		ENVRI-FAIR	EOSC-Life	ESCAPE	PaNOSC	SSHOC
Concepts for FAIR implementation (Pillar 1)	Rec. 1: define FAIR for implementation	Petzold, Andreas; Aerts, Art; Vermeulen, Alex; Pappalardo, Gelsomina; Ballo, Daniele; Schaap, Dick; M. Glaves, Helen; Bundke, Ulrich; Zhao, Zhiming: ENVRI-FAIR – Interoperable environmental FAIR data and services for society, innovation and research, IEEE International Conference on eScience 2019 (eScience2019), San Diego, 24-27, Oct 2019. http://doi.org/10.1109/eScience.2019.00038			Photon and Neutron Data policy update for FAIR D2.1 (May 2020) Common API for metadata catalogues D3.1 API definition D3.5 NeXus Metadata mapping schema and proposed new definitions.	"The FAIR Guiding Principles for scientific data management and stewardship" by Wilkinson et al is followed in terms of definitions and implementation guidelines. Keeping the internal diversity in SSH, specific (data) communities addressing/translating what FAIRification would mean for them. Example: WP9 Data communities (esp. Ethnic and Migration Studies). For a generic data policy statement, see SSHOC - Position paper 2020 https://zenodo.org/record/3697121#.Xqdlqi8_b0
	Rec. 2: Implement a model for FAIR digital objects				Common catalouge API implimentation report D3.4 Policy implimentaion guidlines defiend D2.3 Deliverable 5.1: Prototype simulation data formats as openPMD domain specific extensions including example datasets.	In the context of the SSHOC Open Marketplace, D.7.1. (System Specification - SSH Open Marketplace) presents an implementation plan for FAIR digital objects, Oct 2019 https://doi.org/10.5281/zenodo.3547648
	Rec. 3: develop components of a FAIR ecosystem	WP4 Common FAIR Policies, D4.1 Organisation of PWG – Membership, procedures for operation, WP5 – Common requirements and testbed for (meta)data services, community standards and cataloguing, D5.1 Requirement analysis, technology review and gap analysis of environmental research infrastructures, https://envri.eu/deliverables/			WP 3 Common API to deliver interoperable search between facility meta data catalouges. WP4 Development of data analysis service infrastrure. WP8 Training tools for EOSC & FAIR data for P&N	D4.14 Policy API Tool, D4.14 Policy API Tool https://sshopencloud.eu/d414-policy-api-tool D4.16 Specification of the new features of the Aïoli platform https://sshopencloud.eu/d416-specification-new-features-a%C3%AFoli-platform D7.1 System Specification - SSH Open Marketplacehttps://sshopencloud.eu/d71-system-specification-ssh-open-marketplace For further examples: see tools and services presented in the SSHOC catalogue: https://www.sshopencloud.eu/service-catalogue
	Rec. 16: Apply FAIR broadly				All WP aim to develop caapbility that allows phonon and neutron facilities to apply fair principles to their data chain. With a common approcah across each domain. Data policy work and update to metadata schema WP2 & Wp3 are directly relevent to facilitating the application of FAIR principles	D6.1 SSHOC Community Engagement Strategy, https://doi.org/10.5281/zenodo.3592243 There will be SSHOC webinars with LIBER and Trust-IT on 19 May about FAIRification in the scholix framework, https://sshopencloud.eu/training Ensuring broad application of FAIR: DARIAH Research Data Management WG (https://www.dariah.eu/activities/working-groups/research-data-management/) Future plans: establishing stronger ties with the cultural heritage sector as they are important partners in humanities data workflows providing source materials for their work.
	Rec. 17: Align and harmonise FAIR and Open data policy	WP3 Strategy for alignment with national and international stakeholders, community development and innovation activities. "ENVRI-FAIR EOSC Position Paper" https://doi.org/10.5281/zenodo.3664805			Data policy update as apart of WP2 D2.1	SSHOC - Position paper 2020
FAIR culture (Pillar 2)	Rec. 4: Develop interoperability frameworks			ESCAPE WP4 is connecting the ESFRI to the EOSC using the Virtual Observatory interoperability framework. An first deliverablee, ESCAPE D4.2 the "INTERMEDIATE ANALYSIS REPORT ON USE OF IVOA STANDARDS FOR FAIR ESFRI AND COMMUNITY DATA" was produced March 2020. A final report will bee done near the end of the project (May 2022) ESCAPE D4.8 the "Final analysis report on use of IVOA standards for FAIR ESFRI and community data and best stewardship practices for value-added data"	Common interoparable api for meta data catalouges. Common remote services for data analysis	WP3 Interoperability Hub - example: D3.1 Report on SSHOC (meta-) data interoperability problems https://doi.org/10.5281/zenodo.3569868 SSHOC Reference Ontology and the mapping they have done between different ontologies (D4.18,) D7.3 Marketplace interoperability to be published on December 2021.
	Rec. 5: Ensure data management via DMPs			ESFRIs have high level data management plans that are integrated into their operations, and under their responsibility. At a different level, projects and researchers are being required to specify a DMP in research proposals. ESCAPE WP4 is promoting certification of repositories (CoreTrustSeal) to raise awareness.	DMP template for facilities will be developed in WP2 D2.2	Continuous support via trainings: SSHOC D6.9 SSHOC Trainer Toolkit (draft) D6.7 Inventory of existing learning materials
	Rec. 6: recognise & reward FAIR data & stewardship			A report will be done near the end of the project (May 2022) ESCAPE D4.8 the "Final analysis report on use of IVOA standards for FAIR ESFRI and community data and best stewardship practices for value-added data". It should include some consideration of recognition of data stewardship.		WP6 "Fostering Communities, Empowering Users, & Building Expertise" and esp. D6.9 SSHOC train-the-trainer toolkit and the Training Toolkit, https://training-toolkit.sshopencloud.eu/. Contributions to community curation in the SSHOC Open Marketplace will be appropriately rewarded. https://dariahopen.hypotheses.org/834
	Rec. 18: Cost data management					Cost estimations could be provided by the SSHOC affiliated repositories.
	Rec. 19: Select and prioritise FAIR digital objects					n/a
	Rec. 20: Deposit in Trusted Digital Repositories				Development of common meta data catalouge API and implimentation report from facilities. (Could include work towards trusetd certification)	Outputs of WP5, innovation in data access
	Rec. 21: Incentivise reuse of FAIR outputs					TBD at a later stage of the project lifecycle.

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FAIR ecosystem (Pillar 3)	Rec. 7: support semantic technologies			ESCAPE is supporting the use and development of IVOA Semantics standards as part of general support of IVOA standards for Astronomy/Astroparticle ESFRIs	Update to metadata mapping schema D3.5 (Tobias Richter Tobias.Richter@ess.eu might be the PaNOSC contact for further details of the PaNOSC work in this area)	D9.7 Design of Knowledge Graph (election studies and semantic technologies) D3.7 SSHOCro beta version
	Rec. 8: Facilitate automated processing	Might be in WP7 (to be checked).		5	WP4 developmnet of data analysis services WP5 development of simulation serviecs	T3.6 Making Data Re-usable and Actionable
	Rec. 9: Certify FAIR services	WP5 Common requirements and testbed for (meta)data services, community standards and cataloguing, WP7 Common implementation and support. Individual RI:s are working on repository certification (CTS), for example ICOS.		Awareness of CoreTrustSeal certification is being supported by ESCAPE in WP4, and this topic will be included in the diverable D4.8 "Final analysis report on use of IVOA standards for FAIR ESFRI and community data and best stewardship practices for value-added data" (May 2022)	Self evaluation of data policy implimentation against RDA	T8.2 supports SSH repositories in achieving CoreTrustSeal certification. D8.2 Certification plan for SSHOC repositories, https://doi.org/10.5281/zenodo.3725867 . D8.3 Report on TDR status and certification solutions for SSHOC repositories (Feb2022)
	Rec. 22: Use information held in DMPs					
	Rec. 23: Develop components to meet research needs	WP5 Common requirements and testbed for (meta)data services, community standards and cataloguing			Wp3/4/5 dvelopment of reserach tools	D9.1 Report on challenges user communities face when attempting to contribute to SSHOC
	Rec. 24: Incentivise research infrastructures to support FAIR data					
Skills for FAIR (Pillar 4)	Rec. 10: Professionalise data science & stewardship roles	WP6 Training and capacity building, D6.1 Inventory & gap analysis of FAIR training materials, https://envri.eu/wp-content/uploads/2019/10/ENVRI-FAIR_D_6-1.pdf, ENVRI-FAIR is also a partner of the LifeWatch ERIC Summer school, https://www.lifewatch.eu/home		ESCAPE WP4 plans to run a community workshop for data providers on use of standards for publishing data, and sharing of best practices (Milestone expected May 2021). This will emphasise stewardship roles, and results will be presented in the ESCAPE Deliverable D4.8 "Final analysis report on use of IVOA standards for FAIR ESFRI and community data and best stewardship practices for value-added data" May 2022.	Deliverable 8.2 Report on lessons learned and future prospects for adopting the e-learning platform at the PaNOSC facilities	These new professional roles are supported via training, see Rec. 11.
	Rec. 11: Implement curriculum frameworks and training	WP6 Training and capacity building, D6.1 Inventory & gap analysis of FAIR training materials, https://envri.eu/wp-content/uploads/2019/10/ENVRI-FAIR_D_6-1.pdf, ENVRI-FAIR is offering training to different target groups in the community, passed webinars on FAIRSharing.org and on Semantic web and ontologies, for more details, see: https://envri.eu/home-envri-fair/ . ENVRI-FAIR is also developing a training catalogue, as a common resource of open educational resources, https://trainingcatalogue.envri.eu/		ESCAPE has training activities throughout its program in all work packages, usually organised into specific training events.	Deliverable 8.1 Report on lessons learned and future prospects for adopting best practises on data stewardship at the PaNOSC facilities. Deliverable 8.3 Teaching material for users of PaNOSC services, FAIR principles, and the PaNOSC facilities accessible in the e-learning platform at pan-learning.org	SSHOC D6.9 SSHOC Trainer Toolkit (draft), https://zenodo.org/record/3824755; D6.7 Inventory of existing learning materials https://doi.org/10.5281/zenodo.3596003; SSHOC webinars with LIBER and Trust-IT on 19 May about FAIRification in the scholix framework. https://sshopencloud.eu/training/training-events ; https://sshopencloud.eu/training
Incentives and metrics for FAIR data and services (Pillar 5)	Rec. 12: Develop metrics for FAIR digital output	ENVRI-FAIR has performed a FAIR assesment exercise within WP5 with help of methodolgies in GO-FAIR. The result of the assessment is currently being implemented to a common system, for more details see D5.1 Requirement analysis, technology review and gap analysis of environmental research infrastructures at: https://envri.eu/deliverables/ (HL'H: the link to D5.1 seems to require a login/password)		(added by F. Genova) ESCAPE WP4 participated in the tests of the RDA FAIR Data Maturity Model criteria. Astronomy has been developing well established FAIR practices and it was a useful test. The main aims for astronomy are Interoperability and Reuse, Find and Access are mostly in support to I and R. Finding is mostly a dynamic process.		
	Rec. 13: Develop metrics to certify FAIR services	WP5 "Common requirements and testbed for (meta)data services, community standards and cataloguing" is working on this together with the subdomains in ENVRI-FAIR				D8.3 Report on TDR status and certification solutions for SSHOC repositories (Feb2022). T8.2 work will include feedback to CoreTrustSeal Board on the CTS requirements.
	Rec. 25: Implement and monitor metrics					
	Rec. 26: Support data citation and next generation metrics					D3.2 Inventory of SSH citation practices, and choice for SSHOC citation formats and implementation planning, https://doi.org/10.5281/zenodo.3595964 D3.5 Report on integration and exploitation of citation and semantic annotation in SSH catalogues (August 2021)
Investment in FAIR (Pillar 6)	Rec. 14: Provide strategic and coordinated funding			ESCAPE has a connection to the disciplinary networks of Astronomy and particle physics via their participation on the external advisory board. (ASTRONET, APPEC, NuPPEC, ECFA). ASTRONET for example is a consortium of the largest funding agencies for astronomy in Europe.		D3.2 Inventory of SSH citation practices, and choice for SSHOC citation formats and implementation planning, https://doi.org/10.5281/zenodo.3595964 . D3.5 Report on integration and exploitation of citation and semantic annotation in SSH catalogues (August 2021)
	Rec. 15: provide sustainable funding					T8.1 Governance & Sustainability (of the SSH part of the EOSC): D81. Governance and Sustainability Roadmap (Dec 2021)
	Rec. 27: Open EOSC to all providers but ensure services are FAIR					WP3 Lifting Technologies and Services into the SSH Cloud