



www.crs4.it

Centro di Ricerca, Sviluppo e Studi Superiori in Sardegna



- **Interdisciplinary research center focused on computational sciences**
- **Located in the POLARIS Science and Technology Park (Pula, Sardinia, Italy)**
- **Operational since 1992**
- **RTD staff of ~ 170 people**

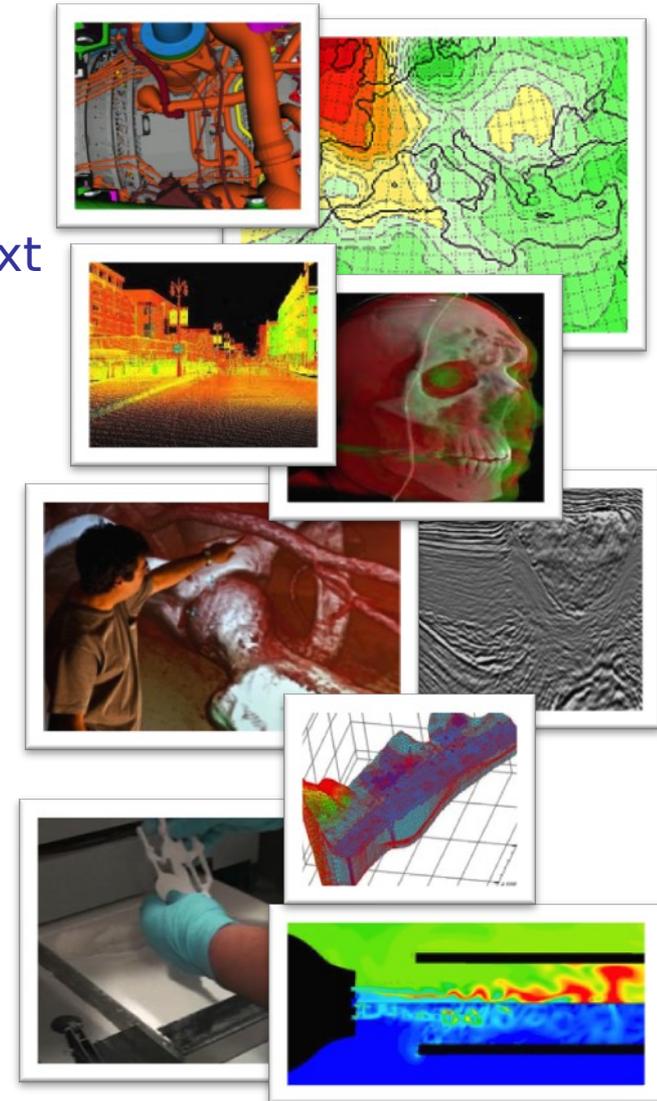
Research facilities

- **State of the art computational facilities**
 - In Italy top five, wide variety of hybrid configurations (GPU, FPGA, ...)
- **High Speed connections**
 - Multiple 10 GbE Sardinian Network and Italian Research Network (GARR)
- **High throughput analysis facility**
 - The largest Next Generation sequencing facility in Italy, with a cumulative output of up to 12 TBytes of raw sequencing data every ten days

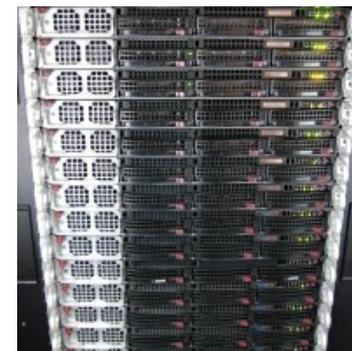
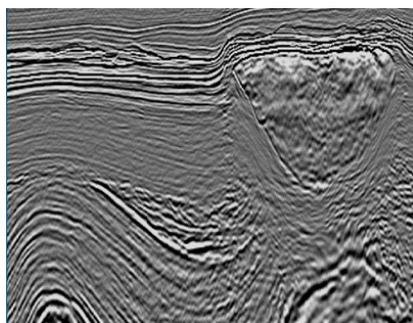
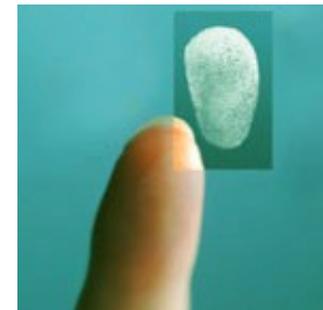


Key Strengths

- **Research and Development on enabling technologies**
 - Direct experience in the application context with primary focus on: Energy & Environmental sciences; Information society; Biomedical sciences...
- **Strong Collaboration Network**
 - PON, EU FP7, Wellcome Trust, NIH, APL, ...
- **Technology Transfer to Industry**
 - ENI, INPECO, IBM, NICE, GEXCEL
- **Technology Transfer to Regional Institutions**
 - Health Care, Environment, Cultural Heritage ...



Industrial partners



Scientific Sector: Biomedicine

Integrated multidisciplinary approach, focused on specific aspects of bioinformatics, imaging informatics, clinical and public health informatics

- ✓ Advanced Genomics
- ✓ Bioinformatics
- ✓ Bioengineering
- ✓ Databases, Software, Support and Services

Scientific Sector: Data Fusion

Technology for acquisition, processing, distribution and visualization of massive data sets

- ✓ Healthcare Flows
- ✓ Distributed Computing
- ✓ Visual Computing

Scientific Sector: Energy and Environment

Mathematical modeling, high performance computing and ICT to support energy efficiency, renewable energy, exploration geophysics, sustainable land use and natural resources management

- Clean Combustion technologies
- Geophysical Imaging
- Environmental Sciences
- Renewable Energy

Scientific Sector: Information Society

Expertise is in digital content technologies, interaction design, geoweb and internet of things, search and mobile, for designing and developing some of the next applications in the fields of tourism, tv, home, etc.

- **Digital Media Applications**
- **Location and Sensor Based Services**
- **Natural Interaction Technologies**

Technological Platform: HPCN

CRS4 offers support to the scientific community through the High Performance Computing centre and its applications

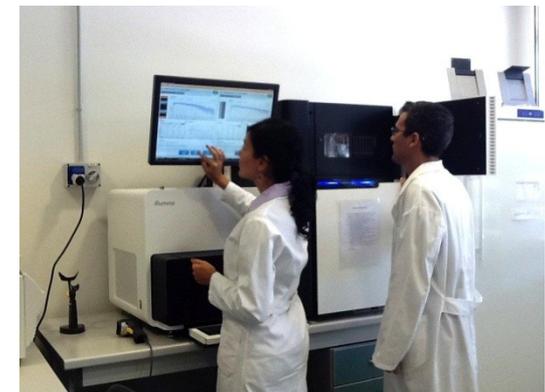
- 47 TeraFlops of computational power
- 5 Petabytes of disk space
- 1 GBps connection



Technological Platform: Genotyping and Massive DNA Sequencing Platform

Established in 2007 by the President of CRS4, Prof. Paolo Zanella, a former Head of the European Bioinformatics Institute near Cambridge in the UK, the platform offers a wide range of advanced genomic characterization techniques.

- High Throughput (12 TBytes of raw sequencing data every ten days)
- Last generation Illumina technology
- Sequencing applied to complex diseases especially relevant to Sardinia population



Technological Platform: Visual Computing

Dedicated to developing powerful interactive 3D tools for scientific visualization and visual simulation.

Expertise in multi-resolution data representation, time-critical graphics, external memory algorithms, and applications of virtual reality technology to visual simulation.



Higher education and training on the job

- Summer School **Genomic Analysis of Complex and Monogenic Disorders** (2011-2012-2013)
 - Master on **Bioinformatics** (with CNR (3 editions) with University of Cagliari (2005-2006, 2012-2013))
 - Master on **Renewable Energy** with industrial partners and University of Cagliari (2010-2011)
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- up to 10 staggers per year from Universities

Thank you

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