



## Towards a new vehicle industry in Flanders

*Based on the innovation-ecosystem for the development of renewing, durable mobility concepts*

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*How should we envisage the future of the automotive industry in Flanders? In any case, it will be different from the one we know now, and the transformation and eventual result will largely depend on how the sector and the government will respond to worldwide trends, starting from Flanders' strengths and opportunities. The vision which is elaborated here, is based on a technical-economical approach from the perspective of a business development for the (new) industry and taking into account the social relevance for Flanders.*

### **The automotive industry today**

Today's automotive industry in Flanders is a strong industrial web of assembly plants, suppliers and service suppliers. These are concentrated not only on the car and its components. The sectors of buses, trucks, trailers, bodywork and agricultural vehicles are also substantially represented in Flanders, as well as manufacturers and assembly plants of bikes.

Today's Flemish vehicle industry employs 36 000 people directly and another 37 000 indirectly. The vehicle industry contributes 10% to the Flemish export. In 2008, investments were made up to 500 million equalling 5,3% of all Belgian industrial investments.

### **Worldwide trends**

The automotive industry in Flanders is also affected by the consequences of the worldwide economic crisis and consolidation cannot be stopped.

In Flanders, the sector is also faced with the enormous challenge to find an answer to the technological (r)evolution towards a greener vehicle landscape in a durable mobility system, taking into account the wide range of "comfort demands" of each one of us and the economic efficiency thereof. This challenge requires an approach towards a new landscape (ecosystem) involving the bundling of high-tech developments which have to be steered through new business models and a broader view on innovation.

Worldwide, as in the neighbouring countries, a considerable amount of initiatives encompassing this transition are being set up. Market positions are taken, standards are defined and experiments are done with new business models and transport concepts. International evolutions force us to act quickly and to play our trump cards too.

## **Macroeconomic approach**

The automotive industry will grow into a mobility industry. This implies that the innovation policy will migrate towards a cluster policy from an ecosystem point of view. Given the worldwide (technological) challenges in the sector, a region has to make a choice by capitalizing on those niches where it can offer a solution following its existing growth potential and competences. Investments have to be made in internationally attractive niches through a large-scale integrated approach aiming at concrete projects to be developed. Combining forces between the relevant actors in industry and research is crucial. Starting point for value creation is the existing value chain that has to be strengthened and extended into a full value network.

## **Opportunities for Flanders as a region**

Flanders is a heavily urbanized region, suffering from traffic congestion, but has high-tech competences and short communication channels. These are all elements offering opportunities to make Flanders an ideal testing area for new mobility concepts and a pilot market for innovative mobility solutions in densely populated green cities.

## **The future of the vehicle industry**

Flanders has to go for a proactive vehicle industry enabling breakthroughs by developing durable mobility concepts in a green urbanized city environment and this through innovation linked to economic growth.

The transformation of the sector is based on five pillars. Two of them refer to the strengthening of the current value chain. The next three aim for complementary activities from the value network of the future vehicle.

### **A. Strengthening the current value chain**

- Pillar 1: Vehicle and components
- Pillar 2: Production and assembly

### **B. New complementary activities from the value network**

- Pillar 3: Infrastructure for the future vehicle
- Pillar 4: Communication and the future vehicle
- Pillar 5: The future vehicle in mobility concepts

### **A. Strengthening the current value chain**

#### *Vehicle and components*

Flanders has a strong supplier industry that, from the development, production and marketing of its materials, components and systems, plays a significant role in the value chain of the vehicle. This, completed with service providers and the activities in the sector of trucks, buses, industrial and agricultural (TBI) vehicles and their suppliers, gives Flanders a good position in the value chain of the vehicle. Strengthening the value chain means substantial investment in the future vehicle.

Vehicles get more and more environmentally and energy friendly and safer. Vehicles became hightech products with intelligent (mechatronic) systems and components which make this possible. And this in combination with a continuous aim for new (lightweight) materials and systems.

A permanent investment in new materials, components, powertrains and development methods for a green vehicle is necessary to safeguard the international position of the Flemish companies.

Flanders' DRIVE supports the industry by developing competencies in the domains for product development which have been strategically chosen. These domains are lightweight materials, active safety and clean powertrains. For this purpose, Flanders' DRIVE has built up core competencies by developing concrete projects with the industry and with the support of knowledge institutes. For instance, a lightweight door has been developed with special attention to the integration aspects of

the door parts, by which the door offers new functions. Another example concerns the set up of competencies to develop a complex mechatronic system. The knowledge was translated to the development of an active suspension. Besides that, Flanders' DRIVE is researching the newest generation of lithium batteries for hybrid and full electric vehicles.

The big challenges are in the future energy system, the batteries. And in the long term the fuel cells.

### **Flanders' DRIVE proposal: "Batteries (& Energy Management)"**

An integrated project from a global approach with knowledge built-up and new (production) challenges concerning batteries and energy management of components.

#### **Production and assembly**

The production and assembly of vehicles and the production at the suppliers is also an important part of the value chain of the current automotive industry. Flanders' DRIVE already fulfilled projects for innovation in this domain. One of these projects concerned the use of a PDA or a tablet pc as information system for the operator at the assembly line (DAISSY = Direct Access Information Support System). The project aims to improve the quality as well as the productivity of the process.

A big challenge for the assembly industry in Flanders is that it has to be able to produce the future vehicle in a relatively short term. If the future vehicle is produced on the same assembly line as the conventional vehicle, the complexity of the production and assembly process will increase, not only at the OEM but also at the supplier. Therefore our companies need to prepare for this challenge.

### **Flanders' DRIVE proposal: "Full Electric & Hybrids"**

An integrated project about the preparation of the assembly plants for the production of hybrid and full electric vehicles. This project is a transformation project within individual companies.

#### **B. New complementary activities from the value network**

The current value chain of the automotive industry can be further strengthened by creating a value network with several dimensions around the future vehicle.

#### **Infrastructure for the future vehicle**

The breakthrough of environmentally friendly cars and fuels in general and full electric vehicles more specifically, will strongly depend on the infrastructure present at that time.

The expansion of the charging infrastructure for full electric vehicles is a must. The challenges are:

- Sufficient charging possibilities at home, at work and on the go
- Increasing the possibilities of efficient energy supply and storage
- Standardization, safety, certification and testing of charging infrastructure
- The supply and price at large-scale usage (vendor dependent)

### **Flanders' DRIVE proposal: "Continuous Electric Drive"**

A project about idle and dynamic charging with the help of induction technology offers a solution for these challenges and makes Flanders first-mover in this domain. This technique is currently developed for trams, but with further research and development, it can also be used for buses, cars and other vehicles.

#### **Communication and the future vehicle**

Vehicles communicate more and more with the (intelligent) surroundings including other nearby vehicles ('connected car'). This kind of communication can be useful in several ways. For instance, it can guarantee a more efficient traffic flow. Besides that communication can increase the comfort of the driver and passengers letting the vehicle function as a kind of extension of the office or the home.

## **Flanders' DRIVE proposal: "Mobility Platform & User Services"**

An integrated project about the integration of services within a mobility platform with a large range of "user services" for electric vehicles such as

- Getting information about charging points nearby
- Making a reservation for a parking place with charging point
- Giving priority of access to driving lanes for electric vehicles by vehicle identification
- Energy management depending on the situation (e.g. route, car handling,...)

### **The vehicle of the future in mobility concepts**

"Mobility on Demand" will become more and more common. The vehicle user chooses a vehicle depending on his need for mobility at a given time, "the right vehicle on the right time and at the right place". The solution will be a combination of individual and collective transport. As for individual transport, the challenge is to develop new vehicle concepts which combine the user's comfort with durable mobility. The success of these new vehicle concepts is largely dependent on the accompanying traffic rules (prohibition to enter city centers with classic vehicles, free parking spaces for new concept vehicles, ...).

## **Flanders' DRIVE proposal: "Green Mobility Concept"**

A project developing a new vehicle concept based on lightweight materials which will be integrated in a new mobility concept for a city. These new vehicle concepts will have to answer the need for vehicles that combine low speed, low cost, low weight and high comfort.

Voor duurzame economische groei  
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ONAFHANKELIJKE DENKTANK

**KLARE IDEEËN, KLAAR VOOR ACTIE**

**Itinera Institute VZW**

Leopold II Laan 184d B-1080 Brussel

T +32 2 412 02 62 - F +32 2 412 02 69

[info@itinerainstitute.org](mailto:info@itinerainstitute.org)

[www.itinerainstitute.org](http://www.itinerainstitute.org)

Verantwoordelijke uitgever: Marc De Vos, Directeur