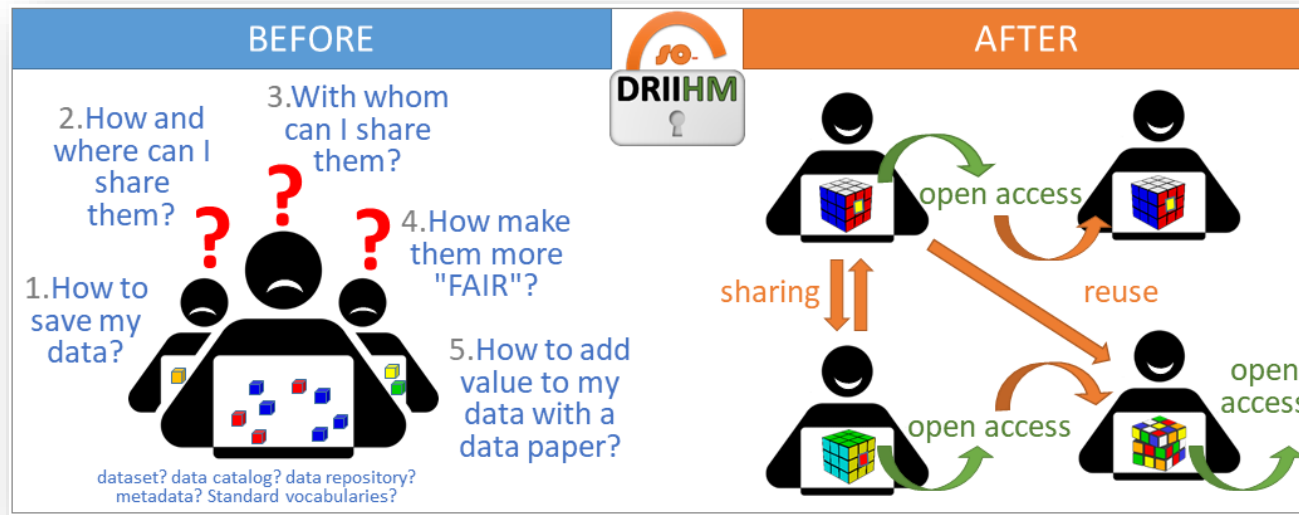


Main results of the ANR SO-DRIIHM open science project

Promote Open Science within the DRIIHM Interdisciplinary Research Facility on Human- Environment Interactions:
Co-design of an e-infrastructure implementing the FAIR Principles

E. Lerigoleur^{1*}, F. Arnaud², B. Cissé³, P. Dayre⁴, P. Duboz⁵, C. Jabéa¹, M. Laffond⁶
I. Le Berre⁷, M. Massaviol⁸, L. Mendy⁶, B. Morandi⁹, C. Pardo⁸,
J-C. Raynal⁸, G. Skupinski¹⁰, M-L. Trémélo¹¹



- ¹UMR GEODE CNRS, Toulouse, France.
- ²EVS, Lyon, France.
- ³UCAD, Dakar, Sénégal.
- ⁴UMR IRIT, Toulouse, France.
- ⁵IR ESS, Dakar, Sénégal.
- ⁶Makina corpus, Toulouse, France.
- ⁷UMR LETG, Brest, France.
- ⁸FR ECCOREV, Aix en Provence, France.
- ⁹GRAIE, Lyon, France.
- ¹⁰UMR LIVE, Strasbourg, France.
- ¹¹UMR ESPACE, Aix en Provence, France.

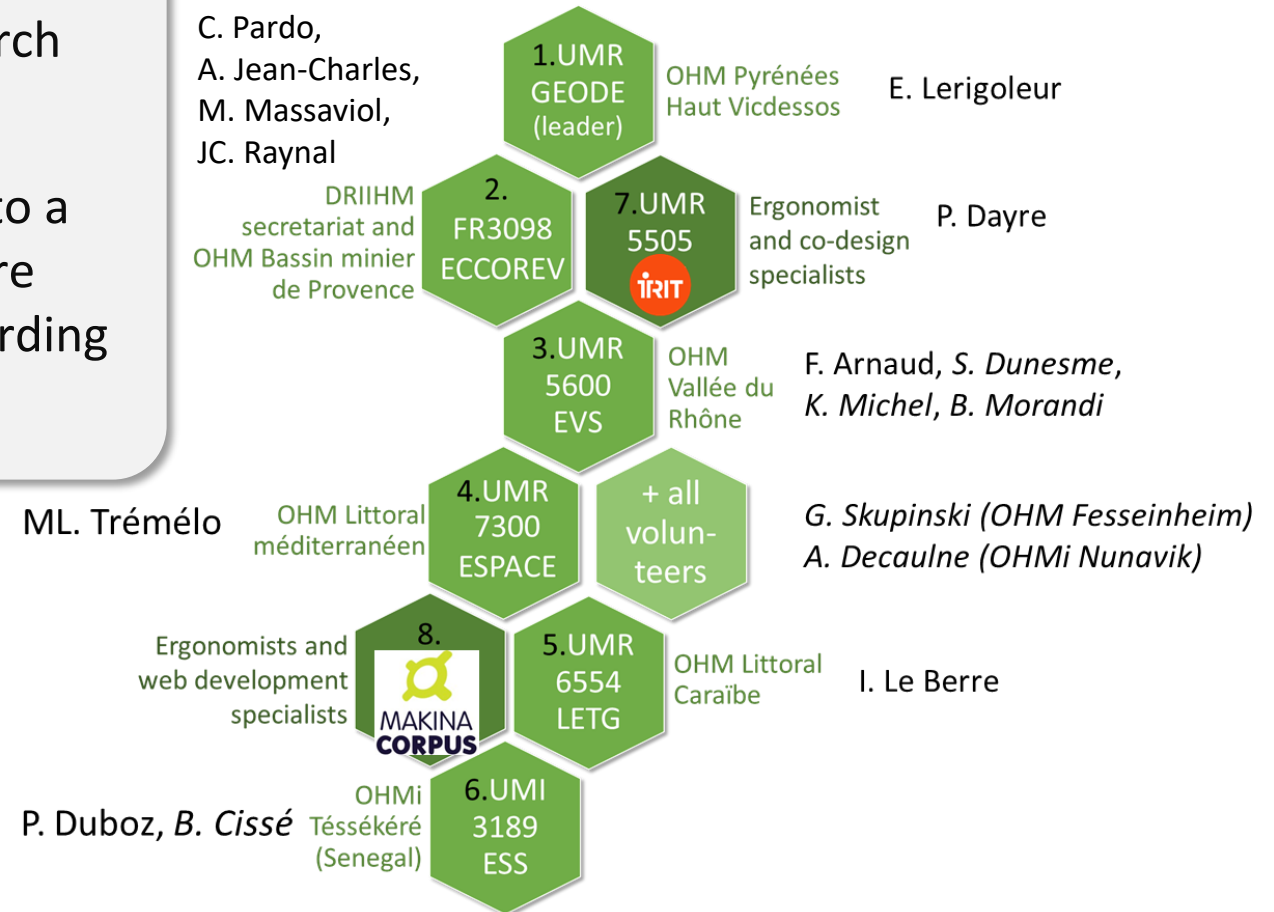
News from OHM and DRIIHM

1. The ANR SO-DRIIHM project encourages the sharing and opening of data within the OHMs, between them and beyond

WP 1. Promote Open Science and encourage Open Science practices, showing the challenges and benefits of structuring, accessing, sharing and opening research data

WP 2. Enhance the DRIIHM existing infrastructure to a more user-friendly and interoperable e-infrastructure with new functionalities that will be prioritized according to users' expectations and motivations

- ✓ ANR Open science Flash 2019
- ✓ 8 partners
- ✓ 6 OHM + 1 OHMi
- ✓ 98 k€
- ✓ Oct. 2020 - **March 2024 (+1 year)**



2. The challenges of data sharing in the context of open science for DRIIHM

Acculturate DRIIHM scientists to data sharing practices in addition to open access publications

- Increase knowledge of the open science ecosystem and its vocabulary

Help OHM(i) project coordinators draw up a Data Management Plan (DMP)

- Find out about DMP models
- Learn how to use the [DMP OPIDoR](#) collaborative editing tool

Help producers of OHM(i) research data to better describe and display their data in dedicated catalogues

- Learn how to create **FAIR metadata**
- Understand the benefits of exposing data in one or more **metadata catalogues**

Help producers of OHM(i) research data to make their data as FAIR as possible and publish them

- Learn how to create **FAIR data**
- Know the recommended **data repositories**
- Know about licences for accessing and using data

3. Definition of FAIR Data...

Findable

Metadata and data should be findable for both humans and computers

Interoperable

Data needs to work with applications or workflows for analysis, storage and processing

F

A

I

R

Accessible

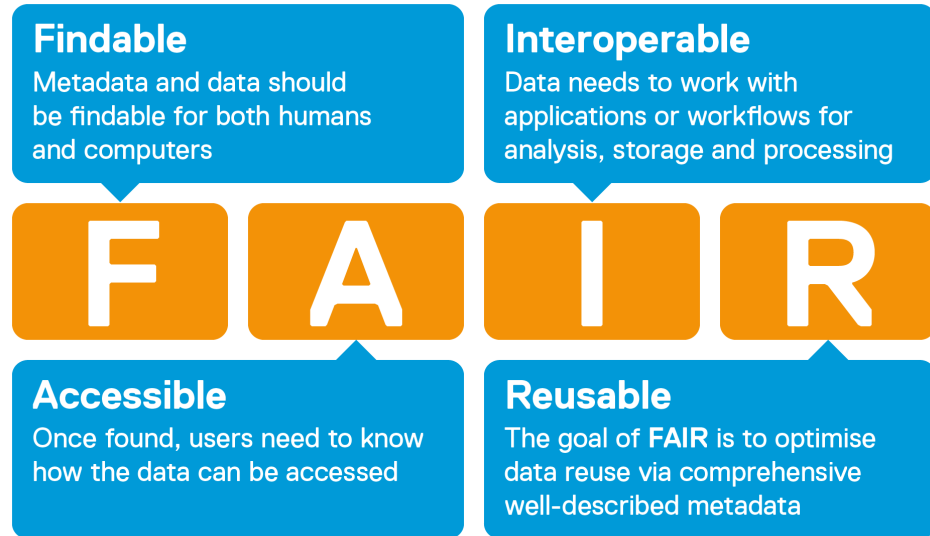
Once found, users need to know how the data can be accessed

Reusable

The goal of FAIR is to optimise data reuse via comprehensive well-described metadata

<https://scibite.com/solutions/enterprise-fair-data-mdm/>

3. Definition of FAIR Data... and clarifications to remove ambiguities



<https://scibite.com/solutions/enterprise-fair-data-mdm/>

Findable **A**ccessible **I**nteroperable **R**eusable
≠
Open 

- **FAIR data does not mean open**
 - Data can be FAIR with access restrictions clearly stated
 - **Open data is not necessarily 100% FAIR**
-
- **FAIR is not a binary process** → gradient in FAIRness
 - **Using a data repository does not induce 100% FAIRness**
 - This depends, for example, on whether the data repository imposes a data standard (e.g. GBIF yes, ZENODO no), and/or on the completeness and accuracy of the metadata
 - **F & A are the most easily achievable principles**
 - **I is the most difficult to implement**
 - **R is under progress in environmental / Humanities & Social Sciences** : reproducible research, use of controlled vocabularies and input templates, ...

4. Data governance and data policies for OHM & OHMi

Statement in 2020

The LabEx had some data policy elements at its disposal (charter)



Challenges

Building a CNRS-Ecologie&Environnement-wide data policy



Actions

Initiative and co-construction of this data policy (coord. D. Joly DAS CNRS-INEE)

Results



**Politique des données
des dispositifs et
infrastructures de l'INEE**

<https://hal.science/hal-04000652>

4. Data governance and data policies for OHM & OHMi

Statement in 2020

The LabEx had some data policy elements at its disposal (charter)

The LabEx DRIIHM did not have the capacity to manage its own data repository

Challenges

Building a CNRS-Ecologie&Environnement-wide data policy

Find reliable, long-term partners

Actions

Initiative and co-construction of this data policy (coord. D. Joly DAS CNRS-INEE)

Partnership built with BBEES (data.InDoRES), HumaNum (Nakala), PNDB and GBIF + planned with Data Terra (EaSy Data)

Results



Politique des données des dispositifs et infrastructures de l'INEE

<https://hal.science/hal-04000652>

- ✓ Partnership built
- ✓ Experimentation with data deposit in the respective data repositories, with testing and feedback
- ✓ Operational technical interoperability with Nakala, planned with others

Our partner data repositories

- For ecology and environmental data

- **Data.InDoRES** is our DRIIHM default data repository:

<https://data.indores.fr/dataverse/driihm>



- For biodiversity data:

- **PNDDB** (French platform) for FAIR metadata



- **GBIF** (International platform) for FAIR metadata + data



- For multi-source observation data, you can use the Data Terra infrastructure, particularly the [EaSy Data](#) platform for long tail data



- For data in the Humanities and Social Sciences

- **Nakala** (Huma-Num tool) is our DRIIHM default data repository:

<https://nakala.fr/collection/10.34847/nkl.addd0599>

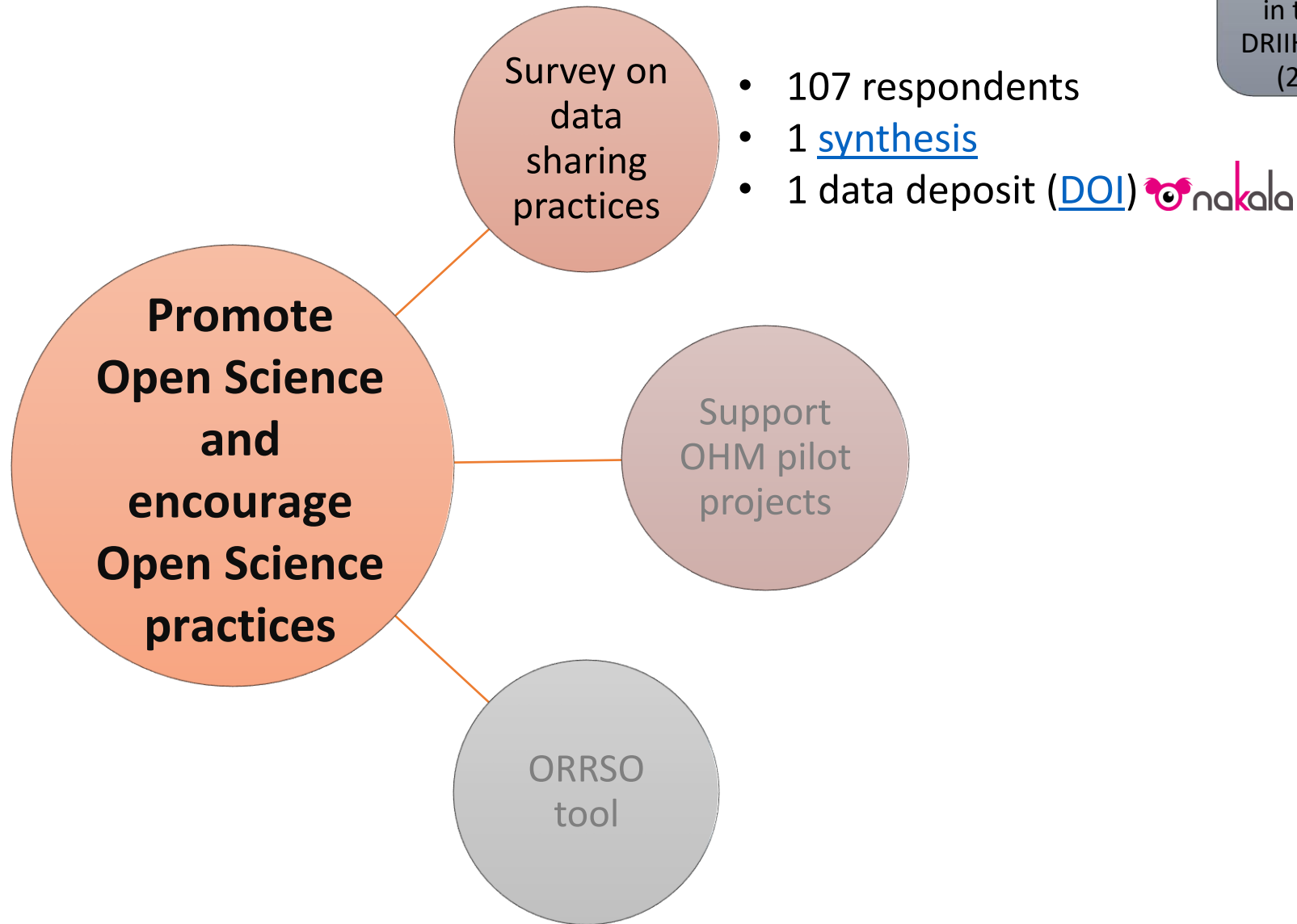


NB: recherche.data.gouv also offers a data repository

You can also use **trusted thematic data repositories**, depending on your scientific domain (eg. GenBank)

→ Consult the [list of 49 thematic data repositories](#) recommended by the Comité pour la science ouverte (CoSO)

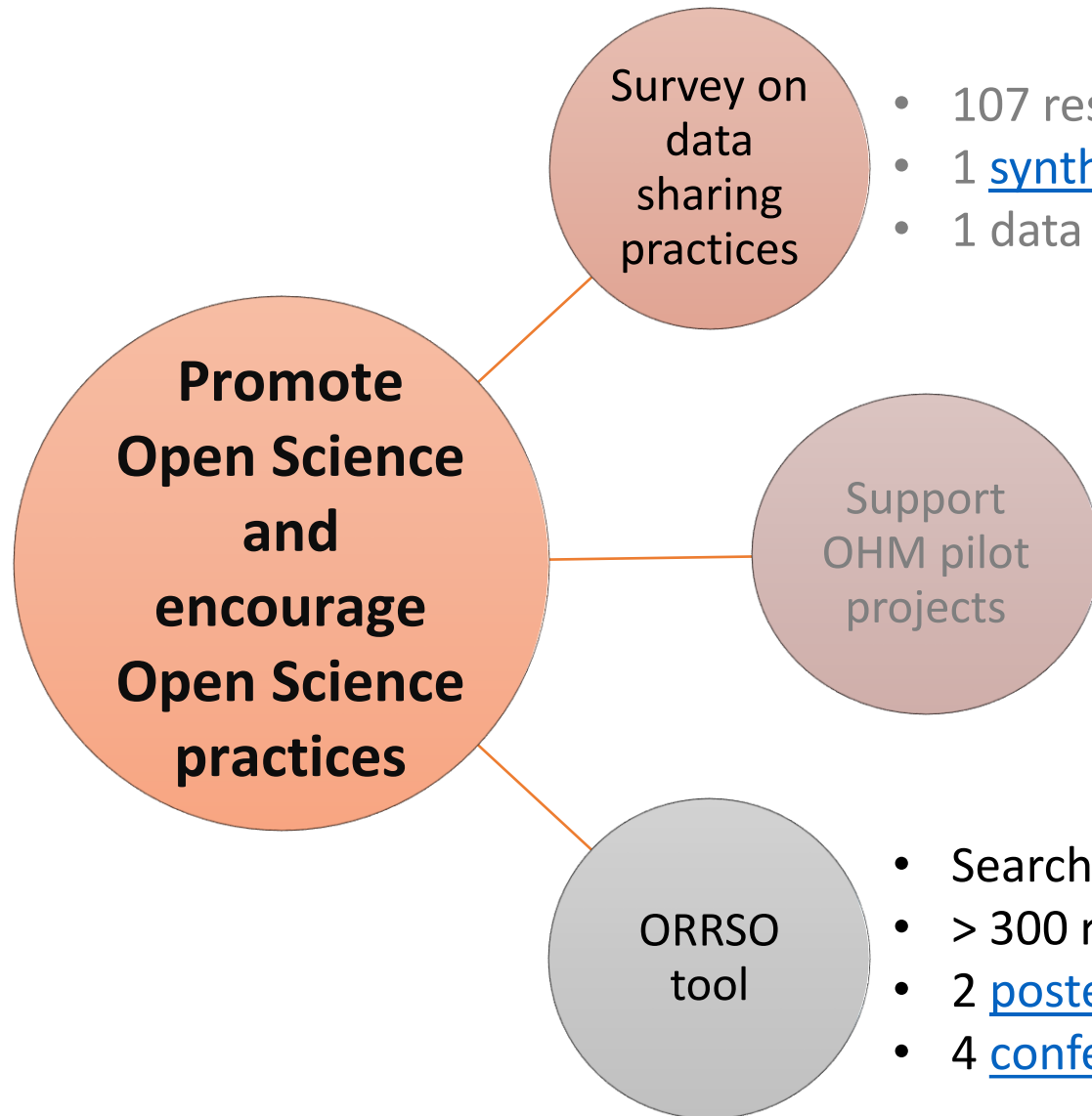
5. WP1 main actions & results




38
[productions](#)
in the HAL SO-DRIIHM collection (2019-2024)

- 1 data paper
- 26 conference papers
- 5 posters
- 6 other productions

5. WP1 main actions & results




Survey on data sharing practices

- 107 respondents
- 1 [synthesis](#)
- 1 data deposit ([DOI](#))  nakala

Support OHM pilot projects

ORRSO tool

- Search tool for open science resources
- > 300 resources → 1 data deposit ([DOI](#))  nakala
- 2 [posters](#)
- 4 [conference papers](#)

38

[productions](#)

in the HAL SO-DRIIHM collection (2019-2024)

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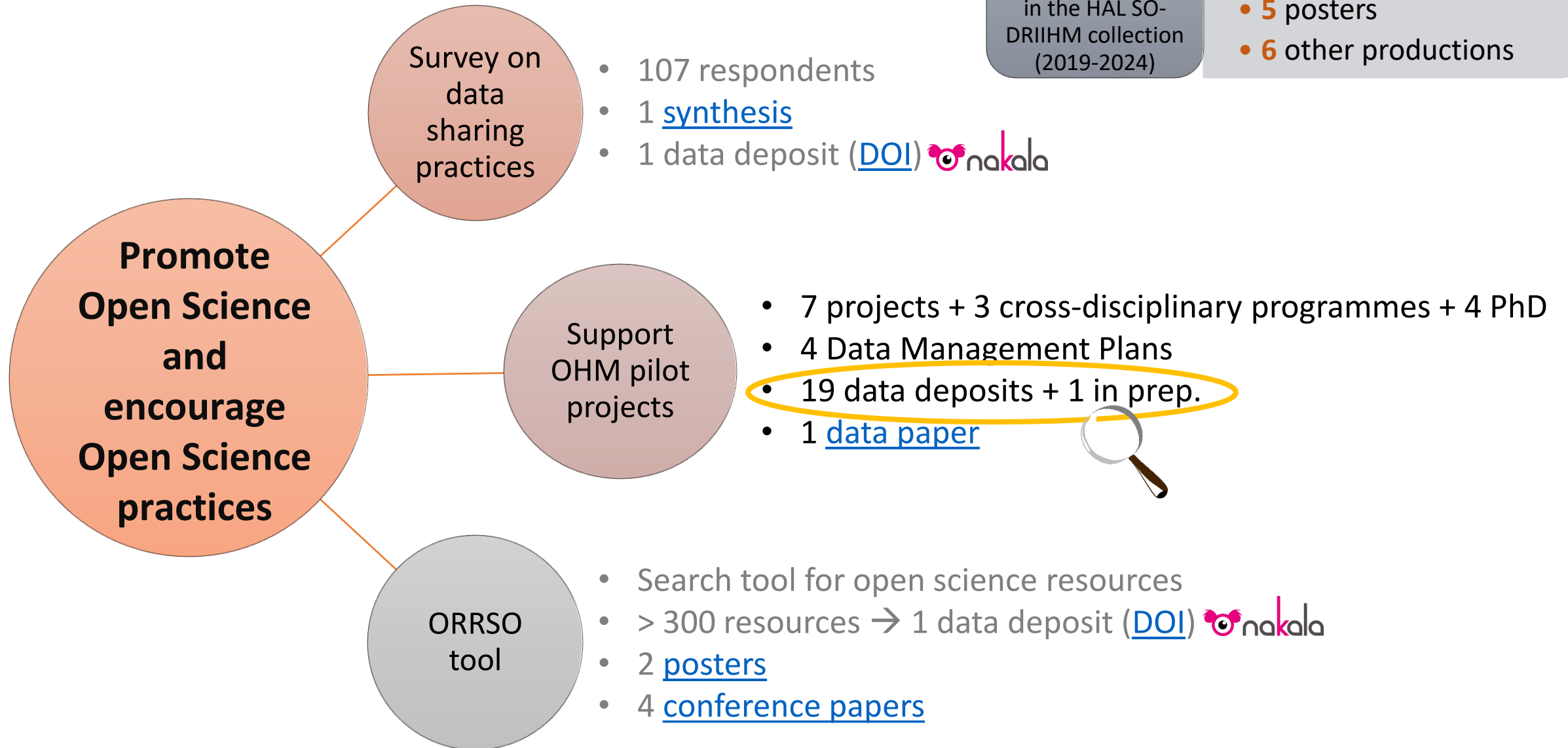


ORRSO

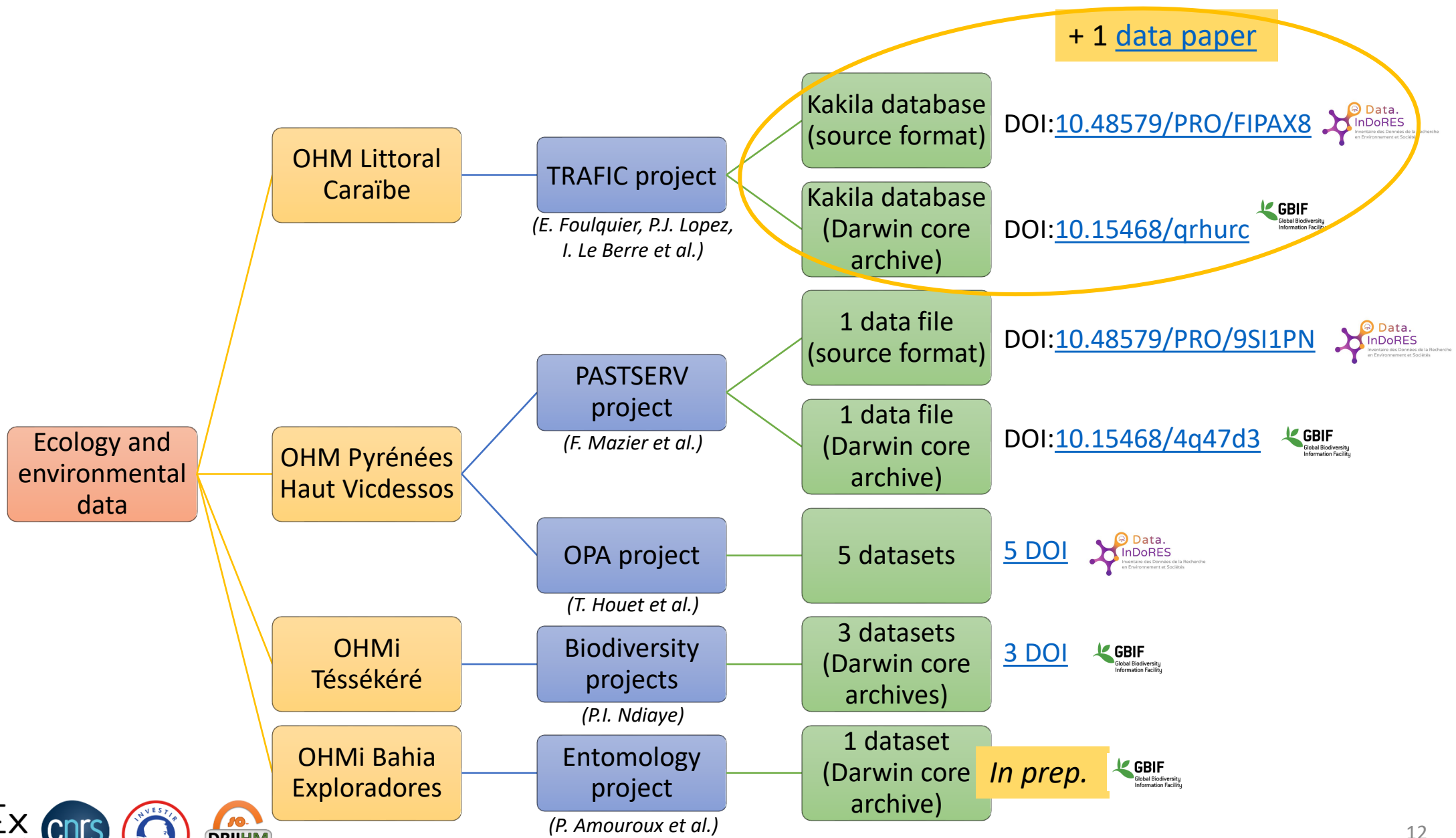


Outil de Recherche de Ressources en Science Ouverte
<https://www.driihm.fr/science-ouverte/orrso?view=home>

5. WP1 main actions & results



5. WP1 main actions & results → 12 data deposits for ecology and environmental data



5. WP1 main actions & results → 7 data deposits in Data.InDoRES



Kakila database of marine mammal observation data around the French archipelago of Guadeloupe in the French Antilles

8 avr. 2024 - OHM Littoral Caraïbe



Coché, Lorraine; Arnaud, Elie; Bouveret, Laurent; David, Romain; Foulquier, Eric; Gandillon, Nadège; Jeannesson, Etienne; Le Bras, Yvan; Lerigoleur, Emilie; Lopez Pascal-Jean; Madon, Bénédicte; Sananikone, Julien; Sèbe, Maxime; Le Berre, Iwan; Jung, Jean-Luc, 2024, "Kakila database of marine mammal observation data around the French archipelago of Guadeloupe in the AGOA sanctuary - French Antilles", <https://doi.org/10.48579/PRO/FIPAX8>, data.InDoRES, V2, UNF:6:EQCWjtWRyPMKn42mMhWtaQ==[fileUNF]

Database collected as part of the Lorraine Coché master's 2 internship "Inventory and structuring of marine mammal observation data around Guadeloupe" in 2020 (Master Tropical marine ecosystems at the University of the Antilles). This database centralizes and harmonizes the data...



Vegetation surveys in mountainous area (Pyrenees, France)

14 sept. 2022 - OHM Pyrénées Haut Vicdessos



Mazier, Florence; Plancher, Clara; Haunold, Sébastien; Bonnet, Colline; Belly, Hugo; Houet, Thomas, 2022, "Vegetation surveys in mountainous area (Pyrenees, France)", <https://doi.org/10.48579/PRO/9SI1PN>, data.InDoRES, V1

The data file contains absolute cover percentage of plant species from vegetation survey in the Vicdessos mountainous area (Pyrenees, France). The data have been collected in 2015 and 2020 within the framework of two projects: ANR-10-JCJC-1804 MODE-RESPYR (Modeling Past and futur...



Land cover maps of the Haut Vicdessos valley (Pyrenees, France) from 1942 until 2008

25 juil. 2023 - OHM Pyrénées Haut Vicdessos



Houet, Thomas, 2023, "Land cover maps of the Haut Vicdessos valley (Pyrenees, France) from 1942 until 2008", <https://doi.org/10.48579/PRO/BBXGHL>, data.InDoRES, V3

Land cover maps made using visual interpretation from panchromatic aerial photographs segmented and classified using e-cognition. The geometric quality of the map is identical to that of the orthophotoplan of the corresponding year. Raster data have also been converted to vector d...

Simulated land cover maps for 2080 on the Haut Vicdessos (Pyrenees, France) considering two pastoral land use change scenarios and model parameterization

25 juil. 2023 - OHM Pyrénées Haut Vicdessos



Houet, Thomas, 2023, "Simulated land cover maps for 2080 on the Haut Vicdessos (Pyrenees, France) considering two pastoral land use change scenarios and model parameterization", <https://doi.org/10.48579/PRO/BWJSR9>, data.InDoRES, V2

2 scenarios (MBAU, PHVU) and 4 different model parameterizations for each of them with detailed land cover for 1983 and 2008 distinguishing deciduous and coniferous. The 4 model parameterizations result from the following combination: the driving factors (slopes, orientations, di...

Wetlands map of the Bassies valley (Haut Vicdessos, Pyrenees, France)

25 juil. 2023 - OHM Pyrénées Haut Vicdessos



Houet, Thomas, 2023, "Wetlands map of the Bassies valley (Haut Vicdessos, Pyrenees, France)", <https://doi.org/10.48579/PRO/PL4RZQ>, data.InDoRES, V2

Wetland mapping from in situ surveys made in 2010 and used as validation data for wetland classification using remotely sensed data.

Simulated land cover maps for 2080, 2100 and 2120 on the Haut Vicdessos (Pyrenees, France) considering pastoral land use changes scenarios

25 juil. 2023 - OHM Pyrénées Haut Vicdessos



Houet, Thomas, 2023, "Simulated land cover maps for 2080, 2100 and 2120 on the Haut Vicdessos (Pyrenees, France) considering pastoral land use changes scenarios", <https://doi.org/10.48579/PRO/EJZQSA>, data.InDoRES, V2

Scenarios based on 3 land use assumptions: A) Without pastoral management constraints: land cover changes between 2008 and 2080 (or 2100 or 2120) occur at the same rate as those observed between 1983 and 2008. B) Taking into account the agro-pastoral pressure defined by the agro...

Spectral signatures on the Bassies valley (Haut Vicdessos, Pyrenees, France) - 2010 campaign

28 avr. 2023 - OHM Pyrénées Haut Vicdessos



Houet, Thomas, 2023, "Spectral signatures on the Bassies valley (Haut Vicdessos, Pyrenees, France) - 2010 campaign", <https://doi.org/10.48579/PRO/PUQ99V>, data.InDoRES, V2

Data set (summary sheets) and location map of spectro-radiometric surveys of 19 representative microplots, used as training samples for remote sensing land cover classifications.

5. WP1 main actions & results → 5 data deposits in GBIF

Bird biodiversity in Ferlo (North of Senegal) Occurrence dataset

These data concern the avian biodiversity of the Koyli Alpha area located in the Ferlo (northern Senegal), on the route of the pan-African reforestation project of the Great Green Wall. This work was ...

Published by Observatoire Hommes-Milieux international Téssekéré ... by the LabEx **DRIIHM**, French programme ...

3 674 occurrences 14 citations

Large wild mammals in Ferlo (North of Senegal) Occurrence dataset

These data are collected in the extension area of the Great Green Wall in Ferlo (North, Senegal) between 2016 and 2021. They concern the biodiversity of large wild mammals present in Koyli Alpha. This...

Published by Observatoire Hommes-Milieux international Téssekéré ... by the LabEx **DRIIHM**, French programme ...

420 occurrences 27 citations

Large wild mammals in Ferlo (North of Senegal)_Trapping data Sampling event

These data are collected using camera trapping in the extension area of the Great Green Wall in Ferlo (North, Senegal), particularly in Koyli Alpha between 2017 and 2020. They concern the biodiversity...

Published by Observatoire Hommes-Milieux international Téssekéré ... by the LabEx **DRIIHM**, French programme ...

439 occurrences 13 citations



Vegetation surveys in mountainous area (Pyrenees, France) Sampling event

The data file contains absolute cover percentage of plant species from vegetation survey in the Vicdessos mountainous area (Pyrenees, France). The data have been collected in 2015 and 2020 within the ...

Published by UMR 5602 GEODE Géographie de l'environnement (CNRS/Université Toulouse 2) ... Haut Vicdessos (Labex **DRIIHM** ANR-11-LABX0010). ...

1 757 occurrences 40 citations



Kakila database of marine mammal observation data around the French archipelago of Guadeloupe in the AGOA sanctuary - French Antilles Sampling event

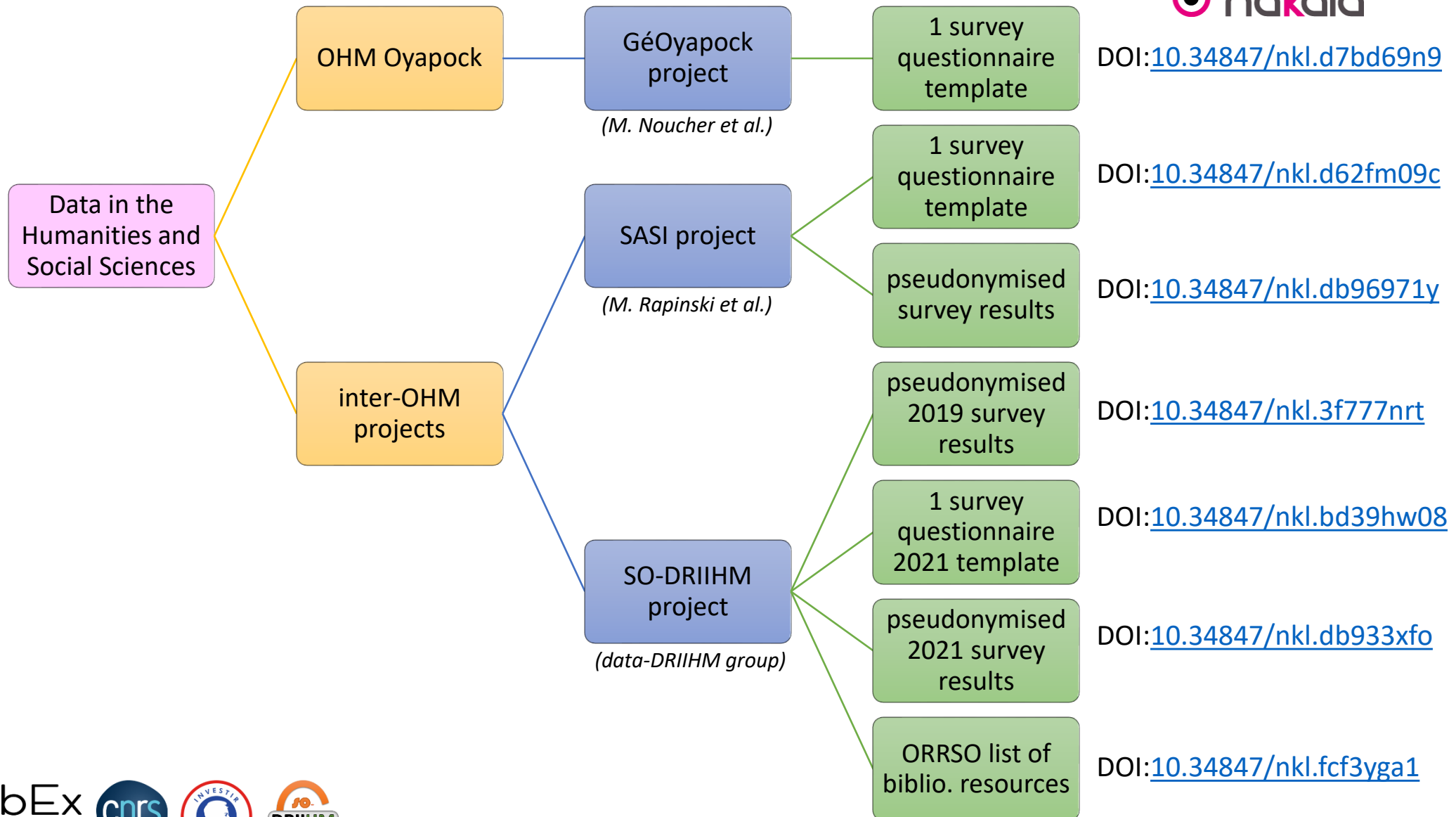
Database collected as part of the Lorraine Coché master's 2 internship "Inventory and structuring of marine mammal observation data around Guadeloupe" in 2020 (Master Tropical marine ecosyst...

Published by Observatoire Hommes-Milieux Littoral Caraïbe ... by the LabEx **DRIIHM**, French programme ...

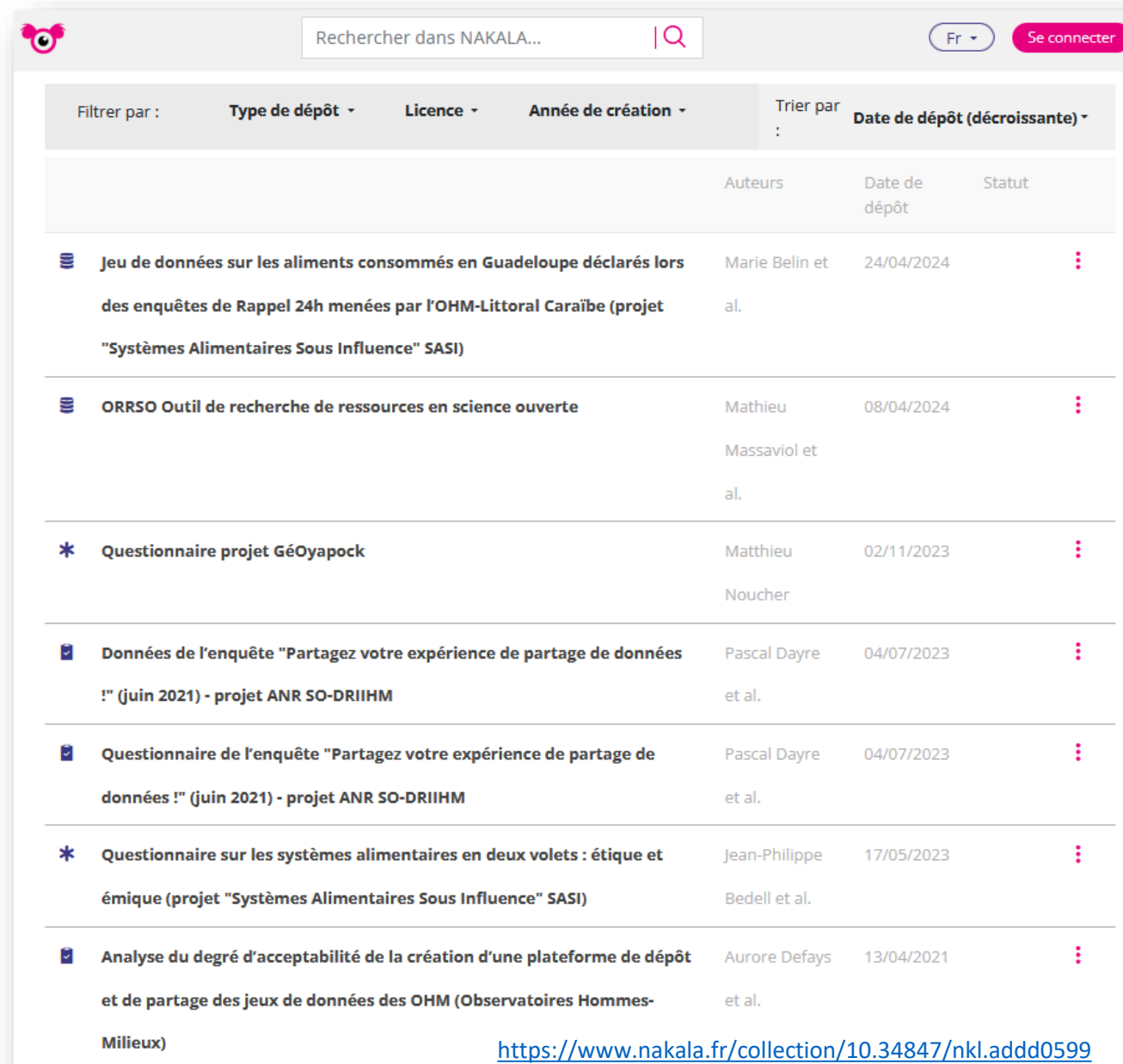
4 703 occurrences 13 citations



5. WP1 main actions & results → 7 data deposits for data in Humanities and Social Sciences

















5. WP1 main actions & results → 7 data deposits for data in Humanities and Social Sciences



Rechercher dans NAKALA... | Q

Fr Se connecter

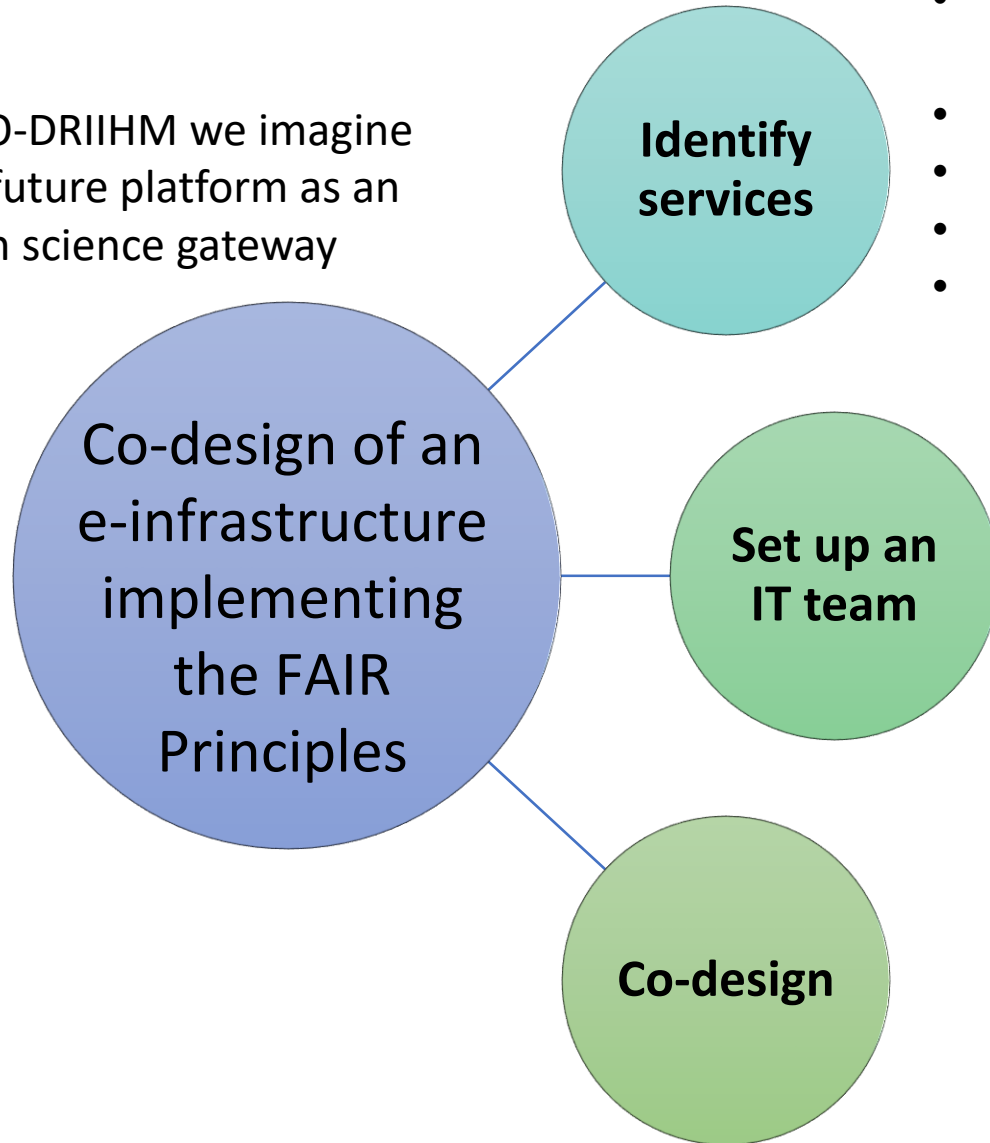
Filtrer par : Type de dépôt Licence Année de création Trier par : Date de dépôt (décroissante)

	Auteurs	Date de dépôt	Statut
 Jeu de données sur les aliments consommés en Guadeloupe déclarés lors des enquêtes de Rappel 24h menées par l'OHM-Littoral Caraïbe (projet "Systèmes Alimentaires Sous Influence" SASI)	Marie Belin et al.	24/04/2024	
 ORRSO Outil de recherche de ressources en science ouverte	Mathieu Massaviol et al.	08/04/2024	
 Questionnaire projet GéOyapock	Matthieu Noucher	02/11/2023	
 Données de l'enquête "Partagez votre expérience de partage de données !" (juin 2021) - projet ANR SO-DRIIHM	Pascal Dayre et al.	04/07/2023	
 Questionnaire de l'enquête "Partagez votre expérience de partage de données !" (juin 2021) - projet ANR SO-DRIIHM	Pascal Dayre et al.	04/07/2023	
 Questionnaire sur les systèmes alimentaires en deux volets : étique et émique (projet "Systèmes Alimentaires Sous Influence" SASI)	Jean-Philippe Bedell et al.	17/05/2023	
 Analyse du degré d'acceptabilité de la création d'une plateforme de dépôt et de partage des jeux de données des OHM (Observatoires Hommes-Milieus)	Aurore Defays et al.	13/04/2021	

<https://www.nakala.fr/collection/10.34847/nkl.add0599>

6. WP2 main actions & results

In SO-DRIIHM we imagine the future platform as an open science gateway

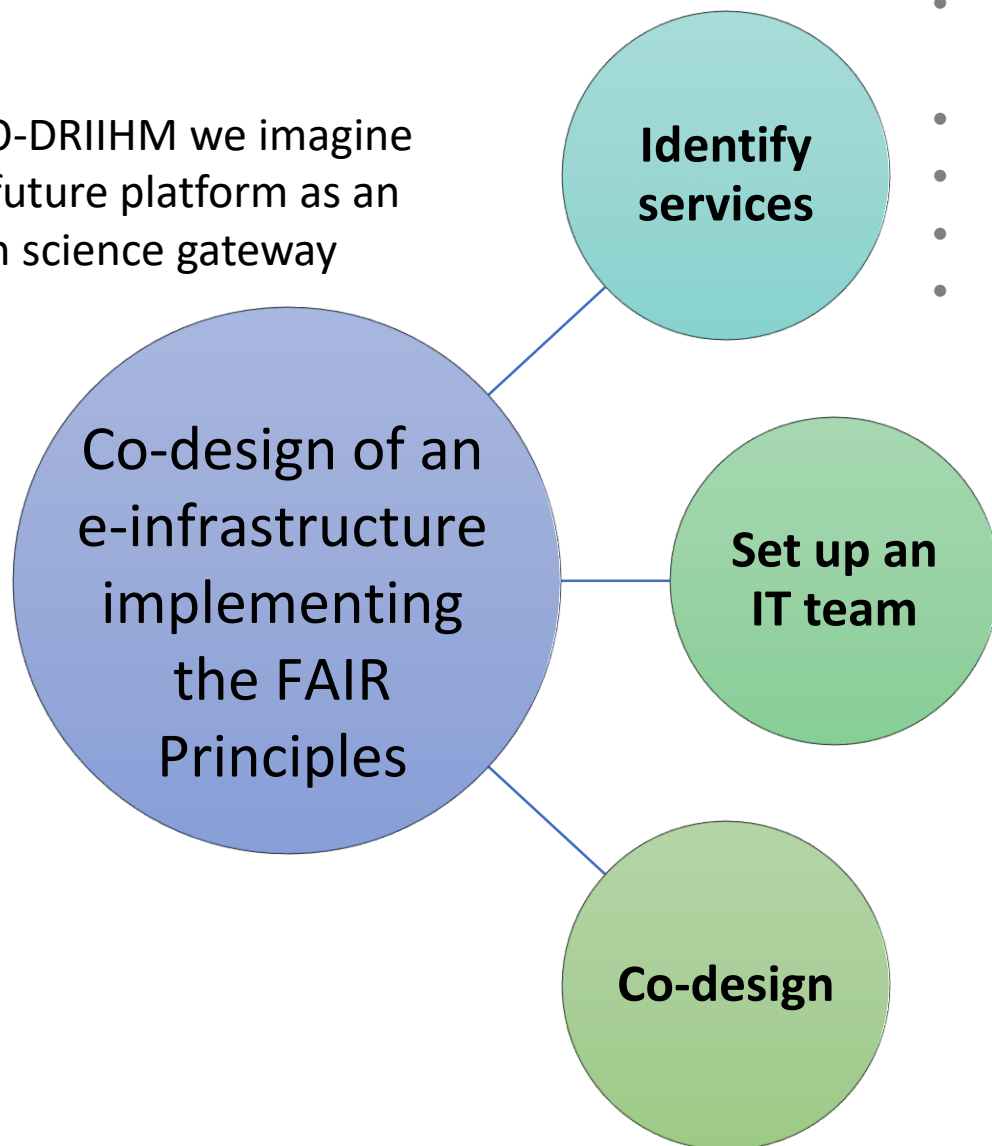


- **Search for OHM data and other linked resources** (land use, meteorological data, demographic data...)
- **Deposit data in a recommended data repository**
- Search for (OHM) publications
- How to make your data as FAIR as possible
- How to draft a data paper, ...



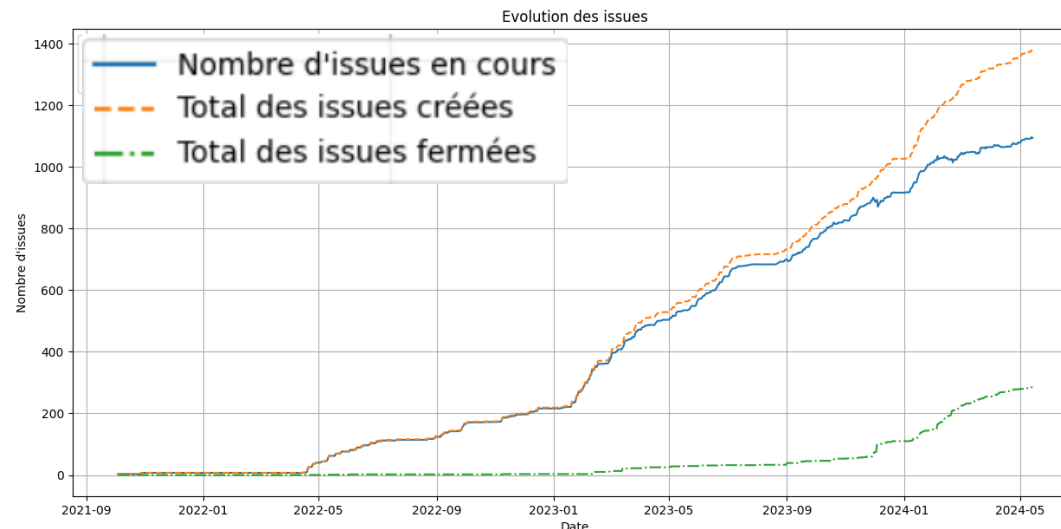
6. WP2 main actions & results

In SO-DRIIHM we imagine the future platform as an open science gateway



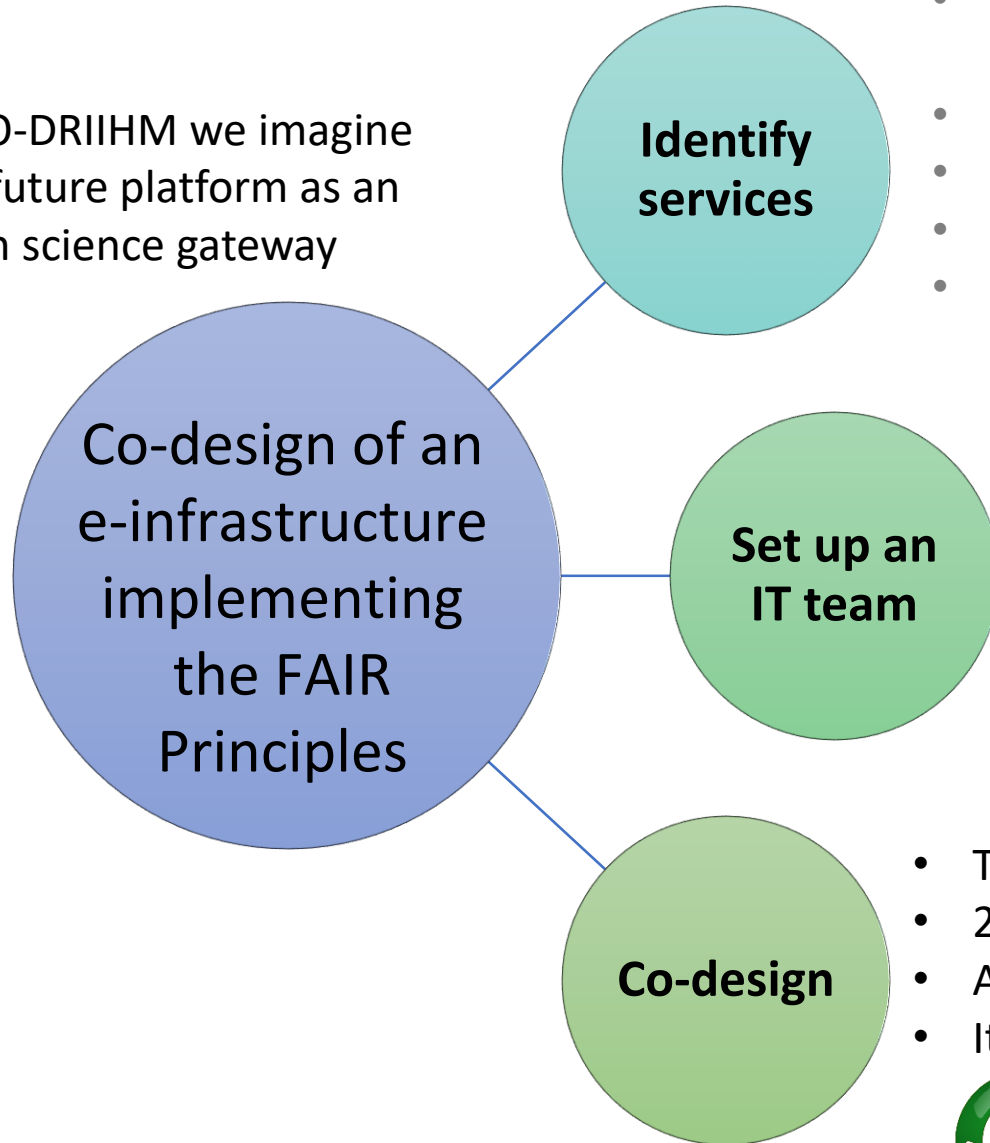
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- Managing the IT project on Gitlab
- Find additional funding: Plan France Relance IRIT/Autonomens = 2 IT (0.8 ETP) x 2 years + operating costs
- Recruit IT staff: Chloé Jabea (2023-06 → 2024-03)
- Gradual involvement of the private partner Makina corpus
- Carry out IT developments (>1100 Gitlab issues, >1300 commits!)



6. WP2 main actions & results

In SO-DRIIHM we imagine the future platform as an open science gateway



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- The Data-DRIIHM group is involved in co-design
- 27 “RDV SO-DRIIHM” meetings (every ~ 3 weeks)
- A workshop in January 2024 with 6 volunteer scientists for beta-tests
- Iterative development cycle and co-design → work in progress...



Work on interface mock-ups & co-design other exchanges

IT development of the prototype

Tests and deployment of a new version of the prototype

Prototype overview - home page

- ✓ A **generic platform** to bring together several spaces for each scientific community
- ✓ Prototype and Gitlab environment hosted at IRIT



Institut de Recherche
en Informatique de Toulouse
CNRS - INP - UT3 - UT1 - UT2J

There are
currently 3
spaces



Open Common open science platform

WELCOME SEARCH DATA DEPOSIT DATA RESOURCES ACTUALITIES CONTRIBUTE ABOUT US CONTACT Register Login

Open Common est une plateforme internet qui accompagne les scientifiques à consulter les données de la recherche et à publier selon les principes FAIR leurs jeux de données dans des entrepôts de données partenaires.

La plateforme Open Common (OC) permet la saisie des métadonnées descriptives des ressources de la recherche tout en respectant les standards et les recommandations internationaux du web des données (W3C), des données ouvertes (DCAT), de l'union européenne pour les données scientifiques multidisciplinaires(DCAT-AP-JRC) et de l'éco-système numérique de la science ouverte. Elle offre un unique point d'accès à l'éco-système numérique de la science ouverte facilitant la saisie des métadonnées descriptives des ressources de la recherche selon un unique format défini par les standards tout en évitant des saisies multiples. L'utilisateur est supporté dans le processus de saisie des métadonnées descriptives et il est aiguillé dans le processus de dépôt des données comme la proposition d'un entrepôt.

Il est possible de s'inscrire à des espaces de données existants ou de demander l'ouverture d'un espace de données sur la plateforme. Un espace de données est dédié à une communauté de recherche qui peut être interdisciplinaire afin qu'elle puisse organiser ses données d'intérêt et publier sa production de données quelque soit sa taille.

Interact with data stewards and cooperate with your community to enrich your data.

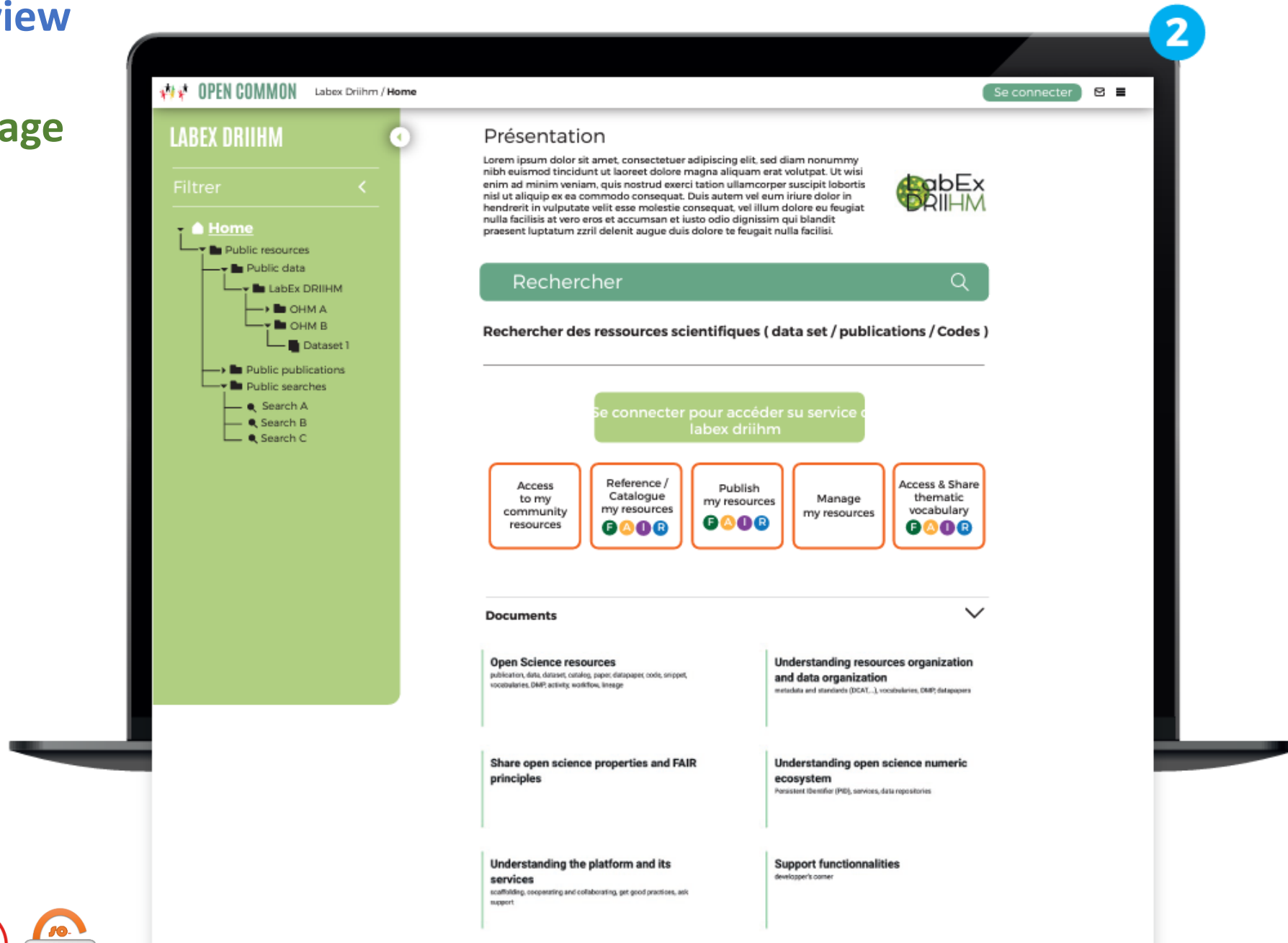
LabEx DRIIHM
DRIIHM Space
Lauréat de la deuxième vague de l'appel à projet Laboratoire d'Excellence (LabEx) dans le cadre du programme « Investissements d'avenir », le LabEx DRIIHM, Dispositif de Recherche Interdisciplinaire sur les Interactions Hommes-Milieus, regroupe les Observatoires Hommes-Milieus (OHM, au nombre de 131), outils créés par le CNRS-INEE en 2007.
Ce LabEx mis en place initialement pour 8

IRIT Space
L'Institut de Recherche en Informatique de Toulouse (IRIT), une des plus imposantes Unité Mixte de Recherche (UMR5505) au niveau national, est l'un des piliers de la recherche en Midi-Pyrénées avec ses 600 membres, permanents et non-permanents et une centaine de collaborateurs extérieurs.

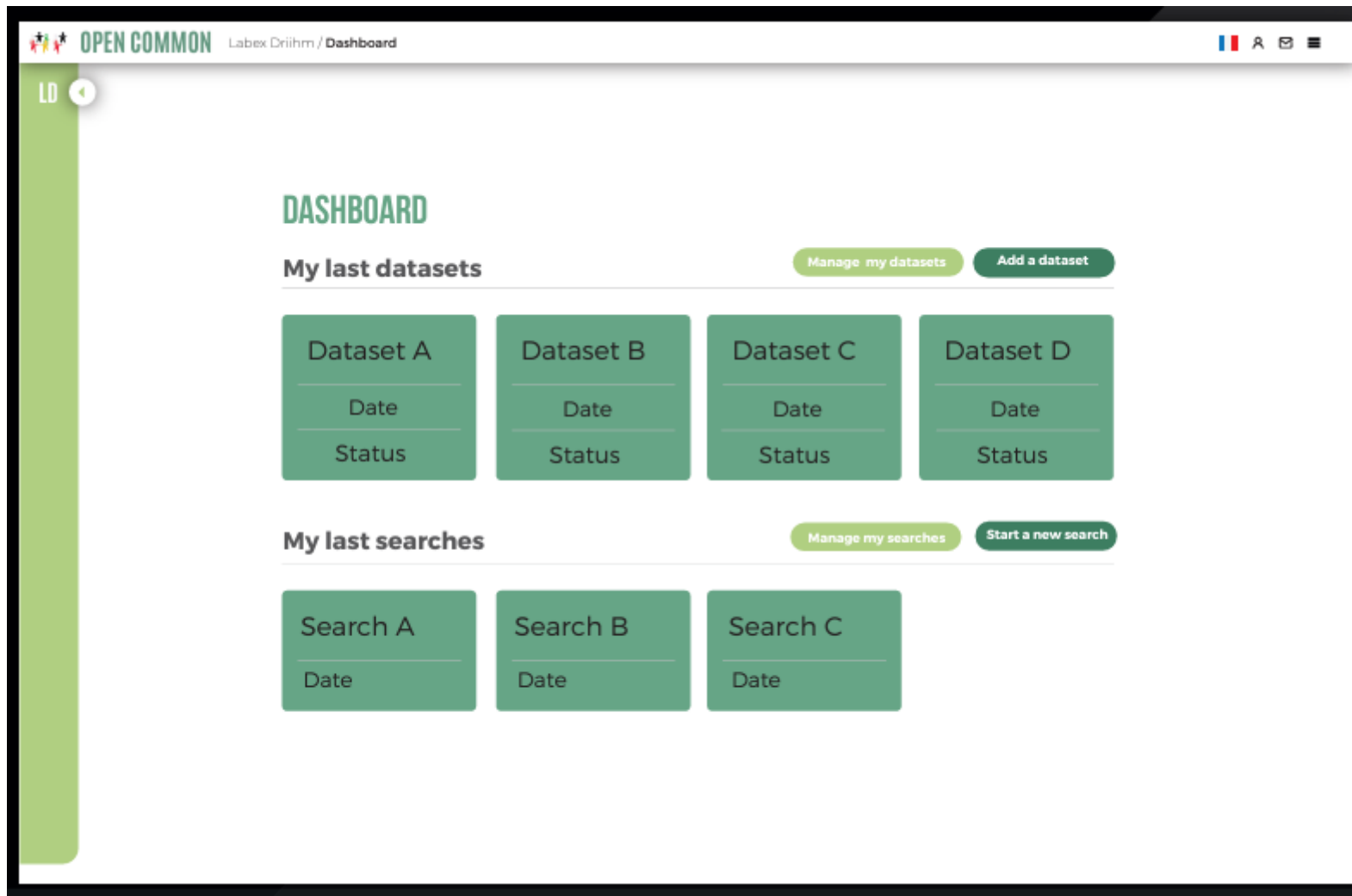
Université Fédérale Toulouse Midi-Pyrénées
UFTmip Space
Au 1er janvier 2023, l'Université de Toulouse est créée. L'Université de Toulouse constitue un établissement d'enseignement supérieur et de recherche au service de la science et de la société. L'Université de Toulouse est une communauté d'universités et d'établissements expérimentale, qui rassemble les membres fondateurs de

Prototype overview (Moke-up)

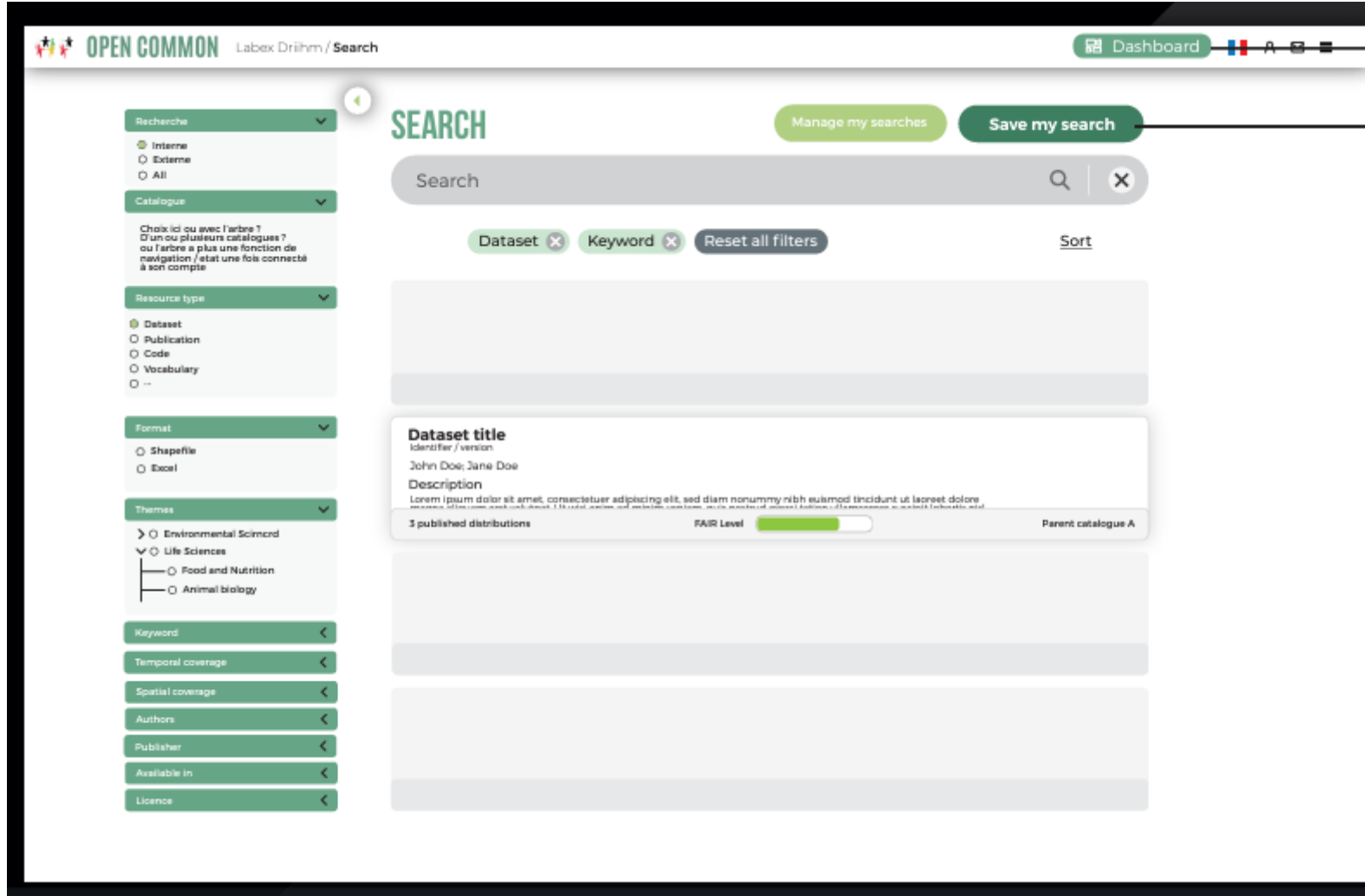
DRIIHM home page



Prototype overview (Moque-up) Dashboard



Prototype overview (Make-up) Search



Prototype overview

(Moke-up)

Manage my searches

Labex Driihm / Dashboard / Manage search

LD

Filter searches

New search

Titre	Description	Access	Last research date	Results	
Research title	Lorem ipsum	Public Shared Private	28-02-2024	18 Datasets	See results Replay the search Modify the search Change access Delete
					Historique de recherches <
Research title	Lorem ipsum	Public Shared Private	28-02-2024	18 Datasets	See results Replay the search Modify the search Change access Delete
					Historique de recherches v
					24-02-2024 15 Datasets
					21-02-2024 13 Datasets
Research title	Lorem ipsum	Public Shared Private	28-02-2024	18 Datasets	See results Replay the search Modify the search Change access Delete

Prototype overview (Moke-up) Manage my datasets

OPEN COMMON Labex Driihm / Dashboard / Manage my datasets

trier les éléments du tableau : Titre / Access / Date / Status / par def : Last date

Filter dataset Add a dataset

Title	ID	Licences	Intern Access	Visibility	Last version date	Version number	Status
Dataset title 1	DOI	short name lien licence	Public Private Shared	Lien Catalogue externe	28-02-2024	V3	Externally referenced Metadata Data Published Distributions 1/2
Distribution A	Id	..	Public Public from date Private Shared	--	28-02-2024	..	
Distribution B	Id	short name lien licence	Public Public from date Private Shared		28-02-2024	V7	
Dataset title 2	Id	Public Private Shared	short name lien licence Open Access	Lien Catalogue interne Lien Catalogue externe	22-02-2024	V3	
Open distributions							
Dataset title 3	Id	Public Private Shared		Lien Catalogue interne Lien Catalogue externe	17-02-2024	V3	
Open distribution							

Actions for each dataset row:

- Modify metadata
- Add a distribution
- Publish metadata
- Change access
- Duplicate Dataset

Prototype overview

(Moke-up)

Dataset deposit workflow

OPEN COMMON Labex Driihm / Dataset deposit workflow

Describe the dataset

Choisir la fiche **FAIR** Mandatory

Titre* **F A I R**

Description* **F A I R**

Auteurs* **F A I R**

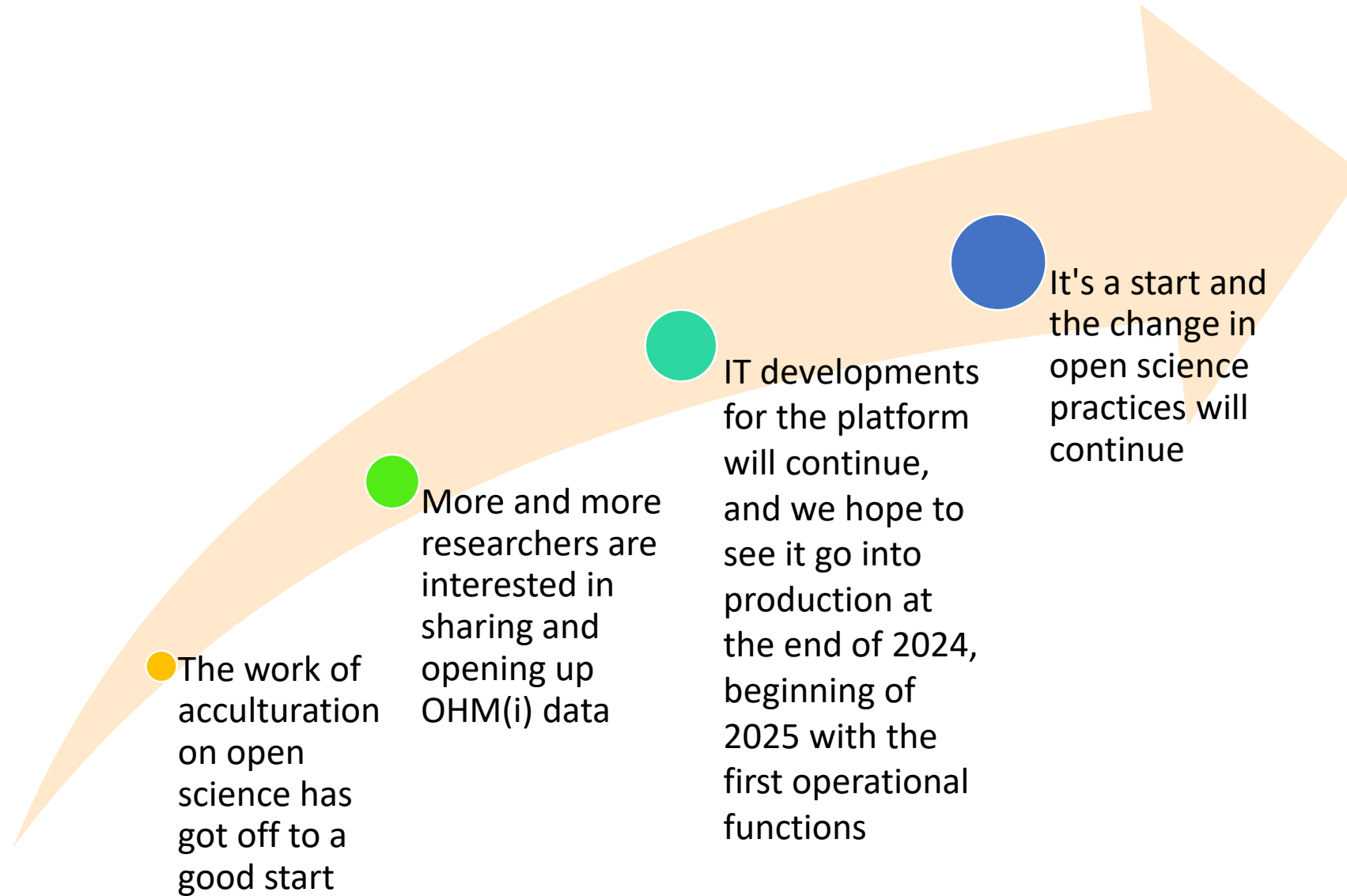
Ajout d'un nouvel auteur

Dataset deposit workflow

- 1 Describe the dataset**
The more you complete metadata fields, the more the dataset will be FAIR !
By default your dataset will be stored in : Home / My resources / My data
- 2 Select a Catalogue and metadata visibility**
Select a place to store the Dataset metadata.
Select the level of visibility for metadata in the chosen catalogue.
- 3 Add Distribution(s)** Recommended
Upload your files and describe them to store and publish them in a Data Repository. You can also reference a data service if the data is accessible by this means.
- 4 Select a Data Repository**
If Distribution with file
Choose a Data Repository to publish your Dataset and its Distributions, and consequently obtain a DOI.
- 5 Summary and confirmation**
This step summarizes the informations you entered and the ones generated by Open Common. You can confirm the Dataset creation or go back to modify it.
The Dataset is created as private and is sent to a moderator to be integrated in the catalogue you chose.
If Distributions with files added, the Dataset and its Distributions will be sent to the Data Repository you chose, the latter might moderate your deposit and contact you in case of modifications needed.
You can anytime check the status of your Dataset from you Dashboard.

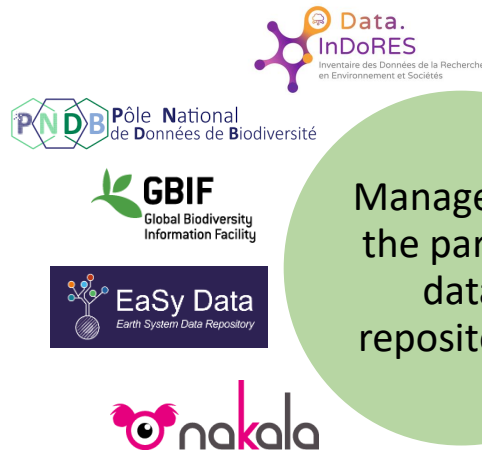
* These properties are mandatory. They are F and R (not A nor I) regarding FAIR principles

7. Conclusion & outlook



Making data as FAIR as possible is no longer an obstacle

Optimising links between OHM(i) researchers and support staff



Managers of the partner data repositories

Corinne Pardo, Mathieu Massaviol and all members of the data DRIIHM group

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Improving the visibility of OHM data so that they can be better exploited and cross-referenced

HAVE A QUESTION?

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