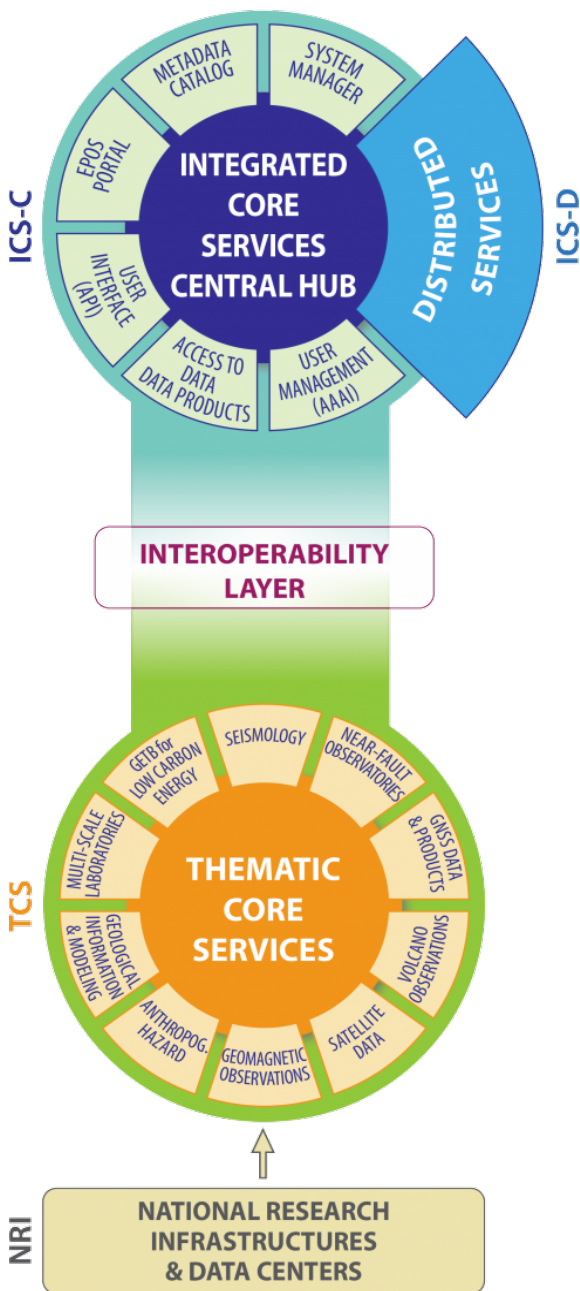




ICT Architecture



The EPOS architecture has been designed to organize and manage the interactions among different EPOS actors and assets. To make it possible for the EPOS enterprise to work as a single, but distributed, sustainable research infrastructure, its architecture takes into account technical, governance, legal and financial issues. Three complementary elements form the ICT architecture:

The **Integrated Core Services (ICS)** represent the novel e-infrastructure that will allow access to multidisciplinary data, products (including synthetic data from simulations, processing and visualization tools), and services to different stakeholders, including but not limited to the scientific community (i.e., users). The key element of the **ICS** in EPOS will be a central hub (**ICS-C**) where users can discover and access data and data products available in the **TCS** and NRIs as well as access a set of service for integrating and analysing multidisciplinary data.

The **Thematic Core Services (TCS)** are the community-specific integration (e.g., seismology, volcanology, geodesy, experimental laboratories, etc). They represent transnational governance frameworks where data and





services are provided to answer scientific questions and where each community discusses their specific implementation, best practices and sustainability strategies as well as legal and ethical issues. The [TCS](#) were designed taking into account the requirements of the different EPOS communities. The fact that ten [TCS](#) contributed to EPOS demonstrates the multidisciplinary breadth of the integration plan and the potential impact of the community building aspect of EPOS. [TCS](#) will be interoperable with [ICS](#) thanks to appropriate ICT solutions (the compatibility layer).

The **National Research Infrastructures (NRIs)** represent the underpinning EPOS data providers that will guarantee access to quality-checked data and products. The EPOS architecture ensures that new RIs as they become operational can be integrated in future. The existing solid Earth science NRIs which support the EPOS integration plan are listed in the RIDE database. RIs contributing to EPOS will continue to be owned and managed at a national level. These have a significant economic value both in terms of construction and yearly operational costs, which are typically covered by national investments that must continue during EPOS implementation, construction and operation.

The technical interface between [TCS](#) and [ICS](#) is the **interoperability layer**, which guarantees communication and interoperability. The [ICS-C](#) single-sited (replicated for resilience) e-infrastructure will include the EPOS portal and its key functions: the Application Programming Interface (API), the metadata catalogue, the system manager and the services that will allow the data discovery, the interactions with users as well as the access, download and integration of data. The [ICS-C](#) will also provide access to distributed resources which form the distributed [ICS \(ICS-d\)](#) and include access to supercomputing facilities as well as to visualization, processing and modelling tools that need not be centralised. [ICS-d](#) may be (a) additional computing/storage/detector array facilities outside the scope of EPOS; (b) nodes providing general software services used across all [TCS](#) such as input/validation, data management, analytics, simulation, mining, visualisation; (c) replicates/mirrors of [ICS-C](#) in distributed locations for resilience and performance.

