

CISTRANA workshop in Brussels 8.11.2005

CASE FINLAND: "Tekes – National Technology Programmes"

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Manager**



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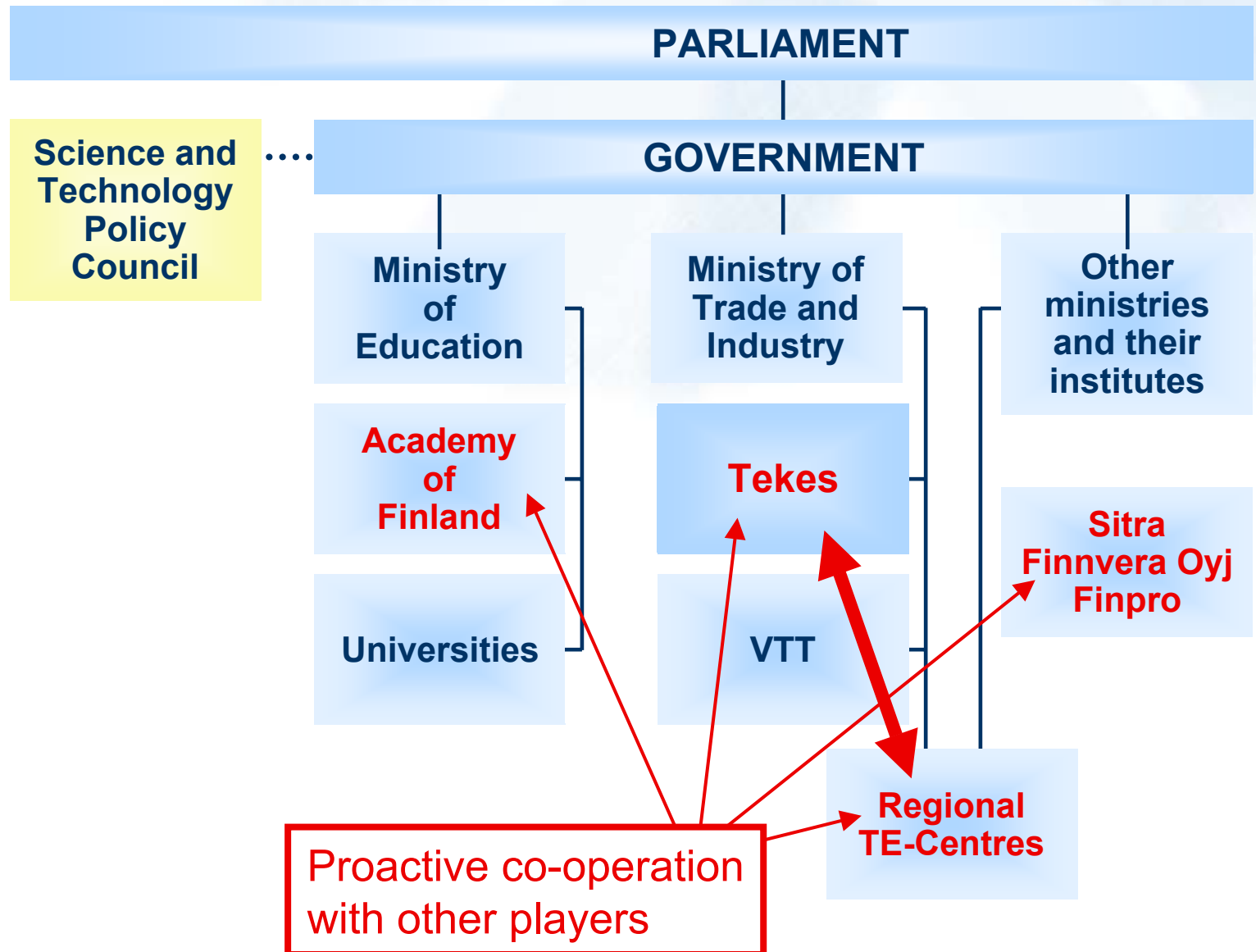
Content of this presentation

1. **Background – Tekes in Finnish innovation environment**
2. **The way of organising public R&D funding in Tekes**
 - Strategy & focus areas
 - ICT & focus areas
3. **Technology programmes - implementing the strategy**
4. **Future development plans & Summary**



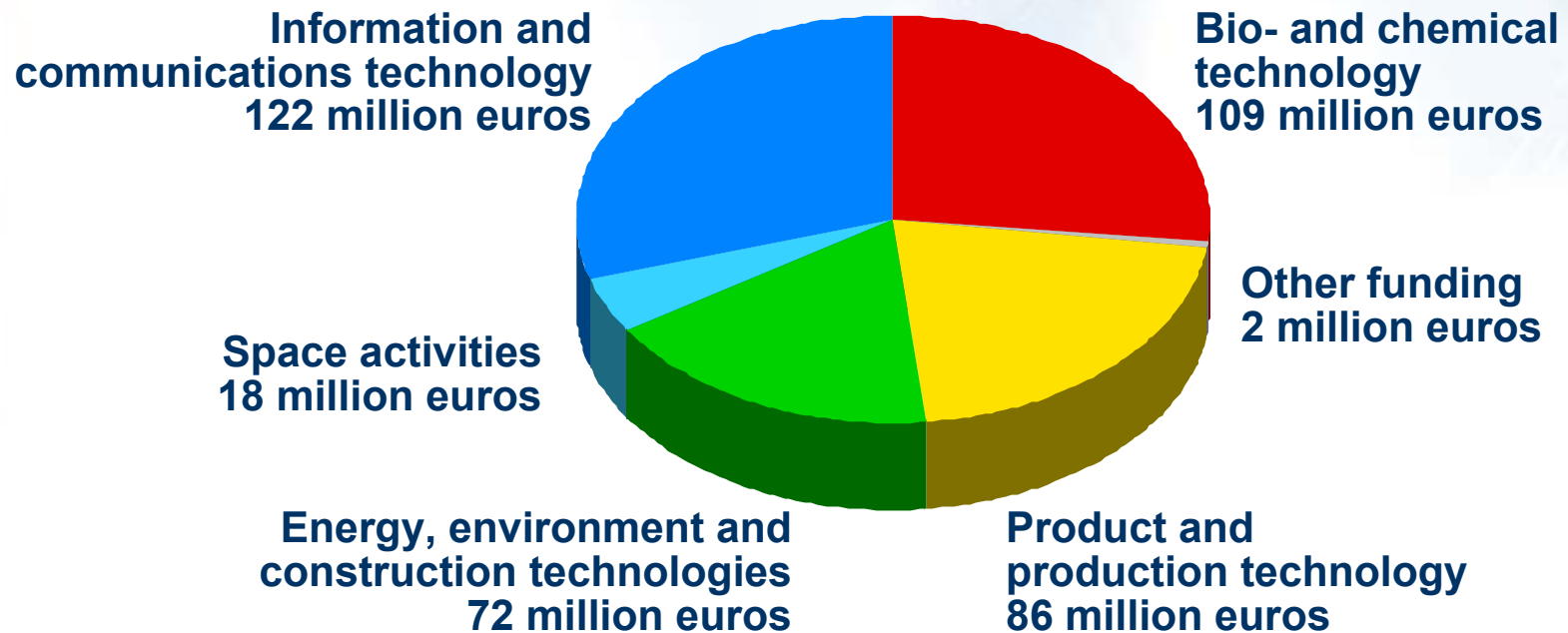
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Public sector activities of R&D in Finland



Total Tekes R&D funding in 2004 by field of technology

**Total 409 million euros and
2,242 projects**



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Tekes' core activities



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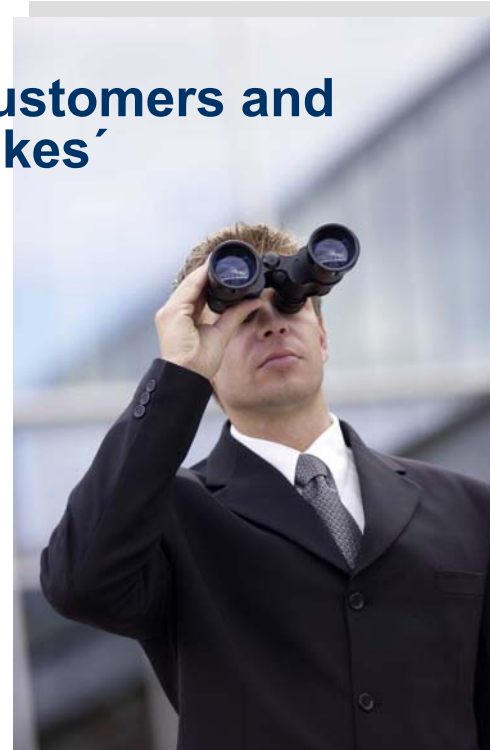
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Technology strategy

Continuous process (in cooperation with companies and public sector) to guide Tekes activities

Why technology strategy:

- To take a longer term view to the future
- To identify focus areas for Tekes' funding and activation
- Especially focus areas for technology programmes which are half of the total Tekes financing
- Tekes' technology strategy is important also for customers and key partners (views into Finland's future) - Part of Tekes' participation in public discussion
- Small country – **we have to make choices !**



Technology strategy

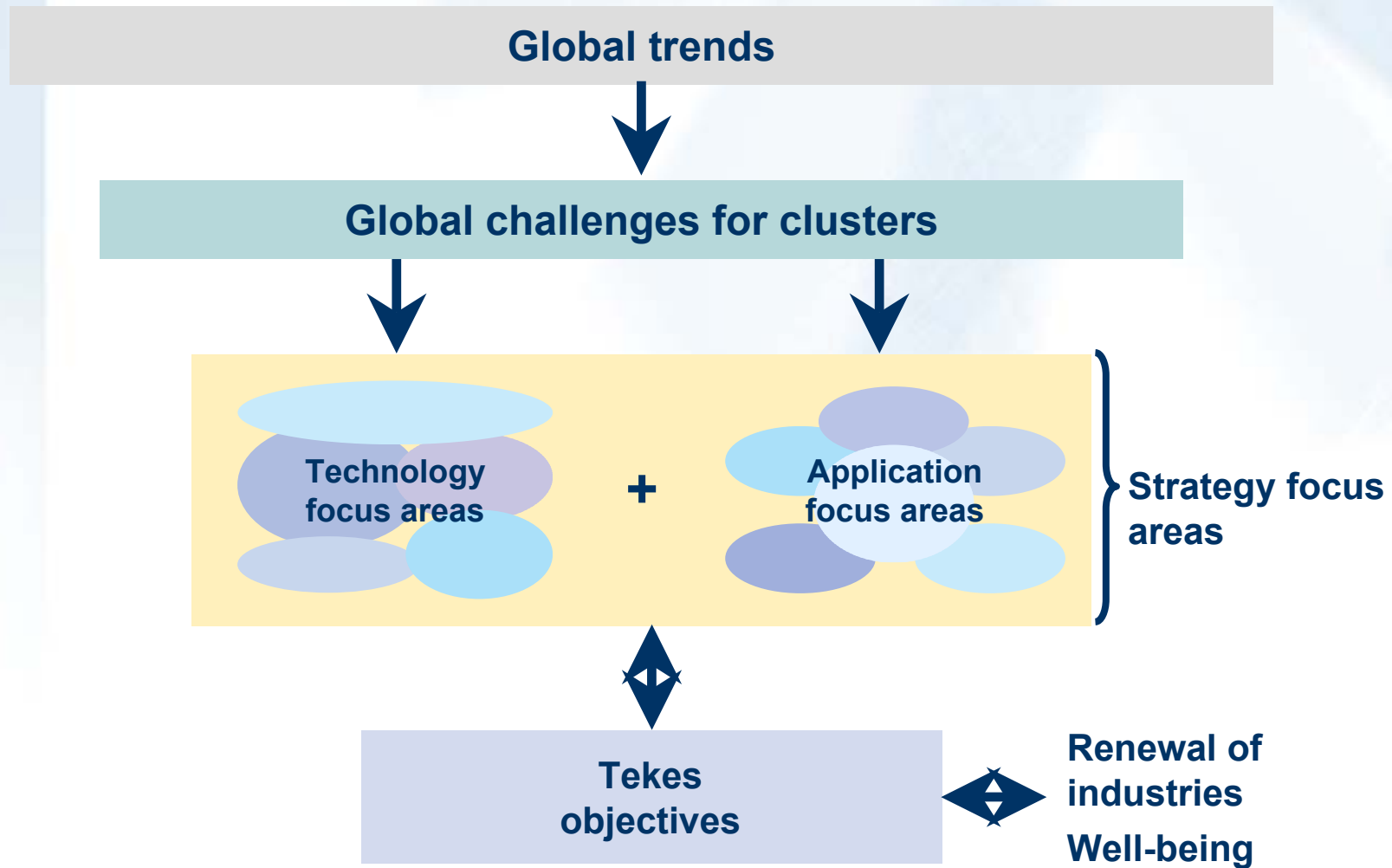
- global trends as driving forces

Trends:

- **globalisation and competition in business and innovation environment**
- **knowledge and competence and their management**
- **innovative networking**
- **sustainable development**
- **demographic changes (aging) and social development**
- **safety, security, health and values**
- **driving technologies**

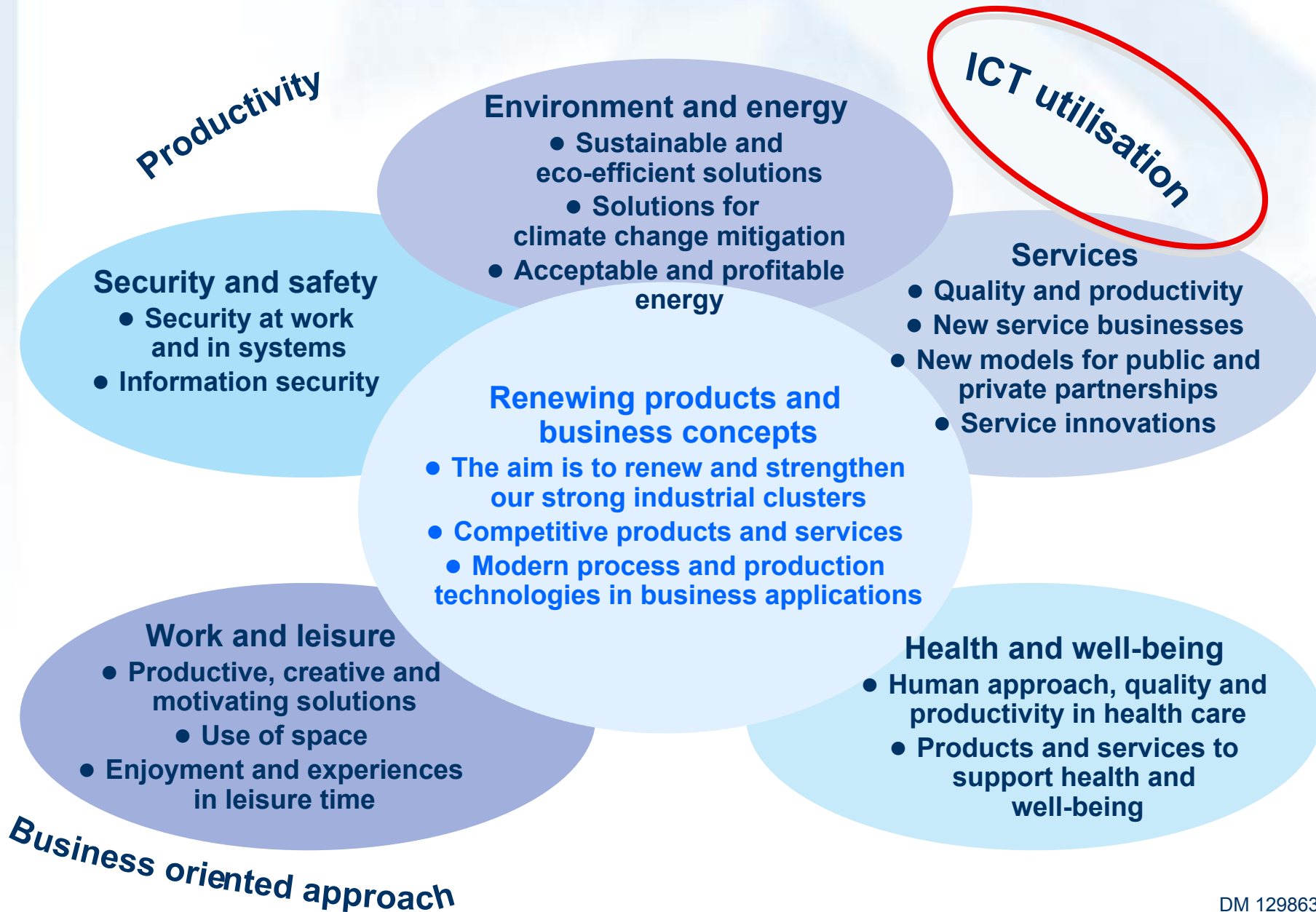


Tekes strategy and focus areas



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Application focus areas



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Technology focus areas

Business competence and business development

- Innovation activities
- Business renewal
- Growth companies and internationalisation
- Customer-oriented approach
- Managing a networked business
- Knowledge management
- Service business

ICT

- Mobility
 - Broadband communications
- Software-intensive products and systems
 - Knowledge and content management
- Test environments for new applications and services

Biotechnology

- Systems biology
- Bioprocess technology
- Combining biosciences with ICT

Materials technology

- Interdependencies between properties, structures and production
 - Surface phenomena
 - Materials design

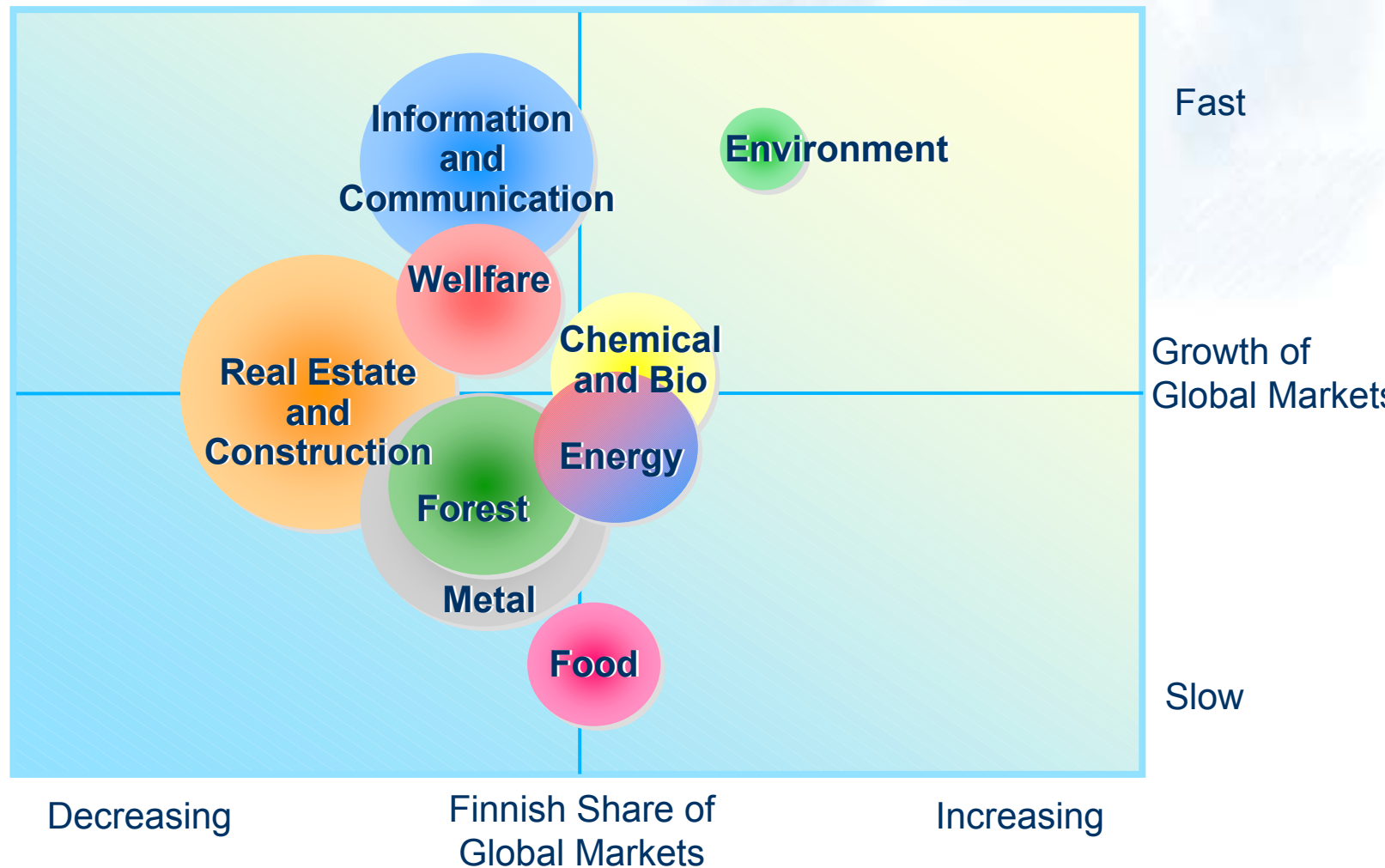
Nanotechnology

- Innovative nanostructured materials
- New structures for nanoelectronics
 - Nanosensors and actuators



Dynamics of Finnish Industrial Clusters 2004

Technology and knowledge renew clusters



Most promising strategic areas in clusters

Information and communications cluster

- Mobile products and services
- Telecommunications services
- Content business
- Software products
- Information technology services
- Instrumentation and automation
- Components
- ICT solutions for health care

Forest cluster

- Sustainable processes
- Future fibre products
- New solutions for media and packaging
- Wood biomass utilisation
- System concepts for wood products

Chemical and bio cluster

- Energy products
- Solutions for forest cluster
- Intelligent and functional materials
- Environmental solutions
- Health care solutions

Energy cluster

- Solutions and services for energy utilisation
- Solutions for energy distribution
- Renewable energy solutions and services
- Other solutions for clean energy and climate change mitigation

Metal cluster

- Renewing metal
- Logistic solutions
- Machines, equipment and services
- System suppliers
- Knowledge-intensive services

Well-being cluster

- Health care technology
- Pharmaceuticals and diagnostics
- Functional foods
- Framework for well-being
- Well-being services

Environmental cluster

- Environmental technologies and methods
- Sustainable solutions, processes and services
- Renewable energy solutions and services

Real estate and construction cluster

- Value-networked construction process
- Service models for renovation and maintenance
- Integrated products and systems
- Proactive facility management and ownership
- Services and software

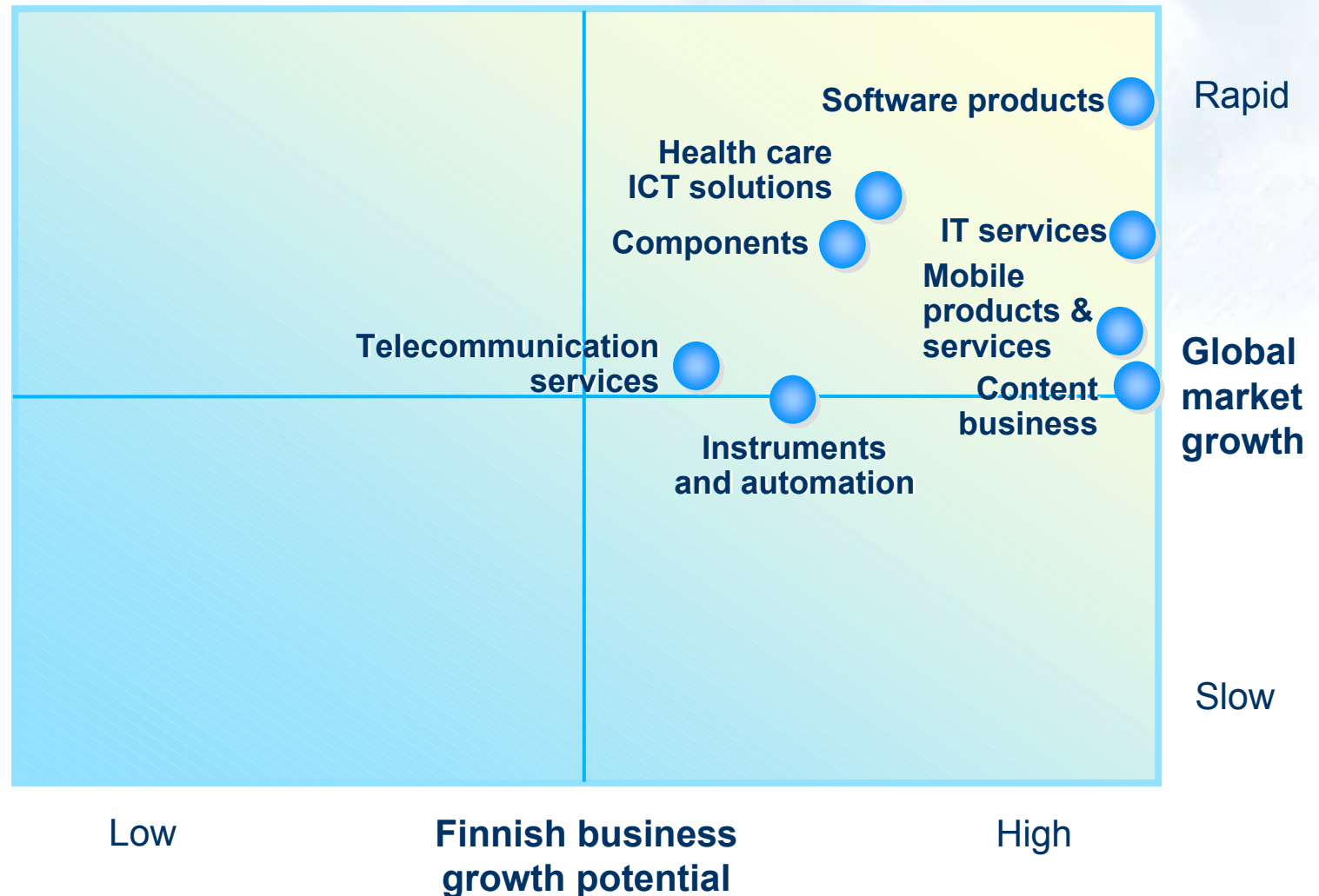
Food cluster

- Functional foods
- Services
- Food safety
- Food chain management and cost-efficiency
- Intelligent packaging



Information and communications cluster growth areas

Success through technology leadership and innovative applications



Business potential through cooperation

<u>Clusters and competences</u>	<u>Rising and growing businesses</u>
All clusters	Utilisation of ICT
All clusters, Information and communications cluster as enabler	Innovative service businesses
Food cluster, Biomedicine, Biotechnology, Materials, Information and communications cluster	Well-being and health
Environmental cluster, Materials, Real estate and construction cluster, Information and communications cluster	Comfortable operating environment
Environmental cluster Energy cluster Forest cluster	Environmentally oriented businesses
Information and communications cluster Forest cluster Chemical and bio cluster	Communication
Chemical and bio cluster Metal cluster, Forest cluster Information and communications cluster	Intelligent materials



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Information and communications cluster

Focus area	Short and medium, under 10 years	Long, over 10 years
Mobile products and services	<p>Internet technology increasingly common in networks and services</p> <p>Communication getting mobile; service adaptation using location information</p>	<p>Seamless integration of wireless products and services with ubiquitous broadband systems</p>
Telecommunication services	<p>Multimedia communications in wireless and broadband networks</p>	<p>Personalised, context-aware broadband services available everywhere</p> <p>Converged networks and seamless access</p>
Content business	<p>Knowledge and content management</p> <p>Multi-channel publishing and services</p> <p>Research & development</p> <p>New business models</p> <p>International business</p>	<p>Semantic web</p> <p>- All content easily retrieved through any device</p>
Software products	<p>Sector-specific, market-oriented</p> <p>Open interfaces and product platforms</p> <p>Open source code</p> <p>Market-oriented research & development</p> <p>Work productivity</p> <p>International business networking</p>	<p>Seamlessly compatible, adaptable software</p>



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Information and communications cluster

Focus area	Short and medium, under 10 years	Long, over 10 years
Information technology services	<p>Systematisation and digitalisation of service processes</p> <p>Reliable, safe and compatible solutions</p> <p>Research & development</p> <p>International business</p>	<p>Open development model and cooperation</p> <p>- digital services</p>
Instruments and automation	<p>Guidance of networked production</p> <p>Real-time enterprise</p> <p>Enhancing productivity in various sectors</p> <p>Intelligent methods</p> <p>Sensor networks embedded in the environment, pattern recognition, bio-recognition</p>	<p>Real-time networks of factories</p>
Components	<p>Components for wireless and embedded systems</p>	<p>Components for ambient intelligence systems</p> <p>Printed electronics and new nanoelectronics solutions</p>
ICT solutions for health care	<p>New business models and concepts, service productivity and quality</p> <p>Devices and software</p> <p>System integration and compatibility</p>	<p>Seamlessly compatible systems</p> <p>Wireless health care</p>



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Content of this presentation

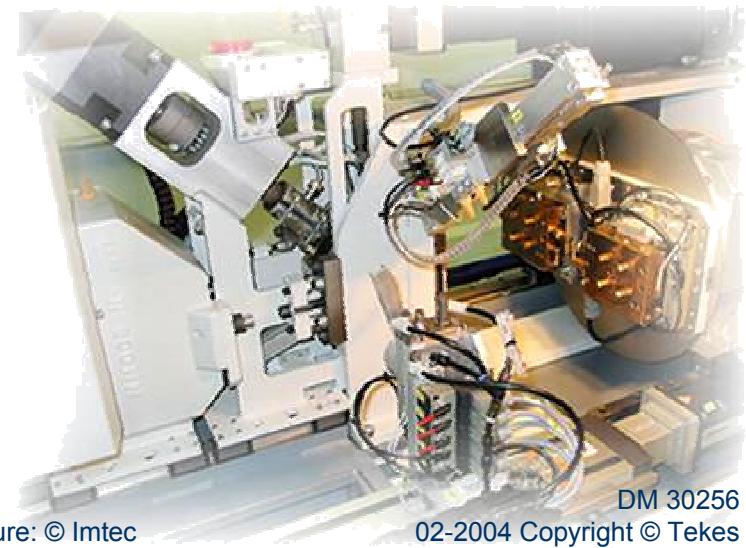
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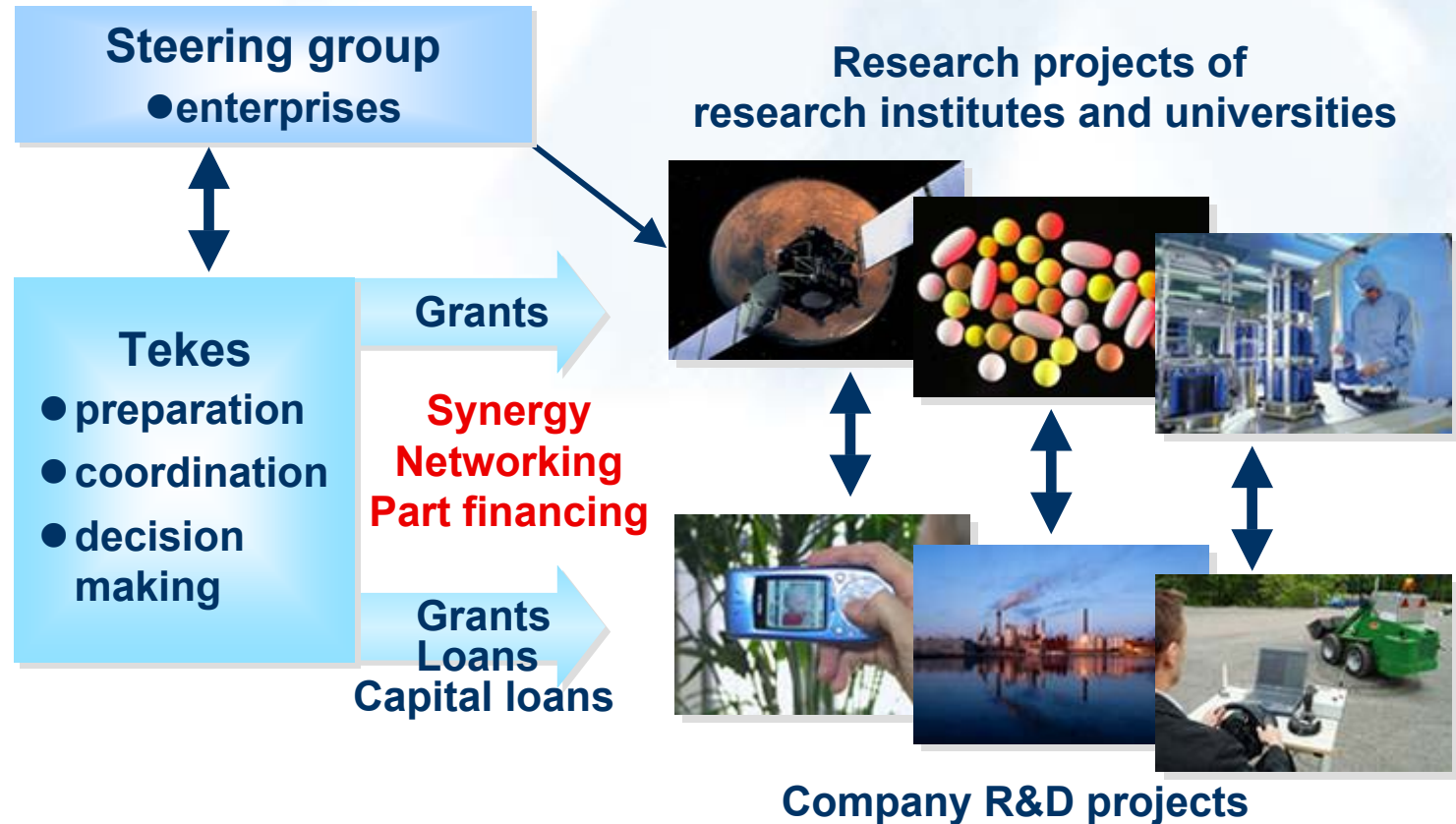
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What are Technology Programmes?

- **Multiproject programmes initiated, steered and part-financed by Tekes**
- **Focused on key technology sectors identified in Tekes' strategy focus areas**
- **Implemented in cooperation by companies and research units**
- **Companies can participate with their own projects or by joining common research projects**
- **Projects and results are partially public**



Technology programme model



Pictures: © ESA, Okmetic, Stora Enso



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Key figures of technology programmes

- 25 ongoing programmes 2005
with a total cost of 1.75 billion euros
- Some 10% of total Finnish R&D (private and public)...
- Each programme typically lasts 3-6 years
- 2,000 company participations annually
- 800 research unit participations annually
- Tekes usually finances
 - 60-80% of university projects
 - 25-50% of company projects



Information and Communications Technology

Technology programmes in 2005

		Total volume mill. euros	Participating compa- nies	research units
ELMO - Miniaturisation of Electronics	2002-2005	106	75	9
AVALI - Business Opportunities from Space Technology	2002-2005	20	20	10
	2003-2007	84	57	19
FENIX - Interactive Computing				
FinnWell - Future Healthcare	2004-2009	150	35	40
MASI - Modelling and Simulation	2005-2009	92	-	-
GIGA - Converging Networks	2005-2010	237	-	-
NORDITE - Scandinavian ICT	2005-2010	15	-	-
VAMOS - Value Added Mobile Solutions	2005-2010	202	-	-

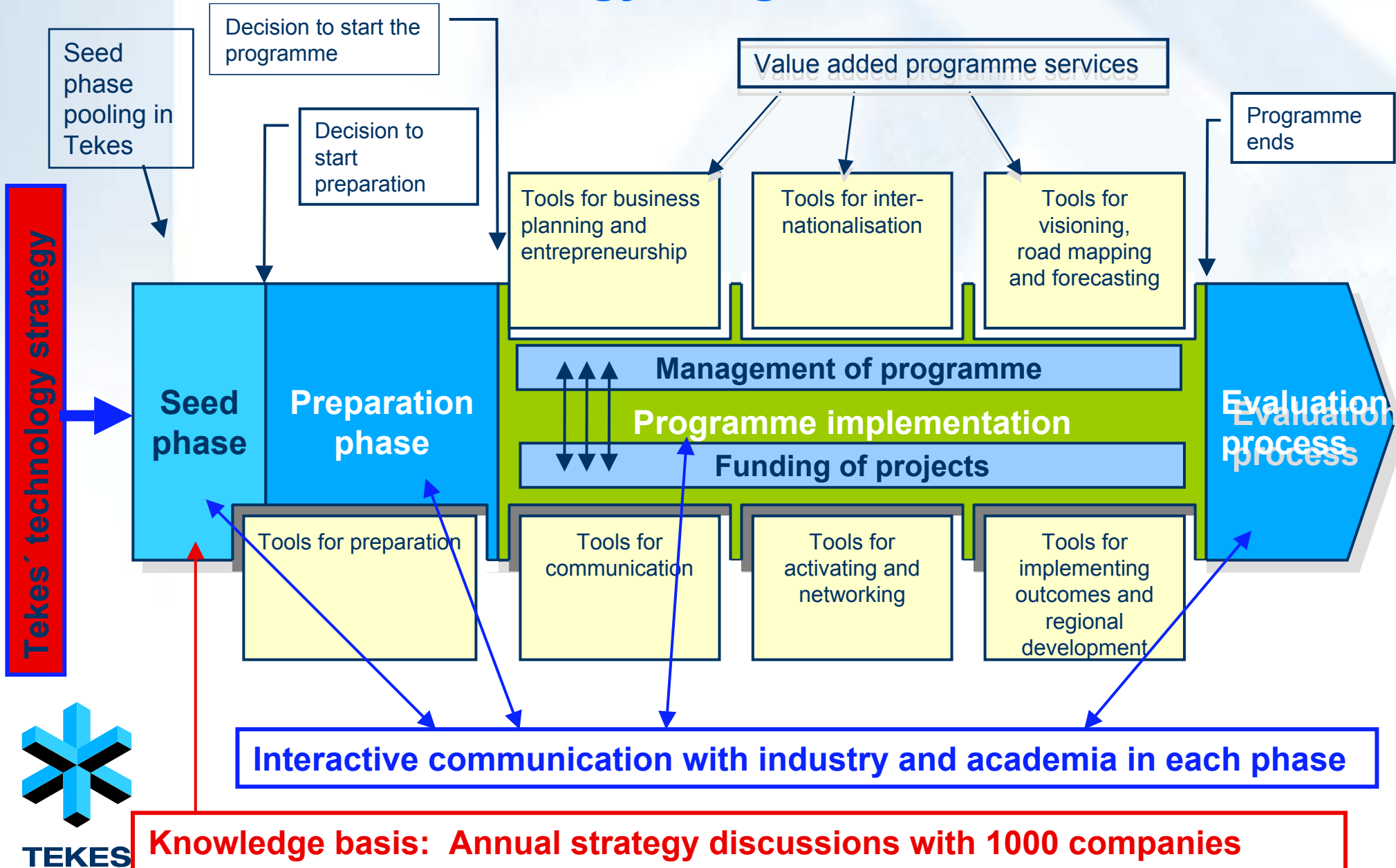
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Verso - Vertical Software Solutions

Veto - Control Systems for Modern Production Plants



Technology Programme Process



Programme services

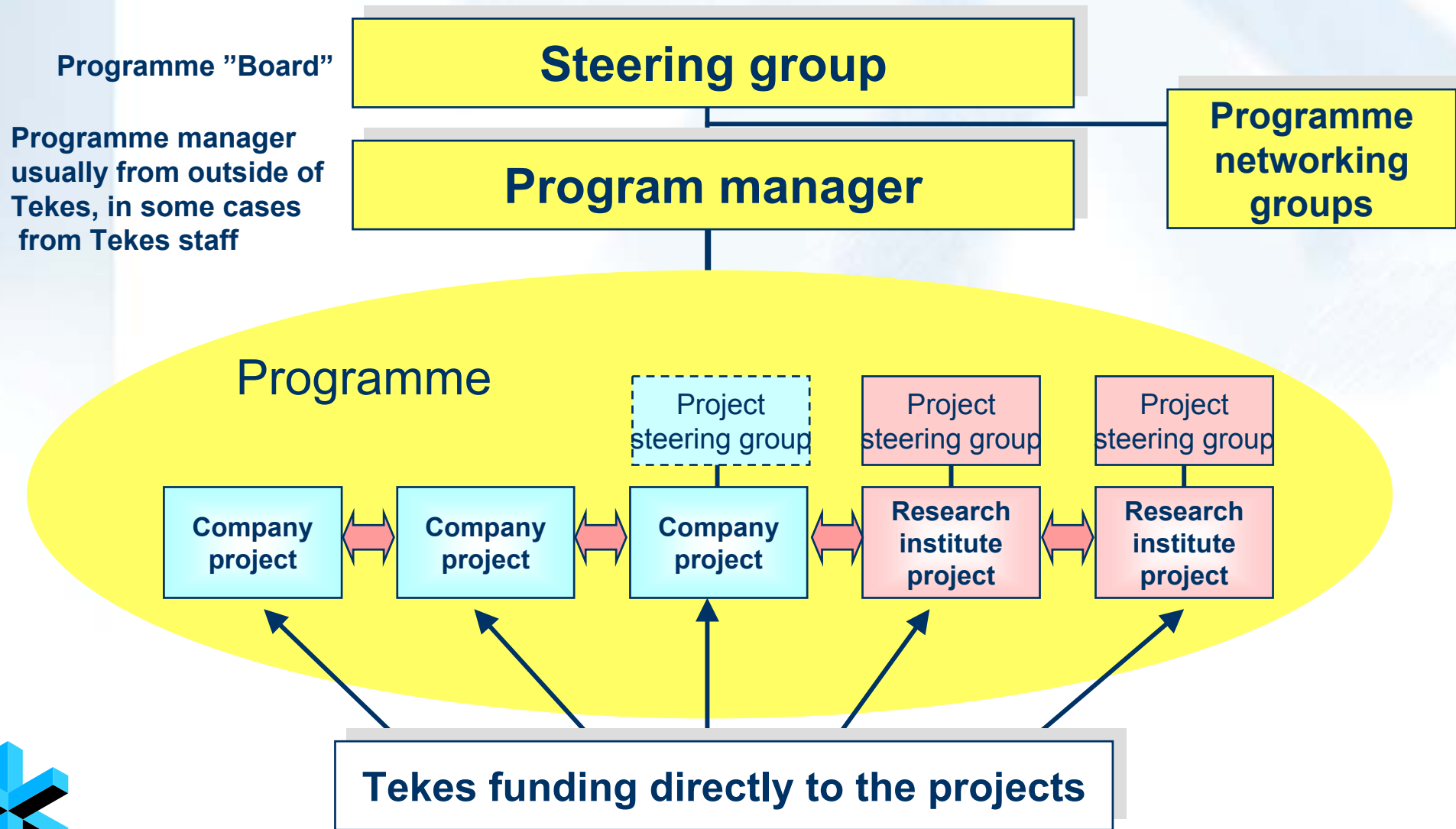
Today programme activities incorporate many support mechanisms in different amplitude

(additional to single project funding):

- Supports to **internationalisation** of R&D and business
- **Commercialisation** and technology based entrepreneurship support mechanisms
- Exchange of information, knowledge and know-how
- **Activation** of new actors in innovation
- Regional activities
- Image and credibility raising



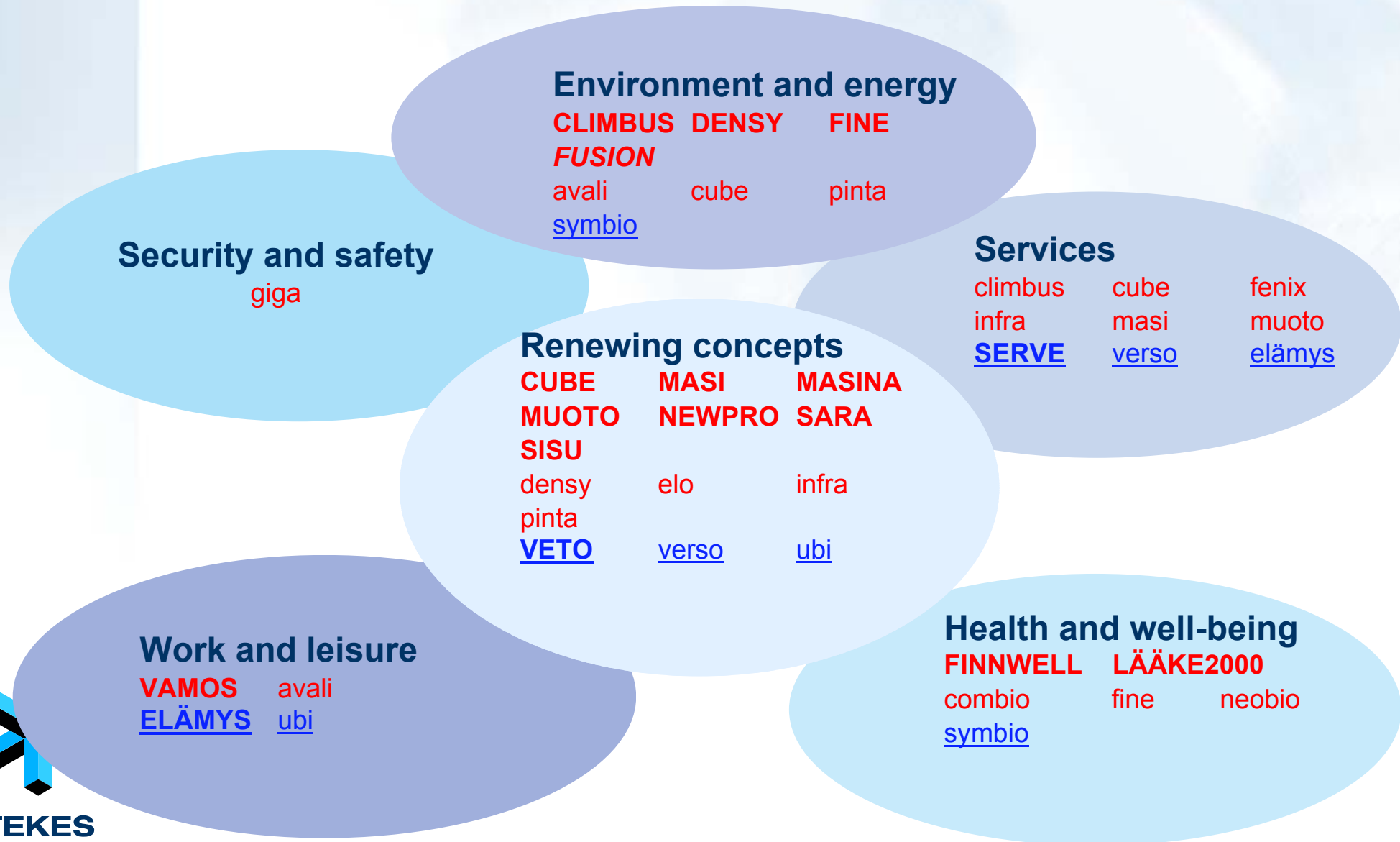
Programme organisation



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The programme portfolio – Application focus areas

(blue = preparation phase)



The programme portfolio – Technology focus areas

(blue = preparation phase)

Business competence

ELO

climbus
fine
Sara

LIITO

INFRA

combio
giga
sisu

veto

densy
muoto
vamos

elämys

fenix
newpro

ICT

AVALI GIGA

elo
fusion
sara

VERSO

ELMO NORDITE

finnano
masi
sisu

UBI

FENIX

finnwell
masina
vamos

veto

Biotechnology

NEOBIO

finnwell

SYMBIO

lääke2000

Nanotechnology

FINNANO

elmo

Materials technology

COMBIO

elmo
fusion
newpro

PINTA

finnano
masina



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Programme model and process is developing

The programme portfolio is going towards **more diversified types** of programmes

Also the programme process is taking more diversified paths

The volume of **programme portfolio is growing** → **50-60%** of Tekes total from 180 Me level towards some 250 Me level (2005-2007)

The scope of the programmes is expanding

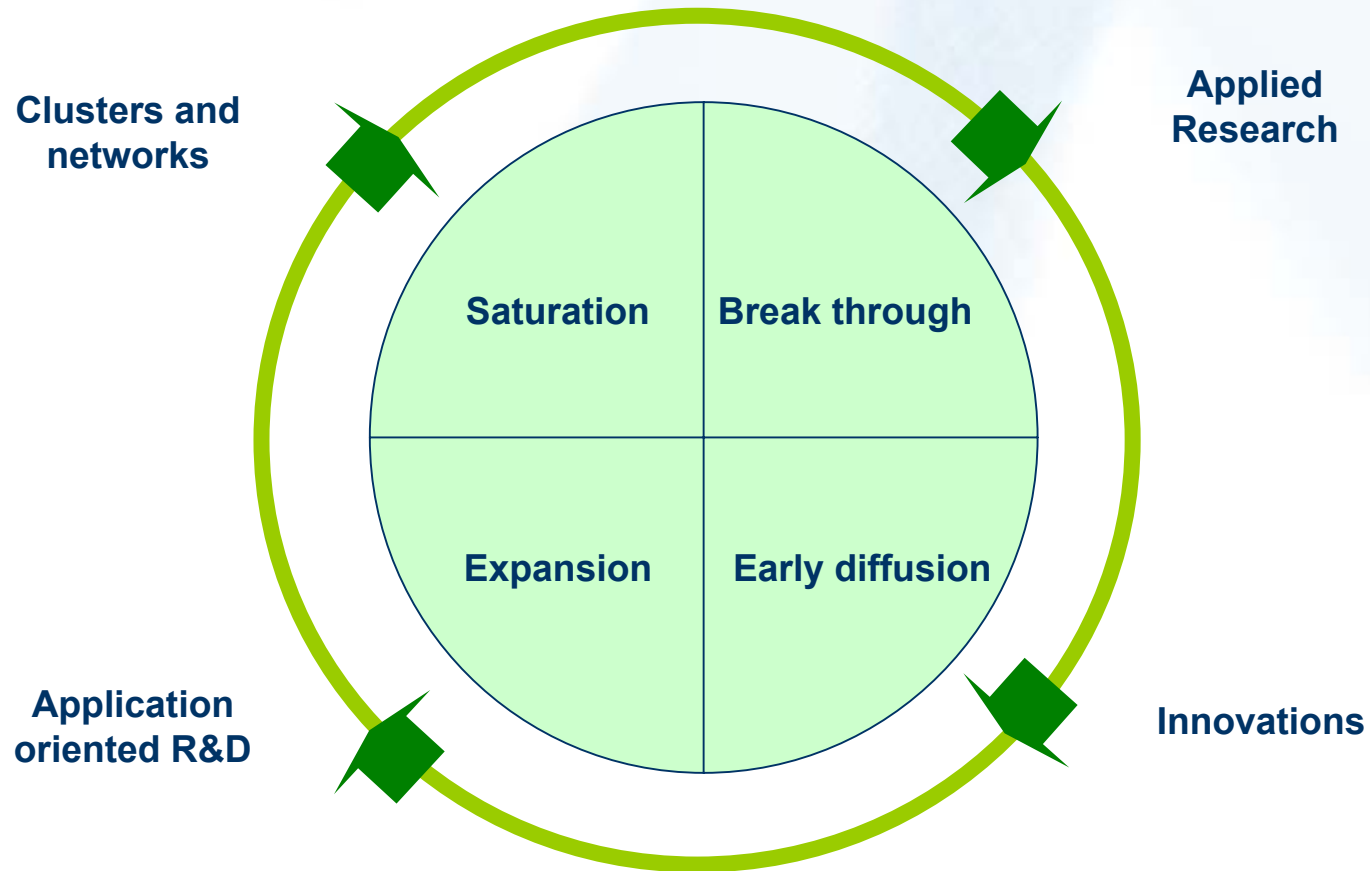
... to answer not only to the needs of knowledge basis for business life,

but also more and more to the **needs of the society**

... like health care, environment, etc

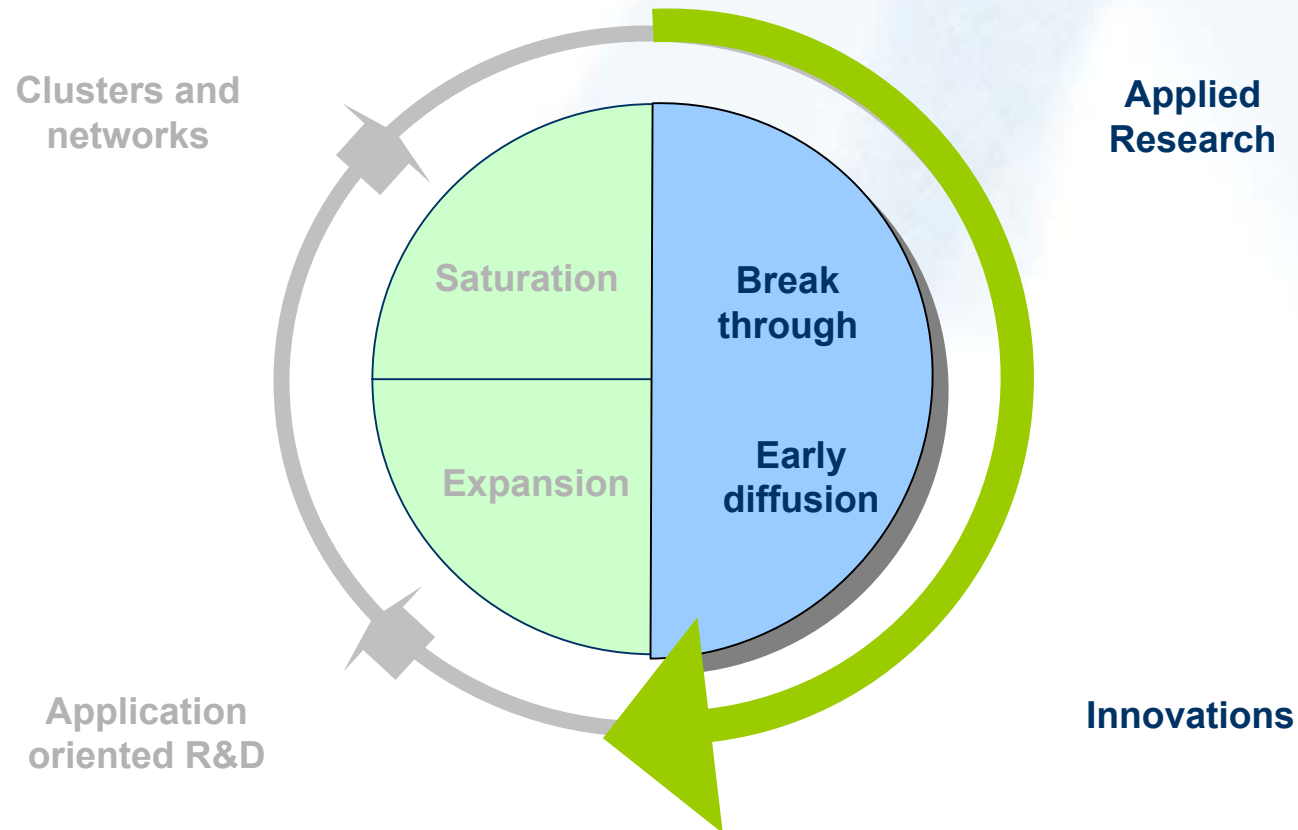


Life Cycle of Innovations will focus technology programmes

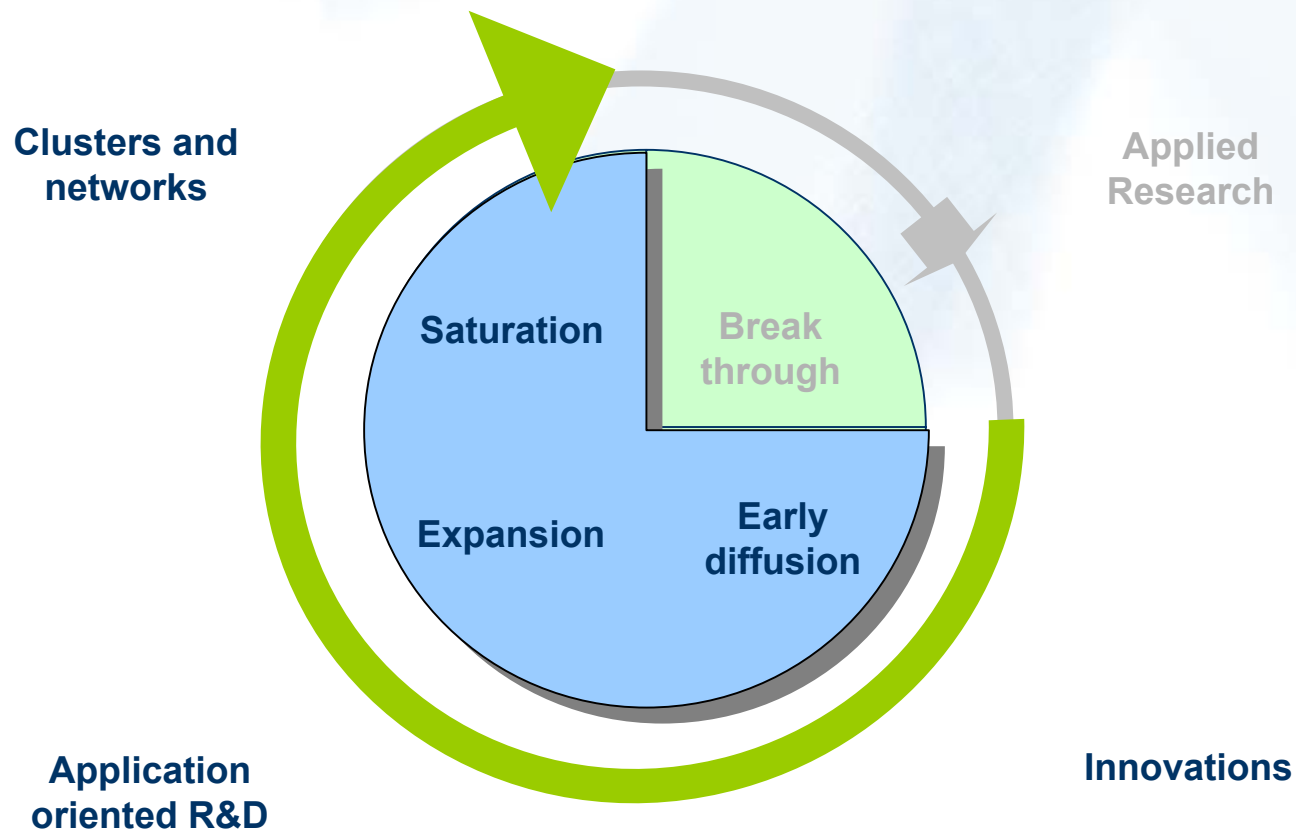


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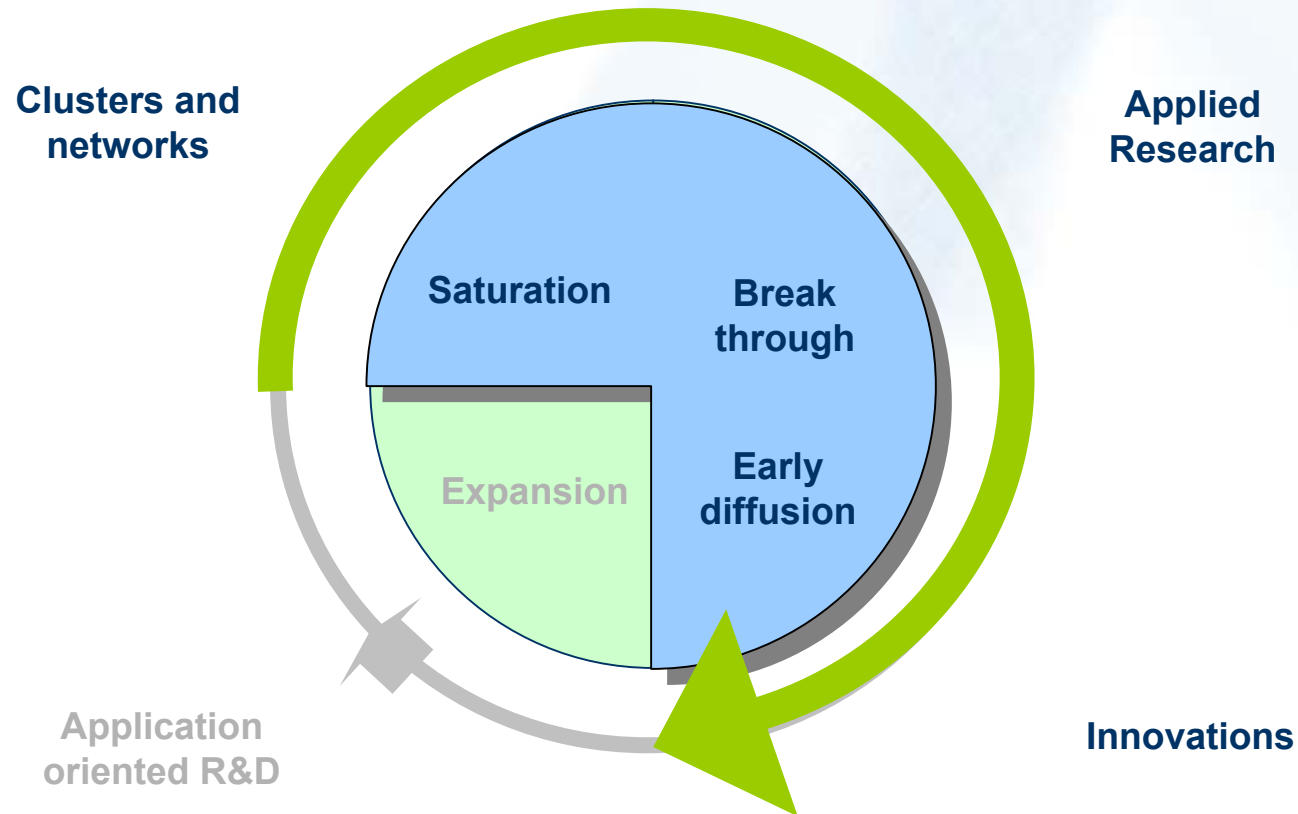
1. Research based programmes



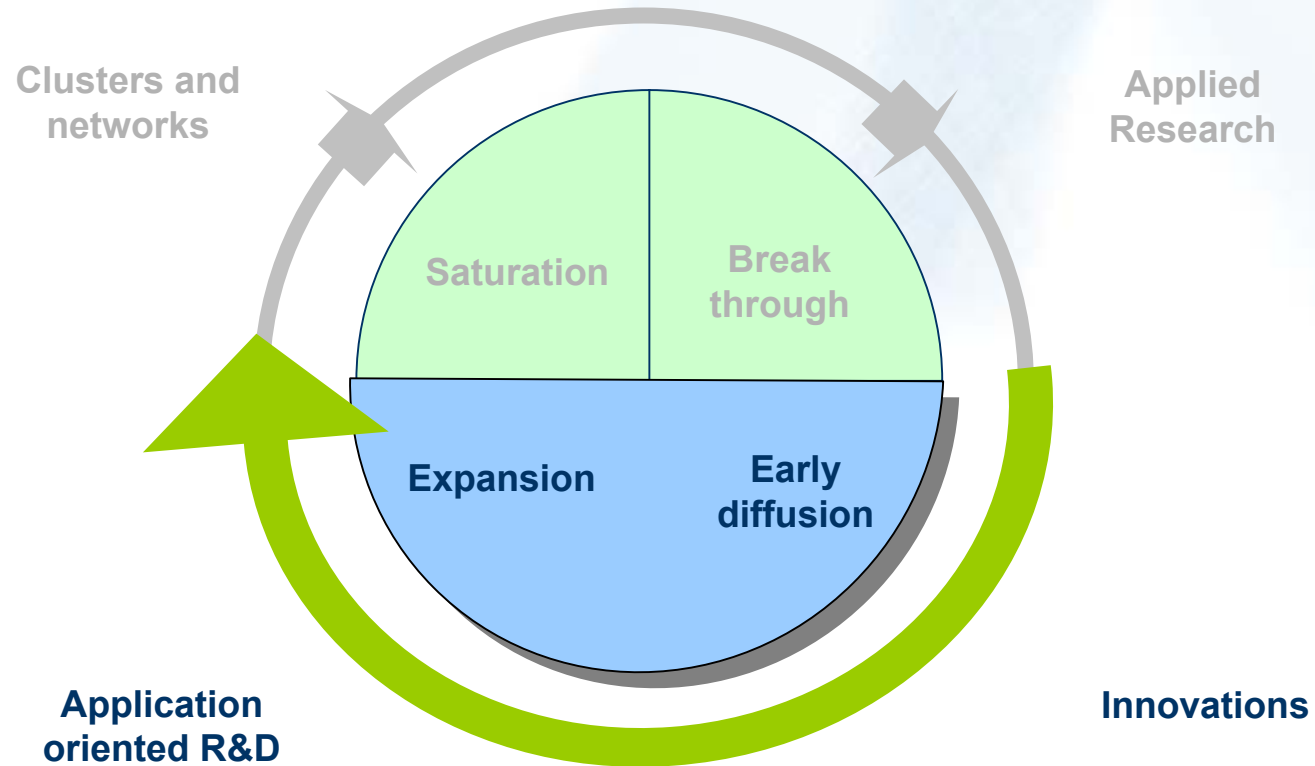
2. Market based programmes



3. Cluster based programmes



4. Societal based programmes



SWOT - technology programmes

Strengths

- Good imago (brand)
- Technology programme tradition (about 20 years)
- Skilful organization

Weaknesses

- Long programme preparation
- Programme management diversity
- Modular programme services

Opportunities

- More diversified types of programmes
- Portfolio control based on technology strategy

Threats

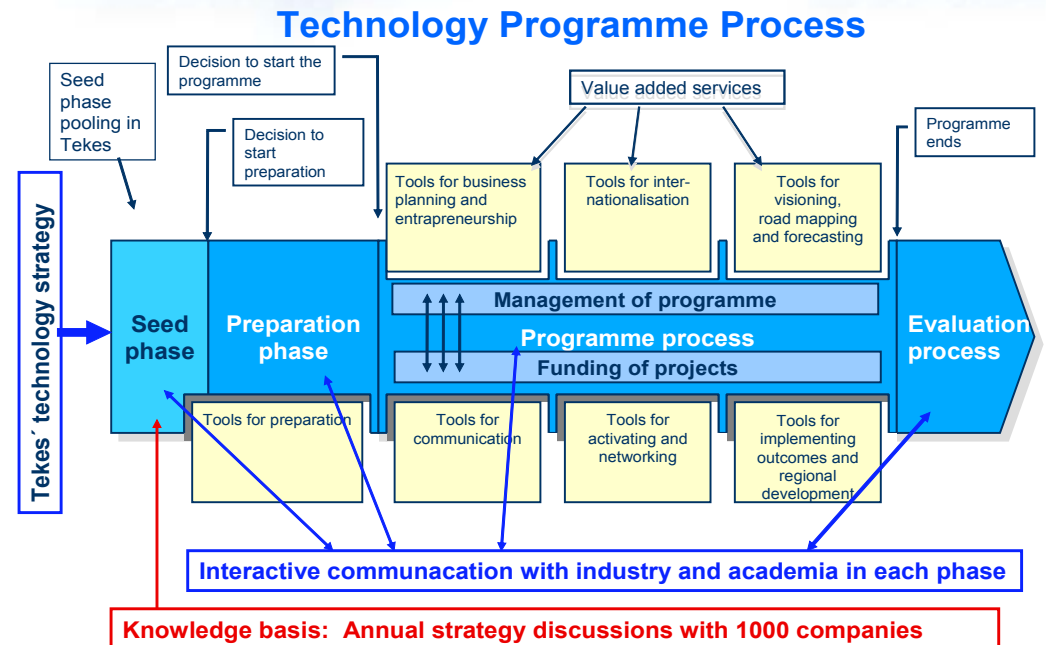
- Implementation the strategy
- Keep the creativity for new programmes



Thank you for your attention!

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