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11 May Pillar 1: Concepts for FAIR implementation								
Concepts for FAIR implementation (Pillar 1)	Rec. 1: define FAIR for implementation	CSIC Institutional Open Access mandate entered into force on April 1, 2019, https://digital.csic.es/handle/10261/179077 . The mandate covers both peer reviewed publications and research data produced by CSIC research community. The mandate explicitly mentions that research data associated to publications must be FAIR and be deposited and made open access (unless exceptions may apply) in institutional repository DIGITAL.CSIC						A prelimary assessment in 2019 indicated an already relatively high degree of FAIRness due to the implemented data curation practices - aka "FAIR by design". See here: https://doi.org/10.1002/essoar.10501879.1 and the corresponding evaluation on our webpages: https://cera-www.dkrz.de/WDCC/ui/cerasearch/info?site=fairness

Current (Q1 and Q2 of 2021) acitvities aim to assess the current FAIRness of data holdings in the WDCC (World Data Center for Climate) in a more objective manner. An ensemble approach of available FAIRness assessment tools was applied to a subset of |

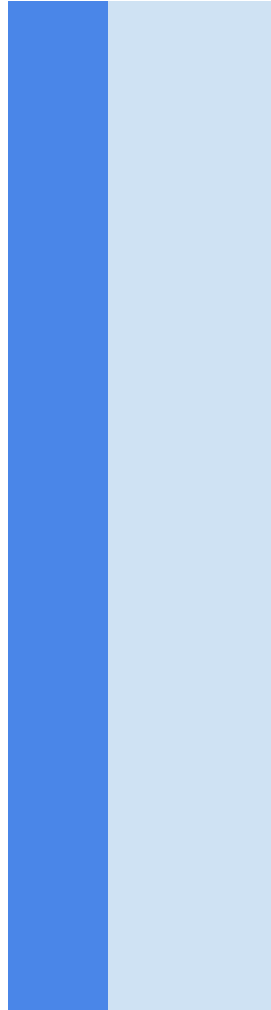|	FAIR champions (Isabel Bernal)	FAIR champions (Maria Johnsson)	FAIR champions (Mark Allen)	FAIR champions (Andreas Rauber)	FAIR champion (Susanna Sansone)	FAIR champion (Antica Culina) (new)	FAIR champion (Karsten Peters-von Gehlen, DKRZ) (new)
Rec. 2: Implement a model for FAIR digital objects	DIGITAL.CSIC is the institutional repository for the wide array of outputs by CSIC researchers (ranging from peer reviewed publications to research data and patents). The repository assigns handle PID to all items and in addition it mints DOIs for selected outputs: research data, software, and						our data holdings and presented at the EGU General Assembly 2021: https://meetingorganizer.copernicus.org/EGU21/EGU21-12560.html FAIR "scores" reach up to 70% in F-UJI, with the average being 57%. The other tool average range from 50% to 82%. Machine actionability of the data is not available for performance and security reasonsn (login required) - being the main reason of low scores of automated evaluation approaches. The above results already indicate a high degree of "FAIRness by design" of WDCC data holdings. Data curation at WDCC is focused on enabling long-term data reuse:- rich, domain-specific metadata is required - especialy if DOIs are to be minted - domain-specific

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	preprints. DIGITAL.CSIC item description handbook empahsizes the importance of including PIDs in selected metadata elements (use licence, research funders, related works)						(meta)data standards and file formats are required- CTS certification ensures the (very) long-term reusability of WDCC archived data- WDCC catalog indexed in various global platformsSee the (meta)data specifications here: https://cera-www.dkrz.de/WDCC/ui/cerasearch/docu
Rec. 3: develop components of a FAIR ecosystem	DIGITAL.CSIC research data policy and related services for CSIC community is at http://digital.csic.es/dc/politicas/politicaDatos.jsp (Spanish language only). The policy explictly indicates the types of research data accepted, main data management issues and recommendations and top data related services including DOI minting, support/review of DMPs, compliance with journals data sharing policies, compliance with FAIR Data Principles and aggreation			A number of building blocks are being develope din the context of the digital transformation initiatives for the Austrian academic sector including repositories, maDMPs; data citation support; controlled vocabularies for metadata search; APIs to CRIS systems or for funders;	Ongoing collaboration between FAIRsharing (https://fairsharing.org) with openAIRE, DMPonline, FAIRshake, FAIR Evaluator and other harvester, DMP and assessment/ evaluation tools to serve the FAIRsharing	Example frim long-tail ecological research: We have set up SPI-Birds Network and Database - www.spibirds.org . Database aims to host raw (i.e. as stored by the data owner) and standardized data on birds all over the world. Currently it hosts data on over 100 populations. We get data in different formats	The WDCC is an established part of the global climate science related data ecosystem. The above elaborations also show a high degree of FAIRness. Accessing the data holdings is however only possible after authorization/authenticati on. Data access is free and open for the very large majority of datasets.Another example is the recent global distrub-ition of CMIP6 data. As central part of the global ESGF infrastructre in Europe,

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	into broader research data infrastructures			modules for data aggregation supporting k-anonymity, l-diversity, t-closeness; fingerprinting of data; reference set-up of a highly secure data infrastructure supporting data visiting based entirely on open-source components;	content (repositories and standards) for their consuption Ongoing collaboration with FAIRsFAIR to register repositories and policies	(as stored by different groups) and then write code pipelines to transfer these data into a standard data format that is FAIR, and then conduct quality check on data. We also attach meta-data to each population, which makes datasets Findable. Some of the data are Open, but the majority is not – researchers are reluctant to fully Open their data, thus FAIR and not Open worked great for us. Our main current issues is the funding for further developments of the database. What we now	DKRZ offers sevices making CMIP6 data FAIR by having provided the early citation service allowing for the referencing of high-quality climate model output in the context of the IPCCs 6th Assessment report: https://cera-www.dkrz.de/docs/pdf/CMIP6_Citation_Userguide.pdfCMIP6 data are free and open for use by anybody. The imposed standards required for CMIP6 data yield a very high degree of domain-specific reusability and PIDs are assigned.

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	Rec. 16: Apply FAIR broadly	Being a multidisciplinary research performing institution, CSIC policy needs to address research data specificities of each of its 8 broad research areas. DIGITAL.CSIC produces supporting material (eg http://digital.csic.es/handle/10261/184580) addressing best practices and recommendations by research area, and its bulletin CSIC Abierto http://digital.csic.es/handle/10261/150210 includes interviews with CSIC					need (appart from enahnce our technical infrastructure) is to connect to other initatives hosting complementary data, and also to find a viable workflow to connect all of the datasets that are based on the raw data hosted in our database.	Ongoing contributions to the RDA CURE-FAIR WG aim at achieving compuatational reproducibility of analyses and workflows.

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	Rec. 17: Align and harmonise FAIR and Open data policy	researchers across several disciplines to showcase their motivations/challenges when sharing data and making them FAIR DIGITAL.CSIC Template to prepare DMPs under the framework of H2020 projects https://digital.csic.es/handle/10261/207866 is an attempt to harmonize DMPs across the institution (available via 'Request a copy'). On another front, there remains a lot to accomplish to raise more awareness about making data FAIR and handling patents at the same time. Global registries and best practices in this latter issue would be most welcome			While opening up access to "sharable" data is increasingly accepted we notice that the biggest barrier to open data is the (massive, majority?) of data that is sensitive (due to privacy reasons or commercial interests). In the wake of COVID19 TU WIEN has thus set up a secure data infrastructure based entirely on open-source components that allows data owners to provide	Work in RDA (Funders IG, Policy IG, FAIRsharing WG) harmonising policies between funders and scholarly publishers, aiming to arrive at a common template, which FAIRsharing will implement to enable comparison between policies: https://www.rd-alliance.org/funder-		

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					controlled access for researchers to subsets of their data needed to address research questions while maintaining full control of the data and preventing data download to the fullest extent possible via a combination of technical and legal mechanisms. (The infrastructure is based upon experienced gained with operationg such an infrastructure for medical data for several years, adapting it now for the needs of a broader group	publisher-research-data-policy-alignment		

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					of stakeholders) This infrastructure is currently also under review for broader adoption, supporting the vision of data visiting instead of data sharing, and thus allowing to open a pathway to access for highly sensitive data, no matter whether this is due to privacy or commercial reasons. Activities are on their way to identify necessary changes to legal regulations to support such access provisioning for sectors with			

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					sensitive data that should be opened up for research purposes.			
19 May Pillar 2: FAIR culture								
	Rec. 4: Develop interoperabi lity frameworks	DIGITAL.CSIC is a multidisciplinary repository and uses standard, discipline-agnostic metadata schemes (Dublin Core Qualified, DataCite). Crosswalks to discipline schemes are promoted to the extent possible and a lot more can be accomplished to establish greater cooperation amongst institutional/thematic/researc h communities repositories and infrastructures. Research is growingly interdisciplinary and sustainable tools and standards are much needed so that data can be FAIR for different disciplines and communities of research.		The astronomical Virtual Observatory is the interoperabil ity framework for astronmy data and seervices. The International Virtual Observatory Alliance (since 2002) is the body that oversees the developmen t of standards that form the basis of the				

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			framework. As the Euro-VO member in IVOA I use my champion role to widely inform thee astronomy community about this framework, and the rapidly emeerging context of Open Science, FAIR and EOSC.				
Rec. 5: Ensure data management via DMPs	Ongoing support and training to prepare good DMPs and DIGITAL.CSIC model template points to external resources/good practices to manage data in different areas. Giving support and evaluating DMPs is consolidating as a service in universities/research performing organizations			In the current national initiative setting up federated data management infrastructures across austrian universities on core building block is the development			- local instance of RDMO (Research Data Managment Organizer) running at DKRZ-project-specific DM support by compiling a DMP as living document which is tailored towards the needs of the **researchers;** project PalMod2- contributions to RDA WG on Domain

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	(eg, it is becoming but another library service within the portofolio of research data management services). Harmonizing DMPs within institutions and calculating the cost and effort dedicated by institutions are key to plan solid data intensive workplans.			and full integration of maDMPs driving and connecting the various repositories, cross-linking to the institutional registries (CRIS systems) and providing APIs for funders to ease the administrative load and ensure the information in DMPs is (automatically) collected from the relevant sources and continuously updated.			Specific Guidance for DMPS- general DMP support to domain scientists if needed ; to be expanded in the future
Rec. 6: recognise & reward FAIR data & stewardship	CSIC institutional mandate came into force last year and 2020 is the first year of implementation. The level of compliance will have an impact on institutional research assessment exercises.		Contributions to data, services and software is becoming more recognised in				Through the relatively strict requirements for obtaining DataCite DOIs for archived data, e.g. by requiring compliance with domain-speciifc standards and the provision of rich

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			Astrophysics, but FAIR and "stewardship" are still relatively new in the vocubulary of reseearchers. Effort is being made to highlight these in the various European and US roadmaps and decadal plans for the field. Inclusion in the Astronet roadmap will be important in Europe.				metadata (documentation, author, issues, provenance) in order to ensure long-term reusability, "FAIR" data stewardship/generation is rewarded by obtaining a DOI.The same holds for publishing data to the ESGF (Earth System Grid Federation) via the DKRZ node of the federation. Only highly standardised and therefore reusable data are considered for publication.through the EASYDAB concept developed in the framework of the AtMoDat project.
Rec. 18: Cost data management	This is a paramount issue for research performing institutions with research data policies in place and should be a priority recommendation. CSIC mandate covers long tail			Cost estimation is on key component in the maDMP infrastructure developed at TU WIEN, with			The awareness that DM requires dedicated funding, especially in terms of FTEs, has risen in the community. Thus, staff are beginning to be hired to specifically cater

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	Rec. 19: Select and prioritise FAIR digital objects	and big data and different infrastrutures are being put in place to provide all types of services. Long term curation is very closely linked to preservation and global FAIR Data practices and recommendations and research organizations/funders policies need to be more closely aligned. Institutional services being offered to its researcher community includes curation, deposit, DOI minting, publication and preservation of institutional research data. For research institutions and research communiites to take FAIR data management seriously it is necessary to budget it properly. This closely links with long term preservation strategies. Recommendations and know how about selection criteris in long term digital preservation plans may be handy for this task (eg https://unesdoc.unesco.org/ark:/48223/pf0000244280 , http://www.digitalpreservatio			an initial focus on provisioning of cost information by the central computing facilities for processing and bit-stream preservation, to be expanded with more complex cost models for additional stewardship activities as services are being rolled out.			for the DM needs of large projects.Future projects will work on developing and implementing workflow infrastructures for HPC computing and to ensure computational reproducibility. FAIR will also play a role here.

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	Rec. 20: Deposit in Trusted Digital Repositories	n.gov/about/initiatives.html) and see how well they may be adapted for FAIR Digital Objects. Considerations about copyright and preservation ae also important (for instance, it is addressed in new Copyright Directive in the EU) DIGITAL.CSIC got awarded with DSA late 2015. Too much strain on repositories coming for several types of certifications may be counterproductive and ineffective			A series of digital repositories are being developed for a range of content types (e.g. source code, publications, file-based data repositories, structured (RDBMS) based data) as part of the national digitization initiative for Austrian universities. This may be complemented with an			DKRZ hosts the WDCC https://cera-www.dkrz.de/WDCC/ui/cerasearch/ (World Data Center for Climate, member of WDS), a CoreTrustSeal certified domain-specific repository. The long-term (>10 years) archival is provided for the global community. Charges may apply for individual cases.

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					additional high-security infrastructure currently set up at TU WIEN for highly sensitive data (medical and commercial) based on the principles of the DEXHELPP infrastructure that has been operational at TUWIEN for several years to support data visiting of sensitive data.			
	Rec. 21: Incentivise reuse of FAIR outputs	Under evaluation. On a general note, suport, good practices and recognition of efforts that show, measure and monitor the degree and extent of FAIR data reuse are very handy- also to conduct return on investment analyses						
20 May Pillar 3: FAIR Ecosystem								
FAIR ecosy	Rec. 7: support	Usage of several discipline agnostic controlled		The International			

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stem (Pillar 3)	semantic technologies	vocabualries/ontologies including COAR Vocabularies, FundRef, DataCite controlled lists and recommendation to use subject thesauri/ontologies when relevant (eg LOC). implementation of SCHOLIX standard in July 2020.		Virtual Observatory Alliance (IVOA) has a Sematics Working Group that has produced 4 standards that are used for interoperability of astronomy data and services. (see - http://ivoa.net/documents/). This includes content descriptors and a framework for vocabularies, as well as a standard on units that is not limited to				

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			astronomy. These Semantics standards are implemented at some level in all services in the IVOA registry (and now available also via EUDAT B2FIND as a first step to inclusion of the operational VO framework into EOSC)				
Rec. 8: Facilitate automated processing	OAI-PMH and SWORD and metadata exports into several formats supported so as to facilitate harvesting and aggregation						
Rec. 9: Certify FAIR services	Ongoing. It is important to harmonize across all existing certification options in order to avoid duplication and too much strain on		The importance and usefulness of				

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	repositories resources. Along with FAIR services certifications, other significant certifications are emerging which are important for repositores that also hold other types of outputs (eg Plan S requirements for repositories). In March 2021 CSIC has been one of the early supporters of COAR initiative in favor or inclusive criteria for data repositories https://www.coar-repositories.org/news-updates/joint-position-statement-on-data-repository-selection-criteria-that-matter/ Details on the badges: https://indico.desy.de/event/29297/contributions/99594/attachments/64973/80301/EOSC-Synergy-SQAaaS-Expands-Workshop-Apr-2021.pdf **Updated**		CoreTrustSeal certification is becoming more visible in the field of astronomy. The CDS (http://cds.unistra.fr) has been certified and we advertise the fact that it was useful to do so - because it helps us with describing our own processes, and also because it helps us communicates and fit into the wider data sharing community.				
Rec. 22: Use			RDA has two working				

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	information held in DMPs		groups on DMP: "Exposing Data Management Plans WG" and "DMP Common Standards WG". The working groups will arrange a RDA Hackathon on machine-actionable DMP:s on 26-27 May 2020. The "Exposing Data Management Plans WG" states that they will build up a catalogue of use cases, which I think is very much needed right now. As many					

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	Rec. 23: Develop components to meet research needs	Hands on and online training provided to CSIC community /researchers and support staff, including data stewards and data scientists) on a regular basis, eg https://digital.csic.es/handle/ 10261/200460 . Current involvement in different thematic research infrastructures to better learn about domain specifics, needs and how institutional services may further develop	universities have CRIS systems today, it would be very interesting to see how DMP:s might be implemented and used in these kind systems, maybe some uses cases in different universties.					

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Rec. 24: Incentivise research infrastructures to support FAIR data		Properly estimating the cost of FAIR services is a major concern and related recommendations should be a priority. Such estimation has to cover short term and long term periods, which is challenging in a constanly changing landscape.						
18 May Pillar 4: Skills for FAIR								
Skills for FAIR (Pillar 4)	Rec. 10: Professionalise data science & stewardship roles	Institutional training programme dedicated to data management issues since 2015 via the institutional repository team. The training can be hands on workshops and online and targeting different institutional communities including researchers, research project managers, librarians woking as data stewards, staff from several departments such as European/internatonal projects, Legal department etc. Research data management is entering into the portfolio of libraries services at CSIC. In addition, CSIC released the first official nationwide	The research data management consortium "Swedish National Data Service - SND" in Sweden is organising different types of training in RDM for its members, see: https://snd.gu.se/en . Research Data Alliance RDA has a working-group focused on	In Astronomy data science prominent. Stewardship roles are less prominent, but there is the opportunity with FAIR / EOSC / Open Science to make this more visible and recognised. There is activity at the level of		terms4FAIR skills: https://terms4fairskills.github.io Building a terminology for the skills necessary to make data FAIR and to keep it FAIR. The terms4FAIR skills project has created a formalised terminology that describes the competencie		An increasing number of staff at DKRZ is dealing with designing concepts for future data management workflows and conceiving approaches to ensure data quality and with that, discipline specific reusability. The WDCC (World Data Center for Climate) is sustainably funded and staff support data providers in providing most reusable data by complying with domain specific standards, supplying rich metadata and minting DOIs to high-quality data - all within an established quality control workflow.

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	Master on Data Science https://masterdatascience.ifca.es/ 2 years ago and courses cover aspects related to infrastructures building, data mining and other computing techniques, as well as other aspects including data policies, data repositories, standards and good practices, legal issues etc. In general, this area is one of the most fruitful and productive across institutions and specific communities, there are real and well defined attempts to enable upskilling and accreditation for different stakeholders and communities. Case studies to highlight the different roles and professions emerging in the data management universe would be useful to show the variety and the many paths that can be pursued. **Update**: Latest training efforts for CSIC institutional members have spinned around reproducibility of science and open access	training, see https://rd-alliance.org/groups/education-and-training-handling-research-data.html	Librarians and Information Services in Astronomy (LISA) with a conference probably in 2021 (postponeed from 2020). Also there are national networks of astronomy libarians who are advocating stewardship roles in the FAIR context. (LISA - http://www.eso.org/sci/libraries/lisa.html including proceedings and links to this series of conferences going back		s, skills and knowledge associated with making and keeping data FAIR. This terminology can be used in a variety of use cases, including: - To assist with the creation and assessment of stewardship curricula; - To facilitate the annotation, discovery and evaluation of FAIR-enabling materials (e.g. training) and resources; - To enable		Now also along the FAIR data principles.

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	(Nov 2020), compliance of CSIC Open Science mandate (March 2021) and a dedicated training on seelcted issues about Open access for researchers (April 2021). Ongoing preparation of Roadshow Spain in collaboration with FAIRxFAIR scheduled June 23rd, with a focus on data repositories and EOSC.DIGITAL.CSIC launched the first edition of the training course for CSIC researchers and librarians "Open Access and Reproducible science" https://digital.csic.es/handle/10261/222954 in November 2020.		~30 years. In particular the most recent event in 2017: http://cds.u-strasbg.fr/meetings/Lisa8/index.html . **Update** May 2021: The LISA Conference is now scheduled for June 2021 (https://lisa9.org) on the general theme "From Open Science to the Preservation of Astronomical Heritage" and is expected to highlight aspects of data		the formalisation of job descriptions and CVs with recognised, structured competencies.		

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			stewardship and the professional roles that perform these activities in the domain of Astronomy.				
Rec. 11: Implement curriculum frameworks and training	In addition to ongoing initiatives to advance curriculum frameworks, OERs, professional exchanges, offocial accreditation etc we need new and sustainable discovery tools, gateways and/or dedicated portals that facilitate awareness about existing opportunities and resources. There are good resources for specific domain areas and specific professional profiles but more cna be done to reach out to all interest parties.				(under development) FAIRassist: https://fairassist.org The FAIRassist tool, part of the FAIRsharing resource, is under development to offer personalised guidance to discover resources, such as data and metadata standards and		Training activities are planned. A number of seminars/talks given at both internal and external institutions are held to raise awareness for the FAIR principles and what this means for Earth System Scientists. Contribution to the sub-WG Training/Further Education of the DINI/nestor WG on Research Data and contributed to the metadata schema for RDM Training MaterialsBiernacka, Katarzyna, Peters, Karsten, Danker, Sarah Ann, Engelhardt, Claudia, Helbig, Kerstin, Hendriks, Sonja, …

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						databases, which should be used to make data FAIR		Ziedorn, Frauke. (2020, May 4). Metadata Schema for Research Data Management Training Materials. Zenodo. http://doi.org/10.5281/zenodo.3784238
12 May Pillar 5: Incentives and metrics for FAIR data and services								
Incentives and metrics for FAIR data and services (Pillar 5)	Rec. 12: Develop metrics for FAIR digital output					Reporting on FAIRplus: https://fairplus-project.eu We have FAIRified a variety of life science examples: clinical trial, clinical observation, and molecular datasets. We have used the RDA/FAIRs FAIR indicators and tested		In ongoing efforts, we are in contact with FAIR evaluation tool developers to report on domain-specific aspects of FAIR evaluation. A set of metrics to evaluate climate science related data has been used to assess FAIRness in recent work: https://meetingorganizer.copernicus.org/EGU21/EGU21-12560.html A paper is in preparation. Alignment with work on metric definition performed in the RDA FAIR Data Maturity Model WG is envisaged. Work in the RDA CURE-FAIR WG aims at devising

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Rec. 13: Develop metrics to certify FAIR services Rec. 25: Implement and monitor metrics					the various evaluation tools. We have noticed that the tools and the indicators are too generic for our datasets and use cases, and we had to extend them and make them more specific.**Updated**		recommendataions for computational reproducibility of analyses and workflows in line with the FAIR principles. Results of our prelimary assessment in 2020 are published on our homepage: https://cera-www.dkrz.de/WDCC/ui/cerasearch/info?site=fairness Results of our most recent assessment (https://meetingorganizer

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	Rec. 26: Support data citation and next generation metrics				RDA WG on Dynamic Data citation is compiling a report on implementations of its recommendations to support precise identification and citation od arbitrary subsets in dynamic data, to complement the on-going documentation during the plenary sessions and webinars.			.copernicus.org/EGU21/EGU21-12560.html will also be available.Tracking over time is not planned (yet). This might also be misleading because assessment tools are still under development. Citation information is given for every dataset curated in WDCC. DOIs are also assigned to a subset of curated data (depending on the user requests). DKRZ is a signatory of the COPDESS declaration: https://copdess.org Data access and downloads are tracked in the back-end and published on a quasi-annual basis. Downloads on the dataset level are not published - but this might be a task for future implementations.Tracking of actual data citations is not performed. There have been efforts but they did not make it to operations. Making

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								citation tracking work is on our agenda (but with not fixed time horizon). Technical implementations is a hurdle.
21 May Pillar 6: Investment in FAIR								
Invest ment in FAIR (Pillar 6)	Rec. 14: Provide strategic and coordinated funding	Providing funding that goes beyond the duration of projects is essential to maintain services such as ontologies and metadata schemes. Lack of enough funding has been identified as a major sustainability problem for many controlled vocabualries, as NISO reported a few years ago in a recommended reading https://www.niso.org/publicat ions/tr-06-2017-issues-vocabulary-management. Proper allocation of funding may come from collaborative initiatives amongst controlled vocabualries initiaitves/funders(research institutions/related services. An example may be this recent one https://ehri-	Sweden has since 2018 invested in giving resources to a national consortium for research data, called Swedish National Data Service (SND), see: https://snd.gu. se/ in which most educational institutions in Sweden are participating. The SND consortiumis working intensively	Open Science and FAIR principles are becoming more visible in Astronomy. Effort is bing made to include this at the right level in the 10-year planning activities in Europe (ASTRONE T Science Vision and Roadmap - https://stfc.u kri.org/resea				

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	project.eu/leveraging-wikidata-enhance-authority-records-ehri-portal. There are lots of metadata schemes, ontologies, thesauri etc. Some well known registries for the latter are https://lov.linkeddata.es/dataset/lov, https://bartoc.org/, and other more recent ones such as FAIRsharing. Sustainability issues may also be addressed by intensifying collaboration amongst such registries/others and amongst controlled vocabualries that are looking into the same properties of entities. Also sustainability issues may be partially addressed by investing on training and professional competence. Creating an ontology or a thesaurus requires specific semantic knowledge to be well built, and then broadly used and maintained. The Controlled Vocabualry and Thesaurus Design course by the Library of Congress is still a very	with a common data repository, the SND catalogue, see: https://snd.gu.se/en/catalogue as well as with different competence development actions in research data for researchers and research support staff. Both these actions areas are important partsof the strategic work in Sweden to make research output FAIR and to create research data management that is sustainable.	rch/astronomy-and-space-science/astronomy-space-science-programme/astronet/) and US (Decadal Review - https://www.nationalacademies.org/our-work/decadal-survey-on-astronomy-and-astrophysics-2020-astro2020). On-boarding the ESFRI/large projects is a way to get sustainability and encourage them to have data				

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Rec. 15: provide sustainable funding	relevant resource and addresses their creation and sustainability in detail https://www.loc.gov/catworkshop/courses/thesaurus/index.html. In a nutshell we need well curated and well built metadata schemes and ontologies and other related servcies, that have sustainable funding and are broadly supported by the ecosystem, not just more ontologies and more schemes unless a real gap has been identifies. We need more crosswalks and more harmonization(interoperability initiatives.		FAIRisation included in their operational budget.				
	Service providers should have transparent governance and business models, not only sustainable. Research data intensive organizations/universities and funders need to estimate costs and budgets related to FAIR data management in a realistic way and that means to have a clear understanding of		Maintenance of disciplinary interoperability frameworks requires sustainable funding. We cannot afford to lose what				

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	Rec. 27: Open EOSC to all providers but ensure services are FAIR	governance of the FAIR service providers, so we could also say that this governance has to be FAIR. Also regular evaluation of relevance and quality of FAIR services is most welcome but not clear in the document who should be in charge of this. I would also emphasize the usability of the services and the potential for enhanced collaboration with like minded initiatives. Quality, relevant and sustainable FAIR services are needed to enable multidisciplianry and interdisciplinary research We are in the midst of a change of paradigm moving from a scholarly communication system controlled by a few and very powerful profit players to a new scenario where the legacy players are repositioning themselves around "services" (and very often around data related services) and an explosion of new, emerging and/or innovative players. Against		has already been built!				

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		this background, tendering of services should be transparent and this should be emphasized in the document.						