Congrès belge de la Route
Belgisch Wegencongres

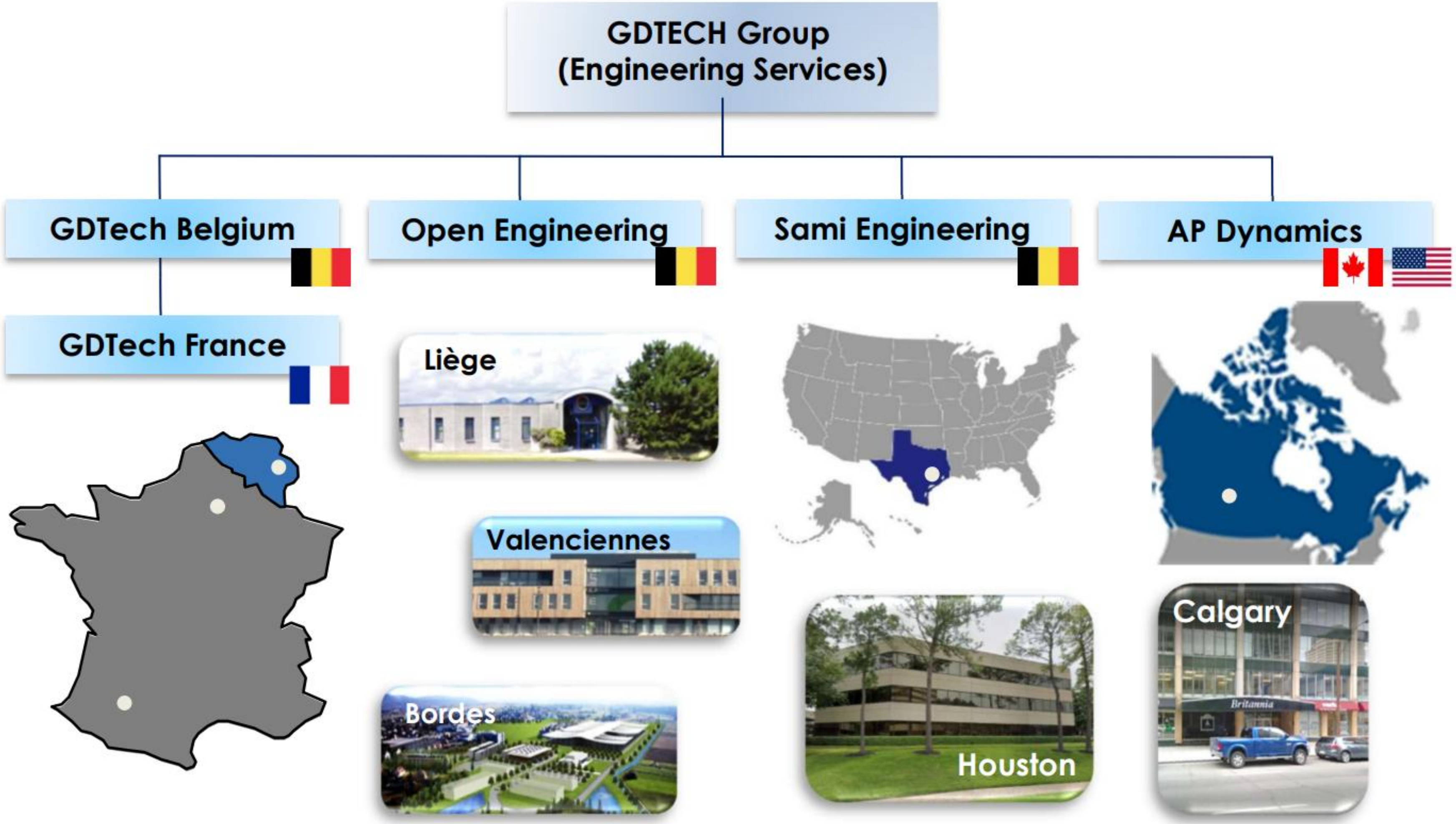
La sécurité des travailleurs et des usagers : de l'étude à la mise en œuvre. Cas pratiques

Joseph MARRA
Chief Business Development Officer

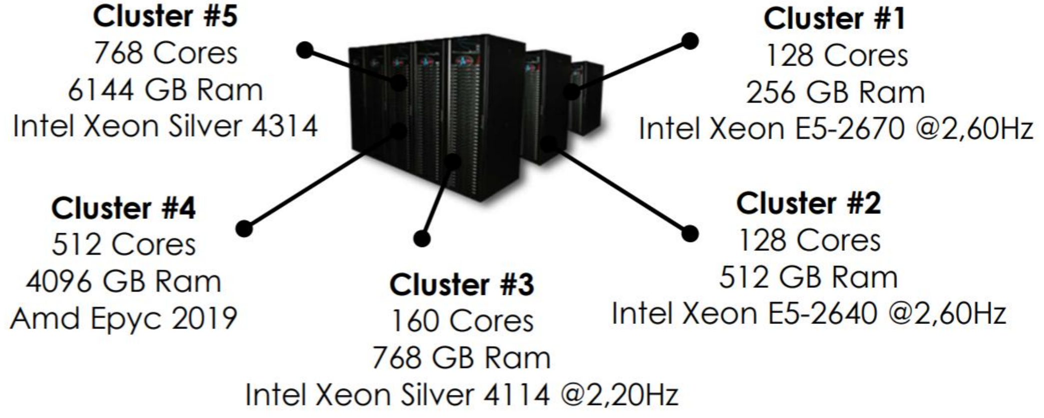
GDTECH

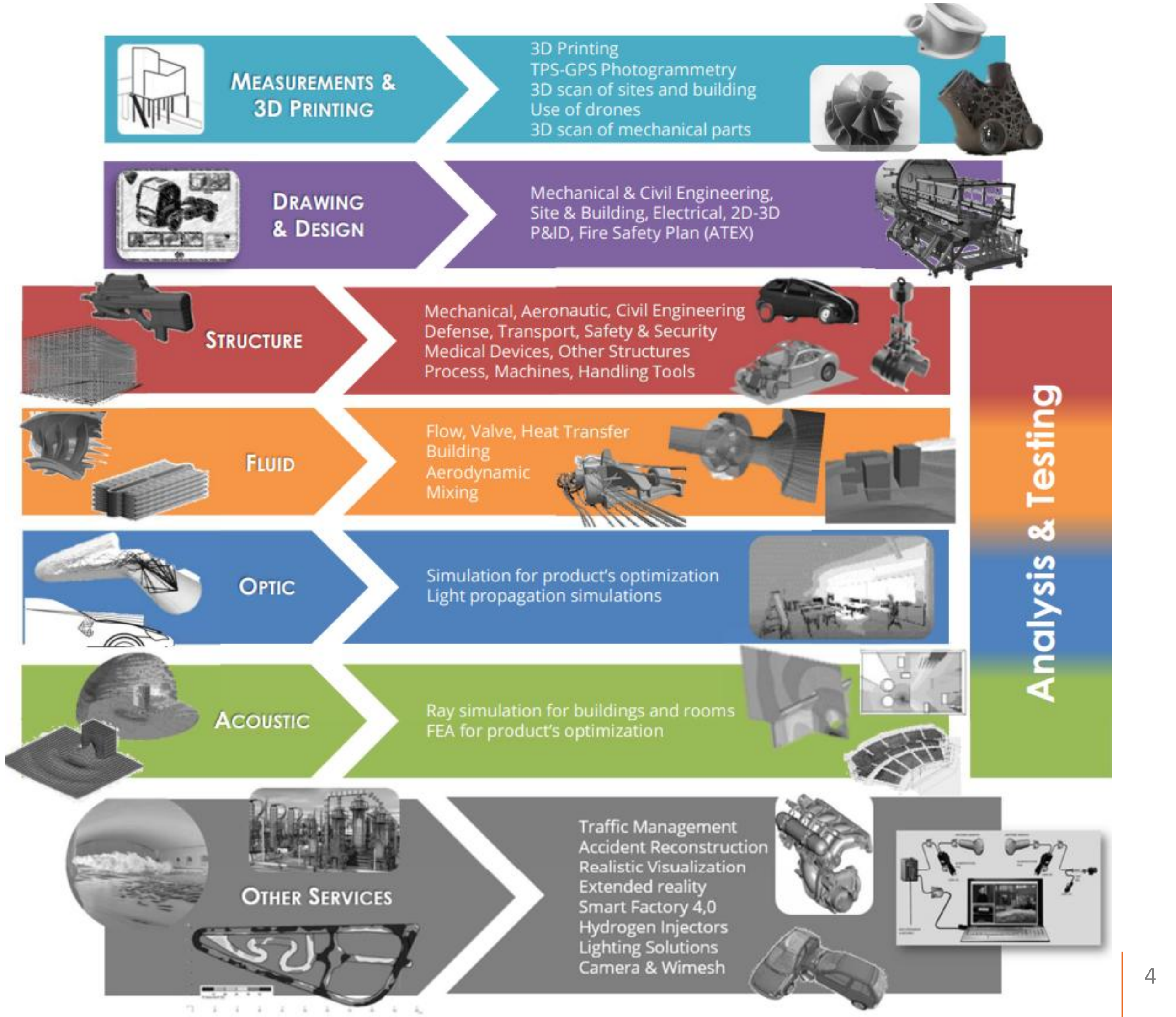
At a glance.

- ENGINEERING OFFICE
- 200 PEOPLE
- 4 COUNTRIES

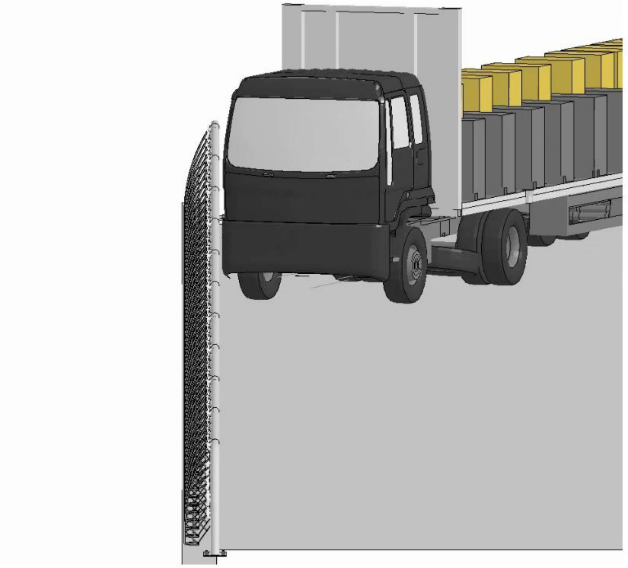


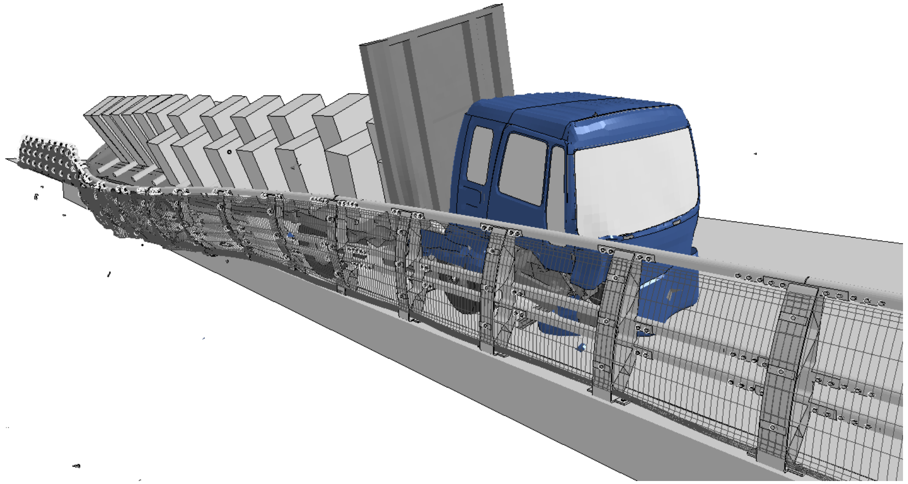
- **ACTIVITIES**

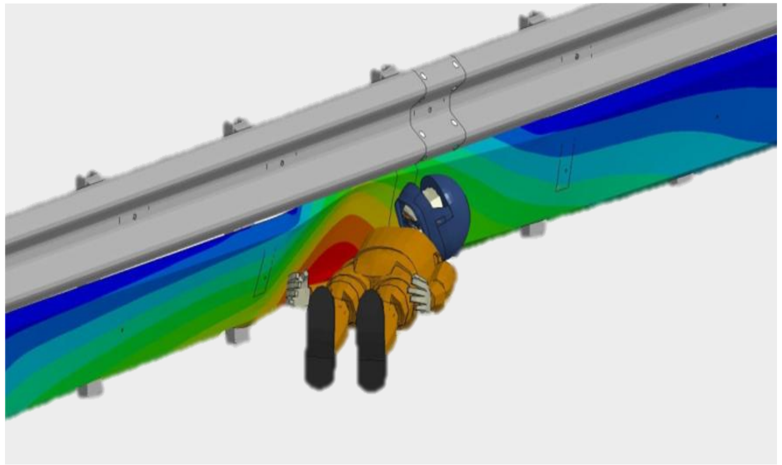

Cluster #5
768 Cores
6144 GB Ram
Intel Xeon Silver 4314
Cluster #1
128 Cores
256 GB Ram
Intel Xeon E5-2670 @2,60Hz
Cluster #4
512 Cores
4096 GB Ram
Amd Epyc 2019
Cluster #3
160 Cores
768 GB Ram
Intel Xeon Silver 4114 @2,20Hz
Cluster #2
128 Cores
512 GB Ram
Intel Xeon E5-2640 @2,60Hz


Measurements & 3D Printing
3D Printing
TPS-GPS Photogrammetry
3D scan of sites and building
Use of drones
3D scan of mechanical parts
Drawing & Design
Mechanical & Civil Engineering,
Site & Building, Electrical, 2D-3D
P&ID, Fire Safety Plan (ATEX)
Structure
Mechanical, Aeronautic, Civil Engineering
Defense, Transport, Safety & Security
Medical Devices, Other Structures
Process, Machines, Handling Tools
Fluid
Flow, Valve, Heat Transfer
Building
Aerodynamic
Mixing
Optic
Simulation for product's optimization
Light propagation simulations
Acoustic
Ray simulation for buildings and rooms
FEA for product's optimization
Other Services
Traffic Management
Accident Reconstruction
Realistic Visualization
Extended reality
Smart Factory 4,0
Hydrogen Injectors
Lighting Solutions
Camera & Wimesh
Analysis & Testing

- VIRTUAL ANALYSIS (CRASH – SAFETY BARRIERS)

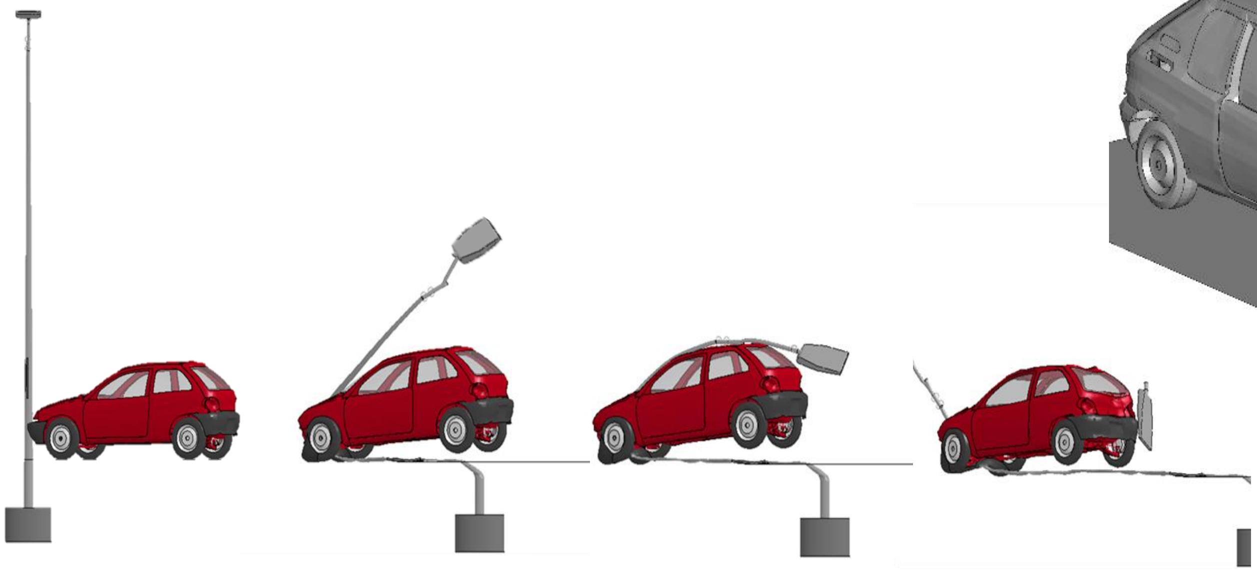


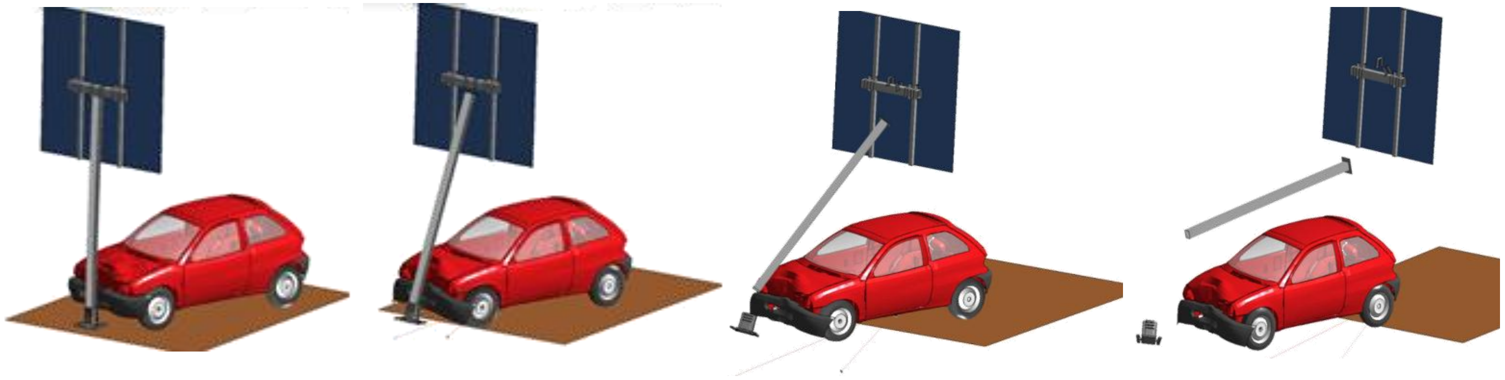


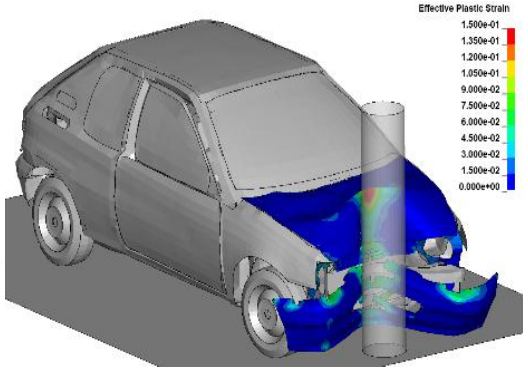


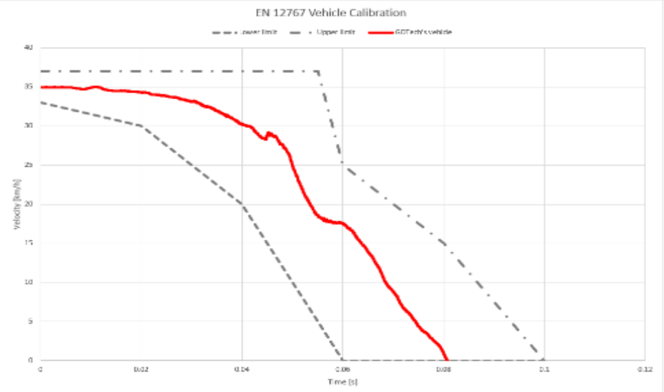
Ansys / LS-DYNA

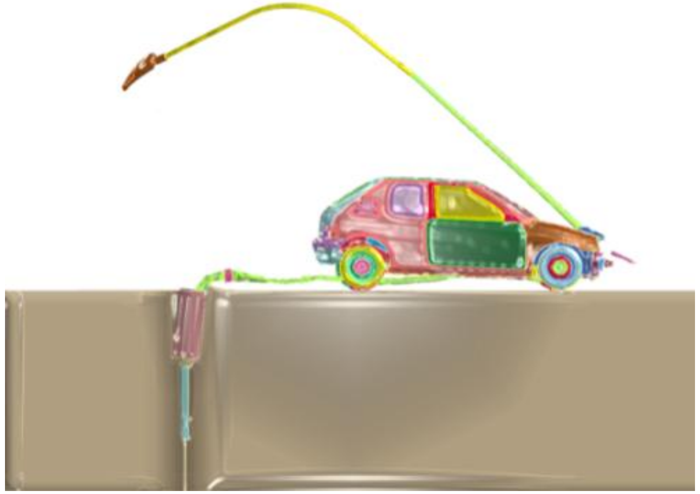
- VIRTUAL ANALYSIS (CRASH – SAFETY POLES)



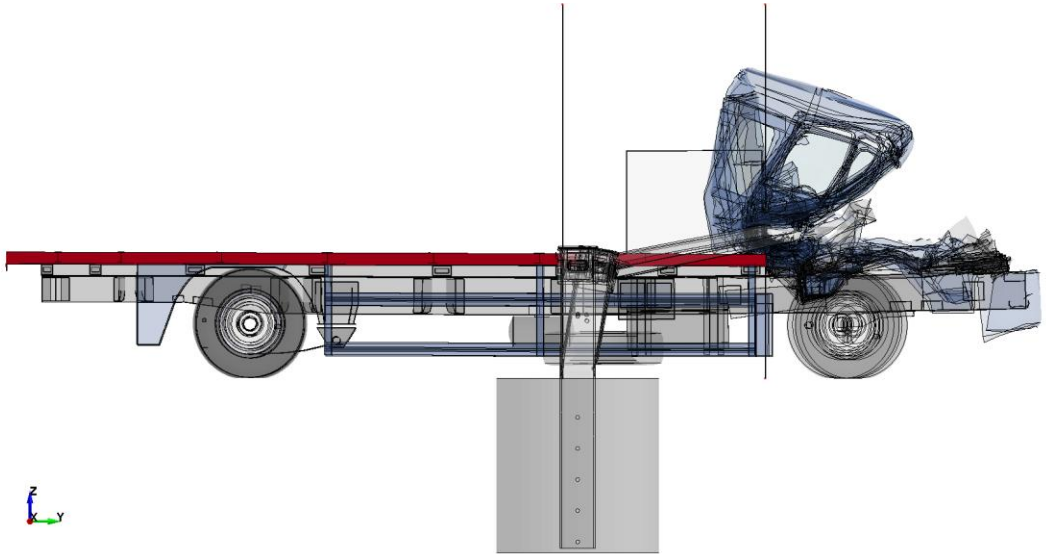






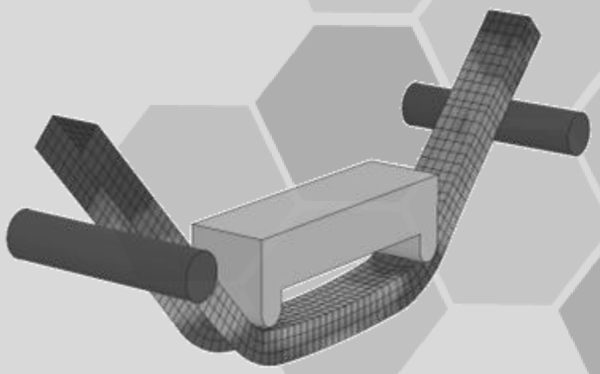


- **Virtual analysis (crash – anti-intrusion/HVM)**



The role of simulations

Main activities with a focus on the adaptation to site conditions



Before to be placed on the market

New product

Development

ITT crash test

FPC

CE

Modified product

Product CE

ITT simulation

CE

EN 1317 rules

Before installation on site

On site

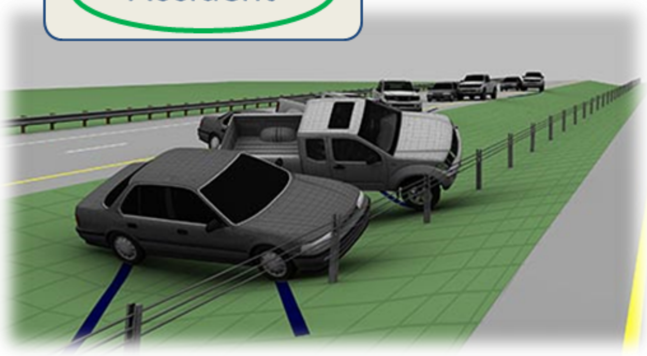
Adaptation to site conditions:

- *Soil modification*
- *Max speed limit*
- *Max CL in curve*
- *Bridge pile*
- *Gantry*
- *Bridge safety barriers*
- *Transitions*
- *Curve influence*
- *Motorcyclist protection*
- *Concrete safety barriers*
- …

National / Regional rules

After an accident

Accident



Insurance / Court

1. New Product Development

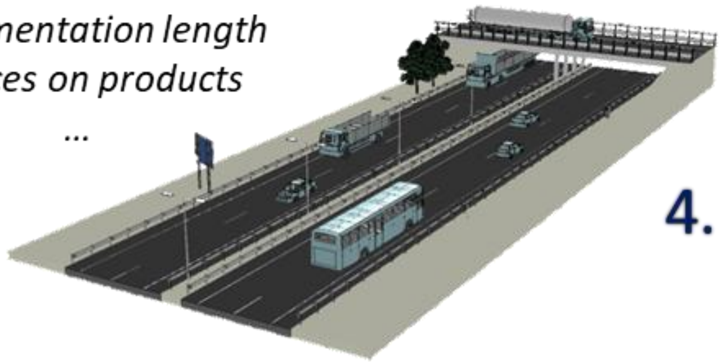
Safety barriers
Crash cushions
Terminals, Transitions
…

2. Certification

ITT (Crash test / Simulation)
CE marking

3. Adaptation to Site Conditions

Implementation length
Advices on products
…



4. Accident Reconstruction

Crash scenarios
Influence of alternatives
…

Congrès belge de la Route
Belgisch Wegencongres

Case study 1

Existing product assessment

Centre de recherches routières
Ensemble pour des routes durables

Wallonie mobilité infrastructures SPW

Agentschap Wegen & Verkeer

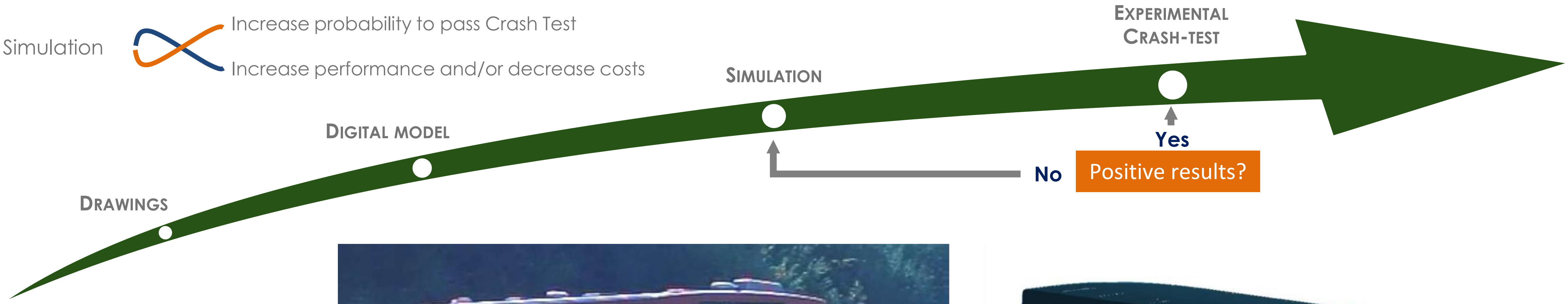
Bruxelles Mobilité
Service public régional de Bruxelles

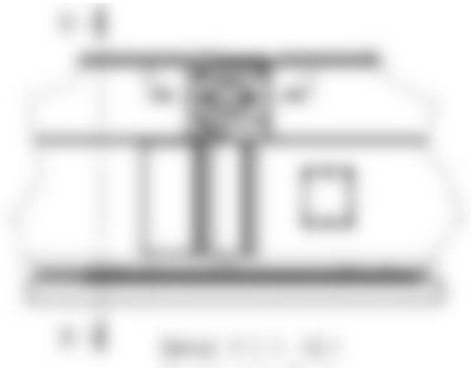
Quality2Build

mobiwall vlawebo

Une organisation de
ABR | Association Belge de la Route

Simulation
- Increase probability to pass Crash Test
- Increase performance and/or decrease costs

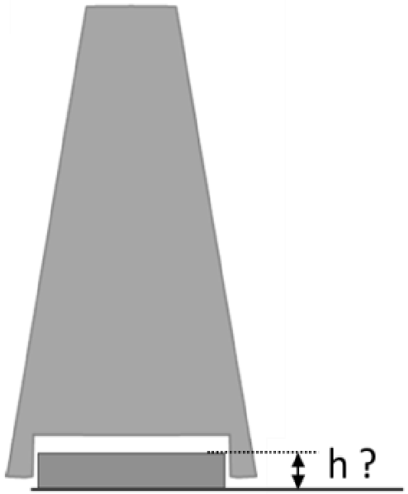


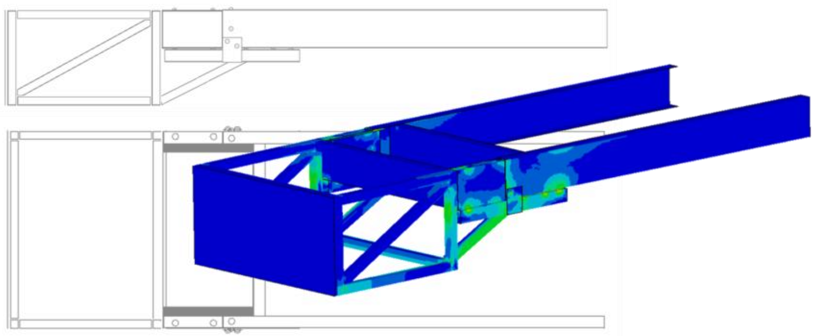


Case study 2

Certification of a modified product

- Materials
- Profile
- Element length
- Bolted joint
- Curve
- Basement heights
- Different standard
- Mounting system for TMA

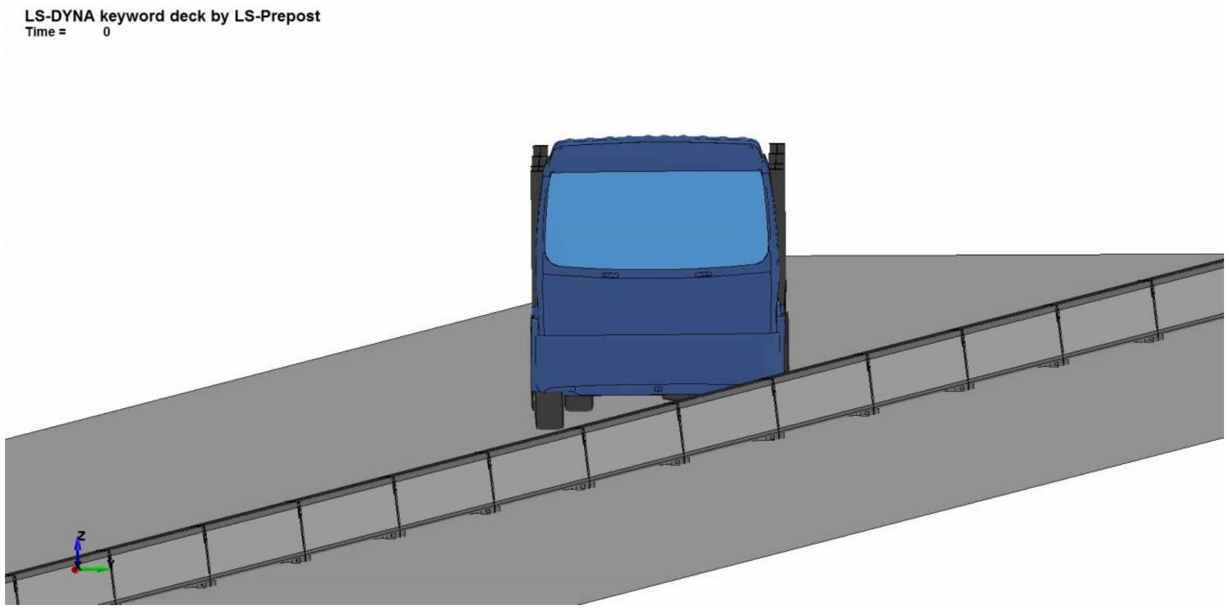




Case study 3

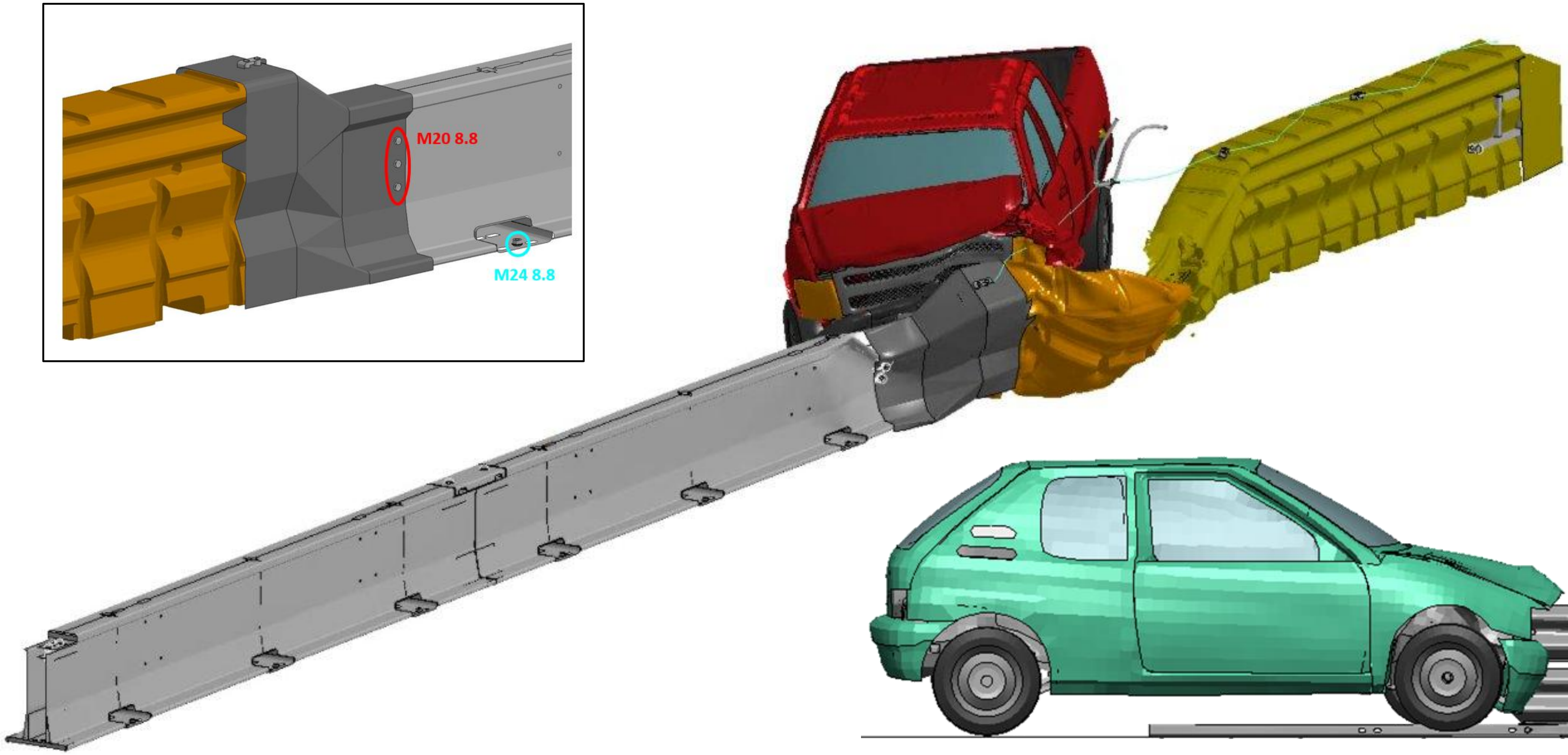
Adaptation to Site Conditions

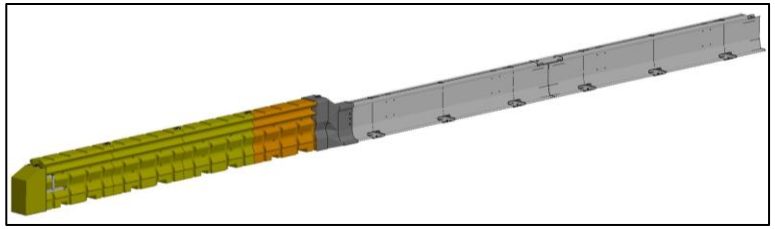
- **CHANGE OF FRICTION COEFFICIENT OF A WORKSITE BARRIER**

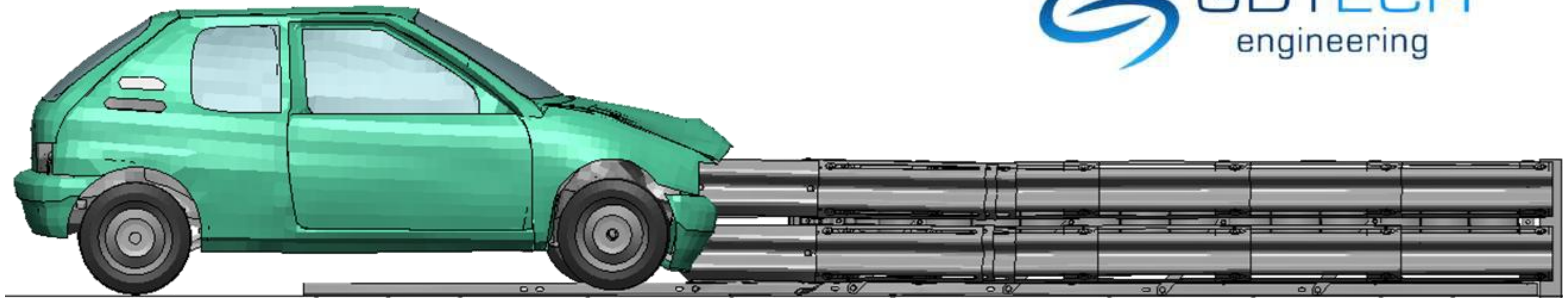


GDTECH engineering

- TRANSITION BETWEEN A TEMPORARY BARRIER AND THE END TERMINAL, OR BY EXTENSION, THE BEHAVIOR OF THE END TERMINAL WHEN INSTALLED ON A TEMPORARY BARRIER

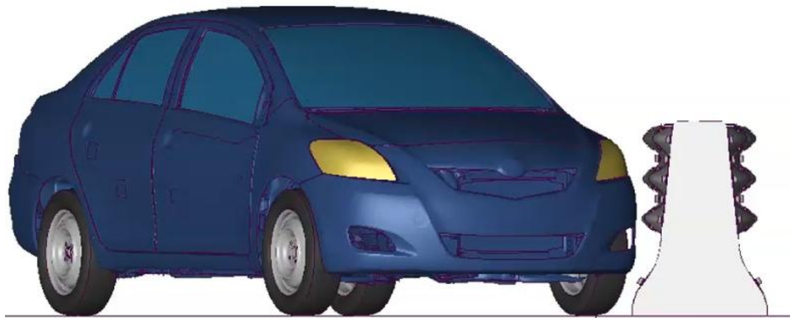


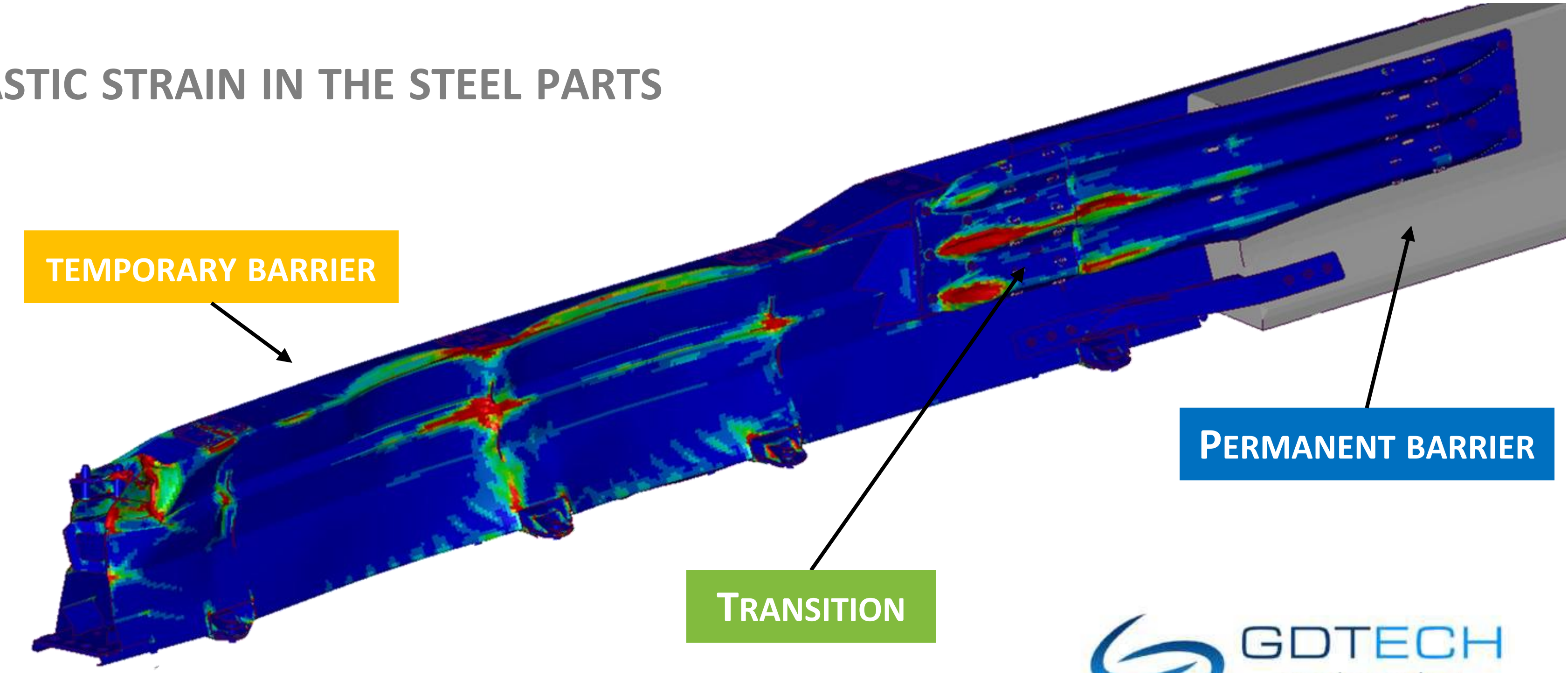


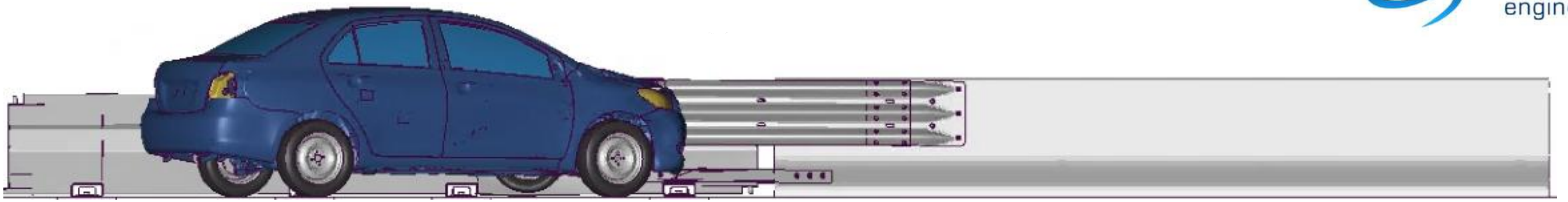


GDTECH engineering

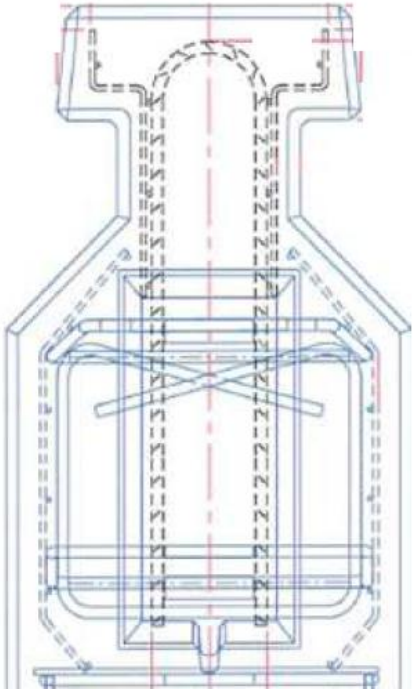
- DISTRIBUTION OF EFFECTIVE PLASTIC STRAIN IN THE STEEL PARTS



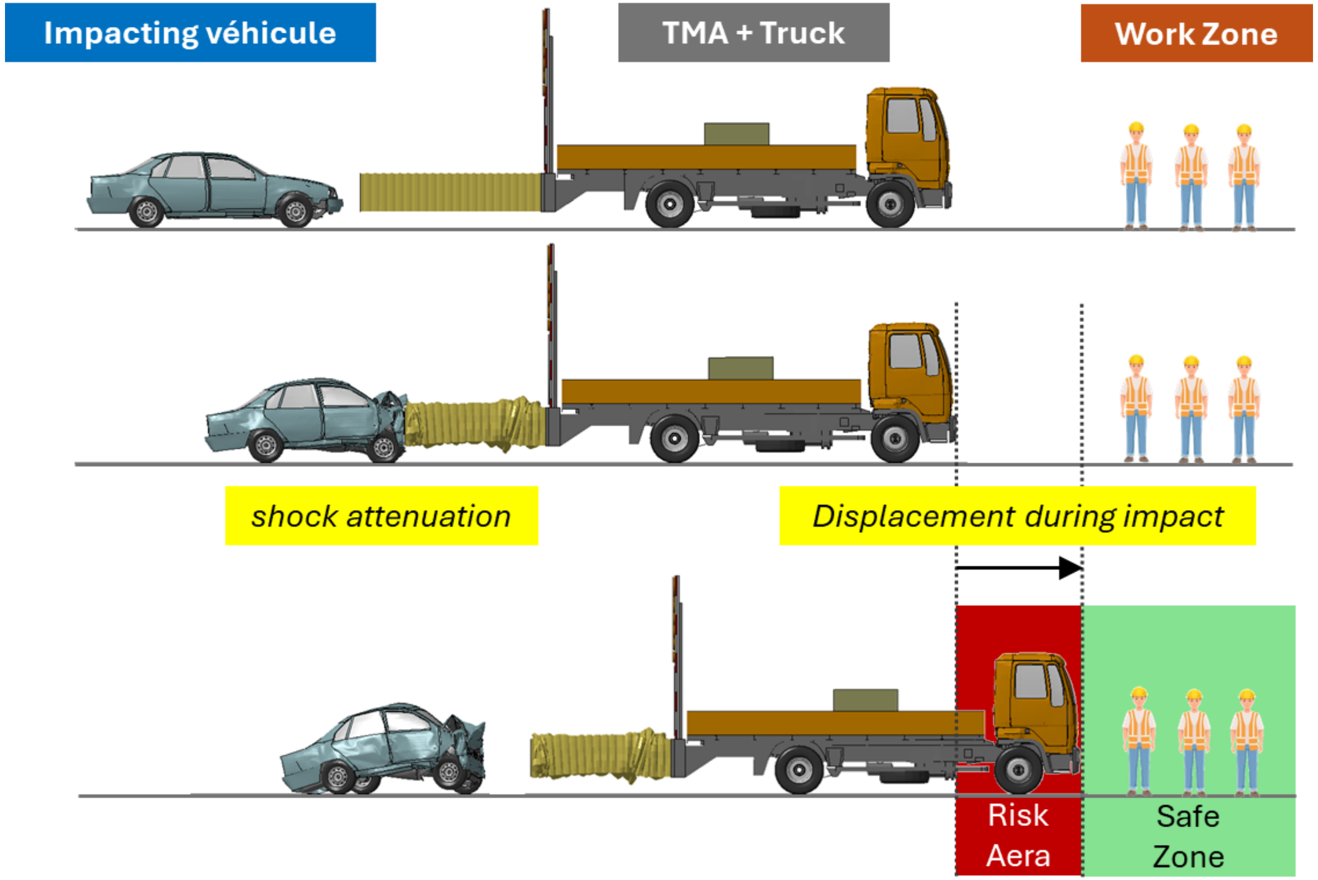


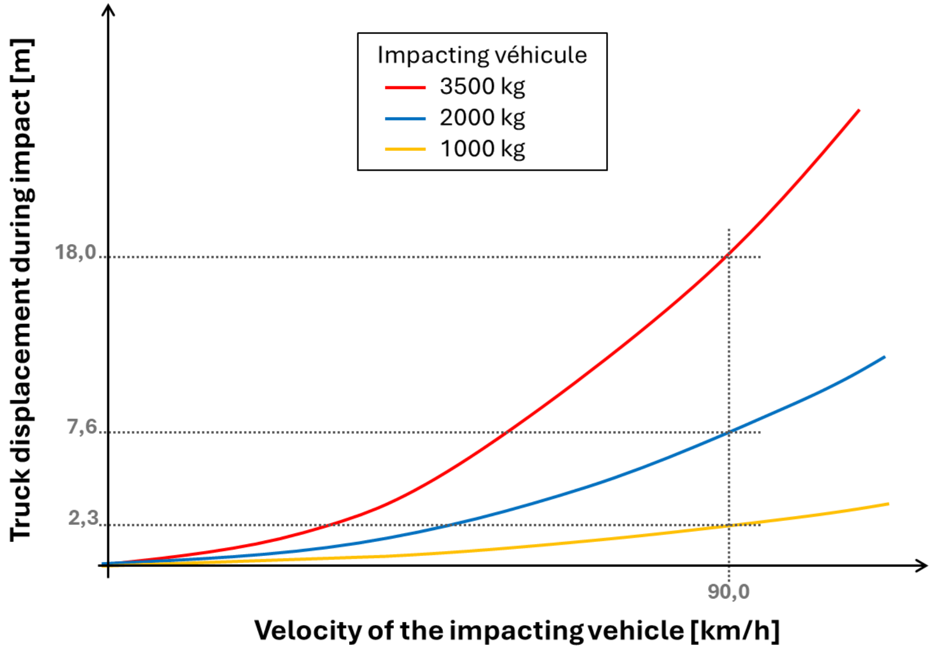


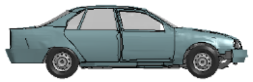
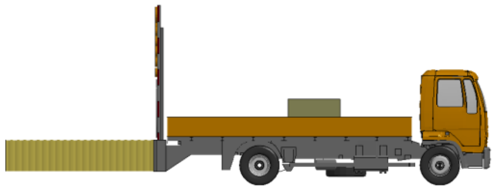
- **What about damaged systems and the level of damage?**
- **When does it become dangerous?**



- **Operating distance of the TMA depending on the carrier trucks (mass) and the impacting vehicle**

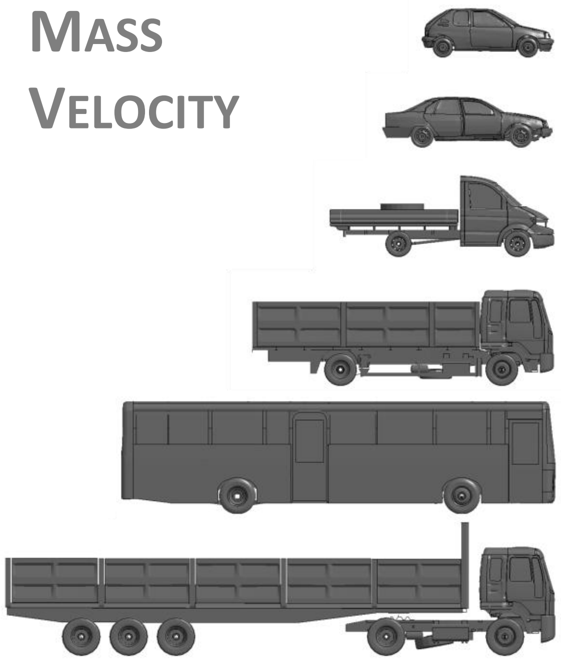




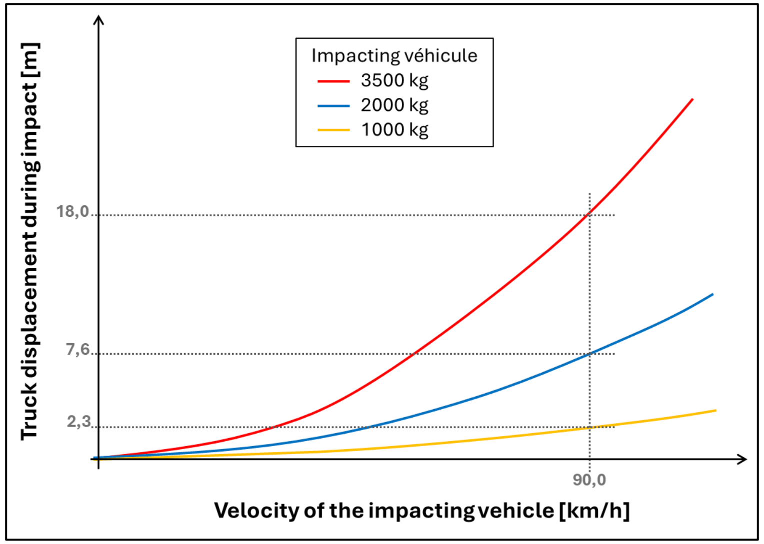

Impacting véhicule → TMA + Truck → Work Zone

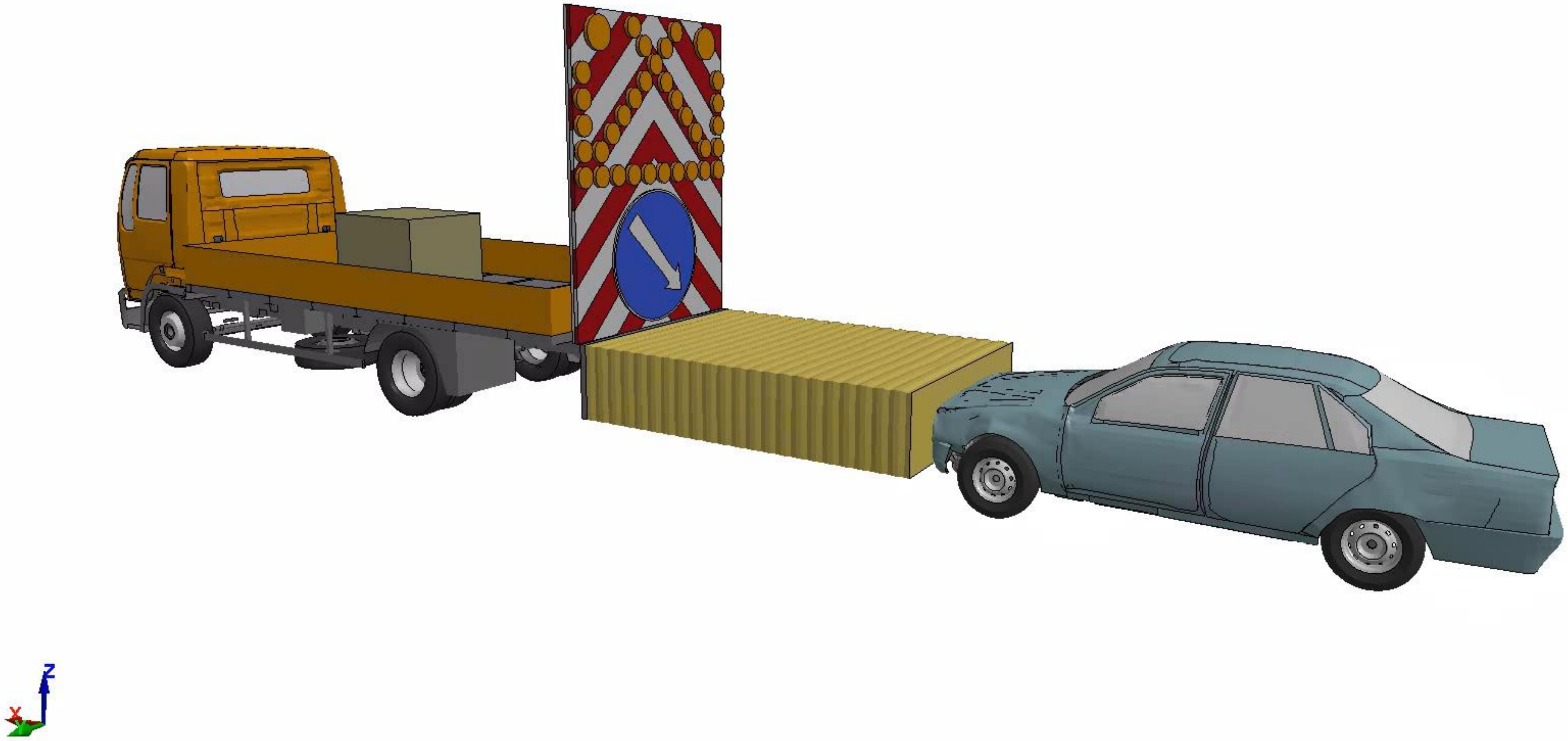
- MASS
- VELOCITY



- MASS

- SAFE ZONE





- **Versatile Tool Across the Lifecycle**
  Numerical simulations support new product development, certification of modified systems, and adaptation to site-specific conditions.
- **Efficiency and Cost-Effectiveness**
  Simulations reduce the need for extensive physical testing, speeding up development and lowering costs.
- **Growing Role in Standards**
  EN 1317, EN 12767, and EN 16303 increasingly recognize and integrate numerical simulation in conformity assessments.
- **Continuous Technical Advancements**
  Simulation techniques are becoming more accurate and robust, better reflecting real-world behavior.
- **Enabling Safer, Faster Innovation**
  Enhanced simulation capabilities help manufacturers and authorities deliver safer road equipment more quickly and economically.

Congrès belge de la Route
Belgisch Wegencongres

Thank you!

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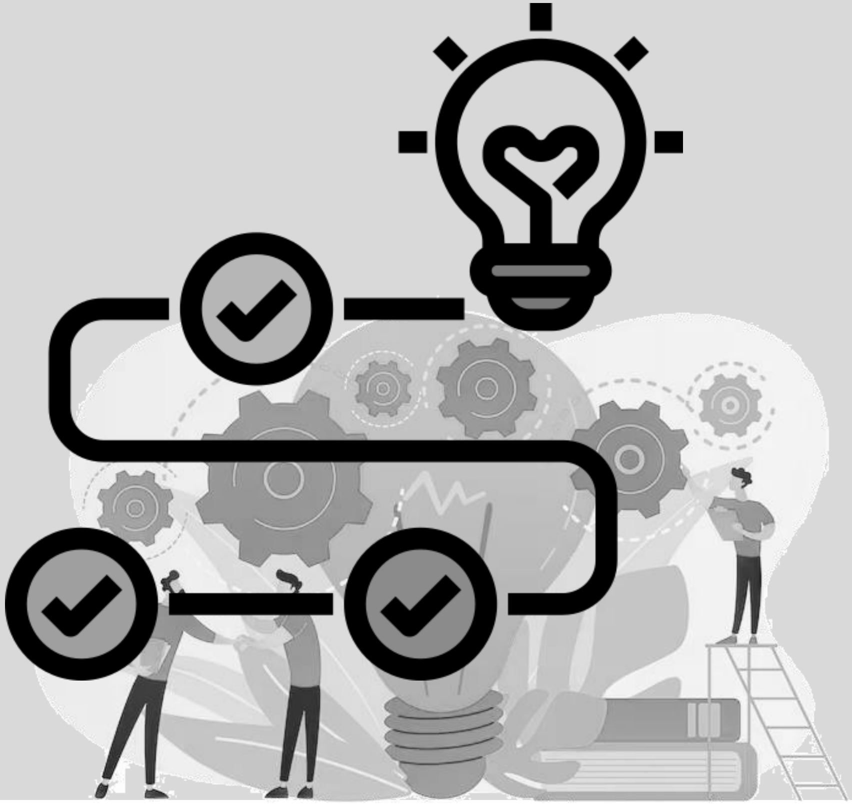

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AGENTSCHAP WEGEN & VERKEER

BRUXELLES MOBILITÉ
SERVICE PUBLIC RÉGIONAL DE BRUXELLES

Quality2Build

BENOR

mobiwall vlawebo

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