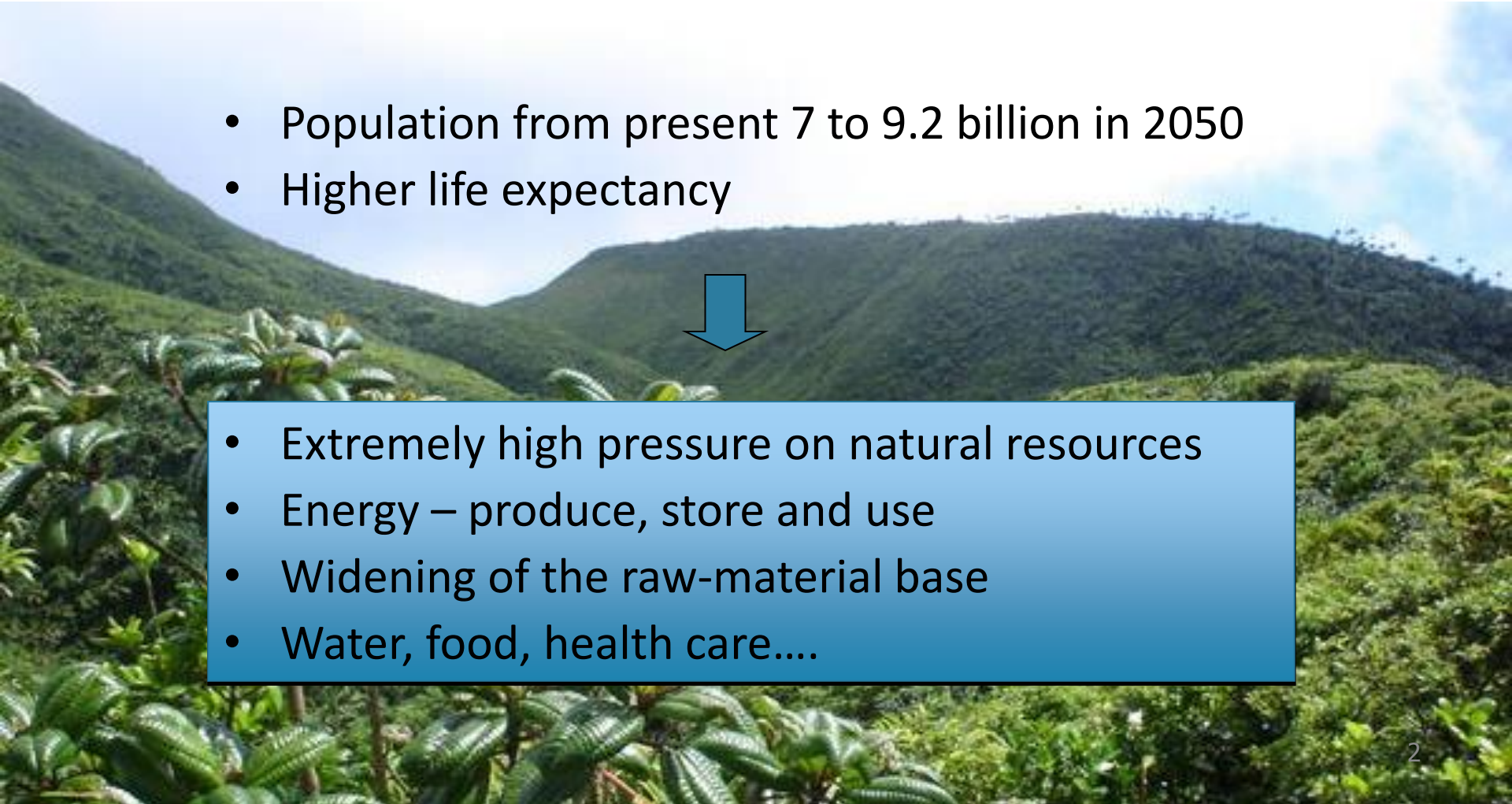
Addressing Research and Innovation at European level:
universities as partners for solving complex problems

Karin Markides
President and CEO
Chalmers

The ONE BIG Challenge

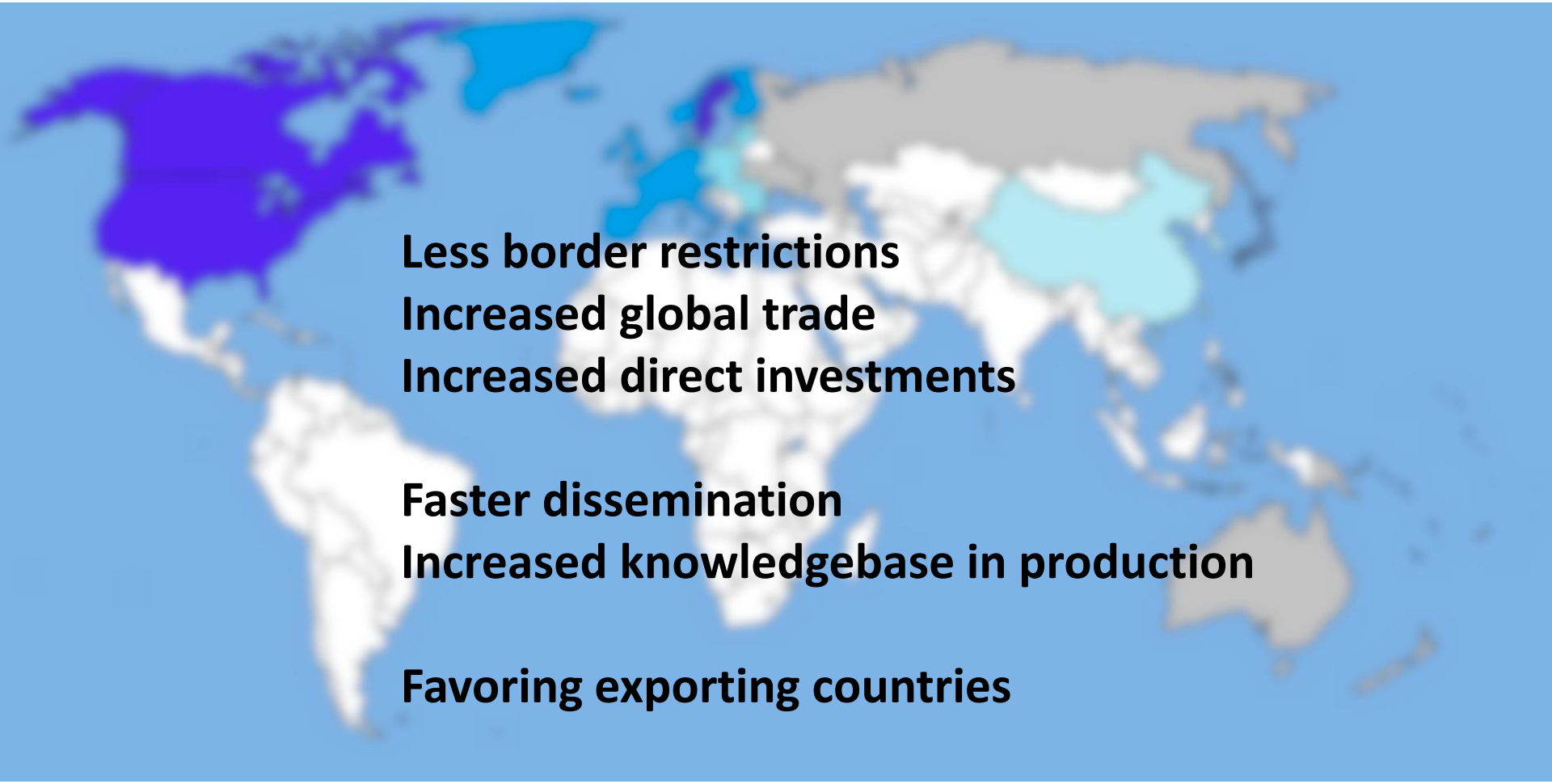
To Enable a Sustainable Future



- Population from present 7 to 9.2 billion in 2050
- Higher life expectancy

- Extremely high pressure on natural resources
- Energy – produce, store and use
- Widening of the raw-material base
- Water, food, health care….

Characteristic features of Globalization



Less border restrictions
Increased global trade
Increased direct investments

Faster dissemination
Increased knowledgebase in production

Favoring exporting countries

EU 2020 objective

- a smart, sustainable and inclusive economy
- the Member States shall deliver high levels of employment, productivity and social cohesion

Building entrepreneurial ecosystems

- Regions around the world are building up their innovative capabilities
  - Response to increasingly globalised and complex world

- Universities are often seen as the hub for these *"entrepreneurial ecosystems"*
  - Primary source of knowledge development and diffusion

"It was the ecosystem of large corporations, universities and start-up companies on the U.S. west coast that broke Nokia"

Jorma Ollila, chairman

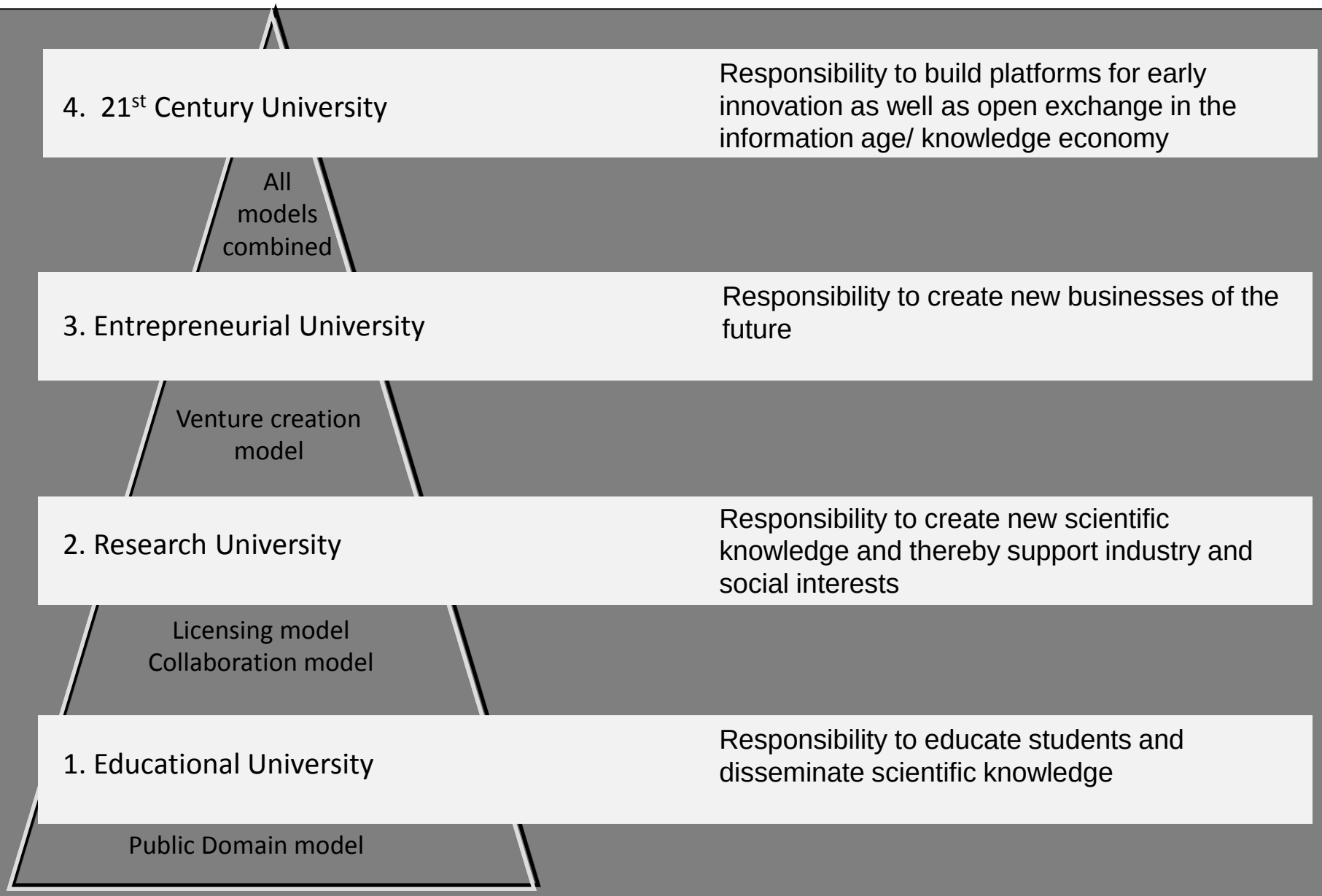
Seven key factors

when building entrepreneurial ecosystems

1. Senior leadership at the university
2. Team of entrepreneurial champions
3. Sustained commitment over decades
4. Substantial financial resources
5. Continuing innovation
6. Organizational infrastructure
7. Local, national and global partnerships

Fetters, Greene, Rice, Butler, 2010

The Role of the University is Changing over Time



Can universities become hubs for *"entrepreneurial ecosystems*?

Research

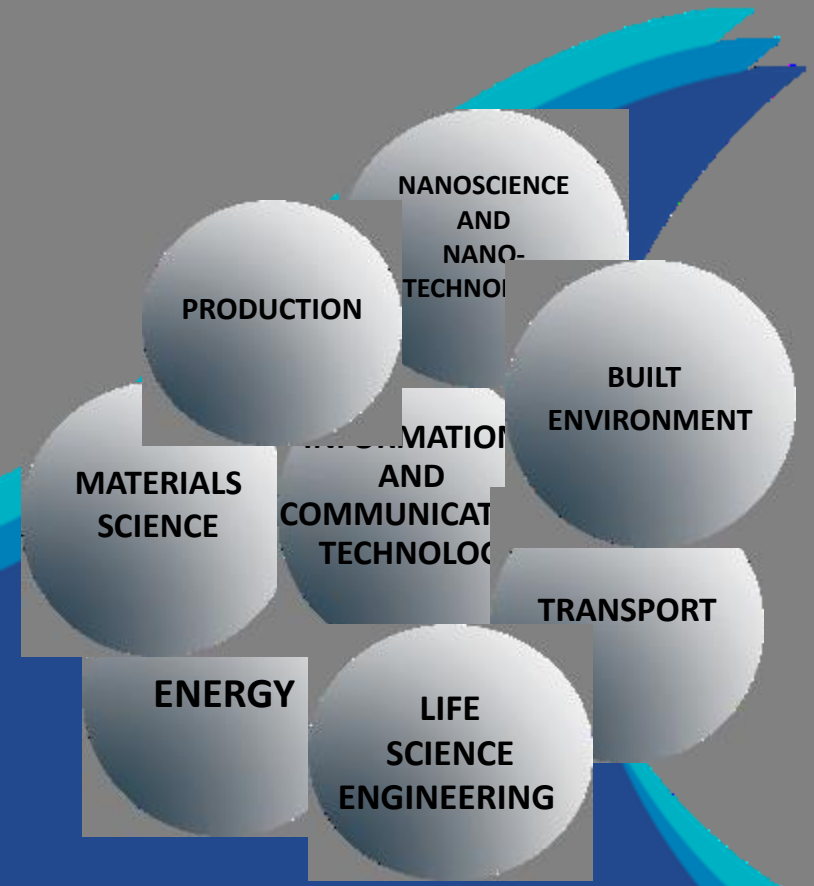
Education

Innovation

through:

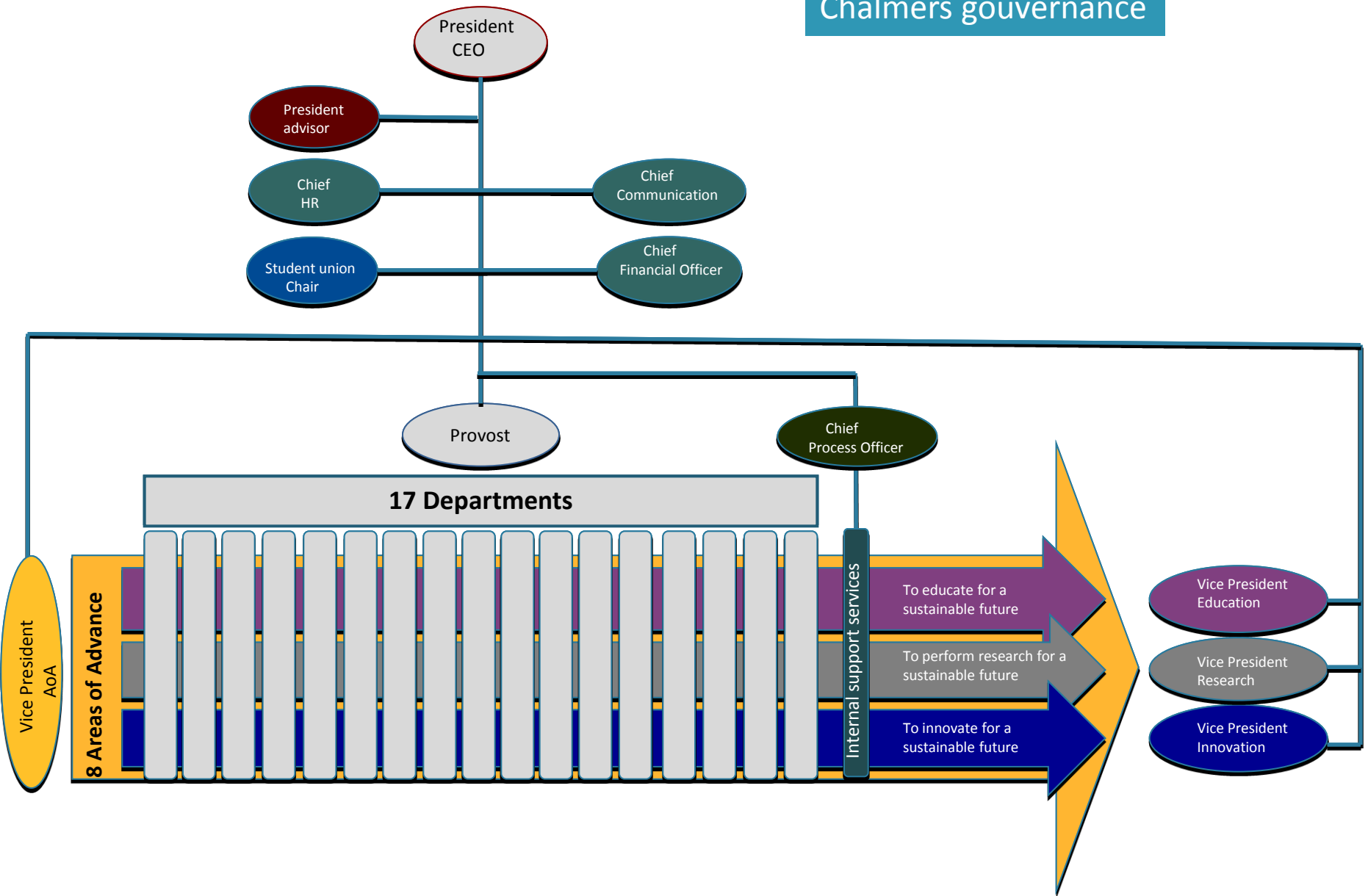
- INTEGRATION OF RESEARC
- NEUTRAL MEETING PLACE ERACTION
- TRUSTWORTHY DEVELOPM WLEDGE CLUSTERS
- LEADERSHIP OF INTEGRAT L AND SOCIAL VALUES

Added Values through Eight Areas-of-Advance



- Visibility and focus
- Attract young and senior top scientists/teachers/leaders
- Interaction across the knowledge triangle
- Incentives for continuous new inspiration
- Combined long-term strategy and focused projects
- Sustainable growth and development in society
- Visible added value to strong departments

Chalmers gouvernance



ENERGY Area-of-Advance

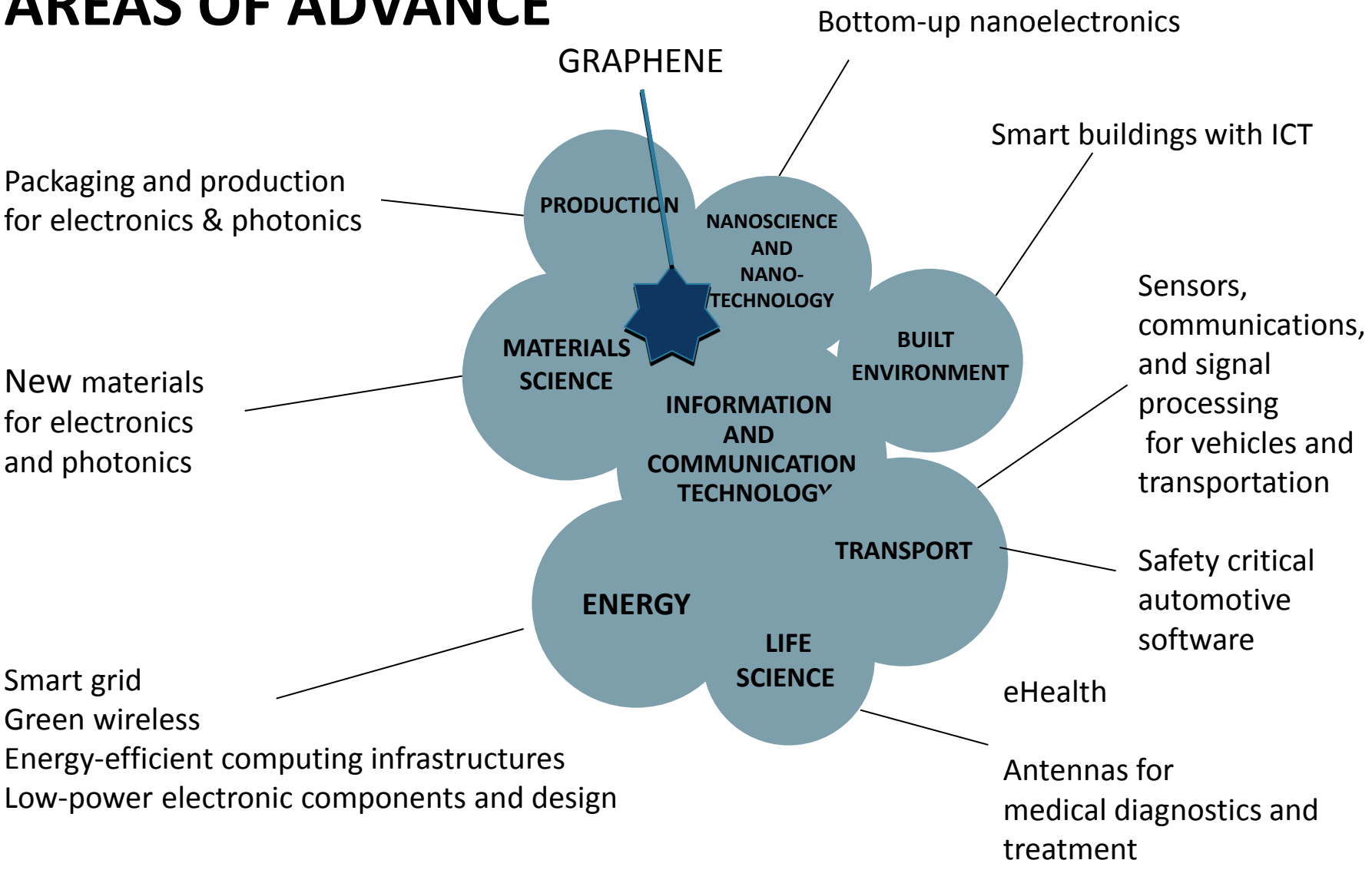
EXCELLENCE PROFILES

HEAT AND POWER GENERATION	COMBUSTION AND GASIFICATION	MATERIALS FOR ENERGY CONVERSION/ APPLICATION	TRANSPORT SYSTEMS AND INFRASTRUCTURE	BUILDINGS – ENERGY USE AND EFFICIENCY	INDUSTRY – ENERGY USE AND EFFICIENCY	ENERGY SYSTEMS
Smart Grids	Biomass gaasification	Materials for energy production and transfer	Combustion engines research	The building as a system	Energy efficiency and process integration	Global sustainable systems and bridging technologies
Wind Power	Carbon capture technologies	Materials for energy storage	Electric and hybrid vehicles	Construction and management processes	Industrial biorefineries	Technology impact assessment and innovating processes
Energy Storage	Combustion and corrosion using biomass and waste fuels	Materials for energy conversion	Renewable fuels	Energy use and technology integration in buildings	Process technologies	Local and regional energy systems planning
Solar Heating and heat pump Technologies			Sustainable transport solutions			
Nuclear Physics & Chemistry						
Fusion						

ACTIVE FIELDS

BASIC SCIENCE

LINKS TO OTHER AREAS OF ADVANCE



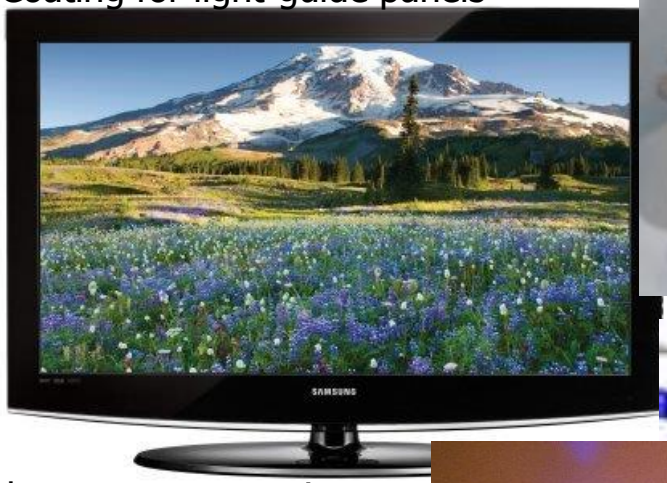
New opportunities

electronic materials

Encapsulation of electronics circuits

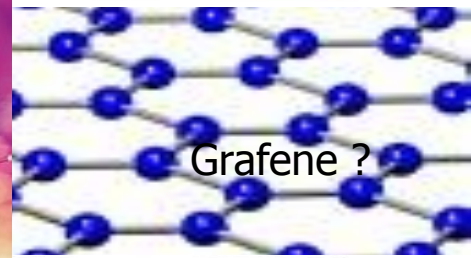
Polymers for low-viscosity ink-jet printing ink

Coating for light-guide panels



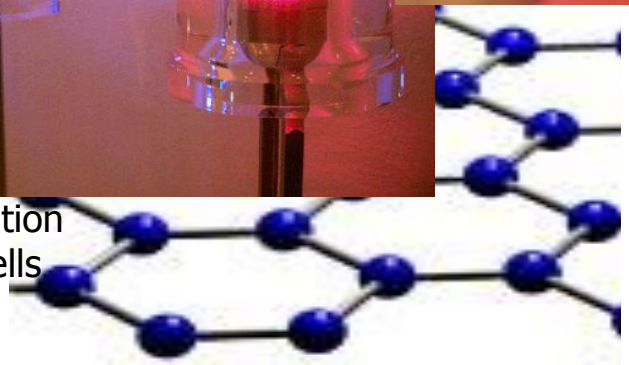
High refractive index coatings for optical conductors

Grafene ?



High-temeprature resistant polyester film as electronic substrate

Encapsulation of solar cells and LED's



Urethane acrylates for touch-screen panels

EU High Level Group Calls for Concrete Follow-Up Measures

VERHEUGEN: *European chemical industry is indispensable.*

HAMBRECHT: *Europe files 40% of chemical patent applications.*

The global economy is facing great difficulties, but short-term needs should not jeopardize long-term objectives, Verheugen says. "Whatever we do must be in line with our basic and fundamental policy objectives that we want to create a knowledge-based economy and a low-carbon economy at the same time," he says. The industrial land-

Källa: Chemical Week Mar2 2009

The European Chemicals Industry
Enabler of a Sustainable Future

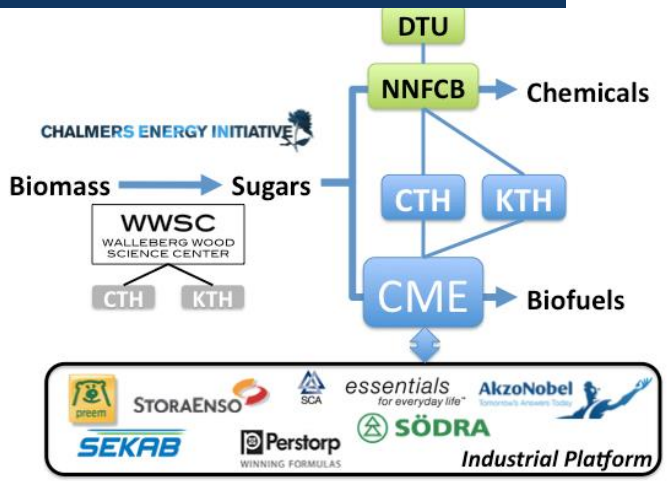
- Building Confidence and Trust
- Enhancing Research and Innovation
- Protection of IPR
- Developing Human Resources
- Responsible use of natural resources
- Level playing field for sourcing energy and feedstock
- Global actions on Climate Change
- Competitive chemicals industry needs open markets with fair competition

Key headlines for 39 recommendations from: High Level Group (HLG) for the competitiveness of the European Chemical Industry, 2009

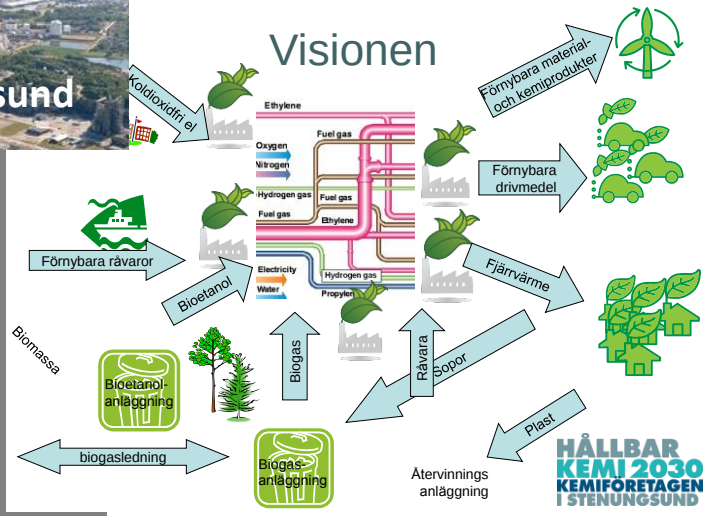
Bio based products/Green chemistry

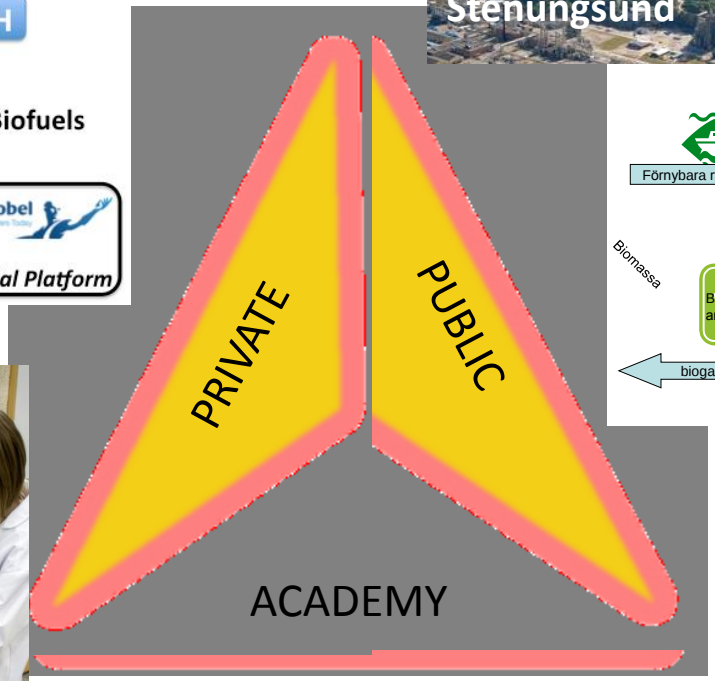
A Cluster in West Sweden

University/Industry
Bio-based product platform



Local industrial platform

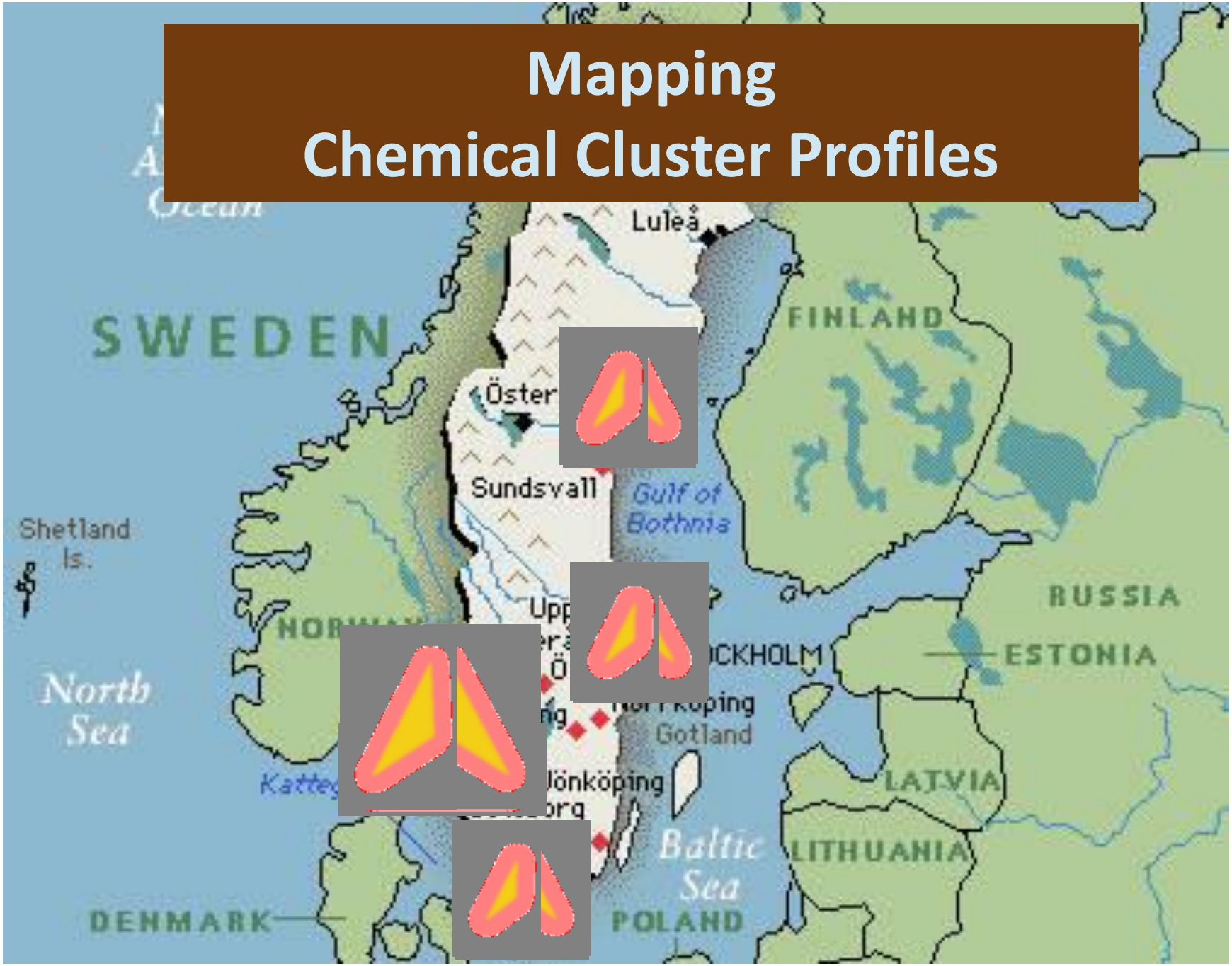




University large scale infrastructure

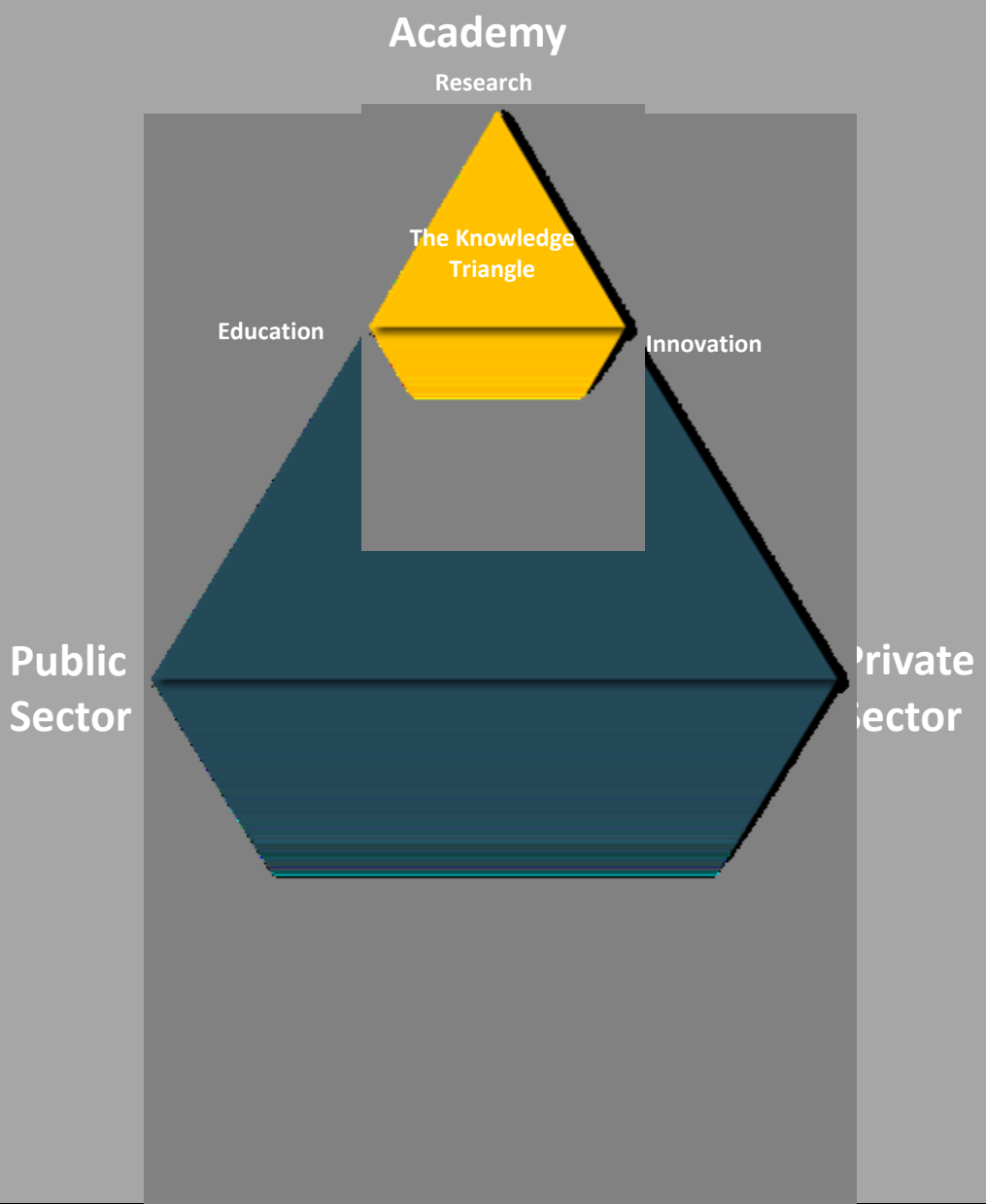
Novel Industrial growth

Mapping
Chemical Cluster Profiles



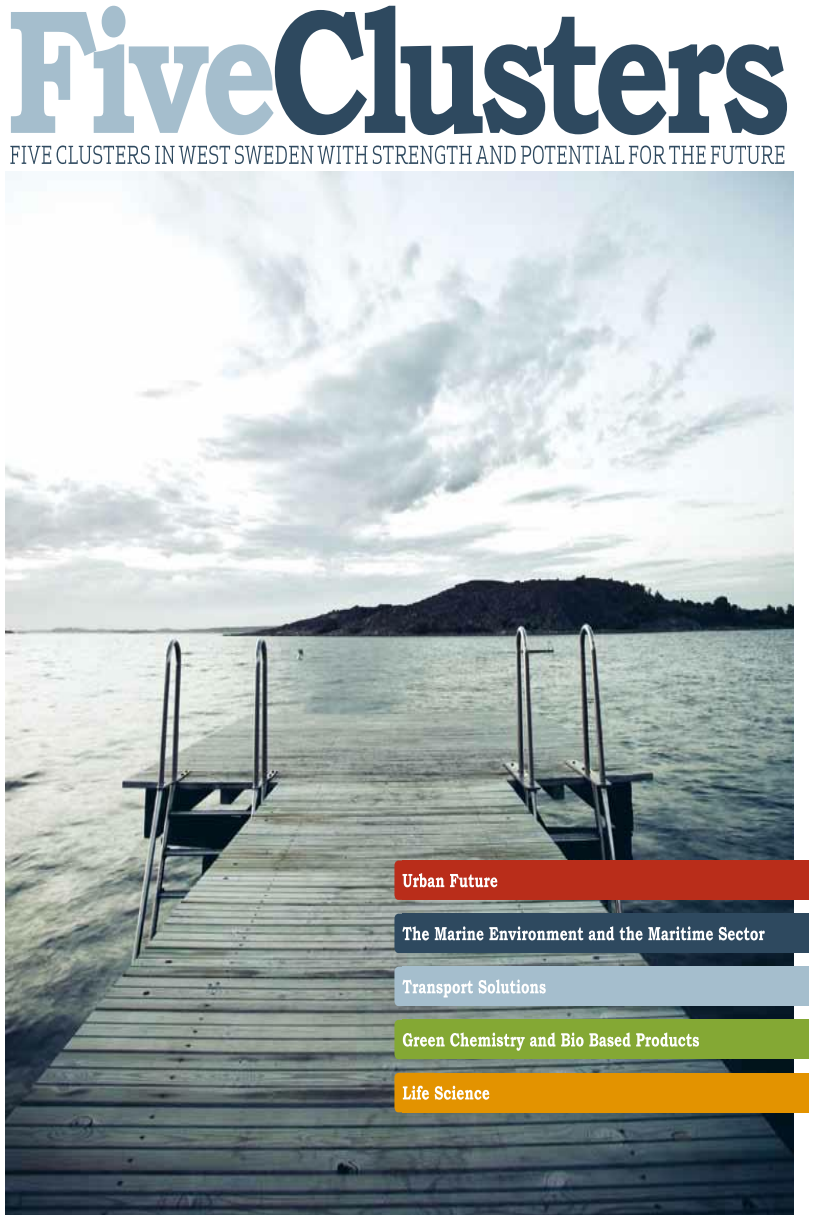
Important Glocal Considerations

- Identify common goal, strengts and individual stakeholder roles
- Coordinate innovation systems
- Make universities hosts in glocal clusters
- Attract competence and investments
- Close long term strategic collaboration agreements for developing competitiveness, sustainable growth and attractiveness

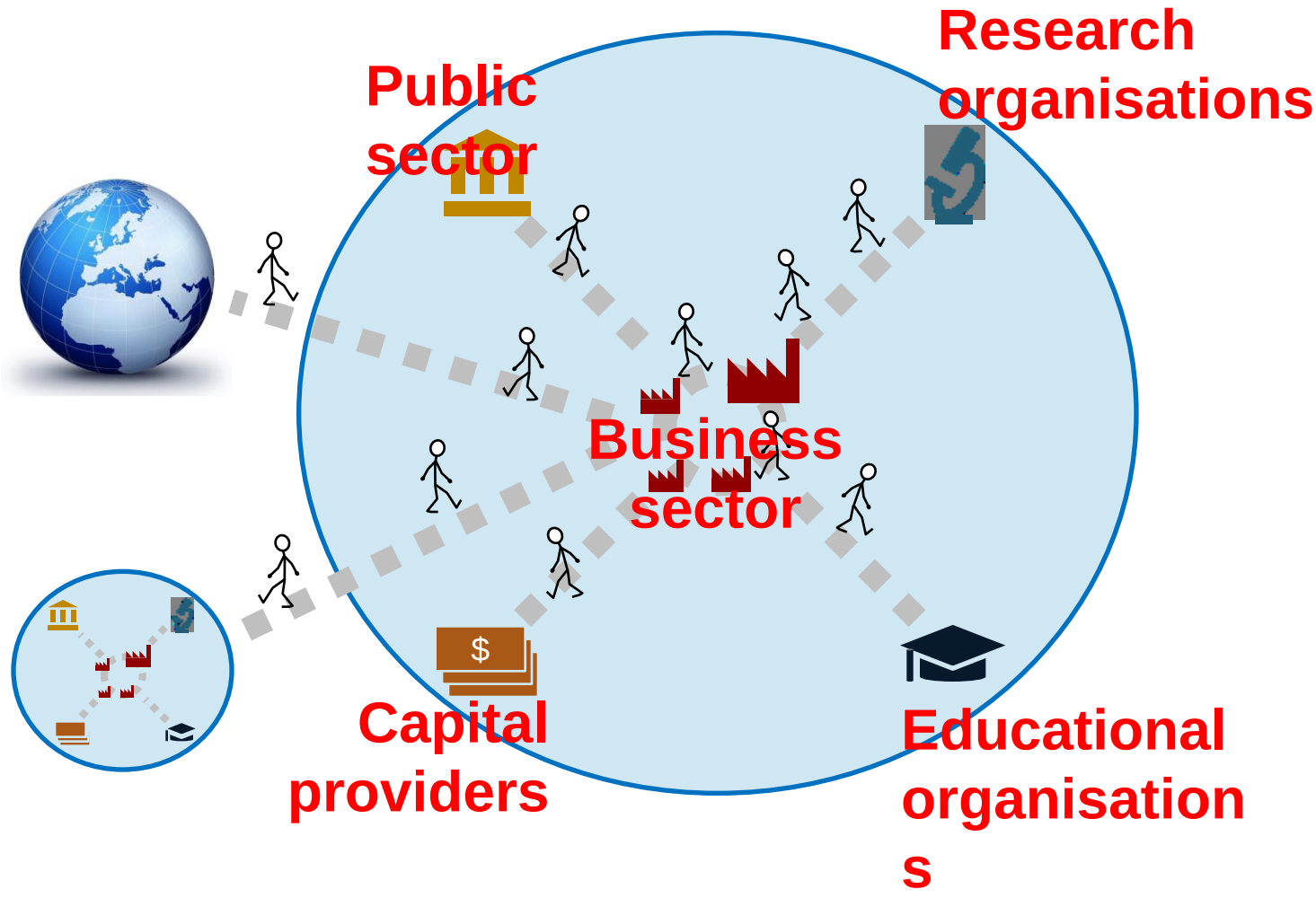


THE INTENTION IS for these clusters to develop cross-boundary collaborations, something Gothenburg and West Sweden have always done over the years. The region is characterized by openness to the surrounding world, both nationally and internationally. It is also known for the closeness between the academia and the public and private sectors, not to mention the openness among people in general.

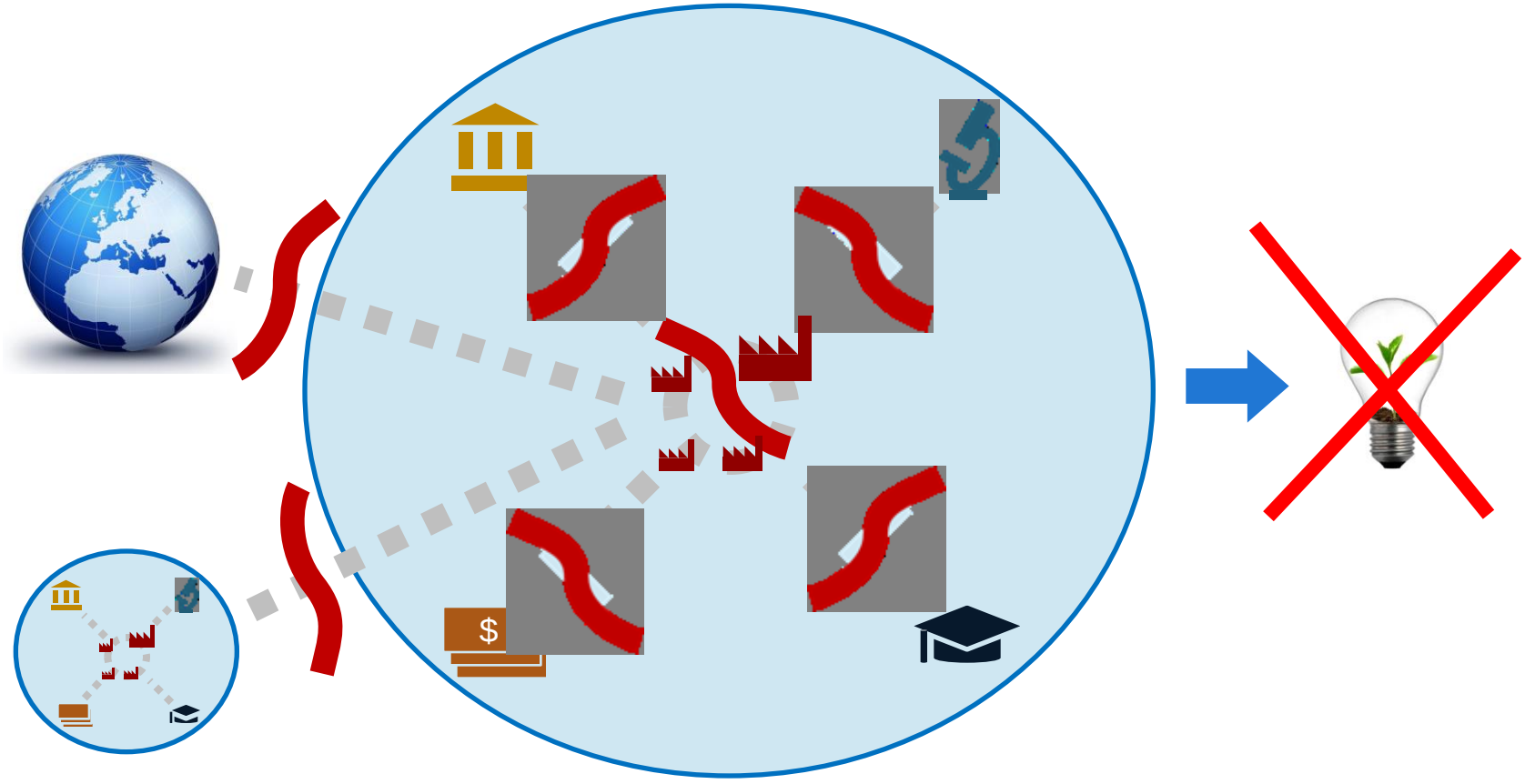
However, in order to be successful we also have to be brave enough to try new approaches. In addition to our renowned cooperative spirit, we must reinforce the sense of trust that effective cooperation is built upon. Then Gothenburg and West Sweden will clearly have what it takes to become even more attractive, both nationally and globally.



The Dream of Dynamic Clusters



The Seven Gaps to Innovation



CHALMERS
UNIVERSITY OF TECHNOLOGY

Science Parks in Gothenburg

Integrated with Stakeholders and Chalmers Areas of Advance

All Areas: Sustainable development, Entrepreneurship & Innovation

Examples of Forefront Research Infrastructures

MOBILITY, INTEGRATION, INSPIRATION

- Started 1st of January 2006 and valid through 2009
- Access offered to research groups in EU member states and associated states including the candidate countries
- Access offered to SME:s for their first access
- An access is maximum three months
- Project duration: 48 months
- Total budget: 1593600 Euro
- Grant covers access plus travel and accommodation costs

Industry Request a new Focus in Education

Focus of yesterday

- Context: Engineering science
- Reduced, "pure" problems (with right and wrong answers)
- Design phase
- Individual effort

Desired focus

- Context: Product & system development
- Systems view; problems across disciplines are complex, ill-defined, and contain societal and business aspects
- Understand the whole cycle: CDIO
- Teamwork, communication

LEADERS ARE NEEDED!

UNITECH is one example of a European Network for top students to get unique competence in:

- Technical knowledge
- Business knowledge
- Cultural awareness

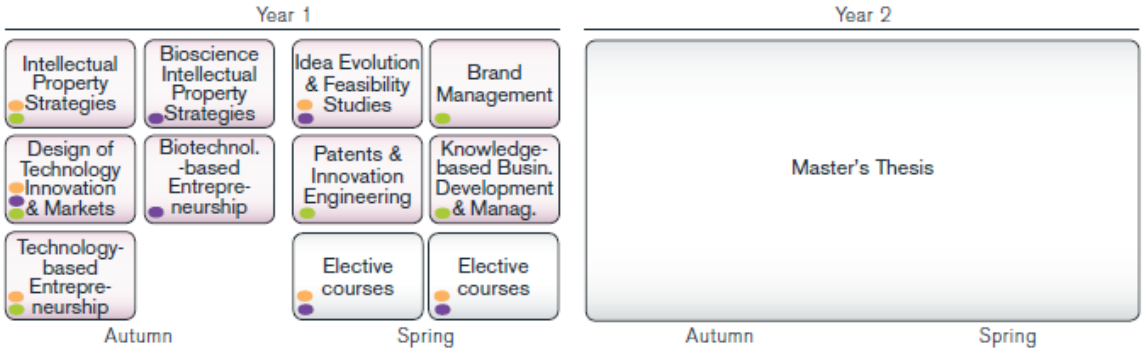
Academic partners (AP)

Chalmers
ETH Zürich
RWTH Aachen
TU Delft
INSA de Lyon
UPC Barcelona
Politecnico di Milano
Loughborough University
Trinity College, Dublin

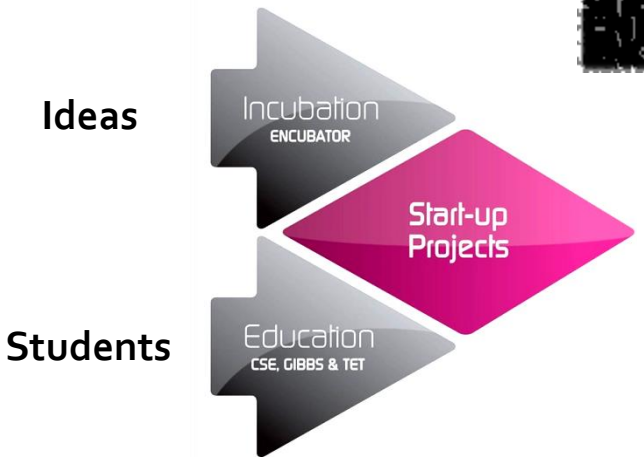
Corporate partners (CP)

Chalmers School of Entrepreneurship

- A two year international master program
  - Three tracks – Technology, Bioscience and Intellectual Property
- One year of studies and preparation, one year of real-life venture creation
  - 60 credits integrated master thesis
- Supported by integrated commercialization entity "Encubator",
  - *"matching good with great"*



Encubator
IDEAS REALIZED.



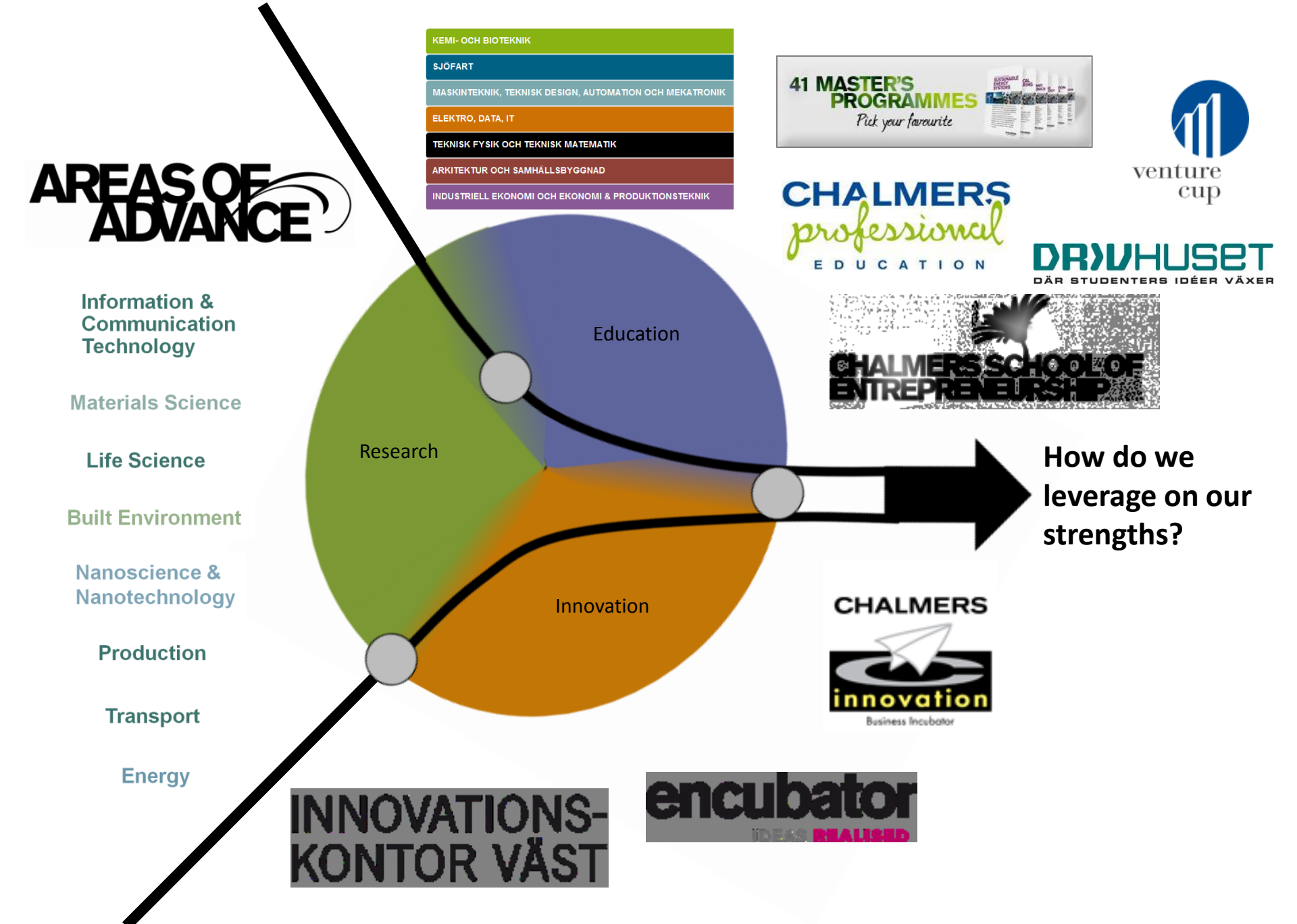
Output:
Portfolio companies & Entrepreneurs

Sweden's fastest growing young companies today (companies less than 10 years old, with international potential)

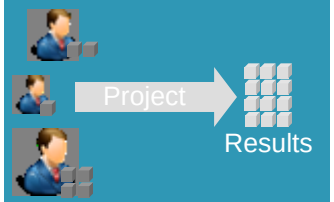
Företag	Utv.	Oms. 2009	Oms. 2008	Oms. 2007	Anst.	Bokslut	Start	Bransch	Inv.
Tobii	+19%	217	198	110,2	225	2009-12	2001	Mjukvara	NZ
Packetfront	-32%	190	283	346,9	115	2009-12	2003	Bredband	
PV Enterprise	-53%	176	385	106,2	59	2009-12	2002	Miljöteknik	
Rebtel	+48%	134	70	5,3	36	2009-12	2005	IP-telefoni	IX, BM
Stardoll	+63%	111	68,1	24,21	83	2009-12	2005	Webbtjänst	IX
Keybroker	+39%	107	77	11	23	2009-12	2007	Annonshantering	IGC
Spotify	+12358%	90	0,7	0,005	76	2009-12	2006	Musiktjänst	CRE, NZ
Klarna	+290%	78,9	20	0,2	13	2009-12	2006	Betalningar	
Medius	+67%	77,1	44	25,6	74	2009-12	2001	Mjukvara	
Cellartis	+30%	53	41,0	26,7	50	2009-12	2001	Bioteknik	INK
Vehco	+18%	52	44,8	29,8	46	2009-12	2001	Mjukvara mobil	CI, CIV, CSE
Gyros	+28%	51,9	32,3	30,0	51	2009-12	2004	Bioteknik	Ja
Mindark	-24%	50,6	66,6	69,7	57	2009-12	2003	Mjukvara spel	
Telepo	+106%	50,5	24,5	14,4	38	2009-12	2003	Mjukvara mobil	Ja
Proximion	+123%	44,2	19,5	11,3	60	2009-12	2003	Fiberteknik	Ja
Aptilo	+12%	44,2	39,5	29,4	39	2009-12	2001	Trådlös kom.	Ja
Avinode	+34%	40,5	30,0	17,7	23	2009-12	2001	Mjukvara webb	Ja
Bilddagboken	+102%	35,3	17,5	4,2	8	2009-12	2007	Webbtjänst	
Scandinova	+98%	34,6	17,5	7,5	15	2009-12	2001	Mjukvara	SEB
Ikivo	-23%	33,6	43,9	60,6	48	2009-12	2002	Mjukvara mobil	
Tail-f Systems	+37%	27,5	20,1	24,1	15	2009-12	2003	Mjukvara	SEB
AHAB	+273%	25,2	6,8	5,6	9	2009-12	2002	Mätteknik	LF
Oxeon	+110%	24,5	11,6	3,1	18	2009-12	2001	Material	CSE

These were started at Chalmers School of Entrepreneurship

Source: www.emerging101.com


KEMI- OCH BIOTEKNIK
SJÖFART
MASKINTEKNIK, TEKNISK DESIGN, AUTOMATION OCH MEKATRONIK
ELEKTRO, DATA, IT
TEKNISK FYSIK OCH TEKNISK MATEMATIK
ARKITEKTUR OCH SAMHÄLLSBYGGNAD
INDUSTRIELL EKONOMI OCH EKONOMI & PRODUKTIONSTEKNIK
41 MASTER'S PROGRAMMES
Pick your favourite
venture cup
AREAS OF ADVANCE
CHALMERS professional EDUCATION
DRIVHUSET
DÄR STUDENTERS IDÉER VÄXER
Information & Communication Technology
Materials Science
Life Science
Built Environment
Nanoscience & Nanotechnology
Production
Transport
Energy
Education
Research
Innovation
CHALMERS SCHOOL OF ENTREPRENEURSHIP
How do we leverage on our strengths?
CHALMERS
innovation
Business Incubator
INNOVATIONS-KONTOR VÄST
encubator
IDEAS REALISED

An intellectual property model supported by a Knowledge Management System enables seamless and reliable collaboration and knowledge transfer

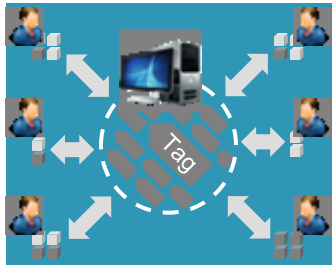


Standardized methods are used to define background and results as objects

1.

Each object is tagged with ownership, access rights, and terms for accessibility

2.

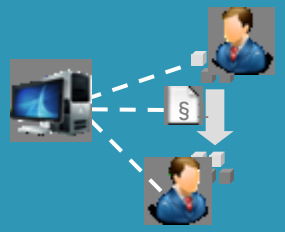


Information is stored and managed centrally through the KMS

3.

Access to the KMS is provided for all partners to browse

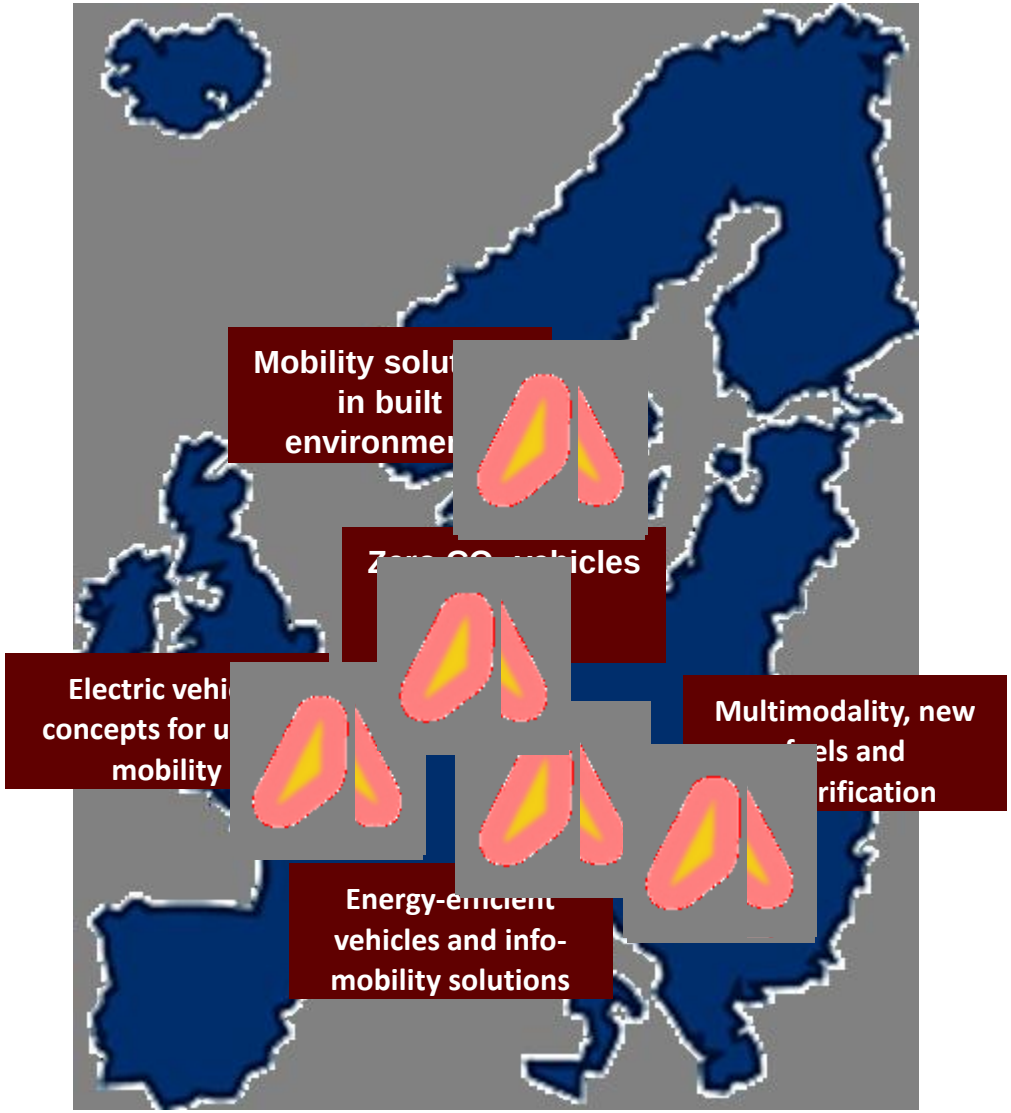
4.



Collaboration, licensing and utilization is governed on an object level

5.

The IP model and knowledge management system create an accessible portal for sharing, trading and utilizing IP and knowledge


Mobility solu
in built
environme
icles
Electric vehi
concepts for u
mobility
Multimodality, new
els and
rification
Energy-efficient
vehicles and info-
mobility solutions

SAFE TRANSPORTATION

ASTA

Closer to Zero Vision initiative with New Technology

ASTAZERO
ACTIVE SAFETY TEST AREA

Glocal Centers for URBAN FUTURES

Fair, Green and Dense as Focus Areas

Universities role as partners in Europe

INTERNAL
Departments and added values
Integration of education, research and innovation

REGIONAL
Collaborations to fertilize growth and development
Spontanous and planed meetings

NATIONAL
Profiled strengths and host abilities

EUROPE
Leadership role and released creativity

INTERNATIONAL
Added value through cultural integration