



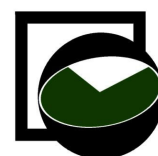
RICARDA

Regional Intellectual Capital Reporting
Development and Application of a Methodology
for European Regions

Intellectual Capital Report for Pannon Automotive Cluster (PANAC)

West Pannon Regional Development Agency –
Pannon Automotive Cluster Division, Győr (Hungary)

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1 Intellectual Capital Report for Pannon Automotive Cluster: Motivation and Methodology

1.1 Introduction

Pannon Automotive Cluster was established in 2000 by the initiation of the West Pannon Regional Development Agency and the West Pannon Regional Development Council with the support of the largest automotive companies of Hungary (both national and multinational) to increase the competitiveness of the automotive sector by special cluster services. Pannon Automotive Cluster's intention is above all to support the integration of the Hungarian automotive industry to achieve the complex supplier tasks. The beneficiaries of PANAC activities are mainly the Hungarian automotive small-, or medium enterprises. The membership in 2006 reached 70, however the target group of its activity is not limited to them, the services are also accessible for non-member firms.

The objective of this intellectual capital report is trying to describe the Pannon Automotive Cluster as a network in its present form. Doing this it aims to draw attention to those elements that contribute to the network's success: the know-how of cluster members, appropriate structures for the exchange of information and knowledge as well as relations with relevant partners within the Region and beyond.

Pannon Automotive Cluster: An Overview

The automotive sector is one of the most important industries in Hungary. It is highly export oriented and dominated by foreign owned large multinationals. However it contains more and more innovative Hungarian small and medium sized enterprises, which have successfully joined to the international circulation of the sector. The sector shows very high spatial concentration in the North Transdanubian Region especially around the centres of Győr, Székesfehérvár, Budapest and other smaller industrial centres resulting in a critical mass for a regional cluster. However the low intensity of supplier and R&D collaboration and common innovation projects, the trifling scale and intensity of cooperation between business actors, scientific research institutes and universities and the inadequate flow of information and knowledge are limitations to the potential synergy effects.

In Dec 2000 Pannon Automotive Cluster (PANAC) as innovative network based cooperation of businesses and organizations was established on a voluntary basis to reach mutual benefits. Now the PANAC membership with the founders is over 70, most of them Hungarian small and medium sized producing enterprises. The mission of PANAC is:

- promoting the production and the localization of automotive modules and systems;
- assisting in improvement of Hungarian owned supplier companies in order to be able to produce and to develop complex systems and tools;
- developing the readiness of national researchers community to participate in automotive - and international as well - development projects.

For reach this it tries fosters the process of Hungarian suppliers to be able to latch on to the global supplier chains; support partners to reach the capability level to produce high quality and more complex products with high added value to improve their position in the supplier chain; makes the network and its members more internationalized.

The network management's activities include special services for not only members but all firms related to automotive sector: providing special training programmes and education, information and communication services, marketing and PR services, internationalisation, organisation of professional conferences and events, operating the automotive benchmarking club, participating in international automotive projects etc. Beside the services PANAC tries to be an active partner in the sectoral and regional development processes that affect automotive industry. The management of PANAC is operating as a division of the West Pannon Regional Development Agency.

1.2 What is Intellectual Capital Reporting?

Intellectual capital reports analyse and assess the intellectual capital of organisations. Intellectual capital is commonly distinguished into three dimensions:

- *Human capital*: the knowledge members of an organisation bring with them. It includes peoples' skills, experiences and abilities.
- *Structural capital*: the opportunities and instruments that serve the exchange and documentation of knowledge (IT, intellectual property, organisational culture, process organisation etc.).
- *Relational capital*: all resources linked to the external relationships with costumers, suppliers and the public.

Intellectual capital reports complement conventional financial reporting. They focus on intangible assets – aspects that are of increased importance in times of service society and knowledge economy. Intellectual capital reporting has been developed as a private sector management tool in the mid 1990ies in Sweden. Meanwhile this methodology has spread throughout Europe.¹ Its use in the context of regional networks is a new field of application, though. Here the RICARDA project undertakes a pioneering work.

The RICARDA Project

The process of drafting an intellectual capital report for the PANAC took place in the context of the EU-financed project RICARDA (Regional Intellectual Capital Reporting – Application and Development of a Methodology for European Regions). This project focuses on the pilot-application of the method of intellectual capital reporting for regional technology oriented networks. This objective is implemented in four exemplary networks in the regions of Stuttgart (Germany), Styria (Austria), Stockholm (Sweden) and West Transdanubia (Hungary). PANAC is the study case for the West Transdanubian Region, Hungary.

Project coordinator is the German Institute of Urban Affairs (Deutsches Institut für Urbanistik, Difu), Berlin, the non-profit-making research and consulting institution of the German cities. RICARDA is supported with funding of the 6th European Framework Programme for Research and Technological Development („Knowledge Regions 2“).²

The project's consortium brings together eight partners from these four European regions, representing a wide spectrum in terms of regional institutional capacities, economic structures and R&D priorities. The participating regional institutions are all actively involved in cluster-development activities. The consortium's four research institutes are all working in the field of regional RTD policy and cluster management.

Members of the consortium are:

- Deutsches Institut für Urbanistik (Difu), Berlin (D)
- Wirtschaftsförderung Region Stuttgart GmbH (WRS) (D)
- Offices of the Province of Styria (Steiermark), Graz (A)
- JOANNEUM RESEARCH Forschungsgesellschaft mbH, Graz (A)
- Kista Science City AB (Kista), Stockholm (S)
- Royal Institute of Technology (KTH), Stockholm (S)
- West Pannon Regional Development Agency (WPRDA), Sopron (HU)
- West Hungarian Research Institute of the Centre for Regional Studies (WHRI), Győr (HU)

¹ See European Commission (2006): Reporting Intellectual Capital to Augment Research, Development and Innovation in SMEs. Report to the Commission of the High Level Expert Group on RICARDIS.

² For further information see the webpage of the project on the internet: <http://www.ricarda-project.org>.

Figure 1: RICARDA partner regions and organisations



1.3 Why Intellectual Capital Reporting for Regional Networks?

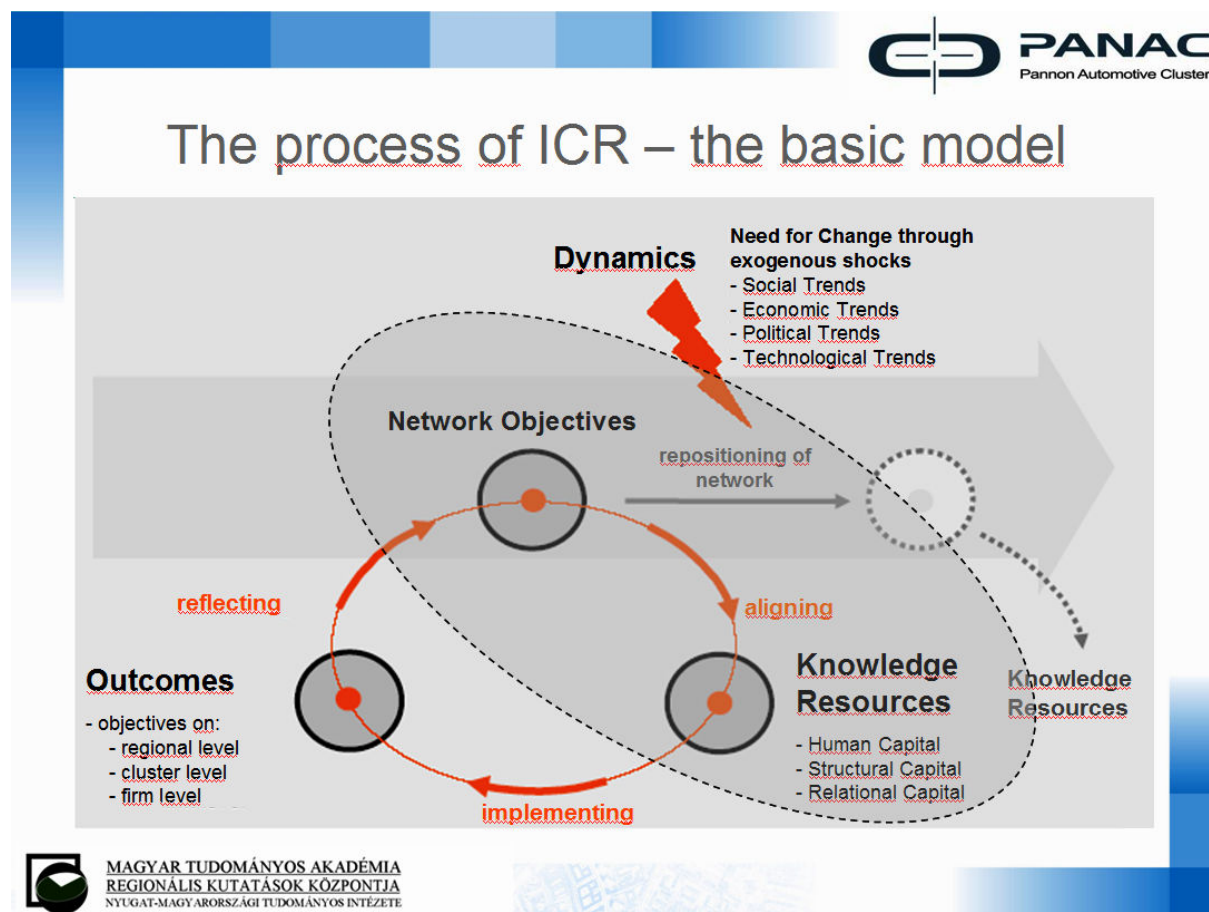
It is quite obvious to transfer the method of intellectual capital reporting from the company level to regional clusters like PANAC. The following considerations and inputs from practitioners were prominent at the start of the project:

- **Methodological focus:** Intellectual capital reports focus on the most important elements of cluster initiatives, i.e. the generation and distribution of knowledge.
- **Team-oriented process:** An intellectual capital report amalgamates the objectives and assessments of an organisation's members. This team-oriented design suits the character of a network as this consists of partners enjoying equal rights.
- **Management tool:** The identification and assessment of a network's intellectual capital with the help of appropriate indicators can support those actors in charge of strategic and operational issues (e.g. board of directors, network manager) with regard to targeted interventions. A periodic repetition of intellectual capital reporting allows to measure changes regarding these indicators.
- **Network development:** Many networks and PANAC is an example in this respect, have been established in the last couple of years and are now going through a phase of maturity, in which the review of the network's objectives and success factors is of growing importance.
- **Public relations:** It is often difficult to communicate the various benefits of networking initiatives to the public. Intellectual capital reports can offer stakeholders (politics, public administration) valuable insights into the structures that have often been supported with public funding.

1.4 The RICARDA Methodology

Within the RICARDA project a basic model for the intellectual capital reporting of regional, technology-oriented networks was developed. It is based on existing methods for intellectual capital reporting on the level of companies and complementary research on existing instruments for the management and evaluation of networks (see diagram below).

Figure 2: RICARDA basic model for intellectual capital reporting



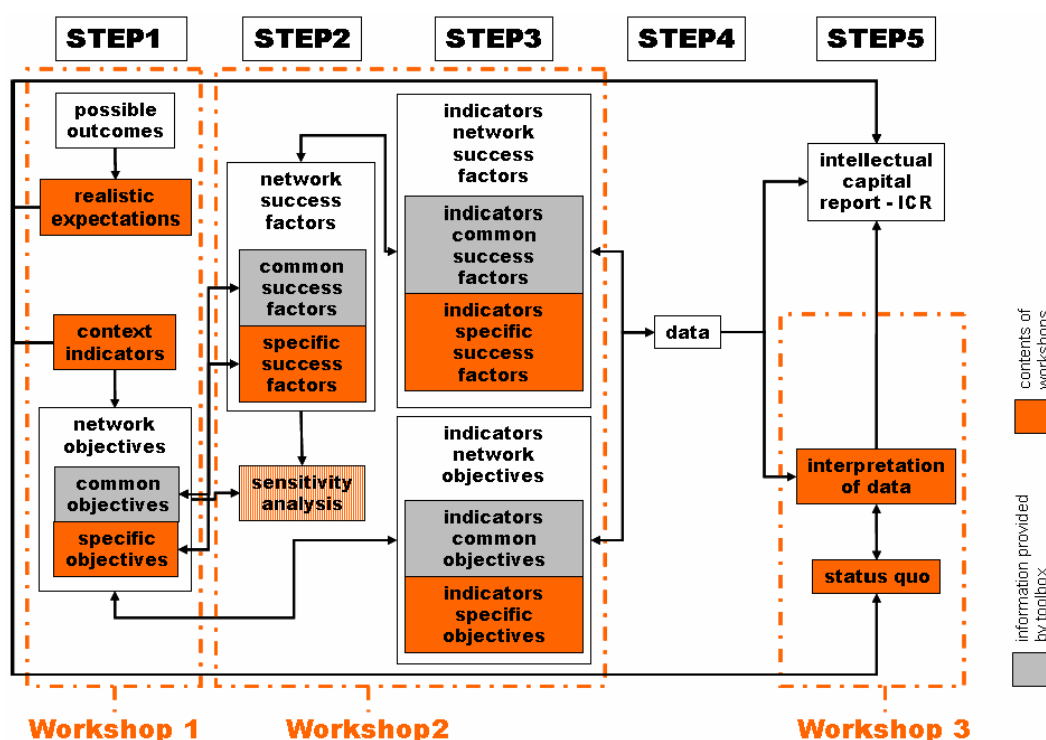
Network objectives, the network's intellectual capital and the results of the network are main elements of the basic model. These three elements are closely linked together. The intellectual capital should be focused according to the network's objectives. It contributes – in its three dimensions of human, structural and relational capital – as knowledge resources to the concrete outcomes of the network. Those must be compared with the network's objectives defined beforehand.

A further assumption of the base model is the variability of network objectives in time. Relevant trends in the network's environment need to be considered. Trends in technological development, in the economy as well as political expectations or policy measures influence the network's activities. They might require an adaptation of the network and thus a change or an adjustment of its objectives.

1.5 The Process

The process of intellectual capital reporting for PANAC was carried out by a working group of selected network members and management. It was organized and moderated externally by the West Hungarian Research Institute (WHRI). An advisory board, consisting of experts from the field of intellectual capital reporting supported the ongoing work.³ The work was organized along the RICARDA ICR toolbox that had been developed in the first phase of the project. The following diagram gives an overview of the stages of the process.

Figure 3: Process of intellectual capital reporting



The work was organized in a series of workshops. In the centre of the first workshop was a review of the network's objectives. This contained the following steps. First, in an analysis of the status quo the objectives laid down in PANAC's cooperation agreement was reviewed. After that the development stage of the network was discussed, laid down that the network is in a developing and recovering stage after its 5 years of operation. An analysis of trends was carried out in a brainstorming on the future requirements for PANAC by changes in the environment in terms of technology, economy, public funding and regional politics. Following the results of the discussions the current network objectives of PANAC were defined on the base of the original objectives, the current development stage and the external trends. Finally 8 network objectives were developed by the participants. Objectives and their rationale were then communicated for comments to the members of working group.

The second workshop focused on the issue of intellectual capital. The guiding question was what aspects of human, structural and relational capital are important resources for the attainment of the network's objectives. In addition to that, possible indicators for measuring these critical aspects were identified. Starting point was a list of "success factors" that had been compiled by research partners of the RICARDA project and possible indicators for regional, knowledge-intensive networks. Two of the earlier defined network objectives were cancelled as participants recognised that they are rather success factors (and their connections to knowledge resources are very weak), while one of the objectives was redefined. In a

³ See appendix for a list of working group and advisory board members.

final group exercise network objectives and success factors were linked according to supposed causal relationships.

After the two workshops a phase of data gathering in the form of a members' survey took place. As the PANAC membership includes manufacturing firms, service providers for automotive companies and other organisations the latest group was not included in the survey. The respond rate of the survey was only 32% (21 answers from the 66 companies), which do not represent the whole cluster. This means that we are not in the situation to speak about the performance of the whole cluster, but only the most important processes regarding to the one third of the network. Parallel to the survey an analysis of documents of the cluster management was carried out. This phase served to gather the concrete values for the indicators on network objectives and relevant intellectual capital ("success factors").

The interpretation of gathered indicator values took place in a third workshop. In a group exercise the data regarding the status quo of success factors and network objectives was assessed regarding their relative degree of attainment.

1.6 Outlook

The following chapter presents the intellectual capital report for the Pannon Automotive Cluster. Its results will be used for the formulation of the work program of PANAC in the next years (2007-2010). On the level of the RICADA-project the experiences from the process of formulating the intellectual capital report, also in the other three RICARDA regions, will inform the revision and refinement of the tools developed so far. They will be presented in a manual for the application of intellectual capital reporting for regional, knowledge-intensive networks by the project consortium by the end of 2007.

2. Intellectual Capital Report for PANAC: Results

2.1 Network Objectives and Success Factors

In the process of intellectual capital reporting six network objectives were defined for PANAC during the first two workshops. Regarding the intellectual capital contributing to the achievement of these objectives eleven factors of human, structural and relational capital could be identified. For both, network objectives and success factors, the PANAC-specific rationale was worked out. The indicators to measure success factors can be found in the annex.

Table 1: Network objectives and their rationale

Objective	Rationale
O1: Strengthening the international competitiveness of Pannon region, improvement of general renewal capability of the region, contribution to the development of the region	The regional economy is mainly based on large multinational export oriented companies and sectors with less value added activities. There is a need to improve the renewal capabilities of the economy by focusing on higher value added activities, innovation and R&D. The automotive sector and especially the innovative network based cooperation of businesses and organizations in PANAC can be one of the most important actor in this demand oriented intensive development policy.
O2: Increase the efficiency of the long term network co-operation of automotive companies	While there is a critical mass in North Transdanubia in the automotive sector regarding the number, the scale and capacity of firms, unfortunately the network co-operation level is very low. The synergy effects of network co-operations are not really present. Increasing the network co-operations in long term can contribute to the competitiveness of the members.
O3: Common utilisation of existing automotive infrastructures, technologies, capacities and common purchasing and using of new infrastructures	Several enterprises have some free capacities on their very special automotive infrastructures, tools or technologies which could be used by other, especially small and medium sized enterprises. PANAC has to be a coordinator among members to find these free capacities and make connections between potential partners.
O4: Encourage the high qualified labour force with relevant skills for automotive industry, mediation of firms' demand	For several years the relative cheap but well skilled labour force for automotive industry in North Transdanubia was one of the most important location factors for multinational companies. Now all the members are facing the problem of lack of well educated labour in automotive professionals from the level of workman completely to engineers.
O5: Building up trust among automotive firms, ensuring the possibilities for informal communication and efficient information flow	One of the most important reasons of the very low level of co-operations, common projects or developments among the Hungarian automotive enterprises is distrust. Most of the companies fear co-operation with others. There is especially a gap between the Hungarian SMEs and the larger multinational companies.
O6: Strengthening the external relationships of the network (with other similar clusters for technology transfer)	There are other similar cluster organisations in the West Transdanubian Region and other Hungarian and foreign regions in different sectors. Their experiences in network development could be very interesting for PANAC. Especially the cooperation with other automotive clusters and networks is important for PANAC and its members. Cooperation for technology transfers with other actors is also in focus.

Table 2: Success factors and their rationale

Success Factors	Rationale
Human Capital	
HC1: Knowledge base	According to the new theory of economic growth, stocks of knowledge contribute to economic growth of nations, regions and sectors. The knowledge of employment reflects the potential of the cluster. The availability of the well skilled labour force in the automotive industry becomes a more and more important problem in the core region of PANAC.
HC2: New capabilities and training	Provision of possibilities to acquire knowledge in knowledge intensive network leads to informal knowledge diffusion and enhanced social capital and this increases the individual's possibilities to get new insights. PANAC organises different specialised trainings for his members.
Structural Capital	
SC1: Interorganisational learning	Interorganisational learning contributes to the creation of new knowledge and increases required adaptability in response to external trends and thus enhances the long-term competitiveness of the knowledge intensive network. Common projects and co-operations between PANAC members contribute to interorganisational learning. There are existing supplier co-operations among members, which can be improved.
SC2: Social capital	Social capital enables enterprises to cooperate closely and thus fosters knowledge diffusion in the network. The confidence of PANAC members is a crucial point. Special events provide the opportunities for members to get to know and communicate with each other.
SC3: Partnerships and networks	Partnerships and networks arise from repeated co-operations and allow increasing competitiveness by division of labour, knowledge spillovers and a reduction of risk. The structure of PANAC is heterogeneous with EOMs, TIER1 and TIER2 suppliers and smaller enterprises. It also contains one university and some other organisations (banks, regional development organisation).
SC4: Innovation capacity	R&D and innovation lead to the creation and application of knowledge, namely to new products, new processes and new services, which finally contribute to enhanced competitiveness. PANAC has to focus on those special services, which can improve the innovativeness of the member companies, especially to provide a platform for the exchange of the existing scientific and technological knowledge.
SC5: Common infrastructure and services	As a special club, PANAC has number of special services for its members; especially the well operated Benchmarking Club or information services, organisations of trainings, workshops, events and conferences in automotive issues, supporting partner searches etc. These services foster the creation and diffusion of knowledge and division of labour among members.
SC6: Management and institution building	The cluster management ensures the effectiveness of the network by creating framework conditions for long-term co-operations and hence the potential for sustained competitiveness. PANAC management as a hub for the network support and the development of partnerships provides services for members.

Relational Capital	
RC1: Co-operations with other networks/clusters or institutions/ single firms	External co-operations of PANAC can help to get access to stocks of knowledge that do not exist in the cluster. Especially from similar foreign networks and clusters connecting to automotive industry, or different but connecting industries (e.g. aviation industry or mechatronics).
Financial Resources	
FC1: Financial background	The annual budget consists revenues from the charged services of PANAC, the yearly membership fees and different national and international projects.

2.2 Interrelation of Network Objectives and Success Factors

The following table shows suggested interrelations of network objectives and success factors of intellectual capital regarded as critical for success. It contains the joint assessment of the participants of the second workshop.

The table shows that the individual success factors of intellectual capital are interlinked with the network objectives in several ways. Beside the financial background, which is not part of the intellectual capital as it is a financial capital and it is necessary for almost all objectives, the “partnership and networks”, “management and institution building” and “common infrastructure and services” shows most influence on the accepted network objectives (both of them have four links) followed by “new capabilities and trainings” with three links. From the other perspective, namely how many success factors effects on the individual objectives the table shows that most of them are linked to the first (rather regional policy) objective: strengthening the international competitiveness of Pannon region, improvement of general renewal capability of the region, contribution to the development of the region. Also several success factors do affect the fifth objective: “building the trust among automotive firms”, “ensuring the possibilities for informal communication” and “efficient information flow”. All the other objectives are influenced by two or three success factors.

In the following chapters, rationale, the results of the data gathering (from members’ survey and cluster management) and an assessment for each success factors are listed. This rationale, related indicators and assessments of the cluster’s success factors presented are products of workshop which network management and experts were represented. In the workshop the participants were asked to give an opinion on the value to which the respective success factor has been achieved in terms of quantity and quality. For measuring we used the methodology of the German ICR, with the following scale: attainment of cluster success factor...

0% not measurable/not present

30% partially sufficient

60% mostly sufficient

90% always/entirely sufficient

120% more than necessary (indicates potential for reduction of efforts)

After measuring the individual success factors we tried to draw up their achievements in one figure regarding the two dimensions of quantity and quality. Using this figure we can clearly define the most problematic success factors and those which were mostly achieved by the cluster. As several success factors have different indicators and elements, we have drawn a more detailed figure also to present the most important differences and problems within the success factors.

Table 3: Interrelation of network objectives and success factors

<div>Network Objectives</div> <div>Success Factors</div>	O1: Strengthening the international competitiveness of Pannon region, improvement of general renewal capability of the region, contribution to the development of the region	O2: Increase the efficiency of the long term network co-operation of automotive companies	O3: Common utilisation of existing automotive infrastructures, technologies, capacities and common purchasing and using of new infrastructures	O4: Encourage the high qualified labour force with relevant skills for automotive industry, mediation of firms' demand	O5: Building the trust among automotive firms, ensuring the possibilities for informal communication and efficient information fl	O6: Strengthening the external relationships of the network (with other similar clusters for technology transfer)
HC1. Knowledge base	X			X		
HC2. New capabilities and training	X			X	X	
SC1. Interorganisational learning	X				X	
SC2. Social capital	X				X	
SC3. Partnerships and networks	X	X	X		X	
SC4. Innovation capacity	X	X				
SC5. Common infrastructure and services	X	X	X	X		
SC6. Management and institution building	X		X		X	X
RC1. Co-operations with other networks/ clusters or institutions/ single firms	X					X
FC1. Financial background		X	X	X	X	X

2.3 Success Factors in Human Capital: Individual Results

HC1: Knowledge base

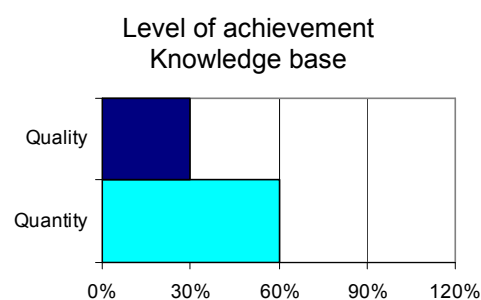
Rationale According to the new theory of economic growth, stocks of knowledge contribute to economic growth of nations, regions and sectors. The knowledge of employment reflects the potential of the cluster. The availability of the well skilled labour force in the automotive industry becomes a more and more important problem in the core region of PANAC.

Results The memberships of PANAC represent a significant part of the Hungarian automotive industry, especially in the North part of Transdanubia regarding to employment. The total labour force of PANAC members are estimated to 35-40 thousand, which is roughly one third of the total employment in automotive and relating industry. This high value is due to that the largest producing companies with high employment are among the founders (Audi, Suzuki, Rába). However the firms that filled out the survey report around 6000 employees (most of them were SMEs). While the total number of employee is decreasing, the share of employee with university or higher education degree is increasing. This increasing of 10 percent is probably overestimated because of the missing larger companies. 60% of the answering members operate an employee suggestion system with the average participation of 20% of the employees. For most of the surveyed members the share of expenditure for the training of human resources from revenue is below 0,25%.

number of employee				
2003	2004	2005	2006	Trend
6346	5959	5929	5906	➔
number of employee with higher education				
2003	2004	2005	2006	Trend
592	582	601	715	↗
share of employee with higher education				
2003	2004	2005	2006	Trend
9,3	9,8	10,1	12,1	↗

Source: PANAC Member's Survey.

Assessment Although the share of employee with higher education is high and the trend is increasing, most of the employee is working in a lower position in comparison with his/her education level. There is a lack of higher educated employee in technical fields; most of them have not technical graduation. The availability of knowledge base is not homogenous. While foreign companies have knowledge competencies most of the Hungarian firms do not.

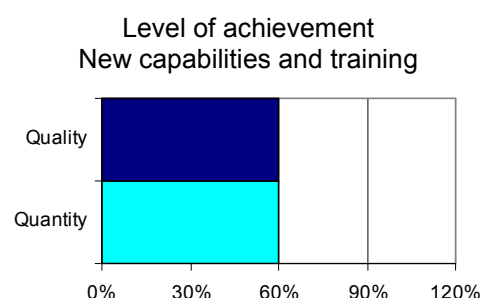


HC2: New capabilities and training

Rationale Provision of possibilities to acquire knowledge in knowledge intensive network leads to informal knowledge diffusion and enhanced social capital and this increases the individual's possibilities to get new insights. PANAC organises different specialised trainings for his members.

Results	PANAC organised different trainings for its members, however most of the trainings were opened not only for PANAC memberships, but other automotive companies. Trainings in 2006 were organised in connection with the automotive academy. In 2005 only a benchmarking training was provided, while in 2004 the number of trainings was seven. The number of the participating organisations and the participants from the cluster were increasing; however they did not reach the number of 2004. Several firms have suggested improving the S&T knowledge within the cluster with specific training on new production and logistic processes (presentations from universities and professional bodies).	number of trainings organised by PANAC			
		2004	2005	2006	Trend
		7	1	8	→
		number of participant organisations in trainings organised by PANAC			
Assessment	The topics of the trainings organised by PANAC met with the demand of the members and were important for their knowledge extension. However in some case the trainings's quality could be improved, if the cluster had much more financial resources for it.	2004	2005	2006	Trend
		53	15	21	↗
		number of participants (person) in trainings organised by PANAC			
		2004	2005	2005	Trend
		206	20	84	↗

Source: PANAC Management.



2.4 Success Factors in Structural Capital: Individual Results

SC1: Interorganisational learning

Rationale	Interorganisational learning contributes to the creation of new knowledge and increases required adaptability in response to external trends and thus enhances the long-term competitiveness of the knowledge intensive network. Common projects and co-operations between PANAC members contribute to interorganisational learning. There are existing supplier co-operations among members, which can be improved.
Results	Unfortunately we can not explore all the existing supplier relationships and other network co-operations among the cluster as only 32% of the members answered our questions. However we know that the surveyed 21 companies reported about 120 existing supplier contacts, which means an average 5.6. Although there are big differences from 0 to 34, with the median 3. In case of other co-operations (common application, common project, common development etc.) the surveyed companies have reported only 50 connects among the

members. This means that the average is only 2,4 with much more differences. 38% of the answering firms do not have any other co-operation with cluster member at all. More than half of the surveyed members have relationship with Széchenyi István University (SZE), the one and only knowledge based member of the cluster. Half of the relationships are only occasionally, but the other half cover permanent, long term co-operations. In results of the network co-operations between the university and business within PANAC in 2006 a regional university knowledge centre was established in SZE with the active participation of 3 PANAC members. In 2005 another initiative launched a cooperation research centre also in the SZE with 6 other PANAC members and 20 external players.

university relationships	2006
share of members cooperating with Széchenyi István University	57%
- R+D: common R+D activities	33%
- other co-operation: use of university equipments, tools, labours, measuring and analysing capacity	38%
- relationship in human resource: provide professional experience, thesis subjects for students and employ graduates	38%

Source: PANAC Member's Survey.

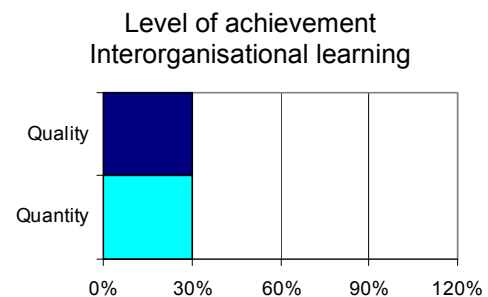
Regional University Knowledge Centre for Vehicle Industry:

Rába Futómű Ltd.,
Borsodi Műhely Ltd.
Schefenacker Part Ungarn

Cooperation Research Centre for Automotive, Electronics and Logistic:

7 of the 27 members are PANAC member

Assessment Most of the relations among partners are simple supplier, or subcontractor partnerships. In addition the number of supplier contracts and cooperation contacts between members is very low. For the improvement of the network activities and especially the supplier connection in the automotive industry PANAC plans to operate an automotive supplier database. However the database still not exists, it is under construction. The number of relationships between member companies and Széchenyi István University become more and more widely, but the intensity of them is not really high and in the most cases these connections do not really contribute to knowledge diffusion.



SC2: Social capital

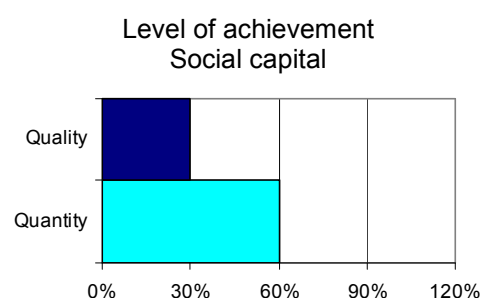
Rationale Social capital enables enterprises to cooperate closely and thus fosters knowledge diffusion in the network. The confidence of PANAC members is a crucial point. Special events provide the opportunities for members to get to know and communicate with each other.

Results PANAC organised different events not only for its members, but all companies active in automotive industry. The number of different events was 10 in 2004 and six in the last two years. As it showed in the next table both the number of the participant organisations and persons decreased significantly in the last years. Parallel with the fall of the number of the events there is a decrease in the share of registered organisations from invited PANAC members for those events. The situation is worse if we think that in 2006 two events connected to RICARDA project with more than 30 participants. The share of active and voluntary members of PANAC in these events and activities in the last year was about 15%, which is a little bit better than 2005, but lag behind the activity in 2004.

number of events organised by PANAC			
2004	2005	2006	Trend
10	6	6	➔
number of participating organisations in events organised by PANAC			
2004	2005	2006	Trend
141	134	51	⬇
number of participants (persons) in events organised by PANAC			
2004	2005	2006	Trend
297	251	119	⬇
share of registered/invited members in events organised by PANAC, %			
2004	2005	2006	Trend
45%	45%	38%	⬇
share of active and voluntary members in events organised by PANAC, %			
2004	2005	2006	Trend
22%	13%	15%	➔

Source: PANAC Management.

Assessment The share of active and voluntary members in PANAC should be much higher, over 50%. Event organisation for automotive companies is not easy as many different organisations (local development organisations or national professional bodies) are active in this field and many parallel professional workshops, conferences and other events are provided for automotive firms. Unfortunately these events are not coordinated. Partly this is the reason of the relatively low participation rate. Beside the events of PANAC the cluster supported many similar events organised by its partner organisations and institutions. RICARDA workshop was the first event in from the foundation of the cluster (6 years), where small and medium sized members could meet and discuss different things with the founder large multinational companies. PANAC organised a member day event in Jan 2007 to get the members together by some issue of PANAC, but provide an opportunity to a free meeting and improving social capital. There is a wish from the members for more professional workshops on specific issues and activities (e.g. cutting, plastic, die-casting etc.) and occasions for just meet together and opportunities to get to know each other.



SC3: Partnerships and networks

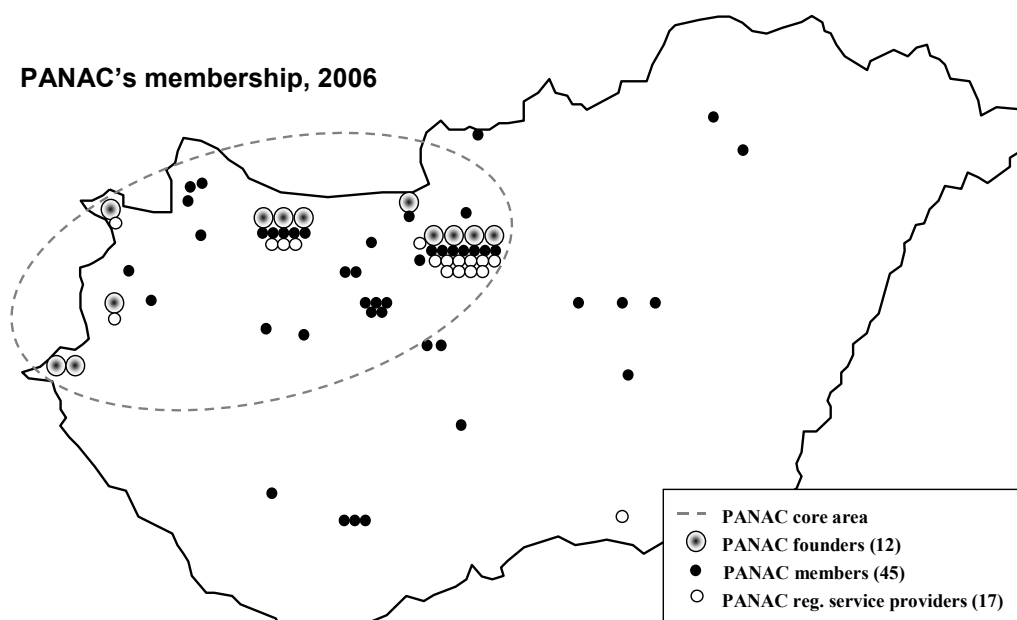
Rationale Partnerships and networks arise from repeated co-operations and allow increasing competitiveness by division of labour, knowledge spillovers and a reduction of risk. The structure of PANAC is heterogeneous with EOMs, TIER1 and TIER2 suppliers and smaller enterprises. It also contains one university and some other organisations (banks, regional development organisation).

Results PANAC was founded by 9 organisations (large manufacturers, regional development council, professional bodies) in 2000, whose number increased to 12 in 2001. 70% of the members are manufacturer. 40% of members is small, 34% is medium and 26% is large companies. Among the members there are 4 OEMs (Audi, GM, Suzuki, Rába) and 3 TIER1 supplier (Luk, Benteler, Video-ton). Among joined members there are two groups: 1) automotive manufacturers with production activities and 2) service providers whose markets are automotive firms. Beside manufacturing companies and service providers 5 other organisations involved as members: Széchenyi István University, Regional Development Council, Consulting & Research for Industrial Economics Ltd. and two banks. In term of geographical locations 35% of members located in Budapest or its agglomeration area, 32% situated in West Transdanubia (half of them in Győr and its surrounding), 20% in Central Transdanubia, while the others are in different regions of Hungary. Service providers especially concentrate in Budapest and Győr.

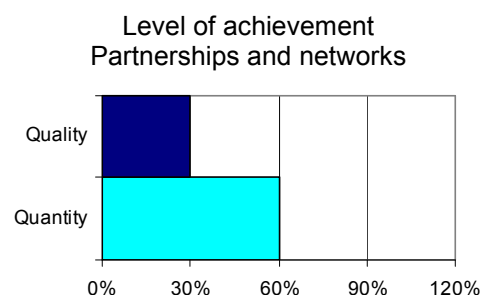
number of PANAC members			
2004	2005	2006	Trend
78	65	74	↗
number of automotive companies			
2004	2005	2006	Trend
56	43	52	↗
number of registered service provider			
2004	2005	2006	Trend
17	17	17	→

Source: PANAC Management.

PANAC's membership, 2006



Assessment The geographical distribution of the membership can not really contribute to the development of an intensive co-operation and knowledge diffusion among the members. In most of cases there are more than 100 kms between members, which cause that the most important direction of any communication and information flow is between the management and the members and not among the members. There are many automotive firms in North Transdanubia, especially in the gravitation area of Győr, and in the surroundings of Tatabánya, Mór which could be potential members of PANAC. With stronger geographic concentration more intensive co-operations could be developed. Several members (from large companies to SMEs) are not active in PANAC. Membership could be more balanced with more TIER1 suppliers, innovative, knowledge intensive micro enterprises, technology providers (e.g. plastic, die-casting, energy, bio etc.), research centres (e.g. Budapest Technical University). The most important problem is the low intensity of the members' activity. There are many "sleeping members". Co-operation and knowledge diffusion is hindered by the heterogeneous activities and existing competences (from plastic to metals and engineering).



SC4: Innovation capacity

Rationale R&D and innovation lead to the creation and application of knowledge, namely to new products, new processes and new services, which finally contribute to enhanced competitiveness. PANAC has to focus on those special services, which can improve the innovativeness of the member companies, especially to provide a platform for the exchange of the existing scientific and technological knowledge.

Results The total R&D expenditure decreased significantly in the last years among members participating in the survey. Half of the surveyed members do not have any R&D expenditure at all. Only two of them reported an R&D expenditure more than 100 million HUF (400 thousand EUR). In connection with the R&D employment the picture is even more pessimistic among the surveyed member firms. Both the number of R&D employment and their share in total employment decreased significantly in the last years. However several members were not involved to the survey have serious R&D activities: Ratipur, Interplus, LuK, Audi, Sapu, Rába, Edag, Karsai, Pannon Tools, Jankovits, HNS, Technoplast.

R&D expenditures, M HUF			
2003	2004	2005	Trend
496	386	357	↘
share of R&D expenditures in revenues, %			
2003	2004	2005	Trend
0,013	0,011	0,012	→
number of R&D employee			
2003	2004	2005	Trend
188	160	142	↘
share of R&D employment, %			
2003	2004	2005	Trend
0,069	0,061	0,048	↘

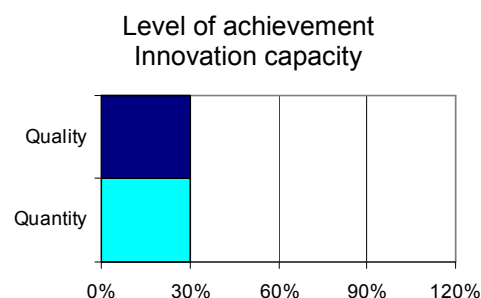
Source: PANAC Member's Survey.

More or less all the surveyed companies are innovative; half of them introduced or developed new products or new services in the last three years. 25% of the surveyed members reported neither new products nor new services at all, but innovative processes or methods. Only four companies participated in FP5 or FP6 projects in the last three years, one of them had two projects. From the 21 surveyed members two firms reported patent applications in the last three years (they have 3 patents for HPO and no patents for EPO). Surveyed members are rather satisfied with scientific and technological knowledge within PANAC. The rate of satisfied / not satisfied firms was 65% / 35%.

introduction of innovation (2003-2005)	
product innovation (goods, services)	76%
process innovation (manufacturing, distribution,	95%
development of product innovation	
mainly own enterprise	40%
mainly together with other enterprises or institutions	47%
mainly other enterprises or institutions	13%
development of process innovation	
mainly own enterprise	26%
mainly together with other enterprises or institutions	69%
mainly other enterprises or institutions	5%

Source: PANAC Member's Survey.

Assessment Some members recognise that R&D and innovation is crucial for long term competitiveness. Many foreign owned companies settle some kind of R&D to Hungary beside the production activity. The innovation capacity is relatively high especially in the group of service providers, while in producing and manufacturing companies it is lagging behind. In some cases innovation means not really something new, but some changes in the product or in the production by the decision of the foreign owner. PANAC members have relatively low expectations that PANAC can contribute to improving innovation capacity, due to their low R&D activity. However several firms had suggestion to improve the S&T knowledge within the cluster (specific training on new production and logistic processes, contact other professional networks, information database, connection to universities, research institutions).



SC5: Common infrastructure and services

Rationale As a special club, PANAC has number of special services for its members; especially the well operated Benchmarking Club or information services, organisations of trainings, workshops, events and conferences in automotive issues, supporting partner searches etc. These services foster the creation and diffusion of knowledge and division of labour among members.

Results

Services of PANAC for charge are opened not only for PANAC members, but other automotive companies also. In the last years PANAC operates one benchmarking club with a quite stable membership. This benchmarking club is the most successful services of the cluster. Beside the club PANAC has only one more service for charge, which is a homepage service (banner advertisement). From the free services of PANAC the businessman meetings and trainings, professional workshops and conferences are the most popular ones, more than half of the surveyed members had participated on these meetings in the last year. About one third of the answering firms have taken the services of benchmarking club, partner search and special information on the sector. The average services claimed is 2-3 per members, however every fourth reported to take 5-6 services from the 7.

Among common infrastructure have to mention the 7 laboratories operating in the Széchenyi István University (SZE) and used by several members regularly. Beside the laboratories of SZE only one common infrastructure exists: the common web page of the cluster.

The management of PANAC is operating in Győr. In 2006 it moved back from the university to the Innonet Innovation and Technology Centre in the Győr Business Park, which provides a quite innovative environment and the closeness of the firms.

number of services of PANAC for charge

2004	2005	2006	Trend
2	1	2	➔

number of events of benchmark. club (BC)

2004	2005	2006	Trend
2	2	3	↗

number of members of BC

2004	2005	2005	Trend
24	22	23	➔

number of PANAC members of BC

2004	2005	2005	Trend
17	15	16	➔

Source: PANAC Management.

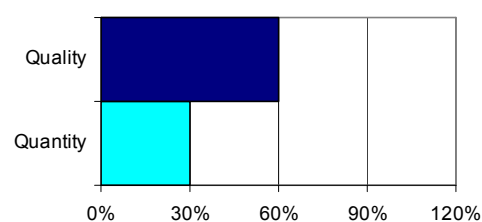
share of members using services in 2006

businessman meetings	62%
trainings, workshops, conferences	52%
benchmarking club	33%
partner search	29%
information on automotive industry	29%
homepage banner advertisement	14%
common projects	14%

Source: PANAC Member's Survey.

Assessment

Most of the PANAC's services are considered to be basic level services, which provide an information and communication platform originally between the management and the members. Only some of the services (e.g. benchmarking club) aim at intensifying the knowledge diffusion among member companies. The existing services are necessary, but there is a need for more complex innovation services for companies (e.g. drawing the technology map of the cluster, encourage technological co-operations among members).

Level of achievement
Common infrastructure and services

SC6: Management and institution building

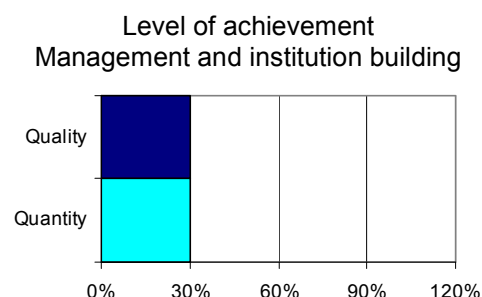
Rationale The cluster management ensures the effectiveness of the network by creating framework conditions for long-term co-operations and hence the potential for sustained competitiveness. PANAC management as a hub for the network support and the development of partnerships provides services for members.

Results PANAC is a relative independent division of West Pannon Regional Development Agency, the most important regional development organisation in the region. Organisationally it is fully integrated to it. The number of employees of the cluster management became stable during 2006. While in January there were a change in the cluster manager position and for a month only one person work in the management, by the end of the year it increased to 3 person and one practicing student. The formal decision making body of PANAC is the cluster committee, which contains only the founders: large manufacturers (Audi, Suzuki, GM, Rába, LuK) and some other organisations mentioned below. The cluster committee has several annual meetings. Other members who are paying a yearly membership fee and who are the most important target of PANAC's services are not involved to the decision making process during the definition of the objectives and tasks of the cluster management.

number of cluster committee meetings			
2004	2005	2006	Trend
6	1	3	↗
number of employees in cluster management			
2004	2005	2006	Trend
3	2	3	↗

Source: PANAC Management.

Assessment PANAC management was stabilised in the last year by new employees, however employing some new staff is needed. For the management's operation 5-6 employee are needed at least. Especially an automotive expert and an engine-builder expert are needed for higher level services, as direct consulting regarding to technologies and innovation. The unambiguous mid-term aim of PANAC to be an autonomous organisation and be fully independent from the regional development agencies. The current situation is more bureaucratic (administration, informatics, accounting, financing, management issues etc), which hinders PANAC operation. The independency of the cluster management is a returning issue of the last years because among other things as part of the regional development agency PANAC can not participate in different programmes or funding schemes and receive cluster development funds. In some way the decision making process is unaccommodating due to on the one hand to the structure of the cluster committee. On the other hand except Audi, GM, Rába, most of the committee members' activity is limited. Some of them do not really want operatively participate in the work. The participation of smaller, active firms representing different activities is necessary.



2.5 Success Factors in Relational Capital: Individual Results

RC1: Co-operations with other networks/clusters or institutions/single firms

Rationale External co-operations of PANAC can help to get access to stocks of knowledge that do not exist in the cluster. Especially from similar foreign networks and clusters connecting to automotive industry, or different but connecting industries (e.g. aviation industry or mechatronics).

Results In 2006 PANAC signed co-operation agreements with four organisations. The cluster management does not have any international cooperation or agreement. PANAC has only 1-2 common projects with other Hungarian organisations per year (in 2004: GKM public procurement, Innonet Phare CBC; in 2005: IT applications for automotive SMEs; in 2006: Audi logistic project, HE-FOP). However the number of common projects with international partners increased (RICARDA, BelCAR, Regins, CoSpaces).

Beside the existing agreements and co-operation projects with different organisations PANAC has strong relationships with foreign and Hungarian partners. Foreign partners: clusters, business cooperation networks (Austria, Slovenia, Germany), universities, research institutes (Austria, Germany, England, Spain) Hungarian partners: universities, research institutes, chambers, development agencies, professional associations, clusters, governmental organisations

Assessment PANAC has very intensive relations with both international and Hungarian organisations and institution, which are important for participating in different projects and creating the financial conditions for operation. Connections could be improved in the direction of national organisation and policy. Public relation and marketing of PANAC activity could be also better.

number of international co-operations/
agreements with other organisations

2004	2005	2006	Trend
0	0	4	↗

number of common projects with na-
tional/regional partner organisations

2004	2005	2006	Trend
2	1	2	→

number of common projects with interna-
tional partner organisations

2004	2005	2006	Trend
2	3	4	↗

Source: PANAC Management.

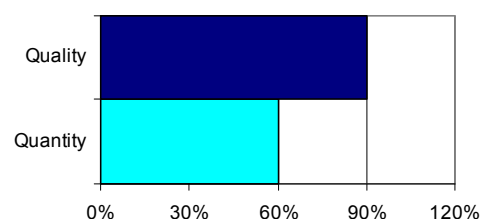
Agreements:

Hungarian Aerospace Cluster
Central Hungarian Innovation Centre
Autopolis Development Pole
Hungarian Living Lab

Most important partners:

Széchenyi István University
Hungarian Investment and Trade
Development Agency
Innovation and Technology Centre
Győr Business Park
Chamber of Commerce and Industry for
Győr-Moson-Sopron County
West Hungarian Research Institute

Level of achievement
Co-operations with other networks/clusters
or institutions/single firms



2.6 Financial Resources

FC1: Financial background

Rationale The annual budget consist revenues from the charged services of PANAC, the yearly membership fees and different national and international projects.

Results PANAC's budget was very unstable in the last years due to the contradictory role of the external funds, especially funds from different tenders and projects. Beside participation in projects revenues come from members (yearly contribution, for the services, which is about EUR 120) and some services for charge (e.g. benchmarking club).

annual budget of PANAC, M HUF

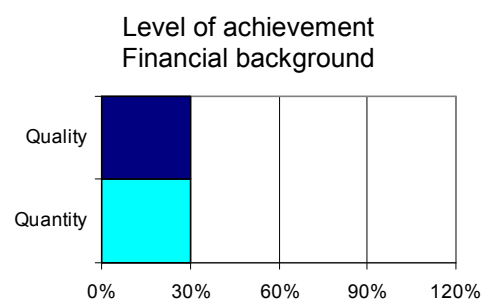
2004	2005	2006	Trend
46,5	7	25,2	↗

annual revenues from PANAC membership fees, 1000 HUF

2004	2005	2006	Trend
2062	2100	1980	↘

Source: PANAC Management.

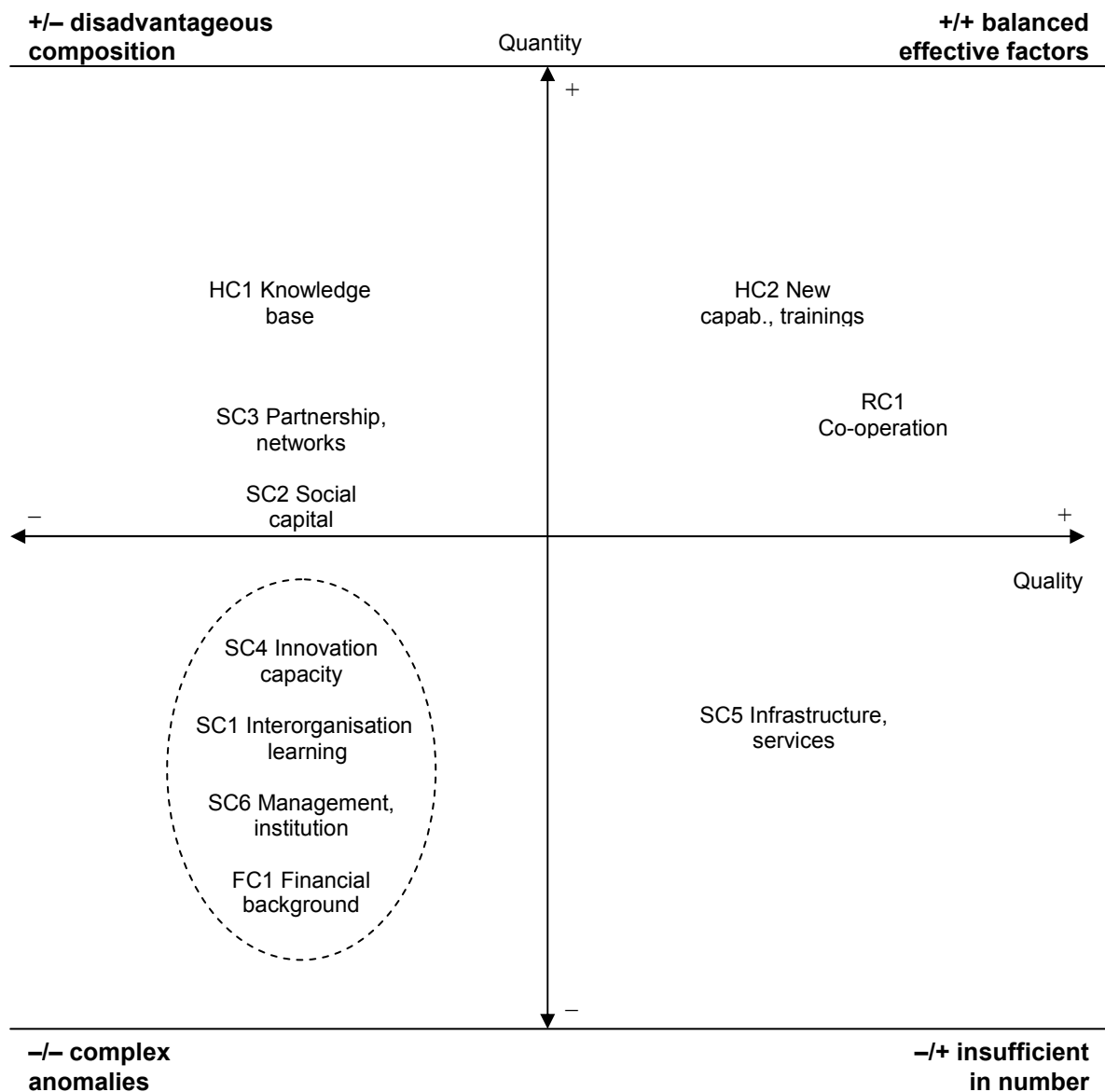
Assessment The unsolved issue of independency affects to a great extent the availability of different financial resources and financial stability. Unfortunately the current financial resources are limiting the activities of the cluster management in different fields: the employment new experts, the provision of more specialised services for members, the operation of common infrastructures etc. In the future the existing membership fee system has to be reconsidered and new services have to be introduced for the increase of revenues.



2.7 Cluster Objectives: Individual Results

For the evaluation of the cluster objectives we do not use independent indicators and assessment, rather we assess the achievement of the individual objectives by the evaluation of the success factors regarding to them. For the clearer perspicuity we have tried to visualise in one figure the assessment of the quality and quantity dimension of all success factor to get information about the complex process regarding the implementation of the cluster objectives.

Figure 4: The structure of success factors according to 'quantity' and 'quality'



Objective 1	Strengthening the international competitiveness of Pannon region, improvement of general renewal capability of the region, contribution to the development of the region
Rationale	The regional economics is mainly based on large multinational export oriented companies and sectors with less value added activities. There is a need to improve the renewal capabilities of the economy by focusing on higher value added activities, innovation and R&D. Automotive sector and especially the innovative network based cooperation of businesses and organizations in PANAC can be one of the most important actor in this demand oriented intensive development policy.
Results	Objective 1 as a complex regional objective was effected by all the success factors used during the process.
Assessment	Based on the values and assessments of the success factors it is hard to assess the implementation of the objective as it is a quite wide objective in regional and affected by all success factors. We can say that PANAC contributed to the development of the region but the extent of its contribution is not really measurable.
Objective 2	Increase the efficiency of the long term network co-operation of automotive companies
Rationale	While there is a critical mass in North Transdanubia in the automotive sector regarding the number, the scale and capacity of firms, unfortunately the network co-operation level is very low. The synergy effects of network co-operations are not really present. Increasing the network co-operations in long term can contribute to the competitiveness of the members.
Results	Objective 2 was principally affected by three success factors: partnership and networks, innovation capacity and common infrastructure and services.
Assessment	Based on the success factors we can say that the objective to increase the efficiency of the long term network co-operation of automotive companies was partly achieved. Common services of the cluster assist to network cooperation; however a supplier database is still missing. Another weak point of the objective is the insufficient R&D activities of member firms.

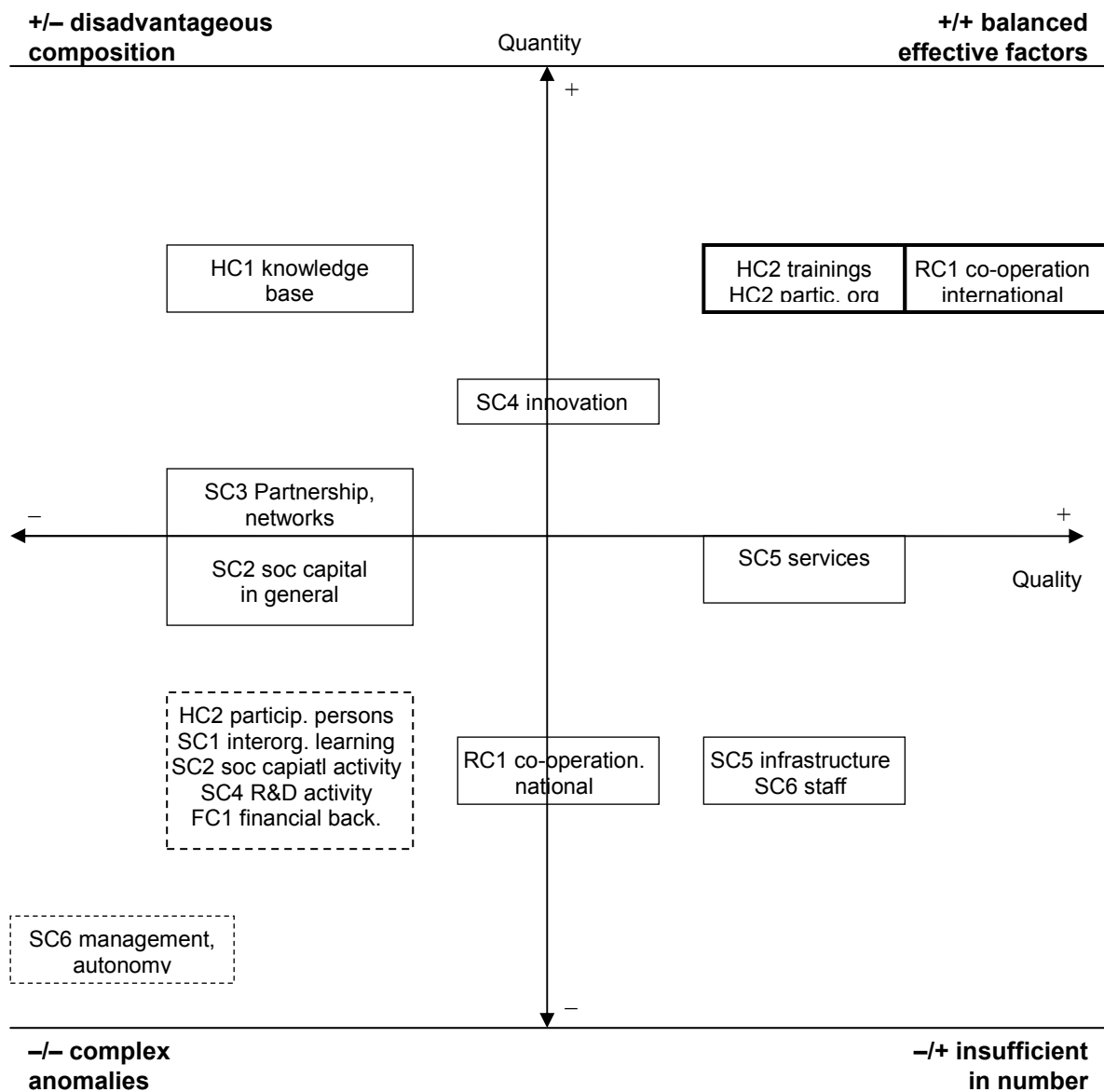
Objective 3	Common utilisation of existing automotive infrastructures, technologies, capacities and common purchasing and using of new infrastructures
Rationale	Several enterprises have some free capacities on their very special automotive infrastructures, tools or technologies which could be used by other, especially small and medium sized enterprises. PANAC has to be a coordinator among members to find these free capacities and make connections between potential partners.
Results	Objective 3 was principally affected by three success factors: partnership and networks, common infrastructure and services and management and institution building.
Assessment	Based on the values of the success factors we can say, that the objective of common utilisation of existing infrastructures, technologies and capacities was achieved only a very low extent. However several firms use the infrastructure of the Széchenyi István University (laboratories, equipments), there is no any other similar co-operation among members. The geographical distance between the member firms limits this kind of activities.
Objective 4	Encourage the high qualified labour force with relevant skills for automotive industry, mediation of firms' demand
Rationale	For several years the relative cheap but well skilled labour force for automotive industry in North Transdanubia was one of the most important location factors for multinational companies. Now all the members are facing the problem of lack of well educated labour in automotive professionals from the level of workman completely to engineers.
Results	Objective 4 was principally affected by three success factors: knowledge base, new capabilities and trainings and common infrastructure and services.
Assessment	Based on the success factors we can say that the objective to increase the high qualified labour force for automotive industry was mostly achieved. The cluster management provided several trainings on the demand of the firms and share of employee with university degree is increasing. However lack of well educated labour (especially engineers) is still an important problem of firms.

Objective 5	Building the trust among automotive firms, ensuring the possibilities for informal communication and efficient information flow
Rationale	One of the most important reasons of the very low level of co-operations, common projects or developments among the Hungarian automotive enterprises is distrust. Most of the companies fear co-operation with others. There is especially a gap between the Hungarian SMEs and the larger multinational companies.
Results	Objective 5 was principally affected by five success factors.
Assessment	Based on the success factors we can say that the objective to increase the trust among automotive firms was partly achieved. The common services of the cluster provided the opportunity of informal communication (information and experience exchange) of members. Especially the benchmarking club, the different events and training serve this aim. However the communication's level is not sufficient among large companies and smaller members.
Objective 6	Strengthening the external relationships of the network (with other similar clusters for technology transfer)
Rationale	There are other similar cluster organisations in the West Transdanubian Region and other Hungarian and foreign regions in different sectors. Their experiences in network development could be very interesting for PANAC. Especially the cooperation with other automotive clusters and networks is important for PANAC and its members. Cooperation for technology transfers with other actors is also in focus.
Results	Objective 6 was principally affected by two success factors: management and institution building and co-operation with other organisations.
Assessment	Based on the success factors we can say that the objective to strengthen the external relationships was partly achieved. While the cluster management has very good relationships with international organisations and participates in different common projects, there are deficits in connections with the national level. Especially connections with policy stakeholders are missing.

2.8 Potentials for Improvement

Based on the findings of the Figure 4 in the previous chapter we get a picture on the success factors connecting to the intellectual capital of PANAC and explore those success factors, which are well balanced and significantly contribute to the success of the cluster, those which are more or less well developed, but can be improved and finally the group, which's factors show complex anomalies and are the most problematic factors regarding to the successful operation of PANAC. These factor groups help to define the most important intervention directions of future development. However as some of the success factors have elements with different assessments we decided to represent the elements of intellectual capital in the same dimensions but much more detailed. The next Figure provides the opportunity to define the potentials for improvement more precisely. The following potentials for improvement were identified on the basis of the intellectual capital assessments presented beforehand. These could be integrated into PANAC medium-term work program in the next years.

Figure 5: The detailed structure of success factors according to 'quantity' and 'quality'



Human Capital

Increasing the activity of the cluster members

However PANAC management provides several trainings for members in different automotive themes along the needs of the enterprises these trainings reach only a small part of PANAC members. Most of the PANAC members are still passive and do not participate in the training programmes organised by PANAC. Beside trainings, increasing the activity of members is also an important task for different workshops, events, conferences or exhibitions organised by PANAC.

Relates to objectives 2, 4 and 5

Structural Capital

Improving the networking activity among members

Most of the PANAC members have only supplier contacts or have no any relationships with other member firms. They consider PANAC as a special service provider organisation for automotive firms but they do not really understand the potential of being a member of a network and do not really try to use the positive synergies of interorganisational learning, information and communication or co-operation among cluster members. PANAC management should lay stress on new activities focusing on network co-operations among member firms.

Relates to objectives 2, 3 and 5

Improving and extending the member structure of PANAC

However PANAC has more than 60 members there are so much automotive companies and organisations outside the cluster, which could be valuable members of the cluster and contribute a more diversified and sophisticated co-operation. To increase the synergies and the co-operation potentials geographical closeness is important, so PANAC should focus on the gravitation area of Győr-Mór-Székesfehérvár-Tatabánya-Budapest circle to recruit new members. Beside location issues technological and R&D competencies has to be received priorities (technological centres, R&D institutions, universities with relevant competencies among new members).

Relates to objectives 1, 2, 4 and 5

New infrastructures and services for members

The scope of services should be extended in connection with the financial background. New, more specialised benchmarking clubs are planned. Several firms had suggestion to improve the S&T knowledge within the cluster with specific training on new production and logistic processes, contact other professional networks, information database on supplier and knowledge competences, connection to universities, research institutions. PANAC has not got considerable common infrastructures, however one of its objective define the importance of common utilisation of infrastructures, technologies.

Relates to objectives 1, 2, 3 and 5

Extending the professional competency of the management

PANAC management was operating average 1-2 employees in the last six years, while in 2006 it could extend to 3 employees. The management should be reinforced with more new employees to get its critical mass for effective operation. There is a need for especially automotive experts and engine-builder experts for the planned new technology and innovation oriented services. Beside experts new staff could contribute the extending services, the improvement of co-operation with regional and national organisations and the more effective PR activity. The ideal number of staff could be at least 6 persons.

Relates to objectives 1, 2, 5 and 6

Establishment of PANAC management's independency

PANAC is a division of West Pannon Regional Development Agency and as a part of it and its autonomy is very limited. Experiences of similar clusters and networks show, that a legally independent organisation could be much more efficient for this kind of special activities, than to be part of a large, bureaucratic and much diversified organisation. Full independence also could contribute to the establishment of the more stable financial background with national and regional programmes and funding schemes, which now are limited.

Relates to objectives 1, 3 and 6

Improving the decision making process of the cluster

The cluster founders, who compose the cluster committee except some manufacturers are one of the less active group of PANAC members. In addition the structure of the cluster committee differs from the structure of the PANACS members. While some groups are overrepresented, others (e.g. SMEs, service providers etc.) are not represented at all. In the last 5 years the structure of the committee is unchanged. For a more successful operation PANAC needs a more active cluster committee, which represents the interest of the automotive and the relating and supplying industry much more.

Relates to objectives 2, 3 and 5

Relational Capital

Improving the co-operation with organisations at regional and national level

PANAC has very good co-operation with regional organisation in West Transdanubia and at international level. However, two third of the member companies are located in other regions (Central Hungary, Central Transdanubia) which regions' regional organisations and regional stakeholders are outside the PANAC management's co-operation area. PANAC has no existing relationships with regional players of neighbouring regions. Its connections to organisations and stakeholders at national level are also very limited. A wider national and regional co-operation activity with a more active PR activity could significantly contribute its objective.

Relates to objectives 1 and 6

3. Appendix

1. Trend Analysis

It is an important aspect of the RICARDA base model for intellectual capital reporting that network objectives are not seen as static but need to be adapted to changes in the network's environment. After the first workshop based on the discussions and the results the most important external trends affect the future operation and activities of the cluster were defined by PANAC management and West Hungarian Research Institute in connection to social, technological, economic and political issues. The defined external trends for PANAC:

- Emerging role of Central and Eastern Europe, new capacities in the wider region, potential development pole in the region.
- Geographical closeness come in to the focus, increasing energy prices rise the logistic costs of production, JIT system does not work after a certain distance.
- Placing out the global sourcing activities of large multinationals, it can be appeared in Central and Eastern Europe also.
- Decreasing demand from consumer side in automotive market is a negative effect on the industry, continuously appearing overcapacities in most of the producers.
- Serious problem in the labour market, lack of skilled workers and engineers in automotive industry.
- Robotisation, new technologies needs higher investments.
- Automotive industry is in the focus of all the national and especially the regional policy, stressed industry, automotive development pole.

2. Members of workshops

List of Participants of workshop 1:

Mr Dániel Magyar (West Pannon Regional Development Agency,
Pannon Novum West Pannon Regional Innovation Agency)
Mr László Kozma (Audi Hungaria Motor Ltd.)
Ms Krisztina Csóka (Audi Hungaria Motor Ltd.)
Mr Tamás Nagy (Rába Automotive Holding Co.)
Mr Zoltán Vincze (LuK Savaria Ltd.)
Mr Péter Kulcsár (Consulting & Research for Industrial Economics Ltd.)
Ms Eszter Bod (Consulting & Research for Industrial Economics Ltd.)
Mr Gábor Gordos (BOS Automotive Products Ltd.)
Mr István Peredi (Jankovits Hidraulika Ltd.)
Mr Szabolcs Horváth (Borsodi Műhely Ltd.)
Ms Ariel Bükiné Foki (SQS 2001 Ltd.)
Mr Zsolt Németh (SQS 2001 Ltd.)
Mr József Prekopecz (Hödlmayr Hungária Logistics Ltd.)
Mr Alexander Kautny (iKreator Internet Ltd.)
Mr Mátyás Lazáry (Pannon Business Network)
Dr András Grosz (West Hungarian Research Institute)
Mr Attila Tilinger (West Hungarian Research Institute)
Mr Zoltán Kabács (PANAC)
Ms Tímea Berki (PANAC)
Mr István Oláh (PANAC)

List of Participants of workshop 2:

Mr Tamás Nagy (Rába Automotive Holding Co.)
Ms Eszter Bod (Consulting & Research for Industrial Economics Ltd.)
Mr Sándor Kárpáti (Hungarian Investment and Trade Development Agency)

Mr Péter Tamás Szliasi (Széchenyi István University, Regional Knowledge Centre for Vehicle)
Mr Zoltán Rózsa (Engineer Innovation Association)
Mr Dávid Losonczi (Budapest Corvinus University)
Mr István Peredi (Jankovits Hidraulika Ltd.)
Mr Gábor Gordos (BOS Automotive Products Ltd.)
Mr Szabolcs Horváth (Borsodi Műhely Ltd.)
Ms Ariel Bükiné Foki (SQS 2001 Ltd.)
Mr Alexander Kautny (iKreator Internet Ltd.)
Ms Vera Sárkány (iKreator Internet Ltd.)
Dr András Grosz (West Hungarian Research Institute)
Mr Zoltán Kabács (PANAC)
Ms Tímea Berki (PANAC)
Mr István Oláh (PANAC)

List of Participants of workshop 3:

Mr Zoltán Kabács (PANAC)
Ms Tímea Berki (PANAC)
Mr István Oláh (PANAC)
Mr Péter Tamás Szliasi (Széchenyi István University, Regional Knowledge Centre for Vehicle)
Mr Mátyás Lazáry (Pannon Business Network)
Dr András Grosz (West Hungarian Research Institute)
Mr Zoltán Csizmadia (West Hungarian Research Institute)

3. Members of the Regional Advisory Board

Prof Dr János Rechnitzer (West Pannon Regional Innovation Council, president; Széchenyi István University, dean)
Mr Dániel Magyar (Pannon Novum West Pannon Regional Innovation Agency, project director)
Mr Gábor Mayer (Autopolis Győr Development Pole, managing director)
Mr Péter Tamás Szliasi (Széchenyi István University, Regional Knowledge Centre for Vehicle Industry, managing director)
Mr László Budavári (INNONET Innovation and Technology Centre, managing director)
Mr Zoltán Rózsa (Engineer Innovation Association, president)

4. Members of PANAC

PANAC founders:

Audi Hungária Motor Kft., Győr
Citibank Rt., Budapest
GM-Fiat Worldwide Purchasing Opel Magyarország Üzleti Szolgáltatások Kft., Szentgotthárd
HVB Bank Hungary Rt., Budapest
Ipargazdasági Kutató és Tanácsadó Kft., Budapest
LuK Savaria Kft., Szombathely
Magyar Suzuki Rt., Esztergom
Nyugat-Dunántúli Regionális Fejlesztési Tanács, Sopron
Opel Magyarország Autóipari Kft. , Szentgotthárd
Rába Járműipari Holding Rt., Győr
Siemens Rt., Budapest
Széchenyi István Egyetem, Győr

PANAC members:

ABF Bowdenteknika Kft., Dunakeszi
Ajakai Elektronikai Kft., Ajka
Albert Weber Hungária Kft., Esztergom
ARRK Hungary Műanyagfeldolgozó Kft., Tiszaújváros
Bankonzult Vill Kft., Budapest
Bausch Kft., Budapest
Benteler Autótechnika Kft., Mór
Benteler Handel Kft., Budapest
Bíró Kft., Budapest
Borsodi Műhely Kft., Győr
Delta-Tech Mérnöki Iroda Kft., Balassagyarmat
Ecseri Kft., Cegléd
Elmaflex Kft., Győr
Emika Zrt., Kalocsa
ETNA Vending Kft, Törökszentmiklós
Euroszol Kft., Szolnok
Galvanplastik Kft., Székesfehérvár
HNS Műszaki Fejlesztő Kft., Győr
Interplus Kft., Diósd
Jankovits Hidraulika Kft., Győr
Karsai Holding Rt., Székesfehérvár
Kónusz Kft., Csorna
KVJ Művek Rt., Nagyvenyim
MATECH 2000 Kft., Székesfehérvár
MOM Faktor Gépipari Kft., Komló
MOMERT Rt., Dunaújváros
Mosonpack Kft., Mosonmagyaróvár
Nivex P+P Kft., Budapest
Pannon Tools Kft., Veszprém
ProForm Kft., Budapest
Rába Futómű Kft., Győr
Rába Járműipari Alkatrészgyártó Kft., Mór, Sárvár
Rati Kft., Komló
Ratipur Kft., Komló
SAPU Bt., Mosonszolnok
SFS intec Kft., Jánossomorja
Tatabányai Rugógyártó Kft., Tatabánya

Technoplast Kft., Miskolc
Unirív Kft., Csepreg
UniTrade M&M Kft., Kunszentmárton
Varinex Informatikai Zrt., Budapest
Videoton Holding Zrt., Székesfehérvár
Videoton Holding Zrt. Elektro-Plast Vállalat, Kaposvár
VT Metal Kft., Székesfehérvár

PANAC registered traders and service providers:

"K+F" Kutatás-fejlesztési Tanácsadó Központ Kft., Budapest
A.A. Stádium Diagnosztikai és Menedzsment Kft., Szeged
AIB-VINCOTTE Hungary Kft., Budapest
Cargo Partner Kft., Sopron
Edag Hungary Kft., Győr
FESTO Automatika Kereskedelmi és Szolgáltató Kft., Budapest
HÖDLMAYR Hungária Logistics Kft., Győr
HTCM Ltd., Győr
LCS Budapest Kft., Budapest
Magyar Pályázkészítő Iroda, Budapest
Nóniusz Kft., Budapest
Régens Informatikai Zrt., Budapest
SGS Hungária Kft., Budapest
SKF Svéd Golyóscsapágy Zrt., Budaörs
SQS 2001 Kereskedelmi és Szolgáltató Kft., Szombathely
T&T Quality Kft., Budapest
TEQUA International Kft., Budapest

4. Success factors and indicators for PANAC

Objective	Rationale
Human Capital	
HC1. knowledge base	<ul style="list-style-type: none"> number of employees number of employee with university or higher education degree share of employee with university or higher education degree share of members with employee suggestion systems
HC2. new capabilities and training	<ul style="list-style-type: none"> number of trainings organised by PANAC number of participant organisations in trainings organised by PANAC number of participants (persons) in trainings organised by PANAC
Structural Capital	
SC1. interorganisational learning	<ul style="list-style-type: none"> number of supplier relationships in network number of co-operation projects between members share of members with co-operation with universities number of firms in supplier database
SC2. social capital	<ul style="list-style-type: none"> number of events organised by PANAC number of participant organisations in events organised by PANAC number of participants (persons) in events organised by PANAC share of registered/invited members in events organised by PANAC share of active and voluntary members in events organised by PANAC
SC3. partnerships and networks	<ul style="list-style-type: none"> number of PANAC members companies doing automotive production from number of PANAC members registered service providers from number of PANAC members other organisations from number of PANAC members number of founders (or connected founders) number of automotive OEMs number of 1 tier suppliers
SC4. innovation capacity	<ul style="list-style-type: none"> total R&D expenditures share of R&D expenditures number of R&D employee share of R&D employment participation in FP5 or FP6 projects members' perception of the scientific and technological knowledge within PANAC
SC5. common infrastructure and services	<ul style="list-style-type: none"> number of firm representation in international events number of services of PANAC for charge number of benchmarking clubs number of events of benchmarking clubs number of members of benchmarking clubs number of PANAC members of benchmarking clubs
SC6. management and institution building	<ul style="list-style-type: none"> number of cluster committee meetings number of employees in network management
Relational Capital	
RC1. co-operations with other networks/clusters or institutions/single firms	<ul style="list-style-type: none"> number of international co-operations/agreements with other organisations number of national/regional co-operations/agreements with other organisations number of common projects with international partner organisations number of common projects with national/regional partner organisations
Financial Resources	
FC1. Financial background	<ul style="list-style-type: none"> annual budget of PANAC annual revenues from PANAC membership fees



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SIXTH FRAMEWORK PROGRAMME

