



European
Commission

European Open Science Cloud (EOSC) Work Plan 2019-2020

This work plan,
produced by the EOSC
Executive Board,
outlines activities from
mid-2019 until the end
of 2020.



Research and
Innovation

EOSC Executive Board
August 2019

Executive Board of the European Open Science Cloud (EOSC) – EOSC Work Plan 2019-2020

European Commission
Directorate-General for Research and Innovation
Directorate G — Research & Innovation Outreach
Unit G.4 — Open Science
Contact Corina Pascu
Email corina.pascu@ec.europa.eu
RTD-EOSC@ec.europa.eu
RTD-PUBLICATIONS@ec.europa.eu
European Commission
B-1049 Brussels

Manuscript completed in August 2019

This document has been prepared for the European Commission, however it reflects the views only of the authors, and the European Commission is not liable for any consequence stemming from the reuse of this publication.

More information on the European Union is available on the internet (<http://europa.eu>).

Luxembourg: Publications Office of the European Union, 2019

PDF ISBN 978-92-76-11315-7 doi: 10.2777/972843 KI-03-19-725-EN-N

© European Union, 2019

Reuse is authorised under the terms of the Creative Commons Attribution License. The reuse policy of European Commission documents is regulated by Decision 2011/833/EU (OJ L 330, 14.12.2011, p. 39).

For any use or reproduction of photos or other material that is not under the copyright of the European Union, permission must be sought directly from the copyright holders.

Cover page image: © Lonely # 46246900, ag visuell #16440826, Sean Gladwell #6018533, LwRedStorm #3348265, 2011; kras99 #43746830, 2012. Source: Fotolia.com

European Open Science Cloud (EOSC)

Work Plan 2019-2020

This work plan, produced by the EOSC Executive Board, outlines activities from mid-2019 until the end of 2020.

Editors: Jean-François Abramatic, Jan Hrušák & Sarah Jones.

Contributors: EOSC Executive Board members.

Reviewers: Karel Luyben & Cathrin Stöver



Table of Contents

- 1 EXECUTIVE SUMMARY 4**
- 2 A FIRST EOSC ITERATION BY END 2020 5**
 - 2.1 RULES OF PARTICIPATION 5
 - 2.2 LANDSCAPING EXERCISE 5
 - 2.3 STRATEGIC AND FINANCING OPTIONS 6
 - 2.4 FEDERATED CORE SERVICES AND CATALOGUES OF DATA AND SERVICES 6
 - 2.5 EOSC INTEROPERABILITY FRAMEWORK..... 6
 - 2.6 PERSISTENT IDENTIFIER POLICY 7
 - 2.7 METRICS FOR FAIR DATA AND CERTIFIED SERVICES..... 7
- 3 TIMELINE..... 8**
- 4 PROCEDURES AND REQUIRED INPUTS..... 9**
 - 4.1 LIAISON WITH H2020 PROJECTS, NATIONAL INITIATIVES, DISCIPLINARY SERVICES AND OTHERS 9
 - 4.2 LIAISON WITH GOVERNANCE BOARD..... 9
 - 4.3 ITERATION AND TESTING 10
 - 4.4 THE ROLE OF THE STAKEHOLDER COMMUNITY 10

EOSC Executive Board, August 2019

Karel LUYBEN: Executive Board Co-Chair, CESAER representative

Cathrin STÖVER: Executive Board Co-Chair, GÉANT Representative

Jean-François ABRAMATIC: Architecture WG chair, Individual Expert

Juan BICARREGUI: Rules of Participation (Rop) WG Chair, Research Data Alliance (RDA) Representative

Jan HRUŠÁK: Landscape WG chair, Individual Expert

Sarah JONES: FAIR WG chair, Individual expert

Conor O'CARROLL: Sustainability WG co-chair, Science Europe Representative

Rupert LÜCK: Sustainability WG co-chair, EMBL Representative

Natalia MANOLA: OpenAIRE Representative

John WOMERSLEY: European Spallation Source ERIC Representative

Ron DEKKER: CESSDA Representative

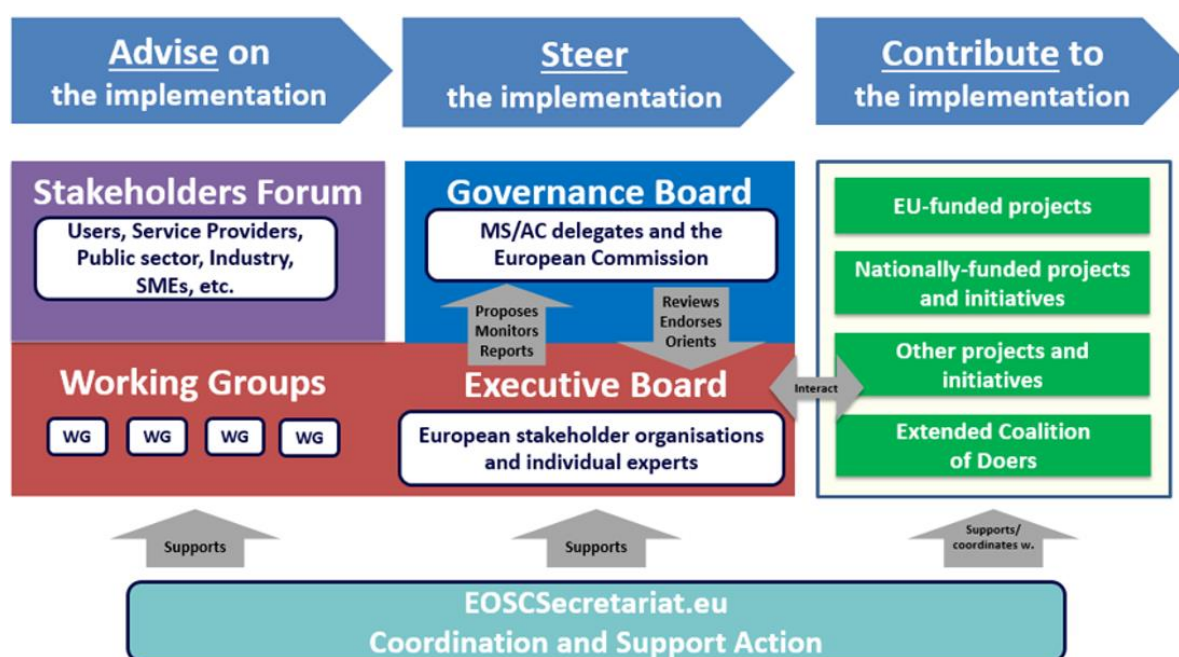
1 EXECUTIVE SUMMARY

The coordination of investments and other relevant activities to implement and govern the European Open Science Cloud (EOSC) is a complex task. It is a multi-year undertaking which is being addressed pragmatically in several stages. This work plan outlines activities that will run for 18 months from mid-2019 until the end of 2020. It operationalizes the EOSC Strategic Implementation Plan¹ reviewed by the EOSC Governance Board and approved by the EOSC Executive Board.

An interim governance structure has been established with four key components:

1. A Governance Board (GB) with representatives from the European Commission, Member States and Associated Countries
2. An Executive Board (EB) of 8 community representatives and 3 independent experts selected via an open call
3. A broad-based and inclusive Stakeholder Community open to all
4. A series of Working Groups convened and run by the Executive Board

As shown in the diagram below, the Stakeholder Community, which is composed of the Stakeholder Forum, relevant bodies, projects and initiatives, advise on the implementation together with the EOSC Working Groups. They each provide feedback and recommendations to inform how the Governance Board and Executive Board collectively steer the EOSC. In addition, the many H2020 projects, national initiatives and other 'doers' are the critical actors of the implementation of EOSC.



Source: DGRTD

Figure 1 - EOSC Work Plan 2019-2020

This Work Plan outlines the key outputs which will be delivered in this first phase of implementation. They comprise a first iteration of activities which will be handed over to a new governance structure at the end of 2020. The timelines, methods for delivery and key inputs are outlined below. This Work Plan will be updated periodically, at least in Q1 of 2020, but potentially more regularly if needed.

¹<https://publications.europa.eu/en/publication-detail/-/publication/78ae5276-ae8e-11e9-9d01-01aa75ed71a1/language-en>

2 A FIRST EOSC ITERATION BY END 2020

Over the coming 18 months, key outputs will be delivered to ensure EOSC is in operation by the end of 2020. These will be based on delivery from H2020 projects, national initiatives and other services. A comprehensive landscape analysis and ongoing liaison with relevant stakeholders will shape all outputs. The Working Groups will coordinate activities and make recommendations to the Executive Board on what should be endorsed and included in EOSC.

The key outputs to be coordinated by the Working Groups are:

- Agreed and tested Rules of Participation (*RoP WG*)
- Analysis of the existing national infrastructures, activities and initiatives, funding models and national strategies and policies. (*Landscape & Sustainability WGs*)
- A legal entity and post 2020 governance structure (*Landscape & Sustainability WGs*)
- Operational federated core and initial services (*Architecture WG*)
- Catalogues of EOSC data and services (*Architecture WG*)
- EOSC Interoperability Framework (*FAIR, Architecture and RoP WGs*)
- Persistent Identifier policy (*FAIR and Architecture WGs*)
- Metrics for FAIR data and repository certification (*FAIR WG*)

2.1 Rules of Participation

The Rules of Participation will build on the deliverables from the EOSCPilot project. The Rules of Participation define the rights, obligations and accountability of the various EOSC actors, notably data producers, service providers, data/service users. The implementation of the Rules will differ according to the maturity and role of EOSC actors. In June-September 2019, the EOSC RoP Working Group will review and where necessary iterate the Rules and align them with EC projects to agree an initial version for testing. A wide variety of testing will be conducted with different research communities and use cases. The EOSC project concertation meeting on 9-10 September, the EOSC workshop at the RDA plenary in Helsinki and the EOSC Symposium in November will be key events. The online platform will also be used to gather feedback. Iterations will be made periodically and a final version of the Rules released in Q3 2020.

2.2 Landscaping Exercise

One of the first tasks will be the landscape analysis as it will lay the foundation for the work of the other WGs. The initial activity of the Landscape WG will be desk studies of existing national activities. The first deliverable (Q3 2019) will inventory available infrastructures, initiatives, and services based on synthesis performed on existing documents. The report will be complemented by the coordinated effort of the INFRAEOSC-5b projects and will be finalized by Q4 2019. A validation workshop with relevant stakeholder community is foreseen 2019/2020. The final report containing also strategic considerations on funding models will be developed during 2020 and delivered in Q3 2020.

The work will build on existing surveys and analytic framework done by national authorities, different stakeholder communities and the relevant H2020 projects in close collaboration with the Member States (MS) and Associated countries (AC). Initial references include the recent report of e-IRG², findings of the EC group of National points of reference³, the surveys of the OpenAIRE project⁴, the planned survey⁵ of the EOSC-Pillar project, analysis of preliminary mapping UK's research and innovation infrastructure landscape⁶, the experience of ESFRI on cross-disciplinary collaboration of ESFRI

² <http://e-irg.eu/documents/10920/238968/NationalNodesGettingorganisedhowfararewe.pdf>

³ <https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=3477>

⁴ <https://www.openaire.eu/frontpage/country-pages>

⁵ <https://drive.google.com/file/d/1GPzdSfVSvpvVldSGLa2qT6yRaaAbBlz-/view?usp=sharing>

⁶ <https://www.ukri.org/research/infrastructure>

Landmarks,⁷ any other relevant documents identified by the WG members, and outcomes of the survey performed by the Landscape WG itself, should it become necessary to complement earlier findings. The Framework will cover various aspects of national policies, existing funding streams and planned strategic outlooks at national and pan-European levels. First interim report is expected Q3 2019. These preliminary findings will be complemented by targeted surveys, fact finding missions, and interviews. Hereby, significant contributions are expected from the newly funded H2020 (INFRAEOSC 5b) projects (EOSC-Nordic, EOSC-Pillar, ExPaNDS, EOSC-synergy, and NI4OS-Europe) (Delivered Q4 2019 and in Q3 2020).

2.3 Strategic and Financing Options

Building upon the work of the Landscape WG in terms of landscaping exercises and analysing the readiness of MS and AC, the work on the strategic and financing options will be led by the Sustainability Working Group. In the Q4 2019 to Q2 2020 period, the Sustainability WG will further investigate the readiness of MS and AC to contribute financially and in kind to the possible EOSC models developed. Close interactions with MS and AC will help identify existing models and national practices that can be upscaled, on which a pan-European governance model can be built. Furthermore, sustainability of operational funding has to be tackled. In parallel, alternative funding stream options will be explored to help in developing the post-2020 governance model proposal. The Sustainability WG will develop a set of recommendations on funding and governance models which will be discussed in a validation workshop with the MS AC representations in Q2 2020. A finalized governance and funding model will flow into the EOSC final report in Q3 2020.

2.4 Federated core services and catalogues of data and services

Based on the consultation of stakeholders, the EOSC should be a federation of existing and planned research data infrastructures, adding a *soft* overlay to connect them and making them operate as one seamless European research data infrastructure. In terms of architecture, the EOSC would essentially comprise a federating core and a variety of federated research data infrastructures committed to providing services as part of the EOSC. The groundwork for such a federated EOSC architecture was laid by several projects funded under Horizon 2020, which are aiming at federating data infrastructures at the European level and offering shared services (e.g. EGI, EUDAT, ELIXIR, EPOS etc.). In addition, resources were committed to examine the EOSC architecture through the EOSCPilot project. The Executive Board has set up the Architecture Working Group which assembles representatives from the Member States and Associated Countries together with representatives of the H2020 projects. The Working Group will make recommendations to deliver an inventory of available services and their technology choices (Q4 2019), use cases to identify and prioritize new developments, and identification of Architecture components needed, to be developed during 2020.

2.5 EOSC interoperability framework

The work on the EOSC Interoperability Framework will be led by the FAIR Working Group in collaboration with Architecture and Rules of Participation Working Groups. The initial activity will be to define what coverage and format this should take. Key references include the European Interoperability Framework⁸ and the Data Commons Framework from the Berkman Klein Centre.⁹ The Framework must cover all aspects of interoperability - semantic, legal, technical and organisational. The different aspects will be addressed by relevant Working Groups.

⁷ <http://roadmap2018.esfri.eu>

⁸ https://ec.europa.eu/isa2/eif_en

⁹ <https://cyber.harvard.edu/story/2018-06/data-commons-version-10>

Within the FAIR Working Group, one team will investigate FAIR practices across research disciplines. Key literature such as the *Turning FAIR into Reality* Expert Group report¹⁰ and *FAIR Data Advanced Use Cases*¹¹ by SURF will be referenced. Contributions from FAIRsFAIR, the INFRAEOSC cluster projects such as ENVRI-FAIR and others will help to identify practices that can be upscaled. The work undertaken by this team will inform the development of the Interoperability Framework.

The interoperability team of the FAIR Working Group will develop recommendations on the legal and semantic aspects. In collaboration with Rules of Participation which will address the organisational aspects and Architecture which will address technical interoperability, a Framework will be released in Q3 2020 for full implementation under the new governance structure. This Framework will provide a series of standards, guidelines and protocols for EOSC service providers and users to abide by to ensure data can be widely exchanged and reused. Open standards and APIs will be promoted and agreed on via the Global Open Science Commons Interest Group of the Research Data Alliance and other relevant fora to ensure EOSC supports and is in line with international best practices.

2.6 *Persistent Identifier Policy*

The Architecture and FAIR Working Groups will jointly develop the Persistent Identifier (PID) policy for EOSC. The work of the FREYA project and organisations such as DataCite will be central to this. The PID policy will cover a broad range of identifiers needed for data and other outputs, researchers, organisations, funders, research activities, services and other entities. Registries that index different entities and allow machine-to-machine interactions and graphs to map relationships will be pursued.

An initial PID policy will be released in Q4 of 2019. This will then be tested and updated iteratively throughout 2020. The EOSC stakeholder forum and other relevant community events will be utilised, as well as the PID Forum¹² and international stakeholder events such as PIDapalooza. RDA Working Groups such as the PID Kernel Information Working Group¹³ and the proposed Open Science Graphs for FAIR Data Interest Group¹⁴ will also form key stakeholder engagement opportunities.

2.7 *Metrics for FAIR Data and certified services*

The FAIR Working Group will monitor the development of metrics for FAIR data and certified services and make recommendations on what should be adopted in the context of EOSC. There is already a significant level of activity in this space. The RDA FAIR Data Maturity Model Working Group¹⁵ is coordinating international activity to define a common set of core assessment criteria for FAIRness and a generic and expandable self-assessment model for measuring the maturity level of a dataset. The Group has run a series of workshops and will release outputs in the same timeframe as the FAIR Working Group.

The FAIRsFAIR project has been tasked with supporting the co-development and implementation of certification schemes for data repositories. The recommendations and outcomes of this project will be taken up in the INFRAEOSC National Initiative and Cluster projects. The FAIR Working Group will liaise closely with FAIRsFAIR and others undertaking activities on assessing services to ensure the EOSC is a trusted environment with appropriate functionality. Initial metrics for FAIR data and service certification will be released in Q4 2019 and then iteratively tested and refined to release a final version in Q4 of 2020.

¹⁰ <https://doi.org/10.2777/1524>

¹¹ <http://doi.org/10.5281/zenodo.1250535>

¹² <https://www.pidforum.org>

¹³ <https://rd-alliance.org/groups/pid-kernel-information-wg>

¹⁴ <https://rd-alliance.org/groups/open-science-graphs-fair-data-ig>

¹⁵ <https://www.rd-alliance.org/groups/fair-data-maturity-model-wg>

3 TIMELINE

	Landscape (Jan Hrusak)	Sustainability (Rupert Lueck)	Architecture (JF Abramatic)	FAIR (Sarah Jones)	Rules of Participation (Juan Bicarregui)	EB/GB Comms Task Force (Ron Dekker)	
Q2 2019 Apr-Jun				Annual FAIR workplan		Continual comms and engagement via Liaison Platform & Stakeholder Community events EOSC brand Trademark	
Q3 2019 Jul-Sep	Initial landscape mapping				Initial EOSC Rules of Participation		
Q4 2019 Oct-Dec	Final landscape mapping		Outline PID policy Initial federating core Registry of infrastructure Updated catalogue & portal	Outline FAIR metrics & repository certification			
Q1 2020 Jan-Mar				Annual FAIR workplan			
	Revised Workplan						
Q2 2020 Apr-Jun			Preliminary connection of infrastructures and services EOSC Catalogue of datasets				
Q3 2020 Jul-Sep	Report on EOSC readiness Strategic & financing options post 2020		EOSC Interoperability framework (joint output)				Final EOSC Rules of Participation
Q4 2020 Oct-Dec			Updated PID policy	Updated FAIR metrics & repository certification			

Table 1 – EOSC 2019-2020: Timeline

4 PROCEDURES AND REQUIRED INPUTS

4.1 *Liaison with H2020 projects, national initiatives, disciplinary services and others*

During 2019, the EOSC Working Groups, supported by the EOSCsecretariat, will conduct a range of activities to gather inputs from all those active in building the EOSC.

An initial list of relevant projects and services has been compiled to direct engagement. This will be made public and projects will be invited to name key contacts for liaison with each Working Group and to outline what activities and deliverables will be made available and when. A series of webinars and events will be organised to allow engagement and sharing, and the EOSC Liaison Platform will allow updates and knowledge sharing from the wider community.¹⁶

Most of the INFRAEOSC projects (FAIRsFAIR, the national initiatives and disciplinary clusters) have landscape analysis exercises planned and have decided on close collaborations and coordination of their activities. They will work closely with the Landscape Working Group and feed data on community requirements into each EOSC Working Group. The key e-Infrastructure projects from DG-CNCT such as OpenAIRE, FREYA and EOSC-Hub also have rich stakeholder contacts which will be engaged and utilised by the Working Groups.

Other efforts are also being made to coordinate across existing EOSC-related H2020 projects, such as collaboration agreements and synchronisation task forces. Where relevant, Working Group members will engage in these events or invite representatives to present at Working Group meetings. An open approach to information sharing and regular communication between projects and EOSC Working Groups is critical to effective coordination.

In order to deliver EOSC and get full engagement from research communities, discussion must go beyond H2020 projects. Disciplinary research infrastructures, national initiatives and research institutions play a critical role. The various engagement activities supported by the EOSCsecretariat such as stakeholder events and the EOSC liaison platform will act as the main locus for connections.

The Working Groups will have regular monthly telecons and quarterly face-to-face meetings. Dates for these, particularly for the Architecture and FAIR WGs, will be announced publicly to allow projects to share information in advance. Close partnership and communication are planned so the Working Groups can help to coordinate activities and provide constructive feedback on developments. Regular testing and stakeholder engagement is also planned to ensure EOSC delivers on the requirements and functionality research communities require.

4.2 *Liaison with Governance Board*

The Landscape and Sustainability Working Groups need to liaise closely with the Governance Board and Member State representatives to ensure sensitivity to cultural and political issues in each context. A validation workshop is foreseen for mid 2020 to outline proposals for the legal entity, funding aspects and governance structure to ensure fitness for purpose, acceptance and the ability to adopt proposals.

The Executive Board and Governance Board have already successfully collaborated to define a shared vision for the EOSC during a teambuilding event and will establish a shared communications group to define the EOSC brand and register a trademark. Collective ownership and community engagement is regarded as fundamental by both Boards.

¹⁶ <https://www.eoscsecretariat.eu/eosc-liaison-platform>

4.3 Iteration and testing

As outputs are released, Working Groups will review them and in collaboration with the EOSCsecretariat project undertake broad stakeholder evaluation and testing. This will include communications to announce new outputs, webinars and events to explain the outputs or services, and various methods to support testing and the collation of user feedback. These might include usability testing, focus groups, surveys and wide use of the EOSC Liaison Platform to raise Github style tickets that offer feedback.

Outputs will be tested in earnest by the broad research community to ensure they are fit for purpose and meet end user needs. An iterative approach is expected of projects and a willingness to take user feedback on board and make appropriate changes. Acceptance by the user community will guide recommendations by the Working Groups for endorsement by the Executive Board.

4.4 The role of the Stakeholder Community

The Stakeholder Community will play a critical role in ensuring the building of the EOSC remains on track and supports end user needs. It must allow broad and inclusive participation to all interested parties and a range of opportunities to provide feedback and input. CNR will lead engagement activities on behalf of the EOSCsecretariat.

Stakeholder Community events

A series of events is planned to allow the community to learn about and engage in EOSC. These will provide opportunities to ask questions, share inputs and test outputs. It is anticipated that an event of some kind will be held every month. Planned events for 2019 are listed below.

Date	Event	Location	Type/Format
1/7/2019	Building the European Open Science Cloud¹⁷	Online	Webinar to present the Strategic Implementation Plan and EOSC Working Groups and invite questions
16-18/9/2019	Open Science FAIR¹⁸	Porto	Several relevant workshops including Services to support FAIR Data, Making EOSC Training more FAIR and The Journey to EOSC - preparing at national level
22/10/2019	The international research data community contributing to EOSC¹⁹	Helsinki	1-day workshop at RDA plenary to present on EOSC and run breakout sessions on each Working Group
26-28/11/2019	EOSC Symposium²⁰	Budapest	3-day conference to share updates from EOSC projects and relevant initiatives and solicit community feedback.

Table 2 – Stakeholder Community Events

A calendar of EOSC stakeholder events will be maintained. Blogs from events will be delivered by the secretariat to report on outcomes and collect the feedback.

EOSC Liaison Platform and Research Data Alliance

In addition to events, an online EOSC liaison platform²¹ will allow continuous engagement. This platform will be used to support open consultations and allow the broad Stakeholder Community to raise ideas and issues. An initial prototype has been released and will be further iterated and improved in light of user feedback. Users are required to register for the platform and can then post messages and leave comments. Broader functionality akin to that supported by the PIDforum²² will also be supported where required.

The Research Data Alliance (RDA) will also be used as a key vehicle in implementing the EOSC and coordinating international activity. Various Interest and Working Groups align with key outputs in this work plan, for example the FAIR Data Maturity Model, Data Description Registry Interoperability and Persistent Identifiers Group, amongst others. These will be utilised as fora to gain international consensus and global solutions so the

¹⁷ <https://www.eoscsecretariat.eu/events/webinar-building-european-open-science-cloud>

¹⁸ <https://www.opensciencefair.eu/accepted-proposals>

¹⁹ <https://www.eoscsecretariat.eu/international-research-data-community-contributing-eosc>

²⁰ <https://www.eoscsecretariat.eu/eosc-symposium>

²¹ <https://www.eoscsecretariat.eu/eosc-liaison-platform>

²² <https://www.pidforum.org>

EOSC approach is not a European silo that doesn't connect well to parallel initiatives in other regions. The RDA Open Science Commons groups will be key in this aim and a great opportunity for EOSC to put forward its developments for input and endorsement by others to define global standards and protocols for adoption beyond our region.

Getting in touch with the EU

IN PERSON

All over the European Union there are hundreds of Europe Direct Information Centres.

You can find the address of the centre nearest you at: https://europa.eu/european-union/contact_en

ON THE PHONE OR BY EMAIL

Europe Direct is a service that answers your questions about the European Union.

You can contact this service

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696 or
- by email via: https://europa.eu/european-union/contact_en

Finding information about the EU

ONLINE

Information about the European Union in all the official languages of the EU is available on the Europa website at:

https://europa.eu/european-union/index_en

EU PUBLICATIONS

You can download or order free and priced EU publications from EU Bookshop at:

<https://publications.europa.eu/en/publications>. Multiple copies of free publications may be obtained

by contacting Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en)

EU LAW AND RELATED DOCUMENTS

For access to legal information from the EU, including all EU law since 1952 in all the official language versions,

go to EUR-Lex at: <http://eur-lex.europa.eu>

OPEN DATA FROM THE EU

The EU Open Data Portal (<http://data.europa.eu/euodp/en>) provides access to datasets from the EU. Data can be downloaded and reused for free, for both commercial and non-commercial purposes.

This first version of the EOSC Work Plan outlines the key outputs which will be delivered in this first phase of implementation. They comprise a first iteration of activities which will be handed over to a new governance structure at the end of 2020. The timelines, methods for delivery and key inputs are outlined in this document and run from mid-2019 until the end of 2020. This Work Plan will be updated periodically, at least in Q1 of 2020, but potentially more regularly if needed.

This document draws from the EOSC Implementation Roadmap adopted by the Commission on 14 March 2018 and the EOSC Strategic Implementation Plan published in June 2019. The activities in the work plan include the most recently approved Horizon 2020 projects.

This document has been reviewed and amended by the EOSC Executive Board in August 2019. It will be presented to the EOSC Governing Board during its 11th September 2019 meeting.

Research and Innovation policy



Publications Office
of the European Union