

KETs and PPPs in HORIZON 2020

Key Enabling Technologies and Public-Private Partnerships to address Competitiveness and societal challenges

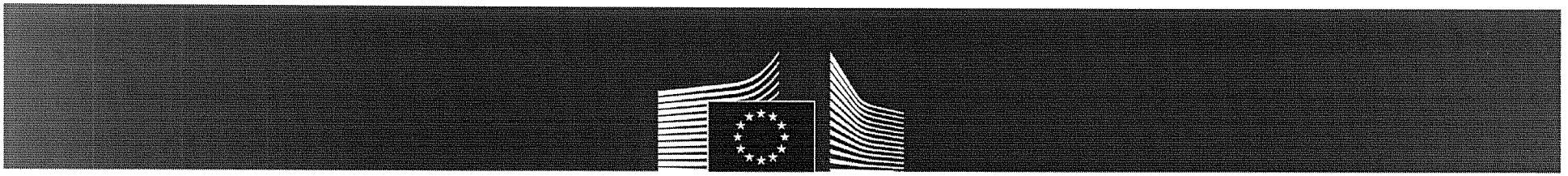
Herbert von Bose

Director

Industrial Technologies,

DG Research & Innovation

Research and Innovation



Horizon 2020

Excellent science

- European Research Council
- Future and EmergingTechnologies
- Marie Curie actions
- Research infrastructures

Industrial leadership

- Leadership in enabling and industrial technologies
- Access to risk finance
- Innovation in SMEs

Societal challenges

- Health, demographic change and wellbeing
- Food security, sustainable agriculture, marine and maritime research & the bioeconomy
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Climate action, resource efficiency and raw materials
- Inclusive, innovative and secure societies

Research and Innovation

European Commission

Elements of a European strategy for KETs
COM(2012)341 adopted on 26 June

- Huge potential for jobs
- Prioritising KETs in H2020, Cohesion Policy, EIB lending
- Coordinated EU and national activities
- Cross-fertilisation of KETs
- Modernisation of State Aid rules, incl. R&D&I
- Ensure a favourable trading environment for KETs (e.g. market acces, IPR protection)
- Addressing skills – development and supply

European Commission

What are KETs

- **Six strategic technologies with economic potential, contribution to solving societal challenges and knowledge intensity**
  - Nanotechnologies
  - Advanced Materials
  - Micro- and nano-electronics
  - Photonics
  - Biotechnology
  - Advanced Manufacturing
- **Knowledge- and Capital intensive**
- **Cut across many sectors**

European Commission

Indicative breakdown of funding

(million euro, 2014-20, at constant 2011 prices)

Leadership in enabling and industrial technologies	**13 781**
ICT (Photonics, nano- and microelectronics*)	***7 939***
Nanotechnologies, Advanced Materials, Advanced Manufacturing*	***(1 588*)***
Biotechnology*	***3 797****
Space	***509****
(*total KETs)	***1 536***
	(5 894*)
Access to risk finance	**3 538**
Innovation in SMEs	**619**

Combining several key enabling technologies for advanced products



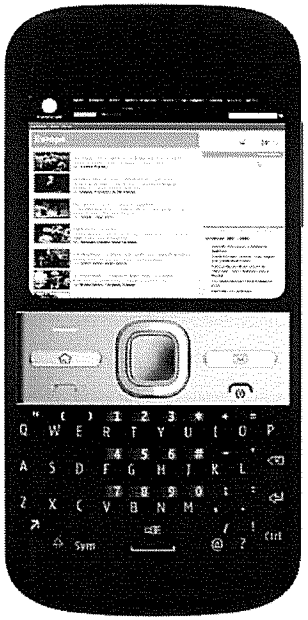
Societal Challenge

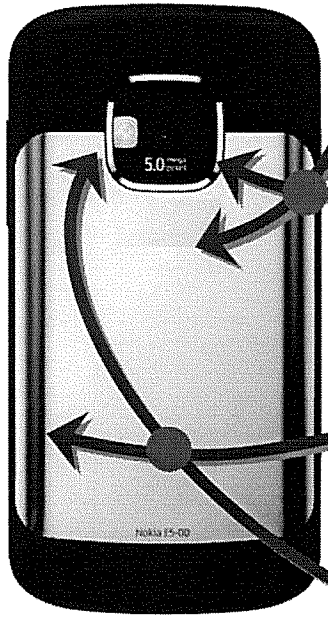
Information



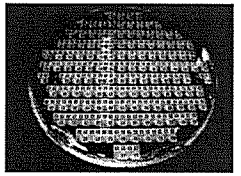
Digital Society

Smartphone



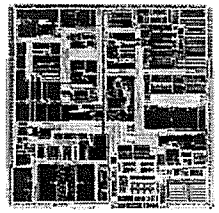


Advanced materials



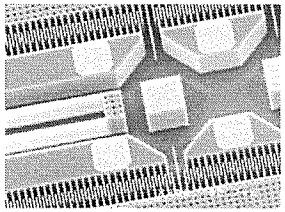
substrate

Microelectronics



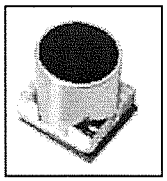
Chip

Nanotechnologies



Mems

Photonics



Camera

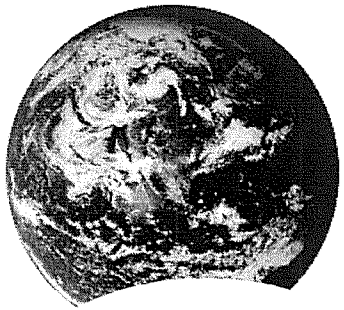
Biotechnologies *Next ?*



Combining several key enabling technologies for advanced products

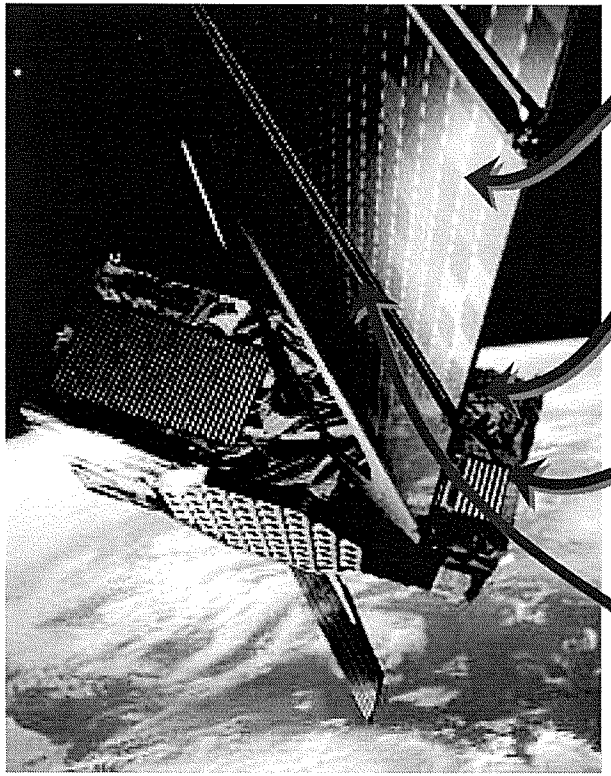
Societal Challenge

Information

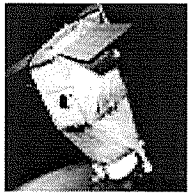


New services & applications (navigation, environment, security, GMES, telecommunications, meteorology)

Satellite & communication

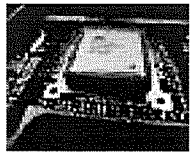


Advanced materials



Harsh environment skin

Microelectronics

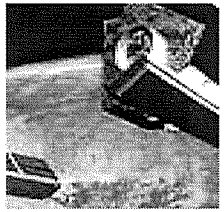


Rad hard



RF

Nanotechnologies



Sensors and radars

Photonics



PV modules

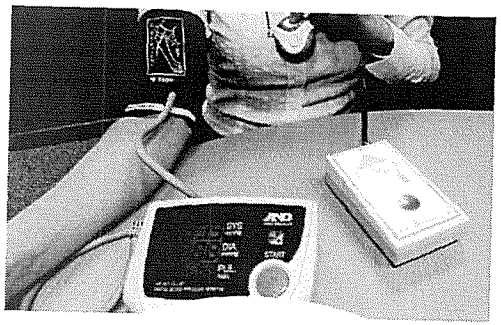
Biotechnologies



Combining several key enabling technologies for advanced products

Societal Challenge

Health

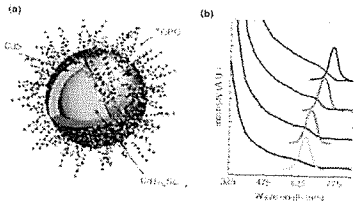


Effective timely detection and diagnostic systems

Real-time Avian flu test

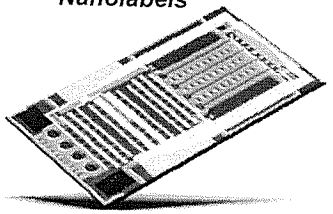


Advanced materials



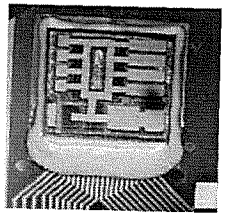
Nanolabels

Microelectronics



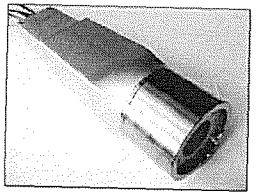
Biochip

Nanotechnologies



Fluidics

Photonics



Optical detection

Biotechnologies



DNA



Combining several key enabling technologies for advanced products

Societal Challenge

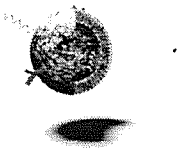
Health

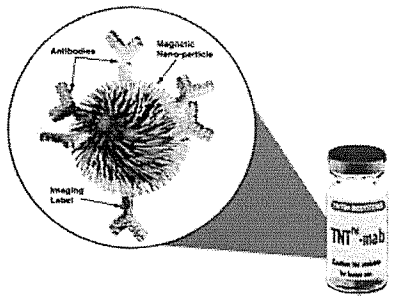


New nanotechnology-based diagnostics

New target drug delivery and release

Regenerative medecine





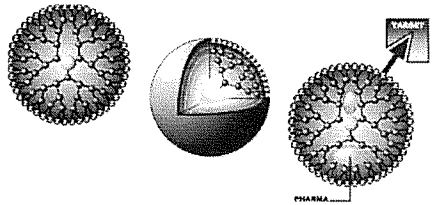
Advanced materials

Nanomedicine

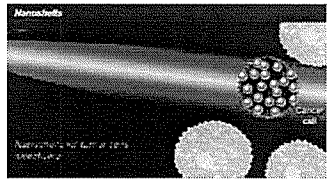
Microelectronics



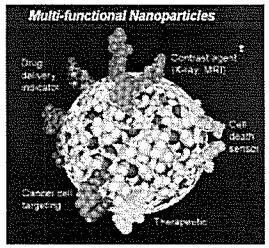
Nanotechnologies



Photonics



Biotechnologies

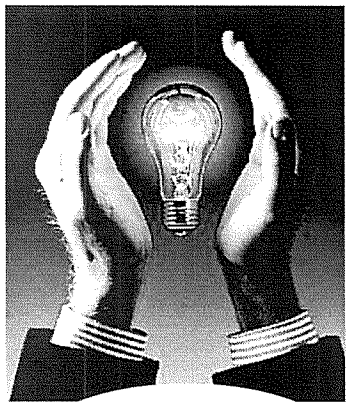




Combining several key enabling technologies for advanced products

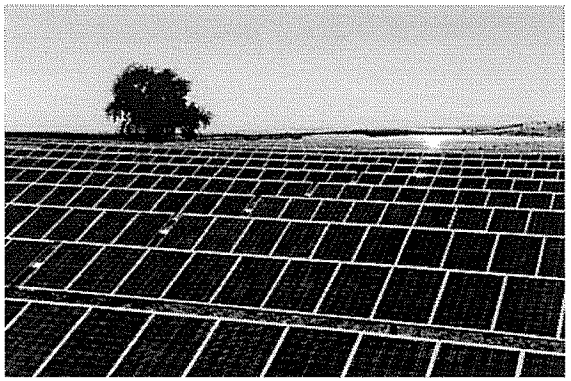
Societal Challenge

Energy

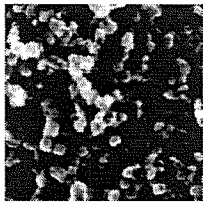


Combating climate change

Photovoltaïc cells

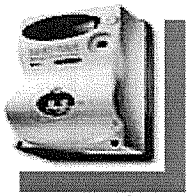


Advanced materials



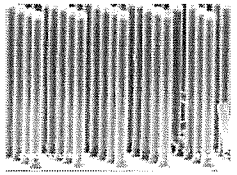
Organic product

Microelectronics



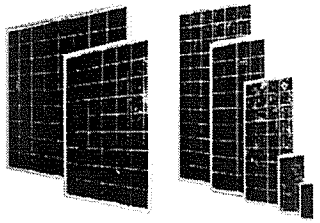
Smart meter for utility energy consumption

Nanotechnologies



Si Nanowire

Photonics



PV modules

Biotechnologies

European Commission

The issues regarding KETs

Europe has strong positions in science and in patenting activity

EU actors at top of patent ranking in each KET

But there is a gap between the technology base and the manufacturing base

We need to add

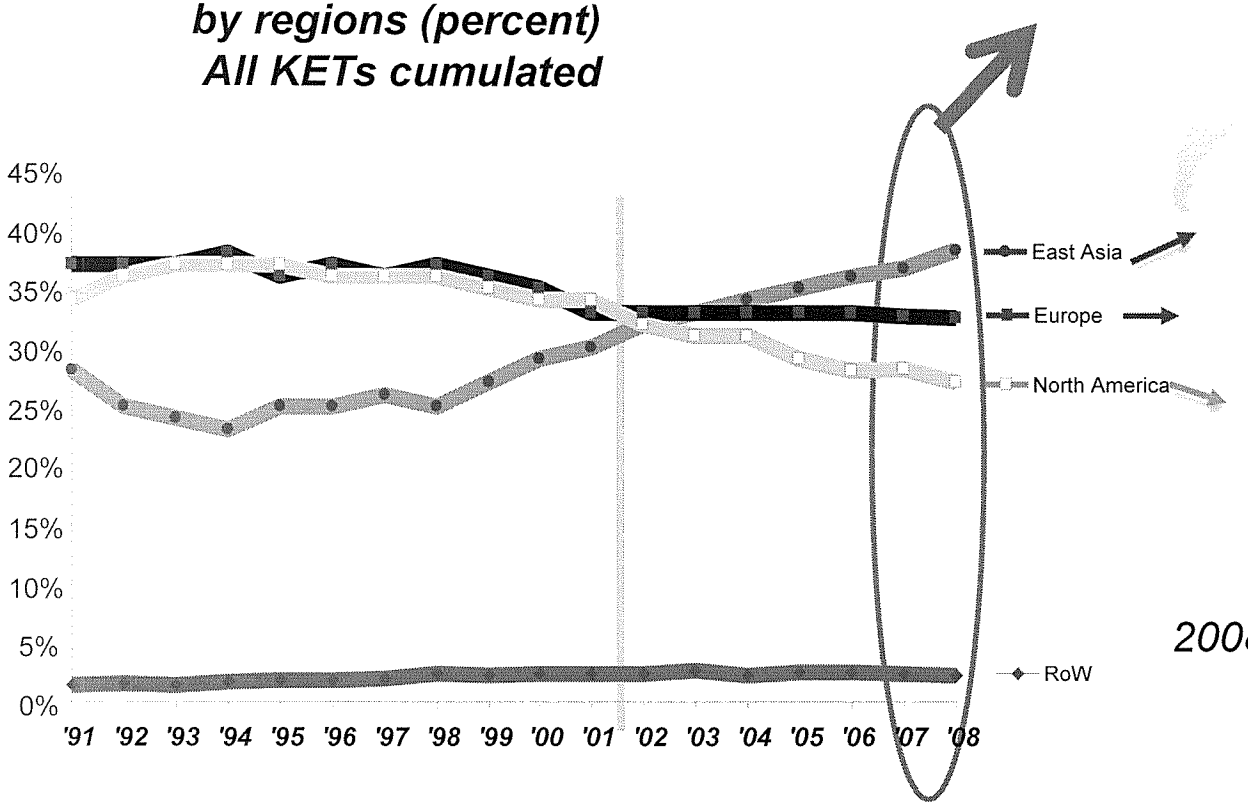
- **product development (e.g. demonstrators);**
- **competitive manufacturing**

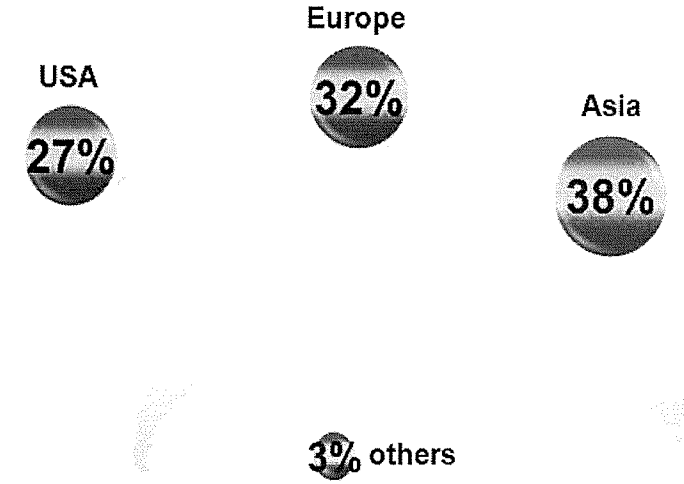
to technology



Concerning patent activity Europe is still in the KET's race

Shares of EPO/PCT patents by regions (percent) All KETs cumulated





2008 priority patents (published)

Source: European Competitiveness Report 2010, European Competitiveness in Key Enabling Technologies (TNO/ZEW), TKM 2011

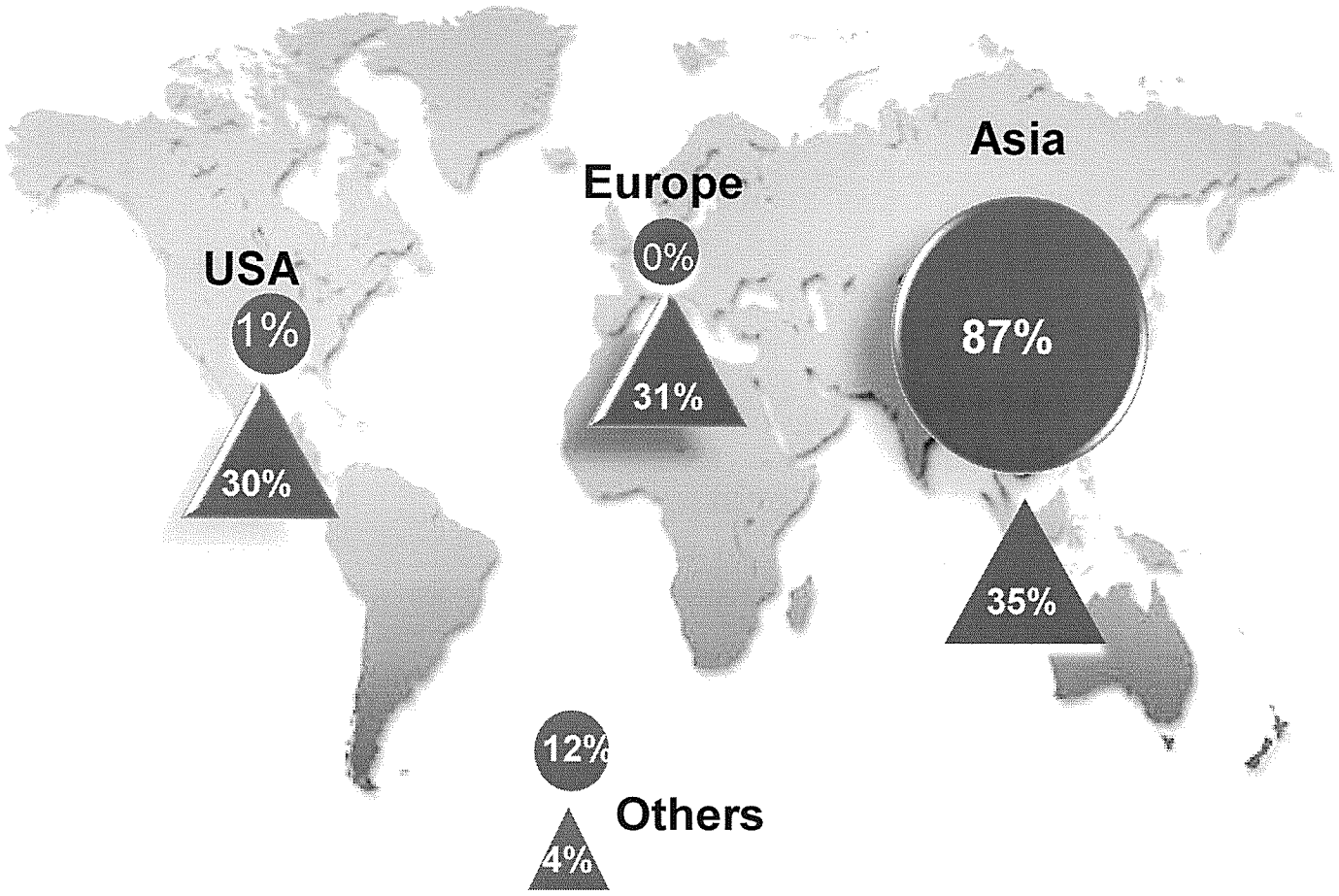


Disconnection between patents share and manufacturing share

Case Study: Li-ion battery production

% Li-ion battery cell production share in 2008

% Advanced Material Patent Share



Source: European Competitiveness Report 2010, European Competitiveness in Key Enabling Technologies (TNO/ZEW), CGGC, Lithium-ion Batteries for Electric Vehicles : THE U.S. VALUE CHAIN, October 2010



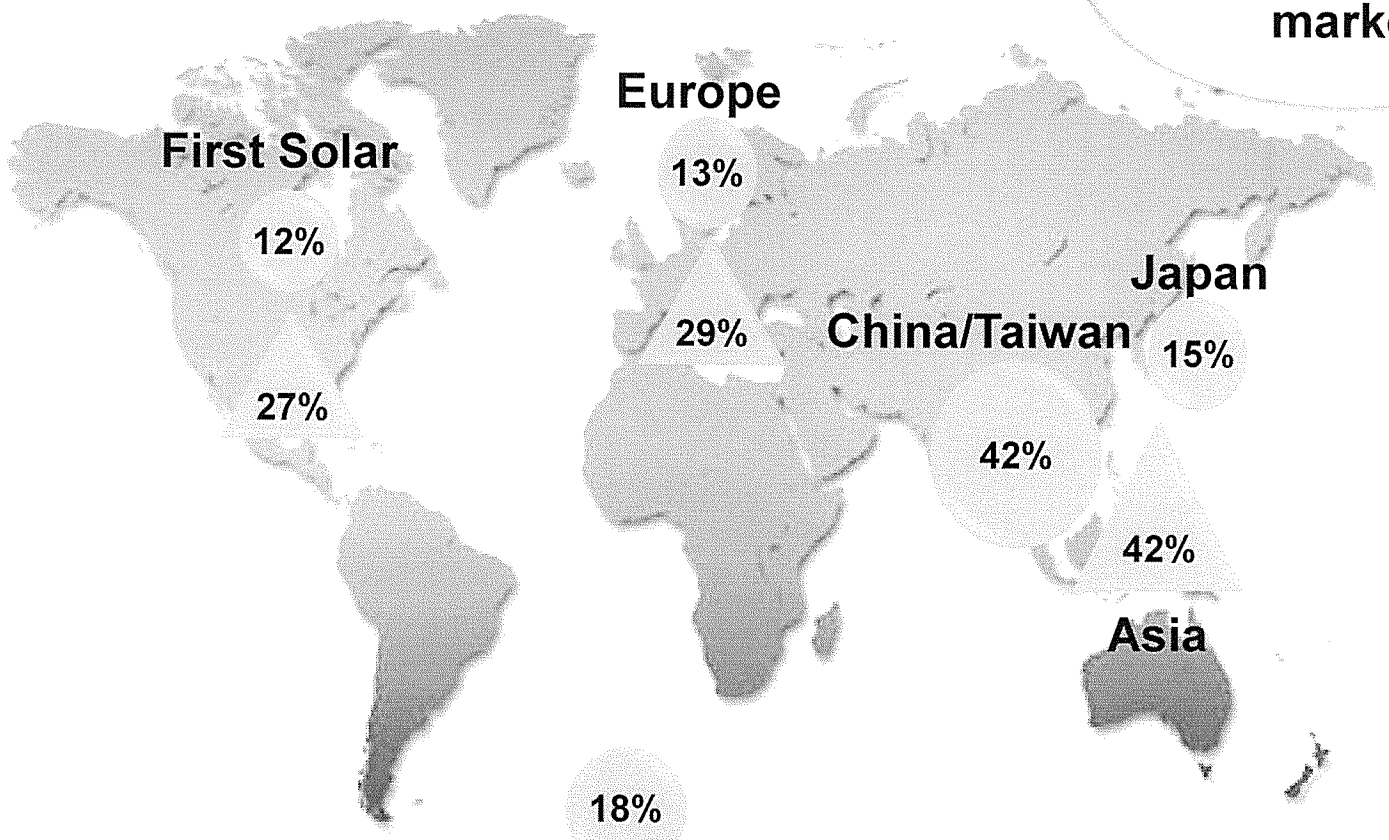
Disconnection between patents share and manufacturing share Case Study: PV Cell production

% PV cell production share in 2009

% Photonics Patent Share

Europe = 77 %

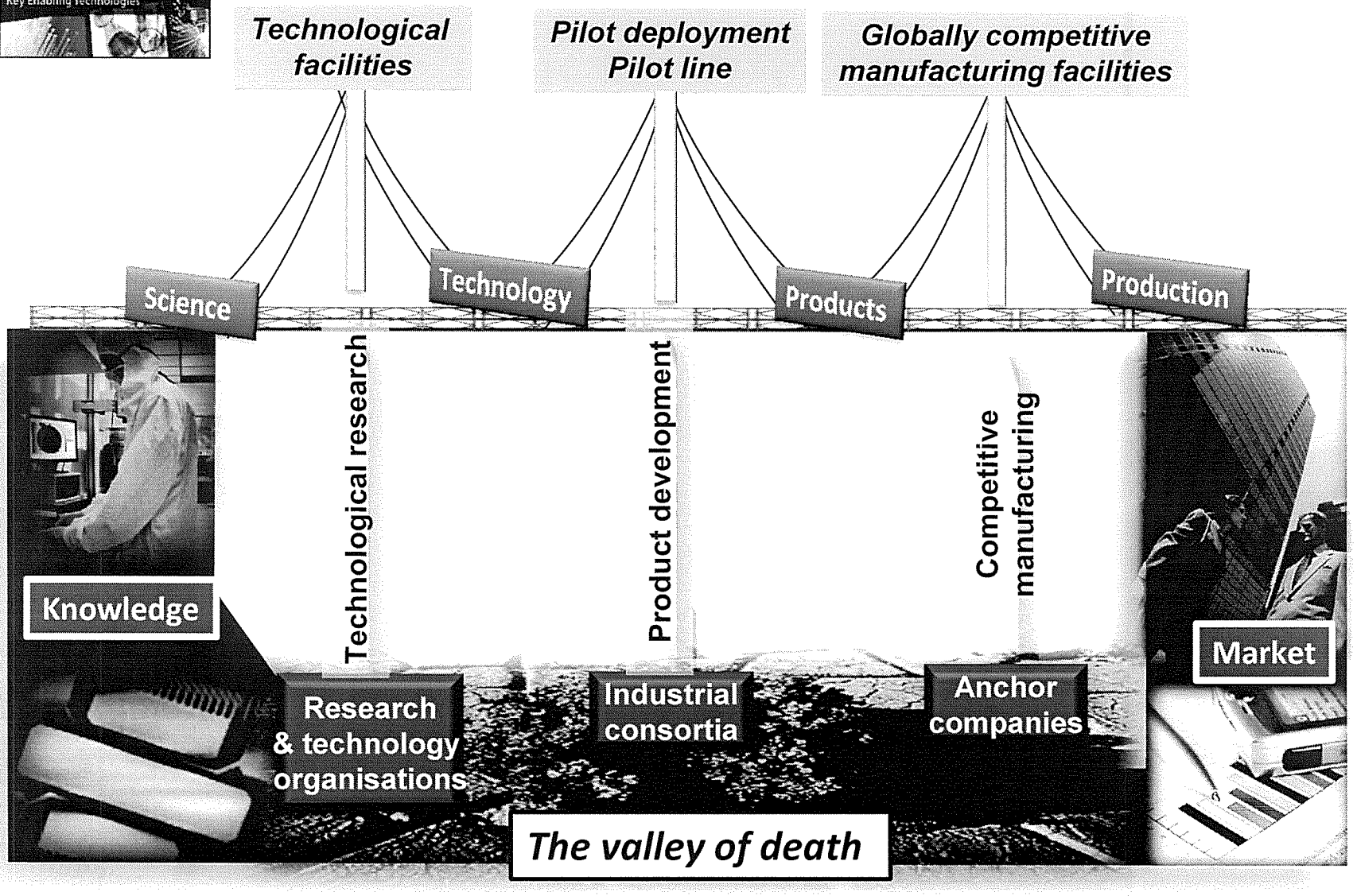
of global market



Source: Photon International Mars 2010, European Competitiveness Report 2010, European Competitiveness in Key Enabling Technologies (TNO/ZEW)
« JP Morgan, PV News, Oliver Wyman Analysis"



- The " three pillars bridge" to pass across the " valley of death "



European Commission

Leadership in Enabling and Industrial Technologies in Horizon 2020

A common approach to KETs (also covering ICT and Space)

Activities based on R&D&I agendas defined with industry and business, together with the research community, in a transparent way

Emphasis on technology development, large-scale pilots and demonstrators, prototyping and product validation

Specific support for cross-cutting KETs (multi-KETs)

Strong focus on leveraging private sector investment

European Commission

Public Private Partnerships

Article 19 Public-private partnerships

Public-private partnerships shall be identified in an open and transparent way based on all of the following criteria:

the added value of action at Union level;

the scale of impact on industrial competitiveness, sustainable growth and socio-economic issues;

the long-term commitment from all partners based on a shared vision and clearly defined objectives;

the scale of the resources involved and the ability to leverage additional investments in research and innovation;

a clear definition of roles for each of the partners and agreed key performance indicators over the period chosen.

Research and Innovation

European Commission

Public Private Partnerships

PARTNERING

Horizon 2020 includes scope and a clear set of criteria for setting up public-public and public private partnerships.

Public-private partnerships can be based on a contractual arrangement between public and private actors and can in limited cases be institutionalised public-private partnerships (such as Joint Technology Initiatives and other Joint Undertakings).



Thank you for your attention!

Find out more:

www.ec.europa.eu/research/horizon2020

