

EOSC Glossary

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EOSC Glossary Interest Group

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1 Introduction

The present document is intended as a basis for the terminological standardisation process within the context of the European Open Science Cloud (EOSC) initiative, with the objective of facilitating and improving the actual communication between the different communities involved.

The realisation of the glossary follows a process of collection, harmonisation and validation of the definitions of the concepts, based on the analysis of the EOSC related documents and the review of the terminological collections, the standards and the specific literature connected to the concepts.

The collected definitions and formulations are analysed and compared in order to identify the characteristics that constitute a concept and, in particular, those that distinguish it from the others.

The set of characteristics that constitute a concept creates relationships with the ones of the other concepts. Those relationships are the basis for establishing a concept system, in which the position of a concept depends on its relationships with the others, thus creating a de facto hierarchy, which implies an inheritance system.

The coherence of the glossary is achieved through the concept system that, while improving the consistency of the glossary, imposes constraints on the definitions, heavily influencing the harmonisation process.

Already existing authoritative definitions are used when possible, even though it can be necessary to modify them during the harmonisation process (the modifications are indicated in the source section of the entry).

The necessary new definitions are formulated reflecting the previously defined concept system with the intent to provide the means to avoid any confusion when referring to each different concept.

They are as concise as possible, containing only those elements that are required to distinguish one concept from the others in the concept system, thus stating its superordinate concept and the necessary delimiting characteristics.

The terms are listed in alphabetical order.

2 Entry structure

Each term is preceded by an entry number. The preferred terms are written in bold and are followed by the admitted terms, if any. The definition may be preceded by a domain indication

and can be followed by examples and notes to disambiguate, specify and clarify the context and the usage of the term.

If an entry or any part of it is a quotation from another document, it is indicated at the end of it, accompanied by a modification statement, if that is the case.

entry number
preferred term
admitted term
<domain> definition

EXAMPLE:

Note to entry:

[SOURCE:]

3 Terms and definitions

3.1

actor

individual or [organisation](#) that fulfils one or more roles in the [EOSC](#).

EXAMPLE: a research organisation participating in the EOSC initiative as a service provider and as a user.

3.2

architecture

fundamental concepts or properties of a [system](#) in its environment embodied in its [components](#), relationships, and in the principles of its design and evolution.

[SOURCE: ISO/IEC/IEEE 42010:2011, modified — reference to components instead of elements]

3.3

cloud computing model

model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics (On-demand self-service, Broad network access, Resource pooling, Rapid elasticity, Measured service), three service models (Software as a Service, Platform as a Service, Infrastructure as a Service), and four deployment models (Private cloud, Community cloud, Public cloud, Hybrid cloud).

[SOURCE: Mell, P., & Grance, T. (2011). *The NIST Definition of Cloud Computing. Recommendations of the National Institute of Standards and Technology* (Special Publication

800-145; Reports on Computer Systems Technology). National Institute of Standards and Technology, Information Technology Laboratory.
<https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-145.pdf>

3.4

cloud infrastructure

[ICT infrastructure](#) enabling the [cloud computing model](#).

3.5

component

<EOSC> discrete [actor](#), [service](#), [policy](#), [data](#) or [infrastructure](#) that can be considered an asset or a constituent part of the [EOSC](#)

3.6

component

<system> discrete part of a [system](#)

3.7

computing infrastructure

[ICT infrastructure](#) enabling computational services.

3.8

data

reinterpretable digital representation of [information](#) in a formalized manner suitable for communication, interpretation, or processing.

[SOURCE: ISO 8000-2:2020, modified — added digital]

3.9

data infrastructure

[ICT infrastructure](#) enabling [services](#) for supporting the [data](#) life-cycle.

3.10

dataset

logically meaningful group of [data](#).

[SOURCE: ISO/TS 18101-1:2019]

3.11

digital infrastructure

[infrastructure](#) constituted by a physical layer (hardware) and an abstraction layer (software) that is based on the physical one.

Note 1 to entry: Digital infrastructures, unlike physical ones, are generative: they can be used recursively to create new digital infrastructures.

3.12

digital platform

software-based [external platform](#).

Note 1 to entry: A software-based external platform consists of the extensible codebase of a software-based system that provides core functionality shared by the modules that interoperate with it and the interfaces through which they interoperate.

[SOURCE: Ghazawneh, A., & Henfridsson, O. (2015). A paradigmatic analysis of digital application marketplaces. <https://doi.org/10.1057/jit.2015.16>]

3.13

digital resource

[resource](#) constituted by a sequence of bytes.

[SOURCE: ISO/IEC 21320-1:2015, modified — reference to resource]

3.14

e-infrastructure

[ICT infrastructure](#) enabling digital services for data- and computing-intensive research in virtual and collaborative environments.

[SOURCE: <https://ec.europa.eu/digital-single-market/en/e-infrastructures>, modified — reference to ICT infrastructure]

3.15

ecosystem

<actor> set of [actors](#) with varying degrees of multi-lateral, non-generic complementarities that are not fully hierarchically controlled.

[SOURCE: Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. Strategic Management Journal, 39(8), 2255–2276. <https://doi.org/10.1002/smj.2904>]

3.16

emergent behaviour

functions and purposes performed and carried out by a [system](#) that do not reside in any of its [components](#).

[SOURCE: Maier, M. W. (1996) Architecting Principles for Systems-of-Systems INCOSE International Symposium, Vol. 6, Issue 1, doi: [10.1002/j.2334-5837.1996.tb02054.x](https://doi.org/10.1002/j.2334-5837.1996.tb02054.x)]

3.17

EOSC-Core

set of [services](#) providing the means to discover, share, access and re-use [data](#) and services.

Note 1 to entry: The EOSC-Core does not, itself, provide the means to transfer, store, process or preserve research data.

[SOURCE: Jones, B., Devereux, C., & Mustajoki, H. (2019). *Solutions for a Sustainable EOSC. A tinman report from the EOSC Sustainability Working Group* (p. 19). EOSC Executive Board, Sustainability Working Group.

https://www.eoscsecretariat.eu/system/files/solutions_for_a_sustainable_eosc_-_tinman_draft_02dec19.pdf, modified — added set of services]

3.17beta

EOSC-Core

[online platform](#) providing the means to discover, share, access and re-use [data](#) and [services](#).

3.18

EOSC-Exchange

set of [services](#) storing and exploiting [FAIR data](#) and encouraging its reuse.

EXAMPLE: Examples of services included in the EOSC-Exchange are those that store, preserve or transport research data as well as those that compute against it.

[SOURCE: Jones, B., Devereux, C., & Mustajoki, H. (2019). *Solutions for a Sustainable EOSC. A tinman report from the EOSC Sustainability Working Group* (p. 19). EOSC Executive Board, Sustainability Working Group.

https://www.eoscsecretariat.eu/system/files/solutions_for_a_sustainable_eosc_-_tinman_draft_02dec19.pdf, modified — added set of services storing]

3.18beta

EOSC-Exchange

set of [services](#) complementing the [EOSC-Core](#) (3.17beta) that store and exploit [FAIR data](#) encouraging its reuse.

3.19

Executive Board

body of the [governance structure](#) tasked to oversee the [EOSC](#) implementation, provide advice on the way forward and on the implementation of the strategic and funding orientations and assist with the transition beyond 2020.

[SOURCE: European Commission. (2018). COMMISSION DECISION of 27.8.2018 Setting up the Expert Group - Executive Board of the European Open Science Cloud ('EOSC') and laying down rules for its financing, modified — reference to body of the governance structure]

3.20

external platform

industry platform

platform

[ICT infrastructure](#) that consists in a set of stable [components](#) providing the foundation upon which the [actors](#) of an [ecosystem](#) can develop complementary products, technologies, or services, and that has the potential of creating network effects.

3.21

European Open Science Cloud EOSC

The [system](#) resulting from the activities and initiatives promoted by the European Commission to support its [policies](#) on [Open Science](#) and [Open Innovation 2.0](#).

Note 1 to entry: It is a trusted system providing seamless access to data and interoperable services. It supports the whole research data cycle, from discovery and mining to storage, management, analysis and re-use across borders and disciplines.

Note 2 to entry: It consists of a set of interacting [components](#): [actors](#), [services](#), [data](#), [policies](#), and [infrastructures](#).

Note 3 to entry: It is implemented by adopting a federated, decentralised, distributed and participatory approach.

Note 4 to entry: The system performs functions and carries out purposes that do not reside in any component alone (aka [emergent behaviour](#)).

[SOURCE: Candela, L., Mangione, D. (2020). Towards a Coherent and Shared Glossary for the European Open Science Cloud.

https://docs.google.com/document/d/1wj9u8QWuCING1O3Lf_yWQJWftXhQwkN_4LzCz48feSQ/edit?usp=sharing]

3.22

FAIR data

[data](#) that conform to the [FAIR principles](#).

3.23

FAIR principles

FAIR Guiding Principles

set of guiding lines to make [data](#) Findable, Accessible, Interoperable, and Reusable.

[SOURCE: COMMISSION DECISION of 27.8.2018 Setting up the Expert Group - Executive Board of the European Open Science Cloud ('EOSC') and laying down rules for its financing]

3.24

First iteration

first version of the [MVE](#) consisting of the first version of the [EOSC-Core](#) and the first version of the [EOSC-Exchange](#).

3.25

Governance Board

body of the [governance structure](#) representing the Member States, the Associated Countries and the Commission.

[SOURCE: European Commission. (2018). COMMISSION DECISION of 27.8.2018 Setting up the Expert Group - Executive Board of the European Open Science Cloud ('EOSC') and laying down rules for its financing, modified — reference to body of the governance structure]

3.26

governance structure

<EOSC> set of bodies that are responsible for the governance of the [EOSC](#)

3.27

high-performance computing infrastructure

high performance computing infrastructure

HPC infrastructure

[computing infrastructure](#) enabling the [high performance computing paradigm](#).

3.28

high-performance computing paradigm

high performance computing paradigm

HPC paradigm

computing [paradigm](#) that focuses on the efficient execution of compute intensive, tightly-coupled tasks. Given the high parallel communication requirements, the tasks are typically executed on low latency interconnects which makes it possible to share data very rapidly between a large numbers of processors working on the same problem. HPC systems are delivered through low latency clusters and supercomputers and are typically optimised to maximise the number of operations per seconds. The typical metrics are FLOPS, tasks/s, I/O rates.

[SOURCE: *Glossary V3—EGIWiki*. Retrieved 19 June 2020, from https://wiki.eqi.eu/wiki/Glossary_V3]

3.29

high-throughput computing infrastructure

high throughput computing infrastructure

HTC infrastructure

[computing infrastructure](#) enabling the [high throughput computing paradigm](#).

3.30

high-throughput computing paradigm

high throughput computing paradigm

HTC paradigm

computing [paradigm](#) that focuses on the efficient execution of a large number of loosely-coupled tasks. Given the minimal parallel communication requirements, the tasks can be executed on clusters or physically distributed resources using grid technologies. HTC systems are typically optimised to maximise the throughput over a long period of time and a typical metric is jobs per month or year.

[SOURCE: *Glossary V3—EGIWiki*. Retrieved 19 June 2020, from https://wiki.eqi.eu/wiki/Glossary_V3]

3.31

information

[data](#) that are processed, organized and correlated to produce meaning.

[SOURCE: ISO/IEC 20547-3:2020]

3.32

information and communication technology infrastructure

ICT infrastructure

[digital infrastructure](#) enabling all categories of ubiquitous technology used for the gathering, storing, transmitting, retrieving, or processing of [information](#) (e.g., microelectronics, printed circuit boards, computing systems, software, signal processors, mobile telephony, satellite communications, and networks).

[SOURCE: DoDI 5200.44, modified — reference to digital infrastructure]

3.33

information technology infrastructure

IT infrastructure

[ICT infrastructure](#) consisting of all the technical components, system software, databases and data files and deployed application software, technical procedures, and technical documentation used to make the [information](#) available.

[SOURCE: ISO/IEC 16350:2015, modified — reference to digital infrastructure]

3.34

infrastructure

<organization> [system](#) of facilities, equipment and [services](#) needed for the operation of an [organization](#)

EXAMPLE: All the facilities, hardware, software and data required to run and maintain a repository; the repository itself can be seen both as a service, if it is used directly by an end-user, or as an infrastructure, if it is used as a component in a more complex system.

Note 1 to entry: Infrastructure is a relational concept: a resource becomes an infrastructure when it is needed in order to enable a service that otherwise could not be offered.

[SOURCE: ISO 9000:2015, modified — example and Note 1 to entry have been added]

3.35

metadata

[data](#) defining and describing other data.

[SOURCE: ISO 8000-2:2020]

3.36

Minimum Viable EOSC

MVE

version of the [EOSC](#), consisting in the minimum set of [components](#) required for its deployment, according to a specification of the minimal functionality/features and quality of service, allowing to collect the maximum amount of EOSC stakeholders' feedback with the least effort.

[SOURCE: Candela, L., Mangione, D. (2020). Towards a Coherent and Shared Glossary for the European Open Science Cloud.
https://docs.google.com/document/d/1wj9u8QWuCING1O3Lf_yWQJWftXhQwkN_4LzCz48feSQ/edit?usp=sharing]

3.37

online platform

[digital platform](#) where users are brought together by a platform operator in order to facilitate an interaction.

Note 1 to entry: Examples of interactions are an exchange of information, a commercial transaction, etc.

[SOURCE: COMMISSION STAFF WORKING DOCUMENT Online Platforms Accompanying the document Communication on Online Platforms and the Digital Single Market {COM(2016) 288}, modified — reference to digital platform instead of "two-sided" or "multi-sided" markets]

3.38

open access

OA

possibility to access and re-use digital research outputs with as few restrictions as possible.

[SOURCE: COMMISSION RECOMMENDATION (EU) 2018-790 of 25 April 2018 on access to and preservation of scientific information]

3.39

open data

[data](#) in an open format that can be freely used, re-used and shared by anyone for any purpose.

[SOURCE: DIRECTIVE (EU) 2019/1024 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019 on open data and the re-use of public sector information (recast)]

3.40

open innovation

OI

distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model.

Note 1 to entry: These flows of knowledge may involve knowledge inflows to the focal organization (leveraging external knowledge sources through internal processes), knowledge outflows from a focal organization (leveraging internal knowledge through external commercialization processes) or both (coupling external knowledge sources and commercialization activities).

Note 2 to entry: Innovation refers to the development and commercialization of new or improved products, processes or services, while the openness aspect is represented by the knowledge flows across the permeable organizational boundary. As an organizational construct, it is moreover the business model, which may be implicit or explicit, that puts the distributed innovation process into the organizational realm as it describes not only how value is created within the value network but also how it is captured by the involved organization(s).

[SOURCE: Chesbrough, Henry and Bogers, Marcel, Explicating Open Innovation: Clarifying an Emerging Paradigm for Understanding Innovation (April 15, 2014). Henry Chesbrough, Wim Vanhaverbeke, and Joel West, eds. New Frontiers in Open Innovation. Oxford: Oxford University Press, Forthcoming (pp. 3-28). Available at SSRN: <https://ssrn.com/abstract=2427233>]

3.41

open innovation 2.0

OI2

[open innovation paradigm](#) based on the [quadruple helix innovation model](#).

3.42

open science

approach to the scientific process based on cooperative work and ways of disseminating knowledge, improving accessibility to and re-usability of research outputs by using digital technologies and collaborative tools.

[SOURCE: COMMISSION RECOMMENDATION (EU) 2018-790 of 25 April 2018 on access to and preservation of scientific information, modified — deletion of time-related adjectives]

3.43

organisation

person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives.

[SOURCE: ISO 9000:2015, modified — Notes to entry are omitted]

3.44

paradigm

recognized scientific achievement that for a time provide model problems and solutions to a community of practitioners.

Note 1 to entry: the concept of paradigm implies that some accepted examples of actual scientific practice — examples which include law, theory, application, and instrumentation together — provide models from which spring particular coherent traditions of scientific research.

[SOURCE: Kuhn, T. S. (1970). *The structure of scientific revolutions* (2d ed., enlarged). University of Chicago Press, modified — removed universally (two paradigms can co-exist and co-evolve; see Carayannis, E. G., & Campbell, D. F. J. (2009). 'Mode 3' and 'Quadruple Helix': Toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management*, 46(3/4), 201. <https://doi.org/10.1504/IJTM.2009.023374>)]

3.45

policy

documented set of intentions, expectations, goals, rules and requirements, often formally expressed by top management representatives in an [organisation](#) or federation.

Note 1 to entry: Policies are then realised in processes, which are in turn made up of activities that people carry out according to defined procedures.

[SOURCE: FITSM. (2016). *FitSM-0: Overview and Vocabulary*.
<https://www.fitsm.eu/download/280/>]

3.46

quadruple helix innovation model

non-linear interaction model in an [ecosystem](#) consisting of government, academic, industry and media-based and culture-based public stakeholders.

3.47

raw data

[data](#) in its originally acquired, direct form from its source before subsequent processing.

[SOURCE: ISO 5127:2017]

3.48

repository

[service](#) delivering organized and persistent data storage that allows data retrieval.

[ISO/IEC/IEEE 26511:2018, modified — reference to service instead of facility]

3.49

research data

[data](#) collected or produced in the course of scientific research activities and used as evidence in the research process, or commonly accepted in the research community as necessary to validate research findings and results.

[SOURCE: DIRECTIVE (EU) 2019/1024 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019 on open data and the re-use of public sector information (recast), modified — reference to data]

3.50

research infrastructure

RI

[Infrastructure](#) enabling the research communities to conduct research and foster innovation in their fields.

[SOURCE: Horizon 2020 Work Programme 2018-2020 4. European research infrastructures (including e-Infrastructures), modified — facilities, resources and services are generalised in the infrastructure concept]

3.51

resource

[component](#) or set of components used to perform an activity.

[SOURCE: ISO 15926-13:2018, modified — reference to component and set of components]

3.52

Rules of Participation

RoP

set of [policies](#) defining a minimal set of rights, obligations and accountability governing the activities of those participating in [EOSC](#).

[SOURCE: Rules of Participation, modified — reference to policies]

3.53

Second iteration

second version of the [MVE](#) including functionalities and [services](#) dedicated to the requirements of government [stakeholders](#).

[SOURCE: Jones, B., Devereux, C., & Mustajoki, H. (2019). *Solutions for a Sustainable EOSC. A tinman report from the EOSC Sustainability Working Group* (p. 19). EOSC Executive Board. Sustainability Working Group.

https://www.eoscsecretariat.eu/system/files/solutions_for_a_sustainable_eosc_-_tinman_draft_02dec19.pdf, modified — added second version of the MVE including; reference to government stakeholders instead of end-users from the public sector]

3.54

service

means of delivering value for the user by facilitating outcomes the user wants to achieve.

Note 1 to entry: Service is generally intangible.

[SOURCE: ISO/IEC 20000-10:2018, modified — Note 2 to entry has been removed]

3.55

stakeholder

[actor](#) that can affect, be affected by, or perceive itself to be affected by a decision or activity.

EXAMPLE: Customers, owners, people in an organization, providers, bankers, regulators, unions, partners or society that can include competitors or opposing pressure groups.

[SOURCE: ISO 9000:2015, modified — Note 1 to entry has been removed; reference to actor instead of person or organization]

3.56

Stakeholders Forum

body of the [governance structure](#) representing the [stakeholders](#).

[SOURCE: European Commission. (2018). COMMISSION DECISION of 27.8.2018 Setting up the Expert Group - Executive Board of the European Open Science Cloud ('EOSC') and laying down rules for its financing, modified — reference to body of the governance structure]

3.57

system

set of [components](#) that are interrelated in order to obtain an [emergent behaviour](#).

3.58

system of systems

[system](#) developed by combining existing systems thus to guarantee (a) Operational independence (if the system-of-systems is disassembled into its component systems, the component systems must be able to usefully operate independently); (b) Managerial independence (the component systems are separately acquired and integrated but maintain a continuing operational existence independent of the system-of-systems); (c) Evolutionary development (the system-of-systems does not appear fully formed. Its development and existence is evolutionary with functions and purposes added, removed, and modified with experience); (e) Emergent behavior (the system performs functions and carries out purposes that do not reside in any component system. These behaviors are emergent properties of the entire system-of-systems and cannot be localized to any component system. The principal purposes of the systems-of-systems are fulfilled by these behaviors); (v) Geographic distribution (the geographic extent of the component systems is large. Large is a nebulous and relative concept as communication capabilities increase, but at a minimum it means that the components can readily exchange only information and not substantial quantities of mass or energy).

[SOURCE: Maier, M. W. (1996) *Architecting Principles for Systems-of-Systems* INCOSE International Symposium, Vol. 6, Issue 1, doi: [10.1002/j.2334-5837.1996.tb02054.x](https://doi.org/10.1002/j.2334-5837.1996.tb02054.x)]

3.59

thematic infrastructure

[infrastructure](#) enabling domain-specific [services](#).

EXAMPLE: ELIXIR (The European Life-Science Infrastructure for Biological Information)

Note 1 to entry: domain examples are: Biomedical Science, Environment and Earth Sciences, Physics and Analytical Facilities, Social Science and Humanities, Astronomy, Energy.

3.60

Third iteration

third version of the [MVE](#) including functionalities and [services](#) dedicated to the requirements of industry and media-based and culture-based public [stakeholders](#).

[SOURCE: Jones, B., Devereux, C., & Mustajoki, H. (2019). *Solutions for a Sustainable EOSC. A tinman report from the EOSC Sustainability Working Group* (p. 19). EOSC Executive Board. Sustainability Working Group.

https://www.eoscsecretariat.eu/system/files/solutions_for_a_sustainable_eosc_-_tinman_draft_02dec19.pdf, modified — added third version of the MVE including; reference to media-based and culture-based public stakeholders instead of end-users from the private sector]

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