# **Seizing the opportunity**: Recognizing the urgency for expanding data science education

DATA SCIENCE CHAMPION CONFERENCE

BROCKENHURST UK 13-14 OF JULY 2016.

VISION & VALUES

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- RETURN on BIG DATA
- IF NOT BIG DATA THAN WHAT ELSE

# EUROPEAN UNION'S BIGGEST CHALLENGE : GROWTH & JOBS
# THE DIFFERENCE BETWEEN 2000 AND 2016

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# THE EUROPEAN DREAM



- 2000

The Lisbon Strategy intended to deal with the low productivity and stagnation of economic growth in the EU.

It was adopted for a ten-year period in 2000 in Lisbon, Portugal by the European Council.

**It broadly aimed to "make Europe, by 2010, the most competitive and the most dynamic knowledge-based economy in the world".**

# The Global Reality






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# EUROPEAN DILEMMA: What is NEXT?



- 1. evening
  - I do not like apple
- 2. evening
  - I like the apple but the skin and seeds
- 3. evening
  - I find the skin and the seeds tasty

**THE LINEAR PROGRESS IS OVER**
**DISRUPTION IS KEY**

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# The Causes and its effects: Global Social challenge

# What happened



| WHAT | Early XX. Century | Early XXI. Century |
|---|---|---|
| **POPULATION** | 2 billion | 7 billion |
| **Life expectation** | 30 years | 70+ years |
| **Human & domestic mammals** | N.A. | 97% |
| **Sead Production** | Zero | 80% by 4 companies |
| **Urban population** | 10 | 55%<br>Half of them live in slums |
| **Mobile phone** | zero | 6 billion |

**THE WORLD IS HOT, FLAT, CROWDED, AND LINKED**

# RESOURCE SCARCITY: Financial material and political resources






You are here

# Resources: Abundance and Scarcity



- **From Resource abundance to Resource scarcity**
  - FOOD, WATER, ENERGY, FUEL, MATERIALS, RARE EARTH MATERIALS

- **From Resource scarcity to Resource abundance**
  - From  MASS DATA to BIG DATA

**From Post industrial age  to DATA DRIVEN ECONOMY and SOCIETY**

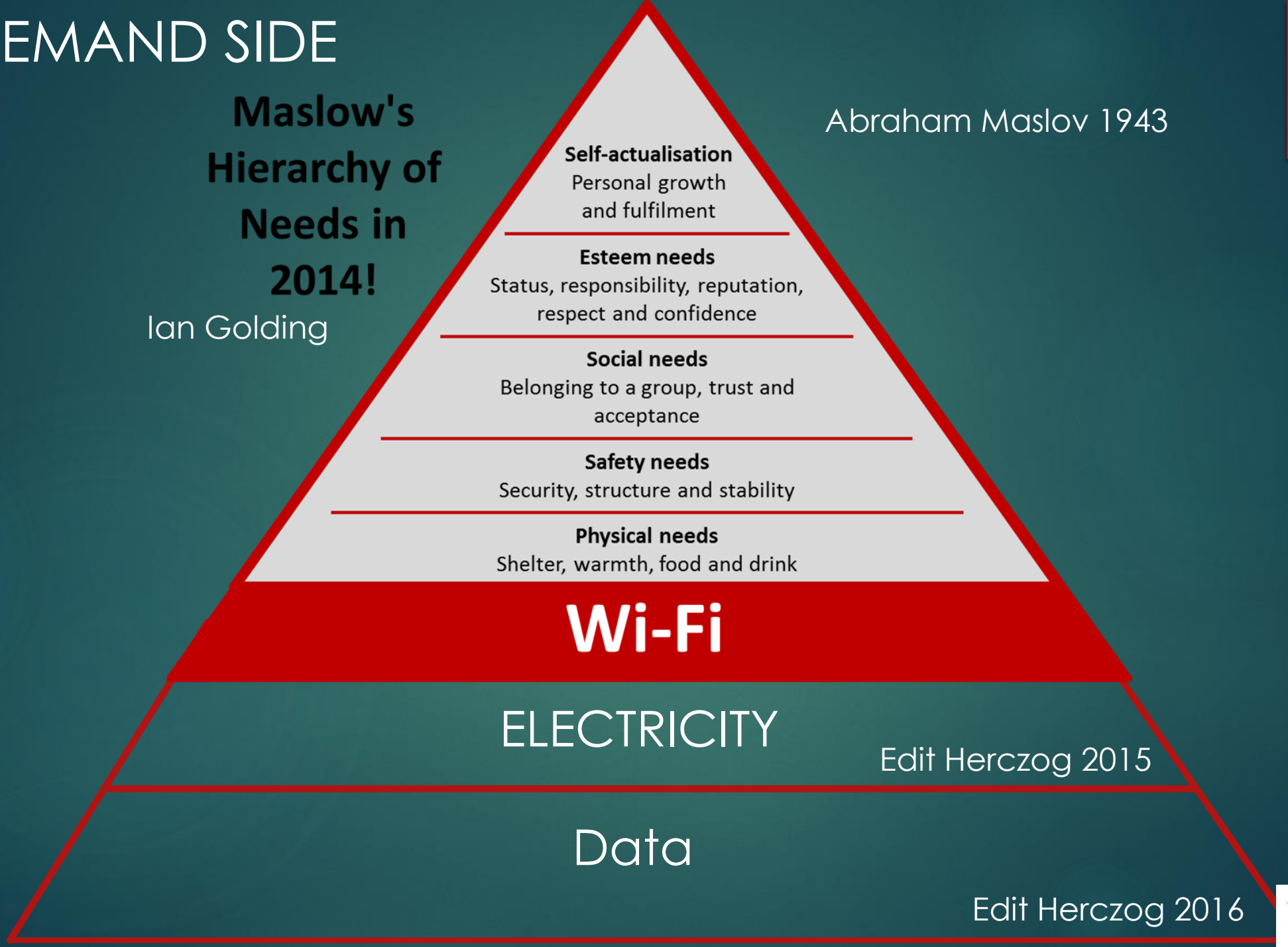
# THE DEMAND SIDE



**Maslow's Hierarchy of Needs in 2014!**

Ian Golding

Abraham Maslov 1943



*“It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.”*

DARWIN

**Data is unlimited, renewable smart resource, and therefore as enabler in certain sectors, opportunity to sustain prosperity in the EU for a period to come, in the case our economy can achieve return on Data, by focus to secure our champion position in the race.**

# DATA CHAMPION….

# BIG DATA and Politician



- Several BIG DATA Definition: Confusion
- We better know what it is not
  - BIG DATA is not ICT it is APPLIED ICT embedded in all technologies and sectors ( Public and Private)
  - BIG DATA is not something you can manage by using traditional technologies
- What we know:
  - BIG Data needs a Data Scientists, Data Professional, Data clerks
  - Fast changing phenomenon needs continuous update
  - Costs are high while our EU financial resources are limited and overused

# Will Link and Move other policies



- 7 Billion people
- Megatonnes of goods
- Terawatts of electricity
- Metadata
- Nature
- Universe
- Economy
- Business
- Society
- Politics

- CIRCULAR ECONOMY
- DIGITAL SINGLE MARKET
- HEALTH and Well being
- TELEKOM
- **ENERGY UNION**
- CLIMATE
- TRANSPORT
- SPACE

BIG DATA IS ENABLER

# BIG DATA and Legislators



- It is not yet known enough to legislate
- There are some parts of the legislation to review
  - IPR
  - Standardisation at EU and not at MS level
  - Remove barriers from Internal market
  - Support EU sectors and businesses
- **Legislators are not only legislate: THEY LEAD TOO**
- European Council decision, and the Score board
- European SKILS agenda
- Awareness building
- Education and EU cross-border acceptance of qualification

# Europe and the DATA



- We went for a world leading Earth Observation Program Kopernikus
- We designed REACH (the chemical legislation) to generate  chemical data in Europe
- We went for Policy communication in 2013 in TALLIN
- We have a HORIZON 2020 Program
- We have a The EU Cloud Initiative
- We stand for OPEN SCIENCE OPEN DATA OPEN WORLD
- We have a Council decision under the Dutch presidency
- **WE HAVE LIMITED APPETITE TO GET RETURN ON DATA**

# BIG DATA generation and the economic mind-set




- Space policy became EU policy under the Lisbon treaty
- FP 6 was the first to include SPACE programs Kopernikus and Galileo
- Due to Financial constrains we moved all resources to satellites
- Services DATA use remained underdeveloped
- Due to slow market uptake the services under perform
- Big non EU companies use EU generated data
- Because it is Public asset it is mostly free
- EU decision makers are about to doubt the sense of it

# RETURN ON BIG DATA



- **According to a recent estimate of the US Open Data initiative (data.gov), open data has the potential to generate more than USD 3 trillion per year in additional value in sectors such as finance, consumer products, health, energy and education.**

- **The European Commission's open data initiatives are expected to generate a yearly income of EUR 140 billion (EC, 2012). In addition, the OECD (2015a) estimated that the public sector information (PSI) market for the OECD area could be around USD 500 billion plus an additional USD 200 billion if barriers to use were removed, skills enhanced, and data infrastructure improved.**

OECD report 2010?

# RETURN ON BIG DATA: HOW



- to generate sufficient business model
- to generate Sufficient PROFIT and NET SALES
- to generate PROSPERITY: JOBS and GROWTH
- to develop Sustainable DATA INDUSTRY TECHNOLOGIES
  - DATA is a "virtual material"
  - MINING, FILTERING, STORING, TRANSPORTING
  - RENEWABLE data,
  - Data waste management
- to develop Reliable DATA SERVICE TECHNOLGIES
- to achieve NOWCASTING with FULL ACCURACY

**Political and business leaders awareness is key**

# EDUCATION EDUCATION EDUCATION



- **EDUCATE THE NEXT GENERATION: DATA NATIVES**
  - Data engineers
  - Data economist
  - Data health service experts
  - Data Safety and Security professionals
  - Data business  society including SME-s
  - Data policy makers and poltician
- **RE-EDUCATE THE CONTEMPORARY GENERATION: THE DATA IMMIGRANTS**
- **EDUCATE THE CONTEMPORARY YET DIGITAL ILLITERATE**
- **DATA-INCLUSIVITY at data user level is critical**

  DATALESSNESS and DATA INCONSISTENCY is a very high risk

# IF NOT BIG DATA THAN WHAT ELSE

# EUROPEAN DILEMMA: What is NEXT?



- 1. evening
  - I do not like apple
  - **Old things better?**
- 2. evening
  - I like the apple but skin and seats
  - **New markets? TTIP?**
- 3. evening
  - I find the skin and the seats tasty
  - **MORE EU, LESS EU, NO EU ?**

# **Seizing the opportunity**: Recognizing the urgency for expanding data science education

EXPANDING SCIENCE EDUCATION IS A FIRST KEY TO SUSTAIN PROSPERITY.

# Race will decide the future



# Thank you for your attention!

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