Company Overview

ESTECO is an independent software provider, highly specialized in numerical optimization and simulation data management.

ESTECO TECHNOLOGIES

Our technology inspires companies to
create, capture and cultivate
engineering knowledge.

FORD MOTOR COMPANY

" We see ESTECO more as a partner than a software vendor; they are always ready and willing to help us advance our methods and become more proficient in the use of design optimization techniques.

Currently we are introducing Uncertainty Quantification and Reliability into our modeFRONTIER studies and two ESTECO engineers have gone through formal DFSS training in order to better support us in this process. "

MARIO FELICE, MANAGER
Global Powertrain NVH & Systems CAE

Our values

INNOVATIVE
Our development is at the forefront of technology

FLEXIBLE
We respond quickly to customers' demand

RELIABLE
Continuous development and on-time delivery

INDEPENDENT
We integrate with any software

Our people

Our staff is our strength

100+

professionals

96%

with a university degree

16%

with a PhD

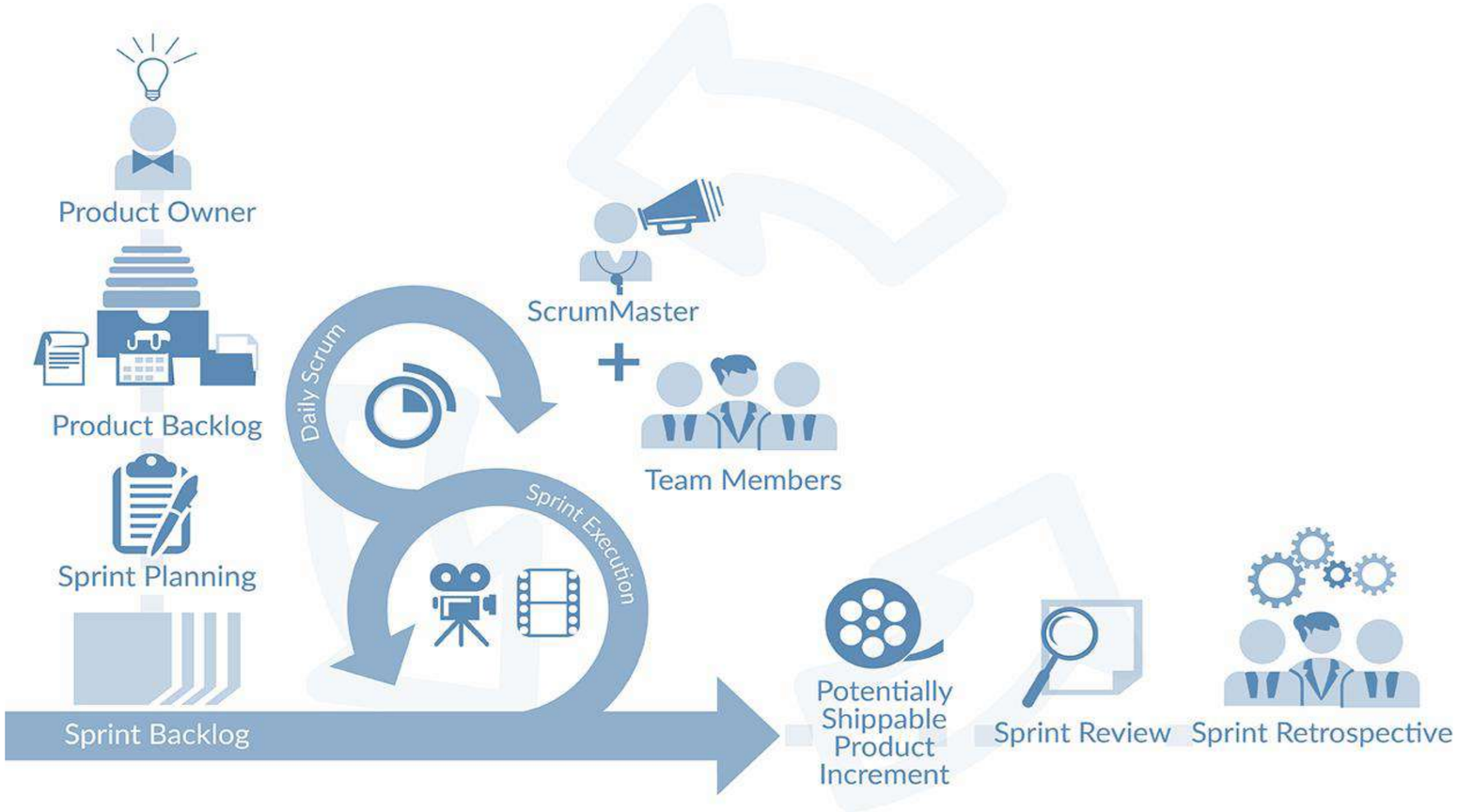
22%

women

Our Philosophy

" Continuous Development Will Change Organizations as Much as Agile Did "

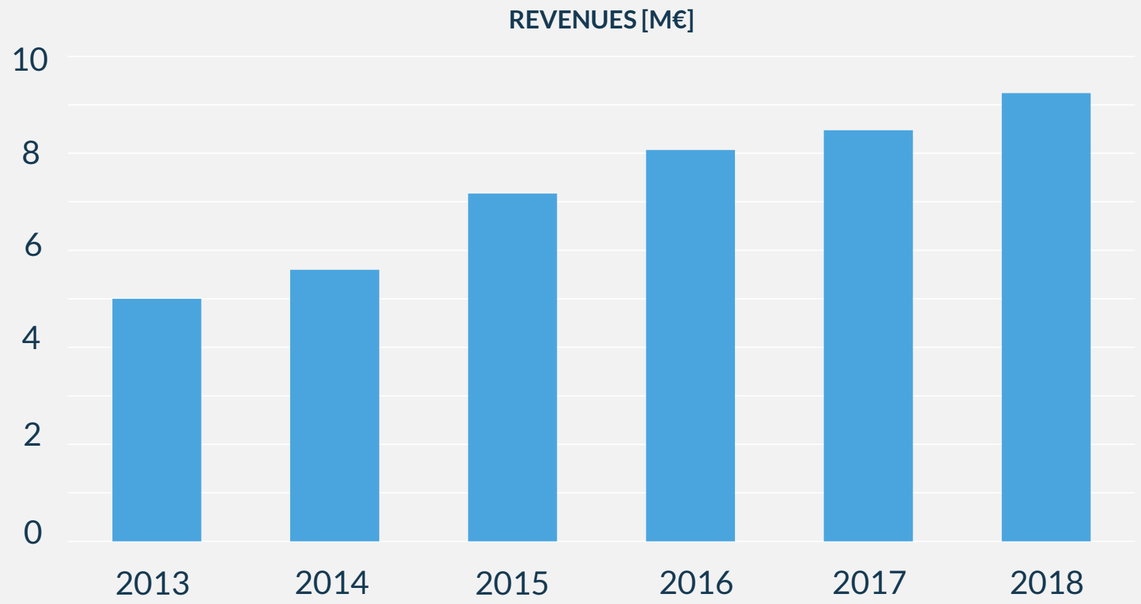
HARWARD BUSINESS REVIEW
May 04, 2018

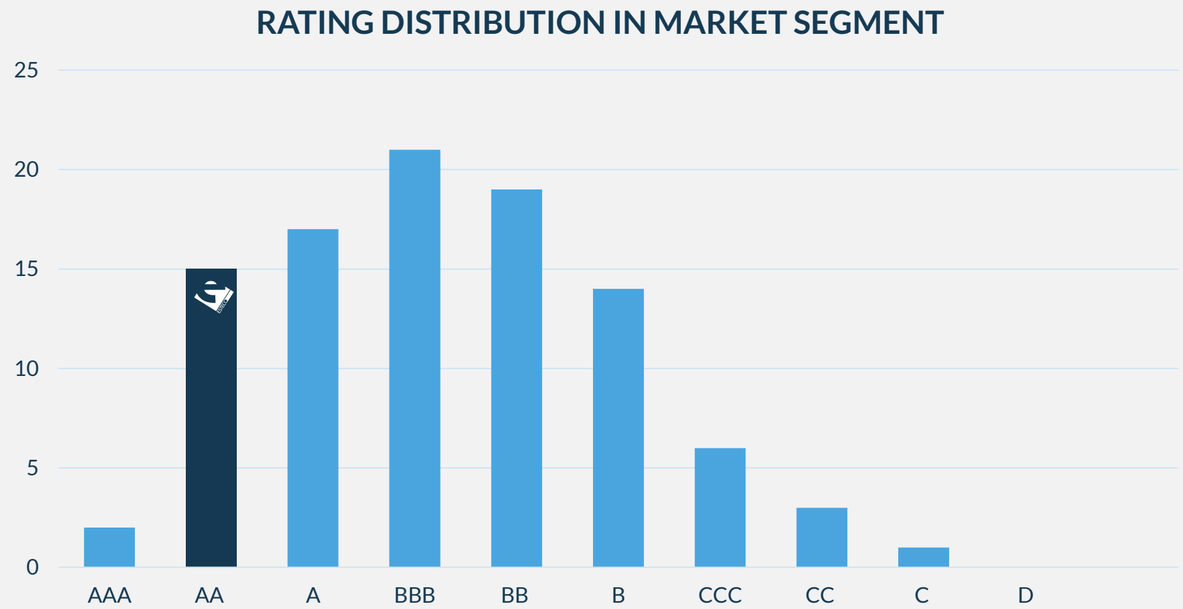


Our stable growth

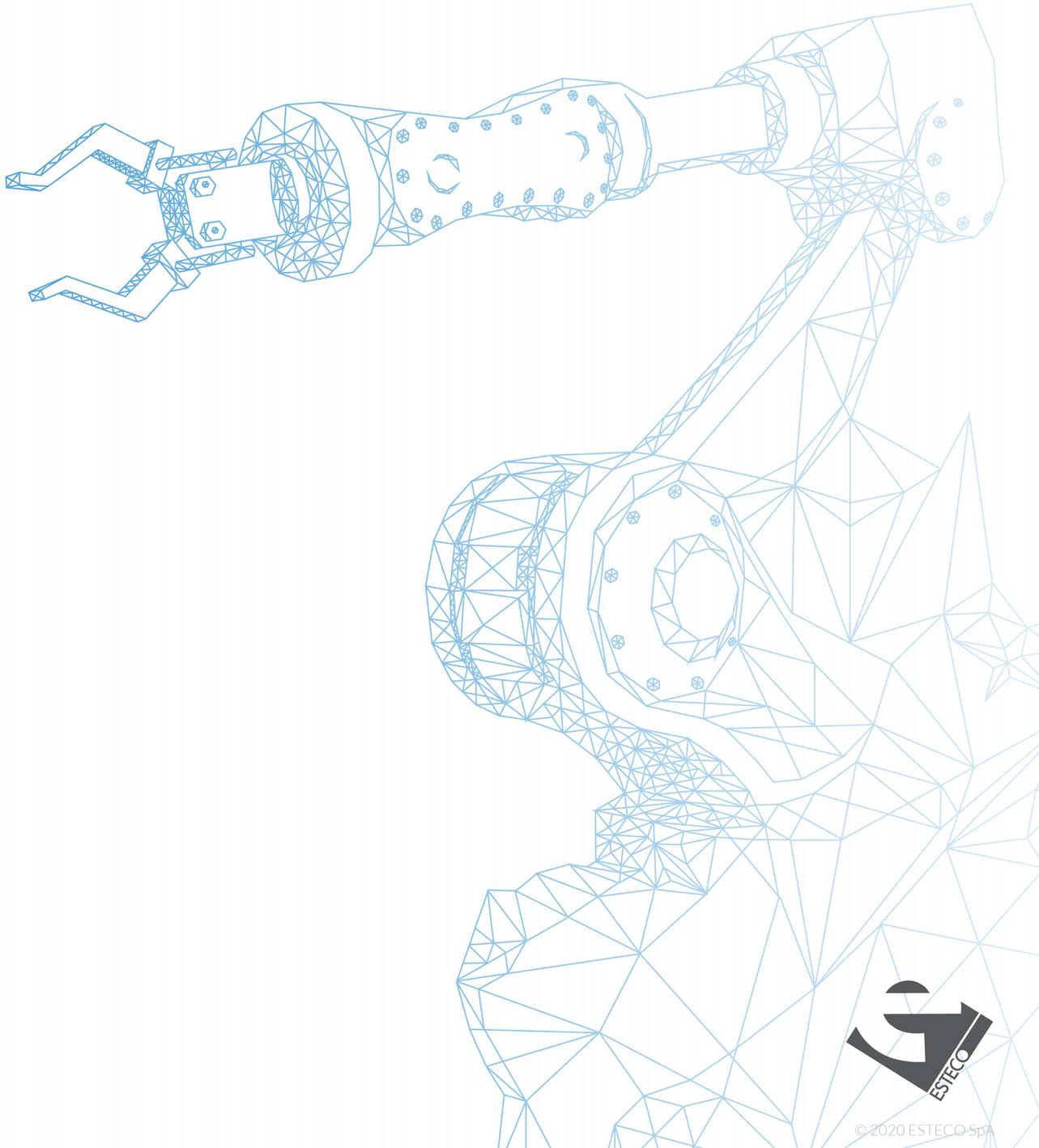
	Revenue [k€]	Default probability	Confidence	Rating
2014	5598	0,13%	100%	AA
2015	7170	0,08%	100%	AAA
2016	8072	0,09%	100%	AA
2017	8477	0,09%	100%	AA
2018	9241	0,11%	100%	AA

modefinance





We provide modularity, ease of use, standardization and innovation within the engineering design process.

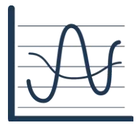


ESTECO Technologies

Integration and
Process Automation

Multidisciplinary
Design Optimization

Engineering Data
Intelligence



Robust Design and
Reliability

Distributed
Execution

Simulation Data
Management

Our products

modeFRONTIER

The comprehensive solution for process automation and optimization in the engineering design process

VOLTA

The collaborative web platform for Simulation Process and Data Management (SPDM) and design optimization

modeFRONTIER

Find the optimal design

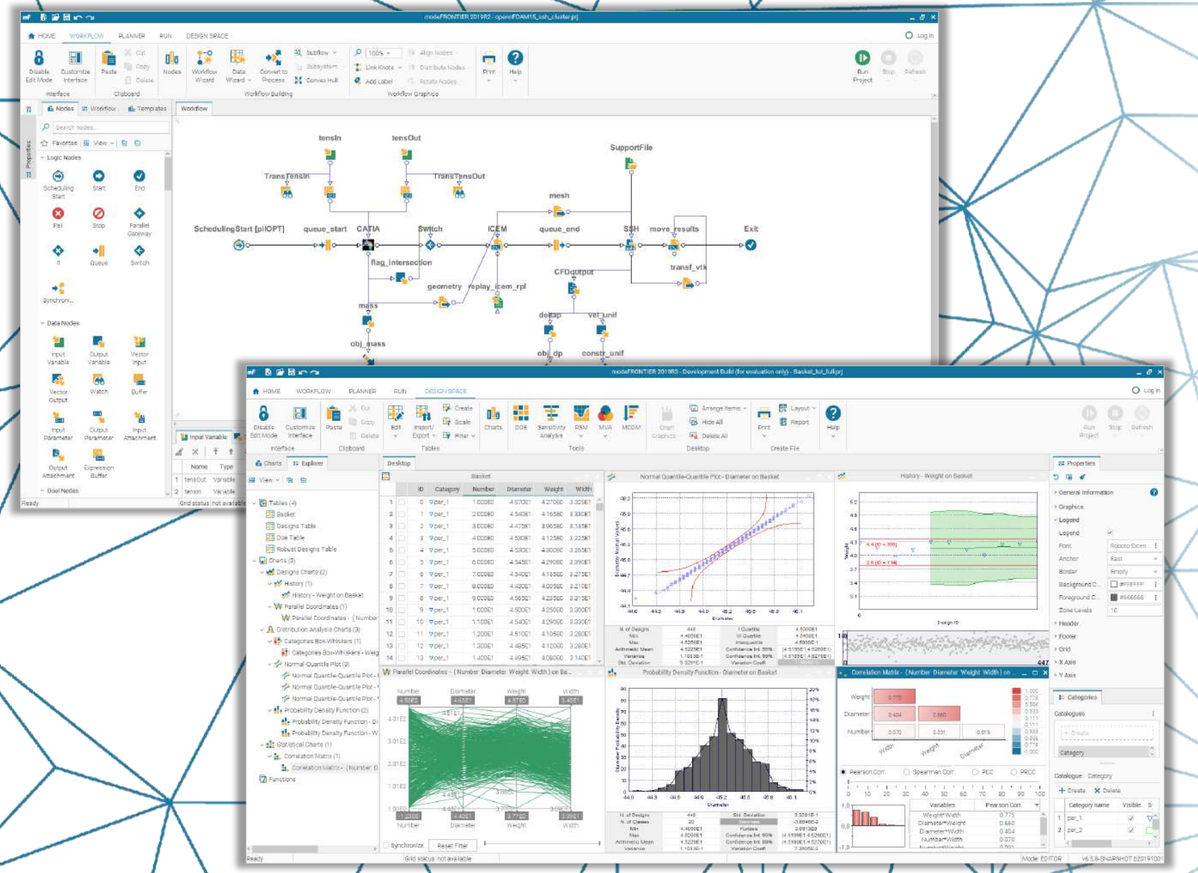
Handle your design parameters and balance conflicting objectives

Maximize IT resources

Exploit all computational resources and engineering solvers

Deliver results on time

Accelerate the engineering process and run multiple simulations



VOLTA

Make simulation data accessible

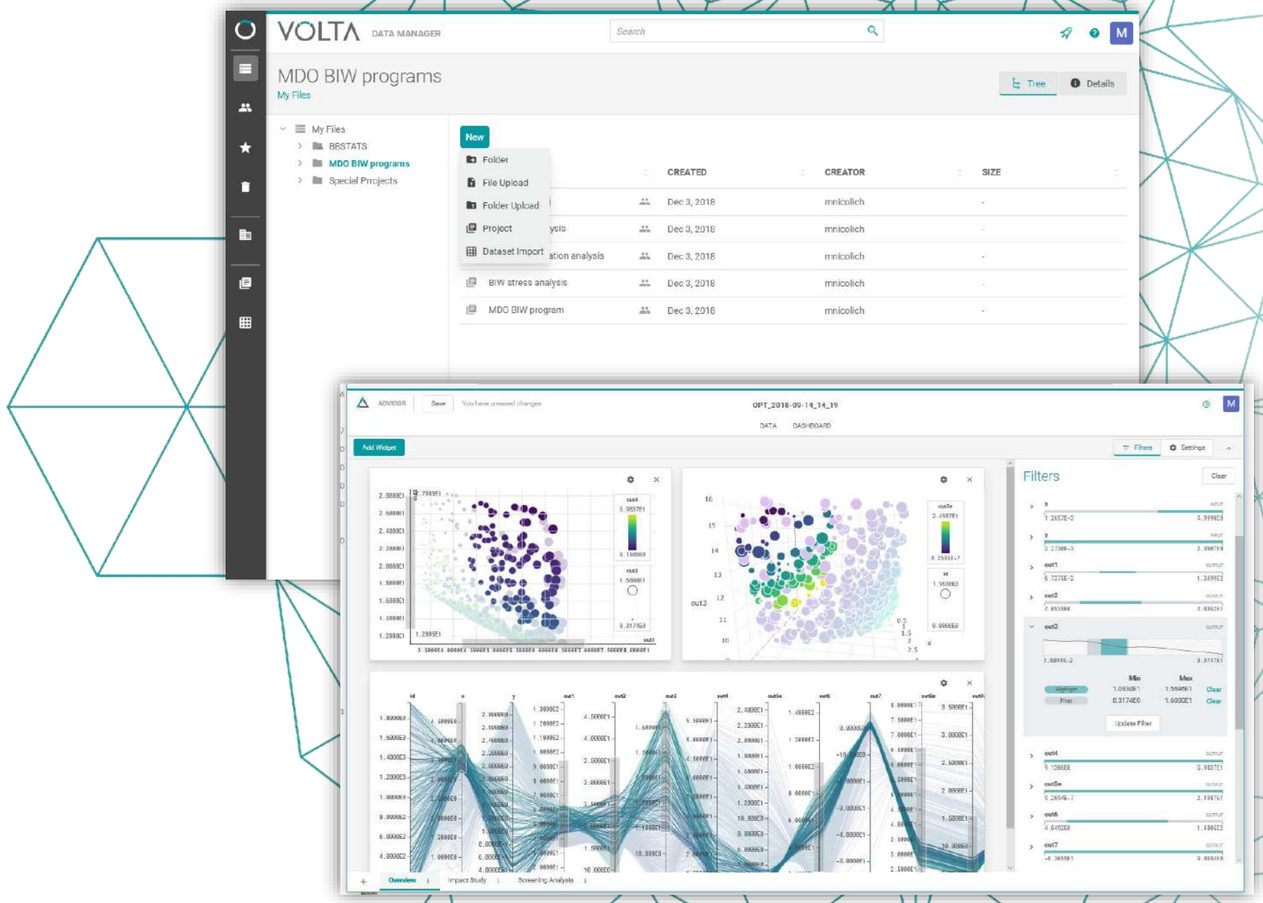
Expand the usage of engineering simulation across teams

Reduce time-to-market

Fast deliver the best product by applying intelligent algorithms to the simulation process

Lower costs

Maximize the investment in engineering solvers and IT resources



We facilitate engineering work, regardless of the level of expertise within one team, and our independent position ensures fast responses to customer demands.

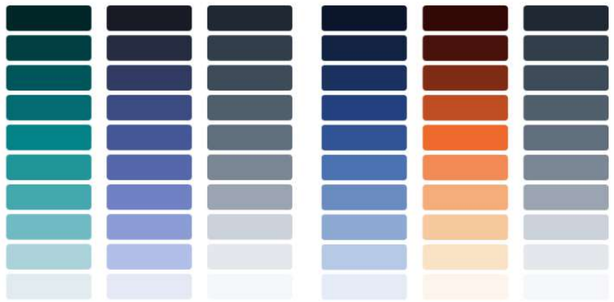
ZUNUM AERO

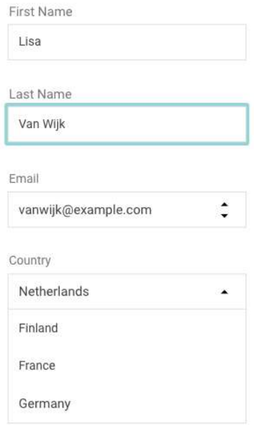
modeFRONTIER makes it easy to set up complex and multidisciplinary optimization problems

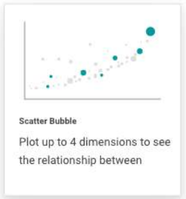
" Its powerful optimization and post-processing tools will help us build the best possible aircraft to usher in an era of fast, affordable short-haul travel everywhere "

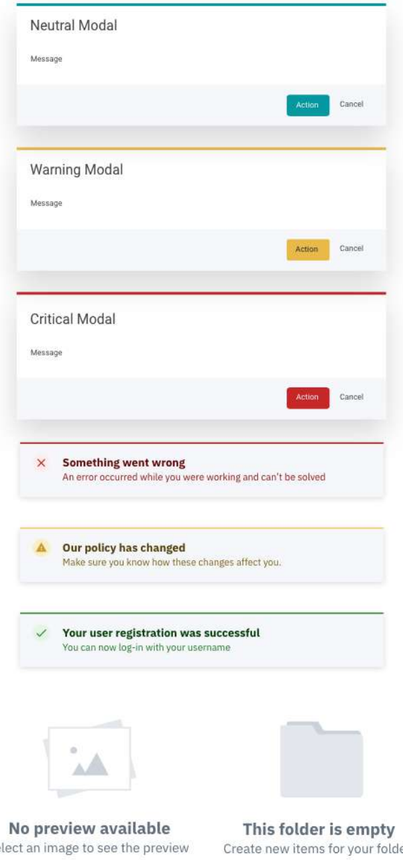
ASHISH KUMAR
Founder and CEO

Our unique User Experience





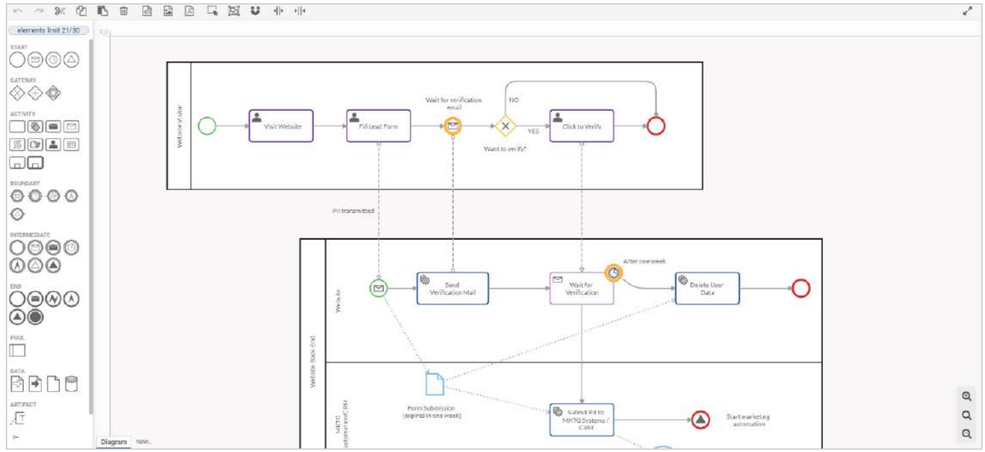




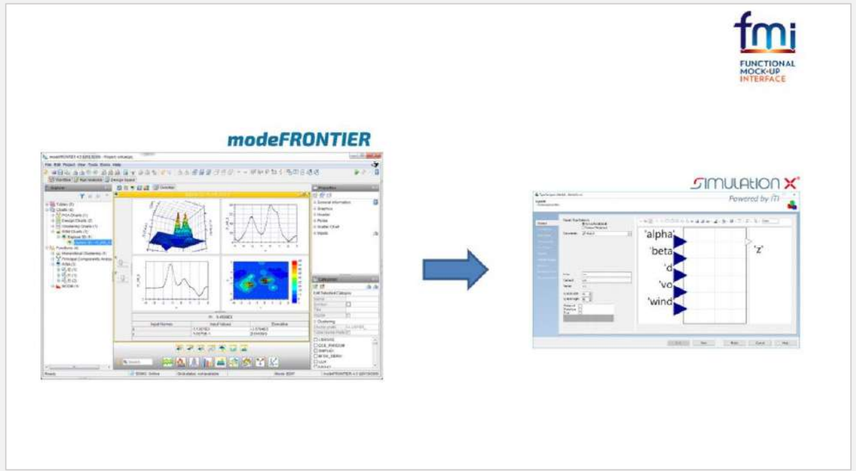
SOUL

Our Standards

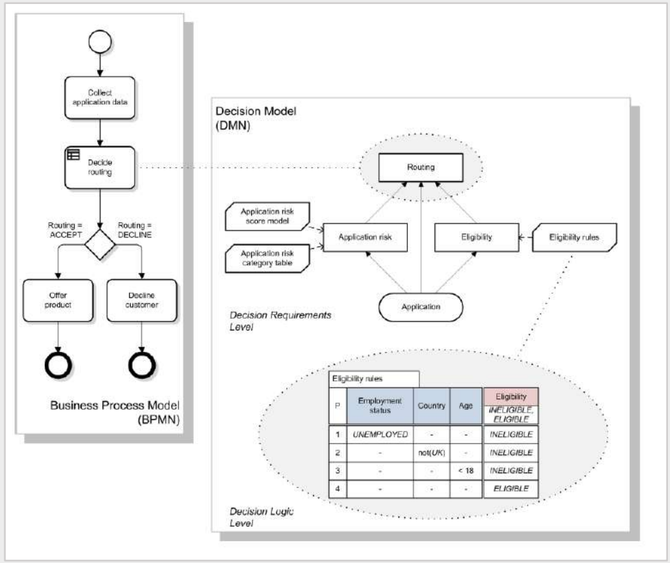
Business Process Model and Notation



Functional Mock-up Interface



Decision Model and Notation



OBJECT MANAGEMENT GROUP®

The capacity to integrate seamlessly with every system and our secure collaborative environment guarantee data integrity while keeping fast responses.

Our alliances

Creating value for our customers

Building coherent solutions with best in class third party software

Our Technical Partners

Seamless integration at hand

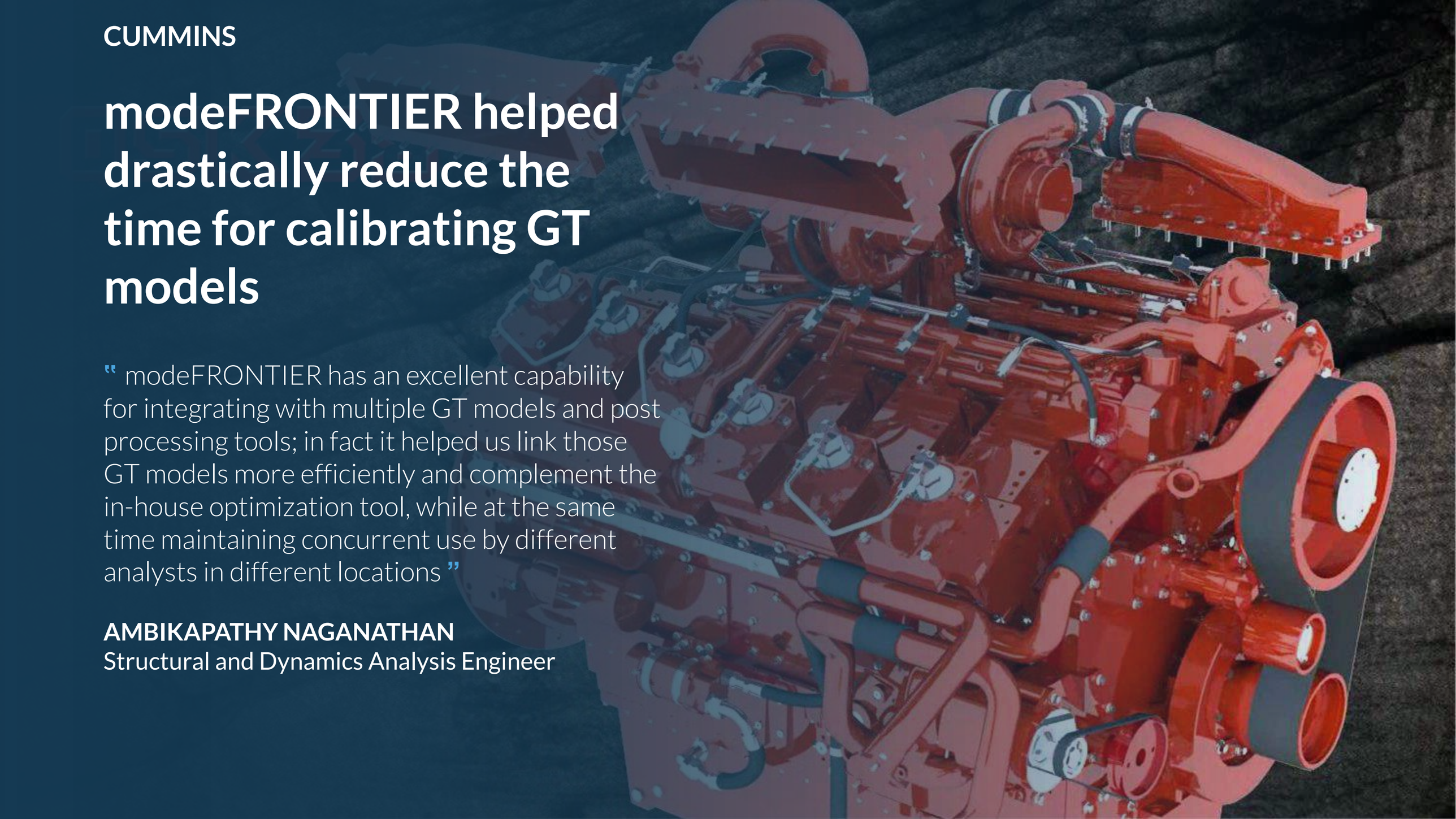
Our solutions are fully integrated with the most commonly used engineering tools

CUMMINS

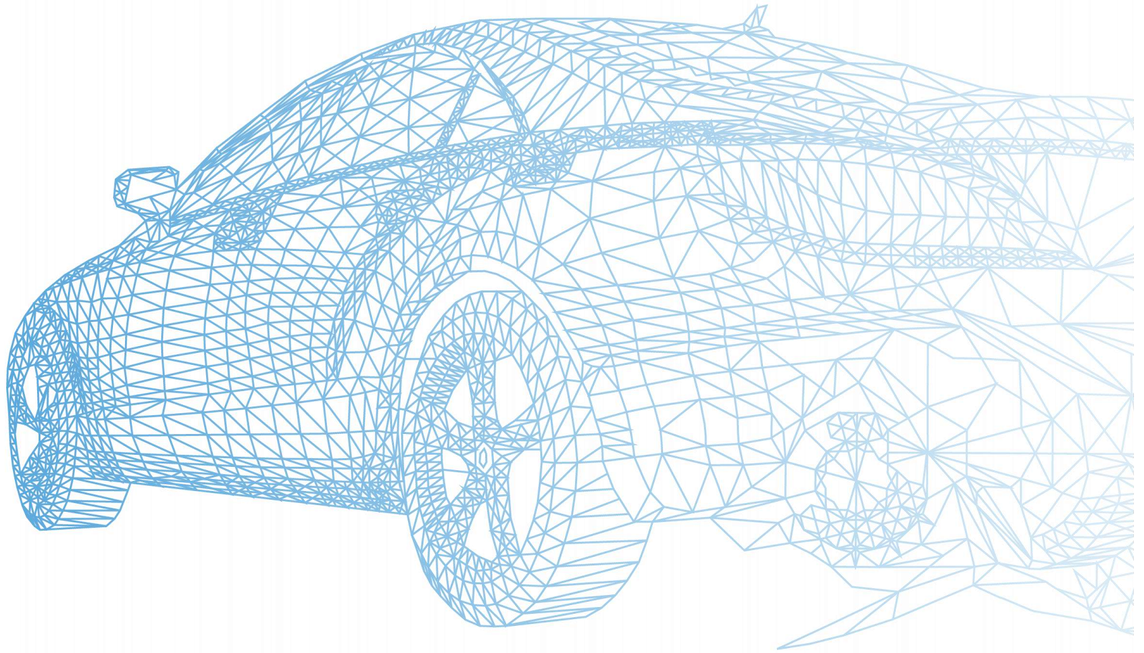
modeFRONTIER helped drastically reduce the time for calibrating GT models

" modeFRONTIER has an excellent capability for integrating with multiple GT models and post processing tools; in fact it helped us link those GT models more efficiently and complement the in-house optimization tool, while at the same time maintaining concurrent use by different analysts in different locations "

AMBIKAPATHY NAGANATHAN
Structural and Dynamics Analysis Engineer



300+ organizations have chosen ESTECO to consolidate specialized expertise, streamline teamwork and boost product development across a wide spectrum of industrial sectors.



PSA GROUP

" With VOLTA, ESTECO offers an interactive and user-friendly web **platform** that is able to cumulate smart algorithms, automation process, post processing and interactive data visualization.

The **democratization** of these complex methods through a friendly and ergonomic interface, offered by VOLTA, is usually an underestimated aspect of the successful deployment of solutions of this caliber "

FABIEN FIGUERES
Data Engineer for Numerical Computation,
PSA Group

Our Customers & Industries

Embraer
Leonardo
Lockheed Martin
Bombardier
FCA
Ford
Honda
PSA Group
Toyota
Volvo Cars Corporation

Mahindra
TAFE
Volvo Trucks
ABB
Bajaj
BASF
Cummins
FAW
Whirlpool
Sony

Automotive

Aerospace

Industrial Equipment

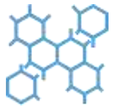
Construction

Energy & Environment

Consumer Goods

Marine & Offshore

Electronics



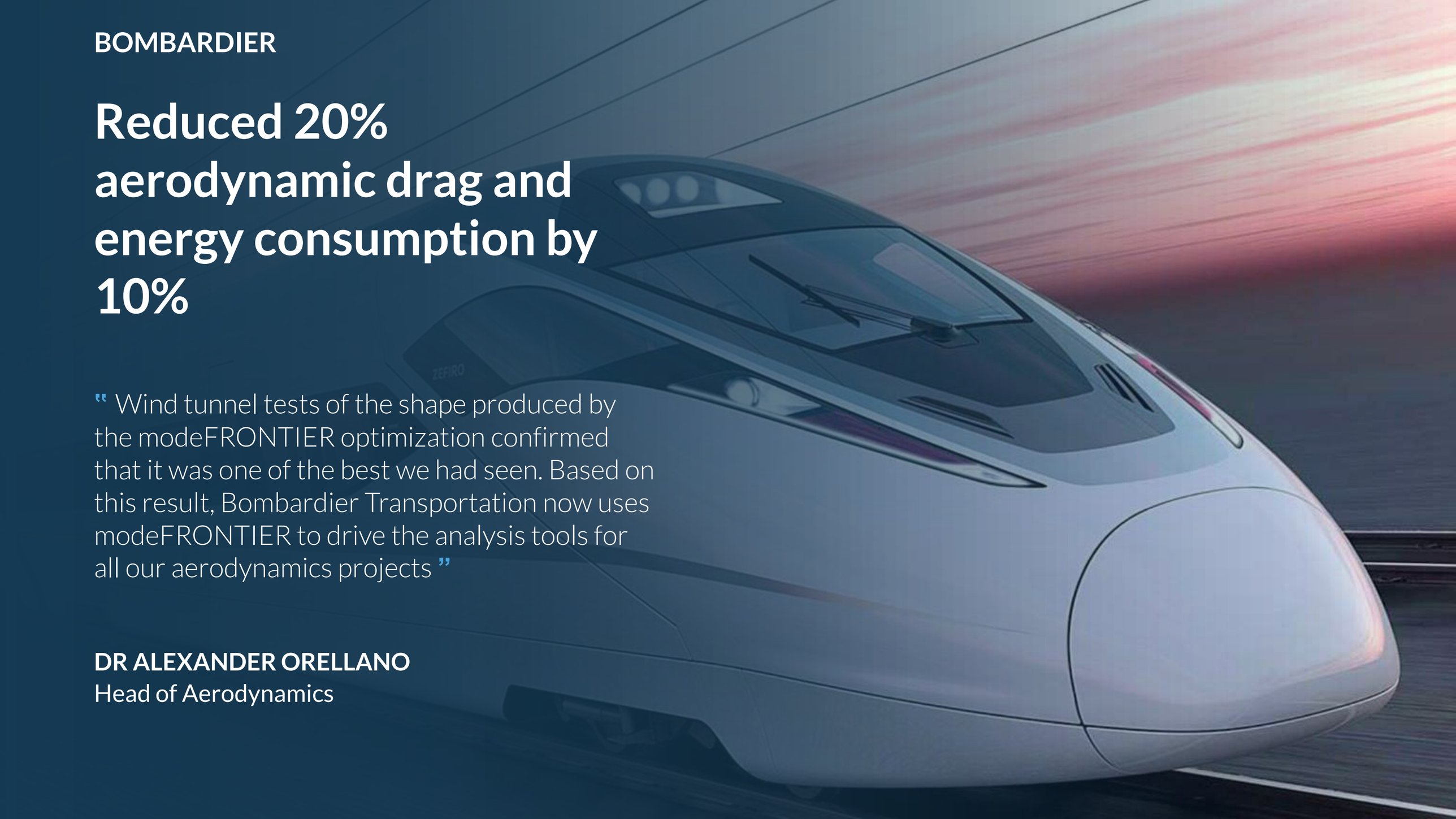
Biotechnology

BOMBARDIER

Reduced 20% aerodynamic drag and energy consumption by 10%

“ Wind tunnel tests of the shape produced by the modeFRONTIER optimization confirmed that it was one of the best we had seen. Based on this result, Bombardier Transportation now uses modeFRONTIER to drive the analysis tools for all our aerodynamics projects ”

DR ALEXANDER ORELLANO
Head of Aerodynamics



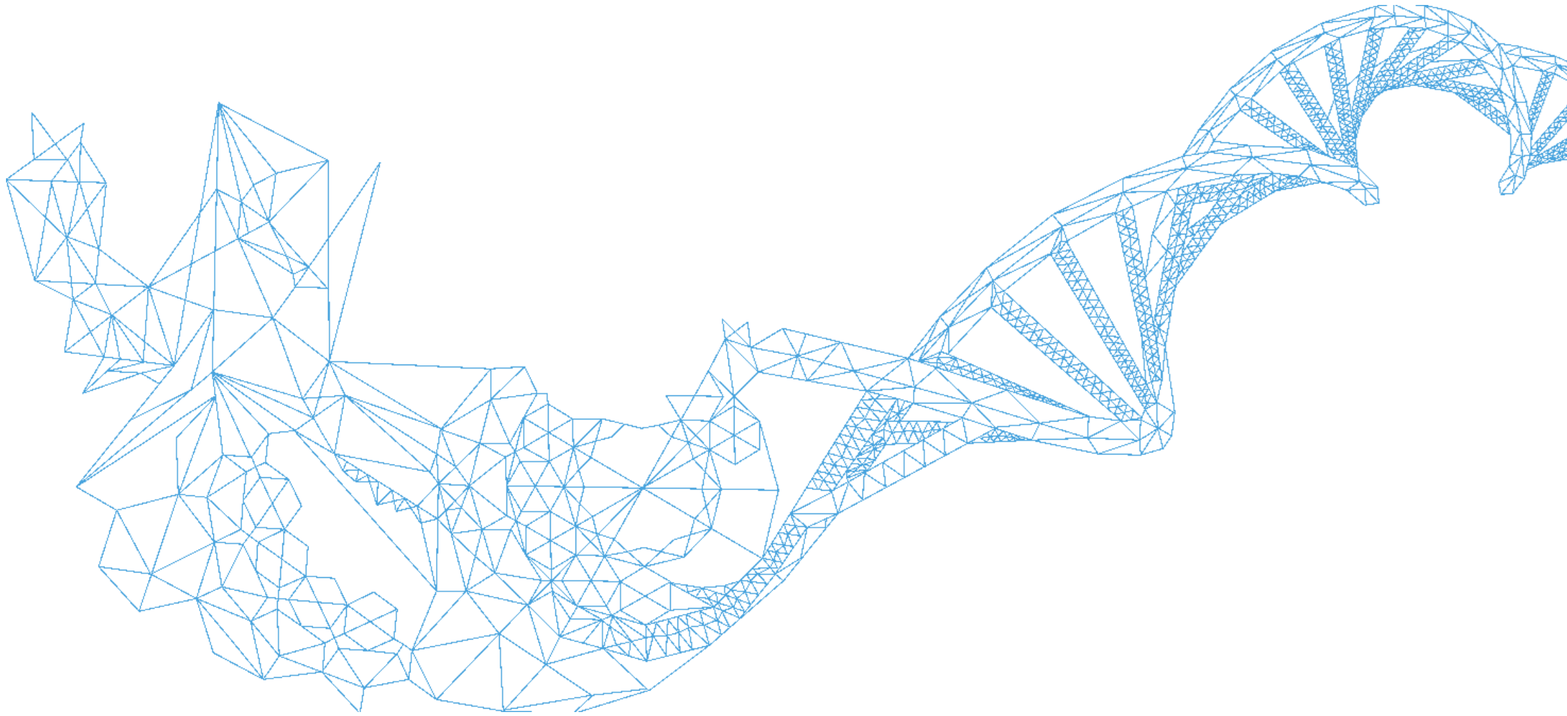
Our Scientific foundation

Spin-off
of a EU Funded Project in the late ‘90s

200+
universities using our technologies

20+
funded research projects

1000+
Scientific papers written about research work performed with our technology



Academy

A community of practice built around modeFRONTIER, our multidisciplinary optimization solution.

- Software license
- Training & seminars
- Design competitions & events

Our Community

student licenses	professor licenses	PhD candidates	scientific papers
218	189	187	1182

We bring students closer to the real world by providing **cutting-edge software technology** and hands-on experience on the different stages of design optimization process.

number of universities using the ESTECO Academy Program

Our Academic Customers

IIT Madras	Waseda University
NIT WARANGAL	University of Liege
University of Kerala	NYU Abu Dhabi
Khalifa University	Linköping University
Mumbai University	ENSTA ParisTech
IIT Kharagpur	Virginia Tech University
RMIT University	Concordia University
University of Michigan	Ecole Centrale de Nantes
TU Delft	Technion
Rutgers	Ben Gurion University

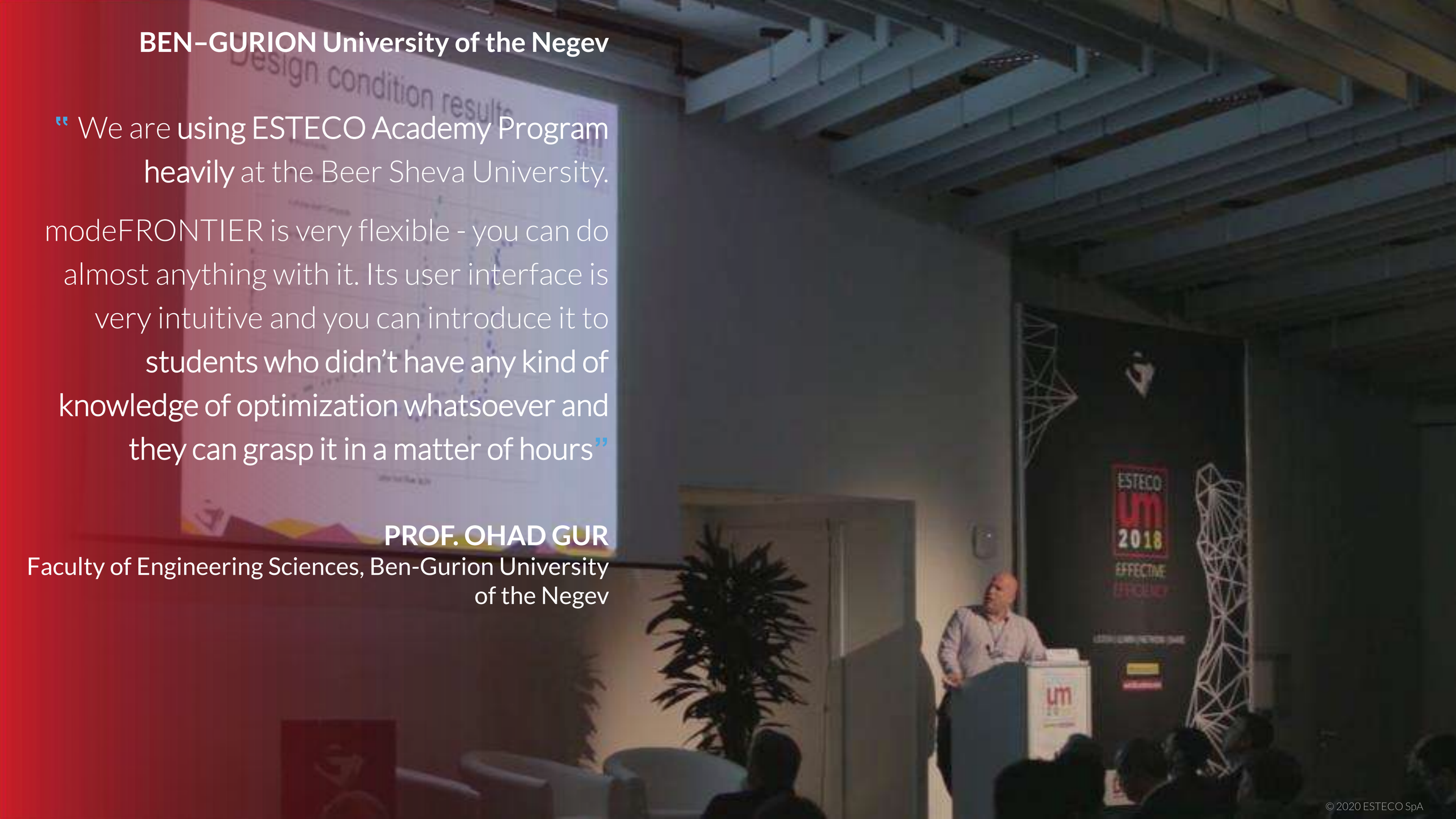
BEN–GURION University of the Negev

" We are **using ESTECO Academy Program heavily** at the Beer Sheva University.

modeFRONTIER is very flexible - you can do almost anything with it. Its user interface is very intuitive and you can introduce it to **students who didn't have any kind of knowledge of optimization whatsoever and they can grasp it in a matter of hours**"

PROF. OHAD GUR

Faculty of Engineering Sciences, Ben-Gurion University of the Negev



Our offices

Our Channel partners

NORTH AMERICA
ESTECO North America

EUROPE
EnginSoft

ISRAEL
Mel Sivan Technologies

INDIA
ESTECO Software India
Altem

JAPAN,
CHINA,
SOUTH KOREA
IDAJ

SOUTH AMERICA
ESSS

SOUTHEAST ASIA
ESTECO Software India

AUSTRALIA,
NEW ZEALAND
EnginSoft

Our Research Projects

COMPOSELECTOR
Polymer Composites Business Decision Support System
European Commission | Horizon 2020 European Union funding for Research & Innovation

Business Decision Support System

GASVESSEL

Natural gas (CNG) transportation system

UNCERTAINTY MANAGEMENT FOR ROBUST INDUSTRIAL DESIGN IN AERONAUTICS
UMRIDA

Uncertainty Management and Quantification and Robust Design

UTOPIÆ
Uncertainty Treatment and Optimisation in Aerospace Engineering

Training and research network

POR FESR 2014 2020 Friuli Venezia Giulia
OPPORTUNITÀ PER UNA CRESCITA SOSTENIBILE
iCAST

Numerical modeling technologies of processes and products

esa
space solutions

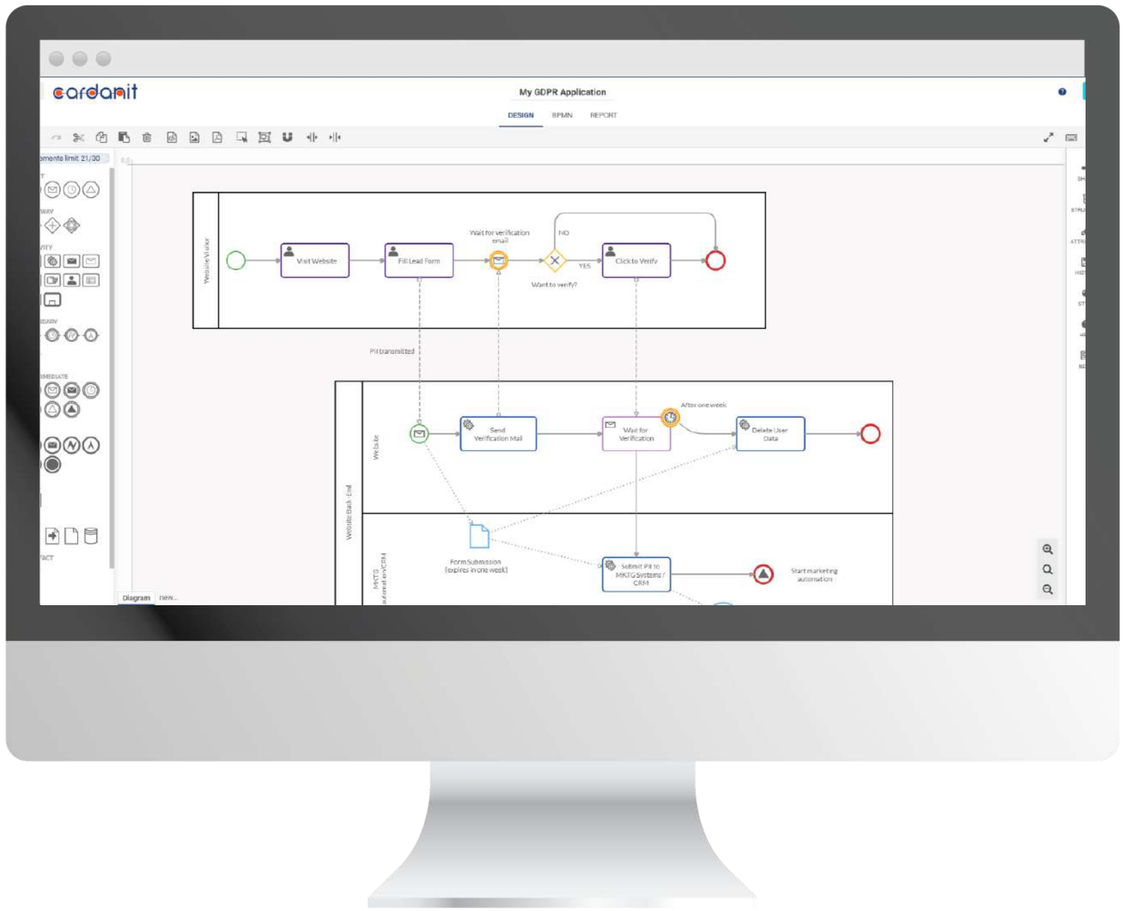
Robust Design Optimisation of Space Missions

Our SaaS application

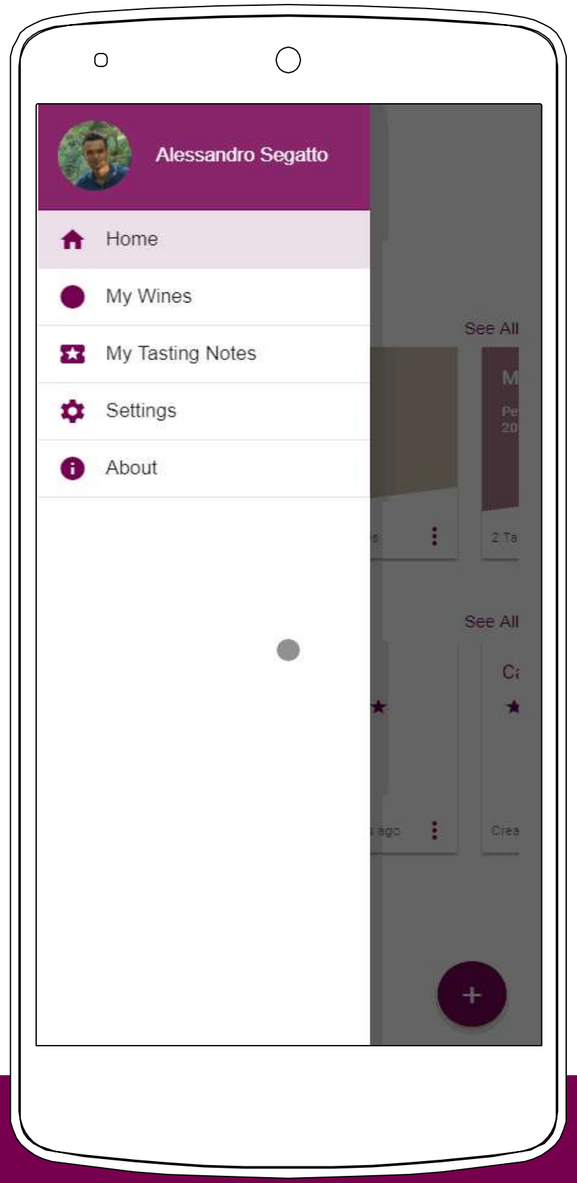
Born as a research project, Cardanit is the next generation collaborative tool for designing business processes.

cardanit

Based on the Business Process Model and Notation standard, Cardanit offers businesses and BPM specialists a new flawless approach to process models.



Our Adventures



- Deep learning
- Social login
- Progressive web apps
- Cloud

Meet Us

Connect with peers and customers

Users' Meetings
Meet optimization enthusiasts

Technology days
Sharing innovative optimization techniques on specific topics

ESTECO Technology Experience
High level keynotes on product promotion and vision, addressing decision makers.

ESTECO Trainings
Workshops and learning sessions

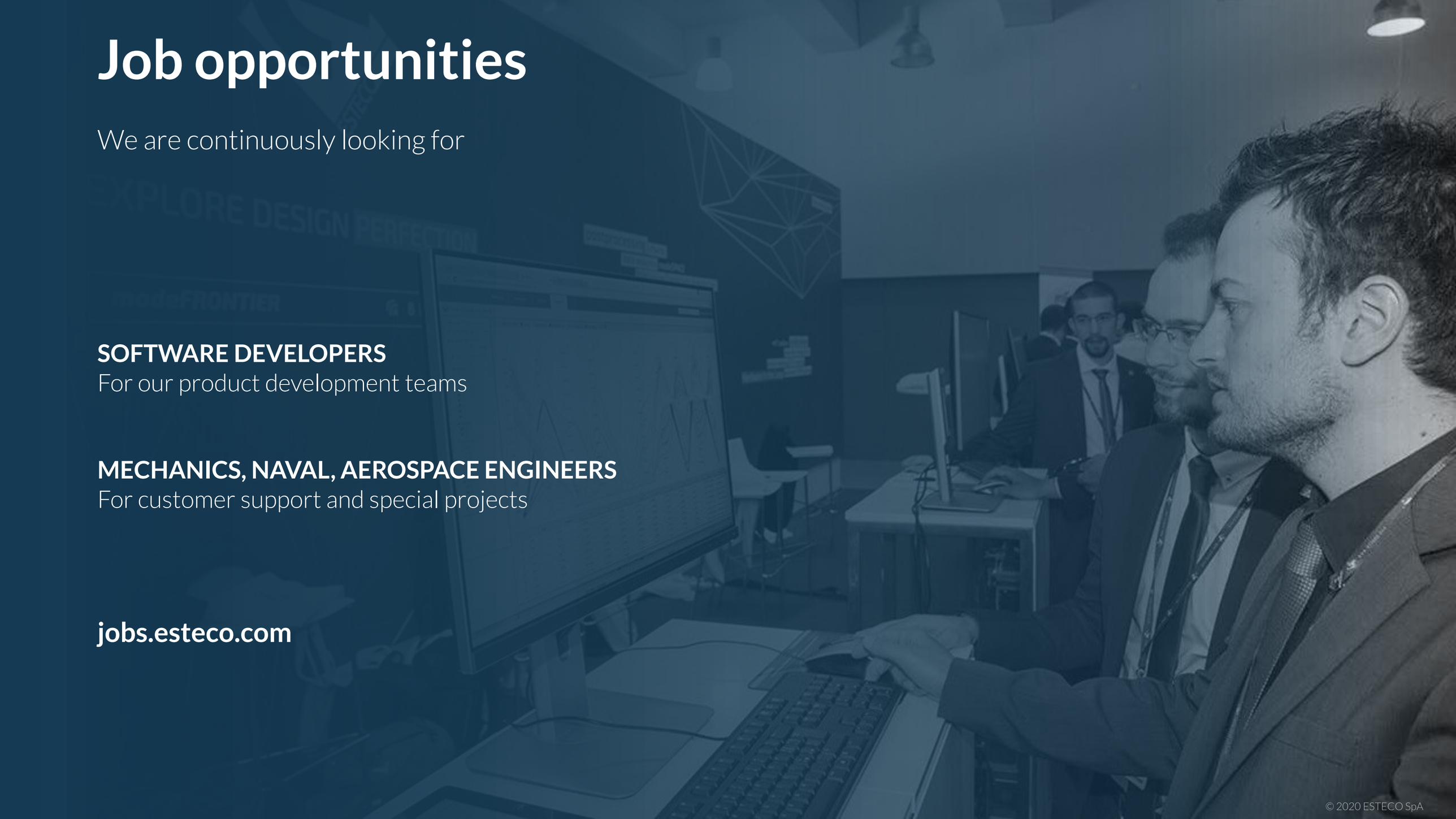
Job opportunities

We are continuously looking for

SOFTWARE DEVELOPERS
For our product development teams

MECHANICS, NAVAL, AEROSPACE ENGINEERS
For customer support and special projects

jobs.esteco.com



Theses and Internships

Engineering and services

Integration with applications related to fluid dynamics, structural analysis, electromagnetics.

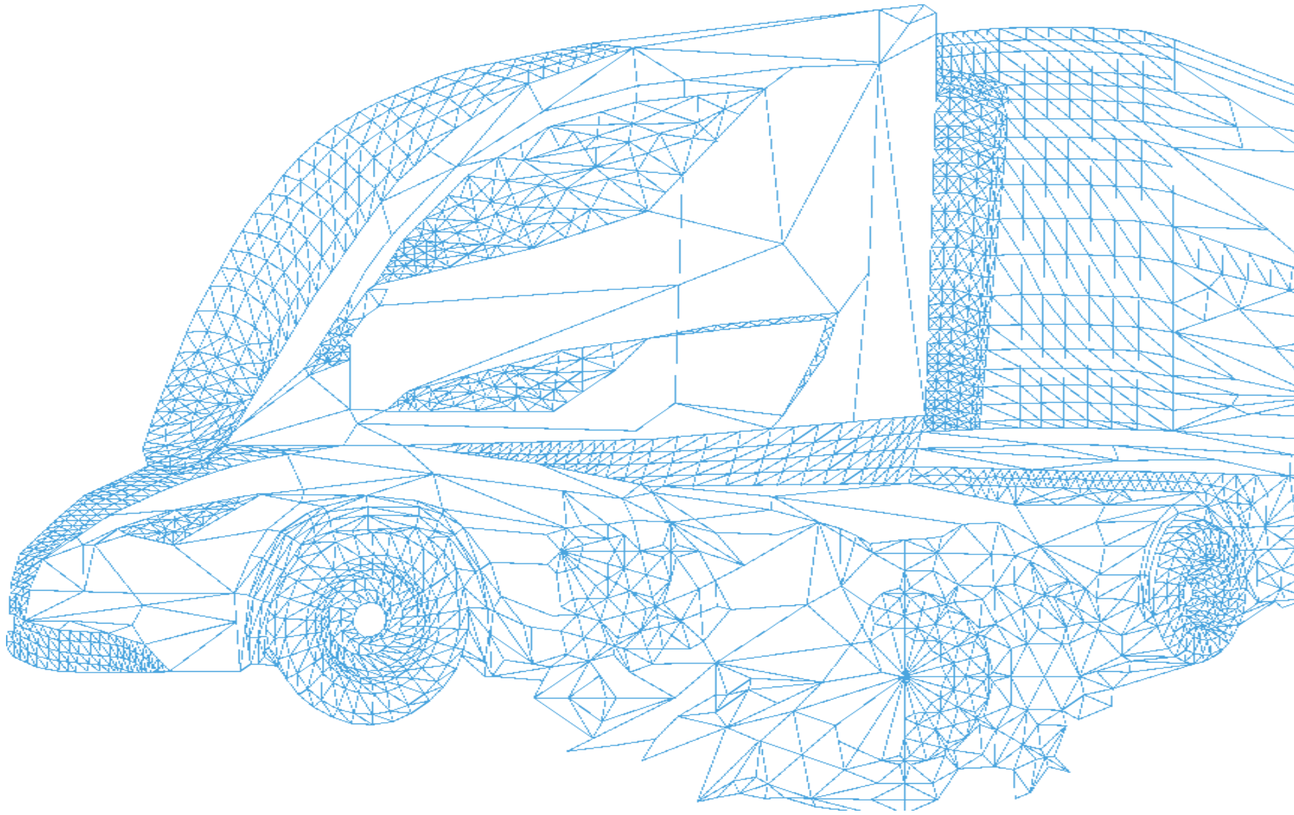
Research and development

Software architecture, Web and mobile applications, Business Intelligence and Data Analysis.

Numerical methods

Optimization algorithms, Response Surface Models, Artificial Intelligence.

We support engineers in designing the products of the future, today.



PETROBRAS

" modeFRONTIER proved to be invaluable in helping us to address the complex problem of selecting the main dimensions of a deep water floating production system, where there is potentially a huge number of alternatives to be evaluated "

DR. MAURO COSTA DE OLIVEIRA
Naval architect at CENPES, Petrobras Research Center

Use Case

Aerospace Aerodynamics

Environmentally friendly aircraft

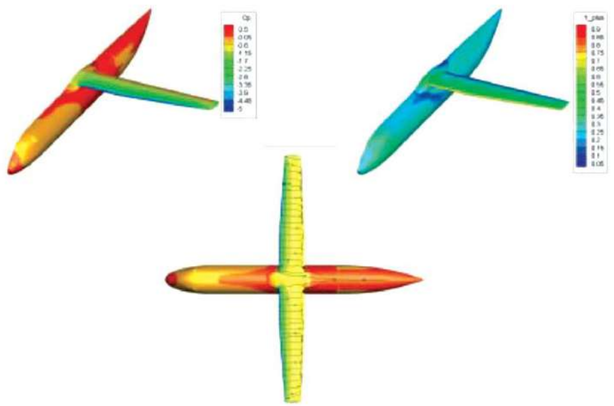


Image courtesy of Leonardo Aircraft

CHALLENGE:

Enhance the overall environmental performance of a Green Regional Aircraft (GRA). Minimize aircraft drag, wing weight, and environmental impact at take-off and landing.

SOLUTION:

MOGA-II algorithm was combined with correlation analysis to reduce global computational effort during wing shape optimization. The MCDM tool supported the design team in determining the best outcome by ranking the Pareto frontier results.

BENEFITS:

- *2.5% enhancement of aerodynamic performance*
- *4% wing weight reduction*

Use Case

Automotive Engine

Air intake manifold design

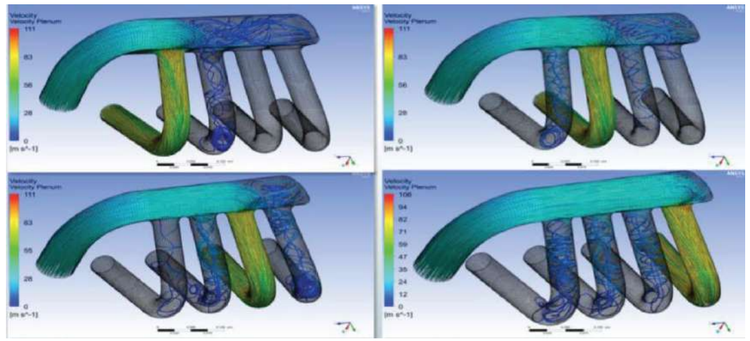


Image courtesy of Magneti Marelli

CHALLENGE:

Optimize the performance of an intake manifold for a multi-cylinder internal combustion engine. Maximize torque and power values while minimizing pressure drop.

SOLUTION:

A multi-fidelity automatic optimization workflow was implemented in modeFRONTIER, combining 1D (GT-Power) and 3D (ANSYS CFX) CFD manifold simulations.

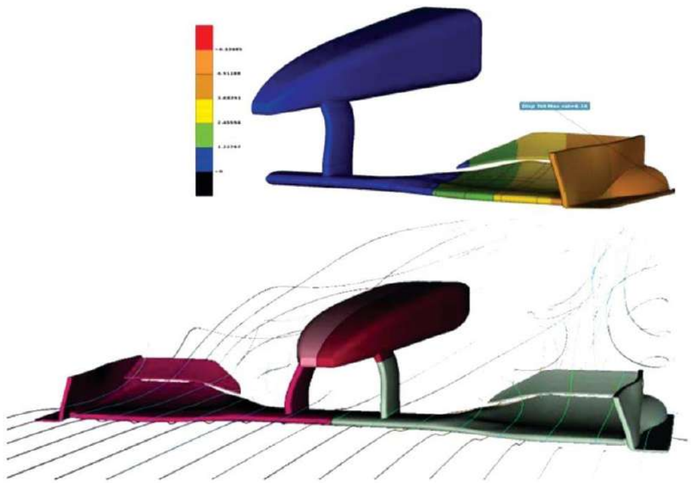
BENEFITS:

- *Global computational effort reduced by multi-fidelity approach*
- *Contrasting criteria satisfied*

Use Case

Automotive Materials

Optimization of a Formula 1 car front wing



CHALLENGE:

Find the optimum composite design of the Formula 1 car front wing. Reduce weight and drag at high speed, while respecting stress and displacement constraints.

SOLUTION:

ANSA, Nastran and mETA software were integrated into a modeFRONTIER workflow to identify optimal fiber orientation and composite layer thickness.

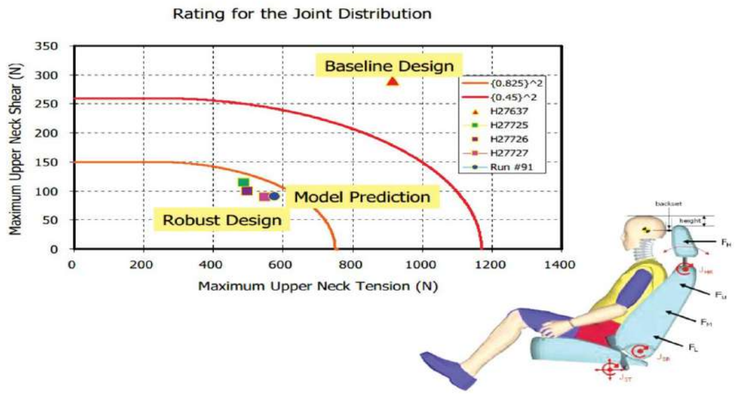
BENEFITS:

- *Wing weight reduced by 27.4%*
- *Angle of attack reduced by 2.5% (significant reduction of drag)*

Use Case

Automotive Safety

Optimizing vehicle passenger safety



Images courtesy of FORD

CHALLENGE:

Improve dummy kinematics in rear impact crash tests to improve the overall safety rating of a head restraint system from "acceptable" to "good".

SOLUTION:

Multiobjective robust design optimization (MORDO) was used to account for uncertainties in the definition of seat geometry. The desired rating objectives were expressed in percentiles.

BENEFITS:

- *'Good' rear impact rating achieved*
- *Turnaround time reduced by 90%.*

Use Case

Automotive Heat Rejection

Underhood thermal management

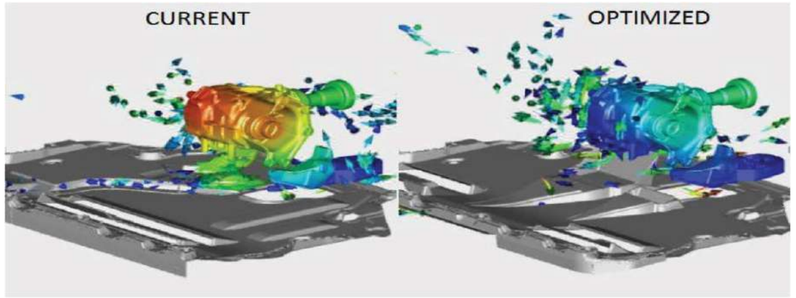


Image courtesy of FORD

CHALLENGE:

Develop a cost-efficient PTU (Power Take-off Unit) cooling system, suitable for multiple powertrains and different operating conditions without deteriorating the vehicle aerodynamic performance.

SOLUTION:

An automated workflow based on DOE and RSM was implemented in modeFRONTIER, combining a morphing CAE model with full conjugate heat transfer simulations to maximize air flow and minimize the PTU fluid temperature.

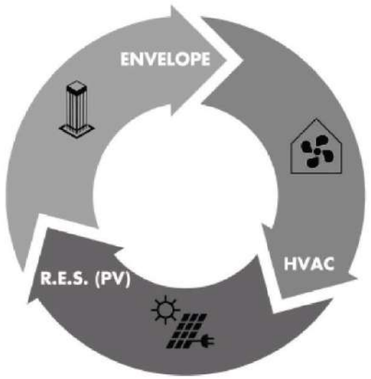
BENEFITS:

- *Parallel and distributed simulations speeded up the entire design process.*
- *Optimized cooling duct design eliminates the need for an expensive water-based cooling system.*

Use Case

Civil Engineering

Zero Energy Buildings



Source Google Maps, 2017

Image courtesy of Giouris Civil Engineering Consultants

CHALLENGE:

Improve the Nearly Zero Energy Building (nZEB) design to meet the EU's 2020 targets within the Energy Performance of Buildings Directive (EPBD). Minimize the use of energy while maximizing adaptive thermal comfort.

SOLUTION:

EnergyPlus, Rhino and Grasshopper were run through a modeFRONTIER workflow to perform cooling, daylight and heating energy loads simulations for a high-rise office building in Athens. Window to wall ratio, wall and glazing thermal coefficients, façade orientation were considered.

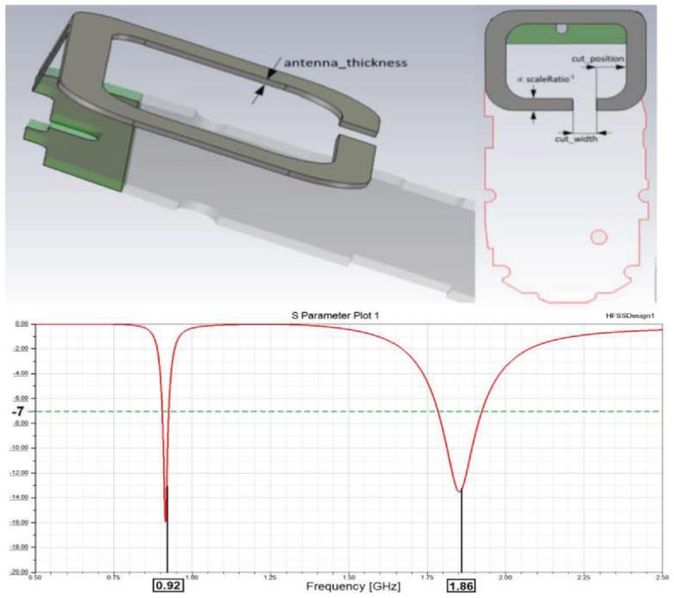
BENEFITS:

- *Building's energy use reduced by 33% (from 109.12 kWh/m^2 to 73.13kWh/m^2)*
- *Trade-off solutions identified for increasing energy performance and thermal comfort levels.*

Use Case

Electronics

Mobile antenna reception performance



CHALLENGE:

Optimize a GSM dual band mobile phone antenna to guarantee effective transmission and reception at specific frequencies (920 and 1860 Mhz), while reducing the loss of signal power.

SOLUTION:

Catia V5 and CST models were integrated with modeFRONTIER to perform accurate analysis of high frequency range changing the antenna geometry.

BENEFITS:

- *Autonomous Pilopt algorithm required just few hours of simulation to perfectly tune the antenna.*
- *This methodology may be extended to any component of an electronic system*

Use Case

Marine and Offshore

CNG transportation vessel

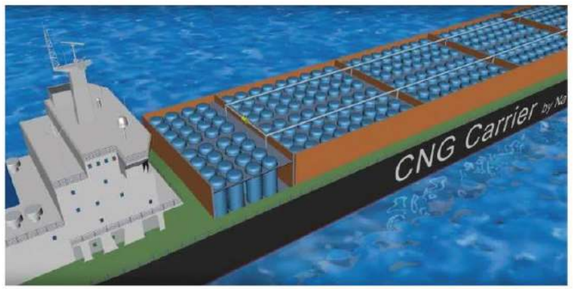


Image courtesy of GASVESSEL

CHALLENGE:

Prove the techno-economic feasibility of a Compressed Natural Gas (CNG) transport concept enabled by a newly patented Pressure Vessel manufacturing in the framework of the EU-funded project GASVESSEL.

SOLUTION:

modeFRONTIER was used to optimize the delivery of gas from the identified source locations to the identified markets, and to design the pressure cylinders reinforced by composite fibers.

BENEFITS:

- *Gas transport costs per unit volume minimized for each geographical scenario.*
- *Partners can easily share data and results through the web-based enterprise solution, VOLTA.*

Thank you

esteco.com