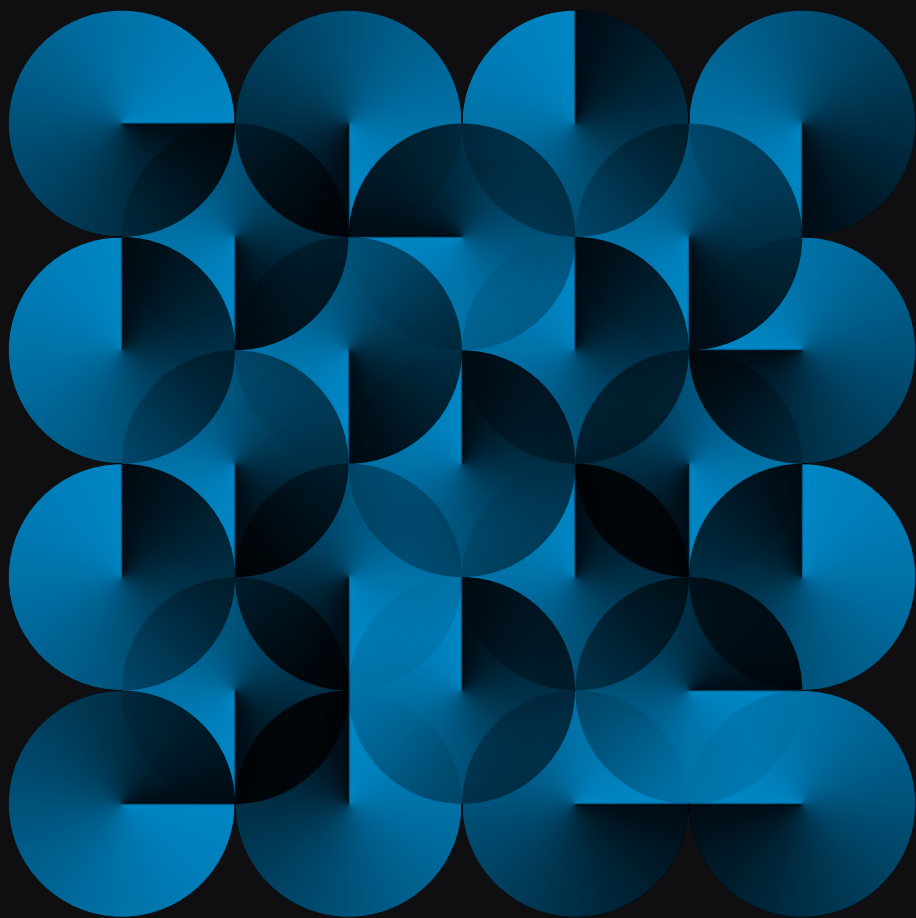# Add value to your business with the support of BCAM

(bcam)
basque center for applied **mathematics**

BCAM can contribute in developing mathematical solutions which help to:

· **Boost the performance of your business**
· **Improve the competitiveness of your products**
· **Reduce production costs**

Innovative mathematics for emerging challenges in science, technology and business

One of BCAM's most important missions is to spread knowledge and technology in the industry. It is critical for the Basque Center for Applied Mathematics to transfer the obtained research results to sectors as telecommunications, health, transport, energy and aeronautics, including local, national and international entities.

For that purpose, BCAM offers expertise in many research fields to SMEs and large industrial groups, and supports the creation of new companies.

Interest for BCAM

Scientific challenges based on real-life applications.

How can industry and BCAM collaborate?

· Strategic partnerships
· Collaborative R&D&I projects
· Joint research teams
· Joint positions / research teams
· Supervision of Master and PhD students
· Training courses
· Organization of dissemination activities

BCAM Scientific Platforms

Applications of Mathematics

Industry: CFD, Electric Power...
Health: Hospitals, Medical Images...
Social: Finances, Networks...
Other applications

Computational Mathematics

Modelling
Computer Simulations
Numerical, Stochastic and Montecarlo methods

Core in Applied Mathematics

Fourier Analysis
Numerical Analysis
Partial Differential Equations
Probability and Statistics

Success Story

Arteche

Effectively determine a high voltage cable's temperature leads to a better operation of power transmission systems

Project

Computational platform for dynamic thermal rating of high voltage power lines

Interest for industry

➔ Identification and real-time adjustment of critical parameters in electrical networks
➔ Improvement of the operation of power transmission systems

Success Story

Baltogar

The CFD optimization of blades' angles and shapes could improve turbofans performance up to 10%

Project

CFD (Computational Fluid Dynamics) simulation and optimal design of turbofans

Interest for industry

➔ Innovative and application oriented CFD platform
➔ Large-scale fluid mechanics simulations
➔ Powerful optimization tool for design

Success Story

AVIA Esergui

Better understanding of the market data is crucial to determine the oil price

Project

Analysis of oil price market

Interest for industry

➔ Adjustments in the pricing policy considering probabilistic approaches and scenario analysis
➔ Efficient support for decision making, and risk analysis

Success Story

Fortuna Sport Club

Queuing theory helps to drastically reduce the congestion of runners in a half-marathon

Project

Optimal management of resources in Behobia-San Sebastian half-marathon

Interest for industry

➔ Strategies to improve the starting line of runners
➔ Control of the arrival flow of runners

Success Story

Bilbao Bizkaia Water Consortium

Controlling density and flow fields help to flush efficiently tank water in a tunnel

Project

Direct FEM (Finite Element Method) simulation of a storm drain tank

Interest for industry

➔ Simulation support for a successful design of a storm tank with an automatic cleaning system
➔ Identification of parameters which have major influence in the flushing section

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Success Story

ETXE-TAR

Computational Fluid Dynamics software tools lead to more precision in engineering design

Project

CFD simulation of beam deposition process for a control laser device

Interest for industry

➔ Optimal design of a powder feeding system to minimize lost material
➔ Sensible reduction of beam deposition processing time

Success Story

Ingeteam

Up to 25% of energy can be saved in railway systems by using optimization techniques

Project

Energy minimization in railway systems based on modelled speed profiles

Interest for industry

➔ Reduction of running costs in railway systems
➔ Design of optimal driving strategy

Success Story

MedLumics

Mathematical modelling allows a more accurate diagnosis of cardiac tissue

Project

Computational modelling for radiofrequency cardiac ablation

Interest for industry

➔ Better understanding of Biophysics
➔ Computational results to be compared with the experimental data in order to improve the treatment of cardiac arrhythmias

Collaborators

bc³
BASQUE CENTRE
FOR CLIMATE CHANGE
Klima Aldaketa Ikergai

POLYMAT

CIC bioGUNE
Biozientzietako Ikerkuntza Kooperatiboko Zentroa
Centro de Investigación Cooperativa en Biociencias

bi·ocruces
health research institute

CIC energIGUNE
energy cooperative
research centre

IK4
Research Alliance

B/S/H/

KTH
VETENSKAP
OCH KONST

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CTA

TEXAS
The University of Texas at Austin

tecnalia
Corporación Tecnológica

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AND LANGUAGE

Osakidetza

IBERDROLA

azti
tecnalia

LAGUN ARO