



INFRASTRUCTURE

ADVANCED COMPUTING OPERATION CENTRES (OC)

- > Centres operating computing grids and/or supercomputers;
- > Provide AC capacity on pre-installed, ready-to-use hardware;
- > Manage architecture flexibility according to each centre defined objectives;
- > Flexibility and innovation through IaaS;
- > A combined national computational capacity of 12 pflops;
- > All hyperconnected and coordinated by a **National Advanced Computing Network**.

ADVANCED COMPUTING COMPETENCE CENTRES (CC)

- > **Close to researchers and industry**, including SME's: HE Institutions, Research Centres, CoLabs, AIR Centre, Space Agency;
- > Provide Advanced Computing **support** to research groups and industry, with **specialization** in different scientific and application areas;
- > Expertise in **analyzing data** results from computational processing, leveraging on state-of-art **visualisation** software and hardware;
- > **High bandwidth** connection to the OCs;
- > **High storage capacity**: to prepare and retrieve data from Operation Centres.

Advanced Computing Portugal 2030 is a dynamic and evolutive process aimed to promote and expand **Advanced Cyberinfrastructure (ACI)** in Portugal by a factor of 100 in the coming decade and until 2030. It considers close international collaborative actions and has been planned in a way to foster all advanced scientific computing fields, as well as mobilising data processing in an effective and diversified way, among industry and academic communities and in all areas of knowledge and the economy, including health, climate, energy, mobility, and the study of social processes.

It has been prepared and is promoted under the **Portuguese National Initiative on Digital Skills (Iniciativa Nacional Competências Digitais), INCoDe.2030**, and in close articulation with the recently created **national strategy on Artificial Intelligence, "AI Portugal 2030"**. The ultimate goal is to widespread access to scientific information and create conditions for cooperation between laboratories based on advanced scientific computing networks, as well as promote international collaboration to foster advancements in knowledge and in the economy.



For more info, visit
www.incode2030.gov.pt



ACP.2030

ADVANCED COMPUTING
 PORTUGAL 2030



VISION FOR 2030

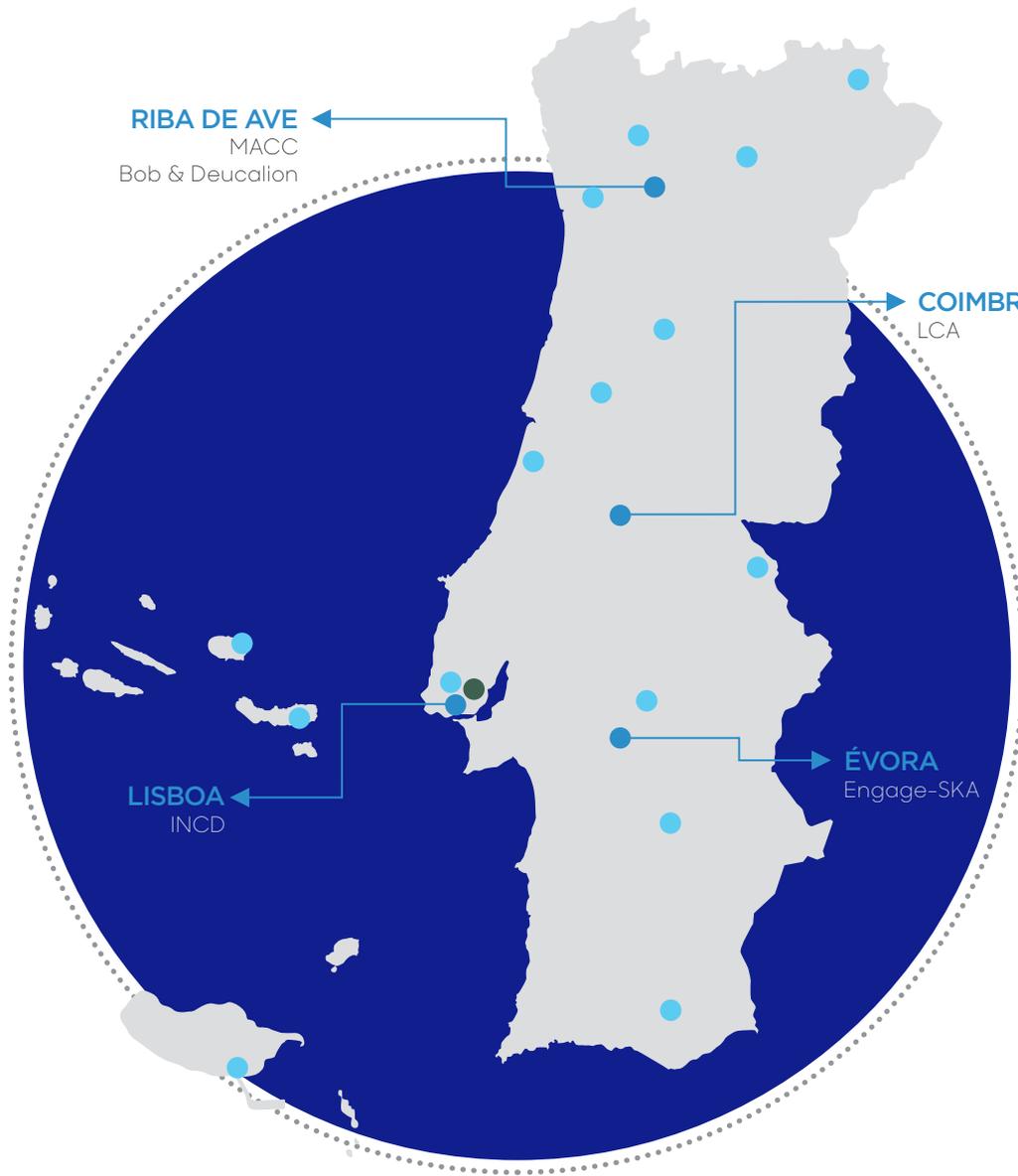
- > A thriving **Advanced Computing Services Economy**, involving Academia, Industry, SMEs and the Public Sector;
- > Portugal is a key provider of **Advanced Computing Software and Services**;
- > Portugal as an **Advanced Computing Living Lab Environment**;
- > Portugal is a reference in Education and Training of People in fundamental and applied **Advanced Computing knowledge areas**.

STRATEGY

ACP.2030 is a science, innovation and growth strategy to foster Advanced Computing in Portugal in the European context, oriented towards building a high-performance computing world-reference network infrastructure. The strategy comprehends 3 main areas of intervention: to create an **infrastructure** of supercomputing in the country at the service of research and innovation; to develop and retain high valued **people** with strong advanced computing skills; and to put in place an **info-structure** of public policies to fill the gap between the infrastructures and people in a way that fosters the creation of high valued services and software.

Five lines of action are identified where Portugal has relevant arguments to use advanced computing as a tool for creating knowledge and innovation with high potential economic impact:

- HEALTH BIT**
promoting advanced computing networks for health applications, in a way to foster health services to *patients* in association with the massive use of datasets and data processing tools by physicians and health care units
- EARTH-SPACE BIT**
promoting advanced computing networks for earth observation and the sustainable development, in a way to foster the preservation of biodiversity through data services to *citizens, government organizations and industry*, in association with data banks and data processing tools for agriculture, forests, fisheries and climate-energy interaction, among other fields
- MOBILITY BIT**
promoting advanced computing networks for mobility patterns, in a way to foster data services for *citizens, government organizations and industry* in association with data banks and data processing tools for maritime transportation (including space driven autonomous shipping), road transportation and urban environments (including car to car communication), among other fields
- SOCIAL BIT**
promoting advanced computing networks for people communication (involving online translation), social networks, behaviours and attitudes, in a way to foster social wellbeing through data services to *citizens, government organizations and industry*, in association with data banks and data processing tools for public services, among other fields
- SCIENTIFIC BIT**
promoting advanced computing networks for new challenges in the frontiers of knowledge, including in particle physics, plasma physics, chemistry, astronomy, fluid dynamics and molecular modelling and cellular processes, among others



- Advanced Computing Competence Centres (CC)
- Advanced Computing Operation Centres (OC)
- Fundação para a Ciência e a Tecnologia (FTC)

NATIONAL NETWORK FOR ADVANCED COMPUTING

- > Many Operation Centres and Competence Centres, one National Network for Advanced Computing (NNAC);
- > NNAC supervises ACP.2030, coordinating OCs and CCs;
- > Federates the OCs providing common authN authZ, accounting, monitoring and access interfaces;
- > Interconnect the OCs and CCs with dedicated high-performance network connectivity provided by FCCN-FCT integrated in RCTS;
- > A one-stop shop for new users to expand areas and bring new users, particularly industry (incl. SME's);
- > Promote standards adoption and best practices to create interoperability;
- > Promote a Research, Innovative and Entrepreneurial environment;
- > Prepare the future by modernizing the infrastructure and provide access to future computing models (quantum, neuromorphic).

INFO-STRUCTURE

- > Promote Research and Innovation with New Players and new Application Areas;
- > Creation and provisioning of Advanced Computing added value services, namely scientific portals, processing workflows, virtual research environments and data exploration services;
- > Creation of new competitive calls to provide computing resources from NNAC to research groups and industry, including SME's;
- > Promote and finance partnerships between academia and medium and large companies for specific advanced computing applications;
- > Create a favorable environment for the creation and growth of start-ups oriented towards Advanced Computing based services and technology, in particular on the development of novel AC software for data mining, engineering and visualization;
- > Modernize Public Administration services with the AC System (Academia, Industry, Research Units, ...);
- > Promote partnerships between Academia and the Manufacturing Industry (incl. SME's) using NNAC services in their production processes;
- > Launch competitive calls for Future Computing Models technology, software and services, namely for fundamental research, applications and services.

PEOPLE

- > Develop and retain high valued human resources with Advanced Computing skills;
- > Bring in people with existing AC knowledge, competences and capabilities;
- > Create advanced computing education and training programs for the reskilling and upskilling of graduates;
- > Increase postgrad offering in AC relevant areas with Universities, involving subjects as parallel and distributed programming, resilience and data visualization;
- > Support the creation of short courses for specific AC techniques and technologies oriented to industry needs;
- > Promote the inclusion of AC subjects in courses from other scientific areas, namely Health, Aerospace, Mechanics and Physics;
- > Provide an easy access of NNAC resources for Education and Training;
- > Promote education programs in Future Computing models (quantum, neuromorphic).