



OpenEdition and its Governed Milieu

Towards an Ecological Understanding of Open Digital Knowledge Infrastructures

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4S/EASST – Roundtable “Open Science Platforms”

16.07.24



Reminder long abstract:

Infrastructures, intricate assemblages of stakeholders and socio-technical components, inherently face fragility. Constantly challenged by centrifugal forces like hardware wear, information corruption, and unresolved controversies, governance norms and practices become crucial for maintaining their cohesion. Open digital knowledge infrastructures have reshaped traditional structures, introducing new elements such as digital publications, data, platforms, and open licenses. This evolution has led a variety of stakeholders, such as infrastructure practitioners, researchers, as well as managers, to use the term “ecosystem” to describe this new configuration, encompassing infrastructures, communities, and their surroundings.

Examining the French public open infrastructure OpenEdition, we illustrate how practitioners perceive and engage with their ecosystem. Utilizing a semantic analysis of OE’s internal documentation, a survey, and interviews, we explore the practical application of an ecological framework, focusing on vocabulary use. The objective is to discern whether and why this framework is employed, ranging from defining new infrastructural dynamics to coordinating diverse stakeholders or merely as window-dressing of age-old objects.

This empirical study aims to contribute to a theory of the governance of open digital knowledge infrastructures. Drawing inspiration from Simondon’s mecanology and conceptualizing infrastructures surrounded by an associated milieu, we can conceive of governance as organizing these elements into an assemblage. The term "ecosystem" is defined as the global scale where singular infrastructures dynamically interact through their milieux – akin to a non-governed meta-milieu. This theoretical framework sets the stage for realizing Star and Ruhleder’s "ecology of infrastructures," providing insights into how governance norms and practices shape open digital knowledge infrastructures.

Introduction

- Project on the **Governance of Digital Knowledge Infrastructures** (GDKI)
Pre-print: Mounier and Dumas Primbault, “Sustaining Knowledge and Governing its Infrastructure in the Digital Age: An Integrated View”, Zenodo
- **Prevalence of “ecological” concepts** : ecology, ecosystem, diversity, predation, keystone species...
 - In oral discourse
 - In policy documents
 - In infrastructure studies: e.g. Star and Ruhleder’s 1996 “Steps Toward an Ecology of Infrastructure”
- Very brief genealogy
 - Symbolic interactionism: Everett C. Hughes’ “human ecology”
 - Anthropology: Bateson’s “ecology of mind”
 - Ecological science: LTER as the archetypal infrastructure

What does “ecosystem” mean for open infrastructure stakeholders in context?

And how is it related to their governance?



OpenEdition

*four platforms dedicated to open access
electronic resources for scholarly communication
in the humanities and social sciences*

5 000

research blogs

640

journals

14 400

academic books

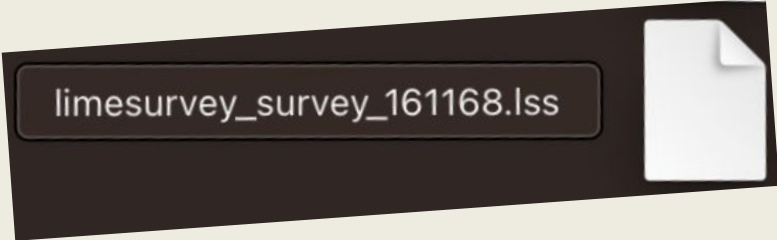
56 000

scientific events

- Formally created in 2007 but started in 1999 as volunteer initiative
- 3.7M budget, 55-60 staff, in the national RI roadmap since 2021
- Supported by 4 RPOs: CNRS, AMU, EHESS, Avignon University + Research Ministry

Mixed-method Approach

- Survey sent to all unit members
 - 20 questions (y/n, multiple choice, open ended)
 - 4 parts
 - Profile
 - About the term “ecosystem”
 - Perception of OE
 - Follow up
 - Anonymous
 - ~ 15mn to complete
 - 30 full answers (48,4% of the unit), representative
- Semi-directed interviews with probes
 - Show interviewees their “map” of the ecosystem
 - Show them the collective results
- Text mining
 - Computational/manual analysis of all the public official communication of OE
 - 1.006 blog posts from Jan. 2007 to today



limesurvey_survey_161168.lss

Survey results (1)

Do you use the term “ecosystem”?

- **No** ($\frac{1}{3}$), alw. intentional
 - Use synonyms instead (infrastructure, platform)
 - It's politically-laden (green-washing, neoliberal, closed v. open)
 - It's merely a fashionable term
- **Yes** ($\frac{2}{3}$)
 - Overwhelmingly used as a **synonym** of either platform, infrastructure, system, network, environment
 - And frequently used **“for lack of a better term”**
 - Mostly used with **external** stakeholders
 - Not linked with other ecological or biological concept
 - 3 semantic groups associated with different fields and skills:

| | | |
|---|--|--|
| Ecosystem of applications Software development, modularity of components, layers of protocols, APIs | Ecosystem of information Editorial workflow, bibliodiversity, publication processes | Open Science Ecosystem Public communication, official contexts, European projects |
|---|--|--|

Survey results (2)



- Very few non reciprocal relationships (such as obey or govern)
- Almost always a reciprocity (e.g. if “provide a service” then “communicate to”)
- Most used type of relationship by far: “collaborate”

Text analysis (1)

- **Source** : official communication website of OE : “L’
édition électronique ouverte”
<leo.hypotheses.org>
- **Created** in Jan. 2007
- **Main editor** : OE communication officer, under
the responsibility of the Director
- **Corpus** : 1006 publications, 789,662 words,
28,980 unique verbal forms

Distribution of ecological vocabulary

| Terme | Total | Proportion |
|-----------------|------------|-----------------|
| diversité* | 69 | 0.00008737916 |
| milieu* | 62 | 0.000078514604 |
| écosystème* | 33 | 0.00004179003 |
| biodiversité* | 18 | 0.000022794562 |
| résilience* | 3 | 0.0000037990937 |
| viralité* | 1 | 0.0000012663646 |
| écologie* | 1 | 0.0000012663646 |
| prédation* | 0 | 0 |
| | | |
| Terme | Total | Proportion |
| communauté* | 680 | 0.0008611279 |
| services* | 488 | 0.0006179859 |
| système* | 485 | 0.0006141868 |
| réseau* | 429 | 0.00054327043 |
| infrastructure* | 308 | 0.0003900403 |
| institution* | 268 | 0.0003393857 |
| marché* | 56 | 0.000070916416 |
| marque* | 36 | 0.000045589124 |

“écosystème” in context

- the **open science** ecosystem: 3
- **publishing** ecosystem: 3
- **diamond open access publishing** ecosystem: 2
- **FAIR** ecosystem: 2
- **digital scientific** ecosystem: 2
- **OpenEdition** ecosystem: 2
- **OpenEdition Books** and its ecosystem
- the **research notebook** ecosystem
- ecosystem of **research and its publications**.
- **international ecosystem of science in the making** ecosystem
- **internet** ecosystem
- **scientific electronic publishing** ecosystem
- **ecosystem highly structured around books and journals**
- **scientific** ecosystem
- **Hypotheses** ecosystem
- **scientific publications** ecosystem
- **e-book** ecosystem
- **Web** ecosystem
- **traditional book** ecosystem
- **scientific knowledge circulation** ecosystem
- **book** ecosystem

“écosystème” versus “marché”

écosystème: 33

| Terme | Collocation | Total (contexte) |
|-------------|--------------|------------------|
| écosystème* | canada | 8 |
| écosystème* | science | 6 |
| écosystème* | ouverte | 6 |
| écosystème* | urbains | 4 |
| écosystème* | scientifique | 4 |
| écosystème* | québec | 4 |

marché: 56

| Terme | Collocation | Total (contexte) |
|---------|---------------|------------------|
| marché* | l'édition | 7 |
| marché* | scientifique | 6 |
| marché* | l'offre | 6 |
| marché* | logicielle | 6 |
| marché* | libre | 6 |
| marché* | faire | 6 |
| marché* | électronique | 6 |
| marché* | concurrentiel | 6 |
| marché* | technique | 5 |
| marché* | savoir | 5 |
| marché* | opérationnels | 5 |
| marché* | l'information | 5 |

Conclusion

General definition of an “ecosystem” from the survey (and literature review):
A coherent assemblage of heterogeneous stakeholders/sociotechnical devices/policies/norms that have become interdependent and whose dynamic is therefore complex (path-dependencies, ripple effects, resilience, side effect) and results from the fragile equilibrium of tensions.
but very seldom defined!

Used at the **interfaces**, as a **boundary-object**, to coordinate action within such complex and heterogeneous environment... “for lack of a better term”!

For our analytical purposes:

- towards “**milieu**” to describe the infrastructure and how it is governed internally (cf. Simondon)
- and “**ecosystem**” at the interfaces – the infrastructure in the singular

Work in progress: interviews to come and more text mining

Collaborative work: Please, ask for our Limesurvey for your infrastructure!