

# **“Education & Innovation & Jobs” - Still Silos**

Anders Flodström

Education Director EIT ICTLabs, former  
Swedish University Chancellor

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## Lite Lek med Ord

Kunskapssamhället

Producenten

Ska Veta

Kompetensförsörjning

Konsumenten

Ska Kunna

Färdigheter

Kompetens

Generiska Färdigheter

Generisk Kompetens

Hon är kreativ! Hon gör bra analyser! Hon är entreprenöriell!

In English – Higher Order Skills

Gallup ESF test Yourself

# Anders F?



Biometric

70/135/75/189/100

Edumetric

Electrician/Engineer/PhD/Prof

European Institute of Innovation and Technology

Horizon 2020, 4bn€ from EU and 12 bn€ from Industry  
Vi affärsutvecklar, vi forskar, och vi utbildar

Ray Bradbury “Fahrenheit 451”

# Värdekedja vid Innovation



# Our World Today and even more tomorrow - Blended Life



Physical and Virtual  
Private and Public  
Work and Education

We experience an explosion of communication and data – big business, big data, big science, ...

We experience a disruption of our industries – Industry 4.0 (Cyber-Physical production), Internet of Things, 3D “printing”, clean technology, renewables

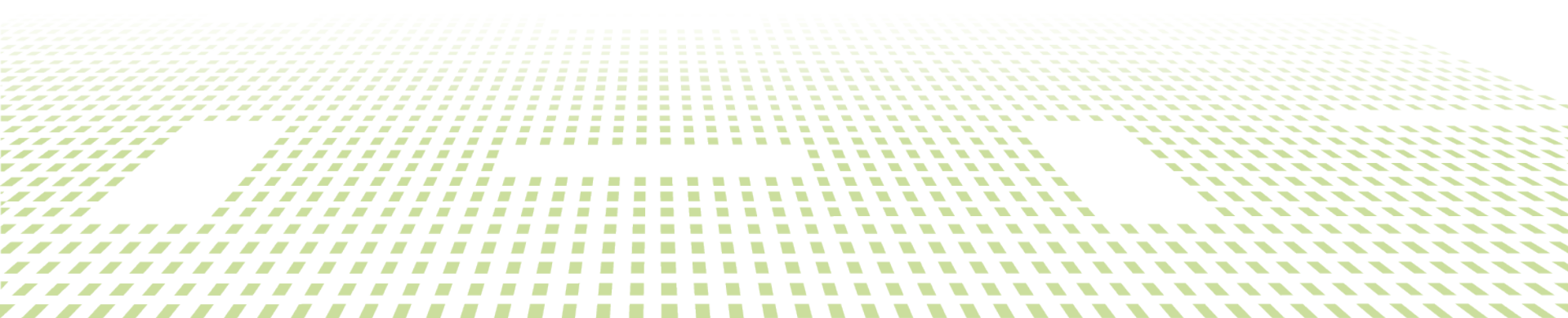
# 150 years in a couple of minutes



- Industrial Revolution
  - Mass Production
  - Modern Science
  - A 2<sup>nd</sup> World War
  - Computers
    - Hardware/Software
    - Intranet/Mobility
    - Digital/Big Data
  - Innovation
  - Urbanization
  - Sustainability
- Folkskolan 1842
- T - Ford
- Einstein, Bohr, Planck
- Teknologin vinner! Människor förlorar!
- Beräkningar
- Kommunikation
- Intelligens, Deep Blue
- 75 %
- Climate/Energy/Raw materials

# Timelines

- Technical fast
- Social slower
- Cultural much slower slow
- Note Geoffrey Moore and his book “Crossing the Chasm”
  - Note Rolf Jensen and his book “Dream Society”



# Macro Economy



- Market and Demand
- Private or Public
- Symphony Orchestra
- Privatization
- Compare US with Europe
- William Bamoul, han borde ha fått Nobelpris
- Future Pressure on Healthcare and Education



# Human or Social Change



- You use things until they break – my “vadmal” trousers
- You use things until you get something that is better – gold, bronze, iron, steel, carbon fibre, ..
- Sometimes, new is radically new – travel by train, car or fly; talk in the phone, listen to radio, watch TV; a digital world; not make war, trade freely

From a producer to a consumer economy

From efficacy to innovation

From quality to dream

Use forestry as an example

Innovation is becoming the everyday economy with 75 % of the economic growth, but still different for countries in different phases of development

# The Playing Field

Concurrence of high unemployment among young academics and skill shortage in Europe

## Sky High Unemployment Rates

- **Southern Europe:** High unemployment rate concerning **young people** e.g. Spain: 52,7 %, Greece: 52,8 % with a high number of affected graduate students

*Source: Eurostat 2012*

- Generally high unemployment rates in **Southern and Eastern Europe** (Spain 26.6%, Greece 26.0%, Latvia 14.1%, Lithuania 12.5%, Slovakia 14.5%, Croatia 13.5%, Portugal 16.3%, Estonia 9.5%, Bulgaria 12.4%)

*Source: Eurostat 2012*

## Skill Shortage

- The **European Commission** recently announced that by 2015 there will be a shortfall of **ICT professionals** across Europe

*Source: News by European Commission, March 20th, 2012*

- **UK** demand gap of 10,000 new STEM<sup>1)</sup> graduates p.a. until 2020

*Source: Royal Academy of Engineering 2012*

1) Science, technology, engineering and mathematics

- **Germany** sees a gap of approx. 9,000 computer science graduates p.a.

*Source: BITKOM 2012*

- Over 10,100 ICT practitioners lacking in **Italy**, 18,300 in **Poland**, 41,800 in **Spain** and 87,800 in **Germany**

*Source: BUSINESSEUROPE, Spring 2011*

# Innovation and Jobs



- Innovation creates and destroys jobs – automation – first blue collar now white collar
- Job change cycle much faster than educational cycle
- Generic skills as creativity, entrepreneurship, value judgement, ICT, ..
- Enough jobs?
- Work replace jobs?
- Role of University – the Universities must become a stakeholder among others in the new knowledge society

# Education



Society gains

Industry/Business gains

You gain

Separate responsibility from  
who is paying

Youth or not; shoemaker stay with  
making shoes has been replaced by  
re-education and multiple competences; jobs  
change faster than  
people can change

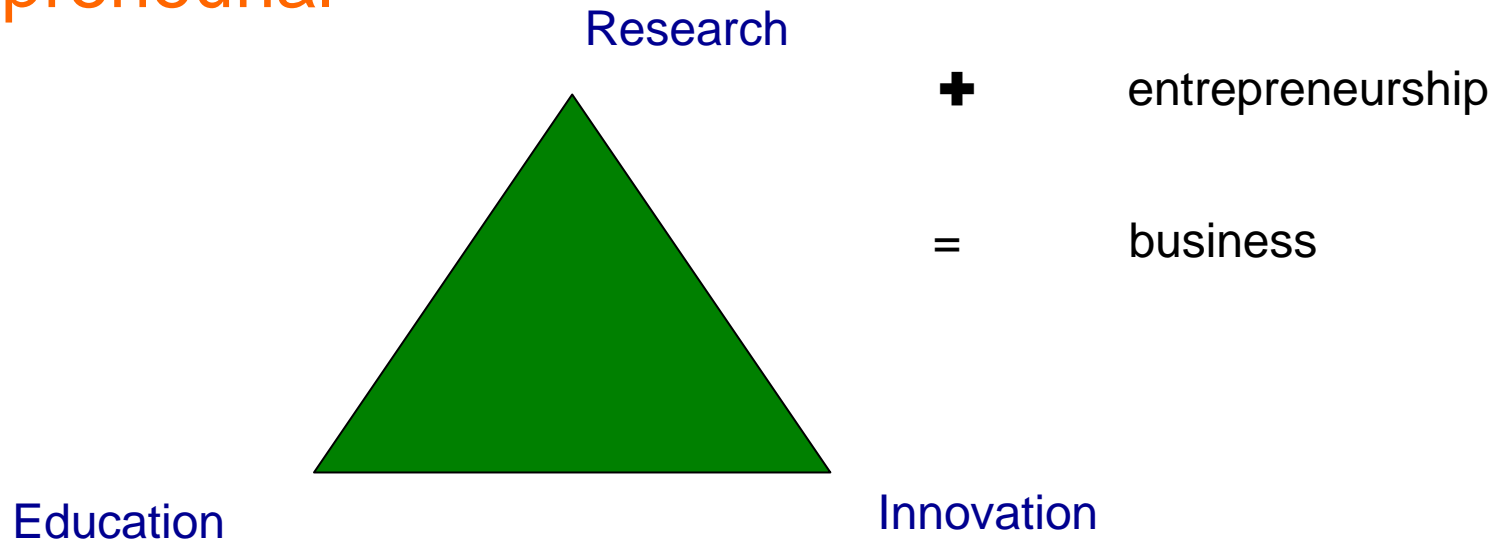
From a Knowledge Society to a Skill & Competence Society,  
not typing but cognitive skills as creativity, solution oriented, entrepreneurial, ...

Where are we and where do we want to go – ask Alice!

# Knowledge Triangle



Autonomy  
Stakeholder  
Integration  
Entrepreneurial



# MOOC or Massive Open Online Education



- Coursera, Udacity, eDX, ...
- 100 thousand, many pay less
- Where are the students, new or old
- Mismatch and youth unemployment
- Retention
- Interaction
- Validation replaces examination
- New pedagogy

# Value Systems

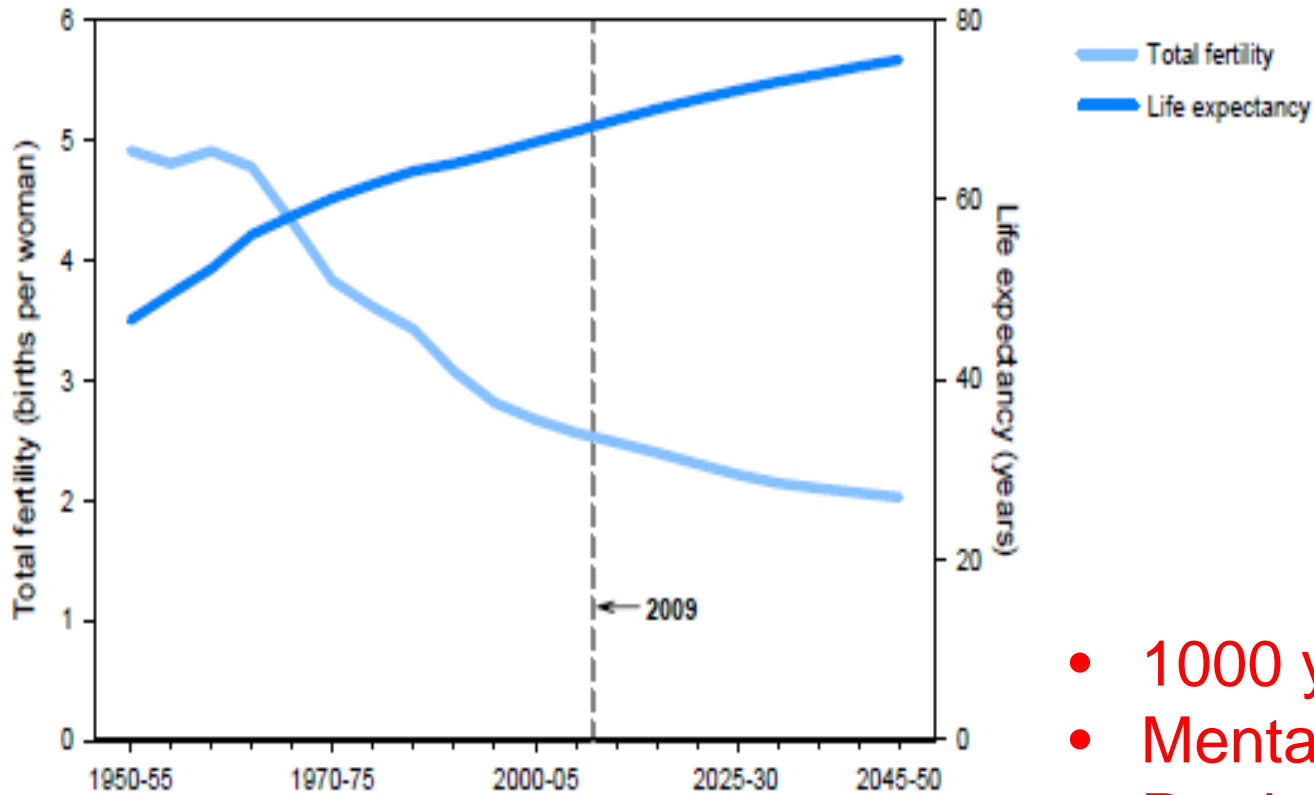


Higher Education  
Research  
Salaries Promotion

Research for Science  
Research for Impact

Innovation  
Products and Services  
Processes

# Trends in Demography decides upon Productivity



- 1000 year
- Mental and Physical
- Productivity decided by population pyramid

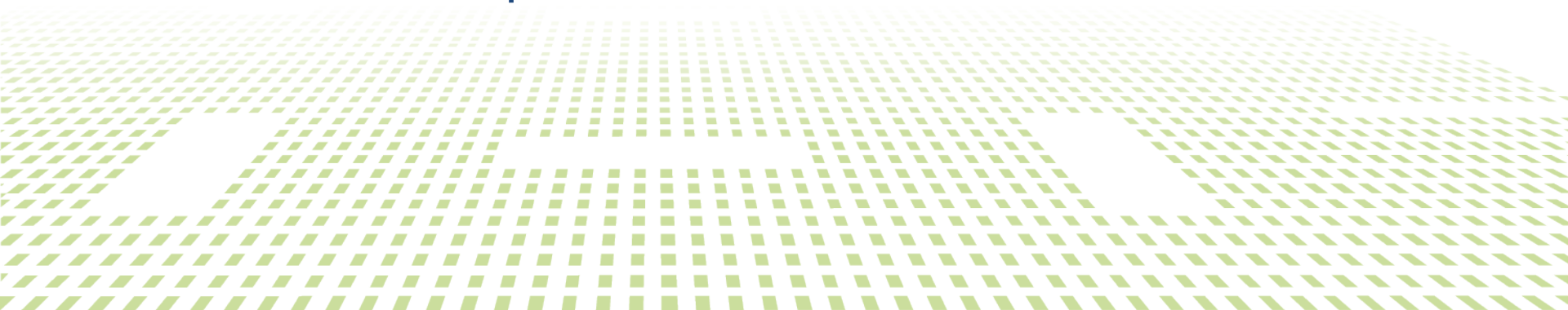


# The world we live in or the world we would like to live in

- Demography
- Why are Healthy Ageing and Childhood Health two sides of the same coin
  - Productivity and Population Pyramid
    - Urbanisation
  - Critical resources or raw Materials
    - Education
- Jobless European Youth; 50 %, 25 % and below 10 %
  - There are jobs!

# ICT – a marriage between humanities, social and technical sciences

- The catalyst or game changer is digitisation
- Happened before – Industry 1.0, 2.0, 3.0 and 4.0
  - Infrastructures are physical and intellectual
- Who are the Employers of ICT Professionals: Companies or Public Sector within Healthcare, Education and Administration
- Who are the main Educators of ICT Professionals: Public and Private Universities? Other Educational Institutions? Companies themselves? MOOCs?



# Jobs in Demand in a new World

- A Digital World – the Cloud and DNA
- A World of Seamless and Ubiquitous Communication
  - Internet of Things
- Printing – 3D and Robotics – Cyber Physical Systems
- A World of Artificial Intelligence – Memory, Algorithms, Bayesian Statistics and Pattern Recognition – Parallelism, Graphene and Quantum Computing
- A World where ICT Competencies are becoming generic for almost every societal and industrial Process/Activity
  - MOOC for Education
  - Self Diagnosis through Expert System

# People with new Jobs and Jobless People

- Millions of new Jobs for the coming 10 Years
  - Millions of old Jobs will disappear
  - Jobs will change faster than education
- All according to OECD and we have seen it before
  - Education will become much more important
    - Education will create the Winners
- What is generic and what is specific will change
  - Education must be revised on all levels

