Benchmarking Report

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Klaster poljomehanizacije d.o.o.

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ESCA is the European Secretariat for Cluster Analysis. Based in Berlin and hosted by VDI/VDE Innovation + Technik GmbH, ESCA supports in particular cluster managers and policy makers with advice on cluster development. ESCA experts have developed a methodology for cluster benchmarking that is acknowledged by both cluster managers and policy makers throughout Europe. Since 2008 more than 450 cluster management organisations have been benchmarked according to this methodology. Being additionally involved in the European Clusters Excellence Initiative (ECEI) from 2009 to 2012, ESCA experts contributed to the development of tools that support cluster managers on their way to excellence.

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1. Introduction

This benchmarking exercise is part of the global benchmarking activities of the European Secretariat for Cluster Analysis, which are carried out by VDI/VDE Innovation + Technik GmbH and local partners in various countries since November 2010.

The benchmarking methodology was developed by the Agency of Kompetenznetze Germany hosted by VDI/VDE Innovation + Technik GmbH and was applied to benchmark more than 140 cluster organisations from eight European countries in the context of the project “NGPExcellence” from October 2010 till June 2011 (www.cluster-excellence.org). At the end of 2011, the methodology was further developed by incorporating new insights and developments from the European Cluster Excellence Initiative (ECEI, www.clusterexcellence.eu), a project co-funded by the European Commission Directorate General Enterprise and Industry within the PRO INNO Europe® initiative. Selected partners of ECEI provided valuable inputs to specific indicators in order to be assessed.

Since the end of 2011, VDI/VDE-IT has merged all its activities relative to cluster benchmarking and analysis under the brand “ESCA – European Secretariat for Cluster Analysis (www.cluster-analysis.org)”. Consequently, ESCA, with its internal experts and a broad network of Cluster Benchmarking Experts throughout Europe (see ANNEX III), provides cluster management organisations, policy makers and program agencies with cluster related analysis and advice as a one-stop shop.

In 2011, in the context of its Competitiveness and Innovation Framework Programme (CIP) the European Commission Directorate General Enterprise and Industry granted funding to four project consortia to initiate activities for the improvement of cluster management:

- ATC4Excellence (ATC4E)
- Capacity Development for Cluster Managers (CDCM)
- Cluster Excellence Network for Training and Mobility (CENTRAMO)
- South East Europe Network of Excellence for Cluster Organisations (SEENECO)

One activity within these projects is benchmarking of cluster organisations according to the approach of ESCA and leading to the “Cluster Management Excellence Label BRONZE” (see www.cluster-analysis.org for further details) for all participating cluster organisations. Another activity is related to training.

This report presents the results of the cluster benchmarking analysis of Klaster poljomehanizacije d.o.o., realised in the context of the SEENECO project. It is based on an interview with Željko Erkapić which was conducted on January 3rd, 2013 by Ivan Božac from Croatian Chamber of Economy.

The report presents the findings of this interview and gives the cluster organisation the opportunity to compare itself with a technological / industrial and an excellence portfolio consisting of 71 clusters selected within the ESCA reference portfolio. Furthermore, a comparison to cluster organisations from the same country is drawn, if data is available from at least around ten cluster organisations from the specific country. The report also provides general recommendations to the benchmarked cluster organisation on how to improve its performance.

For the purpose of this benchmarking activity, clusters are considered as networks of companies and research institutions (including universities) that have a thematic focus, are regionally concentrated, institutionally organised and managed by a cluster manager or a cluster management team. The cluster may also include other actors such as public agencies. The cluster management organisation is a management
agency that coordinates activities of cluster participants. The cluster management organisation is mandated by the cluster participants to represent the cluster, both internally and externally, and to develop and implement activities that support the development of the cluster.

Collected data and the benchmarking report are treated with absolute confidentiality and will not be made available to any other third party. It is the sole decision of the cluster management organisation to publish the report or parts of it.

The benchmarking activities of ESCA are well recognised by many cluster policy stakeholders throughout Europe, who have integrated approaches toward cluster management excellence into their policies and programmes. The European Commission (DG Enterprise and Industry) as well positively acknowledges these approaches.

Cluster organisations having performed an ESCA cluster benchmarking process including the receipt of this individual report are awarded with the “Cluster Management Excellence Label BRONZE – Striving for Cluster Excellence”, valid for two years. ESCA is mandated to award this label after completion of the benchmarking exercise.
1.1 Cluster Excellence

Many countries have developed cluster policies and programmes to enhance the impact of research and innovation. Clusters provide governments with a strategic opportunity to address social and economic challenges through business development and innovation support programmes. In this regard, cluster excellence matters for many reasons: it contributes to more prosperity in regions, better competitiveness for companies and more return on investment for investors. Cluster management excellence is one of the most promising approaches to increase the contribution of clusters to sustainable economic development.

In this context, the European Commission and cluster policy makers in various countries encourage cluster organisations to take part in such benchmarking in order to promote cluster management excellence and mutual learning by comparing cluster organisations in Europe. The project addresses managers and staff of the cluster organisations. Benefits are new insights and findings that can promote cluster management excellence and the development of quality of cluster and network services for enterprises.

1.2 The Cluster Management Benchmarking Approach

Clusters are subject to permanent development. Therefore, cluster organisations require information on performance and competitiveness as an input for strategic decision making. Benchmarking can support this process as it offers the opportunity for active learning through a comparison with other clusters. By relying on qualitative and quantitative indicators and by comparing cluster-specific results among peers (e.g. clusters from the same country and/or the same technology area / industrial sector), benchmarking can be used to document success and to identify opportunities for improvement. The findings are of interest to the cluster participants as well as to the cluster management organisations.

The objective of the benchmarking exercise is not to rank or evaluate individual clusters but to provide cluster organisations with a better understanding of how to improve the quality and effectiveness of the work done by cluster organisations as well as how to facilitate international collaboration between clusters. Thus, in all cases the individual results should always be interpreted individually, taking the specific environment, the strategic objectives, and other individual characteristics of the cluster and the cluster organisation into consideration.

1.2.1 Indicators for Cluster Management Benchmarking

The benchmarking is focussed on the cluster organisation that is responsible for managing the cluster and its activities, and – to a certain extent - on the community of the cluster actors. Economic or other effects of the cluster on entire industrial sectors or the development of regional strengths cannot be reliably measured through benchmarking and are therefore not part of this analysis. The dimensions and indicators of the cluster benchmarking, which are analysed for this report, are presented in the following table.
STRUCTURE OF THE CLUSTER

- Age of the cluster organisation
- Legal form of the cluster organisation
- Nature of the cluster: driving forces
- Nature of the cluster: degree of specialisation
- Composition of the cluster participants (Committed participants)
- Geographical concentration of the cluster participants (Committed participants)
- Utilisation of regional growth potential
- International participants of the cluster
- Nature of cooperation between cluster participants

CLUSTER MANAGEMENT AND GOVERNANCE / STRATEGY OF THE CLUSTER ORGANISATION

- Clear definition of the roles of the cluster manager / Implementation of a governing body / Degree of involvement of the participants of the cluster in the decision making process.
- Number of cluster participants per employee (full-time equivalents) of the cluster organisation
- Human resource competences and development in the cluster organisation
- Strategic planning and implementation processes
- Thematic and geographical priorities of the cluster strategy

FINANCING OF THE CLUSTER MANAGEMENT

- Repartition of the different financial sources (public funding, chargeable services, membership fees and other private sources) in the total budget of the cluster organisation in relation to the age of the cluster
- Financial sustainability of the cluster organisation

SERVICES PROVIDED BY THE CLUSTER ORGANISATION (SPECTRUM AND INTENSITY)

- Acquisition of third party funding
- Collaborative technology development, technology transfer or R&D
- Information, matchmaking and exchange of experience among participants
- Development of human resources
- Development of entrepreneurship
- Matchmaking and networking with external partners / promotion of cluster location
- Internationalisation of cluster participants

ACHIEVEMENTS AND RECOGNITION OF THE CLUSTER ORGANISATION

- Number of external cooperation requests received by the cluster organisation
- Institutional origin of external cooperation requests
- Geographical origin of external cooperation requests
- Characteristics of cooperation with other international clusters
- Visibility in the press
- Impact of the work of the cluster organisation on R&D activities of the cluster participants
- Impact of the work of the cluster organisation on business activities of the cluster participants
- Impact of the business-oriented services of the cluster organisation on SME participants
- Degree of internationalisation of cluster participants
- Impact of the work of the cluster organisation on international activities of the cluster participants

Table 1: Benchmarking of clusters: dimensions and indicators
1.2.2 The Comparative Portfolios

Two distinct comparative portfolios are always used in the benchmarking exercise:

- A technological portfolio: results of the interview with the cluster organisation are compared with results from clusters that are active in the high-lighted technology area in tables 2 and 3. The country of origin of the cluster organisation described in this report is also high-lighted in tables 2.

- An excellence portfolio: results of the interview with the cluster organisation are compared with results from clusters of the excellence portfolio (table 3).

If sufficient data is available from the country of origin of the interviewed cluster organisation, furthermore a country comparison is drawn:

- A national portfolio: results of the cluster interview are compared with results from clusters of the same country (at least ten cluster organisations from one country are required; otherwise this comparison is not feasible).

Table 2a gives an overview of all cluster organisations being benchmarked so far since October 2010. This gives an impression of the international diffusion and acceptance of the methodology.

The comparative portfolios however, result only from data collected between March 2011 and today. This “valid data” being used is presented in Table 2b. By this it is ensured that all data being used for the comparisons is not older than around 2.5 years. The comparison of “new” data with outdated “old” data is avoided as much as possible. The “valid data” builds the basis for the national portfolios.

The idea of benchmarking intends to compare with the “state of the art”. Therefore, within the technological portfolios not all of the “valid” data sets of cluster organisations (according to Table 2b) are used. Using the assessed data ESCA determines a composite “Excellence Score” for each cluster organisation. On the one hand, chosen criteria of excellence according to the European Cluster Management Excellence Initiative (refer to chapter 5) are used to determine this “Excellence Score”. On the other hand, the spectrum and the intensity of the main services provided by the cluster organisation are considered. If a certain minimum score is reached, the data of the cluster organization is used for the technological portfolio (Table 2c). Furthermore, very young cluster organisations are not included in the technological portfolio since their characteristics differ from mature cluster organisations in many aspects (start of any cluster management activities less than around 2.5 years ago).

The excellence portfolio (Table 3) uses the same “Excellence Score”. Only cluster organisations reaching very high levels are included (around 20-30% of all cluster organisations of the technological portfolios).

Cluster organisations which have classified themselves as being active in “Other technology area” were assigned to the best fitting technology area by ESCA during the data analysis.
| TECHNOLOGY AREAS                  | AUT  | BEL  | CAN  | CHE  | COL  | CZE  | DNK  | ESP  | EST  | FIN  | FRA  | GER  | GRC  | HRV  | HUN  | IND  | IRL  | ISL  | ITA  | LBN  | LVA  | MAR  | MEX  | NLD  | NOR  | POL  | PRT  | PRT  | SRB  | SVK  | SWE  | TUR  | Total |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Aviation and space              | 0    | 1    | 1    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Biotechnology                   | 1    | 0    | 1    | 1    | 0    | 1    | 0    | 1    | 2    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Construction building sector    | 1    | 0    | 1    | 1    | 0    | 1    | 0    | 1    | 2    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    |
| Creative industries and business | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Energy and environment          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Food industry (non-biotech)     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Health and medical science      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Humanities / social sciences     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Information and communication   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Micro, nano and optical         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| technologies                    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Production and engineering      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sports / Leisure / Tourism      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Transportation and mobility     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Total                           | 12   | 18   | 11   | 31   | 69   | 36   | 26   | 10   | 49   | 33   | 29   | 65   | 65   | 27   | 437  |

Table 2a: Total number of clusters per country and specific technology area benchmarked since October 2010
| TECHNOLOGY AREAS | AUT | BEL | CAN | CHE | COL | CZE | DNK | ESP | EST | FIN | FRA | GER | GRC | HRV | HUN | IND | IRL | ISL | ITA | LBN | LVA | MAR | MEX | NLD | NOR | POL | PRT | SRB | SVK | SWE | TUR | Total |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Aviation and space | 0 1 1 0 | 1 0 1 | 1 2 1 | 0 1 1 | 2 1 | 0 1 | 1 0 1 | 0 0 1 | 2 0 | 1 1 | 0 0 | 0 0 | 0 0 | 0 0 | 0 1 | 0 0 | 1 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| Biotechnology | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Construction/building sector | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Creative industries and business, media, design | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Energy and environment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Food industry (non-biotech) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Health and medical sciences | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Humanities / Social sciences, service innovation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Information and communication | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Micro, nano and optical technologies | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| New Materials and chemistry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Production and engineering | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sports / Leisure / Tourism | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transportation and mobility | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 12 | 15 | 11 | 26 | 63 | 31 | 21 | 7 | 44 | 29 | 28 | 58 | 19 | 24 | 388 |

Table 2b: Total number of clusters per country and specific technology area benchmarked since March 2011 ("valid data"), being used for compilation of the national portfolios
| TECHNOLOGY AREAS                        | AUT | BEL | CAN | CHE | COL | CZE | DNK | ESP | EST | FIN | FRA | GER | GRC | HRV | HUN | IND | IRL | ISL | ITA | LBN | LVA | MAR | MEX | NLD | NOR | POL | PRT | PSE | SVK | SWE | TUR | Total |
|----------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Aviation and space                     | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 52  | 20  | 17  | 41  |
| Biotechnology                          | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 29  | 17  | 5   | 41  |
| Construction/building sector           | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 14  | 9   | 1   | 1   |
| Creative industries and business/brand | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 20  | 13  | 1   | 1   |
| Interior design                        | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 7   | 1   | 1   | 14  |
| Energy and environment                 | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 19  | 2   | 0   | 0   |
| Environment                            | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 0   | 1   | 20  |
| Environmental health                   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 1   |
| Food industry (non-bioc)               | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 14  | 14  | 0   | 1   |
| Health and medical sciences            | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 11  | 0   | 0   | 0   |
| Humanities/social sciences             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 11  | 0   | 0   | 0   |
| Information and communication          | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 5   | 1   | 0   | 0   |
| Micro, nano and optical technologies  | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 3   | 0   | 1   | 0   |
| New Materials and chemistry            | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 11  | 11  | 0   | 1   |
| Production and engineering             | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 2   | 0   | 1   | 2   |
| Sports/Leisure/Tourism                 | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 11  | 11  | 0   | 1   |
| Transportation and mobility            | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 11  | 11  | 0   | 1   |
| Total                                  | 11  | 11  | 9   | 20  | 52  | 29  | 17  | 5   | 41  | 25  | 27  | 55  | 14  | 19  | 335 |

Table 2c: Total number of clusters per country and specific technology area benchmarked since March 2011 ("valid data"), being used for the compilation of the technological portfolios
<table>
<thead>
<tr>
<th>TECHNOLOGY AREAS</th>
<th>Aviation and space</th>
<th>Biotechnology</th>
<th>Construction/building sector</th>
<th>Creative industries and business, media, design</th>
<th>Energy and environment</th>
<th>Food industry (non-biotech)</th>
<th>Health and medical science</th>
<th>Humanities / social sciences, service innovation</th>
<th>Information and communication</th>
<th>Micro, nano and optical technologies</th>
<th>New Materials and chemistry</th>
<th>Production and engineering</th>
<th>Sports / Leisure / Tourism</th>
<th>Transportation and mobility</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>Total</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>6</td>
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<td>8</td>
<td>5</td>
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<td>7</td>
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<td>18%</td>
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<td>19%</td>
<td>24%</td>
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<td>18%</td>
<td>17%</td>
<td>29%</td>
<td>12%</td>
<td>16%</td>
<td>25%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Table 3: Number of clusters of the excellence portfolio per specific technology area
1.2.3 Presentation of the Benchmarking Results

The results of the benchmarking are presented by four different graphical formats.

Boxplots

Boxplots display distributions of statistical data without making any assumptions of characteristics of this distribution. This means that the spacing between the different parts of the box helps to indicate the degree of spread and skewness in the data.

The box represents 50 % of the statistical population (the interquartile range), 25 % higher and 25 % lower than the median value, which is marked inside the box. The whiskers represent the lower quartile and the upper quartile of the data. For more homogeneity and representativeness of the results, in the lower and the higher quartile, not the fully 25 % of the data is included, but a reduced set only. The ends of the whiskers are determined by the following model: the length of the whiskers is determined by the lowest and the highest value of the data being presented AND shall not be larger than 1.5x the size of the interquartile range. This way, the whiskers include up to 25 % of the entire data, reduced by significant statistical outliers.

When applying the described methodology for drafting the box-plot chart, in general around 80-90 % of the cluster-related data can be considered inside the box and being inside the range of the whiskers. Very special individual values are not considered.

The green line represents the data of the individual benchmarked cluster. The figure does not feature a green line in case no data was collected for the cluster.
Stacked Barchart

In the first chart, the name of the benchmarked cluster shows its position compared to other clusters of the comparative portfolio. The figure does not feature a name if there was no data collected for the cluster. The numbers in the coloured fields of the bars represent the number of clusters existing within the specific technology area per country.

The second chart shows the repartition of the results within the excellence portfolio. In all graphs, the total number may vary due to incomplete data sets for single clusters.
Radar Chart

The radar chart is a graphical method of displaying multivariate data in the form of a two-dimensional chart of quantitative variables represented on axes starting from the same point. The data of the benchmarked cluster is indicated by a green line and compared to the data of the clusters in its specific technology area (orange line) and to the excellence portfolio (blue line). The figure does not feature a green line if no data was collected for the cluster.
Point Cloud

A point cloud is a bidirectional representation of correlated data. It allows a rapid optic impression about direction and constriction of the displayed correlation. The position of the benchmarked cluster in the matrix is indicated by a green dot (●). In some cases, sufficient data could not be assessed during the interview. In these cases only the distribution of the comparative portfolios being included in the data assessment is presented.
2. Benchmarking Results

2.1 Structure of the Cluster

2.1.1 Age of the Cluster Organisation

The maturity of a cluster organisation is often related to its age. As it takes time to successfully develop and implement activities for a cluster, it is supposed that a cluster organisation needs at least four years to yield satisfying results. The year in which the cluster management activities were initiated (not necessarily as a legally independent organisation) is positioned in the following graphs and compared to the different comparative portfolios. The age of the cluster as such may be older than the age of its management body.

![Graph showing the age of the cluster organisation compared to comparative portfolios](image)

**Figure 1: Year of establishment of the cluster organisation compared to the comparative portfolios**

2.1.2 Legal Form of the Cluster Organisation

The main reasons for a cluster organisation to adopt a legal form are most of the time to reach a higher commitment of its participants, shared risks and a higher exclusiveness of added value for the cluster participants. The most prevailing legal forms for cluster organisations are registered associations and limited liability companies. The repartition of legal forms in the different comparative portfolios is represented in the following graphs.

![Graph showing the legal forms of the cluster organisation](image)
Figure 2: Legal form of the cluster organisation in the specific technology area

Figure 3: Legal form of the cluster organisations within the excellence portfolio
2.1.3 Nature of the Cluster: Driving Forces

In many cases, the cluster participants influence the strategic cluster priorities. The following scale was used to measure the level of influence of research and industry participants on the cluster priorities:

- (1) Cluster priorities are only set by research organisations/universities;
- (2) Cluster priorities are mainly set by research organisations/universities;
- (3) Cluster priorities are set to the same extent by research organisations/universities and by companies;
- (4) Cluster priorities are mainly driven by companies;
- (5) Cluster priorities are only driven by companies.

Figure 4: Driving forces for the cluster priorities (industry or R&D driven) in the specific technology area

Figure 5: Driving forces for the cluster priorities (industry or R&D driven) within the excellence portfolio
2.1.4 Nature of the Cluster: Degree of Specialisation

A cluster can be highly specialised in a specific industry field or can cover a broad range of different industries within the selected technology area. The degree of specialisation of the cluster within its specific technology area was assessed using a scale with a range:

- from (1) “The cluster is highly specialised in a specific industry field”;
- to (5) “The cluster covers a broad range of different industries”.

![Figure 6: Degree of specialisation of the cluster in the specific technology area](image)

2.1.5 Composition of the Cluster’s Participants

The benchmark analysis is concentrated on participants in the sense of committed participants. A cluster participant is committed if it actively contributes to the activities of the cluster through e.g. paying membership fees or providing financial support for the cluster management on a regular basis (this may also include in-kind contributions or staff working time), signing of a declaration of accession (letter of intent, partnership agreement, or a similar form of written commitment) or regularly participating in cluster projects or working groups. Commitment is not reflected by a registration for a newsletter or by a single participation in an event organised by the cluster organisation.

A non-committed cluster participant is a passive participant who shows interest in the cluster’s activities going beyond the mere registration for a newsletter or similar (e.g. through [more or less] regular participation in events), but does not contribute actively to any of the cluster’s activities.

The composition of cluster participants is very important for successful work of and within a cluster. Bundling of different competences is one determinant for the facilitation of innovation and competitiveness of all cluster actors. If certain key actors and key competences are missing, this might have a negative impact on the innovation capability of the cluster.

The repartition of the committed participants is represented according to the following participants’ categories:

- Figure 7: Total number of committed participants;
- Figure 8: Number of committed industrial participants;
- Figure 9: Number of committed SME participants;
Figure 10: Number of committed participants dedicated to R&D (universities and R&D organisations);
Figure 11: Number of committed participants dedicated to education and training (universities, schools and training providers);
Figure 12: Number of committed participants that are governmental agencies.

Universities are counted twice, both in the category “R&D participants” and in the category “participants dedicated to education and training”. Based on the SME definition of the European Commission (Recommendation 2003/361/EC regarding the SME definition) a company is considered as SME if it has no more than 250 employees.

Figure 7: Total number of committed participants compared to the comparative portfolios

Figure 8: Number of committed industrial participants compared to the comparative portfolios

Figure 9: Number of committed SME participants compared to the comparative portfolios
Figure 10: Number of committed participants dedicated to R&D compared to the comparative portfolios

Figure 11: Number of committed participants dedicated to education or training compared to the comparative portfolios

Figure 12: Number of committed participants that are governmental agencies compared to the comparative portfolios

2.1.6 Geographical Concentration of the Cluster Participants

According to Michael E. Porter\(^1\) “clusters are geographic concentrations of interconnected companies and institutions in a particular field”. The issue of geographic concentration is considered here. The following figure displays the percentage of the committed cluster participants located within a radius of 150 km from the premises of the cluster organisation and/or any regional offices (if existing).

The idea behind this is, to encourage a face-to-face meeting between the cluster management team and a committed member, as well as between participants with limited effort of around two hours travel time (by car, train, etc.).

Figure 13: Percentage of the committed cluster participants that are located in a distance of < 150 km to the premises of the cluster organisation and/or any regional offices compared to the comparative portfolios.
2.1.7 Utilisation of Regional Growth Potential

It is important that clusters achieve a critical mass with a high regional coverage in terms of committed membership. The focus on regional participants should yield benefits from regional proximity of appropriate partners. The potential number of participants in the region could in this way contribute to the further development of the cluster.

The ratio of the number of committed cluster participants in the region (see chapter 2.1.6) and the number of all potential participants in the region (%-value on the x-axis) is put in relation to the achieved growth of the regional membership of the cluster during the last 2 years of activity (growth in % on the y-axis).

Clusters that are located in sector I of the figure are characterised by a high potential for further growth with regard to the number of participants. For achieving a critical mass in the region - in terms of having a majority of potential cluster participants active within the cluster – further growth, with a higher rate than achieved in the past, is necessary. Reaching such a regional critical mass should be considered as a strategic task for the cluster management.

Clusters that are located in sector II of the figure are characterised by a reasonable regional coverage of their participants and/or by a significant growth in the last 24 months. An increased growth of the committed cluster membership should not be considered as a strategic priority for the cluster management. Only for clusters that are younger than three years, this figure might not give a correct impression as the entire membership was built up during the last two years with an extremely high growth rate, which of course cannot be expected to remain at the same level in the future.

Clusters that are located in sector III of the figure are characterised by a high regional coverage in terms of committed membership. Further growth in the region should not be considered as a strategic task for the cluster management.

Figure 14: Utilisation of regional growth potential of clusters in the specific technology area
Figure 15: Utilisation of regional growth potential of clusters compared to the excellence portfolio

2.1.8 International Participants of the Cluster

International participants are understood as participants that are headquartered abroad and do not have a branch office in the home country of the cluster. Local subsidiaries of international companies or other parties that are a cluster member are counted as a national/local member.

International cooperation is an opportunity for knowledge and technology transfer. It is therefore quite common for clusters to have committed international participants who participate in the work and activities of the cluster.

The following figure presents the share of international committed participants of the cluster.
2.1.9 Nature of Cooperation between Cluster Participants

The nature of cooperation between cluster participants and the role of the cluster management can have different characteristics, which are described as follows:

- **External facilitator**: The cluster management acts rather as an external facilitator and is rather detached from networking activities between cluster participants. The core function of the cluster management within the network can be described as administration (left bar in the figure).

- **Decentralised**: Cooperation among the cluster participants can be characterised as decentralised: cluster management has a significant influence, but it is not the main initiator of activities (middle bar in the figure).

- **Centralised**: The cluster management is the hub of the cluster (considered as a star-shaped cooperative structure) and sets the agenda of the cluster activities. Cooperation between participants is primarily initiated by the cluster management (right bar in the figure).

The following figure indicates how the cluster managers understand their role.

**Figure 17**: Nature of cooperation between cluster participants in the specific technology area

**Figure 18**: Nature of cooperation between cluster participants within the excellence portfolio
2.2 Cluster Management and Governance

2.2.1 Governance of the Cluster

The existence of different stakeholders of cluster governance as well as their role in the decision making process for cluster strategy and cluster governance were assessed. In this respect, the three following elements of cluster governance were analysed:

- Clear definition of the tasks and responsibilities of the cluster manager, like team management, day-to-day business and strategic activities of the cluster, etc.
- Existence of a governing body such as a steering committee or advisory board to conduct decision making and support the cluster management in implementing the action plan, survey and review the progress of the cluster work as well as the work of the cluster management. Its responsibilities are understood by all participants and meetings take place on a regular basis.
- Degree of involvement of the participants of the cluster in the decision making and strategic orientation of the cluster organisation.

For a successful networking all cluster actors have to understand and respect their tasks and responsibilities. In collaboration with relevant cluster participants, the cluster management must define dedicated governance structures and turn them into practice. The three above described elements were reflected in a composite indicator. Three levels were defined in order to identify whether there is a strong, moderate or weak system of cluster governance in place.

Figure 19: Level of governance of the cluster in the specific technology area
2.2.2 Number of Employees of the Cluster Organisation (Full-time Equivalents)

The number of employees being active in the cluster management team was expressed in full-time equivalents (FTE). The analysis of FTE provides a better understanding of the human resources that are effectively available for the cluster management in terms of working hours. Full-time equivalent employment (FTE) is the number of full-time equivalent jobs, defined as total hours worked divided by average annual hours worked in full-time jobs.

Figure 20: Level of governance of the clusters within the excellence portfolio

Figure 21: Number of employees (full-time equivalents) working in the management of the cluster organisation compared to the comparative portfolios
2.2.3 Number of Cluster Participants per Employee of the Cluster Organisation

A more relevant factor for the assessment, whether the quantity of human resources of the cluster management is sufficient, is the ratio of the number of cluster participants and the FTE in the cluster management staff. This indicator gives the numerical value of the number of cluster participants one FTE of the cluster management has to serve. Higher capacities of the cluster organisation are expected to allow the development and provision of more tailor-made and demand-oriented services or a better direct support for the cluster participants.

![Figure 22: Number of cluster participants per employee (Full-time Equivalents) of the cluster organisation compared to the comparative portfolios](image)

2.2.4 Human Resource Competences and Development

In order to assess the status of human resource development of the cluster organisation’s staff, the benchmarking analysed the following topics:

- Lifelong training programmes and sufficient budget for the human resource development of the cluster organisation staff are in place;
- Training measures for the cluster organisation staff are carried out on a regular basis;
- The cluster manager and/or the cluster organisation staff possess international work experience, foreign language skills and a professional international network;
- There is a continuity/fluctuation of the cluster manager and/or the cluster organisation staff.

The above described elements were reflected in a composite indicator. Three levels have been defined whether there is a high, moderate or low status of human resource development in place.

![Figure 23: Status of human resource development in the cluster organisation in the specific technology area](image)
2.3 Financing of the Cluster Organisation

The total budget of the cluster organisation includes budget dedicated to management tasks or activities performed by the cluster management organisation for cluster participants (staff and non-personnel expenses). It excludes the specific budget for R&D projects or any other projects of cluster participants.

The origin of the total budget of the cluster is split between the following categories: public funding, income generated from chargeable services, membership fees, as well as other private sources like private foundations or donations. In-kind contributions (non-cash contributions) are not represented in the following graphs.

Many cluster organisations were established with significant public support. As public support is mostly limited in time, it is crucial for a cluster management to tap other sources of financing. The substitution of public funding by private means over time can indicate good cluster management practises as products and services are sold to cluster participants or other parties.
2.3.1 Share of Public Funding in the Total Budget of the Cluster Organisation in Relation to the Age of the Cluster

The figures below indicate the share of public funding of any type (including funding programs, project funding limited in time, institutional funding and service contracts) in the total budget of the cluster management organisation related to the age of the cluster organisation and compared to the different comparative portfolios.

Figure 25a: Share of public funding in the total budget of the cluster organisation in relation to the age of the cluster organisation and in the specific technology area

Figure 25b: Share of public funding in the total budget of the cluster organisation in relation to the age of the cluster organisation and compared to the national portfolio
2.3.2 Share of Income Generated from Chargeable Services in the Total Budget of the Cluster Organisation in Relation to the Age of the Cluster

The figures below indicate the share of income generated from chargeable services (private and public contractors) in the total budget of the cluster management organisation related to the age of the cluster organisation and compared to the different comparative portfolios.

Figure 25c: Share of public funding in the total budget of the cluster organisation in relation to the age of the cluster organisation and compared to the excellence portfolio.

Figure 26a: Share of income generated from chargeable services in the total budget of the cluster organisation in relation to the age of the cluster organisation and in the specific technology area.
2.3.3 Share of Income Generated from Membership Fees in the Total Budget of the Cluster Organisation in Relation to the Age of the Cluster

The figures below indicate the share of income generated from membership fees in the total
budget of the cluster management organisation related to the age of the cluster organisation and compared to the different comparative portfolios.

Figure 27a: Share of income generated from membership fees in the total budget of the cluster organisation in relation to the age of the cluster organisation and in the specific technology area.

Figure 27b: Share of income generated from membership fees in the total budget of the cluster organisation in relation to the age of the cluster organisation and compared to the national portfolio.
2.3.4 Share of Private Financing in the Total Budget of the Cluster Organisation in Relation to the Age of the Cluster

The figures below indicate the share of private financing of any type (membership fees, chargeable services and other private funding sources like e.g. private foundations or donations) in the total budget of the cluster management organisation related to the age of the cluster organisation and compared to the different comparative portfolios.

Figure 27c: Share of income generated from membership fees in the total budget of the cluster organisation in relation to the age of the cluster organisation and compared to the excellence portfolio

Figure 28a: Share of private financing in the total budget of the cluster organisation in relation to the age of the cluster organisation and in the specific technology area
2.3.5 Financial Sustainability of the Cluster

The financial sustainability of the cluster organisation is an important aspect for the future perspectives and the existence of the cluster organisation. The cluster management needs to be based on a solid financial basis in order to concentrate on its mandate. Without a sustainable financial basis the cluster management has to spend significant resources on fundraising.
Thus, these resources are not available for the development and provision of services for the cluster participants.

Cluster managers are asked to assess their financial situation according to the following categories:

- Secured in the long term (for more than 2 years);
- Secured in the short and medium term (for at least 1 year);
- Critical, but up to now no negative impacts on daily activities of cluster organisation;
- Very critical, with already negative impacts on daily activities of cluster organisation.

Figure 29: Financial sustainability of the cluster organisation in the specific technology area

Figure 30: Financial sustainability of the cluster organisations within the excellence portfolio
2.4 Strategy of the Cluster Organisation

2.4.1 Strategic Planning and Implementation Plan

Strategic planning and the corresponding implementation plan are key preconditions of successful work. It is recommended to develop and implement a cluster strategy in order to operate in a sustainable and successful way. The strategy should be documented and cover all relevant strategic issues, topics, timeframes, etc., complemented by graphs and illustrations and describing the long, medium, and short term prospects. The strategy has to be an outcome of an internal process, in which the needs and expectations of the cluster stakeholders are discussed and translated into strategic measures. After implementing the main elements of the cluster’s strategy, a continuous monitoring approach should document the progress and impact of the implementation. Review measures and corrective actions should be documented.

The following categories are defined:

- The cluster organisation states that they do not have a strategy (Left bar in the chart);
- A cluster strategy is available as a written document and includes an implementation plan with measurable milestones and budgets (Second bar from the left);
- A cluster strategy is available as a written document and includes an implementation plan with measurable milestones and budgets. A system to monitor the implementation plan of the strategy is in place (Third bar from the left);
- A cluster strategy is available as a written document and includes an implementation plan with measurable milestones and budgets. Strategy and implementation plan are reviewed on a regular basis (Fourth bar from the left in the chart);
- A cluster strategy is available as a written document and includes an implementation plan with measurable milestones and budgets. A system to monitor the implementation plan of the strategy is in place. Strategy and implementation plan are reviewed on a regular basis (Right bar in the chart).

Figure 31: Strategic planning and implementation plan of the cluster in the specific technology area
2.4.2 Thematic and Geographical Priorities of the Cluster Strategy

The following two radar charts show the general priorities of the strategy of the cluster organisation. These priorities are considered to be the baseline of the cluster management’s activities. The first figure presents the thematic priorities and main service categories of the cluster organisation. The second figure reflects the geographical scope of the cluster organisation and its activities (international, national, or local/regional). The corresponding percentages indicate the relevance of different strategic priorities in the overall strategy (e.g. 40% of activities are related to collaborative technology development, technology transfer or R&D).

Figure 32: Strategic planning and implementation plan of the clusters within the excellence portfolio
Figure 33: Thematic priorities of the cluster strategy compared to the comparative portfolios

Figure 34: Geographical priorities of the cluster strategy compared to the comparative portfolios
2.5 Services Provided by the Cluster Organisation

One of the main aims of cluster organisations is to provide need-oriented structures of cooperation and to make cooperation between members in the innovation business more efficient. The success of clusters therefore also depends on the extent to which the cluster management succeeds in supporting the cluster participants with need-oriented services. In doing this, it is crucial for cluster participants to be able to concentrate on their specific core competences and that the expenditure of time and financial resources by individual approaches is thus reduced. It is important that services are geared to needs in such a way that they generate high added value for participants. Hence, it is crucial to consider first of all the needs and requirements of the cluster participants and, in particular, the specific features of the cluster in the sense of an “optimal tailoring.”

In the follow-up, general service categories that could serve as a model for offers developing and implementing one’s own services are described:

- Acquisition of third party funding;
- Collaborative technology development, technology transfer, or R&D without third party funding;
- Information, matchmaking and exchange of experience among participants;
- Development of human resources;
- Development of entrepreneurship;
- Matchmaking and networking with external partners/promotion of cluster location;
- Internationalisation of cluster participants.

The diversity and the frequency of services provided by the cluster organisation are analysed. Based on this data, composite service indicators are calculated and grouped according to the following scale:

- (4) Very large spectrum of services and/or very high frequency of services;
- (3) Large spectrum of services and/or high frequency of services;
- (2) Average spectrum of services and/or medium frequency of services;
- (1) Limited spectrum of services and/or less sufficient frequency of services;
- (0) No services offered.
2.5.1 Acquisition of Third Party Funding

The acquisition of third party funding (from public sources), most of the time for R&D projects, is one main field of cluster organisations’ activities which serves the benefit of their participants. The acquisition of third party funding in the area of education and training or regional development is common as well. Cluster management should have an overview of funding opportunities and should spread this knowledge amongst their cluster participants.

Figure 35: Services provided by the cluster organisation in the service category „Acquisition of third party funding” compared to the comparative portfolios
2.5.2 Collaborative Technology Development, Technology Transfer, or R&D

Collaborative technology development among the participants of a cluster is another key area for activities of the cluster management. The facilitation of both leadership in specific interest groups, as well as the generation of joint R&D activities among the participants and activities in relation to joint products, services, and IP-rights are further typical activity areas.

Figure 36: Services provided by the cluster organisation in the service category “Collaborative technology development, technology transfer or R&D” compared to the comparative portfolios
2.5.3 Information, Matchmaking and Exchange of Experience among Cluster Participants

The process of innovation in clusters is largely determined by communicative processes, i.e. by the way the players involved communicate with each other and pursue common aims. Situations in which communication and experience are exchanged contribute to value creation and are, as a result, a decisive economic factor. Nevertheless, cluster communication exceeds the general exchange of information about specific projects. Communication is designed to enable the players involved to build up long-term relations (of cooperation), to exchange experience and to learn from each other. In this regard, participants and, above all, cluster management organisation are called upon to make use of their personal, methodological and social competences of communication and to develop a common communication platform.

Figure 37: Services provided by the cluster organisation in the service category “Information, matchmaking and exchange of experience among participants” compared to the comparative portfolios
2.5.4 Development of Human Resources

The development of human resources by the cluster participants is particularly relevant for the success of innovation processes. Adequately and, most of all, well-trained skilled personnel should be available on all levels of the value creation chain. Despite these factors, it is all the more important to find suitable personnel to meet significant needs. Many instruments of personnel recruitment can be used to reach this goal.

![Diagram of Development of Human Resources]

Figure 38: Services provided by the cluster organisation in the service category “Development of human resources” compared to the comparative portfolios
2.5.5 Development of Entrepreneurship

As a rule, young business starters in the phase of setting up and establishing business during which the focus must be put on the development and implementation of innovative ideas in the first place, need to be supported by competent and experienced experts. For business starters the most important basis for success is therefore, apart from the business plan, correct information about aspects such as: “what is the process of starting business like”, “how can a business plan be developed”, “where can I get the necessary capital from”, “are there alternative financing options”, “what is the right legal form”, or “how can a sales network be built up”, etc. These are points on which the cluster management can provide some support or can organise a process for such support based on knowledge within the entire partnership in the cluster.

Figure 39: Services provided by the cluster organisation in the service category “Development of entrepreneurship” compared to the comparative portfolios
2.5.6 Matchmaking and Networking with External Partners and Promotion of Cluster Location

With regard to clusters, public relations can be defined as the concise, externally oriented presentation of the cluster with its visions, goals, structures, profiles of participants, innovation products, services and other specific cluster features in order to achieve an increased visibility. It is the aim of the externally oriented communication to build up reputation for the cluster and attract through it further participants. For external players, meaningful public relations must make clear, rapidly and precisely, what is specific and unique about the cluster concerned. This implies that the clearer the message of the network, the more effective its (national and international) positioning.

Figure 40: Services provided by the cluster organisation in the service category “Matchmaking and networking with external partners/promotion of cluster location” compared to the comparative portfolios
2.5.7 Internationalisation of Cluster Participants

For many cluster participants the main reason for going international is to keep their lead in technological development and to strengthen their own position on markets worldwide. Furthermore, the expectation to improve the access to identified target markets, in order to take advantage of the cooperation more easily and efficiently, is a common motive. In case a cluster lacks some important competences internally, the primary objective of taking part in international cooperation is to obtain the missing know-how on usability or technology. This becomes especially important if clusters are active in areas with broad technological character.

The cluster participants and mainly small entities often lack of time, resources or budgets to successfully realise internationalisation processes. That is why cluster organisations should provide customised supporting measures and tools to the cluster participants on their paths to internationalisation, as they usually have more resources at their disposal and are more experienced in internationalisation matters.

Figure 41: Services provided by the cluster organisation in the service category “Internationalisation of cluster participants” compared to the comparative portfolios
2.6 Achievements and Recognition of the Cluster Organisation

2.6.1 Number of External Cooperation Requests Received by the Cluster

The recognition and visibility of a cluster is often reflected in a high number of external cooperation requests coming from relevant actors and received by the cluster organisation. The amount of external cooperation requests within the last 2 years is represented on a scale ranging:
- from (0) no cooperation requests;
- to (4) large number of cooperation requests.

![Bar chart showing the number of external cooperation requests received by the cluster organisation in the specific technology area.](image)

Figure 42: Number of external cooperation requests received by the cluster organisation in the specific technology area

![Bar chart showing the number of external cooperation requests received by the cluster organisations within the excellence portfolio.](image)

Figure 43: Number of external cooperation requests received by the cluster organisations within the excellence portfolio
2.6.2 Institutional Origin of External Cooperation Requests

The institutional origin of external cooperation requests gives an idea about the categories of actors that are attracted by projects and activities of the cluster.

Figure 44: Origin of the external cooperation requests received by the cluster organisation in the specific technology area

Figure 45: Origin of the external cooperation requests received by the cluster organisations within the excellence portfolio
2.6.3 Geographical Origin of External Cooperation Requests

The geographical origin of external cooperation requests illustrates how well known the cluster and its projects and activities are among local/regional, national and international actors. The percentage per geographical origin reflects the share of cooperation requests in the total number of external cooperation requests.

Figure 46: Geographical dimension of the external cooperation requests received by the cluster organisation compared to the comparative portfolios
2.6.4 Characteristics of Cooperation with Foreign Clusters

The characteristics of cooperation with clusters from other countries are analysed in terms of type and level of cooperation. The findings of the analysis are grouped in four categories:

- No cooperation;
- Quite unspecific cooperation;
- Joint R&D or joint business projects;
- Joint R&D and joint business projects.

**Figure 47:** Characteristics of cooperation with foreign clusters in the specific technology area

**Figure 48:** Characteristics of cooperation with foreign clusters within the excellence portfolio
2.6.5 Media Visibility

Media visibility on regional, national and international level is important for clusters to attract partners, clients etc. Thus, the visibility of the cluster is assessed in terms of the frequency of media appearances.

The visibility of the cluster was analysed on a scale ranging:
- from (None);
- to (High), meaning more than 48 media appearances in the past twelve months.

![Figure 49: Media appearance of the cluster in the specific technology area](image)

![Figure 50: Media appearance of the clusters within the excellence portfolio](image)
2.6.6 Impact of the Work of the Cluster Organisation on R&D Activities of the Cluster Participants

The impact of the work of the cluster organisation on R&D activities of cluster participants is indicated by the following figure. The spectrum and frequency of services provided by the cluster management with respect to R&D is expected to have an impact on the R&D activities of the cluster participants. The cluster managers self-assessed the impact of their work according to the following scale:

- (4) Significant and sustainable impacts on a significant number of cluster participants in the field of R&D;
- (3) Significant and sustainable impacts on a reasonable number of cluster participants in the field of R&D;
- (2) Measurable impacts on a certain number of cluster participants in the field of R&D, but not yet really significant and/or sustainable;
- (1) Limited impacts on a small number of cluster participants in the field of R&D;
- (0) No impact yet.

The self-assessment covers different categories of cluster participants (SME, Non-SME, universities, R&D organisations, and training and education providers).

![Impact on the R&D activities](image)

Figure 51: Impact of the work of the cluster organisation on R&D activities of cluster participants compared to the comparative portfolios
2.6.7 Impact of the Work of the Cluster Organisation on Business Activities of the Cluster Participants

The impact of the cluster organisation’s work on business activities of cluster participants is indicated by the following figure. The spectrum and the frequency of services provided by the cluster management team, with respect to business development, are expected to influence the business activities of cluster participants. The cluster managers self-assessed the effect of their work according to the following scale:

- (4) Significant and sustainable impacts on a significant number of cluster participants in the field of business development;
- (3) Significant and sustainable impacts on a reasonable number of cluster participants in the field of business development;
- (2) Measurable impacts on a certain number of cluster participants in the field of business development, but not yet really significant and/or sustainable;
- (1) Limited impacts on a small number of cluster participants in the field of business development;
- (0) No impact yet.

The self-assessment covers different categories of cluster participants (SME, Non-SME, universities, R&D organisations, and training and education providers).

Figure 52: Impact of the work of the cluster organisation on business activities of cluster participants compared to the comparative portfolios
2.6.8 Impact of the Business-oriented Services of the Cluster Organisation on SME Participants

The following figure displays a correlation between the spectrum and intensity (in terms of frequency) of business-oriented services and the impact of the work of the cluster management organisation on SME business activities. The more services are provided (see e.g. the median value), the higher the impact on business activities of SME is.

The spectrum and intensity of the business-oriented services are summarised in a composite indicator. The indicator is determined by incorporating all services analysed in chapter 2.5 which have a direct influence on business activities rather than R&D activities. Each single service furthermore is considered with a specific weight within the composite indicator.

![Impact of business activities of SME](image)

**Figure 53: Impact of spectrum and intensity of services on business activities of SME in the specific technology area**
Figure 54: Impact of spectrum and intensity of services on business activities of SME compared to the excellence portfolio.
2.6.9 Degree of Internationalisation of Cluster Participants

The degree of internationalisation of cluster participants is analysed for different categories of participants. The degree of internationalisation reflects for example the number of international cooperation declarations and cooperation projects as well as the existence of branch offices abroad, etc.

For each category of cluster participants the degree of internationalisation is self-assessed by the cluster manager on the following scale:

- from (0): no international activity;
- to (4): significant international activities of a significant number of cluster participants.

Figure 55: Degree of Internationalisation of cluster participants compared to the comparative portfolios
2.6.10 Impact of the Work of the Cluster Organisation on International Activities of the Cluster Participants

The impact of the cluster organisation’s efforts on international activities of cluster participants is indicated by the following figure. The spectrum and the frequency of services provided by the cluster management with respect to international activities are expected to affect the cluster participants. The cluster managers self-assessed the impact of their work according to the following scale:

- (4) Significant and sustainable impacts on a significant number of cluster participants in the field of international activities;
- (3) Significant and sustainable impacts on a reasonable number of cluster participants in the field of international activities;
- (2) Measurable impacts on a certain number of cluster participants in the field of international activities, but not yet really significant and/or sustainable;
- (1) Limited impacts on a small number of cluster participants in the field of international activities;
- (0) No impact yet.

The self-assessment covers different categories of cluster participants (SME, Non-SME, universities, R&D organisations, and training and education providers).

Figure 56: Impact of the work of the cluster organisation on international activities of cluster participants compared to the comparative portfolios
3. Assessment of the Cluster Management

3.1 Benchmarking as the First Step towards Measuring the Cluster Management Excellence

Benchmarking results are based on information provided by the cluster manager to an external benchmarking expert. Neither does the expert receive detailed justification nor is she/he able to confirm or approve the collected information. The cluster manager is expected to provide fair answers in order to present a realistic view on the position of the cluster compared to the comparative portfolios. Benchmarking is a self-assessment and therefore cannot be compared with an evaluation.

Although it does not qualify for any rankings, the benchmarking helps to identify the relative position of the cluster with regard to the “best-in-class” cluster and thus allows for an assessment of the cluster performance.

The following table presents the results of this assessment at a glance. It gives the opportunity to see where the cluster management already fulfils future quality levels and where actions for improvement are recommended.

The performance of the benchmarked cluster management is highlighted in the following table.

The colours in the table indicate the three following levels:
- **GREEN**: Excellent. Only minor improvements are - if at all – possible;
- **YELLOW**: Reasonable. Potential for improvement;
- **RED**: Certain minimal criteria for good practice in cluster management are not met. It is recommended to consider this issue for improvement.

These three levels have been defined on the basis of the experience of ESCA on cluster management, as well as on the basis of the quality indicators defined within the European Cluster Excellence Initiative.
## STRUCTURE OF THE CLUSTER

<table>
<thead>
<tr>
<th>Age of the cluster organisation (2.1.1)</th>
<th>More than 4 years old</th>
<th>Between 2 and 4 years old</th>
<th>Less than 2 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal form of the cluster organisation (2.1.2)</td>
<td>Registered association / Limited liability company</td>
<td>Any other legal form</td>
<td>No legal form</td>
</tr>
<tr>
<td>Composition of the cluster membership (Committed participants) (2.1.5)</td>
<td>More than 70% coming from industry (enterprises of different sizes) AND At least one research and one educational organisations AND At least one of the categories: Intermediates, government / public organisations, marketing</td>
<td>More than 50% coming from industry AND At least one type of research and / or educational organisation</td>
<td>Less than 50% coming from industry OR No research or educational organisation</td>
</tr>
<tr>
<td>Geographical concentration of the cluster participants (Committed participants) (2.1.6)</td>
<td>More than 70% within a distance of 150 km from the headquarters or any regional office</td>
<td>50-70% within a distance of 150 km of the headquarters or any regional office</td>
<td>Less than 50% within a distance of 150 km of the headquarters or any regional office</td>
</tr>
<tr>
<td>Utilisation of regional growth potential (2.1.7)</td>
<td>The cluster has a satisfying regional coverage in terms of membership or maximal potential is already reached. (Sector III of the graph, chapter 2.1.7)</td>
<td>The cluster has an at least good regional coverage of its participants and/or has experienced significant growth in the last 24 months. It is assumed that growth dynamic of the past will continue in the near future. (Sector II of the graph, chapter 2.1.7)</td>
<td>The cluster has potential for further growth in terms of participants. There is still a high amount of partners in the region who are not committed to the cluster work. The cluster would certainly benefit from an increased participation of regional actors. (Sector I of the graph, chapter 2.1.7)</td>
</tr>
</tbody>
</table>

## CLUSTER MANAGEMENT AND GOVERNANCE / STRATEGY OF THE CLUSTER ORGANISATION

<table>
<thead>
<tr>
<th>Clear definition of the roles of the cluster manager / Implementation of a governing body / Degree of involvement of the cluster participants in the decision making (2.2.1)</th>
<th>Strong</th>
<th>Moderate</th>
<th>Weak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cluster participants per employee (FTE) of the cluster organisation team (2.2.2/2.2.3)</td>
<td>Green (see Table)</td>
<td>Yellow (see Table)</td>
<td>Red (see Table)</td>
</tr>
</tbody>
</table>

2 Number of Cluster Participants per Employee (FTE) of the Cluster Organisation

<table>
<thead>
<tr>
<th>FTE</th>
<th>Green</th>
<th>Yellow</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. 20 cluster participants in total</td>
<td>21-50</td>
<td>&gt;50</td>
<td></td>
</tr>
<tr>
<td>Max. 50</td>
<td>51-110</td>
<td>&gt;110</td>
<td></td>
</tr>
<tr>
<td>Max. 90</td>
<td>91-180</td>
<td>&gt;180</td>
<td></td>
</tr>
<tr>
<td>Max. 140</td>
<td>141-260</td>
<td>&gt;260</td>
<td></td>
</tr>
<tr>
<td>Max. 200</td>
<td>201-350</td>
<td>&gt;350</td>
<td></td>
</tr>
<tr>
<td>Max. 270</td>
<td>271-450</td>
<td>&gt;450</td>
<td></td>
</tr>
<tr>
<td>Max. 350</td>
<td>351-560</td>
<td>&gt;560</td>
<td></td>
</tr>
<tr>
<td>Max. 440</td>
<td>441-680</td>
<td>&gt;680</td>
<td></td>
</tr>
<tr>
<td>Max. 540</td>
<td>541-810</td>
<td>&gt;810</td>
<td></td>
</tr>
<tr>
<td>Max. 650</td>
<td>651-950</td>
<td>&gt;950</td>
<td></td>
</tr>
<tr>
<td>Table 4: Assessment of the benchmarked cluster</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Human resource competences and development in the cluster organisation (2.2.4)</strong></td>
<td>GREEN</td>
<td>YELLOW</td>
<td>RED</td>
</tr>
<tr>
<td>Strategy, monitored and reviewed</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Strategic planning and implementation processes (2.4.1)</strong></td>
<td>Strategy, monitored and reviewed</td>
<td>Any other answer</td>
<td>No strategy</td>
</tr>
<tr>
<td><strong>FINANCING OF THE CLUSTER MANAGEMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial sustainability of the cluster organisation (2.3.5)</strong></td>
<td>Secured in the long term (for at least 2 years)</td>
<td>Secured in the short and medium term (for at least 1 year)</td>
<td>Critical / very critical</td>
</tr>
<tr>
<td><strong>SERVICES PROVIDED BY THE CLUSTER ORGANISATION (SPECTRUM AND INTENSITY)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acquisition of third party funding (2.5.1)</strong></td>
<td>3 out of 4 service intensities above average of clusters in the same technology area</td>
<td>Value in between</td>
<td>3 out of 4 service intensities below average of clusters in the same technology area</td>
</tr>
<tr>
<td><strong>Collaborative technology development, technology transfer, or R&amp;D (2.5.2)</strong></td>
<td>3 out of 5 service intensities above average of clusters in the same technology area</td>
<td>Value in between</td>
<td>3 out of 5 service intensities below average of clusters in the same technology area</td>
</tr>
<tr>
<td><strong>Information, matchmaking and exchange of experience among participants (2.5.3)</strong></td>
<td>3 out of 4 service intensities above average of clusters in the same technology area</td>
<td>Value in between</td>
<td>3 out of 4 service intensities below average of clusters in the same technology area</td>
</tr>
<tr>
<td><strong>Development of human resources (2.5.4)</strong></td>
<td>3 out of 4 service intensities above average of clusters in the same technology area</td>
<td>Value in between</td>
<td>3 out of 4 service intensities below average of clusters in the same technology area</td>
</tr>
<tr>
<td><strong>Development of entrepreneurship (2.5.5)</strong></td>
<td>2 out of 3 service intensities above average of clusters in the same technology area</td>
<td>Value in between</td>
<td>2 out of 3 service intensities below average of clusters in the same technology area</td>
</tr>
<tr>
<td><strong>Matchmaking and networking with external partners/promotion of cluster location (2.5.6)</strong></td>
<td>4 out of 6 service intensities above average of clusters in the same technology area</td>
<td>Value in between</td>
<td>4 out of 6 service intensities below average of clusters in the same technology area</td>
</tr>
<tr>
<td><strong>Internationalisation of cluster participants (2.5.7)</strong></td>
<td>4 out of 6 service intensities above average of clusters in the same technology area</td>
<td>Value in between</td>
<td>4 out of 6 service intensities below average of clusters in the same technology area</td>
</tr>
<tr>
<td><strong>ACHIEVEMENTS AND RECOGNITION OF THE CLUSTER ORGANISATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of general external requests for cooperation received by the cluster organisation (2.6.1)</strong></td>
<td>Large number of requests</td>
<td>Any answer in between</td>
<td>No cooperation request</td>
</tr>
<tr>
<td><strong>Visibility in the press (2.6.5)</strong></td>
<td>High</td>
<td>Any answer in between</td>
<td>None</td>
</tr>
</tbody>
</table>
3.2 Recommendations

Based on the assessment in the previous chapter, it is now possible to give recommendations for improving actions towards cluster management excellence. However, these recommendations should in each case be adapted to the individual context of the cluster (cluster organisation). In some cases it might be a result of specific circumstances or strategic considerations that certain weaknesses occur and they have to be accepted.

### STRUCTURE OF THE CLUSTER

#### Utilisation of regional growth potential (2.1.7)

It is recommended to attract new cluster participants from the region to better utilise the regional potential.

### SERVICES PROVIDED BY THE CLUSTER ORGANISATION (SPECTRUM AND INTENSITY)

#### Acquisition of third party funding (2.5.1)

The acquisition of third party funding is one of the objectives of the cluster organisation’s work. As the range of services in this service category and/or the intensity of them are lower than the average of the comparative portfolios, it is recommended to implement a broader range of tailor-made services or to run existing services with a higher intensity. Such actions should be based on an analysis of the participants’ needs in close cooperation with the potential beneficiaries.

#### Collaborative technology development, technology transfer or R&D (2.5.2)

Collaborative technology development, technology transfer or R&D activities without third party funding are some of the objectives of the cluster organisation’s work. As the range of services in this service category and/or the intensity of them are lower than the average of the comparative portfolios, it is recommended to implement a broader range of tailor-made services or to run existing services with a higher intensity. Such actions should be based on an analysis of the participants’ needs in close cooperation with the potential beneficiaries.

#### Development of entrepreneurship (2.5.5)

The development of entrepreneurship is one of the objectives of the cluster organisation’s work. As the range of services in this service category and/or the intensity of them are lower than the average of the comparative portfolios, it is recommended to implement a broader range of tailor-made services or to run existing services with a higher intensity. Such actions should be based on an analysis of the participants’ needs in close cooperation with the potential beneficiaries.
4. ANNEX I: Key Factors to Stimulate Clusters – Important Issues for Excellent Cluster Management

There are five major key factors being identified that are crucial for a long-term efficient and successful network and cluster development. These factors addressing cluster-specific aspects are interrelated and influence the cluster’s prospect for development.


4.1 Long-term Involvement and Commitment of Participants

Advantages resulting from existence of clusters are mainly based on the composition and type of cluster participants and their involvement in the cluster. Companies differing in size, research and educational/training organisations as well as public institutions complement one another in their competences and resources. This requires a mobilisation of the regional potential of relevant actors and stakeholders by continuously enlisting new ones, and identifying and integrating additional competences in the cluster’s value chain. To ensure that the value chain is entirely covered the most relevant stakeholders in the region should show some interest in the participation in cluster activities and should become involved. The actors involved are the nucleus of any cluster. They contribute the required tangible and intangible assets to the cluster.

Since many of the achievements in cluster activities are only accomplished in the course of the mid- to long-term existence of clusters, the cluster management must succeed in involving these actors in network processes as committed participants on a long-term basis.

Therefore, the services offered by the cluster management and strategic aims have to be geared towards the special requirements and needs of the committed participants. E.g. it may also be relevant for the cluster management to balance diverging interests between stakeholder groups (e.g. financially strong versus financially weak companies).

The services should allow the committed participants to retain personnel as well as save financial and material resources. Moreover, the services should provide a chance to efficiently support both, committed participants and the cluster as a whole in their economic development.

4.2 Financing

Financing is one of the key factors which determine the long-term sustainability and the efficiency of a cluster. The availability of funding (private and public) decisively influences the cluster management’s capacities and resources as well as its scope of activity, overall network processes and organisational structures. All aspects related to a cluster must be assessed in taking into account the cluster management's
financial potential, plus additional funds e.g. for collaborative projects.

Therefore, a solid financing plan that ensures sustainability is particularly important for clusters. Cluster organisations need to continuously secure and raise new funds in order to have a financially balanced and stabilised cluster. This is true for both mainly privately financed as well as for cluster organisations, which primarily rely on public financing sources.

A financing model should be based on regular and variable income sources. This helps to reduce the dependency on only one source of financing, particularly if the latter is only available for a limited period of time. Examples for financing sources are:

- Membership fees, which could be flexibly adjusted e.g. to the scope of services, or fixed, depending on the kind and size of the committed participants;
- Financial assistance for start-ups;
- Sponsoring and donations;
- Fee for services offered by the cluster management, available to committed participants and even to non-participants (higher fees for the latter), e.g. training courses, meetings, measures of recruitment;
- Benefit from income generated from patents and licences of the cluster;
- Implementation of projects on behalf of the industry;
- Public co-financing of activities, which have a positive impact on the participants, the cluster as such, and as well as on the entire region and its development.

Cluster organisations that are publicly funded should be allocated enough funds to secure financial stability over several years. Nevertheless, the cluster management should be kept motivated to become independent from public financing sources.

### 4.3 Innovation Dynamics and Innovation Management

Innovative companies need reliable relations of cooperation with other partners from the economic and research community to maintain their competitive edge in the long run. Clusters are one answer to such needs. They have established themselves as an important innovation driver worldwide in the past few years. Economic research shows that high-tech companies engaged in clusters are more competitive and innovative than those which do not operate in such networks.

Performing innovation processes within a cluster (or other public or non-closed communities) has been named “Open Innovation”. Open Innovation is designed to enhance the innovation potential of companies by obtaining external and broadening internal know-how, because the entire processes are based on cooperation with others. Therefore, cluster managers are responsible for sharing to and providing know-how with target persons and organisations, enabling them to learn from each other.

The relevance of clusters for companies’ innovative capacity can be traced to the capacity of network structures to encourage innovation, because networks within companies are also conducive to a better exchange of know-how.

Consequently, clusters see themselves confronted with the challenge to build up processes and structures capable of enhancing the binding character of cooperation and enabling a network-wide control of the innovation process by joint steps. It should be noted that control is not meant here as a centralistic regime that largely interferes with the network partners’ autonomy. Control rather denotes the process of a structured and systematic innovation management as
the basis for joint and cross-company innovation activities (e.g. in technology and product development, but also in joint market introduction).

The challenge in this regard is notably to cluster themes and participants horizontally and vertically, including the interdisciplinary discussion and analysis of themes. This process has to be moderated. Such a process will only succeed with well-placed efficient structures where interfaces can be formed at different spots along the value chain. This can be done sector-wise and functionally. Thus, the challenge is to transfer already existing forms of cooperation to other branches within the cluster and to find new common ground there. This means transferring already existing best-practice examples to new circumstances and to interlink them. To this end, workgroups and topic related groups can be implemented.

4.4 Prioritisation and Expansion of Sectors

Clusters do not only bundle existing sector-specific competences. They also contribute to the development and further evolvement of existing and new branches through their intra-network and cross-cluster interaction, by making it possible to overcome branch barriers or by widening the technological focus through systematically linking different branches and sectors.

Essential preconditions for a durable marketability are flexibility and mobility of the cluster itself and its participants. This makes a quick and adequate response to economic, technological and other external changes possible. It also allows the development of new markets, also international ones, which make it necessary to intensify collaborative and interdisciplinary technology and product development.

In the long term, economic stagnation can be a result of an exclusive concentration on core competences within the cluster and the implementation of partial sequences of process chains. Therefore, it is necessary to implement intra-industry followed by cross-industry network approaches during the cluster development.

Alternatively, a change or complementation of the technological focus must be aimed at, because new cluster and network configurations can lead to high synergy effects. Networks and clusters are particularly capable of moderating this future development process, i.e. of branch prioritisation and expansion. This is due to the close communication and interaction which facilitate visions for the future to emerge, and processes of strategy formation to commence.

4.5 Regional Development

An increase in economic efficiency, a rise of competitiveness and the national and international profiling of locations are not temporarily limited activities. They constitute a longstanding development project by bringing together different regional forces and initiatives. Clusters have the potential to influence a region’s competitiveness through the increase of the productivity of local companies involved. This can be of economic benefit to the region, e.g. through a higher added value and more jobs, etc.

Regional networks are an instrument for the targeted development of bigger clusters or complete economic regions in this process by involving players in a long-term strategy process. An intensive constant interaction is crucial, apart from the presence of companies, R&D institu-
tions and other organisations of one or several interrelated branches. This process can be actively supported by the cluster management. Another aspect concerns the need to overcome regional frontiers, as is practiced among other companies, through a faster and more complex regional development.

Stable relations of cooperation can be the result of already initiated network processes and may also lead to further structures and options for cooperation – e.g. in the fields of personnel, management, marketing, sales, and profiling of location, which positively influence regional development. The successful realisation of growth and employment effects (such as spin-offs, settlement of new companies and R&D institutions in the region, recruitment of qualified personnel) presupposes responsible action for the region by all regional players. In this context, joint dialogue and cooperation between the political, economic and scientific communities is crucial.
5. ANNEX II: European Cluster Excellence Initiative

5.1 Assessment of the Cluster Organisation According to the Set of Quality Indicators developed in the European Cluster Excellence Initiative (ECEI)

A “standard” for assessing cluster management excellence was currently developed within the “European Cluster Excellence Initiative (ECEI)”\(^4\). ECEI has been an international project, co-financed by the European Commission, which aimed to develop measurement procedures and approaches to assess cluster management excellence. The overall objective was to create an independent, voluntary proof of cluster organisation management excellence which is accepted and recognised all over Europe, or even beyond. The methodology aimed to identify weak spots and motivate cluster managers to take part in an improvement process, to become better by comparing with others and learning from the best.

The benchmarking approach developed by VDI/VDE-IT as well as the assessment approach of the ECEI project are very similar and are built upon each other. Many of the indicators used within the benchmarking exercise are the same as in the ECEI approach. The main difference is that the benchmarking exercise approach is a self-assessment and no further proof for the data is required. In contrast, the ECEI approach is based on an external assessment which states whether a cluster management fulfils certain quality criteria or not. Consequently, the ECEI indicators reflect excellence thresholds, which is not the case in the benchmarking exercise.

A set of 31 quality indicators, measurement procedures and excellence thresholds have been elaborated in the ECEI project. A list of these quality indicators is published under [www.cluster-analysis.org](http://www.cluster-analysis.org). Additionally, the methodology of assessing the data according to these indicators and the way of data analysis has been developed and tested. A process was defined leading to the “Cluster Management Excellence Label GOLD” for excellent cluster organisations (see section 5.3).

The following table lists the cluster organisation management excellence indicators of ECEI for which relevant data was also collected within the benchmarking exercise. In the three columns on the right it is indicated whether the cluster organisation performs according to the quality level defined by ECEI.

The colours indicate the level of performance as follows:

- **GREEN**: Excellent level of performance. Only minor improvements are – if at all – possible;
- **YELLOW**: Reasonable level of performance. Potential for improvements;
- **RED**: Certain minimal criteria for good practice in cluster management are not reached and/or it is recommended to take these

\(^4\) The “European Cluster Excellence Initiative (ECEI)” ([www.cluster-excellence.eu](http://www.cluster-excellence.eu)), a three-year project, co-funded by DG Enterprise and Industry of the European Commission, started in 2009. It aimed to develop methodologies and tools for improving the excellence of cluster organisation management. Materials and tools were developed and provided in order to help cluster managers to become “excellent cluster managers”. Finally, a “Cluster Organisation Management Excellence Label (Quality Label)” was to be developed to award “excellent cluster managers”, based on a set of harmonised indicators. This development resulted into the labelling approach for cluster organisations now being offered by ESCA. Furthermore, a concept for a “European Cluster manager Club” was elaborated which on the long term shall serve as a communication and experience exchange platform for cluster excellent managers.
weak spots into consideration for further development of the cluster organisation management.

This provides a quick overview on areas of improvement for reaching level of cluster management excellence which could lead to the "Cluster Management Excellence Label GOLD". It has to be clearly noted however, that the data for this overview was assessed in a different manner and that some of the projections do not represent the full scope of the details of the ECEI indicators.
<table>
<thead>
<tr>
<th>STRUCTURE OF THE CLUSTER</th>
<th>GREEN Quality Level</th>
<th>YELLOW Quality Level</th>
<th>RED Quality Level</th>
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<td>Committed cluster participation</td>
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<tr>
<td>Composition of the cluster participants</td>
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<td>Stability of cluster participation</td>
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<td>Clarity of roles – involvement of stakeholders in decision making processes</td>
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<td>Degree of cooperation within the cluster participants</td>
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<td>Integration of the cluster organisation in the innovation system</td>
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<td>FINANCING</td>
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<tr>
<td>Share of financial resources from private sources</td>
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<td>STRATEGY, OBJECTIVES, SERVICES</td>
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<td>Financial controlling system</td>
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<td>Activities and services of the cluster management</td>
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<td>Working groups</td>
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<td>Cluster organisation’s web presence</td>
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<td>ACHIEVEMENTS, RECOGNITION</td>
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<td>Cluster participants’ satisfaction surveys</td>
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</table>

Table 5: ECEI set of quality indicators
5.2 Requirements to Excellence According to Relevant ECEI Indicators

The following requirements are supposed to be fulfilled by the cluster organisation in order to reach the level of excellence “GREEN” according the ECEI indicators.

STRUCTURE OF THE CLUSTER

Committed Cluster Participation
Participants of a cluster should commit themselves by some kind of written agreement. Such a document should indicate potential benefits for the participants but also their duties as a committed cluster participant. At least 80% of the cluster participants should be committed participants. The idea behind this limitation is that the cluster management should be able to focus its activities on the needs of the committed participants; therefore the number of non-committed participants is to be very limited. Companies, research stakeholders or any other parties that have registered just for an email-newsletter or have attended a workshop or event just once without contributing anything to the progress of the cluster should not be considered as committed cluster participants.

Composition of the cluster participants
More than 70% of the committed participants of the cluster should originate from industry (both SME and non-SME). The cluster should also count at least one research institution and at least one education organisation as committed participants. Finally, the cluster should incorporate at least one committed participant from the following categories: Intermediates, government/public organisations, marketing, others.

Number of committed cluster participants in total
A membership of more than 40 committed participants is considered necessary to create a critical mass for projects that benefit the entire cluster.

TYPOLOGY, GOVERNANCE, COOPERATION

Lifelong learning aspects for the cluster management team
Measures for lifelong training for the cluster management team should be planned and based on a sufficient budget. They should be implemented on a regular basis with more than two training days per year for every staff member.

Integration of the cluster organisation in the innovation system
The cluster organisation should maintain good cooperation contacts with other institutional innovation support and service providers, business and innovation promoters, funding authorities, etc. At least three of these actors should either be official committed participants of the cluster or have implemented strategic partner agreements with the cluster. They should play an active role for the general benefits of the cluster participants. By this, the cluster organisation can be considered as well integrated into the national/regional/local innovation system, which is seen beneficiary for the committed cluster participants.

FINANCING

Prospects of financial resources
The financial situation of a cluster organisation can be considered as excellent if the budget is secured for the next two years of activity and if there is a positive outlook beyond.
STRATEGY, OBJECTIVES, SERVICES

Financial controlling system
A day-to-day controlling and financial reporting system is in place and allows financial monitoring of the cluster activities at every time with little efforts. With such a system the cluster management is at any time aware of own resources and expenses and can promptly react to any demands of the cluster participants occurring in the daily activities without significant resources for internal administration.

Working groups
Working groups covering specific issues within the cluster should be set up to provide cluster participants with a platform for joint projects. It is consensus that the cluster management team shall rather facilitate cooperation between the cluster participants than being the driver and involved directly in all activities. Initiating and implementing a structure of working groups can be considered as good practice for cluster organisation management.

Cluster organisation’s web presence
A regularly updated content about the cluster organisation should be available in the local language on a website and on social networks/platforms like LinkedIn, the European Cluster Collaboration Platform or facebook, giving a general overview and details on the work of the cluster and possibly the technology area as well as important contact points. As internationalisation of clusters is an important issue, the public part of the web presence should be available in the English language, plus the languages of the key countries targeted for collaborations and market opportunities. Furthermore, contacting cluster participants should be possible via the web presence where the appropriate contact details should be available.

ACHIEVEMENTS, RECOGNITION

Success stories
Success stories of the cluster or its participants – if significantly supported by the activities of the cluster organisation – should be communicated by the cluster organisation. The success stories should highlight the following points:

- The complexity of the objectives and activities;
- The positive impact on the majority of the cluster participants and industry in general;
- The relevance and degree of contribution to the achievement of the cluster’s strategic objectives;
- The contribution to the sustainability of the cluster organisation development.

Cluster participants’ satisfaction surveys
Cluster participants’ satisfaction surveys should be carried out and analysed, in terms of updating strategy and implementation plan, at least bi-annually. Cluster management should serve and aim for the benefit of their committed cluster participants. This however implies that the cluster organisation is aware of the needs of the participants and is informed of any specific demands. The degree of satisfaction of the cluster participants and/or even external stakeholders of the cluster should be assessed on a more or less regular basis.
5.3 ECEI Labels Recognising Improvements and Excellence in Cluster Management

The aim of the ECEI project was the development and implementation of a set of tools and methodologies dedicated to cluster organisations, in order to improve their work and to demonstrate their excellence in cluster management. One of the instruments developed and being introduced starting 2011 is the ECEI label system, recognising improvements and excellence in cluster management.

Cluster organisations, which have taken part in a cluster benchmarking exercise according to the „NGPExcellence-approach“, are awarded with the Cluster Management Excellence Label “BRONZE – Striving for Cluster Excellence”. This benchmarking provides a documented initial level of improvement processes for cluster management and uses indicators similar to the quality indicators of ECEI. The validity of the BRONZE label is limited to two years from the month of the benchmarking interview.

Thus, each cluster that is participating in the benchmarking activity described in this report (including the receipt of this benchmarking report) receives the BRONZE label awarded by ESCA. The label cannot be considered as a justification of an excellence status that is already reached, but rather as a justification, that the cluster organisation is considering and working on improvements of its cluster management’s activities.


The GOLD label is awarded to cluster organisations, which have reached a cluster management excellence score of ≥ 80 % during an external expert assessment, according to the 31 quality indicators elaborated within ECEI. The procedures of expert assessment and award of the label are monitored by a “Cluster Excellence Expert Group”, consisting of all cluster managers holding a valid GOLD label. By this an international recognition of the GOLD label is guaranteed.

The validity of the GOLD label is limited to two years. It can be extended in validity for another two years, if improvement projects in conformity with EFQM have successfully been implemented and validated according to „EFQM Committed to Excellence“ during the course of the first two years.

Currently the initiation of an additional label is discussed: The “Cluster Management Excellence Label SILVER – Dedicated to Cluster Excellence“. Cluster organisations which participate in a benchmarking exercise for the renewal of their BRONZE Label after two years and which can demonstrate their achieved improvements in cluster management (including proofs of evidence) to a neutral expert within a validation meeting can be awarded with such a label. The SILVER label therefore indicates that a cluster organisation is successfully working on
improving cluster management for a longer period of time. The full details and conditions for award of this SILVER label will be elaborated and then published during 2013.

The described labelling system for cluster organisations can be considered as one of the main results of the ECEI project. The former ECEI project partners and the European Commission as co-financing authority have mandated ESCA to follow-up the results of the ECEI project regarding benchmarking and labelling of cluster organisations. ESCA therefore acts as a one-stop shop for cluster organisations interested in being awarded with these labels.

ESCA for this purpose cooperates with a pool of trained experts from all over Europe, who are involved in performing benchmarking interviews and the on-site assessments (see annex III). Additionally, cooperation with EFQM is foreseen. Furthermore, monitoring and decision-making bodies regarding the award of labels are implemented:

- “Technical Advisory Board Cluster Management Excellence”,
- “High-Level Policy Group”,
- “Cluster Excellence Expert Group”.

The “Technical Advisory Board Cluster Management Excellence” is responsible for the continuous development of the methodology, indicators, assessment procedures, mainly for the GOLD label.

The “High-Level Policy Group” is responsible for promoting the approaches of cluster management excellence on policy and programme level in different countries and regions.

The “Cluster Excellence Expert Group”, consisting of cluster managers holding a valid GOLD label, supervises ESCA in respect to the assessments and awards of the GOLD label (and most probably of the SILVER label in the future).

All groups cooperate with each other and with ESCA. ESCA provides information regarding organisational issues and experiences of the work as inputs to these groups. Individual data provided by cluster organisations in any assessment process in general is not distributed. Only selected individual data is provided to the “Cluster Excellence Expert Group” in the context of GOLD label assessments (however, data is pre-discussed and approved by the cluster organisation before provision).

Please contact ESCA for any details on the necessary steps that have to be taken and the costs for getting a GOLD label (and SILVER Label in the future) and/or consult www.cluster-analysis.org.

Figure 57: Cluster Management Excellence Label GOLD Assessment Procedure Framework
6. ANNEX III: Pool of Experts in the European Secretariat for Cluster Analysis

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The updated list of benchmarking experts can be found under: [www.cluster-analysis.org](http://www.cluster-analysis.org)