



Initiatives for making VIVO platform more interoperable



euroCRIS Strategic Membership Meeting,
Nijmegen, The Netherlands
December 2nd, 2022



Background

- VIVO is a semantic web platform enabling research discovery
- It is based on the VIVO ontology and might be used as a research portal for an institution or region
- Moreover, it can be customized to support some other roles in the research information ecosystem
- Furthermore, because of its nature and the fact it is based on semantic web technologies it might be part of a distributed research information system enabling cross-linking and cross-searching of information
- Following the VIVO product roadmap established for this year, some initiatives have been launched in line with the strategy to enhance the interoperability of the VIVO platform

Mapping between CERIF and VIVO ontology

CERIF and VIVO

- In July 2021 a Memorandum of Understanding between VIVO and euroCRIS was signed
- One specific action started after the signing of the MoU is updating the mapping between the CERIF data model and the VIVO Ontology from 2013
- The goal is to make possible communication between the VIVO platform and research information system capable of producing or ingesting research information in the CERIF format or its profiles such as one used in the OpenAIRE guidelines for CRIS managers

Status and plans

- In one direction at the moment - CERIF to VIVO
- Matching of structure
- Mapping between used vocabularies
- Review (help needed)
- <https://docs.google.com/spreadsheets/d/19vmYxsyawNi3W0JkToCc7CDUvjTSluoULPBsAgb-nEU/edit?usp=sharing>
- Formal language for representation of mapping
 - Maintaining and versioning of the mapping

Integration of VIVO platform and DSpace repository

Goal

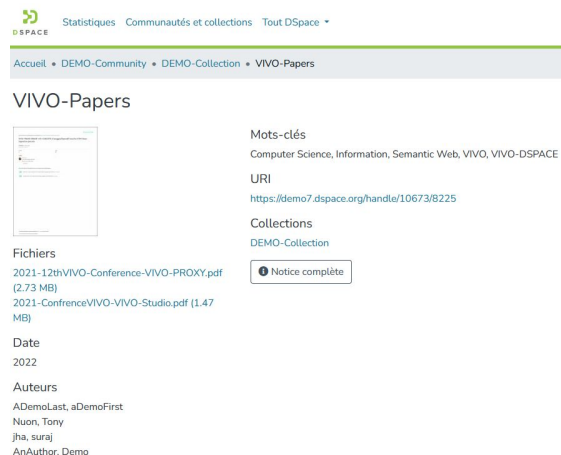
- Streamline process for academics
 - Avoid duplicated bibliographic data management
- Adding semantic web aspect to existing DSpace repositories
 - Reasoning - infer new facts from existing data based on inference rules or ontologies
- Adding depositing files and monitoring of Open-access policy compliance to existing VIVO instances

Status

- The first phases completed in June
- Usage scenario
 - A new fresh and empty instance of VIVO is installed. There is a running instance of DSpace. Configure and run the migration process by using bash scripts as it is described at <https://wiki.lyrasis.org/display/VIVO/Migrate+DSpace-Metadata+from+DSpace+to+VIVO>. After initial migration of data from DSpace, VIVO UI for editing and adding new items has been turned off (**VIVO is used in read only mode**). Weekly or daily, there is the update of information in VIVO during the night by dropping triplestore, and running migration with a fresh copy of DSpace data. The update is defined as a bash script run as a scheduled job (for instance a [cron job](#)).
- Planning of the follow up phases is in progress

The first phase of the project

- Call for expression of interest published - beginning of January 2022
- Procedure for selection of candidate
 - Michel Héon, Canada
 - José Ortiz, Ecuador
 - DSquare, India
 - Abhishek Raval and Narendra Kumar
- The project started in February
- The end of the first phase - June 30th
- The goal - migration of data from operational DSpace to VIVO in read-only mode
 - A new presentation of DSpace items and semantic web aspect to existing DSpace repositories
 - DSpace 6 or 7



DSpace Statistics Communautés et collections Tout DSpace

Accueil • DEMO-Community • DEMO-Collection • VIVO-Papers

VIVO-Papers

Fichiers
2021-12thVIVO-Conference-VIVO-PROXY.pdf (2.73 MB)
2021-ConferenceVIVO-VIVO-Studio.pdf (1.47 MB)

Date
2022

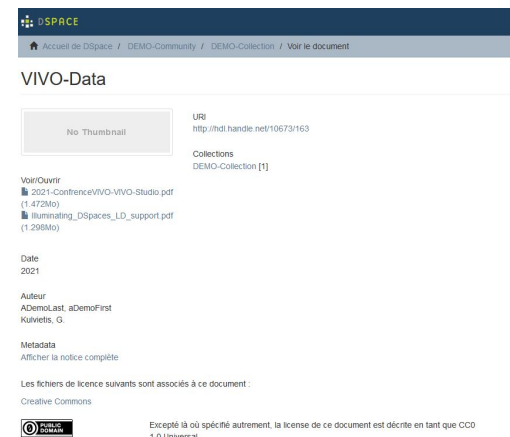
Auteurs
ADemoLast, aDemoFirst
Nuon, Tony
jha, suraj
AnAuthor, Demo

Mots-clés
Computer Science, Information, Semantic Web, VIVO, VIVO-DSpace

URI
<https://demo7.dspace.org/handle/10673/8225>

Collections
DEMO-Collection

[Notice complète](#)



DSpace

Accueil de DSpace / DEMO-Community / DEMO-Collection / Voir le document

VIVO-Data

No Thumbnail

URI
<http://hdl.handle.net/10673/163>

Collections
DEMO-Collection [1]

Voir/Ouvrir
2021-ConferenceVIVO-VIVO-Studio.pdf (1.472Mo)
Illuminating_DSspaces_ID_support.pdf (1.298Mo)

Date
2021

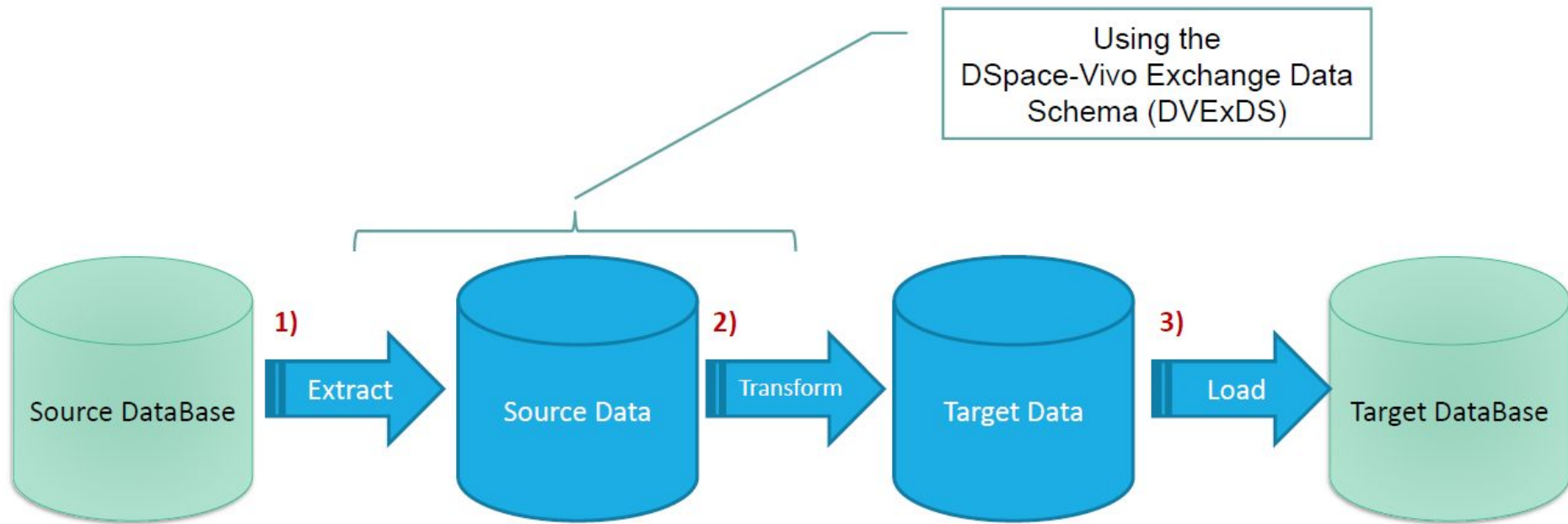
Auteur
ADemoLast, aDemoFirst
Kuvvetis, G.

Métadonnées
[Afficher la notice complète](#)

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ETL approach



<https://github.com/vivo-community/DSpace-VIVO>

<https://wiki.lyrasis.org/display/VIVO/DSpace-VIVO+Technical+Documentation>

YAML Metamodel

[▼ Collapse source](#)

```
1  openapi: "3.0.2"
2  info:
3    version: 1.1.0
4    title: DSpace-VIVO EXchange Data Schema (DVExDS)
5    description: |-
6      This is the "DSpace-VIVO EXchange Data Schema (DVExDS)" based on the OpenAPI 3.0.2 specification.
7      You can find out more about Swagger at [http://swagger.io](http://swagger.io). In the third iteration of the pet store, we've switched to the design first approach!
8      You can now help us improve the API whether it's by making changes to the definition itself or to the code.
9      That way, with time, we can improve the API in general, and expose some of the new features in OAS3.
10     Some useful links:
11     - [DSpace-VIVO - Integration project of DSpace metadata with VIVO](https://github.com/vivo-community/DSpace-VIVO)
12     - [The Pet Store repository](https://github.com/swagger-api/swagger-petstore)
13     - [The source API definition for the Pet Store](https://github.com/swagger-api/swagger-petstore/blob/master/src/main/resources/openapi.yaml)
14  termsOfService: http://swagger.io/terms/
15  contact:
16    name: Michel Héon PhD
17    email: vivo@uqam.ca
18    url: https://github.com/vivo-community/DSpace-VIVO
19  license:
20    name: BSD 3-Clause License
21    url: http://www.apache.org/licenses/LICENSE-2.0.html
22  servers:
23    - url: /api
24  tags:
```

<https://wiki.lyrasis.org/display/VIVO/DSpace+Communities+taxonomy+for+VIVO>

Extraction of data

- OAI-PMH
- REST API - DSpace 7



<https://github.com/vivo-community/DSpace-VIVO/tree/main/bundles/org.vivoweb.dspacevivo.transformation/src/main/java/org/vivoweb/dspacevivo/transformation/harvester>

Transformation & Loading

- Java
- Bash scripts

The screenshot shows the VIVO interface with a search bar and navigation tabs. The record page for 'Analysis of planned motion trajectories for scalable micro-robots' is displayed. It includes an abstract, a list of authors (Asta Drukteinė, Genadijus Kulvietis, Ramutis Bansevicius, Vytautas Bakanauskas), a description, keywords, and a URI. The interface is clean and modern, with a blue header and a white main content area.

VIVO connect • share • discover

Home People Organizations Research Events Capability Map

Analysis of planned motion trajectories for scalable micro-robots | Academic Article | DSpace Item

<https://demo7.dspace.org/handle/10673/2258>

Overview

abstract

Prototypes of micro-robots and geometric path planning algorithms are presented in this paper. Geometric motion trajectories are generated by switching contacts, control points and tangents methods. Analysis of high-speed formation of trajectories using switching contacts method revealed that the geometric path depends on orientation angle of a micro-robot. Investigation of formation of high-precision trajectories demonstrated that there is minimal deviation from the given motion trajectory at which micro-robot stops. This paper presents methodologies for evaluation of optimal orientation angle of a micro-robot and minimum deflection from the given trajectory. The methodologies are verified by experiments.

authors

[Asta Drukteinė](#)
[Genadijus Kulvietis](#)
[Ramutis Bansevicius](#)
[Vytautas Bakanauskas](#)

No Thumbnail Available

Description

Prototypes of micro-robots and geometric path planning algorithms are presented in this paper. Geometric motion trajectories are generated by switching contacts, control points and tangents methods. Analysis of high-speed formation of trajectories using switching contacts method revealed that the geometric path depends on orientation angle of a micro-robot. Investigation of formation of high-precision trajectories demonstrated that there is minimal deviation from the given motion trajectory at which micro-robot stops. This paper presents methodologies for evaluation of optimal orientation angle of a micro-robot and minimum deflection from the given trajectory. The methodologies are verified by experiments.

Keywords

micro-robot, path-planning algorithms, optimal orientation angle, minimum deflection

URI

<https://demo7.dspace.org/handle/10673/2258>

Collections

Journals

[Full Item page](#)

```
@prefix obo: <http://purl.obolibrary.org/obo/> .
@prefix ro: <http://purl.obolibrary.org/obo/ro.owl#> .

<https://dspace7.org/resource/10673_8225>
  a
    obo:BF0_0000031, bibo:Document,
    owl:Thing, bibo:Article, obo:BF0_0000001,
    vivo:Dataset, obo:IAO_0000030, pl:Item, obo:BF0_0000002 ;

  rdfs:label
    "VIVO-Papers" ;
  obo:ARG_2000028
    <https://dspace7.org/resource/10673_8225-vcard> ;
  dcterms:creator
    "Nuon, Tony", "AnAuthor, Demo", "jha, suraj" ;
  dcterms:date
    "2022-05-09T10:44:07Z", "2022" ;
  dcterms:subject
    "Computer Science, Information, Semantic Web, VIVO, VIVO-DSpace " ;
  dcterms:title
    "VIVO-Papers" ;
  dcterms:type
    "Article" ;
  vitro:mostSpecificType
    bibo:Article, pl:Item ;
  vivo:relatedBy
    <http://dspacevivo.vivoweb.org/individual/nuon_tony>,
    <http://dspacevivo.vivoweb.org/individual/another_demo>,
    <http://dspacevivo.vivoweb.org/individual/jha_suraj_https_dspace7_org_resource_10673_8225>,
    <http://dspacevivo.vivoweb.org/individual/jha_suraj>,
    <http://dspacevivo.vivoweb.org/individual/nuon_tony_https_dspace7_org_resource_10673_8225>,
    <http://dspacevivo.vivoweb.org/individual/another_demo_https_dspace7_org_resource_10673_8225> ;
  pl:hasBitstream
    "https://demo7.dspace.org/bitstreams/20de77fb-acea-4aaf-8fd3-6dbf087da109/download"^^xsd:anyURI,
    "https://demo7.dspace.org/bitstreams/65bbb69a-2497-47c3-a8e5-a9b87415a37b/download"^^xsd:anyURI .
```

Several Dspace metadata are translated into the VIVO vocabulary:

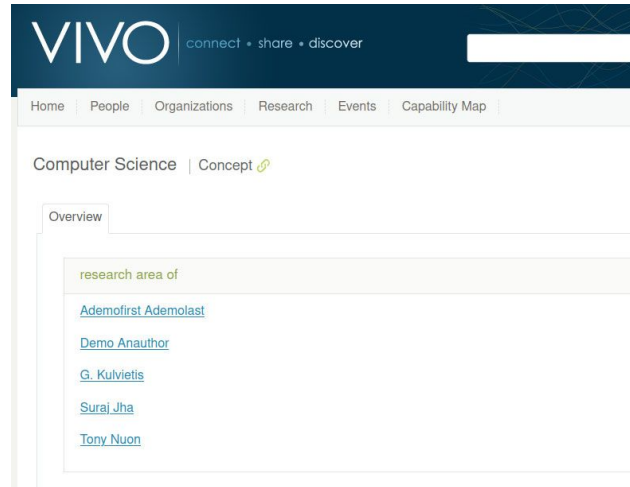
- The corresponding DSpace Url (Clickable)
- The abstract
- The authors
- The keywords translated in vivo:Concept

Authors -> foaf:Person

- DSpace creators are translated into foaf:Person in VIVO
 - The author's permanent URI is built from a processing on the name String
 - The topics associated with an Item-Keywords are translated into 'Research Area' for the item's author - grouping researchers with a common area of expertise



The screenshot shows a VIVO profile page for 'Demo Anauthor'. The header includes the VIVO logo and navigation links: Home, People, Organizations, Research, Events, and Capability Map. The profile section features a silhouette icon, the name 'Demo Anauthor', and a 'Person' label. Below this, 'Research Areas' are listed: Computer Science, Information, Semantic Web, and VIVO. A 'Publications in VIVO' section shows a 'selected publications' list with an entry for 'article' linked to 'VIVO-Papers'. A 'Contact' section displays the 'full name' as 'Demo Anauthor'.



The screenshot shows a VIVO concept page for 'Computer Science'. The header is identical to the profile page. The main content area is titled 'Computer Science | Concept' and includes an 'Overview' tab. Below the tab, a 'research area of' section lists associated authors: Ademofirst Ademolast, Demo Anauthor, G. Kulvietis, Suraj Jha, and Tony Nuon, each with a blue hyperlink.

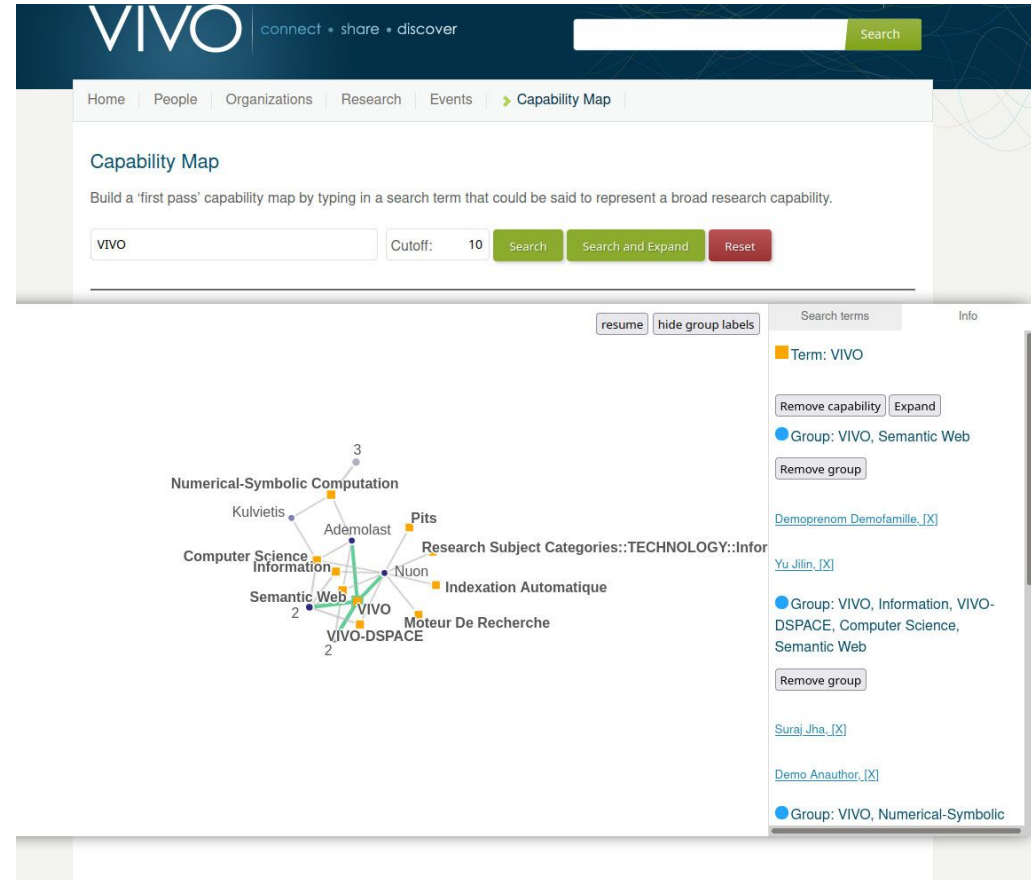
Multiple sources

- DSpace Items can come from several DSpace sources
 - University VIVO with integrated data from Department 1 DSpace, Department 2 DSpace, etc.
- The author's 'Research Area' (expertise) is enriched with publications from various data sources

The screenshot displays a VIVO profile for Tony Nuon. The header includes the VIVO logo, navigation links (Home, People, Organizations, Research, Events, Capability Map), and a search bar. The profile section features a silhouette icon, the name 'Tony Nuon', and a 'Person' label. Below this, 'Research Areas' are listed with links to 'Computer Science', 'Indexation Automatique', 'Information', 'Moteur De Recherche', and 'Pits'. A 'Research Subject Categories' section lists 'TECHNOLOGY::Information Technology::Computer Science::Cognitive Science' and 'Semantic Web'. A 'Publications in VIVO' section includes links to 'Co-author Network' and 'Map of Science'. A tabbed interface at the bottom shows 'Publications', 'Contact', and 'View All'. The 'Publications' tab is active, displaying a list of 'selected publications' with links to 'VIVO-Papers' and 'Explorescence - PROJET P.I.T.S.'. The 'Contact' tab shows the 'full name' as 'Tony Nuon'.

Capability Map

The Keyword transformation into a concept allows the experts mapping by crossing the information coming from the multiple DSpace instances



Next phases

- What?
 - Completion of exchange information task
 - Transformation of other entities - repositories, communities, collections
 - Integration of project within VIVO codebase
 - Establishing stable links between DSpace and VIVO items and terms
 - Description of crosswalks/mapping in formal language
 - Adjusting default crosswalks for customized VIVO and DSpace instances
 - Sending notifications to DSpace from VIVO
 - Depositing pdf files from VIVO UI into DSpace
 - Receiving notifications from DSpace
 - Changes in DSpace items reported to VIVO
- When?
 - ASAP
- How?
 - Crowdfunding
- Who?
 - Call for expressing interest for participation in the project

<https://wiki.lyrasis.org/display/VIVO/DSpace-VIVO+integration+task+force>

Building a REST endpoint for getting and
ingesting data from/into VIVO

Background

- At the moment VIVO platform supports SPARQL API endpoint which can be used for getting/ingesting data by using SPARQL select and construct queries
- Problem: semantic web expertise needed
- Solution: the json like REST endpoint for common entities

JSON like REST endpoint

- Dynamic API
 - Simplify VIVO extension
 - Build on top of an ontology
 - Enables VIVO users to develop endpoints in accordance with needs at their institutions
 - Decouple backend and frontend
 - Provide RESTful API to VIVO users
 - Ingestion of data
 - Endpoints for person and organization units are planned to be implemented first

Organizational level

- Two VIVO sprints were organized
 - <https://wiki.lyrasis.org/display/VIVO/Sprint+-+Dynamic+API+based+on+an+ontology>
 - <https://wiki.lyrasis.org/display/VIVO/Sprint+-+Dynamic+API+based+on+an+ontology+2>
- A Task force
 - <https://wiki.lyrasis.org/display/VIVO/Dynamic+API+Task+Force>

Status and plans

- Dynamic API ontology has been defined
- The engine for executing API description has been partially implemented
- The pilot version of a GUI has been started
- Hopefully, the first version of the JSON like endpoint for organization units and persons should be part of VIVO 1.15.0 (2023)
- Extension of expressiveness of dynamic API ontology