AMI-4EUROPE PROJECT

Unirea Hotel, Iasi, Romania

29-31 October 2011,

The North-East Regional Innovative Cluster for Molecular and Structural Imaging in Romania [IMAGO-MOL]

Official Launching Event

High-Tech Cluster Analysis

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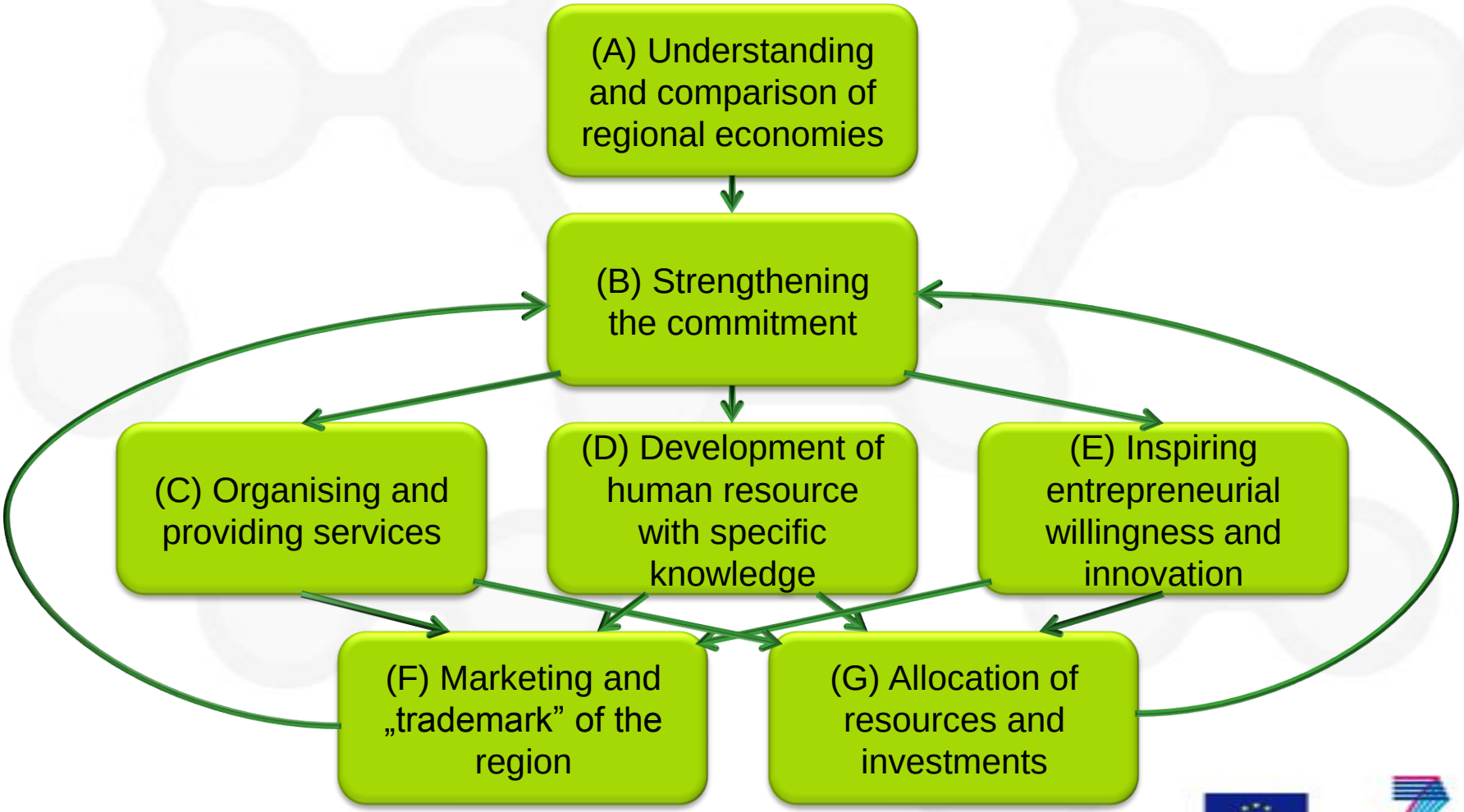
FP 7 REGIONS OF KNOWLEDGE
PROJECT No 265436

Introduction

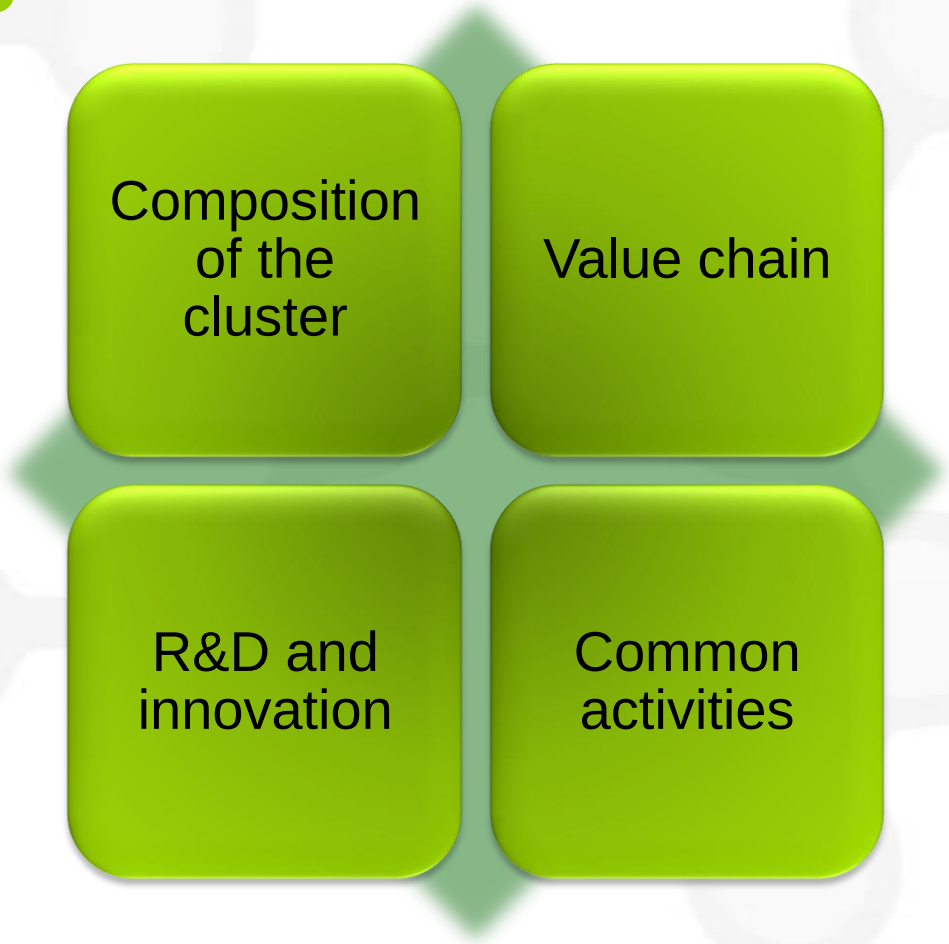
- Cluster development
- A framework for the performance of high-tech clusters
- Indicators for assessing the performance of high-tech clusters
- Hungarian cluster development model
- Performance analysis of clusters in Hungary – Accreditation Procedure
- Case study – Pharmapolis Debrecen Innovative Pharmaceutical Cluster

Cluster development

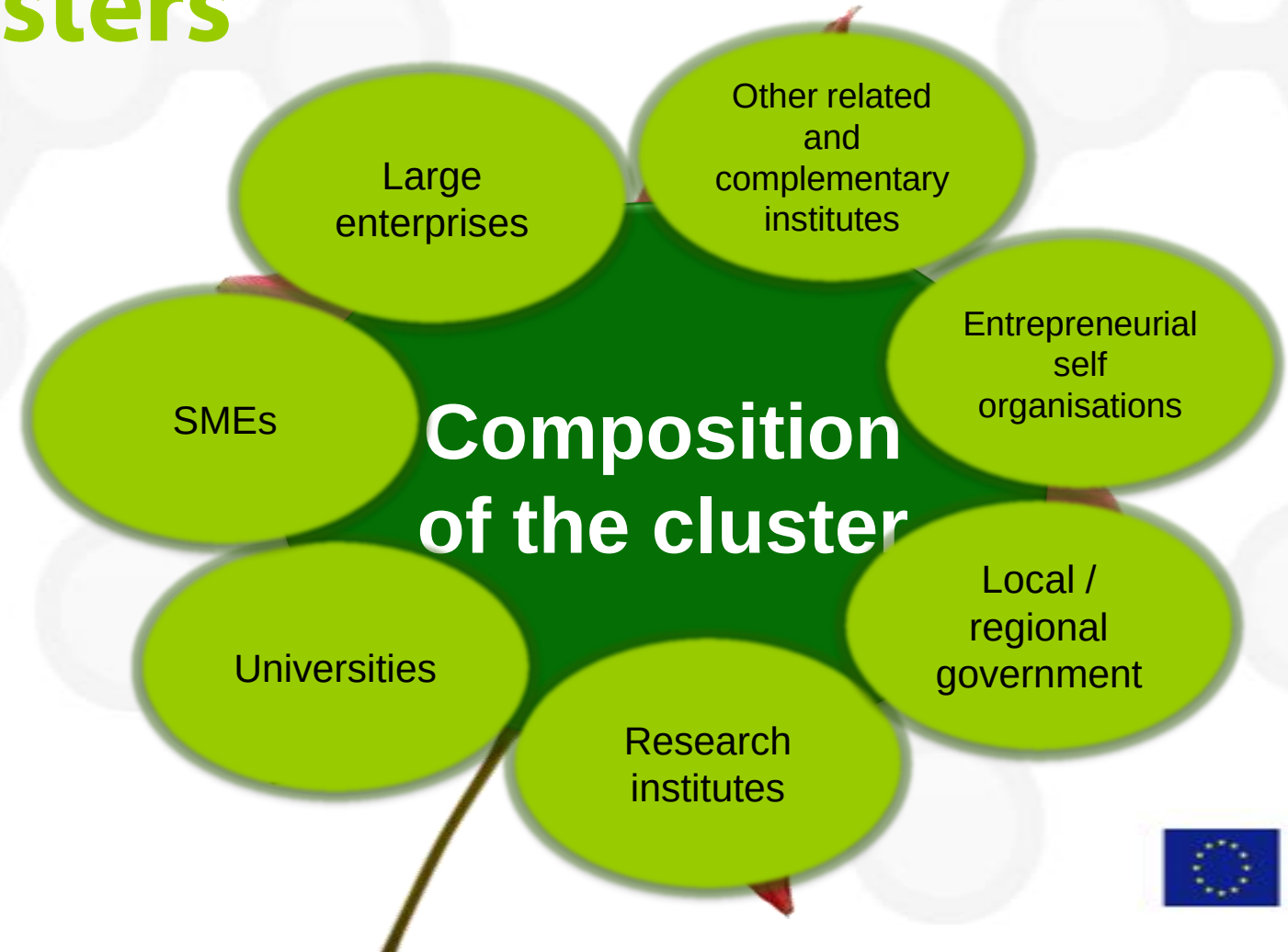


Source: Rosenfeld (2002)

A framework for the performance of high-tech clusters



Indicators for assessing the performance of high-tech clusters



Composition of the cluster

- Large enterprises
  - They have enough resources to build up a significant research infrastructure.
- SMEs
  - In the EU the SME sector hires 80% of the employees therefore they have an important effect on the economy's performance.
- Universities
  - Universities train the work force with the appropriate knowledge for the companies' needs.
  - Universities cooperate in the R&D projects (mainly in basic and applied researches).

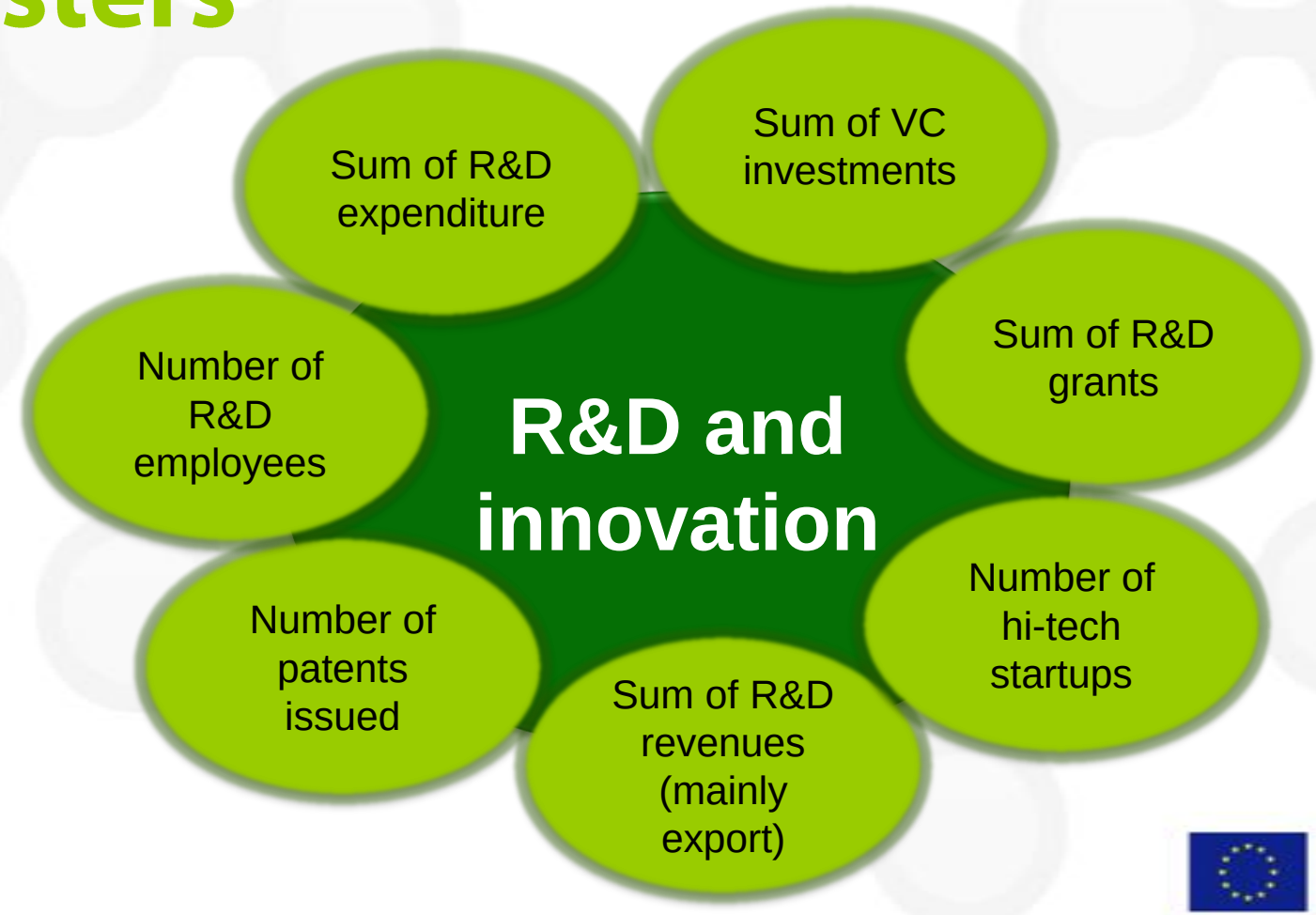
Composition of the cluster

- Research institutes
  - They have the appropriate knowledge base and infrastructure for the R&D projects.
- Local / regional government
  - The supportive local and regional government is able to admit the proposals of the business sector and is willing to support them.
- Entrepreneurial self organisations
  - The strategic cooperation generates the formation and development of the cluster.

Composition of the cluster

- Other related and complementary institutes
  - Financing institutes
  - Consulting companies
  - Suppliers
  - Etc.

Indicators for assessing the performance of high-tech clusters



R&D and innovation

- Sum of R&D expenditure
  - Expenses serving the R&D activity:
    - Personal costs, material costs
    - Services provided by outer organisations, tangible and intangible assets
- Number of R&D employees
  - How many percent of the total employees deal with the R&D activity?
- Number of patents issued
  - How many patents are issued in a year?

R&D and innovation

- Sum of R&D revenues (mainly from export)
  - Revenues of a company can come from the traditional activity and from the R&D activity.
- Number of hi-tech startups
  - How many hi-tech startup is available in the region in that specific sector?
- Sum of R&D grants
  - R&D grants can come from the government, the European Union or both

R&D and innovation

- Sum of VC investments
  - Venture capital is a type of private equity capital typically provided for early-stage, high-potential, growth companies in the interest of generating a return through an eventual realization event such as an IPO or trade sale of the company.

Indicators for assessing the performance of high-tech clusters

Common activities

- Proximity of suppliers
  - Spatial and time proximity of such suppliers which can complete the special needs of the companies and institutes performing R&D activities.
- Vertical / horizontal linking / partnership
  - Vertical linking: companies performing on the same part of the value chain (e.g. all of them are material manufacturers)
  - Horizontal linking: companies linking horizontally in the value chain (e.g. material producer and material processor)

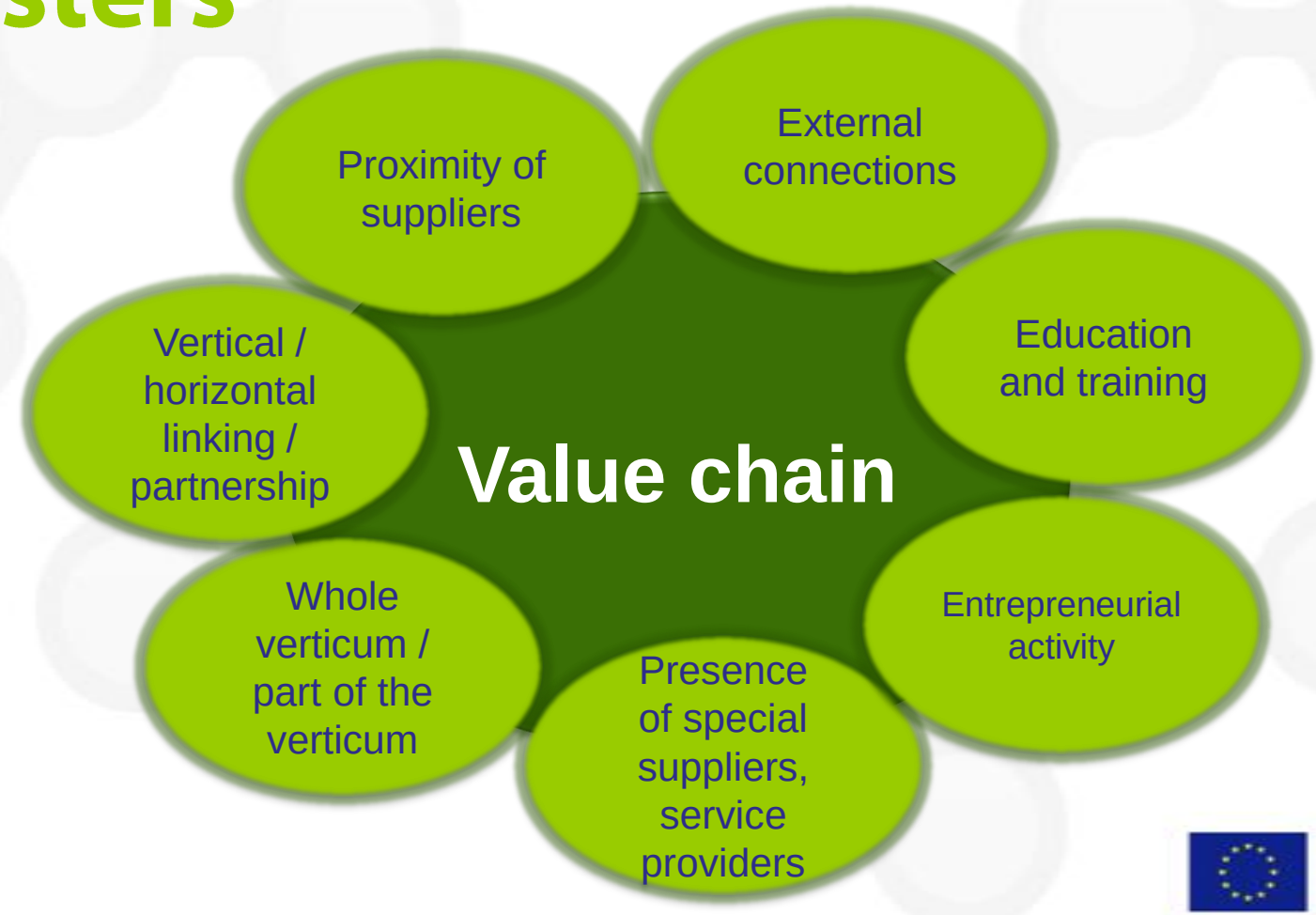
Common activities

- Sum of revenues from common sales
  - Common exhibitions, conferences
- Number of commonly developed and offered services
  - Services which were developed by a group of cluster members and are offered commonly by them.

Common activities

- Quality of common infrastructure
  - Commonly used specialised tangible and intangible assets for completing the needs of the R&D activity of the cluster
- Quality of common knowledge base
  - High role of educational organisations
  - Common culture
  - Knowledge-sharing

Indicators for assessing the performance of high-tech clusters



Value chain

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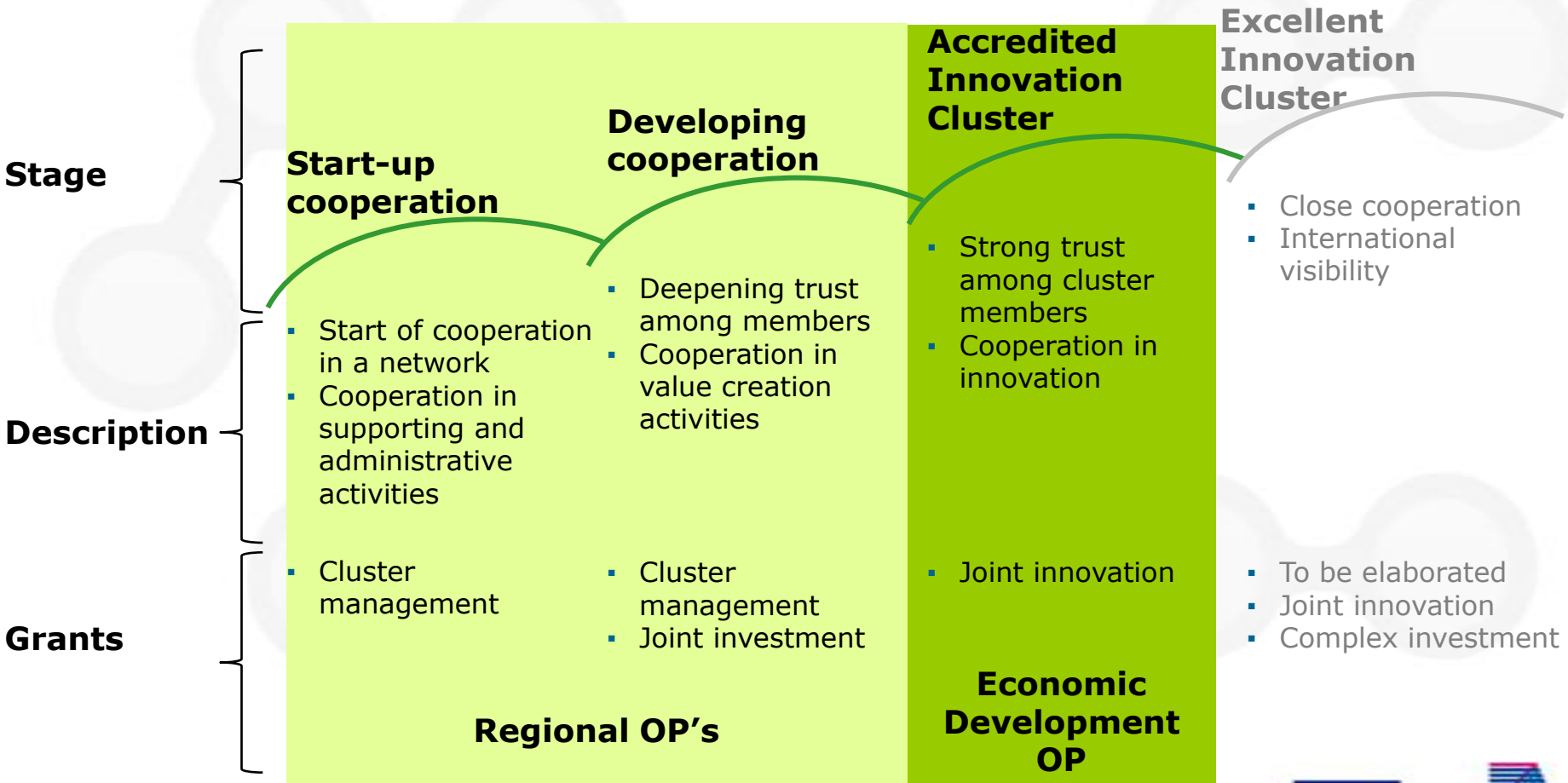
Value chain

- Whole verticum / part of the verticum
  - Whole verticum: the companies and institutes cover the whole value chain: from material-production through deploying the final product on the market to the aftercare.
  - Part of the verticum: the companies and institutes cover only a part of the value chain.
- Presence of special suppliers, service providers
  - Suppliers and service providers who can complete the special needs of the cluster.
  - Outsourcing

Value chain

- Entrepreneurial activity
  - How high is the entrepreneurial activity in the region?
- Education and training
  - Life-long learning
  - Practical skills
- External connections
  - with foreign companies and educational and research organisations,
  - with actors from other clusters.

Hungarian cluster development model



Source: Mag Zrt.

Performance analysis of clusters in Hungary – Accreditation Procedure

Common activities	Composition of the cluster	Economical performance of SMEs	R&D&I performance	Strategy of the cluster	Strategy of the cluster
Common marketing	Number of SMEs	Added value	R&D costs	Common aims	Growth of average wage per head
Projects in co-operation		Rate of export revenue	IP protection	Common projects	Rate of governmental grants
Common development history	Number of research centres, universities	Growth of revenue	Employees with PhD degree	Strategy accepted by all members	Number of entrant engineers
Common requisited services		Invesment in excess of depreciation	Participation in funded R&D programmes	Growth of revenue per head	First stage innovative products

Pharmapolis Debrecen Innovative Pharmaceutical Cluster

The **Pharmapolis Debrecen Innovative Pharmaceutical Cluster** is a legal and natural persons' **network**, who aspire, on a profit-orientated or a non-profit orientated basis, to enhance the added value along the value chain of the **pharmacological industry**, **human biotechnology** and **functional foods**; or they perform activities tightly related to these industries, or complementary activities connected to these industries.

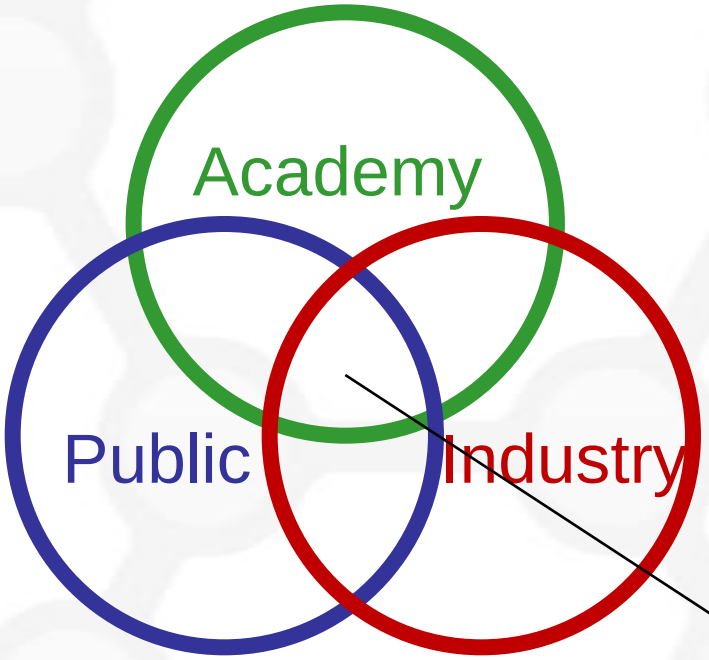
Composition of the cluster

Biological Research Centre of the Hungarian Academy of Sciences

Institute of Nuclear Research of the Hungarian Academy of Sciences

University of Debrecen

Chamber of Commerce and Industry of Hajdú-Bihar



Triple Helix

Richter Plc. (leading pharmaceutical company)

SMEs, spin-offs proceeding pharmaceutical R&D and innovation

Cluster

importance of partnership

Aims and operating fields of the Cluster

1. **Innovative therapeutic products**
   - 1.1. Formulation of biotechnological drugs and drug candidates
   - 1.2. Development of cell therapy processes
2. **Development of imaging technologies**
3. **In vitro technological platforms**
   - 3.1. Biomarkers
   - 3.2. Development of stress protein-based drugs and diagnosticum
4. **Biotechnology**
5. **Education module**

Results

- 6 project companies (✓)
- 1 new plant (Richter, ✓)
- 1 new science park (incubator, 8000 m^2, ✓)

Project companies 2009

1. Parens Ltd.
    - Autologous bone marrow-derived stem cell therapy in patients with severe peripheral arterial disorders
2. CERORIN Ltd.
    - Development of preprandial and bedtime oral insulin preparation
3. Pharmatom Ltd.
    - PET radioligand development for characterization of binding of drugs and drug candidates to HERG channels
4. BioDiagnostica Ltd.
    - Pulmonary Cancer Diagnosys Development

Project companies 2010

1. OxaPharm Ltd.
    - Development of an antipsychotic drug combination devoid of metabolic side effects

2. AUTOGEN Kft.
    - New quality, specially effective autologous haematopoietic stem cell transplantation development

Thank you
for your kind attention!

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