

Research Software Services

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Plan

1 Research Software Services

- Our vision
- A consistent set of services
- FG-SOL

2 OpenScience

- Sharing and dissemination
- Infrastructures are needed

3 Research Software experience

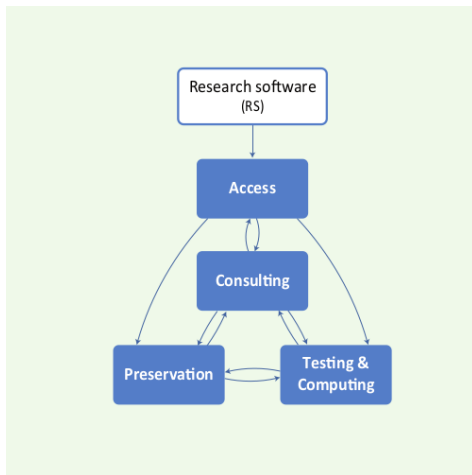
- Lab level : LIGM
- National level : PLUME in France

4 Conclusion

*To create the necessary environment where
research software
can be discovered, studied and re-used
by others researchers
in order to validate and reproduce published results,
which will produce new knowledge.*

- we propose **access** and **preservation** services
- taking into consideration existing work, projects and components
- any research area, European level
- FAIR : findable, accessible, *interoperable*, re-usable
- FLAR : findable, *linked*, accessible, re-usable
- Context : open science, e-infrastructures, EOSC

A consistent set of adapted services (1/2)



- User-driven design approach
- Structure : sound, flexible, scalable, easily adaptable
- Collaborative design : CNRS, EGI.eu, IASA, Univ. Edinburgh

A consistent set of adapted services (2/2)

- **Access**

- ▶ based in two existing components : EGI AppDB, PLUME
- ▶ metadata, software description, links to publications and data
- ▶ search interface

- **Consulting**

- ▶ Software Sustainability Institute (SSI), PLUME
- ▶ goal : improve research software dissemination
- ▶ documentation, training

- **Preservation**

- ▶ first level of preservation
- ▶ to recover a fixed copy
- ▶ EUDAT data services : B2SHARE, B2SAFE

- **Testing&Computing**

- ▶ user interface for research software test and re-use
- ▶ access to source code
- ▶ EGI computing services



FG-SOL :

a new service of the French NGI catalog to be opened soon in France Grilles.

Will provide services in France.

Goal1 :

build the picture, following a pragmatic roadmap.

Goal2 :

to be extended to European level in collaboration and link with partners, existing e-infrastructures and organizations.



CNRS, EGI.eu, IASA, Univ. Edinburgh

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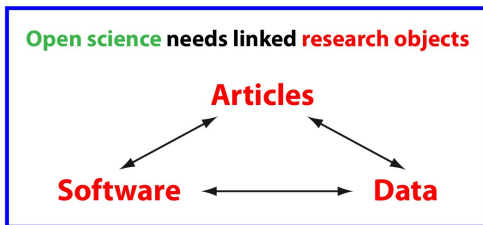
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Open Science

Sharing and dissemination conditions of research outputs

- Articles are still the most visible and accessible of research productions
- Open Access movement and policies : mostly articles and data
- A lot of data and software are produced by researchers to achieve published research results
- There is not a clear procedure for their publication or distribution
- Consequence : most of this software is in *unknown status*
- **Wanted** : use, copy, modify, (re)distribute, mine, built upon (*legal terms*) to study, collaborate, validate, verify, reproduce, ... (*open*) access needed



- Infrastructures : access to research outputs
- Findable, accessible, re-usable, *linked*...
- Services for target communities
- Sustainable : not just a funding issue
- Challenge : the architecture of participation
- Build links with other infrastructures



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LIGM research software



«LIGM software mission» (june 2006): to study the implementation of services (versioning, publication, etc.) associated with the laboratory software development with the aim to promote their visibility.

1.- Publication of LIGM's software reference cards on the PLUME server:

■ <https://www.projet-plume.org/LIGM>

■ <https://www.projet-plume.org/en/taxonomie/1936/en>

2.- Studies on the dissemination of research software published on «Patrimoine logiciel d'un laboratoire»:

■ <https://www.projet-plume.org/patrimoine-logiciel-laboratoire>

Name	License
OpenMEG Topological smoothing	CeCILL-B CeCILL
22 maintained software since 2008	
CAPCC Critical kernels Cross-Section topology DCTV Euclidean skeletons gpu-openings Ibox Imagine++ ImagineMVS Intview K-VLD Norm Est Olena OpenKN OpenMVG OrsaHomography PINK PowerWatershed Saliency maps Segmentation dIRM cardiaque 3d+ SynDE+ic Topological watershed	in progress CeCILL GPL v3 CeCILL GPL GPL v3 proprietary proprietary GPL BSD GPL v3 GPL + clause GPL MPL v2 LGPL CeCILL CeCILL CeCILL CeCILL use, distribute CeCILL

Algorithms,
architectures,
image analysis and
computer graphics
(A3S)

Team	Nb.	Distributed	Free	PLUME ref. cards
A3S	22	22	18	22 fr, 20 en
Combinatorics	7	7	7	2 Val., 7 fr, 7 en
Models-Algo.	11	11	11	1 Val., 11 fr, 8 en
LRT	12	11	9	12 fr, 7 en
Signal-Com.	9	8	8	9 fr, 9 en
Total	61	59	53	3 Val., 61 fr, 51 en

Maintained software since 2008

Name	License
Algorithmique du texte EdNimbus GraalWeb Hoop Lothaire package Minbrkpts Outilex	proprietary contact author on line use LGPL use, distribute contact author LGPL

Models
and
algorithms

11 maintained software since 2008

Name	License
ASTL Distagger Gramlab GraMofFolie LGExtract LGTagger Regal RoadColoringImpl TreeCloud Unilex Vaucanson	GPL v2 LGPL Apache v2 GPL LGPL LGPL GPL GPL GPL LGPL GPL

Name	License
JMMF MEDL Sprintabout	GPL contact author LGPL
12 maintained software since 2008	
Bec3 D-Lite LejosRT MIMO-802.11e Plade Qolyester REALTIMEZ RTMSIM RTSS Saburo Tatoo YARTISS	in progress GPL GPL in progress Afferro GPL v3 GPL BSD BSD GPL LGPL LGPL GPL

Software,
Networks
and
Real-Time
Systems
(LRT)

Algebraic
combinatorics
and
symbolic
computation

Name	License
7 maintained software since 2008	
InvariantRingPermutationGroup MLV MuPAD-Combinat Polynômes multivariés en Sage PST-Cox Sage-Combinat Schur	GPL GPL LGPL GPL LGPL GPL GPL

Signal
and
communications

Name	License
1D Wavelet decompositions Blind source separation	CeCILL-B proprietary
9 maintained software since 2008	
GC-PPXA-QUANTIZER LSMM pMRILab RestoMMMG_Lab RestoPPXA_Lab RestoVMFB_Lab Signal separation SURELET-DECONV TexGeoPPXA_Lab	LGPL CeCILL-B CeCILL v2 CeCILL-B CeCILL-B CeCILL-B ind. partner contract CeCILL-B CeCILL-B

LIGM, nov. 2013

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Research software in France



- PLUME - <http://www.projet-plume.org/>

- Improve the visibility of software produced in research laboratories
- Mainly supported by CNRS (2006-2013)
- PLUME-FEATHER (2009-2013) <http://www.projet-plume.org/en>
- **Results :**
 - ▶ more than **350** research software descriptions, 1/3 also in English
 - ▶ actions on software dissemination :
documentation, guidelines, 10 workshops...
 - ▶ publications on legal issues (French IPR law and licenses)

See *e-Science and Software Sustainability in France*, G. Romier, PLAN-E Meeting (Dublin, May 2016)
https://planeurope.files.wordpress.com/2015/03/plan-e_software_sustainability-workshop2016-4.pdf

Conclusion

Studying infrastructures for open science

T. Gomez-Diaz (CNRS, LIGM)



Introduction

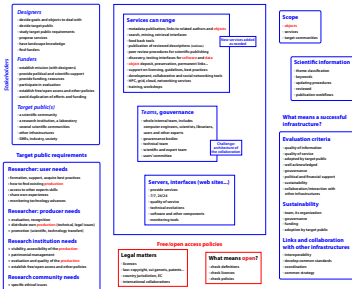
Articles are the most visible and accessible part of research. The distribution of software and data raises similar issues. Open science makes scientific objects visible, accessible, reusable and linked.



I- Design

II- Realisation of the infrastructure

III- Evaluation



Keywords: infrastructures, open science, reproducibility, accessibility, free/open access....

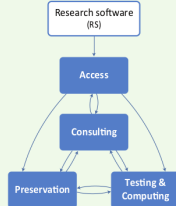
GOAL: make free/open access happening in the «every day's life» of researchers.

Consulted platforms

Archives, arXiv, DataCite, DARE, DOI, DRYAD, Edinburgh Research Archive, ISI Applications Database, Eprints, EUDAT, eprints.org, GRI, GRIInfo, Google code, HAL, PLOS, Journal of Open Research Software (JORS), nasa/ADS, OpenJIRE, OpenJOM, OpenJournals, OpenJRI (J. Jäger), Project PLUME, RESEDA, RESEDACTA, Research Papers in Economics, ResearchCompendia, RunMyCode, Software Sustainability Institute, SourceForge, uclLib, uclLibX, Zenodo and many others.



EGC-Conference 2015
Lisbon, 19-22 may 2015



LIGM research software

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11. *Journal of the American Medical Association*, 2000; 284: 2689-2695.

Keywords:

...

[illegible]

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