

Regional learning from European Foresight

The Example of ManVis

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Content



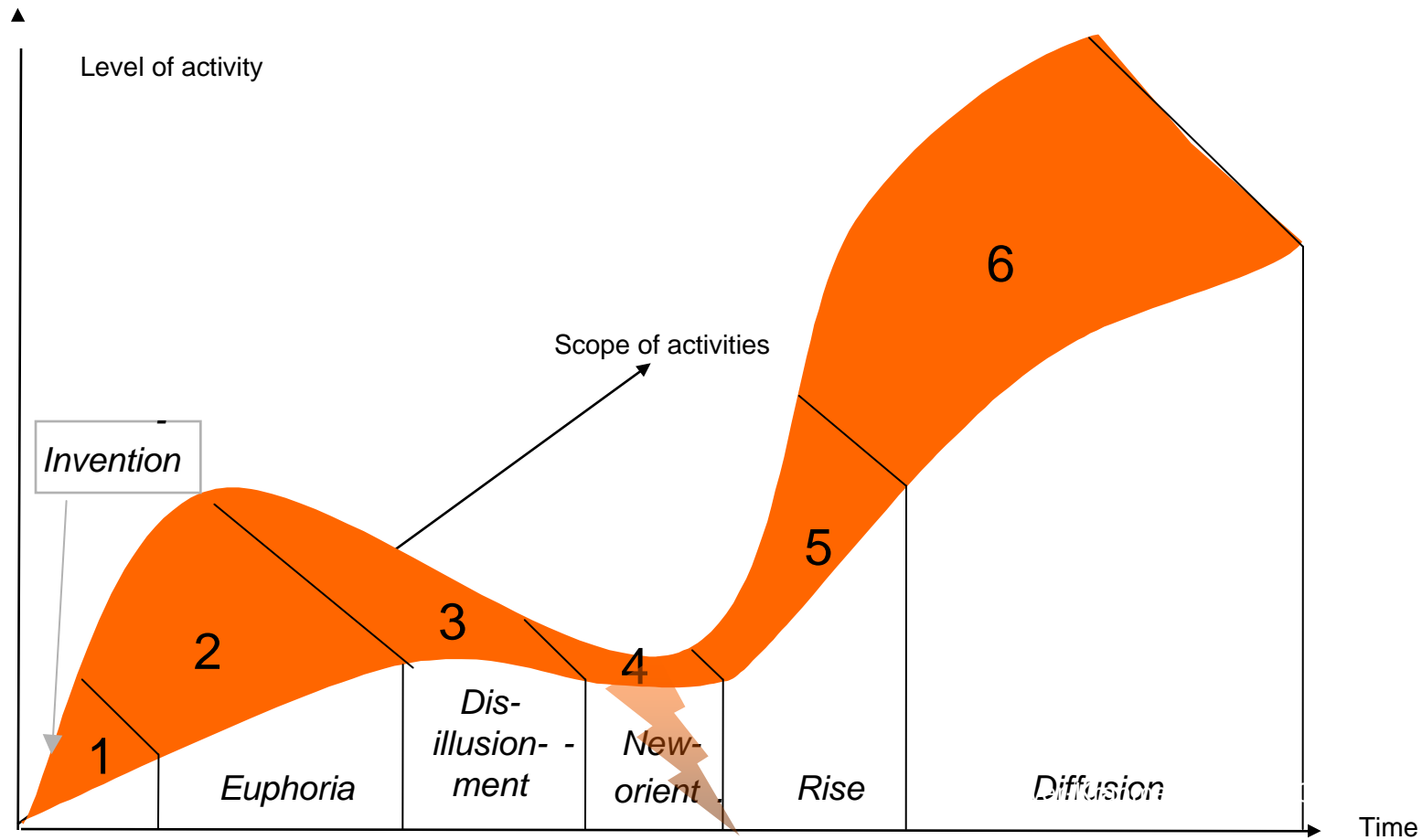
- What were the aims and tasks of ManVis?
- Which technologies will be relevant for European manufacturing?
- Which role European manufacturing will play in a more competitive world
- How to meet customer and societal needs?
- Which visions and challenges emerge from the ManVis findings
- What regions may learn – and what not?

European Manufacturing – Quo vadis?



What were the aims and tasks of the
ManVis - project ?

Combined Science-Technology-Cycle



Project Aims



- Joining shattered knowledge and activities by forming one European database on the trends of manufacturing i.e. for partners not familiar with the approaches and methodologies.
- Bringing the demand-side perspective into manufacturing foresight by stakeholder and international partner involvement.
- Providing targeted outcomes for EU and Manufacture discussions.
- Offering a reference for the specific foresight and roadmap activities in EU FP6th projects as IPs, NoEs, etc.

The ManVis Partners



Austria, ARC Systems Research

Belgium, Agoria, the multisector federation for the technology industry

Bulgaria, BAMDE, Bulgarian Association for Management Development and Entrepreneurship

Croatia, University of Zagreb, Faculty of Economics Department of Organisation and Management

Denmark, DTI, Danish Technological Institute

Estonia, IBATTU, Institute of Business Administration at Tallinn Technical University

Finland, VTT, Technical Research Centre of Finland

France, Innovation 128

Germany, ISI, Fraunhofer Institute for Systems and Innovation Research, B-Wise

Greece, LOGOTECH SA, Innovation & Development

Hungary, FME, Foundation for Market Economy

Italy, FR, Fondazione Rosselli

Netherlands, TNO-STB, TNO-Institute for Strategy, Technology and Policy

Norway, Sintef, Stiftelsen for industriell og teknisk forskning ved Norges Tekniske Hogskole

Poland, University of Lodz, Department of Entrepreneurship and Industrial Policy

Romania, AES-Manager, Academy of Economic Studies

Slovakia, University of Technology, Department of Manufacturing Systems, Faculty of Manufacturing Systems

Slovenia, LAPOM, University of Maribor, Faculty of Mechanical Engineering

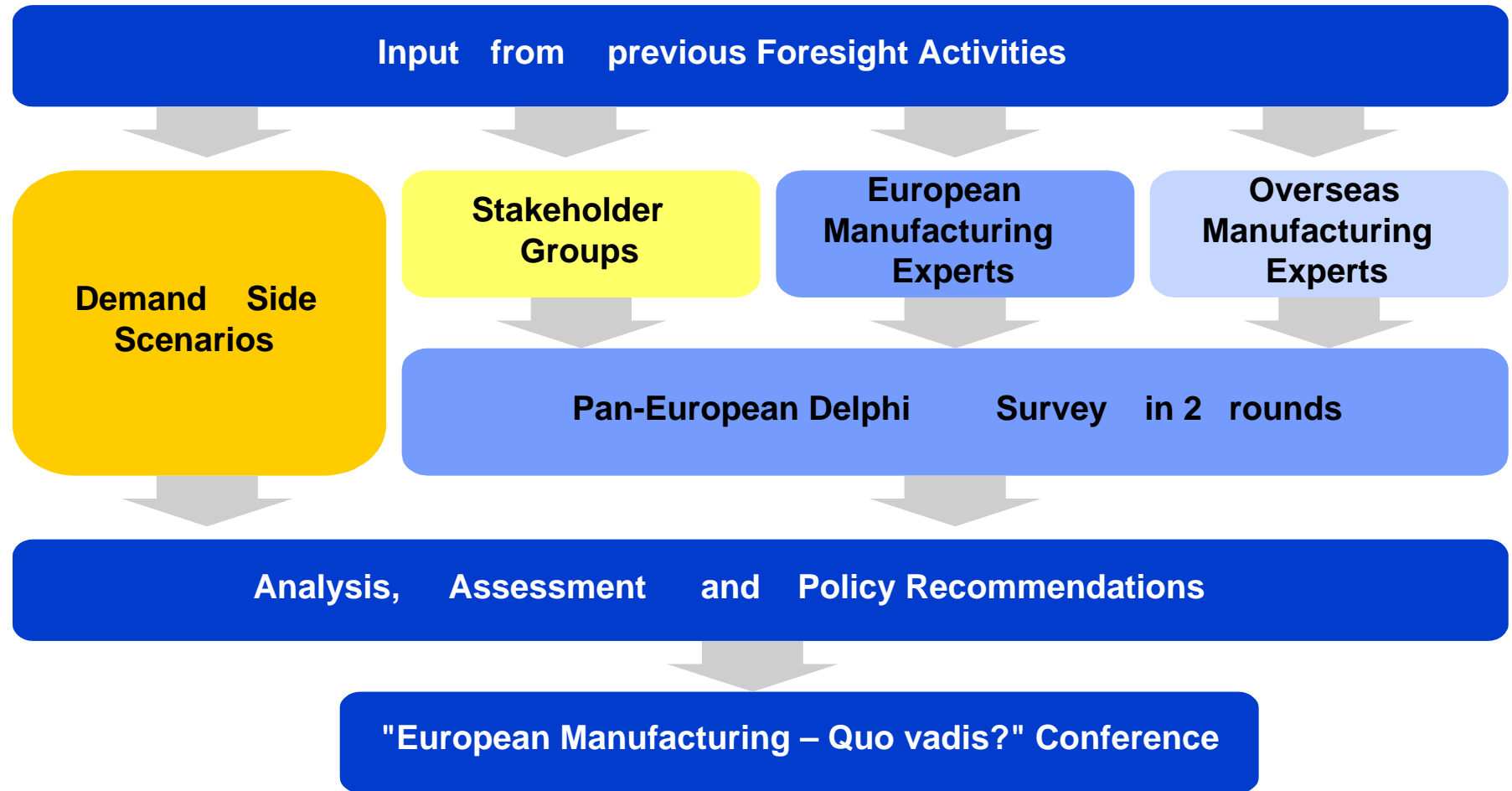
Spain, Ascamm Foundation, OPTI – Foundation, IPTS

Sweden, IVF, Industrial Research and Development Corporation

Turkey, Tubitak, Scientific and Technical Research Council of Turkey

United Kingdom, Cranfield University - School of Management, Institute for Manufacturing – University Cambridge

The ManVis-approach

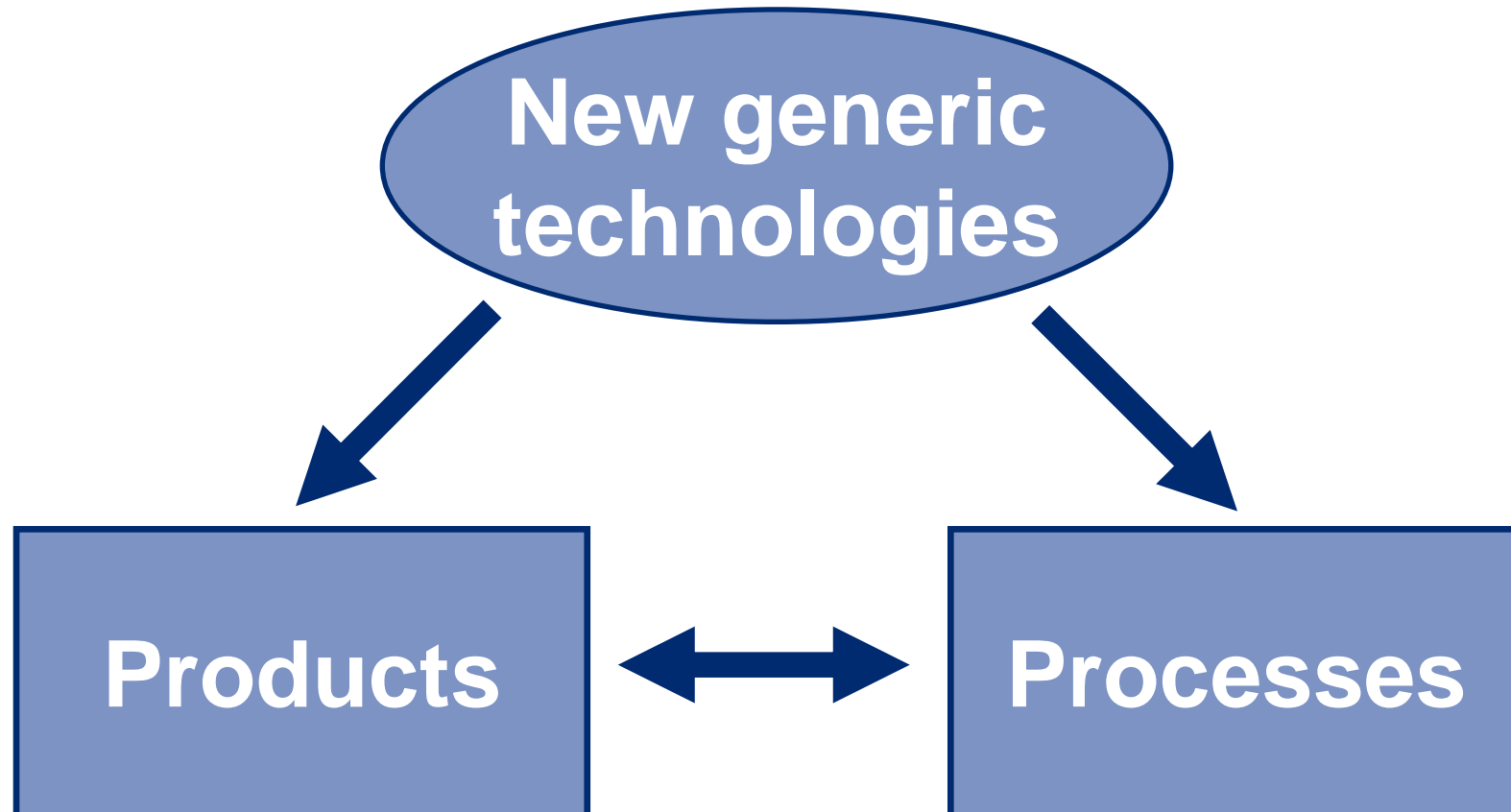


European Manufacturing – Quo vadis?

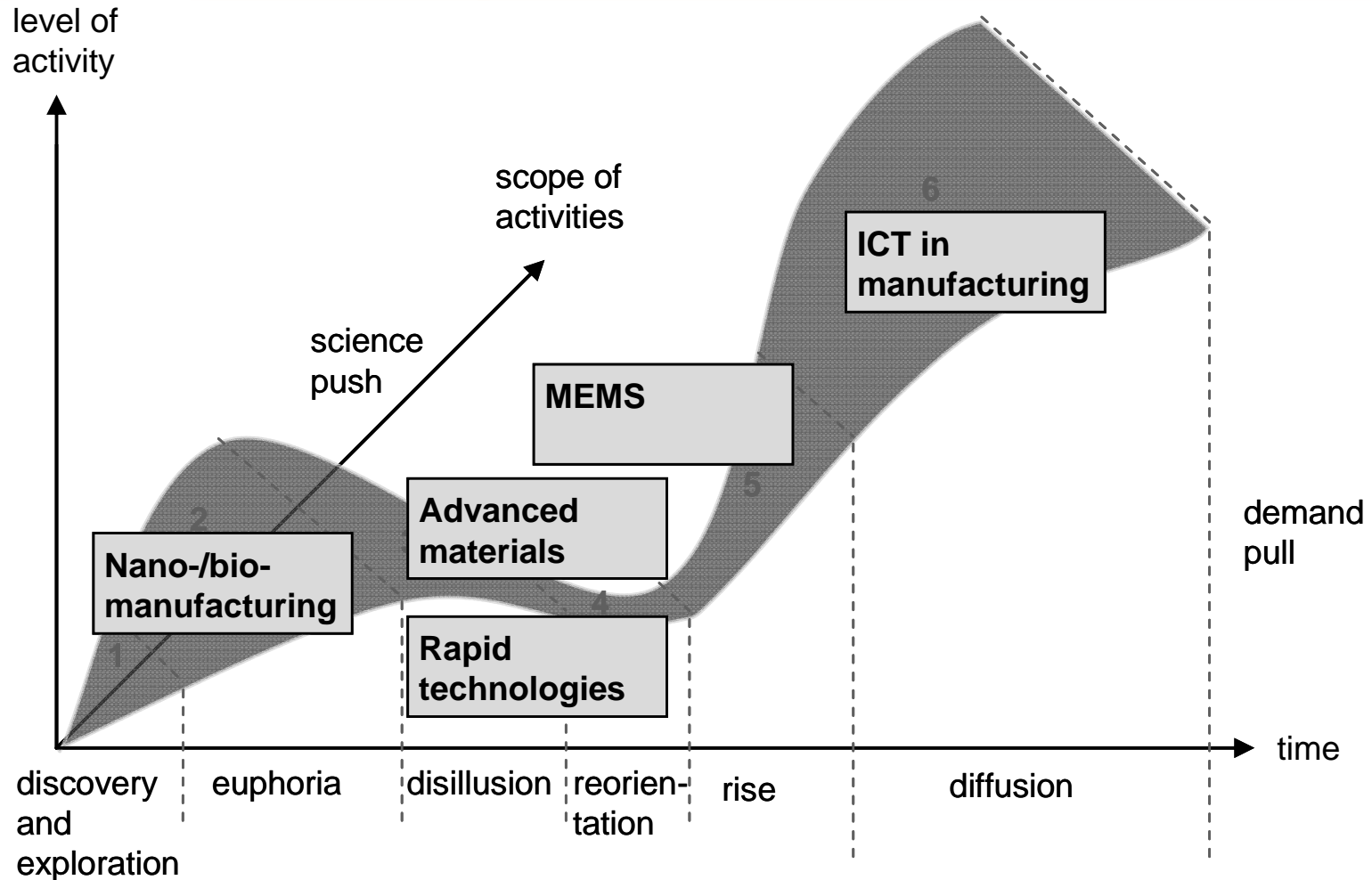


Which technologies will be relevant for
European Manufacturing?

Challenge of generic technologies for manufacturing



Manufacturing related technologies on the Science-Technology Cycle



The Future of Flexible Automation



- Flexible automation is still considered an important trajectory for achieving competitiveness
- Main barriers are economic viability and technical feasibility
- Trade-off between automation and firms specific flexibility requirements prevails
- Flexible automation may eventually increase competitiveness but certainly not employment

Future of products



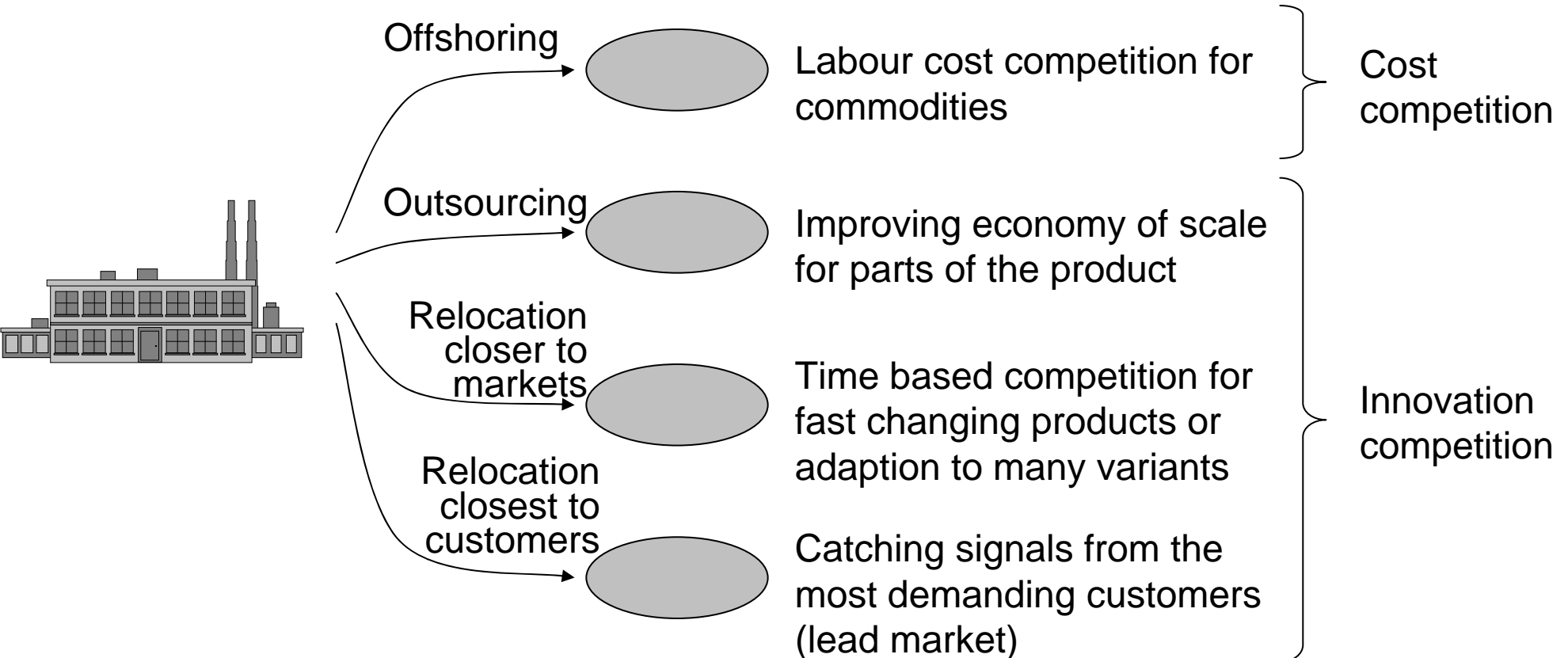
- Most important fields of innovation are Energy systems and Sustainable transport
- Use a systematic innovation policy within the FP, integrating different policy strategies, and supporting all phases of innovation
- Organizing IPR also on new business concepts is necessary
- Policy support should give attention to develop new, radical concepts, including use of existing knowledge
- User centred innovation is applicable to many up market sectors (B2B and B2C)
- Citizens and consumers are two different institutions, both need to be addressed in different ways.

European Manufacturing – Quo vadis?



Which role will European Manufacturing play
in a more competitive world?

Relocation, relocation, relocation



MANVIS experts expect 80% of existing industry to be relocated outside of Europe

What will determine whether this happens?



- Economic growth
 - Emergence of strong lead markets
- Vision and development of manufacturing in key economies
 - China, Japan, USA
- Use of automation
 - Reducing labour content
- Evolution of cost structures
 - E.g. transport costs

European Manufacturing – Quo vadis?



Is European Manufacturing prepared to meet customer and societal needs?

Challenges arising from new demands on products



- Enabling **user centred** innovation
- Strengthening capability for **systemic innovation** enabling the generation of
 - customised product-service systems
 - sustainable production and consumption models
- Facilitating **transparent provision of information** on products and processes
- Ensuring product **usability** for groups with special needs

Challenges arising from emerging demands on working and living patterns



- Balancing individual and organisational learning
- Implementing new ways of acquiring skills within manufacturing
- Include a broader range of sources into knowledge generation for innovation (open innovation)
- Securing a competent workforce
- Foster sustainable structuring of work and facilitate a better reconciliation of working and non-working life.
- Integrating a wide range of societal groups into learning processes

Addressing the Challenges



Three lines of strategy ...

- Adopting user centred modes of innovation
- Establishing new modes of knowledge generation and competence building
- Establishing sustainable high performance working patterns

European Manufacturing – Quo vadis?



Which visions and challenges emerge for
European Manufacturing?

Technology research needs (1)



Paving the way for new technologies in manufacturing

- road mapping and foresight on manufacturing relevance of nano- and (white) bio-technology
- Measurement, workplace safety for nano-technology and bio-technology
- Applied basic research for white bio-technology and nano-manufacturing

Industrialising technologies

- Processing and manipulation of new materials
- Incorporating smart materials into components for process technology
- Combining new materials with micro electrical mechanical systems (adaptronic)
- Exploring new modelling knowledge and high power computing for simulation of product development, of material behaviour and of virtual experiments

Technology research needs (2)



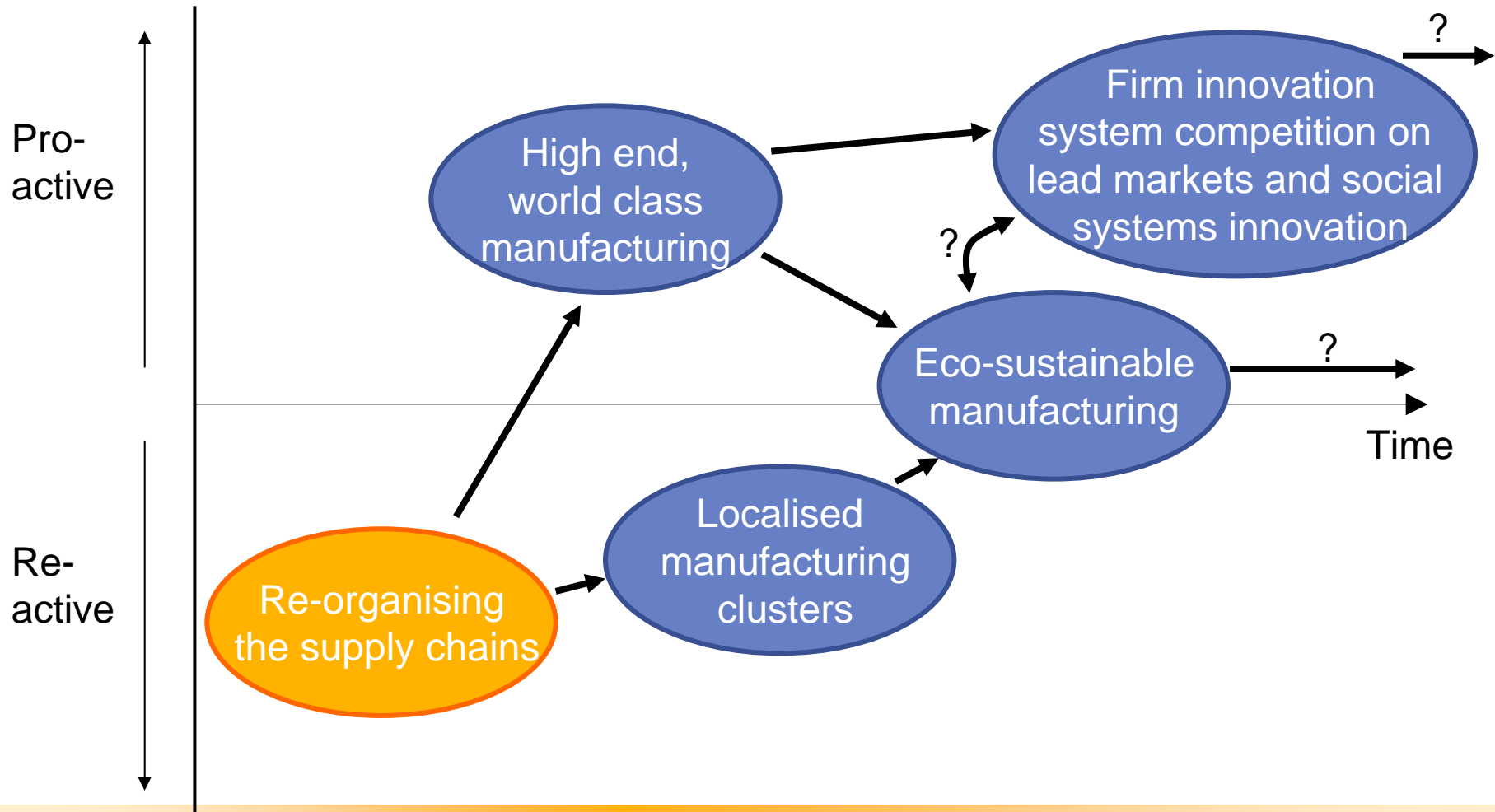
Exploiting technology advantages

- **Micro-systems in machine tools and products**
- **Intelligent mechatronic systems for automation and robotics (e.g. self adapting components)**
- **New automation technologies considering advanced human-machine interaction by considering diverse workers capabilities**
- **ICT-tools for traditional sectors**

Technologies for customising products/services

- **Tagging Technologies**
- **Approaches towards product customisation via software or electronic components that allow for maximum flexibility and user integration**
- **Technologies and concepts facilitating user integration into innovation processes**
- **Technologies and concepts facilitating personalisation and built to order concepts**
- **SME appropriate tools for networks and logistics**

The ManVis trajectories for Manufacturing of Tomorrow

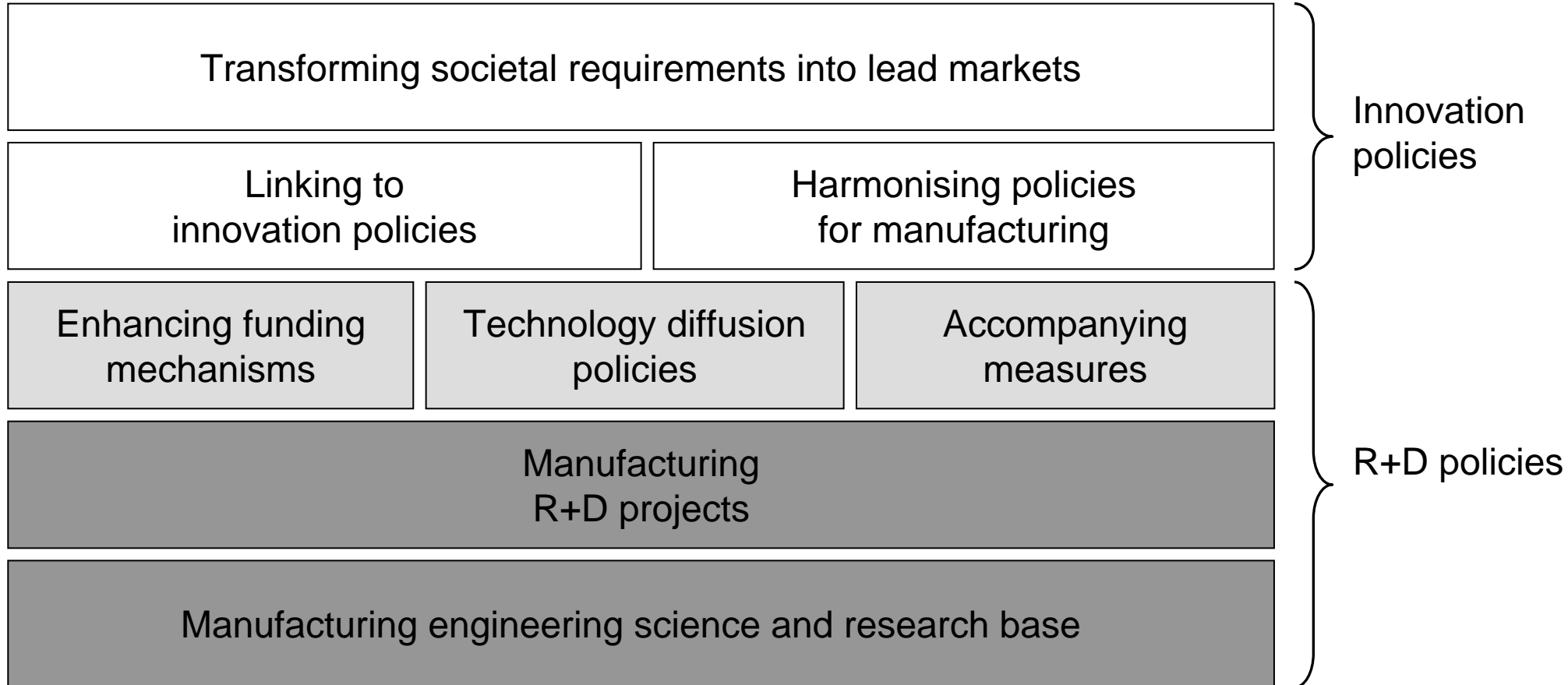


Challenges

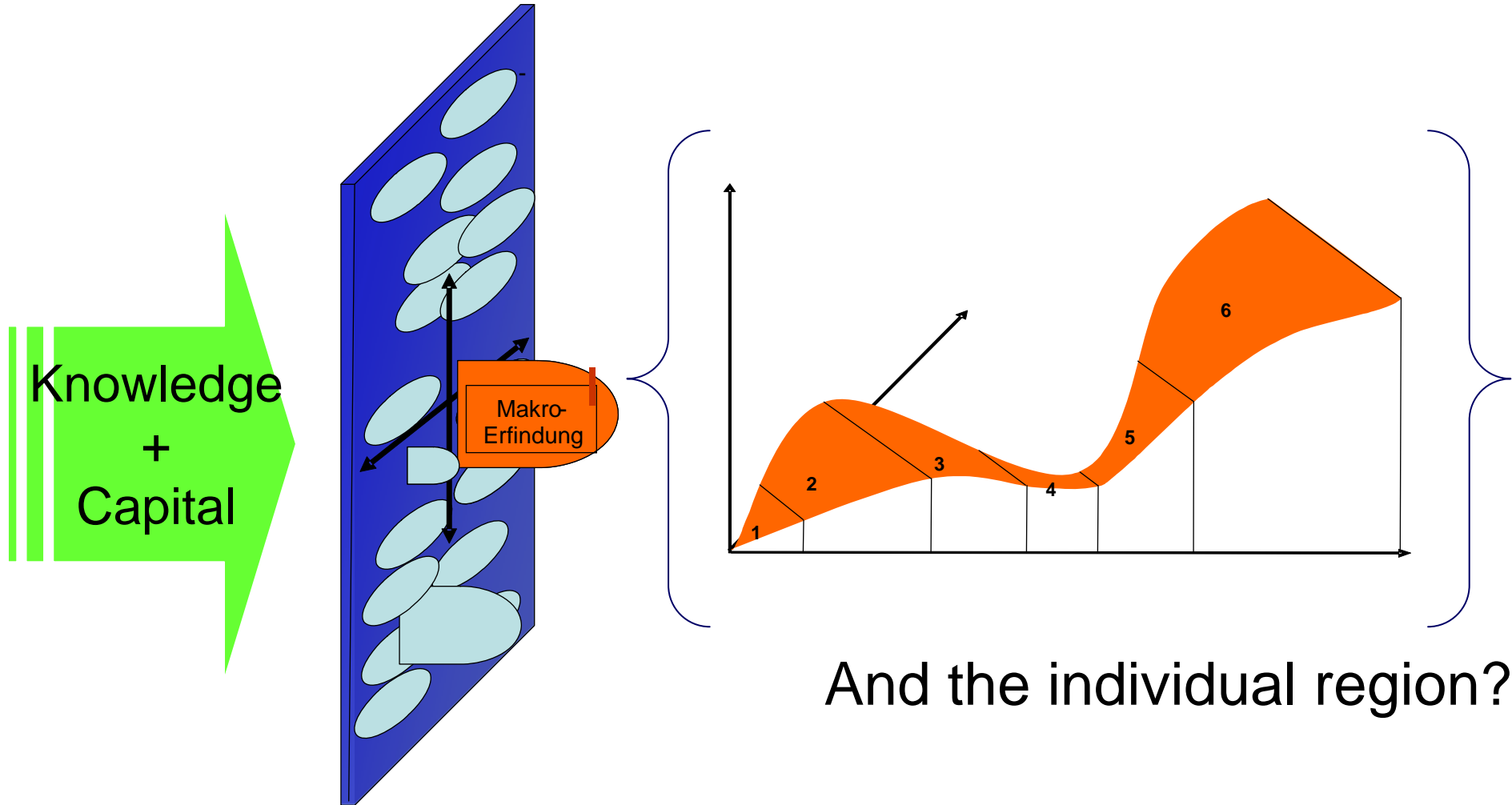


- Creating manufacturing based on sophisticated technology
- Developing knowledge based and learning companies and industries
- Competing through the firms individual innovations systems
- Re-defining and innovating demand
- Keeping Europe economically united

Elements of policies for knowledge based manufacturing



Innovation System and S+T-cycle



And the individual region?

European Manufacturing – Quo vadis?



What regions can learn – and what not?

What regions can learn from ManVis



- Overall “fitness” check of strategy
- Technology competences considering disruptions
- Importance of user interaction
- Mix of technology push and lead market demand
- Profiling existing strengths against emerging regional trends

What regions cannot learn from ManVis



- Exact steps to take
- Investment directions
- Recommendations for single technologies

And Lodz? – Some preliminary thoughts



- Exploiting labour market advantages without getting dominant players blocking the future.
- Transport hub for the opening of Ukrainian and Russian markets.
- Combining old strength with future disruptive technologies
 - Food and bio-tech
 - Bio-tech and waste treatment/eco business
 - KIBS and specialized IT (which?)
 - Non- metal industries and health care with new materials
- Serving the low cost eco-business markets (Russia, Ukraine, others)