

# **14 “Knowledge Intensive Entrepreneurship Fostering Digital Society”**

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## **14.1 Abstract**

The history of active digitalisation started roughly from the invention of transistor. After microprocessors the digitalisation has followed the Moore’s law. Earlier digitalisation was clearly focused on technology sciences e.g. robotics, mobile phones, automation, intelligent vision, neural networks, 3D printing. Slowly also service and client based applications are in a more and more active role. Intelligent construction, intelligent clothes, clean tech, logistics, intelligent healthcare and whole social media. These topics among other things e.g. car tire with it’s own internet address, deal more and more with big data and step by step the whole society is under digital control and guidance and also the intelligent innovation and development procedures are run by complicated digitalised algorithms.

The above development gives us huge challenges and a great part of them are developed, activated and used and the most potential results are run as profited business. On the other hand how many challenges are lost, destroyed, never found or have not got correct push or start-up actions? Anyway the main thing is that to run and mutually develop this digitalised society is knowledge intensive entrepreneurship. It includes two principles. The first one is that the new enterprises are based on higher education to guarantee the updated knowledge in the young brains. The second one is the role of higher education which is integrated also in the succession procedures of enterprises because that just the point to evaluate present business ideas and take into account business challenges of digital society.

Finnish universities of applied sciences (UAS) have developed several successful activities for promoting entrepreneurship. In this presentation the possibilities of knowledge intensive entrepreneurship are discussed. The discussion is based on the progressive results and the models which are developed during the last years.

Great demands are also set for universities (Entrepreneurial University) where knowledge intensive entrepreneurship is successfully moving ahead. The strong strategic and operational commitment is one of the main things.

Discussion is based on authors’ diverse and active experiences, research activities and observations in promoting entrepreneurship in UASes and Universities.

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## **14.2 Introduction**

### **14.2.1 Big data and digitalisation**

In the following we are simply following discussions in Finnish professional media about big data and digitalisation. In car production processes via industrial internet new software, new services are produced. At the same time risk of information security are increased (Juha-Matti Mäntylä, Talouselämä 13, 2.4.2015).

Tekes - the Finnish Funding Agency for Innovation has activated new programs for the digitalised future of Finland:

### **14.2.2 5th Gear 2014–2019**

The 5thGear programme aims to solve challenges related to the next generation wireless data communications, the creation of new business, and rocketing Finland as the leading target for international investments.(Tekes.fi/5g)

### **14.2.3 Industrial Internet – Business Revolution 2014–2019**

The programme aims to renew the business operations of companies through the Industrial Internet and encourage companies from different fields to engage in new kinds of cooperation.(Tekes.fi/ti)

### **14.2.4 Bits of Health 2014–2018**

The programme is mainly intended for companies that utilise digitalisation and strive for international growth and that develop products and services promoting health, the early diagnosis of illnesses, health monitoring and personalized treatment.(Tekes.fi/terveyttabiteista)

Study about the fishermen of big data is telling that most of the bidies in Finland are keeping silent about their project of big data. (Ari Saarelainen, tivi, January 2015, tivi.fi)

Government and cities and pioneers are also very active with digitalisation and e.g. fresh publication of Ministry of Employment and the Economy of Finland is studying how digitalisation is changing the service sector as strongly as in industry creating new business possibilities and new type of entrepreneurship. (Ministry of Employment and the Economy Publications 12/2015, tem.fi)

The above cases are very faraway from the first step of active digitalisation which started roughly from the invention of the transistor. After microprocessors the digitalisation has followed the Moore´s law. Earlier digitalisation was clearly focused on technology sciences e.g. robotics, mobile phones, automation, intelligent vision, neural networks, 3D printing. Slowly also service and client based applications are in a more and more active role. Intelligent construction, intelligent clothes, clean tech, logistics, intelligent healthcare and whole social media. These topics among other things e.g. car tire with it´s own internet address, deal more and more with big data and step by step the whole society is under digital control and guidance and also the

intelligent innovation and development procedures are run by complicated digitalised algorithms.

### **14.3 What does our society look like?**

When we are discussing the huge possibilities of digitalisation in business and society it is also worth thinking about how our society looks and how progress coincides with digital success?

The global population and net productivity have roughly doubled during the last 50 years. Additionally living standards in western economies including Japan has tripled during the last 50 years and now also China and others are increasing their living standard with the same rate as western economies. Although the rate of western economies is slowing down ([www.ggdc.net/MADDISON/oriindex.htm](http://www.ggdc.net/MADDISON/oriindex.htm), [esa.un.org/undp/wpp](http://esa.un.org/undp/wpp)).

Technology is the main element in Finland when the reasons of the work productivity are discussed. Additional elements are education and investments. Knowledge intensive entrepreneurship is an important element of future growth and it is also necessary when we are discussing the real use of big data.

Planetary boundaries could have drastic effects on the progress of digital society e.g. climate change, nitrogen cycle, rate of biodiversity loss (Rockström et al 2009, Planetary Boundaries: Exploring the safe Operating Space for Humanity). This also connects the aspects of decoupling that the environmental impacts decouples economic activity ([gci.org.uk/Decoupling\\_Report\\_English.pdf](http://gci.org.uk/Decoupling_Report_English.pdf)).

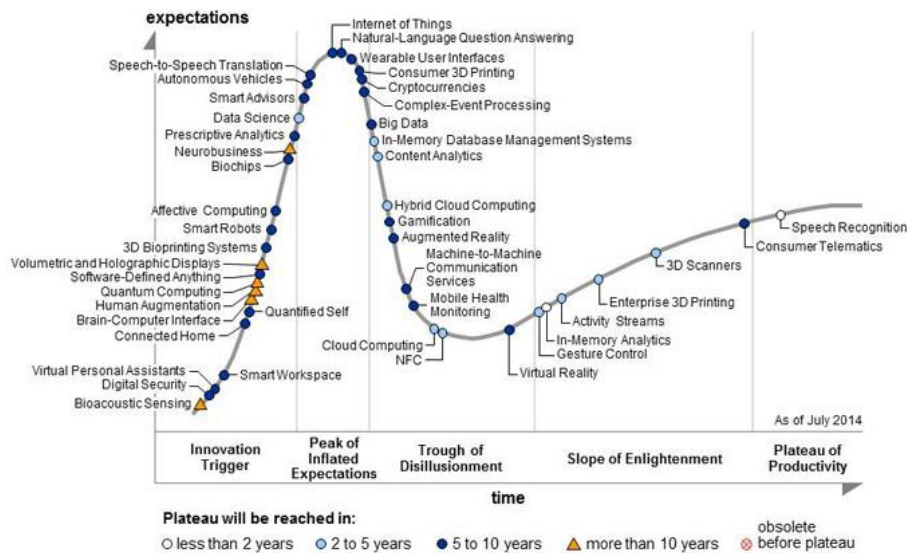
### **14.4 Snapshots of digital society**

In the following we will give some examples of digital business/products for the background of the chapter “Entrepreneurial university”.

Freely available operating systems are good examples about free distribution just like games, you are getting something free but you pay for additional or professional features. The earning logic based on that distributed volumes are thousands normally millions. One basic feature is also that you can distribute but you can still keep it also yourself. Digital distribution of music is also the same but it’s nature has already felt changes in digital downloads and physical shipments. Net e-business is still only using digital routing instead of conventional logistic. We have different free distribution models from history e.g. Maxwell equations where you didn’t get any earnings about the equations itself and real winnings were coming if you was engaged with application product.

E-health is one of very active field of digital information but still we are in the situation that digitalisation is used for data storage picking up data and storing the data and essential intelligent applications are lacking to minimize the conventional work not only adding the work load of health professionals.

Gartners hype curve (Gartner Research May 2003) is also important to keep in mind because there are so many inventions which takes too long to get to market or never reach the level of profitable business.



## 14.5 Entrepreneurial university

Entrepreneurship in Finnish universities of applied sciences (FUAS) has increased tremendously during the last decade. Entrepreneurship has taken a position as a part of educational processes and educational programs including also real start-ups of enterprises during studies and also as a result normal incubating processes. Also special succession schools are organized in some universities as a part of degree studies for special group of multi-discipline students. Additionally entrepreneurship is active process in master programs, which are focused into management, entrepreneurship and social and health care.

The above great progress in FUAS is partially or totally followed by the strategic decisions just like Turku University of Applied Sciences (TUAS) and Satakunta University of Applied Sciences (SUAS). In both universities entrepreneurship was stated in the strategy as one of the primary goals. Moreover the full commitment of higher management is given which is one of the main criteria to guarantee the progress of entrepreneurship in the university and also the activity of staff who were interested to develop entrepreneur in education and in action. Following our experiences we do argue that these two points are the most essential ones to start to develop entrepreneurship in higher education, but it is also necessary to have support and order from surrounding society (Mertanen, O., Lähdeniemi, M. and Neuvonen-Rauhala, M-L. 2008. Entrepreneurship in action as a result of university's strategic choice. Promoting Entrepreneurship by Universities. The Proceedings of the 2nd International FINPIN 2008 Conference Hämeenlinna, April 20-22, 2008).

## 14.6 Enterprise Accelerator

Enterprise accelerator in Satakunta University of Applied Sciences is a combination of knowledge intensive studies and entrepreneurship. It creates student opportunities to become entrepreneurs during their studies. The students have the possibility to establish an enterprise or to continue existing business by succession or business transfer. Students' collaboration with industry during the studies and the R&D - projects as part of studies are creating business ideas and help to find the first clients

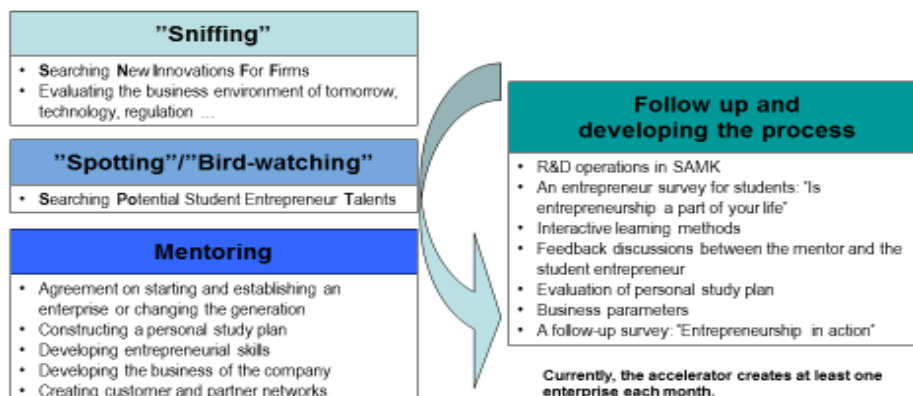
or partners for students own business. Accelerator’s mentoring process helps create needed competences, offers technology and know how backup, ensures basic business skills, and helps in building networks and partnerships. Mentors support the students and the process encourages also growing international. The model what we also offer as an activation method for businesses of digital society is following the figure underneath.

### A new student’s development to a partner



Incubation process consists of following steps:

### Incubator Process of Enterprise Accelerator A modern combination of research and development and higher education



It also fits to generational re-placement process and is giving a good tool to refresh conventional business to the direction of digital business.

## Generational re-placement process

1. Spotting and matching potential entrepreneurs with re-placement cases
  2. Trust creation
  3. Interaction
  4. Business evaluation
  5. Technical change
  6. Business development
  7. Process evaluation and follow up
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### **14.7 Business succession school**

The Business Succession School deepens entrepreneurship education from the point of view that in the future there will be changes in the ownership, either because of corporate acquisitions, or because the ownership is passed on between generations in a family business. In Finland there will be about 70 000 enterprises in front of this problem in the near future and the number has been estimated to be over 650 000 in EU.

The BSS in Turku University of Applied Sciences is a training program integrated into the university degree, which provides skills to plan and run controlled transmission of the enterprise to the student, who will be able to continue the profitable business and ensure business regeneration. Economically it's sensible to protect the future of active enterprises compared to the alternative that enterprises finish their operations because of the lack of a successor and somewhere else somebody starts a new business with all the challenges and costs. The SME's need a program like Succession School to maintain entrepreneurship, their competitiveness and growth.

In the Succession School the network of higher education institutions provide a training program which starts with the entrepreneurial potential tests for the students and their personal successor curricula. The training program contains theoretical and practical items about business analyses and business improvement. Pedagogically we use e.g. project work, team work and working in an enterprise, in addition to the traditional lesson methods to activate the innovativeness of the students.

If a student has a family business background, the enterprise and the owner are involved from the beginning. If a student is willing to buy a business but he/she doesn't have one, the institution searches it with the help of public business organizations and the enterprise is involved, when the program is realized. It's very important that during the succession process the renouncing enterprise and the entrepreneur accept the process and work together. The transfer can take 3-5 years.

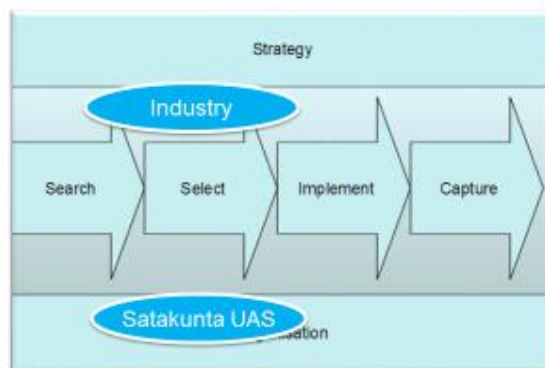
As a result the BSS will ensure the success of an enterprise, which is facing ownership change

When the Succession School is realized internationally, the network of institutions, enterprises and students all benefit from exchange of information, developing the program and creating business contacts. The project produces economical

disquisitions, training packages, a study module and a final report as a concrete outcome. It provides a basis for training to changes of ownership and promotes entrepreneurship.

The above models fit also very well into the process of collaborative innovation.

## Collaborative Innovation



*General and simplified model for innovation process based on Tidd and Bessant 2009, p. 44*

## 14.8 Conclusions

Digital society is moving us from conventional industry to service business where also environmental and lifecycle parameters are being accounted for. Digital business is giving reason for economic growth.

Private sector is doing business but in the case of digital society it is giving a reason to ask do we need also governmental information plans and/or is policy of information also necessary?

Tailored university studies just like enterprise accelerators and business succession schools are necessary because digital business entrepreneurs have mainly university studies and even updated ones.

Digitalisation is giving also for several enterprises in conventional field to go on with profitable business by refreshing up their business ideas with adding value from digitalisation.

The future of digitalised business society based on two principles which set great demands for universities (Entrepreneurial University) where knowledge intensive entrepreneurship is successfully moving ahead.

The first one is that the new enterprises are based on higher education to guarantee the updated knowledge in the young brains.

The second one is the role of universities (universities and universities of applied sciences) which is integrated also in the succession procedures of enterprises because that just the point to evaluate present business ideas and take into account business challenges of digital society.

Finally the main thing is to run and mutually develop our digitalised society with knowledge intensive entrepreneurship.

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