



# Spirit Ventures

Turning Research into Successful KET Companies

**European Photonics Roadshow – Stockholm – June 11, 2018**

# KETs\* are Everywhere: No KETs → No IOTs, No EVs, No new mobiles

\* KETs are Key Enabling Technologies like Photonics, Photovoltaics, Nanotechnology, Printed Electronics, Semiconductors, Material Science, Advanced Manufacturing, and Bioengineering

**Information** Societal Challenges: Digital Society



Och, osynliga för det mesta:  
Mikro-nano-elektronik, Nanoteknologier  
Avancerade material, Mikro-mekanik (Silix)

**Optiska nätverk**



Lätta delar =  
Laser-  
Tillverkade



**HEALTH**

**SOCIETAL CHALLENGES**

Effective timely detection and diagnostic systems

**REAL-TIME AVIAN FLU TEST**



Advanced materials  
Microelectronics  
Nanotechnologies  
Photonics  
Biotechnologies



**Figure 3: Advanced products are a combination of KETs: the case of real-time avian flu monitoring**


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**ENERGY**

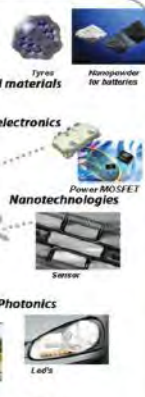
**SOCIETAL CHALLENGES**

De-carbonisation of transport

**ELECTRIC VEHICLE**



Advanced materials  
Microelectronics  
Nanotechnologies  
Photonics  
Biotechnologies



**Figure 1: Advanced products are a combination of KETs: the case of the electric vehicle**

Source: Pierre-Yves Fonjallaz, Photonics Sweden



# KETs Address Large Markets

## Established Markets Sample:

- Semiconductors: \$366B<sub>1</sub>
- Semiconductor Eqpt: \$41B<sub>2</sub>
- **Photonics: \$510B<sub>3</sub>**
- Solar Energy: \$491B<sub>4</sub>

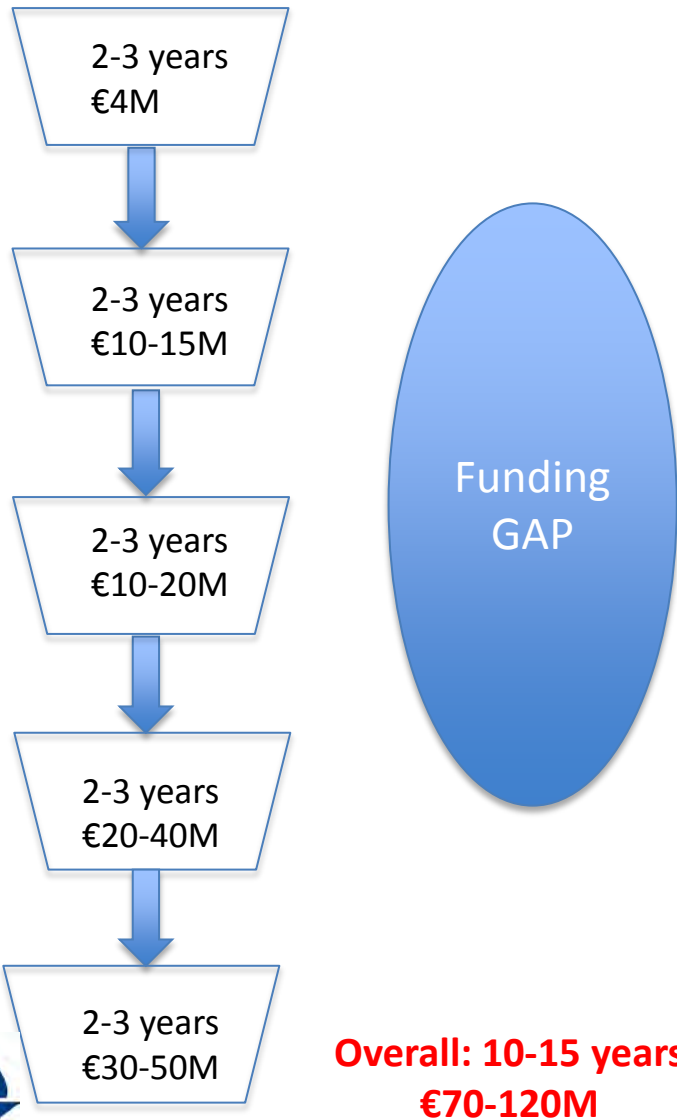
## Emerging Markets Sample:

- Augmented Reality<sub>5</sub>:
  - 2016: \$1.2B
  - 2020e: \$90B, of which HW is \$40B
- Virtual Reality<sub>6</sub>:
  - 2016: \$2.7B
  - 2020e: \$30B, of which HW is \$8B
- Electric Vehicles<sub>7</sub>:
  - 2016: \$103B
  - 2020e: \$213B

Sources: 1 IC Insights, 2 SEMI, 3 Transparency Research, 4 Allied Market Research, 5 Digi-Capital, 6 Ibid., 7 Allied Market Research

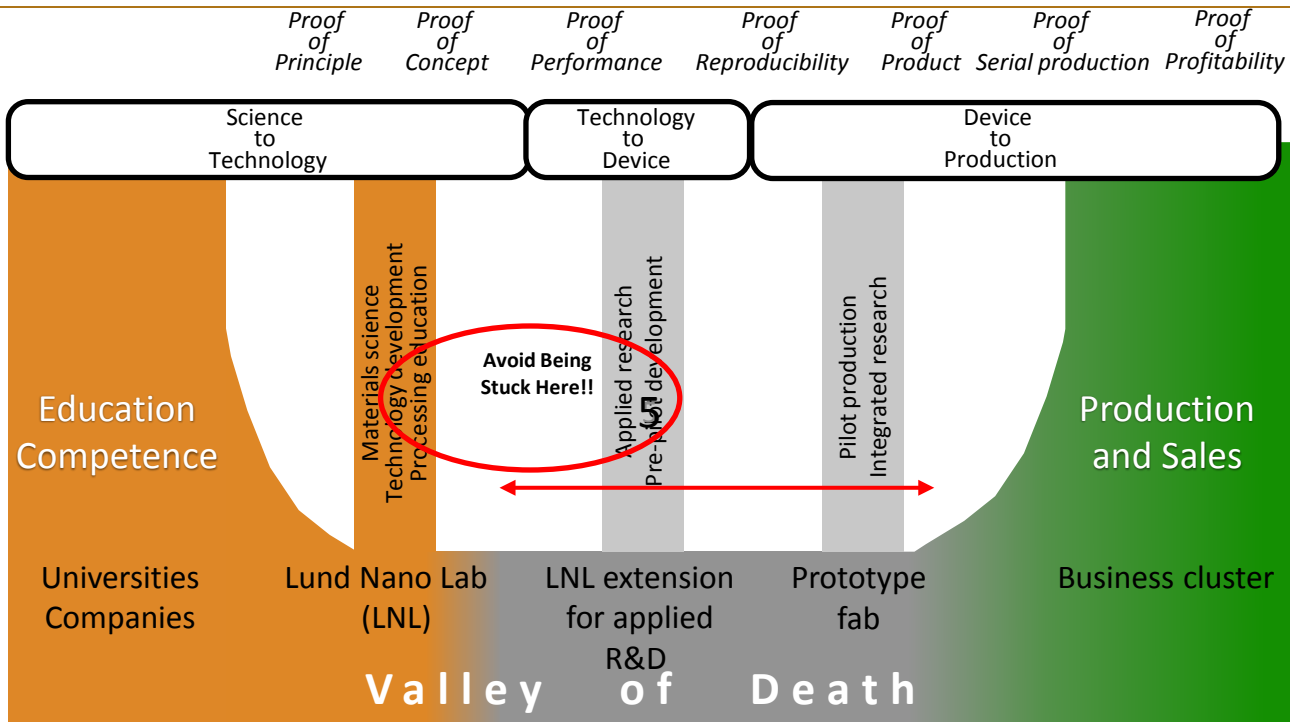


# But developing KET companies takes time and money



- Proof of concept
- Local soft funding available for co-investment
- Proof of performance
- VC funding near absent
- Proof of product
- VC funding near absent
- Proof of production
- Limited strategic co-investment available
- Proof of profitability
- Institutional late stage investment available

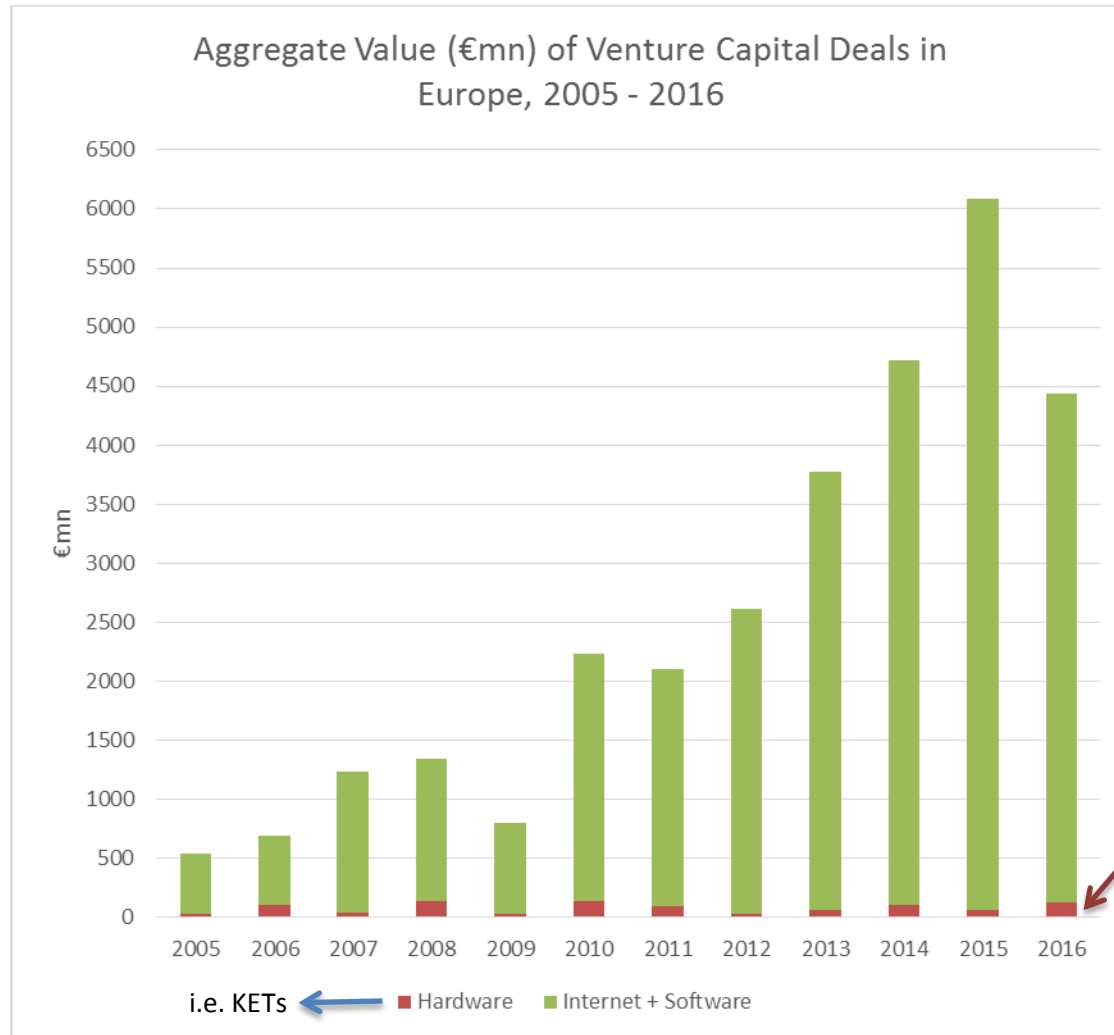
# Venture Funding: Valley of Death



VoD: 6 - 10 yrs



# Big VC funding gap for KET companies in the EU



Source: Preqin

Today's KET underfunding, can be tomorrow's market opportunity

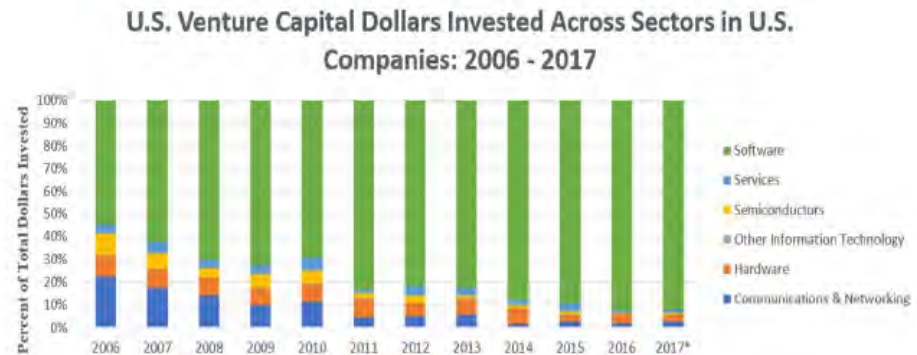
We need a new model to solve this Funding Gap!



# Similar VC funding gap for KETs in the US

## Venture Capital Investment Trends in the U. S.

- From 2006 – 2017, VC software investment: 15X investment in hardware and 30X investment in semiconductors
- Investments in software rose from 55% (2006) to 92% of total investments in 2017



The problem is VC's time horizons are too short and available capital too small for most KET companies. So, they have been investing in software and internet companies instead.



# Why focus on KETs?

- Sweden and other Northern Europe countries have a large, untapped opportunity to create significant KET technology companies
  - We traditionally had built major KET companies (e.g. Axis, Micronic, Arcam)
  - Today local KET cos are dead/zombie cos or being sold cheap to foreigners
  - As we are not giving KET startups the crucial funding to reach commercialization
- We invest significant R&D resources in KETs
  - Taxpayers fund University and Institute science
  - But innovative, deep technologies get stranded due to lack of VC funding
- We educate many talented scientists and engineers
  - Our universities produce excellent scientists and technologists
  - Where will they go after graduation if no local companies use their skills?
  - So why waste time and money on research, if you never commercialize it?
- Is there a Solution to this Funding Gap, so that KETs can commercialize their technologies?





# Thank You

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