The ESoCE-Net Industrial Forum 2007
"Co-Creative Innovation In Service-product development & solutions for creation and managing collaborative clusters"

Collaborative Clusters for Innovation, Automotive Cluster Portugal

Alvaro Oliveira
(Alfamicro – Portugal)

Rome, Italy, 3 December 2007
ALL-Net Europe

- Portuguese Automotive LL
- Slovenian Automotive LL
- Automotive Cluster Upper Austria
- Hungarian Automotive LL
- Stuttgart Automotive Cluster
- ALL-Net Europe
ALL-Net Europe:

Portuguese Automotive Emerging LL
The Portuguese Automotive Industry

- Percentage of GDP: 7%
- Percentage of Exports: 25%
- Total Sales of Components: 4,1B€
- Total Exports of Components: 2,7B€
- Total Sales of AUTOEUROPA (2006): 2,3B€
- Total Sales (Vehicles + Components): 5,0B€
AUTOEUROPA Industrial Park

2nd and 3rd Tier Suppliers

1st Tier Suppliers
Supplier 1
Supplier N-1
Supplier N-2

Sequential Logistics
AUTOEUROPA PRODUCTION LINE
Sequential Logistics
Supplier N+1
Supplier N+2
Supplier M

1st Tier Suppliers

2nd and 3rd Tier Suppliers
AUTOEUROPA Product Design and Engineering

AUTOEUROPA Industrial Park

ATEC (Training)

CEIIA
CEIIA-AE Platform

AUTOEUROPA

1st Tier Suppliers

2nd and 3rd Tier Suppliers

AFIA

CLEPA

Materials Suppliers

Research Organizations

CEIIA (Design and Engineering)
Portuguese Automotive Cluster Sector Evolution

OEM
- SKD Operation
- RENAULT Assembler
- AUTOEUROPA, GM, PSA
- AUTOEUROPA PSA, Others

Suppliers
- 10
- 50
- 180

Collaboration
- Non-existent
- Clubs of Suppliers
- Added Value Networks

Turnover
- 500 Millions Euros
- 1.5 Billions Euros
- 5 Billions Euros
- 7 Billions Euros

Date
- 1992
- 1995
- 2005
- 2010
Portuguese Automotive Emerging LL
Global Market Positioning
ALL-Net Europe:

Slovenian Automotive LL
Rome, Italy, 3 December 2007

Slovenian Automotive LL
ACS - Automotive Cluster of Slovenia

- ACS has 54 members, from that 47 companies and 7 R&D institutions.
- ACS members have 20,800 employees, from that 2,000 registered researchers.
- Sales of ACS members in 2003 exceeds 2.3 billion EUR, 80% of which comes from the export of goods and services to the EU and the rest of the world.
Slovenian Automotive LL
How to proceed?

- 12 members (1995)
- 35 members (2001)
- 54 members (2003)
- Open network

1995
2001 ACS establishment
2003 Information system
2004 - 2006 Technology Centres and laboratories
2007 LivingLab - Global R&D
ALL-Net Europe:

Automotive Cluster Upper Austria
Automotive Cluster Upper Austria
Key Data of Network

- Total turnover (in billion) € 17,19
  - Turnover of manufacturing companies (in billion) € 12,19
  - Turnover in the supplier sector (in billion) € 5,60
- Employees 184,000
- R&D* 3,95 %
  - Comparison Upper Austria 1,96 %
- Export rate 77,66 %

*) numbers of manufacturing and trading companies, which informed us about R&D and export quota (calulation: R&D quota x 100 / turnover)
The Automotive Cluster Network in Upper Austria

248 partner companies

156 SME
147 manufacturing companies

52 companies

7 OEM

97 suppliers

106 service providers & institutions

Suppliers of systems and modules (Tier 1)
Component suppliers (Tier 2)
Raw materials, standardized parts (Tier 3)

machine/plant construction
tooling
mould making
logistics
engineering
IT services
Automotive Cluster Upper Austria
Methods of the Cluster Management – Portfolio

- Cooperation
  - Cooperation projects
  - Knowledge exchange groups
  - (specialized) trainings
  - Learning platforms

- Innovation, R&D
- Customer visits
- Marketing and PR
- Networking database
- Qualification
  - Automotive seminars

Rome, Italy, 3 December 2007
ALL-Net Europe:

Hungarian Automotive LL
Hungarian Automotive LL
Type of partners involved

**PANAC Statistics:**

- Total number of employees: ~ 38 000
- Total Turnover: ~ 6.5 billion €

70% of the members involved in production
27% of the members involved in R&D
Hungarian Automotive LL
Main objectives

- Strengthening the **international competitiveness of Pannon region**, improvement of general renewing capability of the region, contribution to the development of the region (automotive start-ups and spin-offs, creation of new workplaces)
- Increase the efficiency of the long term **network co-operation** of automotive companies
- Promotion of the establishment of **new supplier links**
- Promotion of the formation and the settle down of **new automotive enterprises**
- Common utilisation of existing automotive **infrastructures, technologies, capacities and common purchasing** and operation of new ones
- Ensuring **high qualified labour force** with relevant skills for automotive industry
- Absolving the distrust among automotive enterprises, ensuring the possibilities for informal **communication** and efficient **information** flow
- Strengthening the **external relationships** of the network
Hungarian Automotive LL
Automotive Living Lab – Győr in TECHNONET Automotive Competence Centre

AUTOMOTIVE Living Lab, Győr has beenosen as „1st wave” LL in the ENoLL

Innovative Collaborative Work Environments for Individuals and Teams in Design and Engineering

1st priority
- Create technological and competence map
- Integration of the most competent experts in development projects
- Be part of EU-wide R&D projects (ENoLL)
- Support SMEs with high value-added services and technologies

2nd priority
- Involve the users, individuals in R&D phase
- Bring the Hungarian Innovations in the ENoLL

Project and Technology level:
- ENGINEERING FULL SERVICES
  - PRODUCT DEVELOPMENT
  - PRODUCT- AND PRODUCTION SIMULATIONS
  - DIGITAL FACTORY
- TESTING & LABORATORY
- RAPID MANUFACTURING
- VIRTUAL REALITY
- Education level:
- According to the needs of the Industry
ALL-Net Europe:

Stuttgart Automotive Cluster
The automotive sector

- OEM and suppliers:
  - Big multi-technology suppliers
  - medium-sized, family-owned suppliers of modules in the pre-modularisation sense
  - suppliers of components, mostly small firms.
- Hierarchical structure
- Globalisation and regionalisation
- System integration and modularisation
Stuttgart Automotive Cluster
Recent trends

- High innovation pressure
- Increased number of car types and variants
- Niches and specialists, knowledge intensive services
- Reduced development time
- Increased cost pressure and globalisation of the markets
- Re-configuration of the production value chain

SMEs need high flexibility and inventiveness. Innovation is crucial for competitiveness.
Stuttgart Automotive Cluster
The cluster: car production
Stuttgart Automotive Cluster
The cluster: suppliers

Rome, Italy, 3 December 2007
Automotive Cluster Emerging Living Lab - Portuguese Example

- Identification of potential automotive suppliers (Metal, plastics, composts, foundry, etc.) GAPIN
- Strong awareness and motivation (Business opportunity) GAPIN
- Get automotive manufacturing certification (Reliable quality and productivity. New product equipment). AICIME EU Project
- Sectorial collaboration (Plastics, metal, etc.). Clubs of Suppliers. Logistics.
- Training, best practices, tools, etc.
- Collaboration for complex assemblies (co-design, managements, etc.). Partnerships. Knowledge and experience sharing.
- Achieve status 1st tier suppliers (Design and prototype for new parts and models).
Automotive Cluster Development – AICIME Methodology

- Market Pressures
- Institutional Support
- AICIME Demonstrators
- Support Infrastructures
- AICIME Imitators
- Strategies, Methodologies, Products, Tools
- Implementation Team
- Expert Team
- AICIME Network
Portuguese Automotive Cluster Evolution

- Stimulate the value of innovation and added value products.
- Facilitate the liaison to technological and professional networks
- Support the development of global business strategies and networked enterprises.
- Stimulate the internationalization strategy.
- Support and motivate new networking initiatives.
- Improve the environment for service companies

Source: (Medium and long term objectives of AICIME)
Collaborative Added Value Networks

Plastics
Metal
Electronic
Etc.

Components
Modules
Systems

Portuguese Automotive Industry
Metal Components Integrator

Consolidated Sales: 60 Million Euros
Number of Workers: 1000
Engineering Technicians: 50

Design Capacity:
Metal Forming, Soldering, Finishing and Painting
Vehicle Interior Systems Integrator

ACECIA

Design

Plastic Parts Digital Integrated Design

Materials

Structure Mechanisms Integration

Mechanisms and Structure

Finishing and Confort

Ergonomics

Rome, Italy, 3 December 2007
Vehicle Seats Designed and Made in Portugal
ALL-Net Services at Regional Level

- Manage large samples of customers / citizens in the co-creation and testing processes
- Develop creative environment. Facilitate interactive creation process.
- Facilitate and enable collaborative value added activities in an open concurrent enterprise environment
- Promote innovative projects and disruptive innovation.
- Develop, support and sustain the virtual Automotive Community (Second life approach)
- Promote open innovation culture
- Ultra wideband Network (OANs – Fibre and Wimax)
ALL-Net Europe Map

- Stuttgart Automotive Cluster
- Automotive Cluster Upper Austria
- Portuguese Automotive Emerging LL
- Slovenian Automotive Cluster
- Hungarian Automotive LL
### ALL-Net Europe Overview

<table>
<thead>
<tr>
<th>Emerging LLs</th>
<th>Enterprises</th>
<th>Employees</th>
<th>Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portuguese Automotive LL</td>
<td>180</td>
<td>50,000</td>
<td>5,0 Billion Euros</td>
</tr>
<tr>
<td>Slovenian Automotive LL</td>
<td>54</td>
<td>20,800</td>
<td>2,3 Billion Euros</td>
</tr>
<tr>
<td>Automotive Cluster Upper Austria</td>
<td>248</td>
<td>184,000</td>
<td>17,2 Billion Euros</td>
</tr>
<tr>
<td>Hungarian Automotive LL</td>
<td>73</td>
<td>38,000</td>
<td>6,5 Billion Euros</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>555</strong></td>
<td><strong>292,800</strong></td>
<td><strong>31,0 Billion Euros</strong></td>
</tr>
</tbody>
</table>

*Stuttgart Automotive Cluster data is not included*
ALL-Net Services at European Level (1)

- Manage large samples of customers/citizens in the co-creation and testing processes at the European level
- Discover, facilitate, intermediate new business opportunities
- Develop and operate collaborative open innovation services
- Develop e-Learning contents especially targeting critical skills shortage in the LL culture. Adopt Serious Games.
- Best practices. Training. Mobility.
- European dimension of services.
- Virtual meetings with knowledge rich environments tools and presence.
ALL-Net Services at European Level (2)

- Observatory of: markets and technologies at local, european and global levels.
- Global forecasts.
- Globalization strategies.
- Sustainability strategies.
- Policy contributions at regional, national and European level.
- Research Roadmap.
- Engineering Roadmap.
Conclusions

- ALL-Net at regional level is emerging with a strong basis on existing clusters where solid partnerships between public and private initiative exist and the governments acts as a facilitator.
- Collaborative added value is a driving force from the early stages of the cluster.
- ALL-Net is the most attractive model to implement further the innovation strategy for the automotive industry in Europe: All the stakeholders involved, including the users and buyers.
THANK YOU

Alvaro de Oliveira

alvaro.oliveira@alfamicro.pt

Phone: 00351 21 486 67 84
Alameda da Guia
n. 192 2750-368 Cascais
Portugal
General Description of the Automotive Cluster

Assemblers:
- 4 units, 250,000 vehicles produced per year
- AUTOEUROPA: 61%; PSA: 20%; others: 19%

Annual Turnover:
- 180 enterprises: 5.0 Billion Euros

Sectorial distribution: Turnover of the main sectors – source: IStrat
- Metal and forming components 29,50%
- Electrical and electronics components 22,10%
- Others (Including integrators) 20,80%
- Metallurgy 14,10%
- Plastics components 10,10%
- Textiles 2,00%
- Moulds and special tooling 1,40%

Regional distribution: Turnover of the main regions – Source ISTrat
- Lisbon 35,30%
- Braga 27,50%
- Setubal 12,90%
- Aveiro 10,20%
- Porto 7,30%
- Leiria 1,60%
Portuguese Automotive Emerging LL

REDIA
“Network of Excellence for the Development of the National Automotive Industry”

Industrial Platforms
- Other Platforms
- AUTOEUROPA
- Portuguese Platforms

Scientific Research Partnerships (Outside Portugal)
- Fraunhofer Institute IPA

Technology Sources
- Massachutes Institute of Technology (MIT)

Other External Technological Partnerships
- REDIA
- Technical Institute of Lisbon (IST)
- Minho University (UMINHO)
- INTELI
- Other Portuguese Partners

Material Suppliers
- Others

Testing and Certification Laboratories
- AUTOEUROPA

Rome, Italy, 3 December 2007
Collaborative Added Value Networks (2)

- Global promotion of integrated solutions for the automotive industry
- Technical capabilities to design, digital model engineer, prototype, laboratory testing
- Promote and facilitate direct relations with OEMs and 1st tier suppliers
- Pro-active marketing, commercialization, design and network image
Future Open Collaborative Networks

Actual: Sequence Model

Future: Community Model

OEM

Support Services Suppliers

Logistics and Sales

Open Collaborative Platform

Other Portals

OEM
Overview

- Present automotive cluster in Portugal
- Automotive cluster development
- Collaborative added networks
- The automotive cluster ecosystem
- Future developments
- ALL-Net Portugal
- Conclusions
Portuguese Industrial Policy for the Automotive Cluster

1990

GOVERNMENT OFFICE - GAPIN

Facilitating environment
- Supporting infrastructure
- Pro-active facilitation
- Incentive mechanisms

Added value chain
- Joint ventures
- Enterprises modernisation
- New enterprises

AUTOMOTIVE INDUSTRY CLUSTER

Self-sustained added value
- Virtual enterprises
- Networks
- Clubs of suppliers
- Market observatory
- Innovation centers

Sustained competitiveness and employment
- Functions design and manufacturing
- Shared logistics
- New market opportunities

1992

AICIME Project

PORTUGUESE MINISTRY OF INDUSTRY

INDUSTRIAL POLICY
Automotive Cluster Development Model in Portugal

- Strong political support for the project (Vision, guidance, facilitation, etc. at ministerial level)

- Promote an attractive environment (Business opportunities, research, engineering, training, etc. – GAPIN reporting directly to the Minister)

- Adequate policy and funding mechanisms on a project and merit basis.
Automotive Cluster Development – AICIME (ESPRIT) Model

SUSTAINED MARKET COMPETITIVENESS

- Innovation Culture. Collaborative Added Value
- Knowledge Management and Decision Making
- Management of excellence

ENTERPRISE NETWORKING

- Rapid Development of new products and processes
- “LEAN” and Flexible Production
- Intelligent Integrated Logistics

CUSTOMER SATISFACTION

- Continuous Learning. e-Learning
- Teamwork. Motivation. Communication
- Continuous Improvement. Flexibility

“WORLD CLASS MANUFACTURING”
Automotive Industry Changes

- Global industry and market, different regional realities
- Delocalization of value chain activities, regional competitive advantages and value chain reorganization
- Different actors, different strategies
- Diversification of the partnerships with different drivers
CEIIA – Center for the Automotive Industry Excellence and Innovation

- Private non-profit association, with more than 30 associated entities, including main Portuguese automotive suppliers, innovation centers and public agencies.

- **Main objective:** To promote the competitiveness of the Portuguese automotive and aeronautical industries and improve the positioning of companies within international supply chains.
## Critical Factors for the Automotive Industry Development in Portugal

<table>
<thead>
<tr>
<th>Enterprise Strategy</th>
<th>Public Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Product Engineering</td>
<td>▪ Foreign Direct Investment</td>
</tr>
<tr>
<td>▪ Collaboration Networks</td>
<td>▪ Qualification of Human Resources</td>
</tr>
<tr>
<td>▪ Process Engineering</td>
<td>▪ Internationalization</td>
</tr>
<tr>
<td>▪ Training</td>
<td>▪ National Industry Image</td>
</tr>
<tr>
<td>▪ Research and Development</td>
<td>▪ Counterparts System</td>
</tr>
<tr>
<td>▪ Innovation</td>
<td>▪ Strategic Information</td>
</tr>
<tr>
<td>▪ Logistics</td>
<td>▪ Creation of tradings in the new target markets</td>
</tr>
<tr>
<td>▪ e-Business</td>
<td>▪ Venture Capital and Incentives</td>
</tr>
<tr>
<td>▪ Risk taking</td>
<td>▪ Living Lab (ALL-Net)</td>
</tr>
<tr>
<td>▪ Living Lab (ALL-Net)</td>
<td>▪ Living Lab (ALL-Net)</td>
</tr>
</tbody>
</table>