Attractive Passenger Environment
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The Green Train (Grönatåget) is a national Swedish research program with an ambition to develop trains as a sustainable and efficient future travel alternative. The project is a collaboration between manufacturer, science and operator and contains several sub-projects. This project is a sub project within the field of industrial design.

The project covers the whole train interior including a restaurant concept. It also includes a design concept for the front and exterior of the train.

The work has been carried out by a main design team of three industrial designers. In addition students from different disciplines have been engaged to carry out specific parts in the concept like the restaurant area.

Olle Lundberg
Industrial designer / project manager

Martin Ranvinge
Industrial designer

Daniel Eriksson
Industrial designer
The future perspective

Gree train is in the middle of its lifecycle around 2017.
Major task

"Grönatåget should work as a bank of ideas for the Swedish rail industry in the future"
Speaking Partners

KTH
SJ PERSONAL
SJ EVENT
SJ AFFÄR/LEDNING
SJ BISTRO
TÅGRESEARCH EUROPA
HORIZONS 2020
BOMBARDIER
RESENÄRSFORUM
KAIROS FUTURE
FUNKTIONSHINDRADE
RESENÄRER
European trains
Asian trains
Conclusions

“Strategic conclusions were formed in collaboration with our industry partners. All the product concepts and innovations sprung from these five conclusions.”
Conclusions

Design for everyone
An important conclusion is that functional design is beneficial for all passengers. In every concept or solution we need to think from the traveler’s perspective.

A memorable experience
We also believe that a future high-speed train needs a design that is a little out of the ordinary, something special to remember and tell friends about. This helps building memorable product concepts like the London buses or the Shinkansen trains.

Sustainable transportation
Trains are by far the most sustainable transportation alternative – we believe this should be communicated better in the product design.

A changing market
In 2013 the Scandinavian train market opened up for competition. This is about to change the business model for trains in many ways. In the end we believe this can provide added value and services for the travelers. We believe future trains should be designed to support these services.

Quality time
One of the most unique benefits with trains is the possibility use the time on board for additional activities. The journey is a part of the travelers plans as people tend to think of their time in a holistic way. Therefore it is important to create an interior that allow people to use their time on board in just the way that is best for their individual time-puzzles. Whether you want to relax, work or socialize, the interior should help you to get the most out of the time on board.
Basic Parameters

“...

In major parts Grönatåget has been an open project with focus thinking in new ways.

Still there are some basic restrictions one needs to be aware of when taking part of the result.”
Basic Parameters

One of the world's widest train profiles.
3400 mm inside

Modular interior system

grönatåget
The train

The concepts are sprung from problem areas we identified in the research. They are to be seen as parts of an interior module system but are not to be taken as a complete train design.
Exterior design
Front and exterior design

A conceptual exterior design was developed to give the project a “face” and help keep the product concepts together.
Exterior design

Front and exterior design

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Exterior design

Important parameters:

- Blend with existing trains
- Adapt to different operators graphic profiles
- Fit the scandinavian culture and environment
Project Focus

- **ECONOMY CLASS**: Efficient & attractive
- **PREMIUM CLASS**: Work & relax
- **ENTRANCE**: A space for communication
- **BISTRO**: An eating experience
- **LARGE ENTRANCE**: Improved access for everyone
- **LUGGAGE**: Improved luggage capacity

grönatåget
Economy Class

Efficient & attractive
Economy Class

Train chairs of today
Economy Class

Scandinavian furniture inspiration
Economy Class
Economy class

Easy accessed personal luggage

Space for luggage under the seats

Foot step makes it easy to reach the shelves
Interior environment

Outer passenger environment

Inner passenger environment
Interior environment

Outer passenger environment

Relaxed
Nature
Speed
Open
Interior environment

Inner passenger environment

Relaxed
Welcoming
Scandinavian
Silent
Caring

görnatåget
“Combining improved comfort with a space efficient layout”
Economy Class

Luggage compartment design

A warmer and lighter expression in economy class
Entrance
A place for communication

gronataget
Entrance

A welcoming entrance or unused space?

Pictures from existing trains entrances.
Entrance
Entrance

Corner unit design

- Sound suppressing textile leaning surface
- Metal edges
- Foldable seat
Entrance
Entrance
Entrance
Entrance

Different themes in each entrance – A personal impression and a better orientation in the train
Premium Class

"The train journey is just a part of the day.

The ideas shown in this segment is based on user studies and improves the possibilities to relax and work with optimal comfort."

gröntagel
Premium Class

Work & relax
Premium Class

Examples of how people try to make it comfortable when the seats doesn’t give support enough
"I use the time on board to prepare my meetings"

Pictures illustrating the inconvenience of traditionally tables placed on the back of the seats

( Photo: Kjell Sundqvist)
Premium Class

**Individual relaxing**

Head cover in back of seat
Reduces sound and visual elements
Works both when resting and when sleeping
Premium Class

**Individual relaxing**

Different seat ideas on how to give support for your head sideways and reduce audial and visual noise.
Premium Class

Mockup
Some of the design work was carried out in the full scale interior mockup that was built during the project.
**Premium Class**

**Mockup**

Sketch models of different head rests

Test model of table placed on your own seat
Premium Class

Mockup

Test model of foldable and adjustable head rest

Test model of dividing arm rest
Premium Class

User studies
User studies were maid in full scale train environment to get feedback on new design ideas. We also did qualitative interviews to understand how people experience different situations when travelling on train.
Premium Class

The chair is designed to improve the experience of comfort for passengers and to be space efficient at the same time.
**Premium Class**

**Adjustable comfort**
- Neck rest adjustable in height - comfort for everyone
- Adjustable table – ergonomic benefits
Premium Class

Privacy screen between the seats makes you comfortable working with “secret” information e.g. on your lap top screen.

Foldable and adjustable table gives you a good ergonomic working position.

A flexible solution as the table position isn’t depending on the row distance (pitch)

grönatåget
Premium Class

Work and relax

Create your own sphere with the foldable head rest

It gives comfortable sleeping possibilities and minimises visual and audible noise.
Premium class
Premium Class

Luggage compartment design
A relaxed and more discreet expression compared to economy class
Premium Class

Inner ceiling

The design creates a feeling of an open sky roof with day light.
Large Entrance

"The entrance is the first impression of the train interior. The time it takes to change passengers at the station is critical. Those two parameters were important when creating this large entrance concept - An entrance for everyone.

The population is getting older and there are many people with different needs of bringing different accessories. Many of the solutions today for bringing a wheelchair on board makes you feel uncomfortable. They demand attention from the train staff and works only for one wheelchair at the time.

From the travellers point of view we created an “main entrance” where everyone can get on board easily. From the operators point of view this concept is efficient and saves time at every station.

"
Large entrance
Improved access for everyone
Large Entrance

Welcome onboard?
Large Entrance

Couldn’t it be more like a big welcoming main entrance to a great mansion?
Entrance with moving floor:
The floor sinks slowly and adjusts to the level of the platform.
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The floor sinks slowly and adjusts to the level of the platform.
Entrance with moving floor:
In the upper position the entrance works as a mini launch and you can easily pass by with a wheel chair or a pram.
Entrance with moving floor:

In the lower position it is easy to enter and the spacious design allows several persons to use the elevating function at the same time.
Large Entrance

Benefits:

- High capacity - short stop at the stations
- Everyone can use the entrance, without assistance
- Everyone can pass through the train - and reach the bistro
A wider train with more seats means more luggage per meter train. The luggage capacity of the trains today is already overloaded especially at weekends at holidays.

There is also a need to improve the handling of luggage in a convenient way.

This project focused on improvements for small to medium sized luggage. The concepts shown could together increase the capacity for small and medium luggage with up to 25%.
Luggage

Improved luggage capacity
Luggage

Increased need for luggage space

Luggage on trains is a well-known problem
A wider train with more seats means more luggage/meter.
Luggage

Some of the many idea sketches

gränätåget
Luggage Capacity

15-25% more luggage capacity
Bistro
An eating experience
Bistro

To gather around food

Relaxing eating environment

The journey as a pause

Access fore everyone
Bistro

Research trip to China

The night train between Beijing and Shanghai
Example of one of the screens exposing the dish, tells you the amount of nutrition and showing the origin.
**Bistro**

**Plan – small unit**

- Around 25 guests
- 20% easy access seats
- Centred seating
Bistro

Full coach, outside

The open and dynamic design gives character to the train and glow welcoming in the dark
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