

50%

of global GDP is generated by the 300 largest metropolitan areas⁸



Around half of US jobs are at risk of being computerised over the next two decades⁹

source: PwC via @mikequindazzi

THE TECHNOLOGICAL ADVANCES



KLAUS SCHWAB

KLAUS SCHWAB THE FOURTH INDUSTRIAL REVOLUTION



(Born in 30 March 1938)

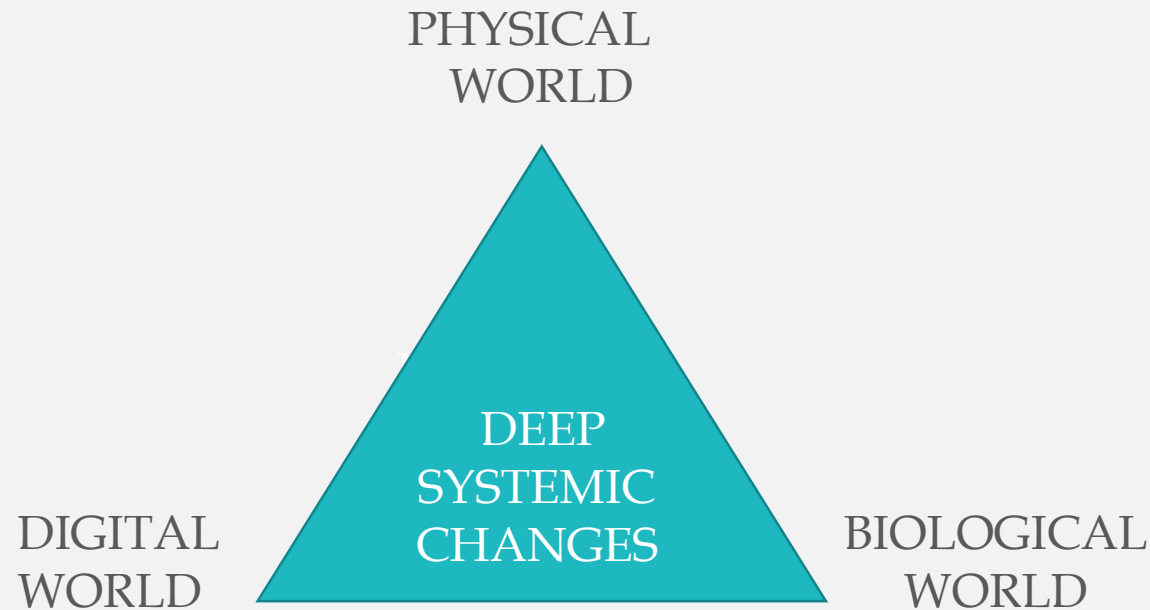
The changes are so profound that, from the perspective of human history, there has never been a time OF GREATER PROMISE OR POTENTIAL PERIL.

“The fourth industrial revolution IS MORE SIGNIFICANT, and its ramifications more profound, than in ANY PRIOR PERIOD OF HUMAN HISTORY.”

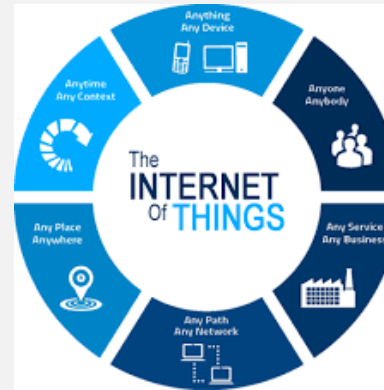
THE FOURTH INDUSTRIAL REVOLUTION ABSTRACT

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.

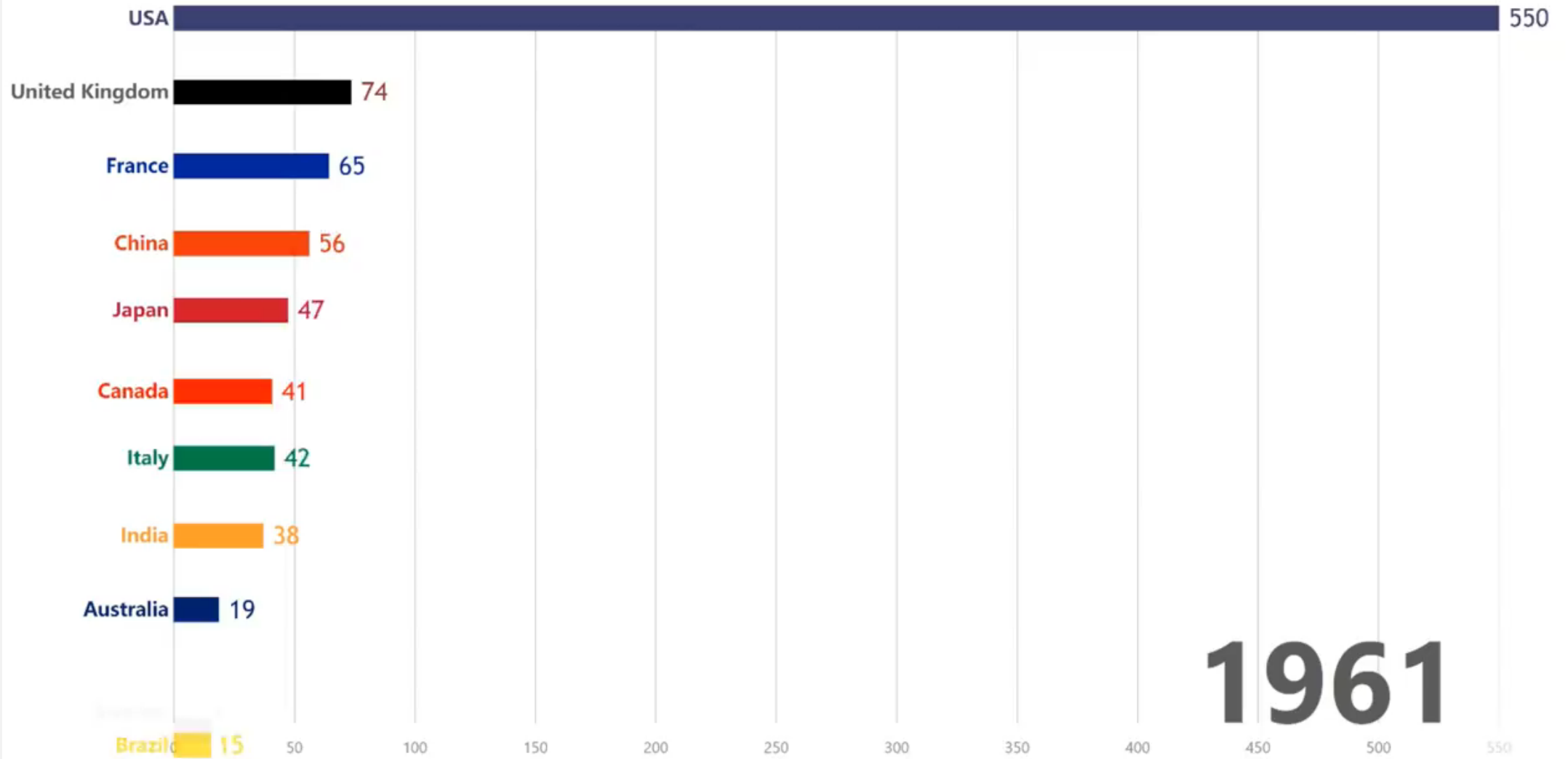


THE FOURTH INDUSTRIAL REVOLUTION – DISRUPTIVES TECHNOLOGIES



GDP EVOLUTION

World GDP by Country in Billions USD



IoT OPPORTUNITIES AND IMPACTS



KEVIN ASHTON



(Born in 1968 · England)

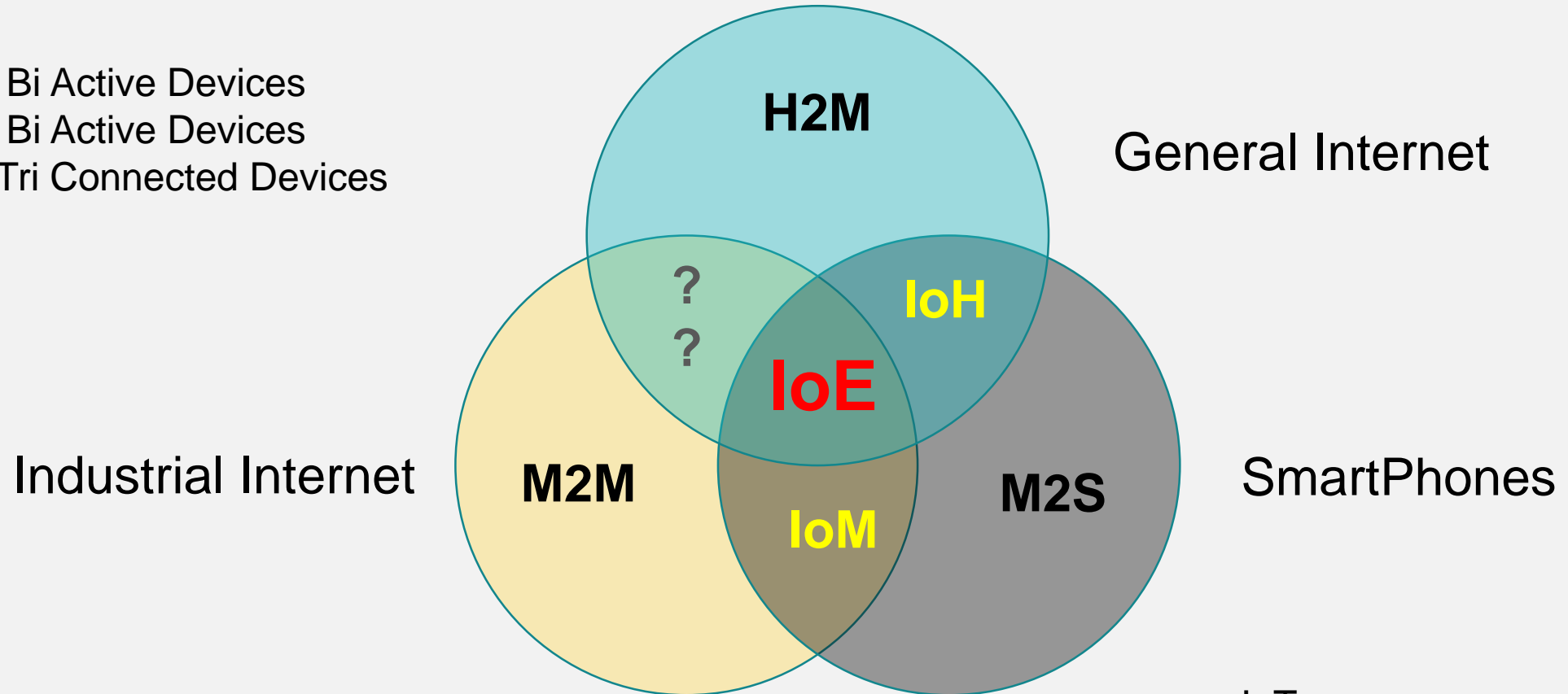
As the person that created the term IoT, Kevin Ashton, mentioned already in 2009:

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

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

INTERACTION

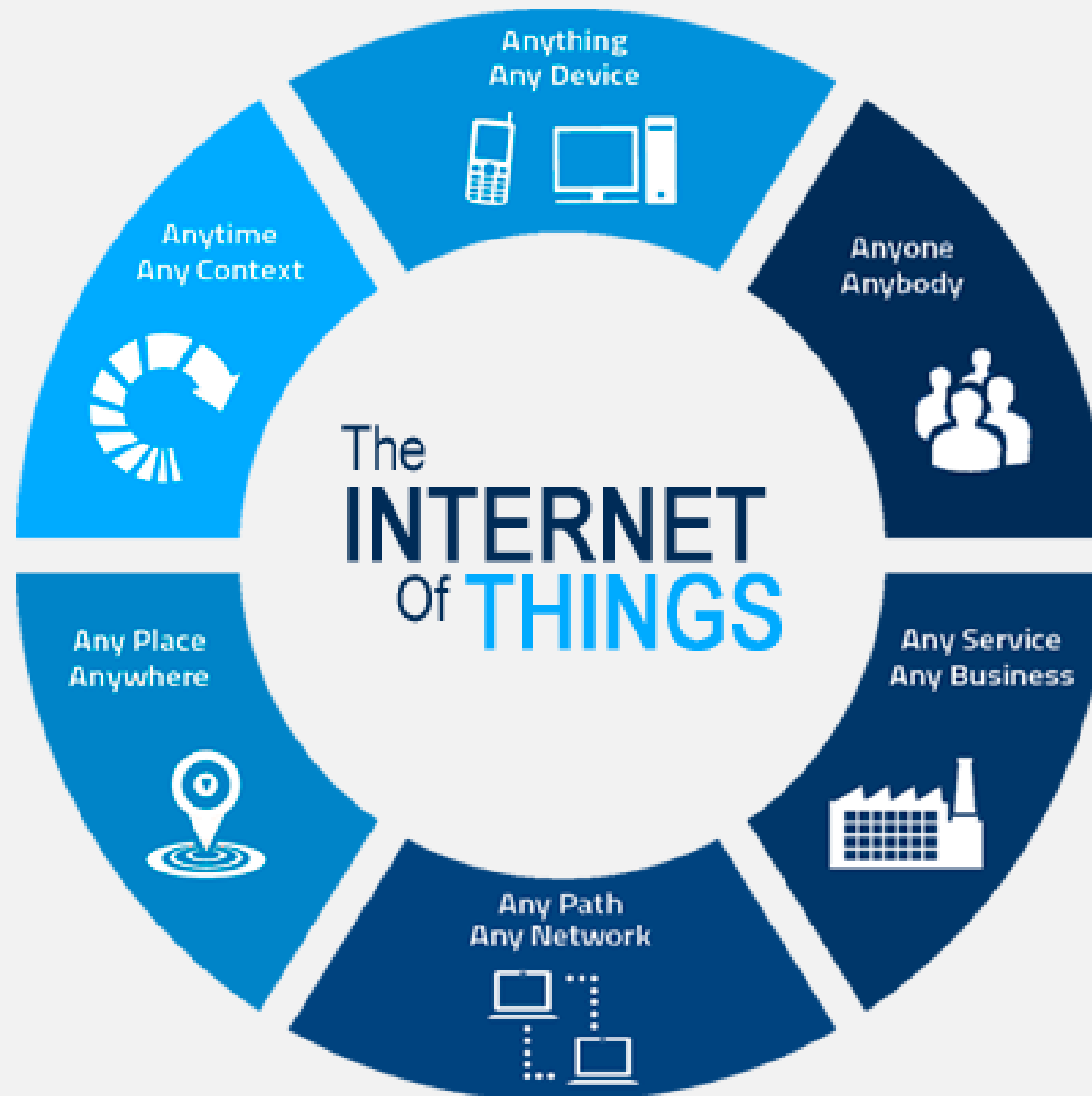
IoT:
2014: 12 Bi Active Devices
2020: 50 Bi Active Devices
2030: 1 Tri Connected Devices



IoE – Internet of Everything

IoT:
U\$ 613 Mi ao ano
U\$ 14,4 Bi em 10 anos

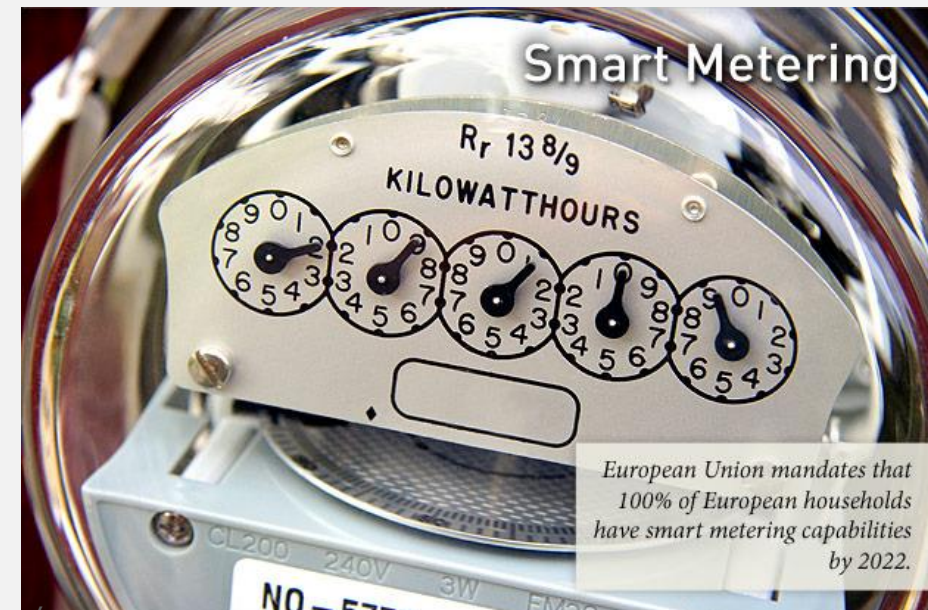
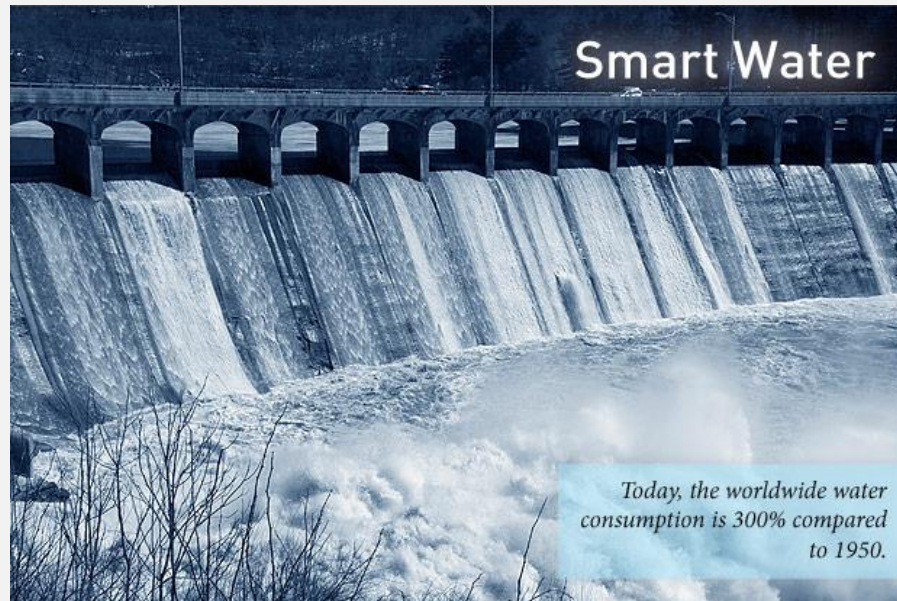
IoT AND MOBILITY



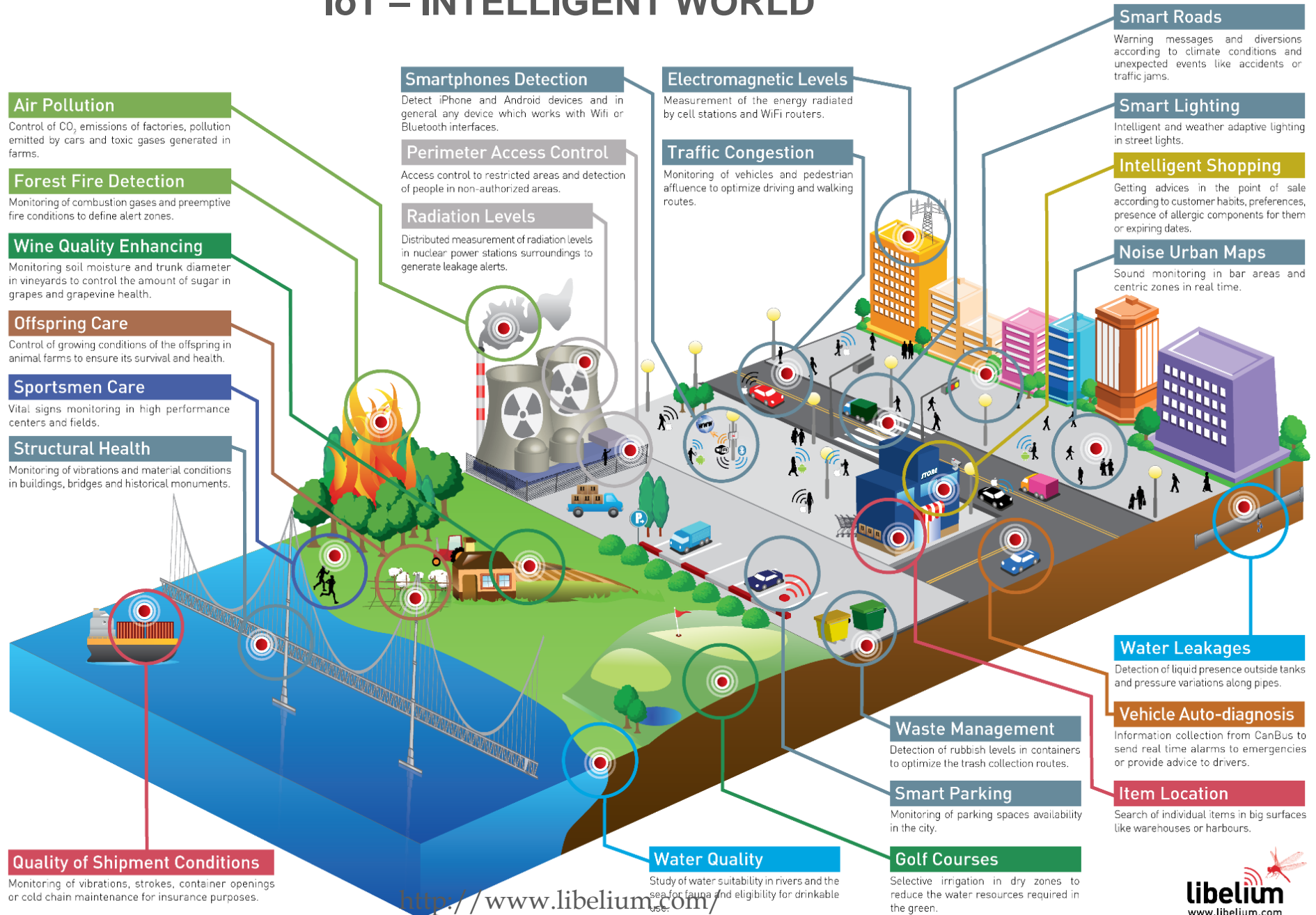
IoT



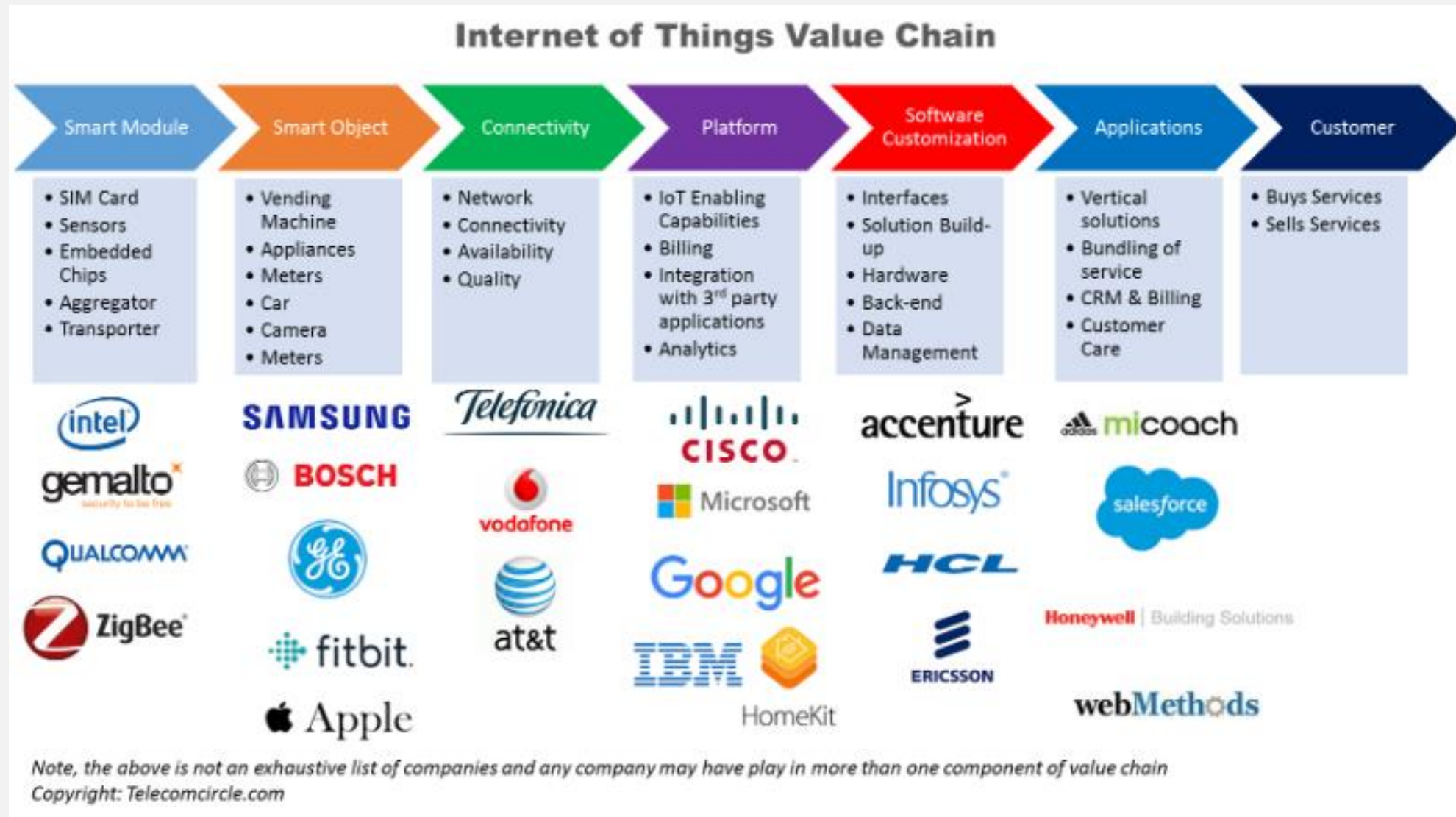
IoT



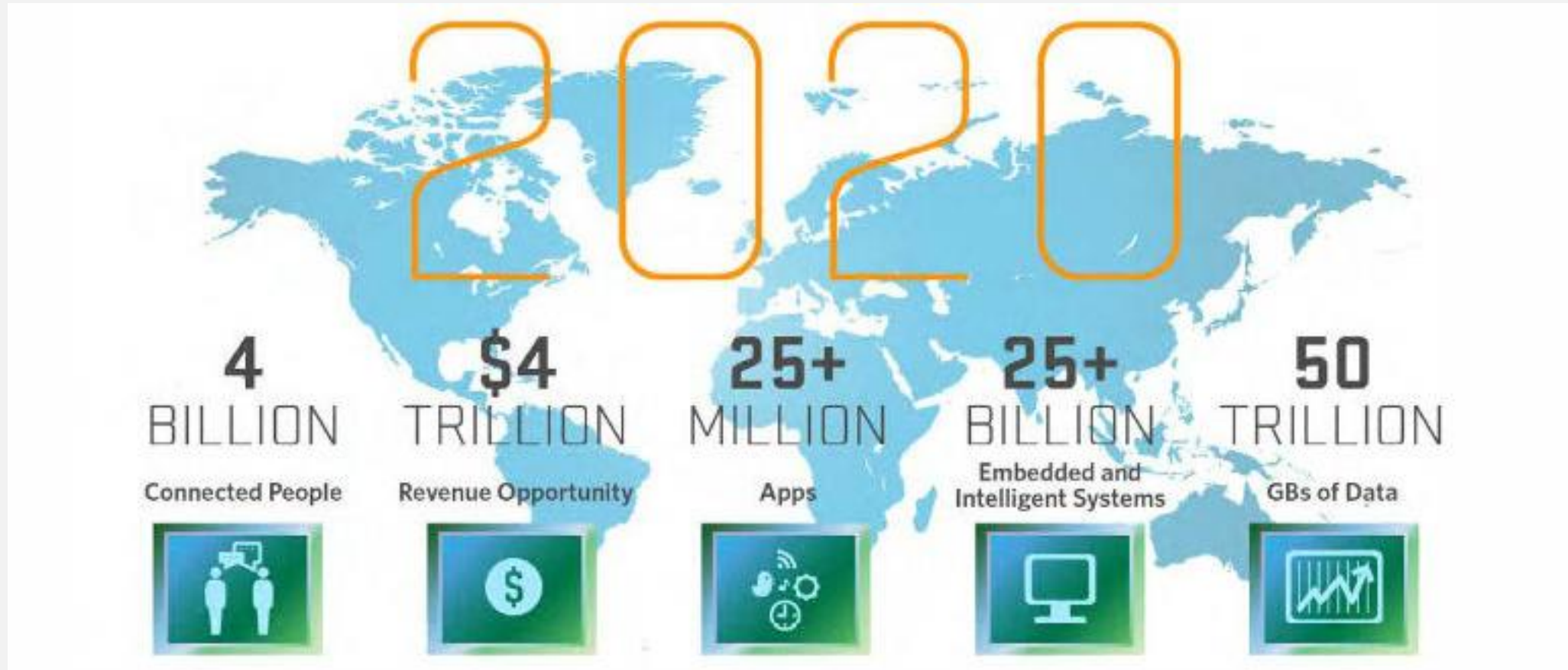
IoT – INTELLIGENT WORLD



IoT



PREVISION FOR NEXT YEARS



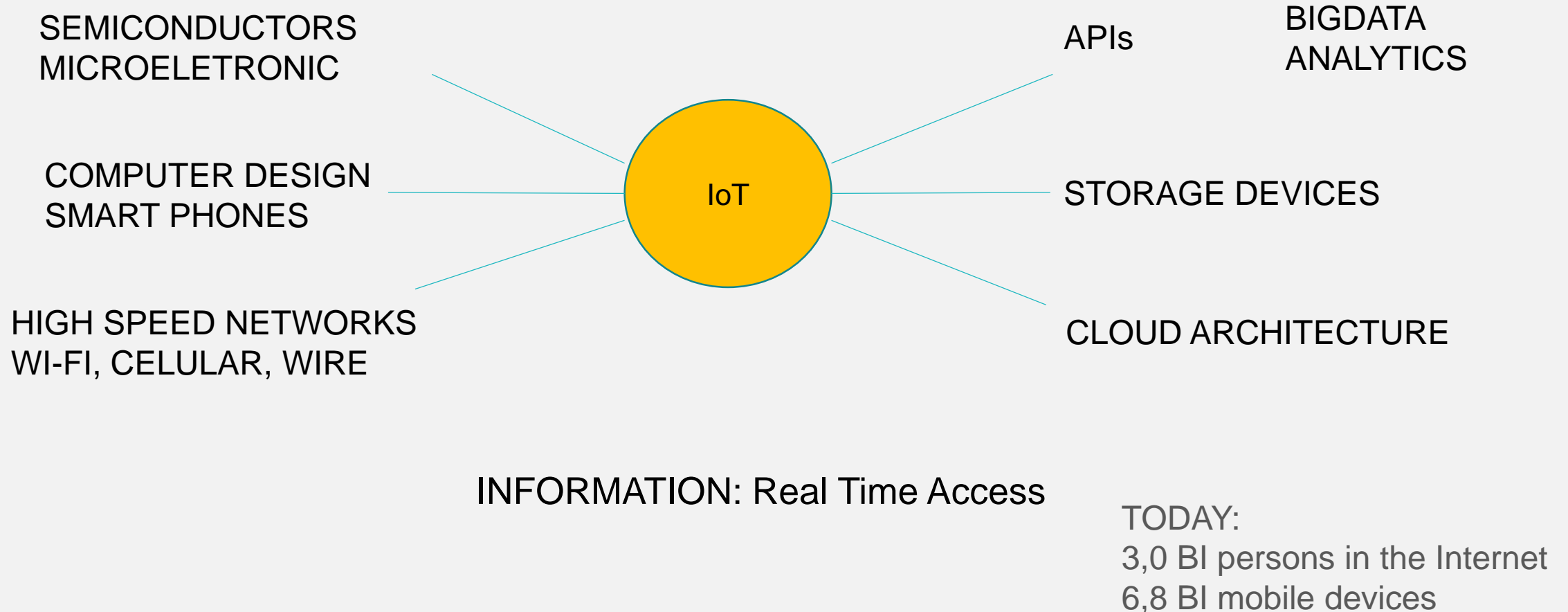
<http://appstimes.in/iot-the-future-internet/>

IDC 2020: 40 ZettaBytes

ADVANCED APPLICATIONS

MASSIFICATION

ADVANCED MOBILITY



SENSORS

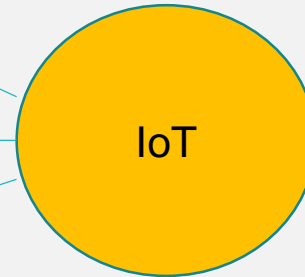
DIGITAL WORLD

PHISICAL WORLD BRIDGES

CELULAR / PDAs /
LAP-TOPS / TABLETS

DIGITAIS MACHINES
ROBOTS

CARS / ATMs
CAMERAS / SENSORIALS



RFID

NFC

BARCODES

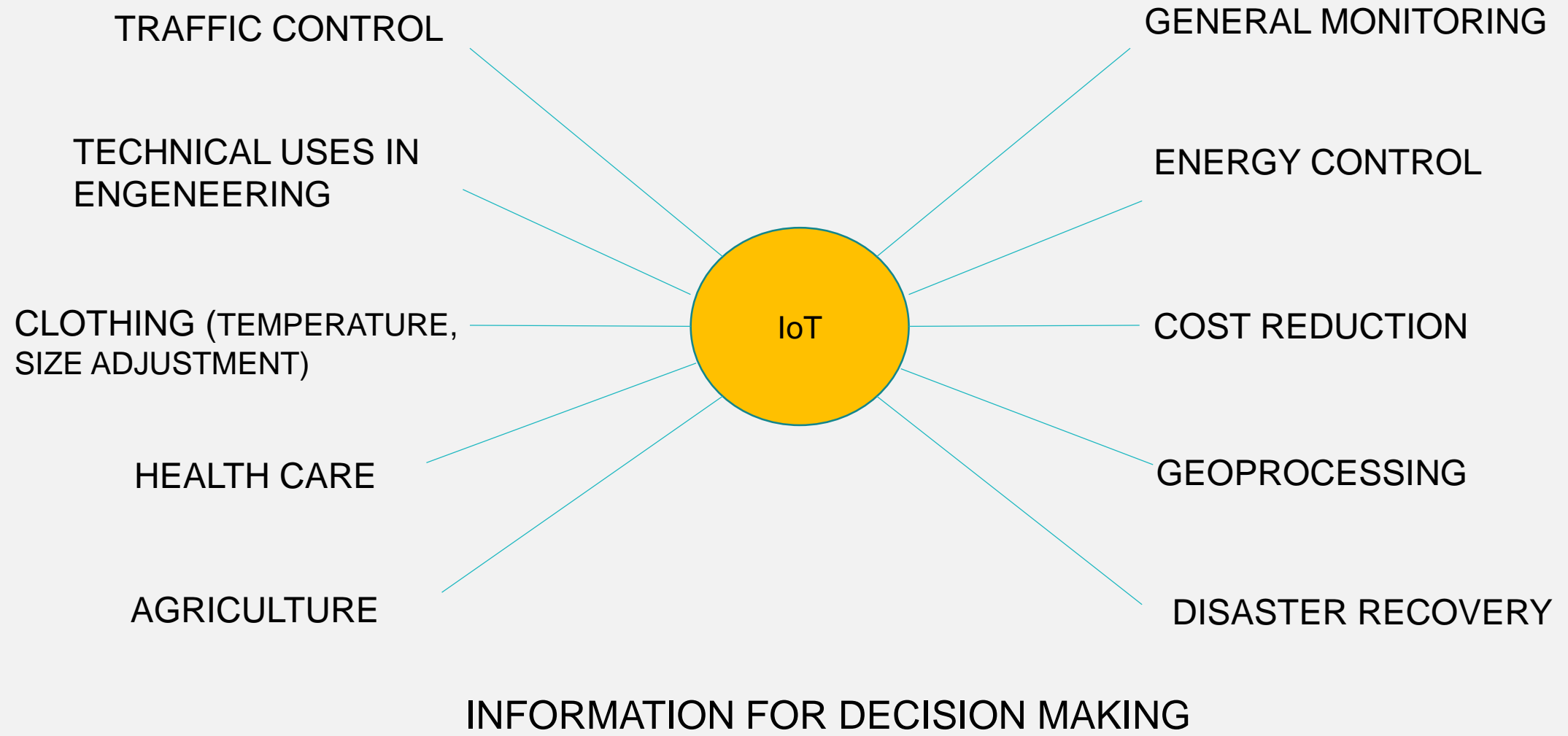
QRCODE

BLUETOOTH

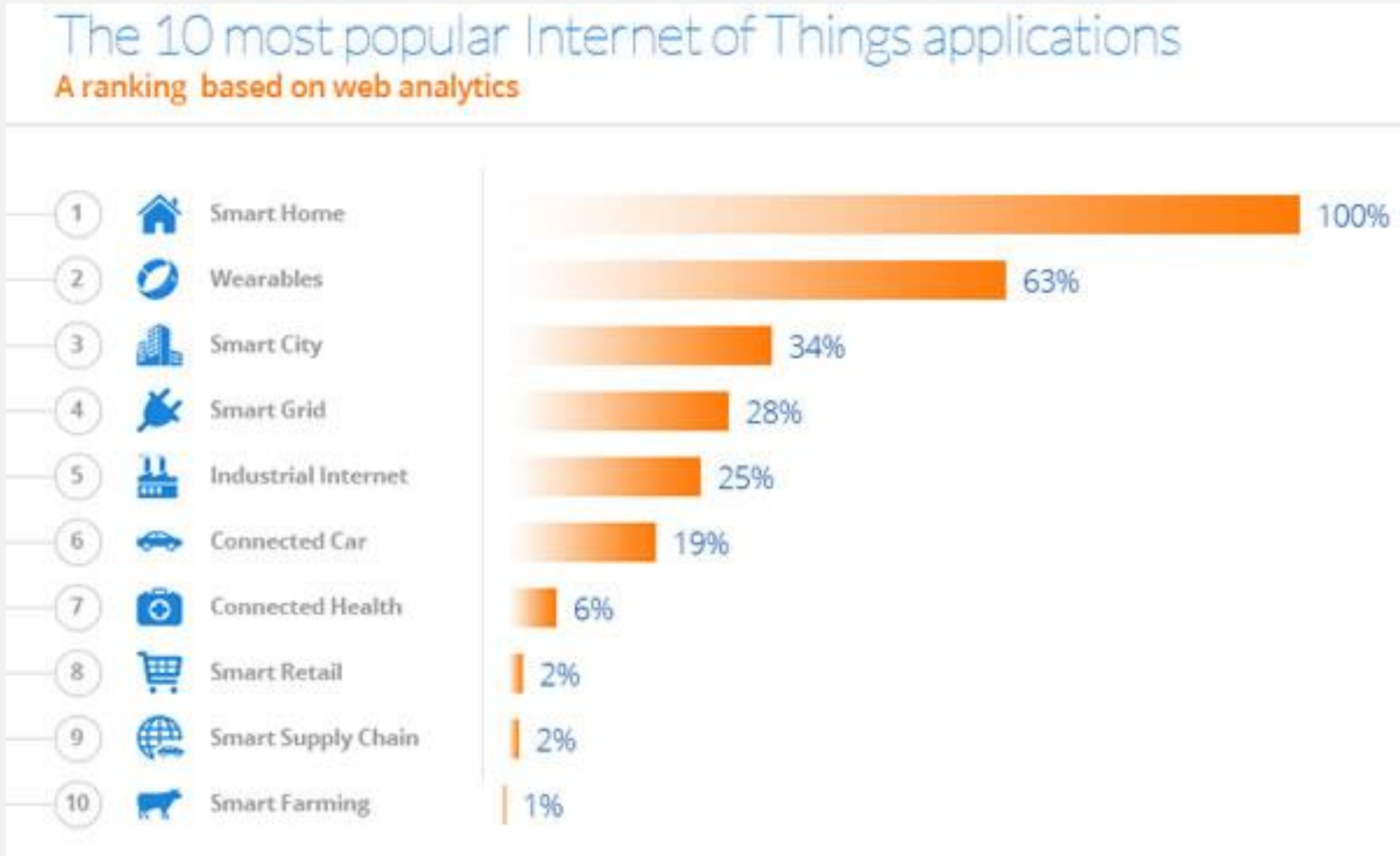
INFORMATION: Real Time Decision

Today:
Around 1,5 Tri of Things in
the World

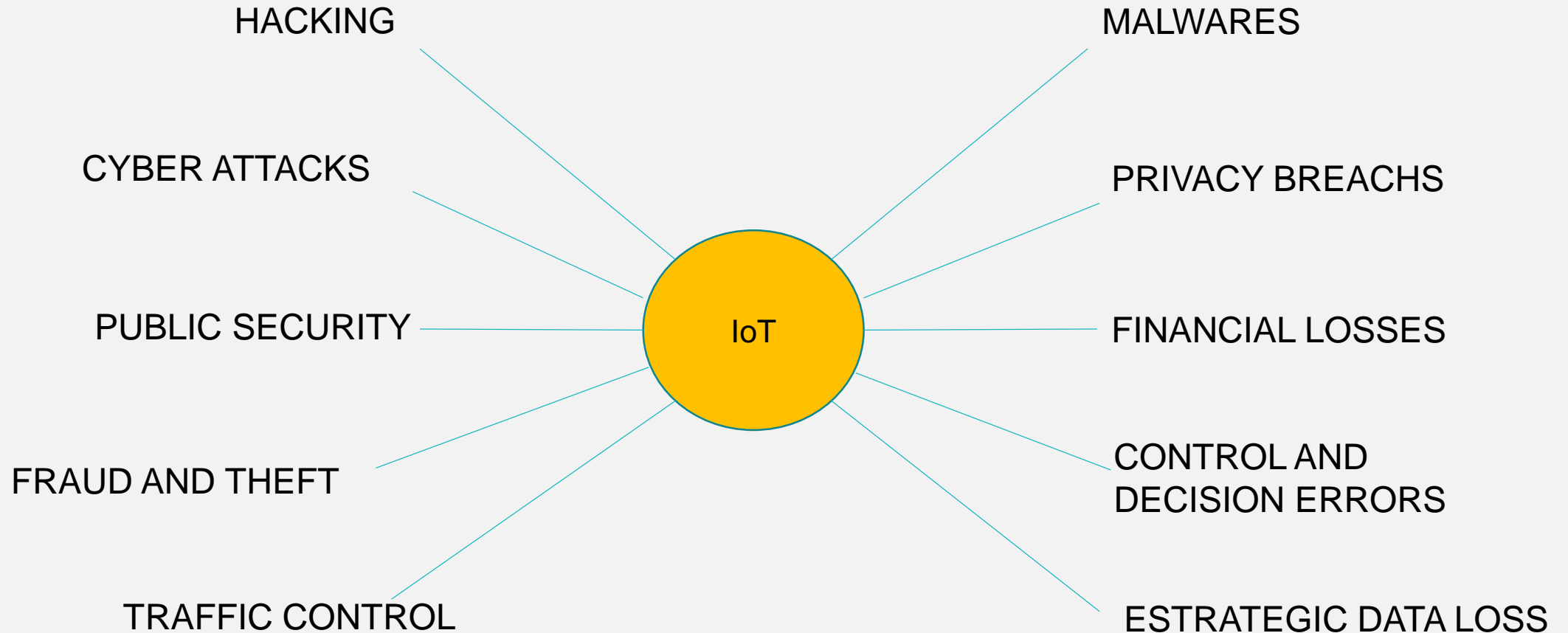
EXPECTED USES



EXPECTED USES



EXPECTED RISKS

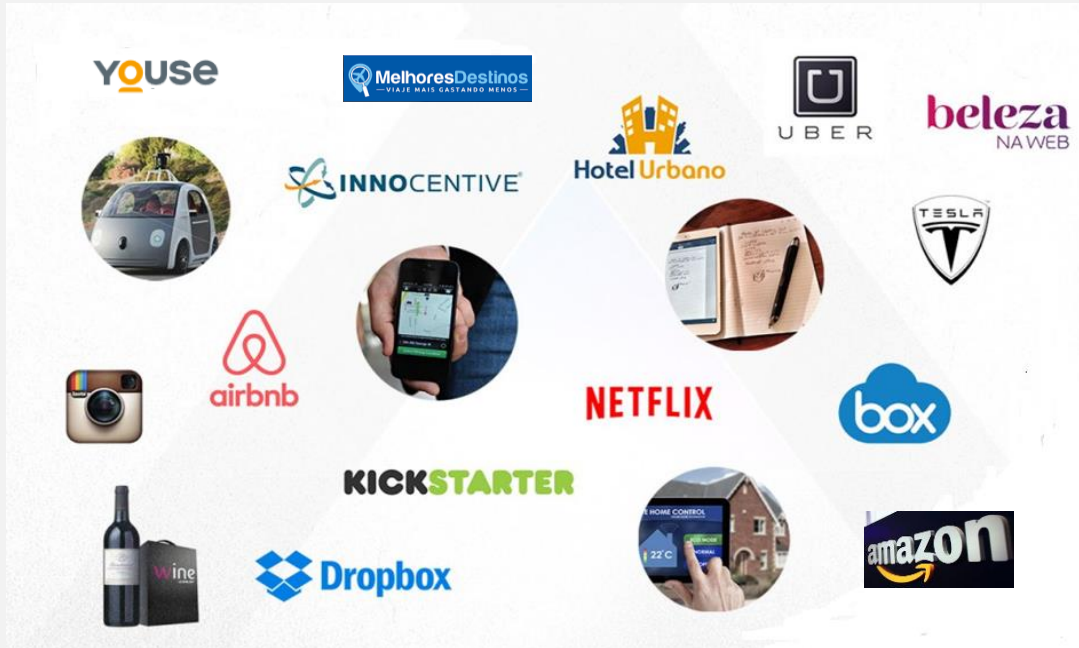


SECURITY INFORMATION AND MAJOR PLANNING REQUIRED

**CONCLUSION
NEW BUSINESS MODELS
AND
NEW BEHAVIORS**

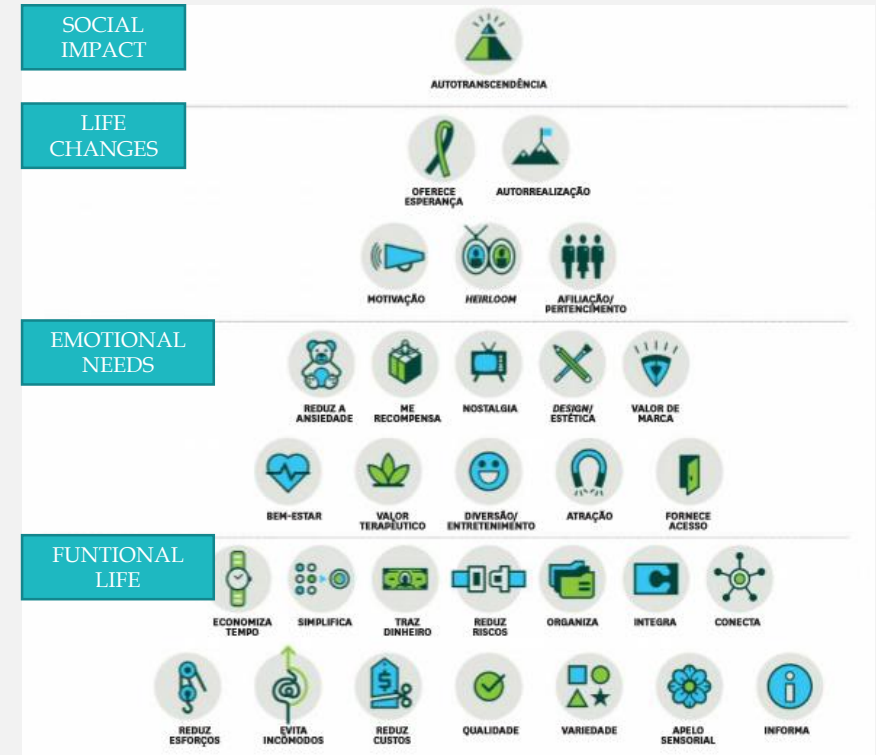


SOCIETY CHANGES



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”

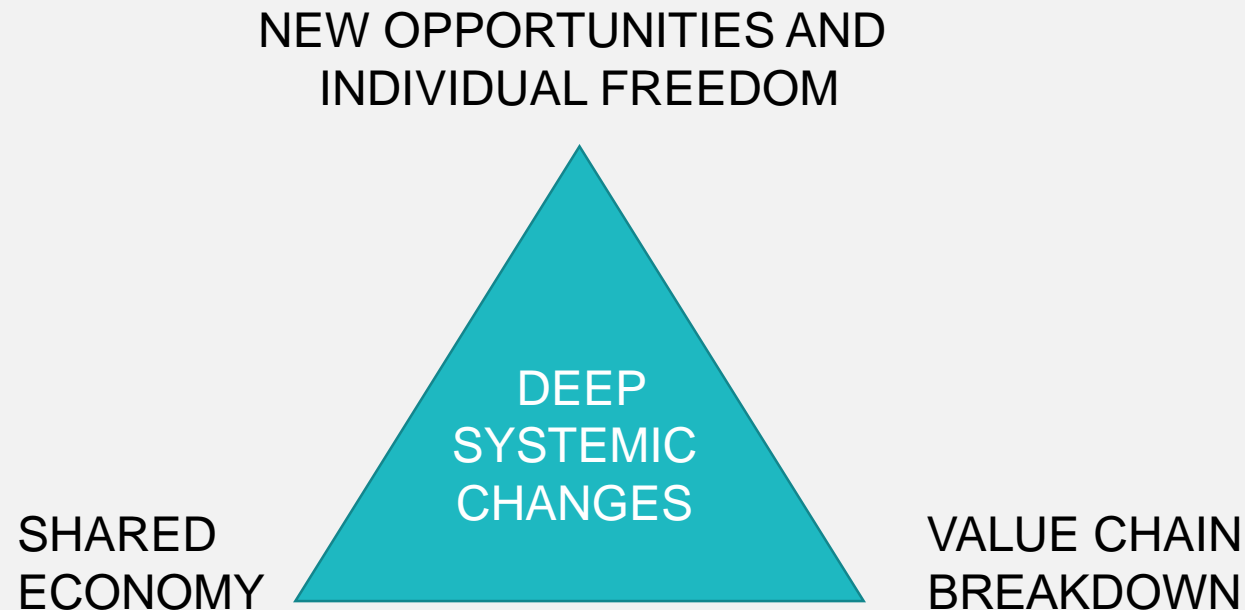
The Smartphone itself is the largest "IoT personal sensor" already available

THE FOURTH INDUSTRIAL AND IoT REVOLUTION

ABSTRACT

The objective of this article is to present the IoT as the main technological **PERSONAL ADVANCE**, connected with AI and Big Data, and the **SPECIAL BEHAVIORAL CHANGES** in course in our society

These observations are expected to assist in the definition of personal and professional choices



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/
FINTECHs /
CROWDFUNDING

SHARING
RESOURCES BY
USERS



HOW TO BE PART OF IT ?

QUESTION:

WHICH IS OUR CALLING,
OUR VOCATION ?

STAYING CONNECTED AND AWARE OF THE
CHANGES AND THE RISCS



TO AVOID DECISION BY OTHERS
(PEOPLE OR MACHINES)



TO CHOOSE, TO CHOOSE, TO CHOOSE



OPTION: DON'T BE SURPRISED

QUESTION:

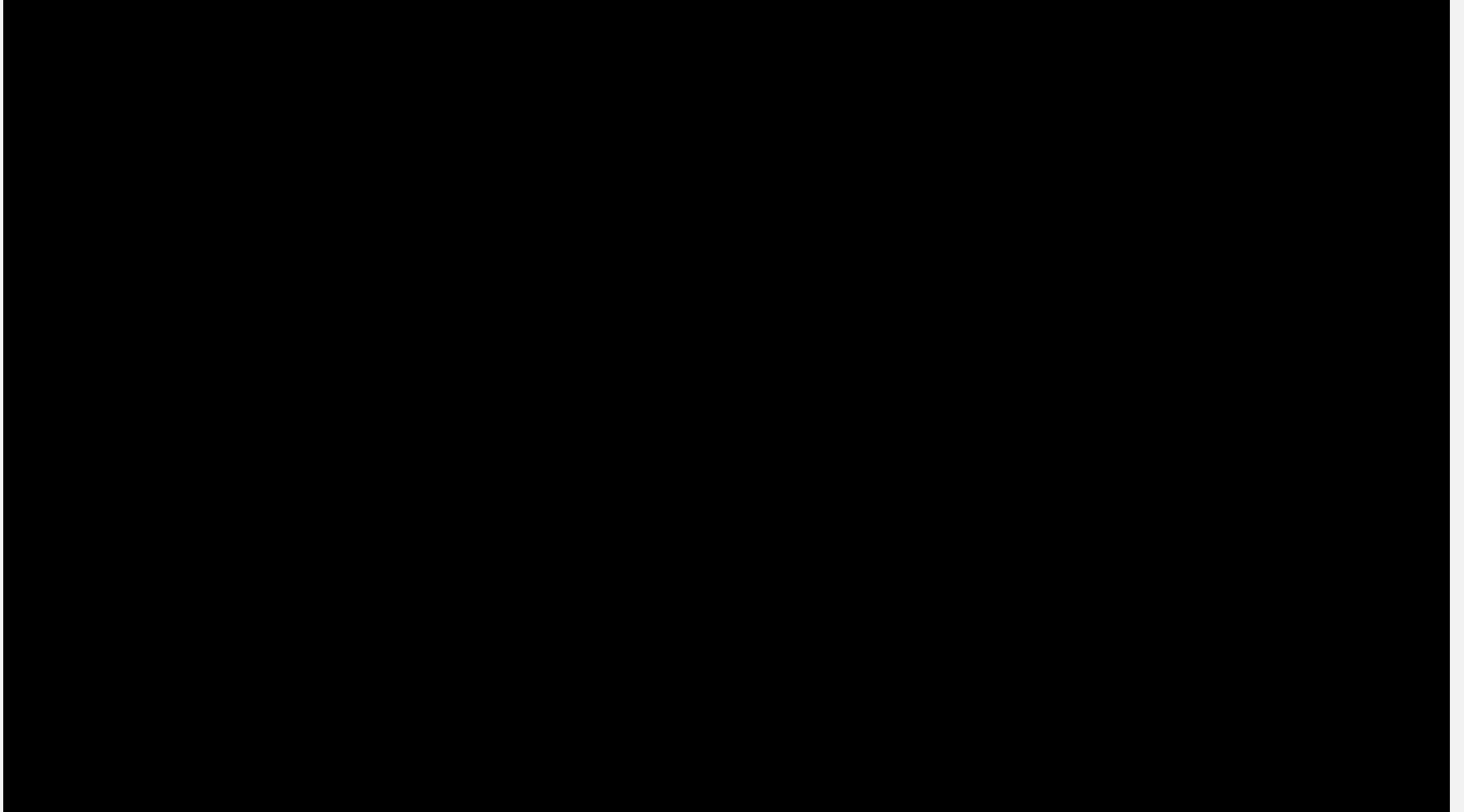
WHICH IS OUR
AMBITION ?

AND ABOUT VALLUES?

MORALITY, ETHIC,
INEQUALITY

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

INDUSTRIAL REVOLUTION AND Iot (World Economic Forum)



THANK YOU !

arnoldodehoyos@yahoo.com.br

jl.alves@uol.com.br