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ICDI Competence Centre for Open Science, FAIR and EOSC - Mission, strategy and action plan

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This document presents the mission and strategy of the Italian Competence Centre on Open Science, FAIR, and EOSC. The Competence Centre is an initiative born within the Italian Computing and Data Infrastructure (ICDI), a forum created by representatives of major Italian Research Infrastructures and e-Infrastructures, with the aim of promoting synergies at the national level, and optimising the Italian participation to European and global challenges in this field, including the European Open Science Cloud (EOSC), the European Data Infrastructure (EDI) and HPC. This working paper depicts the mission and objectives of the ICDI Competence Centre, a network of experts with various skills and competencies that are supporting the national stakeholders on topics related to Open Science, FAIR principles application and participation to the EOSC. The different actors and roles are described in the document as well as the activities and services offered, and the added value each stakeholder can find in the Competence Centre. The tools and services provided, in particular the concept for the portal, through which the Centre will connect to the national landscape and users, are also presented. This record is the English translation of the original Italian (2021). Competence Centre ICDI per Open Science, FAIR, ed EOSC - Mission, Strategia e piano d'azione. Zenodo. <https://doi.org/10.5281/zenodo.5071055>

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ICDI Competence Centre for Open Science, FAIR and EOSC

Mission, strategy and action plan

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ICDI Competence Centre for Open Science, FAIR, and EOSC

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1. Mission and objectives of the ICDI Competence Centre

The mission of the ICDI Competence Centre (ICDI-CC) is to create a network of experts, initiatives and research infrastructures with various functional competencies to support the Italian national community dedicated to the Open Science, the FAIR principles for research results and for the Italian participation in the European Open Science Cloud (EOSC) initiative.

The ICDI-CC is part of a broader context of European initiatives to foster Open Science, the diffusion of FAIR principles and the participation in EOSC, which include research infrastructures, e-infrastructures and projects that have led to the creation of specific competences and national nodes in Italy. The ESFRI research infrastructures, OpenAIRE, the Research Data Alliance, GO-FAIR, the projects of the INFRAEOSC-05 call, are examples of initiatives developed through a European network of national nodes. The EOSC Association itself is a legal entity with representatives from member states and associated countries.

Following the launch of EOSC in 2018, during the two-year period of provisional governance, the need for competence centres has emerged with the aim to consolidate and build on the expertise that had been developed. These competence centres could be national-based, like ICDI, or they could be discipline or thematic-based, i.e. for Open Science practices applied to a specific research community or to a specific topic such as making data FAIR.

By pooling the competences available within research institutions, universities and thematic and cross-disciplines research infrastructures, the Competence Centre intends to act as a single national reference point for:

- **Training and support:** providing support, consultancy and training activities on Open Science, FAIR principles and EOSC.
- **Empowerment:** fostering the integration of Open Science in the daily practice of the different stakeholders, through the acquisition of skills and the awareness of the positive effects.
- **Professionalisation:** designing and promoting structured training and the introduction of the new professional figure of the data steward into research institutions.
- **Good practices:** promoting the development and dissemination of good practices by making accessible guides, guidelines, standards, training and information resources - also produced by others - on Open Science, FAIR principles and EOSC.
- **Tools and services:** providing access to tools and services to apply Open Science good practices and to enable the FAIR-by-design both by taking into account the peculiarities of the different research communities and by fostering the exchange of experiences between sectors.

The ICDI-CC activity will address a variety of stakeholders, such as those responsible for the governance of research institutions, public and private funding bodies, individual researchers and support staff, including the network of data stewards. The action will be addressed to all components of society that can contribute to and benefit from Open Science, the application of FAIR principles and the building of EOSC, such as public administrations, innovative enterprises and citizens.

The ICDI-CC network of experts will have a dedicated web portal for interaction with the different stakeholders, to:

- get in touch with experts for peer support and discussion
- access a showcase and customised channels based on specific interests to learn and communicate training initiatives
- access a national catalogue of training resources, tools and services
- browse information sections with specific content for different types of players.

2. Stakeholders and roles

The categories of stakeholders of the ICDI-CC are:

- researchers
- domain or sector experts
- data stewards
- research support staff
- governance of public and private institutions, bodies and research centres
- public administrations, professionals and companies that (re)use or produce data for research
- funding bodies
- service providers
- public and private training and education institutions and agencies
- Individuals and representatives of civil society (patient/caregiver associations, media, advocacy organisations, etc.)
- ethical committees.

Stakeholders can then play two main roles: users and providers of ICDI-CC services. These two roles may also coincide; for example, the same researcher may make use of services provided by the ICDC and, on other occasions, be the expert called upon to provide another service.

a) Users of ICDI-CC services

Users are defined as those who make use of the services and support offered by the ICDI-CC, from time to time with specific characteristics for each category.

b) Service Providers through the ICDI-CC

Two types of service providers are expected: experts and service providers.

The **experts** in the ICDI-CC network provide expertise in various fields, deliver specific training, offer support on Open Science, FAIR principles and EOSC. As indicated in the section Defining skills and competences, experts belong to different professional categories with specific competences for a given sector/discipline. They will be able to carry out various activities, including for example training courses, support and advice and the creation or dissemination of guides, guidelines and good practices.

Expert profiles will be made available on the public portal, so that user requests can be allocated according to different needs and expertise.

Service providers are research infrastructures, e-infrastructures, institutions, initiatives, projects, able to provide services of several kinds and contribute to the implementation of the activities defined in the paragraph "Services and Tools".

3. Defining skills and competences

Over the last few years, many projects and initiatives have enabled Italian institutions to acquire skills on Open Science and FAIR principles, which are now also functional to realise and participate in EOSC. This heritage can be usefully pooled and integrated in the ICDI-CC to provide training, support and services to the national community willing to adopt Open Science practices and FAIR principles and contribute to EOSC.

The competences made available within the ICDI-CC are:

- **Policy and strategic guidance**

Support to institutions and funding bodies in the drafting of guidelines, regulations, strategic plans and Open Science policies, functional to the management of data according to the FAIR principles and to EOSC and in the monitoring of their application.

- **Legal and ethical**

Legal competences on the management and sharing of research processes and results. This includes re-use licences, copyright agreements, data management contracts and related rights, compatibility between IPR and Open Science, protection of personal data and mixed data, analysis of legal aspects of the European data strategy.

In addition, ethical aspects are always to be considered in many research activities, especially in relation to the quality of information and participation in accessing particular data and innovative rights at stake (i.e. return of results, open future - for children, etc.). In this case, the support will serve to show the ethical implications or aspects to be considered in each step of the scientific work, in a responsible Research and Innovation horizon.

- **Research data management, FAIR principles, data management plan**

Cross-cutting skills for researchers and data stewards on how to manage the phases of the research data lifecycle, such as planning, production/collection, preparation of data for analysis, processing, use of standards for formats and metadata, ontologies, deposit of data in repositories for long-term preservation and reuse. The skills required include the application of FAIR principles to the data cycle and the drafting of the Data Management Plan (DMP), and may include knowledge of storage and computing services.

- **Open Access**

Practical skills for Open Access to scientific literature and other research products, with the ability to highlight the options available to different actors (researchers, institutions, funding bodies, etc.).

- **Domain and sector specific**

Specific competences for different research domains, thematic areas and data types: beyond cross-cutting competencies, best practices, tools, workflows, services for Open Science are often different depending on the specific research domain. Some domains have developed well-defined research infrastructures offering services to researchers for Open Science and the application of FAIR principles to data. This also includes cross-domain infrastructures and e-infrastructures and thematic competence centres.

4. Definition of activities and services offered

The ICDI-CC aims to support and develop activities to disseminate Open Science best practices and FAIR principles, fully integrating them into the methodologies and flows of scientific work in the EOSC era. All the activities carried out will be disseminated through information and

communication events addressed in general to all the actors involved. The activities foreseen by the ICDI-CC are:

- **Training courses**

Customised training courses will be offered according to the different profiles of the ICDI-CC service users and courses will be organised on the 'train the trainers' model to achieve a resonance effect in the different organisations. The material produced will be made available through the ICDI-CC catalogue. The competence centre will also provide specialised training and refresher courses for data scientists, data curators and other EOSC-related professional profiles such as resource and service managers. In addition, vocational training courses are planned for data stewards, a professional figure needed to implement the EOSC but for whom there is currently no defined training path. For this activity, which will be coordinated with other European initiatives supporting the EOSC, light certifications (e.g. of the "open badge" type) will be evaluated, relying on the prerogatives of the affiliated organisations. Finally, partnership agreements will be developed to organise and promote training and education activities.

- **Guides, guidelines and good practices**

The ICDI-CC will disseminate or produce guides, guidelines, tutorials, teaching materials and other resources. Successful initiatives and good practices already in place in different scientific communities, institutions and stakeholders will be mapped and described and made available to ICDI-CC users as examples to follow. The dissemination of good practices is in fact considered a tool for virtuous contamination between the different disciplines and thematic areas: the ICDI-CC intends to be also a place of exchange and coordination between experts.

- **Support and advice**

Within the ICDI-CC, a competence map will be offered so that users can easily find the right expert for a specific need.

Experts will provide support and advice at various levels and on several topics related to EOSC, FAIR principles and Open Science. The aim will also be to foster a multidisciplinary approach, facilitating coordination between research institutions and bringing together different scientific fields on the key issues of the competence centre. In this sense, the ICDI-CC also aims to facilitate the positive exchange of good practices between the diverse disciplinary or thematic fields.

- **Services and tools**

The ICDI-CC CC proposes to make available various services and tools based on the emerging needs of the community, through a catalogue of resources, courses, services, useful tools (e.g. DMP tool for drawing up the data management plan, "sand box" type environments built from various services/tools already in use in the various research infrastructures, etc.).

- **Catalogue management and editing**

The ICDI-CC resource catalogue contains material that is functional to the services and activities offered. The material available is heterogeneous and includes:

- training material (such as slides and comprehensive and structured courses)
- dissemination resources (presentations, posters, brochures, etc.)

- official documents (e.g. from funding bodies)
- description of good practices, guides, OS regulations
- services
- tools
- events.

The types of records in the resource catalogue are not limited to the list above and are expected to evolve according to the needs expressed by the various actors involved and according to the development of the ICDC over time.

The catalogue will be compiled and maintained by a team of experts from the ICDI-CC who will select the resources to be included and request new material as needs arise. The catalogue could be built from the national one, which is being discussed in the EOSC-Pillar project.

5. The web portal

The portal will be the point of contact between the various stakeholders of the ICDI-CC and will include:

- an information section where users can find information on EOSC, FAIR principles and Open Science
- a section where stakeholders can find a profile of the experts of the ICDI-CC network
- news about events
- the ICDI-CC catalogue of resources
- tools such as knowledge base and FAQs, as well as a support and advice section where it is possible to interact with the network of experts and to dynamically sort user requests according to the different needs and competences of the experts.

The portal will be developed on the basis of the www.open-science.it project to be published by CNR.

1. Added value for the various actors

The ICDI-CC offers benefits for different roles and stakeholders.

Service users will find in one place (one-stop shop) information, events, tools, training courses and a network of experts on aspects related to EOSC, Open Science and FAIR principles. All this will be made available with an overview to facilitate the integration of good practices into workflows and to make the transition to Open Science a reality. For example, this will mean having courses available to learn basic or specific aspects of open science, or to train for one of the new professions needed, such as data steward, or to update in key ones such as data librarian. It will mean having tools to easily find these elements, such as the resource catalogue. Or, for institutions, it will mean being able to count on the support needed to adopt and implement an Open Science strategy.

Finally, citizens and society at large will be able to have a point of contact with the scientific community, observing scientific work at close quarters and understanding its mechanisms, participating in citizen science projects, or benefiting from the results produced by an open and

transparent scientific method, of which they will be able, for example, to reuse open data for a variety of purposes.

Service providers will have a showcase to promote initiatives, events, services and tools on the Italian scene. Since all actors are indispensable, service providers will have the crucial role of contributing to the empowerment of each one, spreading awareness and the ability to participate in making EOSC happen. This will mean leading the way for change and being identified as reference points.

The ICDI-CC will allow experts to extend their network of contacts and will contribute to the virtuous contamination between different disciplinary fields, it will be a forum where experts from different sectors and domains can confront each other and strengthen their competences. The link with the competence centres expected to be set up in the rest of Europe will also give greater visibility to national initiatives and encourage the development of international collaborations.