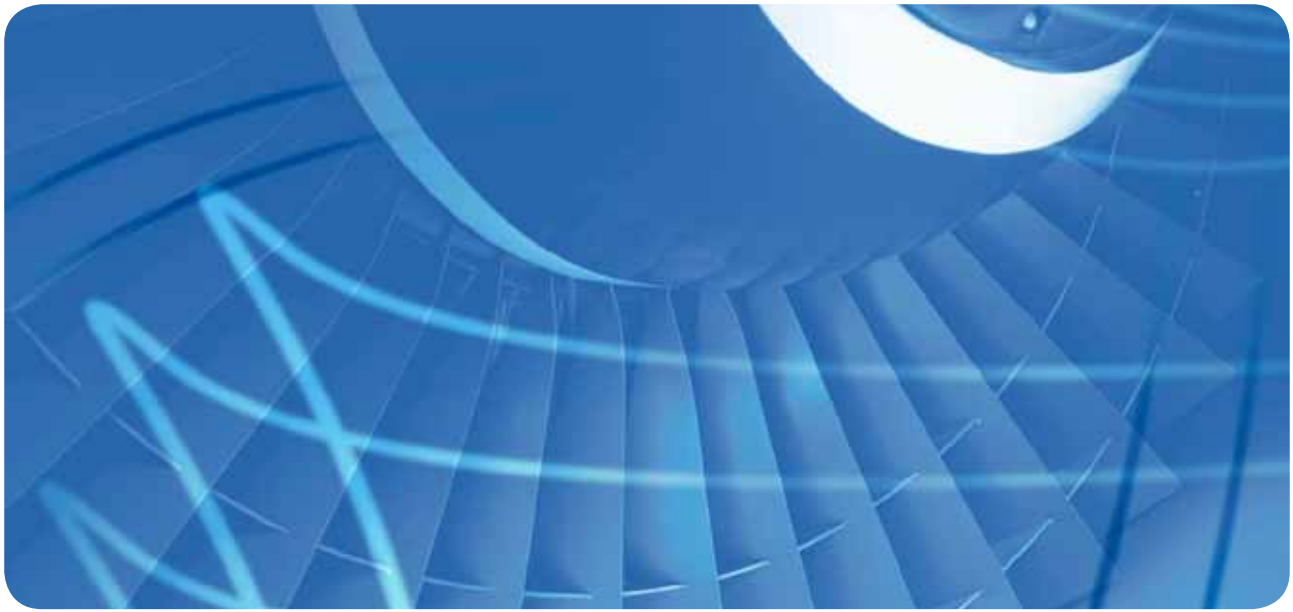

Introducing a revolution in the CFD world

KARALIT

Exploit the immersed value

Discover the revolution

| COMPANY PROFILE

- **KARALIT** provides **Computational Fluid Dynamics (CFD) software** to industrial and academic customers worldwide, disruptively innovating the CFD sector and meeting customers' main needs in terms of time saving, usability and output quality.

- It is a **new** and **revolutionary** user-friendly approach to the analysis, based on parametric layouts designed for specific engineering applications. Given its simple and reasonable price scheme even for unlimited number of users, from a commercial standpoint it provides groundbreaking innovation by allowing all types of licenses to be run on an unlimited number of cores and at no additional cost.

- KARALIT CFD software couples an original implementation of the **Immersed Boundary Method** with a standard Body Fitted grid technology in order to guarantee the ease of use, speed and accuracy of the first, while keeping the reliability and effectiveness of the second.

- Marco Mulas, the founder of KARALIT, has been working as a CFD software developer and CFD analyst for the last 20 years. Previously he was the leader of the Fluid Dynamics group of CRS4 research center. He obtained his two Master degrees at two of the most recognized academic centers in Europe and in the USA, the **Von Karman Institute in Belgium** and **Stanford University in California**. During his PhD studies he spent two years working with prof. Charles Hirsch at the Vrije Universiteit Brussel. He has now built an international and reputed team of developers and analysts to work with him at KARALIT.

- Our continuous development will focus on catching the new promising technologies that will arise in the future from R&D and integrating them into our product in order to offer the CFD community the most effective tools in real time.

| HISTORY

- As a long term user and developer of CFD software for 2 decades, Marco Mulas, the founder, had the vision to **develop a software** which would meet **his own demanding requirements** and would give the community of CFD users the software they long wished for and did not have.

- He thus started up **KARALIT**, born as a spin-off of the **CRS4**, (the Center for Advanced Studies, Research and Development, in the **Technology Park of Sardinia**) with a group of researchers experienced in CFD code development, engineering analysis and modeling.

- The seed capital phase was provided by public funds, while in October 2010 KARALIT was backed by a group of **private investors** ranging from the technology to the financial sectors, with the goal of marketing KARALIT's first product by the end of 2011. In the second part of 2010 the management team was strengthened with a sales & marketing director and an operation manager, both with deep experience in the start-up of technological companies.

- The name "KARALIT" comes from the ancient name of the capital city of the island of Sardinia (Karalis, today Cagliari), with the added suffix "IT", meaning the union of the traditional rocky robustness of the region with the most advanced technologies, which also became a trademark of the island in the last 20 years.

| DISCOVER THE CFD REVOLUTION

- This year, KARALIT brings a true REVOLUTION to the CFD software world, with its innovative vision, technology and offer structure!

- **A REVOLUTIONARY COMPANY: DELIVERING THE CFD YOU'VE ALWAYS WANTED!**
  We are revolutionary because as long term users and developers of CFD software, we imagined and developed a software which met our own demanding requirements in order to give the community of CFD users the software they long wished for and did not have until today!

- **A REVOLUTIONARY TECHNOLOGY: QUIT MESHING FOR GOOD!**
  We are revolutionary because our software reduces meshing time by 99% which is the most time consuming activity in CFD analysis. Based on a tight integration of an original implementation of the Immersed Boundary Method together with the standard Body Fitted grid technology, KARALIT CFD software guarantees ease of use and speed while ensuring the reliability and the effectiveness of your output results.

- **A REVOLUTIONARY PRICING: NO MULTI-PROCESSOR LIMITATION, NO ADD-ONS POLICY, NO ADDITIONAL COSTS.**
  Our price strategy is revolutionary because we give all users the possibility to fully exploit today's available computational power without adding restrictions or additional costs. Moreover, the KARALIT CFD licence scheme will give even academic and research centers the right to legally use the software for economic and industrial consultancy purposes, without additional costs.

| TEAM

- **KARALIT's** highly motivated and experienced management and advisory team has a solid background in software development, sales&marketing and technological start-up operations.

- The **R&D team** comprises a mixed group of **long term experienced** and young researchers who are deeply involved in **software development** and who possess a profound knowledge of the CFD market and who are strongly oriented towards effectively addressing customers' demands for new technology and engineering solutions.

- As of March 2011, the development team has grown to 6 members, with the introduction of new internationally experienced and motivated engineers and will keep increasing during the current and following year.

| PRODUCT

- In the last decade many new technologies have been developed and become increasingly more mature and popular in the CFD community. These technologies mostly aim to **REDUCE THE BURDEN OF MESH GENERATION**, the real bottleneck of the analysis and design processes, by easing, or even simply eliminating the entire pre-processing meshing phase.

- KARALIT products are based on an innovative and generalized implementation of such new technologies. Our desire is to provide software that integrates all effective technologies, and that is capable of making them work together, keeping the advantages of all while eliminating their disadvantages, with the only goal of improving turnaround time, accuracy and robustness while meeting the customers' requirements.

- Our first product **KARALIT CFD** is a revolutionary CFD analysis software. It will provide CFD users with the latest technologies that are not offered by the big vendors. These technologies can have a dramatic impact by **improving and speeding up the whole analysis and design processes**.

- Currently, in the developing and testing phase of company products, the company is partnering with notable academic and industrial players.

- The **core** of its technology is represented by the **IMMERSED BOUNDARY** (IB) **technique** which we developed in an original mode and **coupled** to an easy-to-generate **standard body fitted hyperbolic mesh**, wrapped around the body. Moreover, the use of the IB technique makes it possible to simplify the pre-processing phase even further, as it allows the use of a series of built-in parametric domain layouts, available in our easy-to-use GUI. Each layout is designed to address a class of CFD problems and more new layouts can be easily developed and added in order to satisfy all of our customers' needs.

| PRODUCT SPECIFICATION

PRODUCT	DIMENSION	TECHNOLOGIES	PHYSICAL MODELS	APPLICATIONS
KARALIT CFD vFD1.0 *free download version*	• 2D	• parallel MPI • IB baseline • IB-BF hybrid • std body-fitted	• compressible & incompressible • steady state & transient • preconditioning • arbitrary equation of state • rotating frame • thermal conduction & convection • RANS: SA turbulence model • natural convection & buoyancy	• external aerodynamics (aerospace) • external hydrodynamics (hulls) • turbines, compressors & pumps • heat transfer
KARALIT CFD v1.0	• 2D-3D	• parallel MPI • IB baseline • IB-BF hybrid • std body-fitted • IB multi-layer	• compressible & incompressible • steady state & transient • preconditioning • arbitrary equation of state • rotating frame • thermal conduction & convection • RANS: SA turbulence model • natural convection & buoyancy	• external aerodynamics (aerospace) • external hydrodynamics (hulls) • turbines, compressors & pumps • heat transfer
UPCOMING FEATURES		• coupled mechanical stress analysis • optimization	• RANS: K-Omega turb. model • premixed & diffusion combustion models • turbulence: LES & DES • eulerian multi-phase • multi-phase (VOF) • conjugate heat transfer • spray models	• combustors (gas turbine) • external aerodynamics (automotive) • internal flows (ducts, channels, nozzles) • propulsion (gas turbine) • wind turbines • heat exchanger • pneumatic transport • free-surface flows • fluid-structure interaction • engines & valves (automotive)

KARALIT

Exploit the immersed value

KARALIT srl
Technology Park of Sardinia | Edificio 2
Loc. Piscinamanna | 09010 Pula (CA) | Italy
Phone: +39 070 92432171 | Fax: +39 1782236340
Email: info@karalit.com | Skype: karalit
Web: www.karalit.com