Access/How is use enabled?:
Definition of “Access”: The permission and ability to retrieve, modify, copy, and/or move data.

CATEGORY	DEFINITION	VALUES	VALUES DEFINTION
Access: Actor	Type of entity which accesses data. **Which** *type of entity accesses the data?*	- Human - Machine	**Human**: An individual who identifies and locates the dataset or their metadata. **Machine**: Algorithms, computational models or approaches applied to locate and extract dataset content or metadata.
Access: Data discovery	Infrastructure, technology or protocol used to establish the existence and location of data **How** *is the data discovered?* More than one option can be chosen.	- Search Engine - Text-based publication - Catalog - Direct link - Identifier - Related links or identifiers - OAI-PMH - FAIR signposting - Personal communication - Other	**Search Engine:** Web-based tool to retrieve information based on user queries. **Text-based publication:** A written document (e.g. journal article, report, or preprint) that describes or mentions an associated dataset. **Catalog:** A structured and searchable listing of datasets **Direct link:** A specific URL or web address that directs to the data. **Identifier:** A unique and persistent reference assigned to a digital object. **Related links or identifiers:** URL, web address, or identifier used to assert the existence and/or location of the dataset in question. **OAI-PMH:** Protocol that enables the standardized harvesting and sharing of metadata between repositories and services. **FAIR signposting:** Web-based protocol that uses standardized HTTP links to signal the presence and location of FAIR resources associated with a digital object. **Personal communication:** Information obtained directly from an individual rather than through a public source. **Other:** Infrastructure, technology or protocol to locate the data not covered by the options above
Access: Point of Access	Provider, medium or source from which data were drawn for the instance of use **Where** *does the data live?*	- Data Repository - Journal - Cloud storage - Webpage - Local medium - Other	**Data repository:** A platform or database that stores, manages, assigns identifiers, and provides access to datasets. **Journal:** A scholarly publication that disseminates research articles and may host associated datasets on its website. **Cloud storage:** A remote, network-based storage service that enables access to data online. **Webpage:** Online source which provides access to data in the context of textual and/or graphical information. **Local medium:** A storage or access point physically maintained within an organization or a local environment. **Other:** Provider, medium or source for the data not covered in options above.
Access: Data interaction	Technical pathway or platform through which data is transferred or interacted with for the purpose of use. **Which** *way is the data transferred or interacted with?* More than one option can be chosen.	- Web download - Direct download - Email - File-hosting service - Distributed Data Storage - Secure Data Enclave - API - Manual transcription - Other	**Web download:** Data are accessed through a standard web interface or a download button. **Direct download:** Transfer initiated through a fixed URL or link that provides immediate access. **Email:** Direct exchange of data files or access credentials via electronic mail. **File-hosting service:** Online platform that enables sharing of data files through secure, permission-based access. **Distributed Data Storage:** System that maintains multiple, interconnected servers or locations, allowing decentralized access and redundancy. **Secure Data Enclave:** Controlled digital environment that provides authorized users with restricted, monitored access. **API:** Technical interface that allows software applications to access, query, or interact with data programmatically. **Manual transcription:** Human-performed process to reproduce data from one format or source to another. **Other:** Pathway or tool to transfer or interact with the data not covered by options above.
Access: Restriction on use	Applicable type(s) of non-technical (e.g. ethical, legal) restrictions on use **Which** *non-technical restrictions apply to use?* More than one option can be chosen.	- License type - Local context - Data use agreement - Ethical restrictions - Committee clearance - None - Other	**License type:** Statement of rights and duties which apply to usage of the dataset. Granular infra-values for “license” could make use of RSL standard https://rslstandard.org/rsl#element-permits **Local context:** There are limitations associated with the social, cultural, and/or regulatory environment in which the data are collected, managed, and/or used. **Data use agreement:** Legally-binding document that outlines the terms and conditions under which data are accessed and/or used. **Ethical restrictions:** Limitations on data access and/or use imposed to protect the rights, privacy, and welfare of individuals or communities represented in the data. **Committee clearance:** Approval must be granted by an ethics committee, institutional review board (IRB), or equivalent body to access and/or use the data. **Other:** Non-technical restriction on the use of the data not covered by the options above. **None:** There are no restrictions to the ways in which users can interact with the data.

User/Who is using the data?
Definition of “User”: An entity (human or machine) which interacts with the data.

CATEGORY	DEFINITION	VALUES	VALUES DEFINTION
User: Role	Function assumed by the user with respect to the data. *In* **which** *role(s) does the user engage with the data?*	- Creator - Consumer - Curator - Reviewer	**Creator:** Entity which has an active role in the generation or collection of the dataset. **Consumer:** Entity which uses the data. **Curator:** Entity which organizes or improves (or attempts to improve) the validity, accuracy or completeness of the data for their long-term value, accessibility, and usability. **Reviewer:** Entity which assesses the quality or validity of the data, or provides assessment in relation to data management, funding or publication.
User: Permission	The type of authorization the user has with regard to interacting with the data. **Which** *level of authorization does the user have?*	- Administrator - Editor - Viewer with download - Viewer without download - None	**Administrator:** Rights to perform all changes, possibly with the exception of deletion. **Editor:** Rights to read, download, and edit dataset and its metadata, but no ability to manage rights for themselves or other users. **Viewer with download:** Rights to read and download dataset and its metadata, but no ability to edit or manage rights for themselves or other users. **Viewer without download:** Rights to read dataset and its metadata, but no ability to download, edit or manage rights for themselves or other users. **None:** No ability to read, download, edit or manage rights for the dataset or its metadata.
User: Geography	The user’s geographic location **Where** *is the user located?*	- Country	**Country:** Nation or territory where the user is found, designated per the ISO 3166 country codes: https://www.iso.org/iso-3166-country-codes.html
User: Discipline	The user’s field of research **What** *is/are the user’s field(s) of research, if applicable?* More than one option can be chosen.	-OECD Fields of Science and Technology vocabulary -N/A	**Discipline:** A subdivision of knowledge that is taught and/or researched at the college or university level. Designation by the subdivisions provided by the OECD Fields of Science and Technology (FoS) vocabulary **N/A:** User is not engaged in a research or scholarly activity.

Application/How are the datasets used?
Definition of “Application”: Way in which the data is put to a desired use.

CATEGORY	DEFINITION	VALUES	VALUES DEFINTION
Application: Purpose	The scholarly, public, or private sector(s) or sphere(s) that characterize the activities including an instance of use. **Why** *is the user interacting with the data?* More than one option can be chosen.	- Education - Reporting - Software or tool development - Commercial product - Policy - Research - Operational analytics - Citizen science - Personal/ recreational - Journalism - Review - Curation - Other	**Education:** Teaching, learning, training, academic instruction or pedagogical activities. **Reporting:** Documentation, communication, or dissemination of information, insights, or activities to stakeholders. **Software or tool development:** Creation, improvement, testing, or maintenance of computational tools, applications, platforms, or systems. **Commercial product:** Develop, improve, market, or deliver products or services with profit-generating intent. **Policy:** Inform, support, or evaluate directives, guidelines, or decision-making by institutions. **Research:** Generate new knowledge through systematic investigation. **Operational analytics:** Monitor, or assess ongoing operations, or organizational performance. **Citizen science:** Public participation in research activities, where individuals without a scholarly education in the field in question contribute to generating new knowledge through systematic investigation, often in collaboration with researchers. This includes activities also termed ‘transdisciplinary research’, ‘participatory research’, or ‘patient involvement’. **Personal/recreational:** Activities serving personal or private interests, as e.g. hobby, self-improvement, curiosity, or entertainment. **Journalism:** Activities by media organizations or communicators to investigate stories, verify facts, inform public discourse, or create content for lay audiences. **Review:** Evaluation, quality assessment, or critical appraisal of the dataset. **Curation:** Enhancing datasets for their long-term value, accessibility, and usability. **Other:** Reason for interacting with the data not covered by the options above
Application: Activity type	The specific actions, be them analytical, exploratory, or otherwise, leveraging data that constitute an instance of use. **How** *is the user leveraging or interacting with the data?* More than one option can be chosen.	- Model Development/ Training - Meta-analysis - Statistical methods - Comparison or control - Benchmarking - Exploration - Validation - Reproduction/ re-analysis - Curation/cleaning - Annotation/ labeling - Review - Infrastructure - Data assimilation - Other	**Model Development/Training:** Build, train, or refine computational, statistical, or AI models that can make predictions, classifications, or simulate systems. **Meta-analysis:** Systematically combine data from different studies to complete statistical analyses and derive novel or broader conclusions related to the study question. **Statistical methods:** Develop, test, validate, or illustrate new statistical techniques, methodologies, or analytical approaches. **Comparison or control:** Reference point, baseline, or comparative standard against which to evaluate other data, results, or conditions. **Benchmarking:** Establish performance standards, test system capabilities, or compare against established reference datasets to assess quality, accuracy, or efficiency. **Exploration:** Discover patterns, generate hypotheses, identify phenomena, or gain insights without specific predetermined hypotheses. **Validation:** Verify, confirm, or test the accuracy, reliability, or generalizability of findings, models, methods, or claims from earlier research or activities. **Reproduction/re-analysis:** Application of the same data to verify results, test alternative analytical approaches, or check for errors or biases in the original analyses. **Curation/cleaning:** Processing, organizing, standardizing, error-checking, or improving data quality to make it more usable, accurate, or accessible. **Annotation/labeling:** Addition of descriptive information, classifications, or structured metadata to enhance the meaning, usability, or searchability of datasets. **Review:** Assessment of data quality or claims associated with the dataset, or provide assessment in relation to data management, funding or publication. **Infrastructure:** Build, maintain, test, or improve systems, platforms, tools, or services. **Data assimilation:** Integrate data with information about their uncertainties, in a statistically optimal manner, to estimate model parameters or state variables to improve predictions or understanding of systems. **Other:** Actions or activities involving the data not covered by the options above.
Application: Time of use	Time point at which an activity related to the data occurred. **When** *does the data use occur?*	- Use start time - Use end time	**Use start time:** Time point at which the interaction with the data started for the purposes of use. **Use end time:** Time point at which the interaction with the data for the purposes of use was completed. One or both values may be completed according to the information available. For situations where data use can be asserted but no start use can be determined, ‘Use end time’ should be applied. The format to designate time is flexible and can involve a timestamp, year, or other.
Application: Output	A product resulting from an **instance of use.** **What** *is produced from a given instance of use, if applicable?* More than one option can be chosen.	Controlled vocabulary	The outputs in the controlled vocabulary include the resource list in the DataCite metadata schema, with these additions and exclusions: Additions: Blog, Digital Twin, Educational material, News story, Poster, Presentation, Policy document Exclusions: Book Chapter, Conference Proceeding, Data paper, Grant proposal, Interactive Resource, Instrument, Journal, Physical Object. The DataCite metadata schema provides definitions for the resources: https://datacite-metadata-schema.readthedocs.io/en/4.6/properties/resourcetype/