



from A to green

a future vision of coachworks

// concept discovery + concept design +
concept development //

Integral Design Project

Industrial Design Engineering Faculty.
Delft University of Technology.

My T //

Ana Laura Rodrigues Santos
Barth Vrijling
David Güiza Caicedo
Marjolein van Houten
Ricardo Mejia Sarmiento
Stefanus Heru Prabowo

Coach // Tjamme Wiegiers
External advisor // Elmer van Grondelle.

Report 03 // **Final report.** Jan. 2009.

General Information

Team

MyT is a heterogeneous group from very different but complementary backgrounds (both academic and cultural) with a common interest and motivation for mobility, with two students with more than 6 years of industrial design experience developing different kinds of mass produced products and other two with experience in graphic design.

Conceptual design, human-product/human-spatial interactions and sustainability are also among our common interests. We are an autonomous group with the ability to cover the whole design process (strategy, conceptualization and materialization) with input from different perspectives due to our complimentary backgrounds.

Members

Ana Laura Rodrigues Santos / *IPD Student*
 Bart Vrijling / *IPD Student*
 Marjolein van Houten / *IPD Student*
 Ricardo Mejia Sarmiento / *SPD Student*
 Stefanus Heru Prabowo / *SPD Student*
 David Güiza Caicedo / *DI Student*

Client

COMBIGROEP CARROSSERIEË

(From here on referred as group)

Contact Person:

Karel Verlinden & GeertJan Karhof.

Time

Starting date: 9 September 2008

Finishing date: January 2009

Design brief / Executive Summary

This report aims to summarize in a consistent manner the work done by My T team during the first stage of the project "From A to Green: a Future Vision for Coachworks".

Problem statement

The project "From A to Green: a Future Vision for Coachworks", as its name suggests, engages sustainability and innovation in an effort to provide the group with a significant step-up on the connection between Combigroep's brand image and brand identity through a product.

The team intends to make a creative exercise by projecting a future vision that will finally inspire a realistic and influential product – an environmentally friendly and versatile coachwork.

A pioneering approach will be developed through the analysis of future trends, drivers and forces - far until 2025 - so that this can be reflected in the opportunities of a design that can "launch" the Present (2010) into this direction, while still following constraints and regulations imposed by a compliant industry.

Project scope

The context of the project was defined after an internal and external analysis – using quantitative research tools - and the use of several conceptual and qualitative tools derived from the chosen framework

and approach. The next phase of development will include a future vision for the future delimited by the following factors:

Temporal

The ViP methodology will be used with the years 2008 (Present) and 2025 (Future) as a frame of work to develop the vision, and having the year 2010 as a focus for the exploration of the design opportunities that can lead the group towards this future vision.

Geographical

The geographical context is bounded between local (municipal) and national (respective country) road infrastructure. Municipalities and countries play the most important role on the perspective of expanding markets.

Functional

Attention will be focused on coachworks for distribution and delivery. A limit was set between 3.5 to 7 tons for local delivery and between 7 to 22 tons for distribution. Special customized works and service coaches are left outside of the working scope as they are seen as being too customer-specific by nature and not representative of this project's goals to be taken into consideration.

A selection of the type of goods to be transported was not made as a deeper research about the clients' perspective must still be carried out.

Opportunities and challenges

The overall opportunities analyzed during this first phase of the project were divided in three different dimensions on which the team intends to act:

Product design

Green

- Use of “green” and light materials. This is still a superficial conclusion in the sense that only by studying the future scenario on the next phase, will the team be able to determine the drivers and trends that will influence the concrete choice of materials and production technologies used. In any case it is important to state the two material spheres distinguished by the Cradle to Cradle (C2C) philosophy: the technical (technosphere) and biological (biosphere). These two concepts offer inspiration for the future vision thought they might not be realistic for the results presented for the year 2010.
- The growing number of measures being applied in the automotive industry to achieve greater energy efficiency (from lighting to air conditioning accessories, etc.) reveals a new opportunity for the product in question.

Efficiency and Effectiveness

- Modularity: The understanding of the requirements for special products will be an opportunity in the sense that Combigoep’s main competitor DuCarbo doesn’t have a modular base for construction. The fact that this company already provides a flexible production system for customized truck bodies as a competition advantage represents a design challenge but it is also a good opportunity to strengthen the company’s identity.
- Design for disassembly is identified as one of the biggest opportunities for the group in the line of sustainable action to be applied in the modular product and re-use of parts concept.
- Aerodynamics: surface design, from shape to surface finishing, has strong impact on the drag of vehicles.

Innovation

- Radical or incremental?
This decision has not been made so far as there is not enough information on user’s demands to conclude if the new product will be an addition to the portfolio or a redesign and improvement of the current series.

Business strategy

Orientation

- It is wise for Combigoep to adapt their strategic actions to those of the most important stakeholders (OEM, Suppliers, etc.).

- This project is limited by the dependency on transportation means because the coachworks have no self propulsion. The fact that the truck industry is now following a “green” trend is a great opportunity for Combigoep to be a pioneer supplier.

Green

- Special attention will be given to the logistics, more specifically to a possible material loop derived from the disassembly design strategy.
- For the scope of this project it was decided not to follow the C2C certificate requirements because there is not enough man power, expertise, time and financial resources. By simply following sustainability principles, more realistic ideas can be generated for Combigoep’s product line.
- Further market research is still needed to understand the stakeholders’ current investment decisions, in order to advice the group whether or not they should later invest more in logistic matters to achieve the C2C certificate.

Branding

- It is important to measure the gap between brand image and brand identity by further research on market demands;
- Sustainability trends: Since the goal that Combigoep wanted to achieve by implementing C2C was to strengthen the brand image, it was decided that by choosing sustainability instead as the wider framework, a more appropriate approach could be decided according to the actual market needs and expectations.

System vision

- It was identified that a network is comprised of nodes and connections between these nodes. Extreme networks rely on either minimum infrastructure (which translates to a high level of cooperation between nodes) or maximum infrastructure (with no cooperation). The ideal system should combine a minimal number of connections needed between the nodes according to their importance and position in which cooperation within nodes is optimally balanced.
- It was identified that the system can be effective and to a certain level efficient. Effective (results oriented) in terms of achieving the goal of transporting goods between a point A and a point B. Efficient (process oriented) in terms of achieving the goal in a sustainable manner (balance between environmental, economical and social impact).
- By applying a Cradle to Grave approach (as it currently is) the system is wasting valuable resources and materials that could be put back into the economical cycle. This problem can be identified in all of the links of the system, of which Combigoep is one of them. By modifying the approach of the Combigoep in order to close their own cycle, the company could save money and improve their image of sustainability.

from A to green

a future vision of coachworks

The ViP methodology provided deep insights within the current product and allows, like this, a better performance on the involvement with the subject. This exercise is divided in two phases a deep approach to the product and the following interpretation of the future. The deconstruction phase involves an analysis of the product regarding its functions and values on the present context, an interaction overview that defines the most important qualitative values and a context definition on which an imaginary country was created to synthesize a series of world conditions and influential factors (see Barist 2008 map). On the next phase the interpretation and prediction exercise was done where it was possible to illustrate on a collage a consequent future for the same country (see Barist 2025 map). With this the opportunity is created to simulate possible scenarios and users using mind mapping and role playing techniques

from which the result is a mission statement.

The mission statement determines the main goal of the product to be designed.

So as to proceed action the team made a review of interaction values (this time that must achieve the defined task) and came up with six qualities that will determine the design direction on the conceptualization phase.

The conclusion of ViP, is an overview of the previously referred aspects and their compilation on a cartoon that illustrates and tells the story of Combi's future within the intermodal transportation system.

The third chapter of this report documents the design of concept solutions based on the process described above. For the idea generation some inspirational context features were used such as the digitalization of services and material use trends, online ordering, energy saving policies, traffic optimization and governmental initiatives.



We want people to **enjoy a **sustainable** life
without compromising their freedom & quality of life**

(Effort, convenience, worry, safety,...)

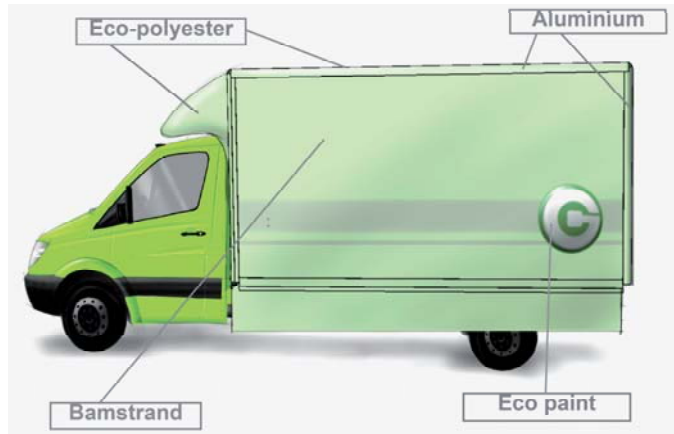


// concept design //

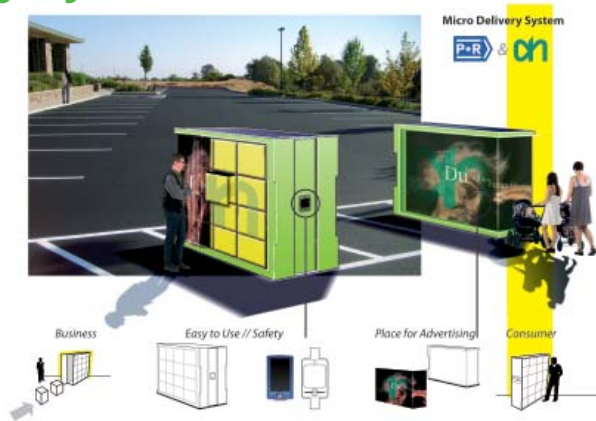
The idea generation was realized after having established the main points of attention and also the general/independent features. During one week sketches of general systems and details were projected and shared. After this the group made the identification of the existing, more relevant typologies and clustered some of the preferred ideas. The categories were then summarized according to their own values, aims and technical characteristics. In parallel a list of general features was also discussed. Following this step the group was divided amongst

the typologies in order to follow the development of these into concrete concepts. The conceptualization phase resulted in three strongly developed concepts from which the client is invited to appreciate the scope of opportunities for a near future. Each concept turned out to be distinguished by the different level of innovation. As demonstrated in the following descriptions the concepts go from more pragmatic to less and the actions implied in their implementation have also different broadness.

// combi minimal //



// micro delivery system //



// flexible skin //



from A to Green

a future vision of coachworks

// general business model //

The **Micro Delivery System (MDS)** is a new kind of business for *Combigoep Carrosserieë* in order to extend its potential market following the regulations and trends about transportation and logistics in the *European Union*.

The key element of this new business consists of a system of detachable **Micro Delivery Modules** which are to be loaded in the **Delivery Centers** (business) and to be used in the different contexts

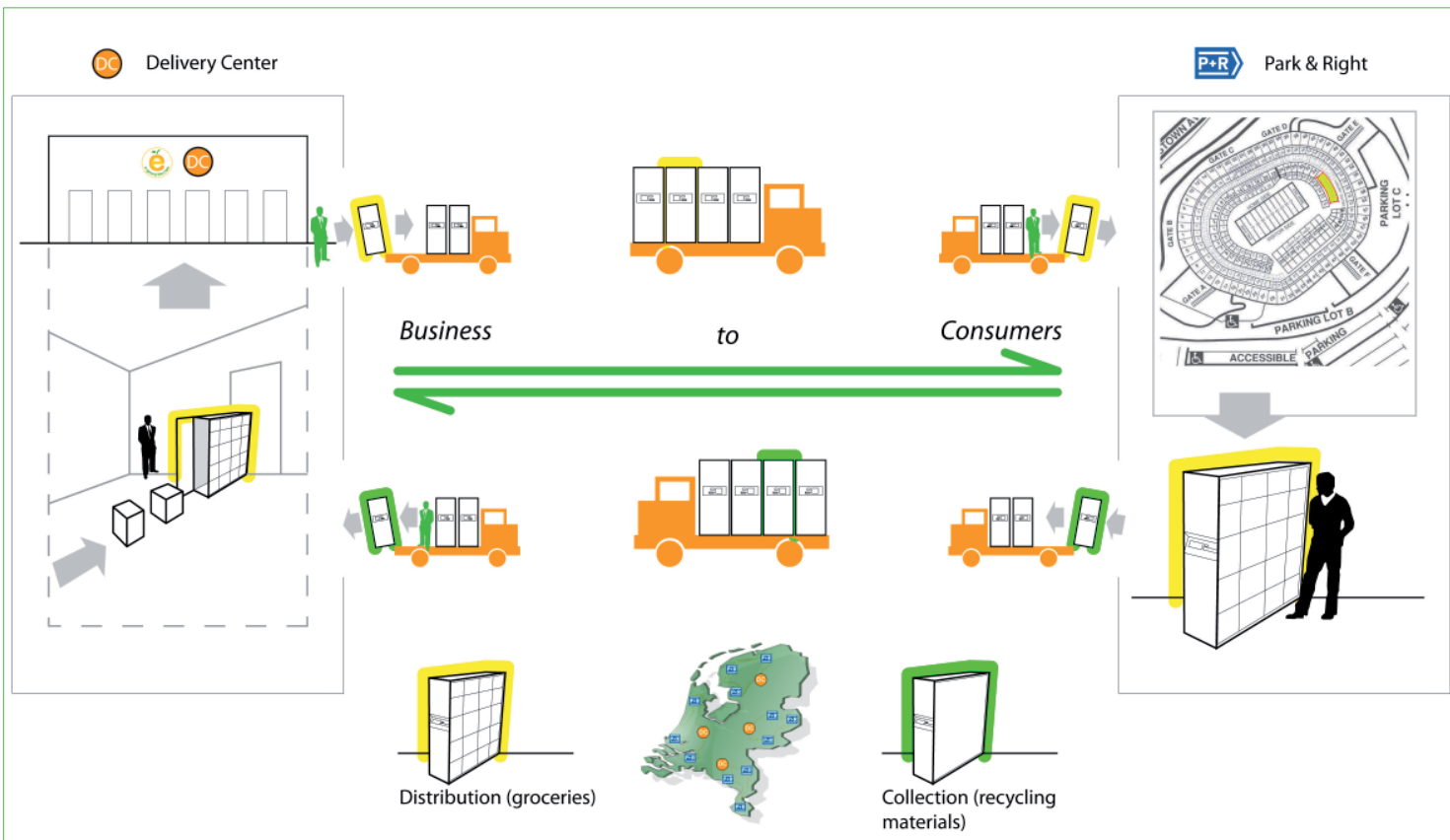
(users, which could be business or consumer). In that sense the new business could be business to consumers (B2C) or business to business (B2B).

It is a new perspective for *Combigoep Carrosserieë* to work with (and in) different businesses like night delivery services, e-shopping or integrated deliveries.

// Case Study / e-groceries / Conceptual & business level //

'**eGrocery**' (<http://www.egroceryusa.com/>) is the industry term for online grocery shopping, where a customer selects and pays for their groceries online. The method of picking and delivery may vary, but the core concept of *eGrocery* is always the same - offering your customers a wide selection of products which may be purchased online and then either delivered to the customer or else stored for pick-up by the customer.

The key element of this new business for *Combigoep Carrosserieë* consists of a system of detachable **Micro Delivery Modules (g-modules)** that are to be loaded atop of special trucks (**g-combies**) at Delivery Centers (e-groceries + DC) and to be used in the Park and Rides (users). Each module has space for approximately 50 **g-boxes** (35cm x 35cm x 50cm) to deliver goods in Park and Rides (P+R).



gcombie



gmodule



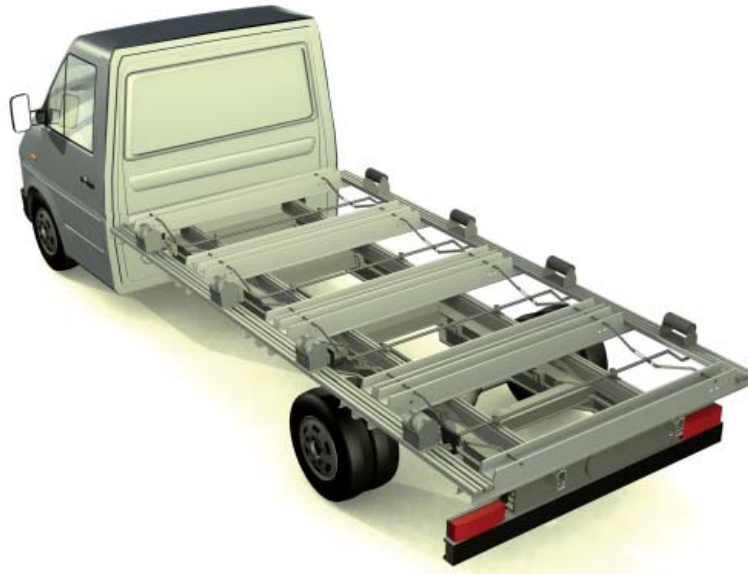
gbox



// technical level //

In the technical level the team developed technical and engineering details of a generic platform and a generic container, without specific client or application in order to demonstrate the technical feasibility of the project.

// generic platform //



// generic container //

