



# GAUSSIN MANUGISTIQUE®

*Creator of global handling solutions*

*Manufacturer of handling and self-propelled systems*

## 12<sup>th</sup> ASEAN PORTS & SHIPPING 2014



**ELVIO SIMONETTI** Gaussin Director - JAKARTA June 11th & 12th





## SCHEDULE

Gaussin Company and Port Equipment Introduction

Gaussin Range of Products

Business case Semiautomatic Terminal



*INTRODUCTION OF GAUSSIN COMPANY*





**1880 – Eugène GAUSSIN  
Metal constructions**



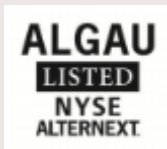
**1961 – Henri GAUSSIN - Industrial trailers**



**1970 – Beginning of the containerization**



**1994 – AIRBUS ( FULL ELEC vehicle)**



**2006 – IPO Listed on the Nyse Alternext**





**GAUSSIN MANUGISTIQUE® is specialized in the audit of handling processes, and the development of wheeled handling systems used to install and transport heavy, bulky or fragile loads.**

With more than 50,000 vehicles worldwide, GAUSSIN MANUGISTIQUE® boasts a strong reputation in four markets with strong potential: Energy, Transportation, Environment and Raw Materials. GAUSSIN MANUGISTIQUE® is listed on the Nyse Alternext since 16 June 2010; GAUSSIN shares are listed since 20 July 2012 on the E2 listing (public market) since obtaining AMF Visa n°12-360 on 17/07/12 for the Prospectus, available free of charge on [www.gaussin.com](http://www.gaussin.com).







Transport



Energy



Raw Material

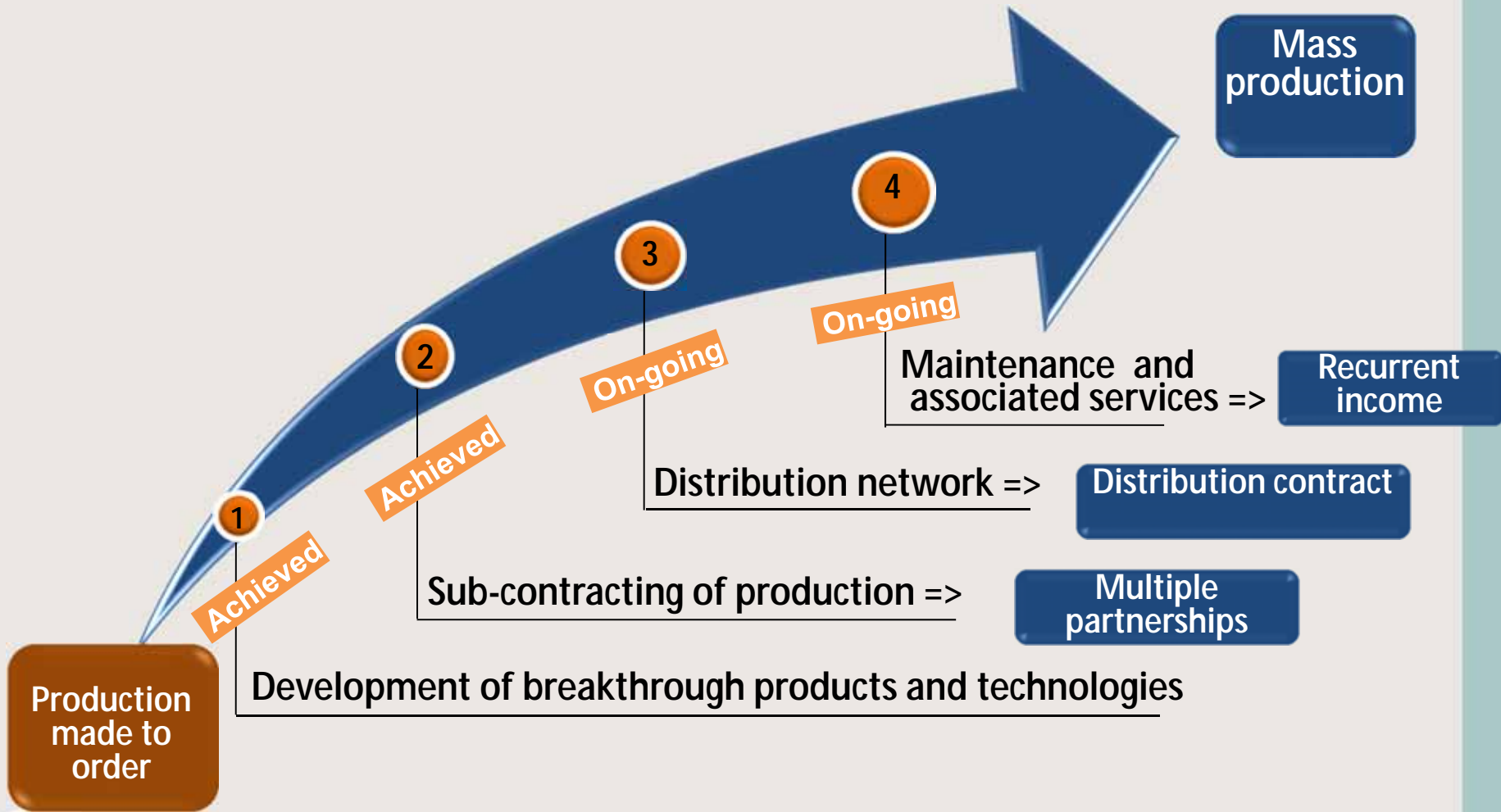




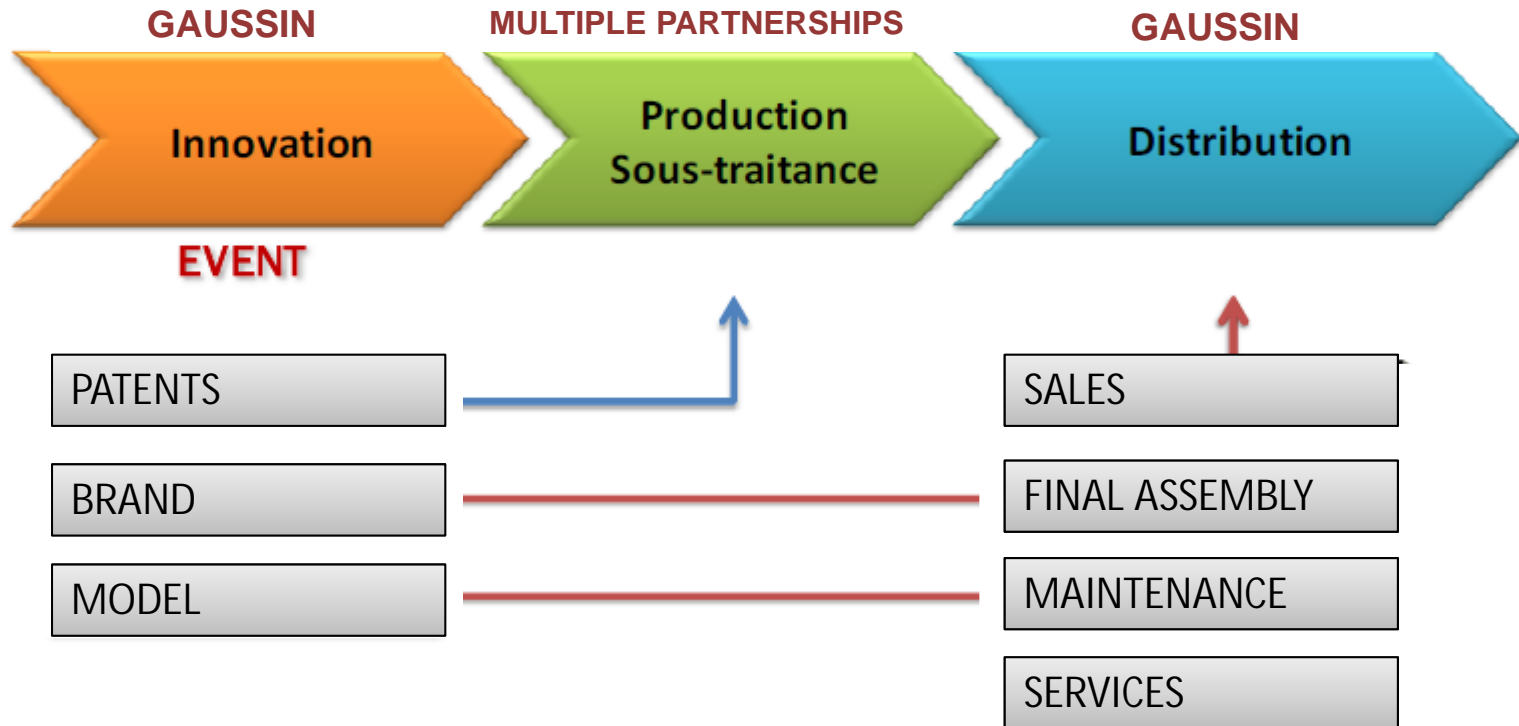

Transport

Energy

Raw material

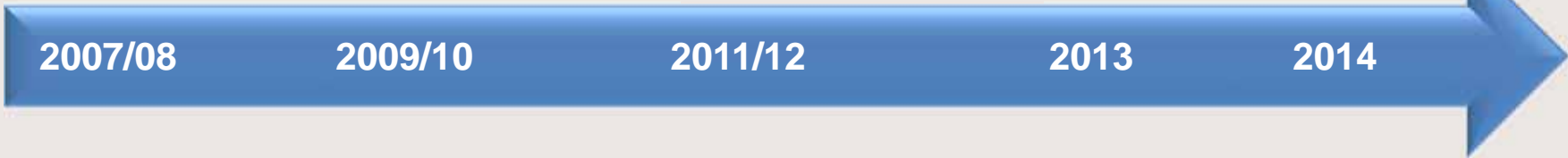








## Rappel de la chronologie



Définition & 1st drafts

Prototype  
Industrialisation  
ATT V1

Commercialisation  
Pré-séries V4 et prototype AIV

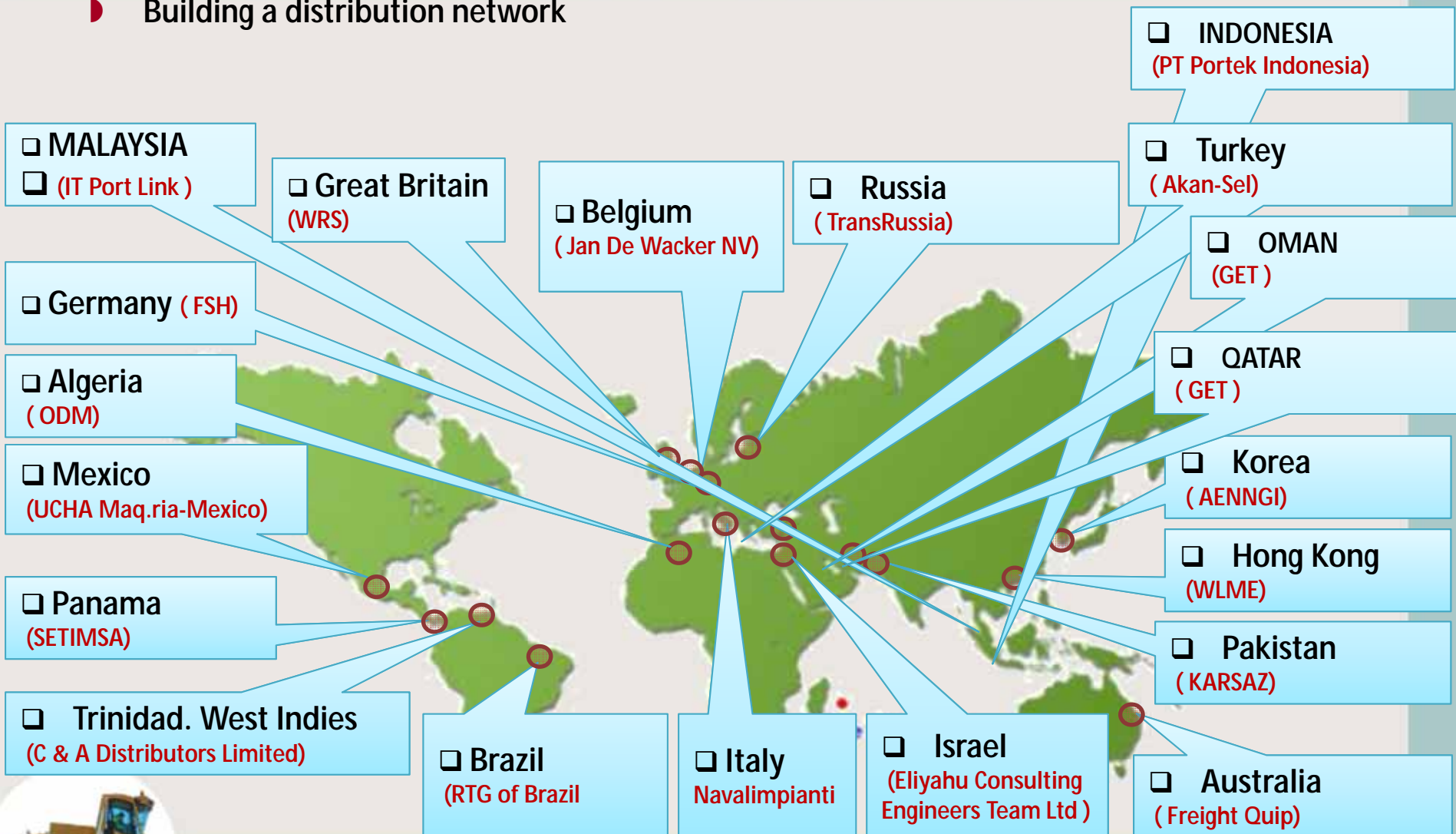
Série ATT V3  
ATT Lift  
Proto full Elec & Hybrid

Commercialisation  
8 véhicules  
5 POWERPACK



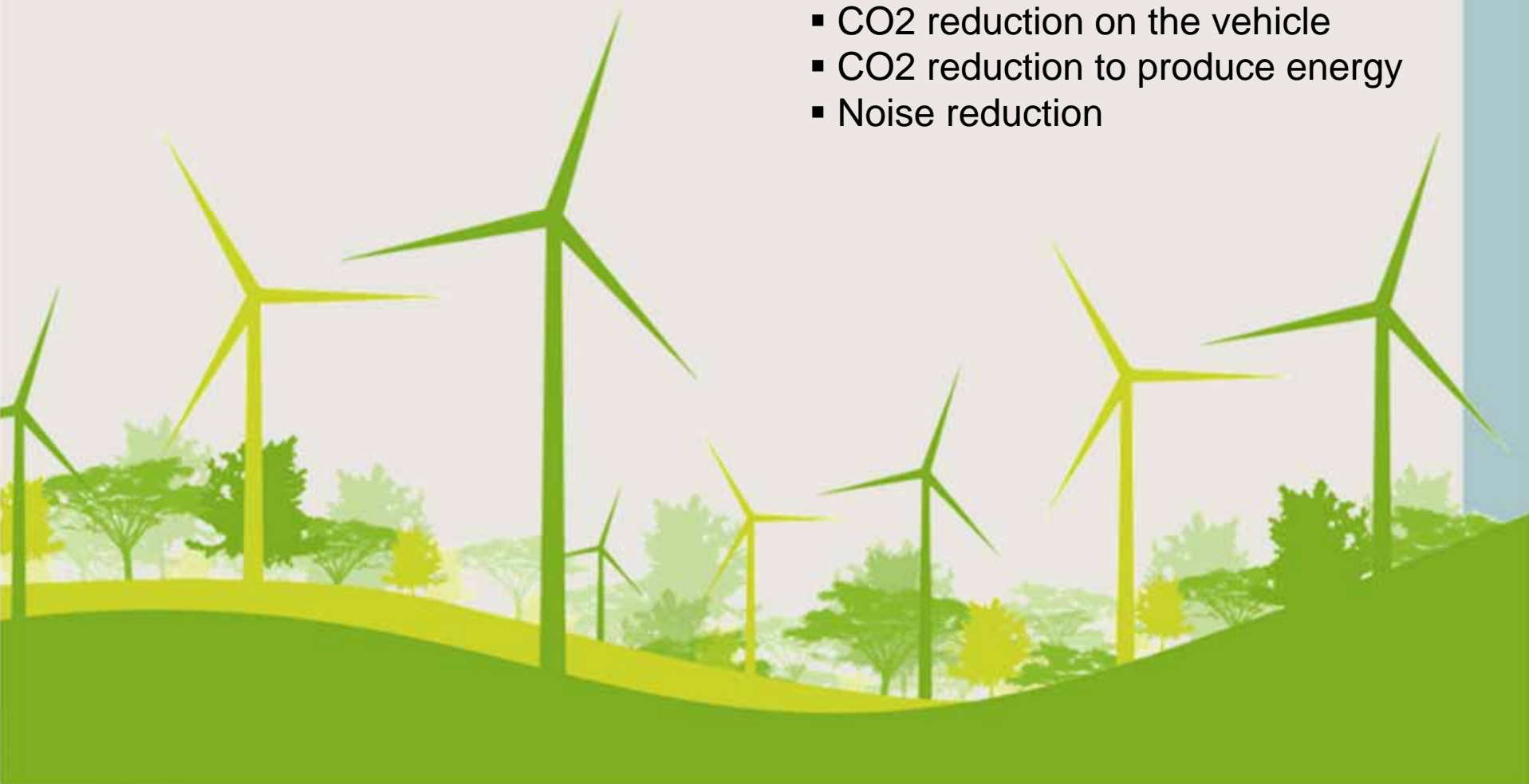


## Building a distribution network



## Environment friendly :

- CO2 reduction on the vehicle
- CO2 reduction to produce energy
- Noise reduction





# DOCK IT

## PORT EQUIPMENT

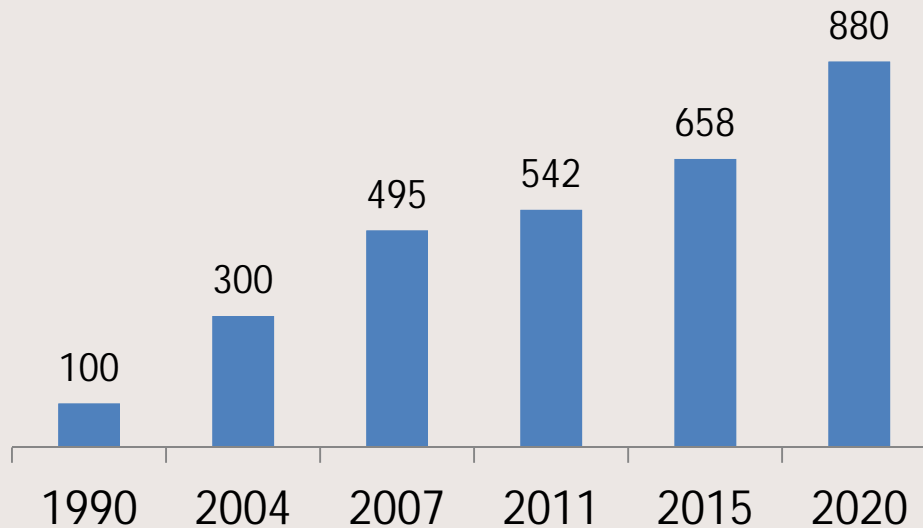








TEU in millions in the top 100 ports of the world



- ✓ A growth of 5-6% per year between 2012 - 2020\*
- ✓ *A growth of 75% of the container volumes during the next 10 years*

\*Source : Containerisation international 2013



## Competitors' offer





## Competitors' offer

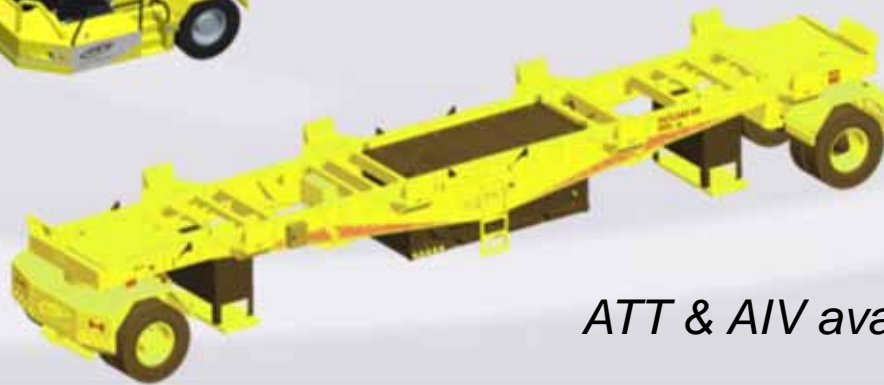




## *GAUSSIN RANGE OF PRODUCTS*







*ATT & AIV available on LIFT*

The Power of your dreams...





## The CEA establishes this partnership through 2 institutes :

- ▶ The CEA (Commission for Alternative Energies and Atomic Energy) is an active partner of the GAUSSIN MANUGISTIQUE Group through 2 institutes :
- ▶ - The CEA LITEN (Laboratory for Innovation in New Energy Technologies and Nanomaterials) ,with more than 50 years of proven experience in batteries and fuel cells for vehicles. The LITEN brings its expertise the GAUSSIN Group to design the Powerpack FULL ELEC and its Battery Management System to guarantee performance and safety
- ▶ - The CEA LIST (Laboratory for Systems Integration and Technologies) has proven experience in robotics, algorithms and simulation software. Their knowledge will be embedded in our AIV©, ensuring the autonomous navigation of the vehicles and enabling to manage the precise berthing operations with ATT© LIFT or AIV© LIFT to the DOCKING STATIONS© or under the cranes (TALK TO CRANE option).





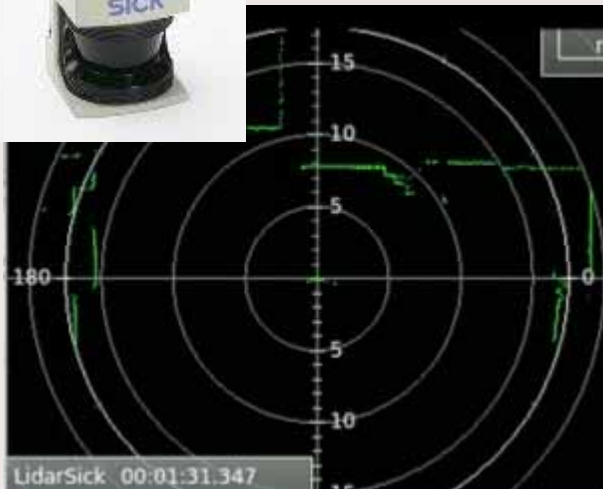
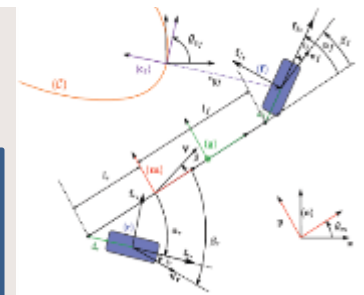
## CEA List (Paris/France)



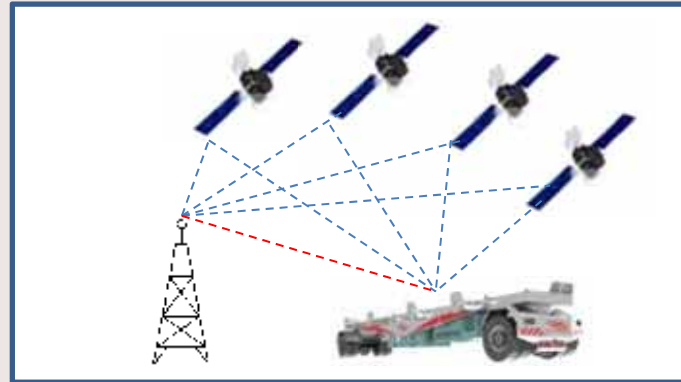
Vehicle simulation with multi-body cinematics validation

$$V_f = \frac{1}{2} \left[ y_f^2 + \frac{1}{\lambda_{y_f}} (\theta_m - \theta_{c_f} + \beta_f)^2 \right]$$

Robotics Algorithms



Laser for guidance and obstacle avoidance



GPS-RTK = differential GPS for better position accuracy





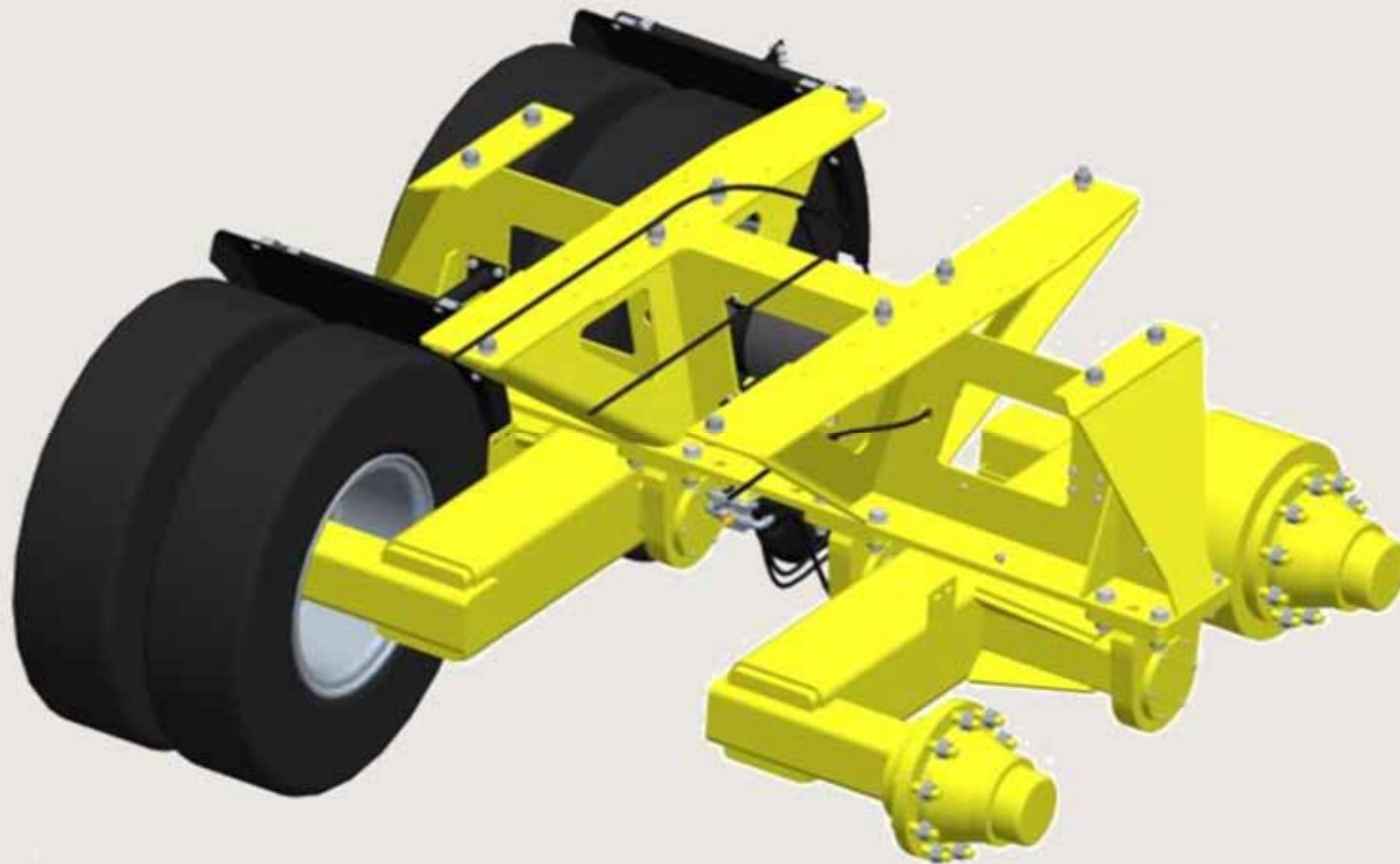


**Terminal Trailer®**  
By GAUSSIN























**Automotive Terminal Trailer** ®





6 key factors for success

Availability

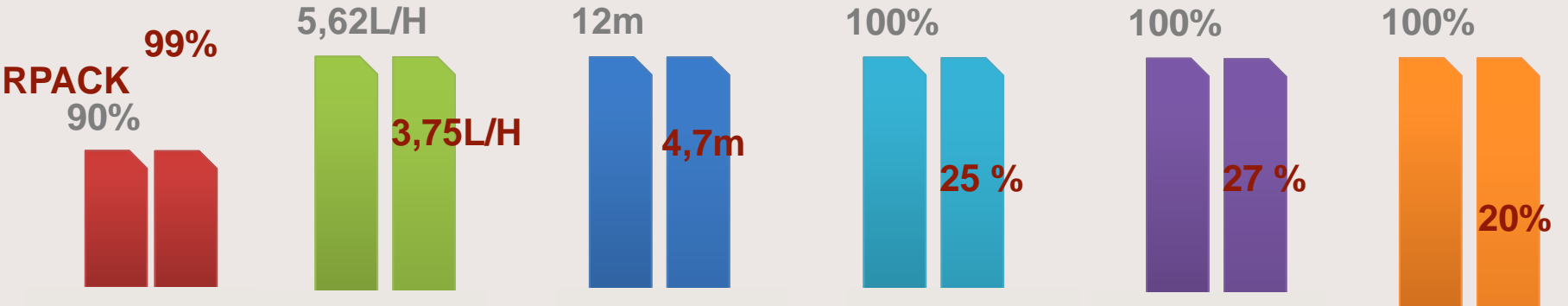
Diesel

Turning radius

Maintenance

Tyres

Transport



**HERO**  
STOP & START BY GAUSSIN



25 Disruptives and patented innovations



In 2013, let's move with ATT® Full Elec  
Faster, safer and cleaner



*In collaboration with Alternative Energies  
and Atomic Energy Commission  
for the development of PowerPack Full Elec.*



Valueur Nyse Alternext : FROO10342329 ALGAU

[www.gaussin.com](http://www.gaussin.com)

GAUSSIN MANUGISTIQUE® is specialized in the auditing of handling procedures and the production of wheeled systems for the delivery and transportation of heavy, large or delicate loads. Founded over a hundred years ago, GAUSSIN, with more than 50.000 handling vehicles across the world, enjoys a strong reputation in the four booming markets of Energy, Transport, the Environment and Raw Materials. GAUSSIN MANUGISTIQUE® has been listed on NYSE Alternext since 16 June 2010.

  
**GAUSSIN**  
MANUGISTIQUE®





***Automotive Multi Trailer System***®

*By GAUSSIN*





*\* Photo AMTS prototype*





**Automotive Intelligent Vehicle®**

By GAUSSIN

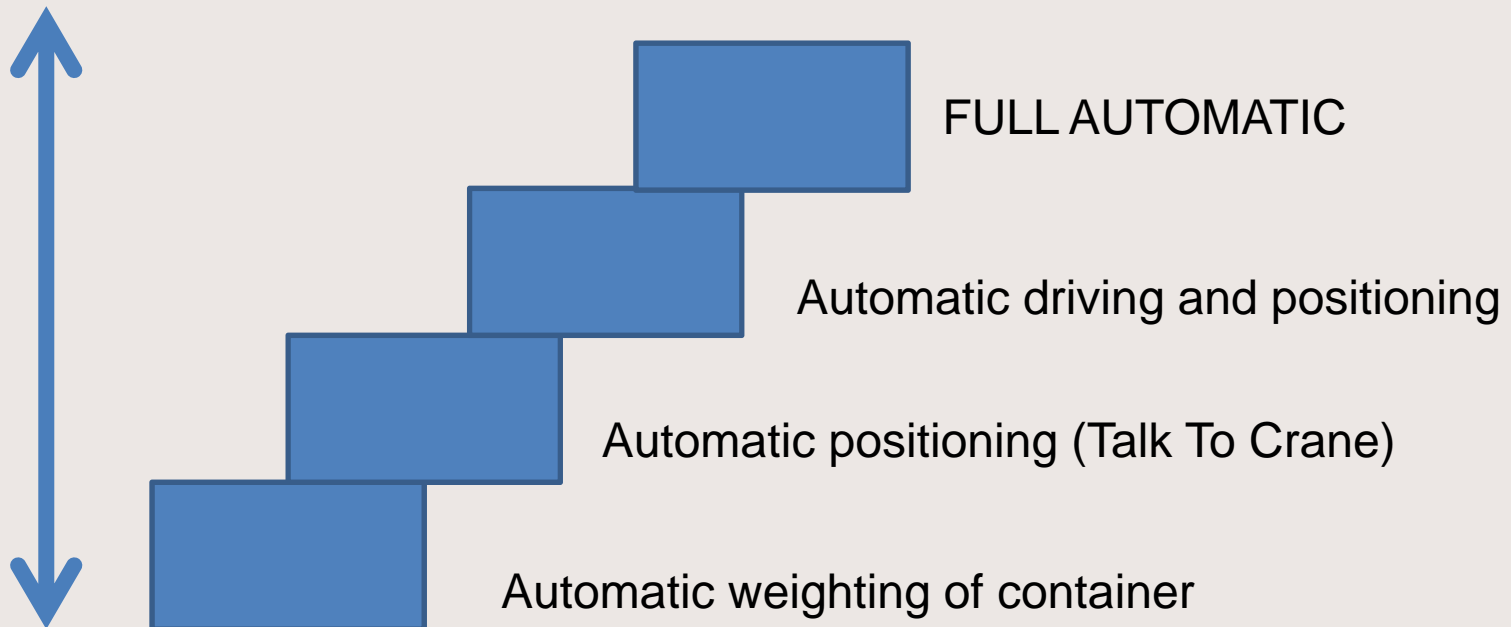


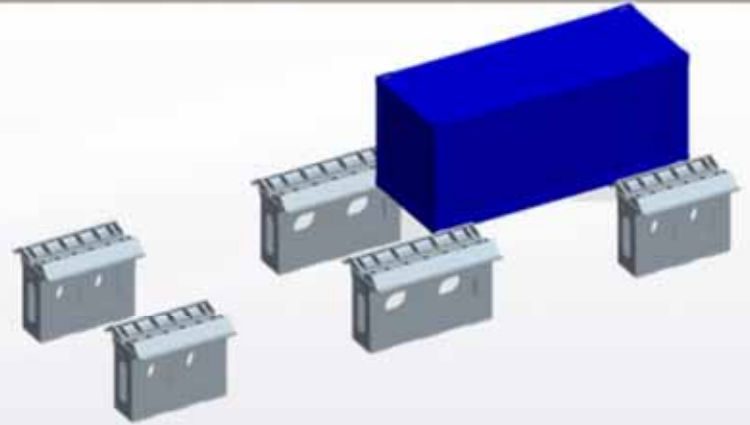






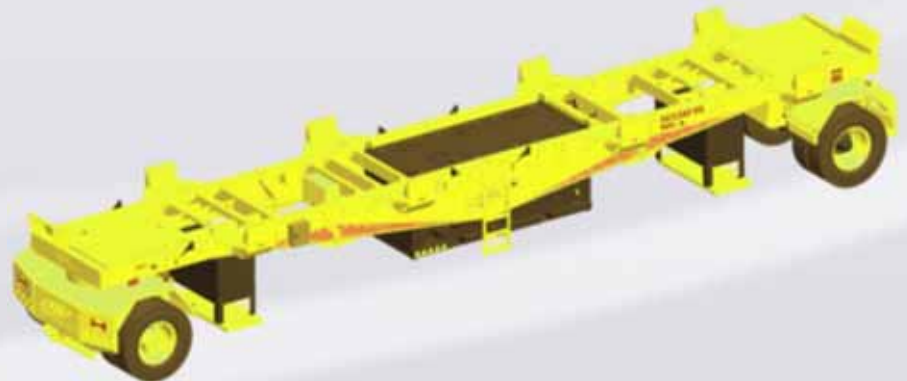
- GAUSSIN must choose the segment that represents the greatest potential. The segments that GAUSSIN can satisfy particularly effectively way. These segments are our targets:





**Automotive Intelligent Vehicle®**

By GAUSSIN



**AIV and ATT electric:**

Hydraulic steering system

Hydraulic suspension

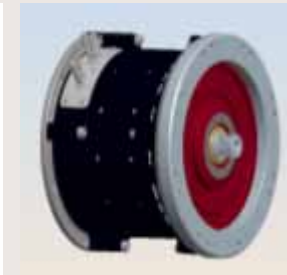
Electric traction system

Dynamic and handbrake system

Automotive components

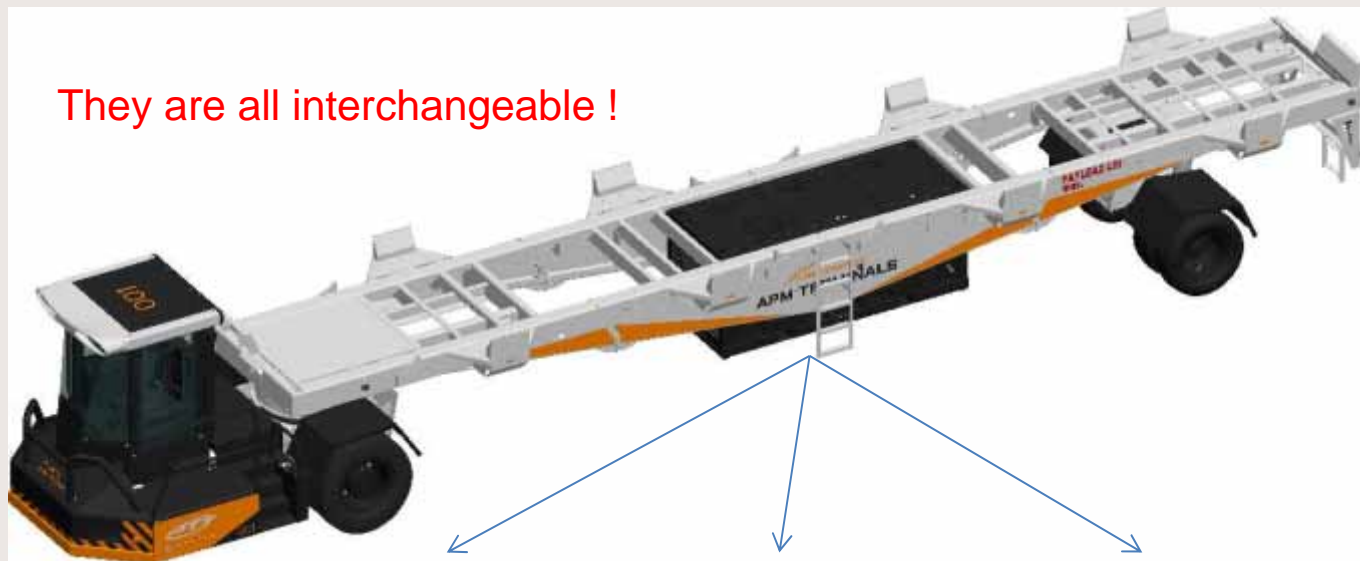
Powerpack technology

- interchangeability
- ease of maintenance
- higher availability of the vehicle





**One vehicle, different type of energy:**  
Choose the one you need!



Hybrid  
(diesel electric)



Full electric  
(Batterie)



Future energy  
(i.e. Full cell-hydrogen)





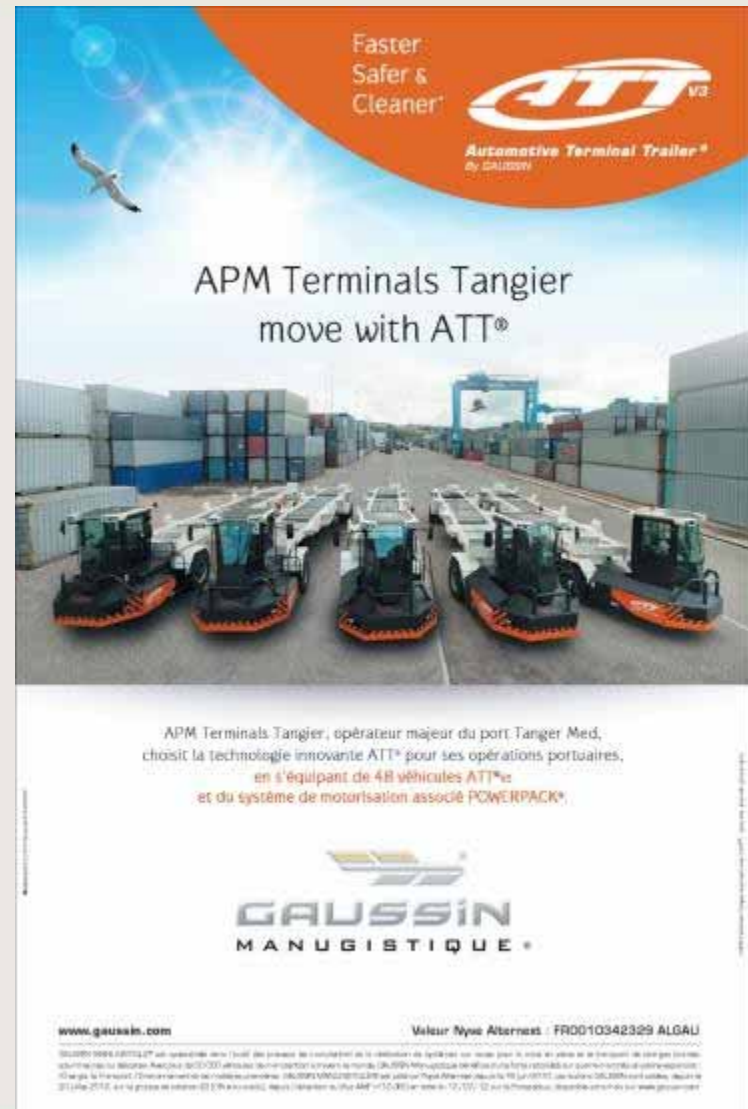


## Electric vehicles (ATT and AIV):

Power:	250 kW max
Turning radius:	less than 20 m for a U-turn
Dead Weight:	20 tons
Capacity:	60 tons
Container:	20 ft, 40 ft, 45 ft.
Speed:	25 km/h (loaded), 38 km/h (unloaded)
Torque:	2 x 11600 Nm (at wheel)
High efficiency:	80% from battery to wheel.



- ▶ On 19 October 2012 – APM Terminals Tangier – leading operator of the Tanger Med port, confirmed the firm order for 48 ATT V3 vehicles and 51 POWERPACKS.
- ▶ After final tests by APM Terminals Tangier undertaken using 9 ATT V3 vehicles from October 2011 to June 2012.
- ▶ In addition to the 9 vehicles put at its disposal on the port to carry out the tests, the order included 39 additional ATT vehicles, with delivery planned for the first quarter 2013.
- ▶ 51 POWERPACK units, associated motorization systems, were also ordered.



Faster  
Safer &  
Cleaner™

**ATT V3**  
Automotive Terminal Trailer®  
by GAUSSIN

APM Terminals Tangier  
move with ATT®

APM Terminals Tangier, opérateur majeur du port Tanger Med, choisit la technologie innovante ATT® pour ses opérations portuaires, en s'équipant de 48 véhicules ATT® et du système de motorisation associé POWERPACK®.

**GAUSSIN**  
MANUGISTIQUE®

www.gaussin.com Valeur Nvse Alternat : FROD10342329 ALGAU



- March 2013: New order for 50 ATTV4 and 50 Powerpacks signed by a leading port operator in Indonesia:  
PT PELABUHAN INDONESIA III (PERSERO)
- PELINDO III Surabaya requested driverless navigation tests on the testing grounds at Héricourt before deciding to equip its 50 ATTV4s with the LIFT and Docking Station options  
<http://youtu.be/oVDCzpsPsRE>.
- This technology, developed in a partnership with the CEA, will be officially presented at the TOC fair in Rotterdam from 25 to 27 June 2013  
<http://youtu.be/-xPHT1PDD7U>



  
 Automotive Terminal Trailer®  
 by GAUSSIN

**PELINDO III Indonesia moves with ATT®**  
 Faster, Safer & Cleaner®

... PT Pelabuhan Indonesia III,  
 l'un des opérateurs portualres leaders en Indonésie,  
 choisit la technologie innovante ATT®.  
 Il s'équipe de 50 véhicules ATT®  
 et du système de motorisation associé POWERPACK®.




[www.gaussin.com](http://www.gaussin.com)

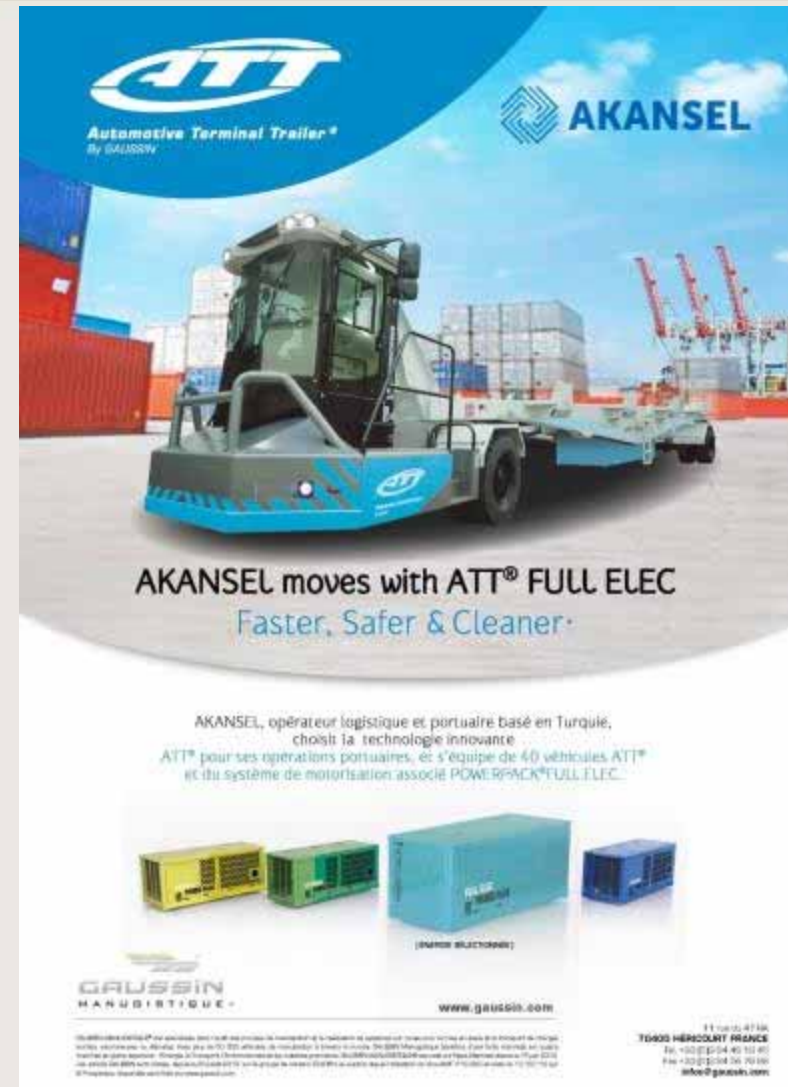
Valeur Nymex Abernethy : ALSBAU

GAUSSIN MANUFACTURER est spécialisée dans l'unité des services de maintenance et la réalisation de systèmes sur mesure pour le port et le transport de charges lourdes, selon les sites de destination. Avec plus de 15000 véhicules de manutention à travers le monde, GAUSSIN Manufacturing Mobilises l'une des technologies les plus innovantes : l'énergie, le Transport, l'Entretien et les machines portatives. GAUSSIN MANUFACTURER est basé sur New Abernethy depuis le 10 Juin 2010. Les actions GAUSSIN sont cotées, depuis le 03 Juin 2010, sur le groupe de cotation Euronext au public, depuis l'adhésion au New Amm le 18/06/2010 et sur le Prospectus, déposés le 10 Juin 2010 sur [www.gaussin.com](http://www.gaussin.com).





- ▶ A new order from AKANSEL for **40 ATT FULL ELEC** has been signed and the delivery of 20 units is planned in the second half of 2014 and 20 more units in the first half of 2015.
- ▶ After APMTT creating **reference zone on the Mediterranean and West Africa**, PELINDO opens the area of **South East Asia** where 63% of global volumes are processed and finally Akansel on the **the Middle East area**
- ▶ The Customer could add 60 units to this order by taking an option.



**ATT**  
Automotive Terminal Trailer®  
By GAUSSIN

**AKANSEL**

**AKANSEL moves with ATT® FULL ELEC**  
Faster, Safer & Cleaner.

AKANSEL, opérateur logistique et portuaire basé en Turquie, choisit la technologie innovante ATT® pour ses opérations portuaires, et s'équipe de 40 véhicules ATT® et du système de motorisation associé POWERPACK® FULL ELEC.

**GAUSSIN**  
MANUBRIQUE®

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- ▶ The GAUSSIN Group announced the signature on 10 March 2014 of a new order for 20 ATT V4s with the German company FSH.
- ▶ Specialised in mobility services for port operators, FSH is GAUSSIN Group's licensed distributor in Germany.
- ▶ The 20 ATT-V4s will be delivered during second-half 2014 and first-half 2015.
- ▶ They will equip the port of Hamburg, largest commercial port in Germany and third-largest European port.



**ATT**  
Automotive Terminal Trailer®  
by GAUSSIN

**FSH**

FSH moves with ATT® FULL ELEC.  
Faster, Safer & Cleaner

FSH a port & logistics operator from Turkey,  
has chosen the innovative ATT® technology  
for its port operations and equips itself with 40 ATT® vehicles  
and with POWERPACK® FULL ELEC. their associated motor system.

**GAUSSIN**  
MANUFACTURE

www.gaussin.com

GAUSSIN MANUFACTURE is specialised in the world of handling processes and the development of stacked handling systems used in port and airport  
terminal. Today, it offers more than 1000 different models for various applications. GAUSSIN MANUFACTURE is also equipped with many  
powerful energy, transmission, development and flow solutions.  
GAUSSIN MANUFACTURE is the leader in the field of port and airport handling systems. It has 1000 different models and is the leader in the field of port and airport  
handling systems. It has 1000 different models and is the leader in the field of port and airport handling systems.

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# *Business case Semiautomatic Terminal*



# Lamongong Bay location

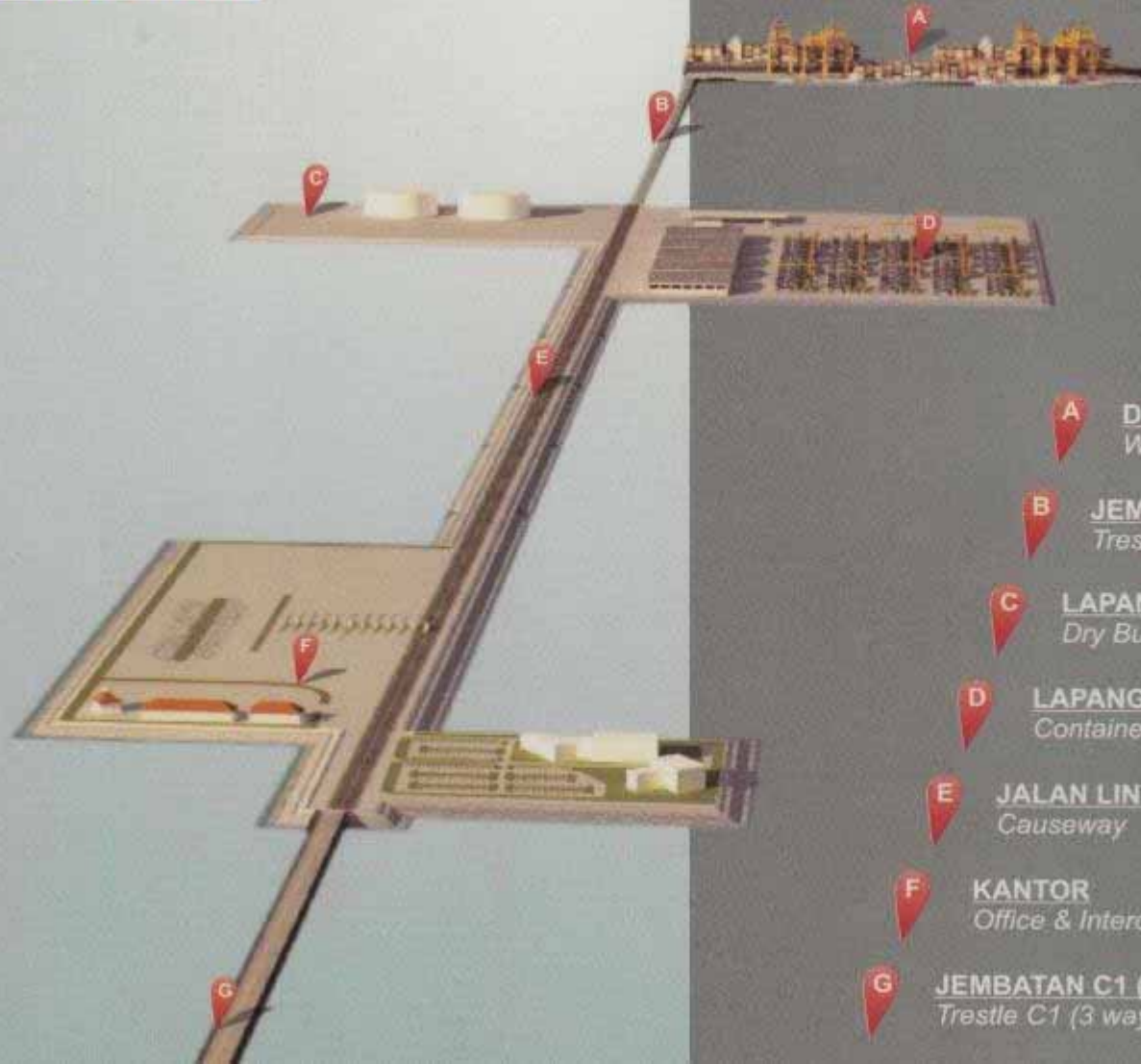








# Lamong Bay layout



**KEDALAMAN** -14 LWS  
*Draugh*

- A** DERMAGA  
*Wharf* **500 x 80 M**
- B** JEMBATAN C2 (4 LAJUR)  
*Trestle C2 (4 way)* **1024 x 18,2 M**
- C** LAPANGAN CURAH KERING  
*Dry Bulk Area* **10 Ha**
- D** LAPANGAN PETI KEMAS  
*Container Yard (CY)* **15,86 Ha**
- E** JALAN LINTASAN  
*Causeway* **1330 x 30 M**
- F** KANTOR  
*Office & Interchange Area* **7 Ha**
- G** JEMBATAN C1 (3 LAJUR)  
*Trestle C1 (3 way)* **800 x 12,5 M**



# Lamong Bay facilities



PINTU MASUK DAN KELUAR TERMINAL  
TERMINAL GATE IN AND OUT



**20** UNIT  
AUTOMATED STACKING CRANE  
(ASC)



WIND TURBINE  
ELECTRIC  
& SOLAR CELL



**5** UNIT  
STRADDLE CARRIERS (SC)



LAPANGAN PENUMPUKAN PETI KEMAS  
CONTAINER YARD



**10** UNIT  
SHIP TO SHORE  
(STS)



**2** UNIT  
SHIP UNLOADER



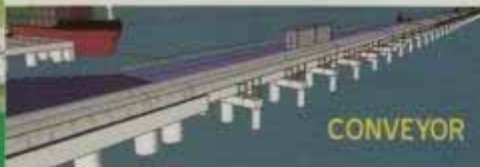
KAWASAN PERKANTORAN  
OFFICE AREA



**50** UNIT  
AUTOMOTIVE  
TERMINAL TRAILER (ATT)



INTERCHANGE AREA



CONVEYOR

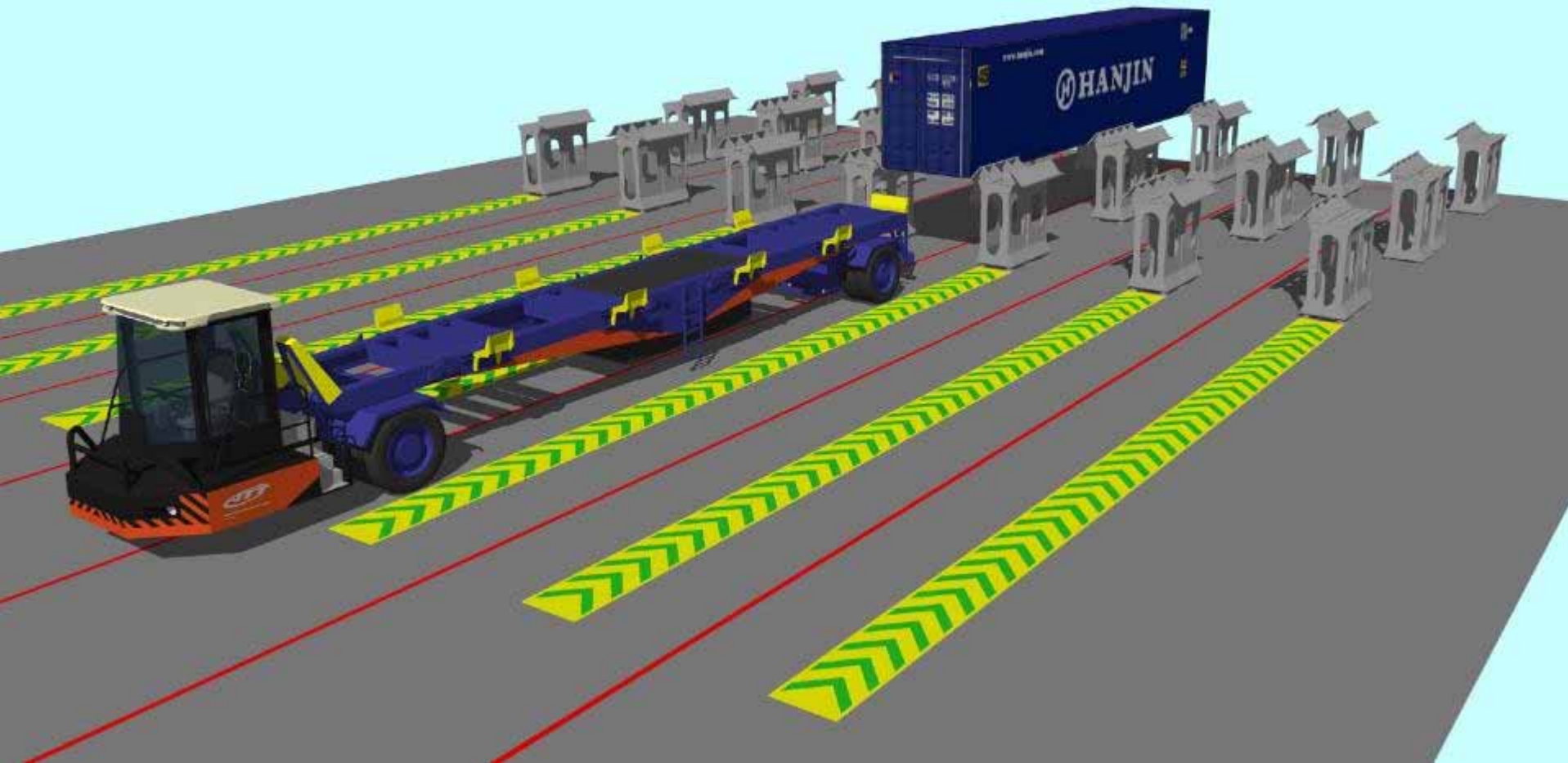
Reproduced courtesy of







# ATT LIFT & DOCKING STATION









**50cm lift**









## 6 Bay Docking Station





# LAMONG BAY WATERSIDE TRANSFER AREA











*AT LIFT©*

*Docking Station©*

- ▶ Very easy to use, robust, reliable with an **availability ratio close to 100%**.
- ▶ **Autonomous**, it can unload/load containers in the stacking yard without having to rely on other unloading equipment or “wait for the crane”.
- ▶ **Improves operational productivity** while providing a **safer working environment for employees** and safer handling conditions for cargo.
- ▶ **Economical, less cost of fuel, maintenance, tyres and labour.**





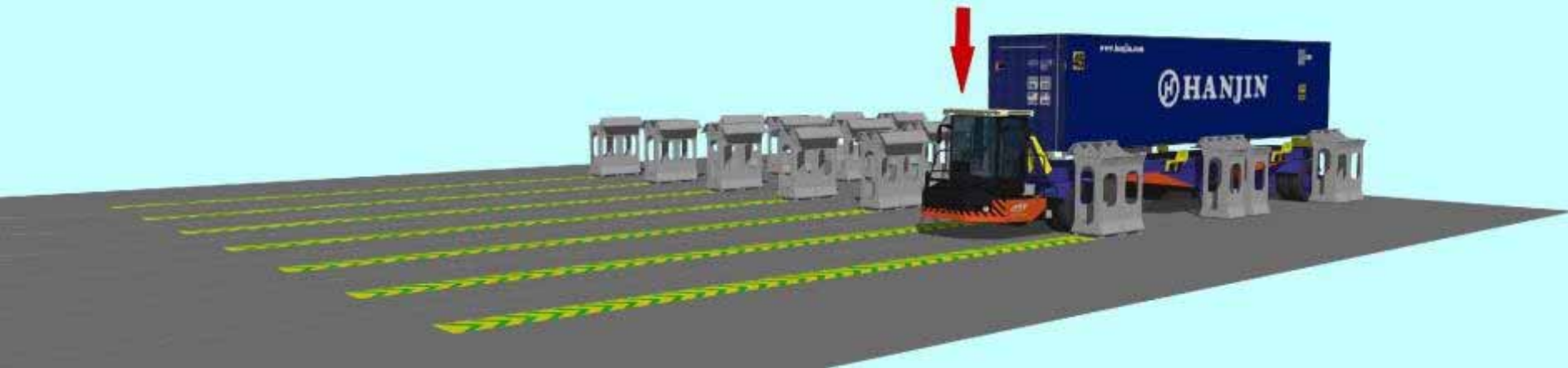


*AT LIFT©*

*Docking Station©*

- ▶ **Special energy saving engine control**
- ▶ **Lower cost support facilities**, needs only tractor trailer workshop
- ▶ **Docking station is a buffer** : Transfer from quay side is **decoupled** from Yard Stacking Crane
- ▶ **Avoids the 'coupled' bottleneck** of Straddle Carriers serving tractor trailers at the ASC Waterside Transfer Area





## *AT LIFT©*

## *Docking Station©*

- ▶ **Avoids grounding of the container** by the STS crane and Straddle Carrier, and the high “G” loads experienced by the containers and the cargo. This reduces risk of damage to cargo.
- ▶ **More Container and cargo friendly** than Straddle Carrier
- ▶ **Requires only basic driving qualifications**
- ▶ **ATT LIFT chassis height ensures better stability and** doesn't have the height and width of a Straddle Carrier





*AT LIFT©*

*Docking Station©*

- ▶ Travel speed is **higher** and **manoeuvrability** is **better** than a Straddle Carrier
- ▶ A fleet of ATT LIFT **multiply** the resources.
- ▶ **Opportunities** : ATT LIFT with Docking Station is a versatile, multipurpose application, that has the potential to be used in fully automatic form as an AIV LIFT.



6 key factors for success

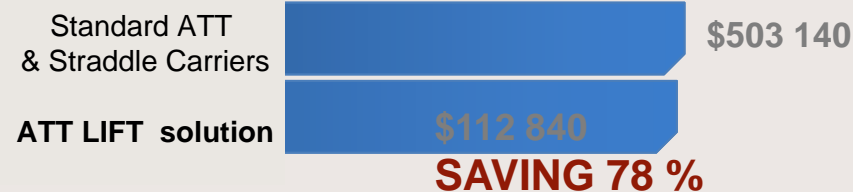
## Labour



## Diesel Fuel



## Tyres





## 6 key factors for success

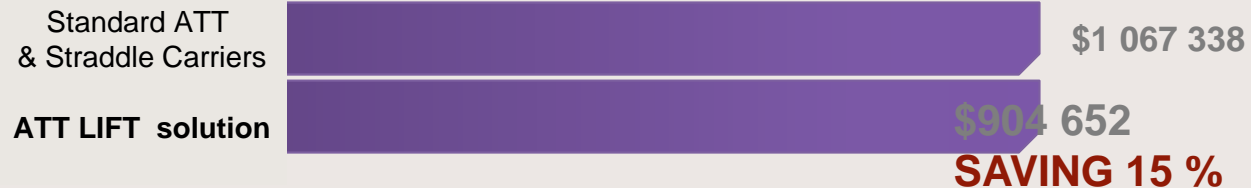
### Maintenance



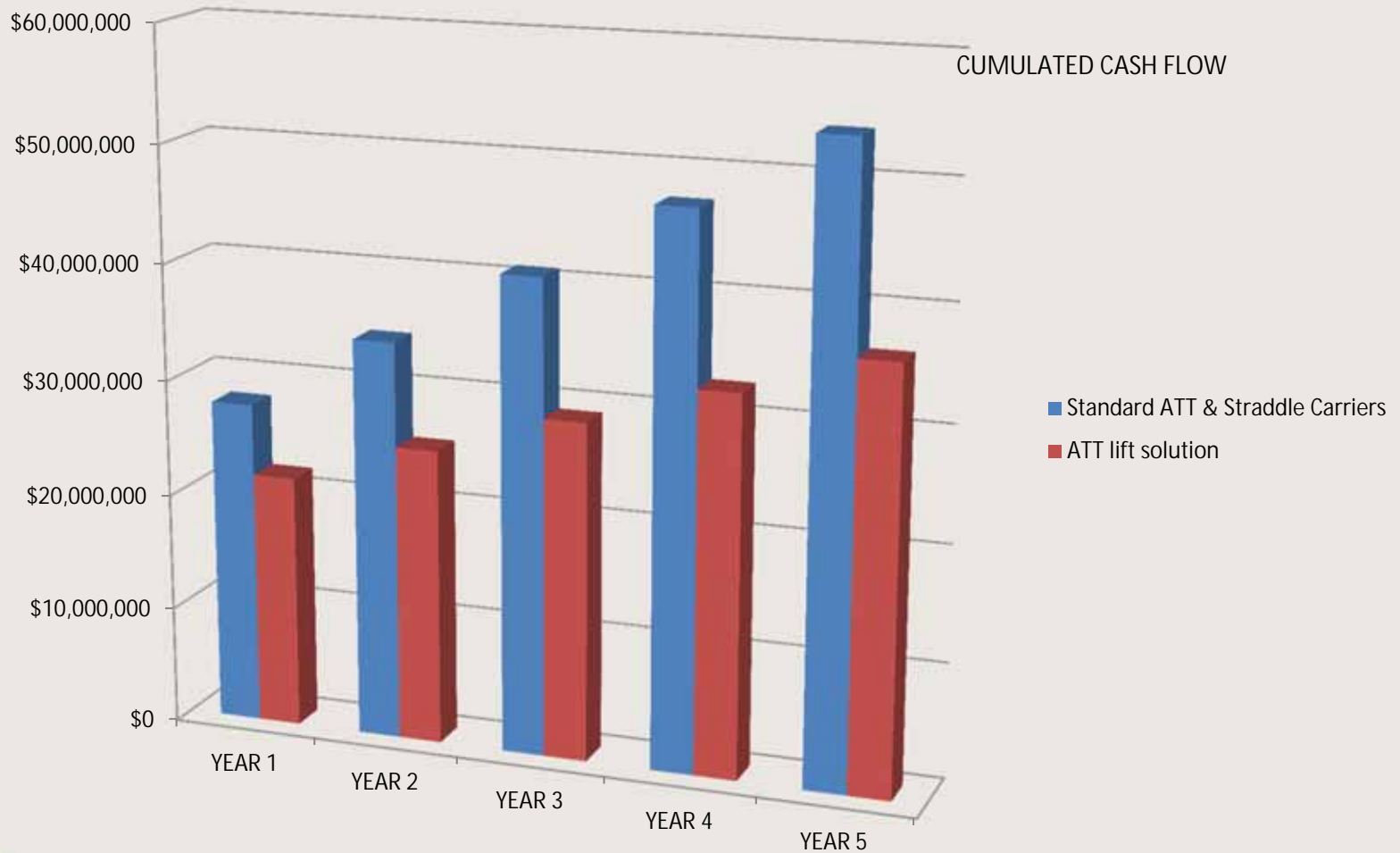
### Insurance



### Interest



# ATT & SHUTTLE CARRIER vs ATT LIFT & DOCKING STATION





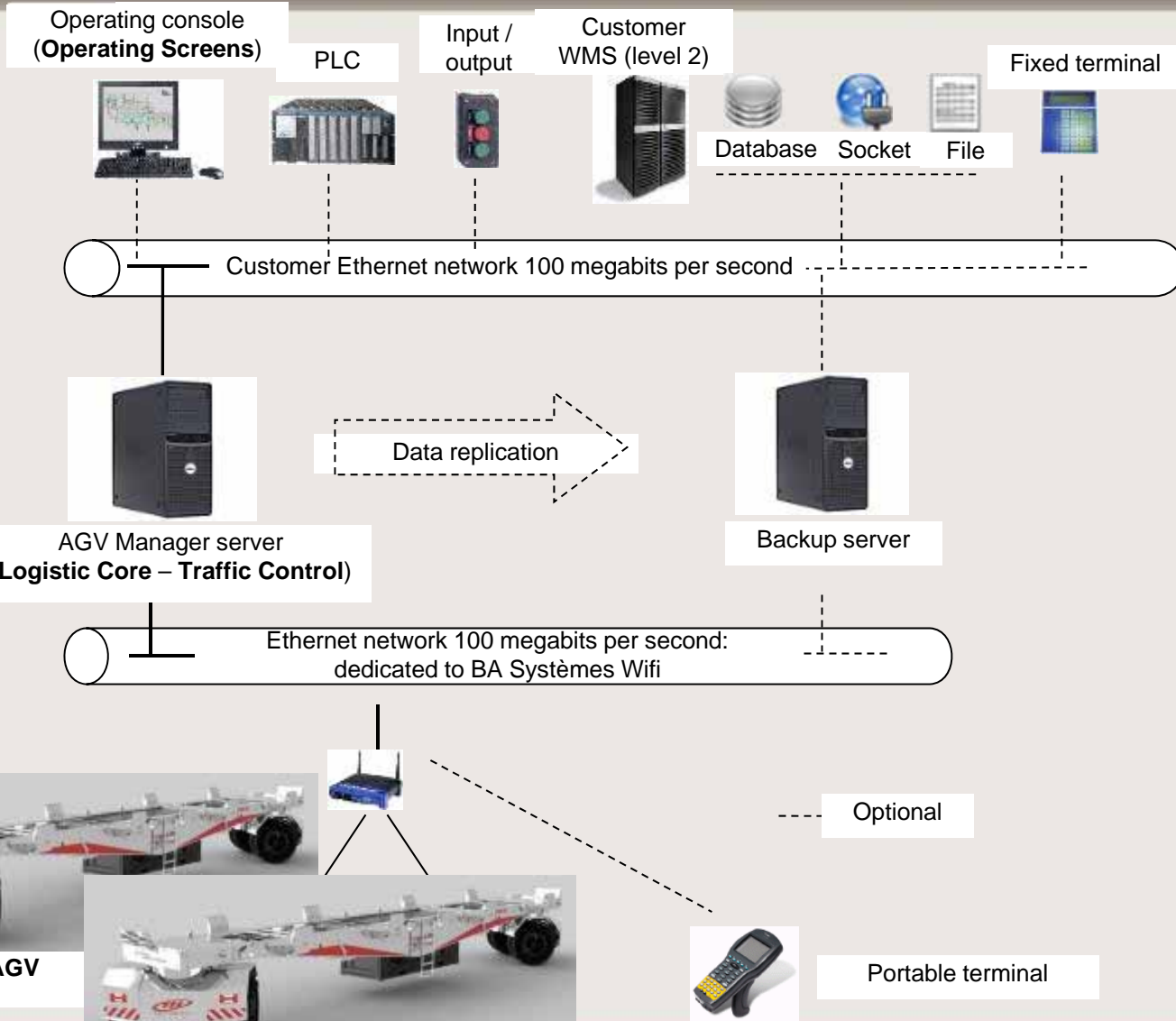
*zero emission & zero noise*  
=  
*automatic terminal*



## Rotterdam Maasvlakte 1 and 2 area









Configuration

## Track Designer



Fichier circuit

## Control Tool



SQL Server

System /  
Simulation

## Logistic Core / Simulateur SPV



UDP  
socket

Traffic Control

UDP  
socket

AGV Control



Operation



Operating Screens

Analyze



Fichier  
magnétoscope

Graphic Display



Fichier mission

Operating Analyzer



Fichier défaut

Availability Analyzer



Paradox



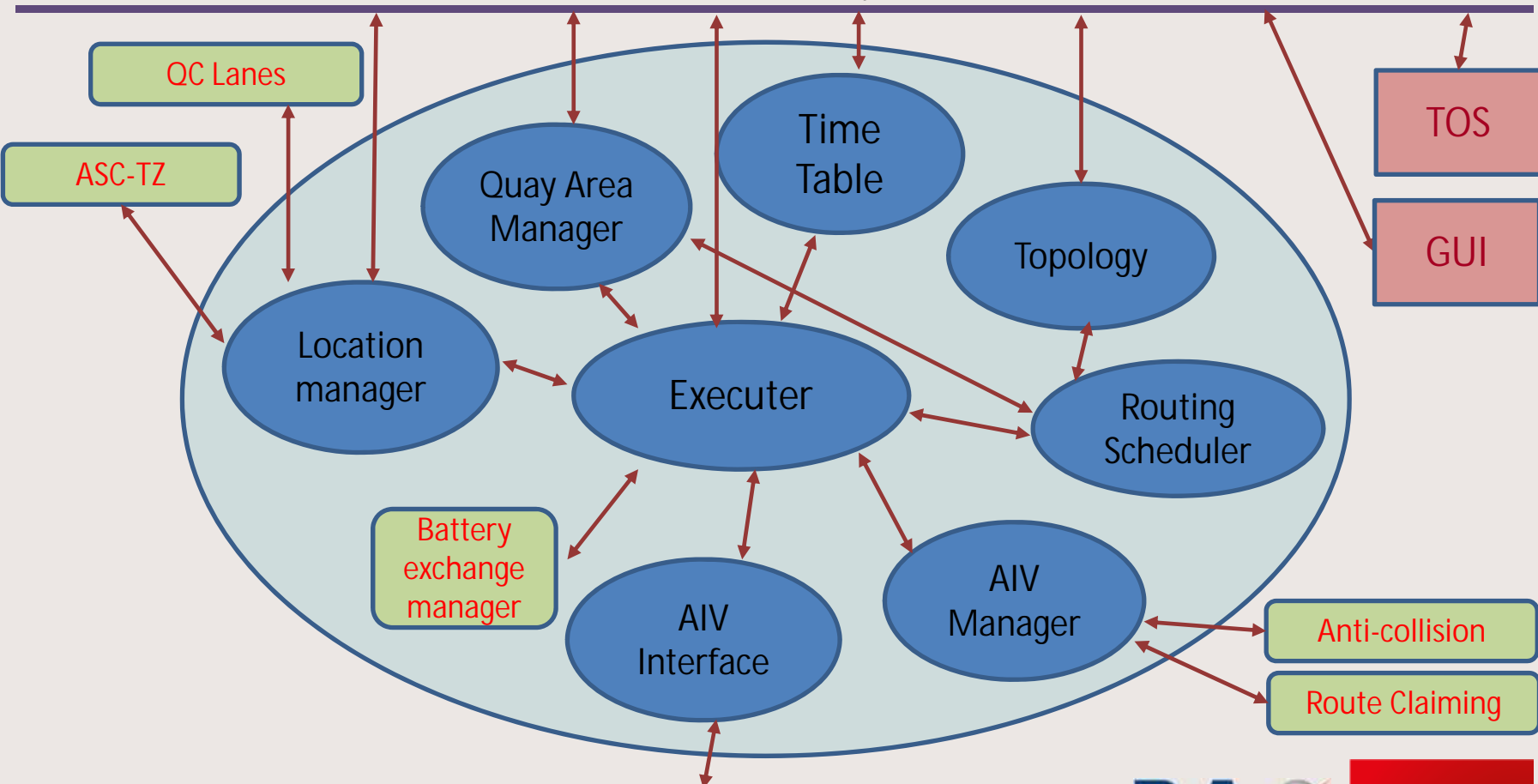


- ✓ The navigation system will be based on available proven technology in the automated container terminal industry.
- ✓ Development in partnership with the CEA (French leading institute for future technologies)
- ✓ Depending on the design the best system will be chosen.
  - For short distance currently wired guidance (docking station)
  - Full terminal will be based on transponders/magnets and DGPS
- ✓ Tests for docking station successful with 20 mm accuracy





## BUS system



Partners:

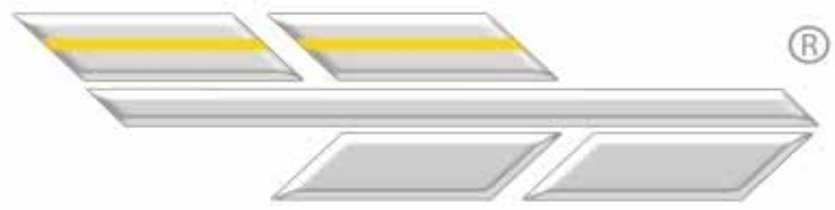






*THANK YOU ! SEE YOU SOON*

*Elvio*



**GAUSSIN**

**MANUGISTIQUE**

*Jakarta 11 & 12 June 2014*

