



From research to Deuxfleurs and back again *towards digital service infrastructure as commons*

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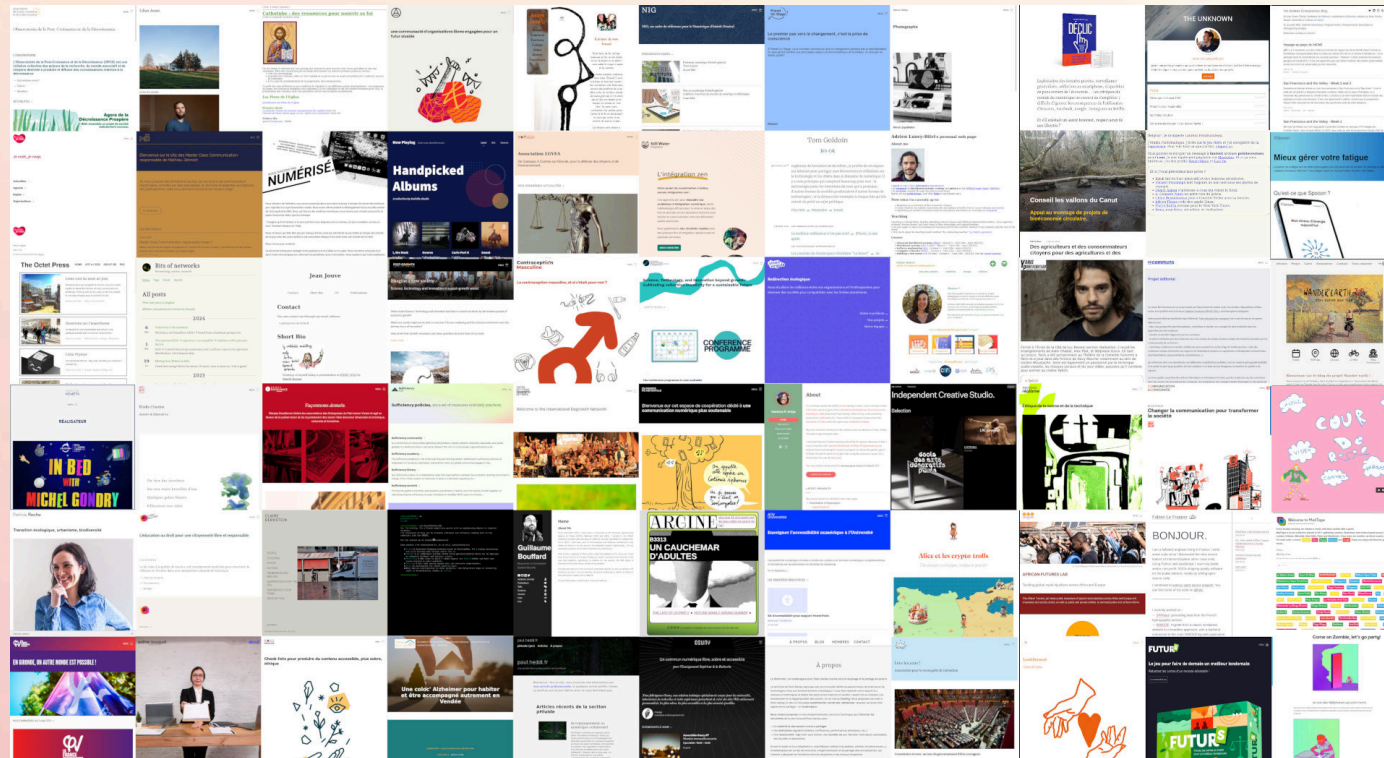
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What is Deuxfleurs?

Deuxfleurs is a French collective. We host **digital services** on a strongly **limited infrastructure**: website hosting (see figure), email, messaging, documents.





Providing services outside of datacenters

Main objectives:

- question the **impact and cost of digital services**, by making **resources limits** visible
- providing **reliable services** at a fraction of the usual **environmental cost**

How? (technical) 10 old refurbished computers, hosted at home in multiple locations, with distributed storage and automatic service failover

How? (social) *Entre-hébergement* concept (“collective self-hosting”)

Datacenters: an industrial approach

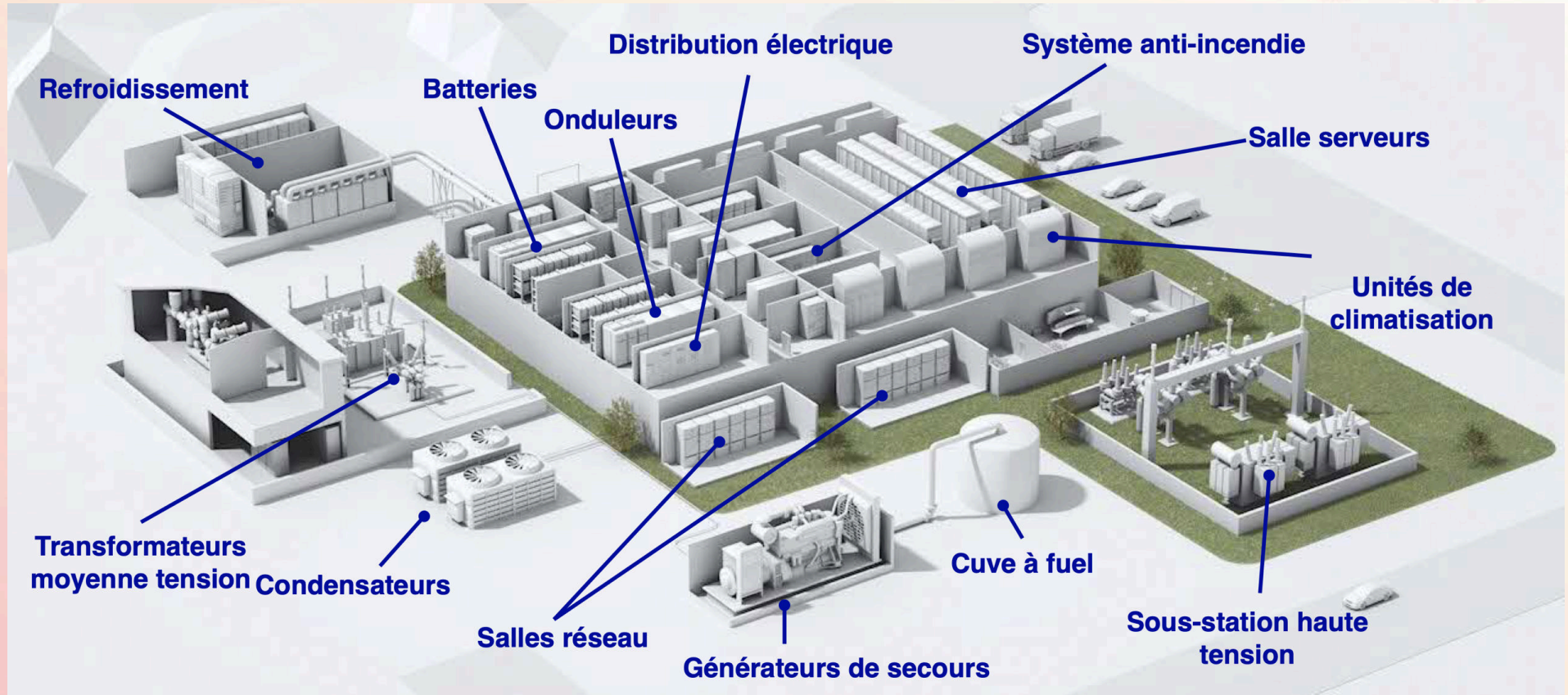


Figure 2: Datacenter structure, from Jean-Marc Pierson (IRIT) & Grégory Lebourg (OVH)

Providing services outside of datacenters



Figure 3: Example of Deuxfleurs server

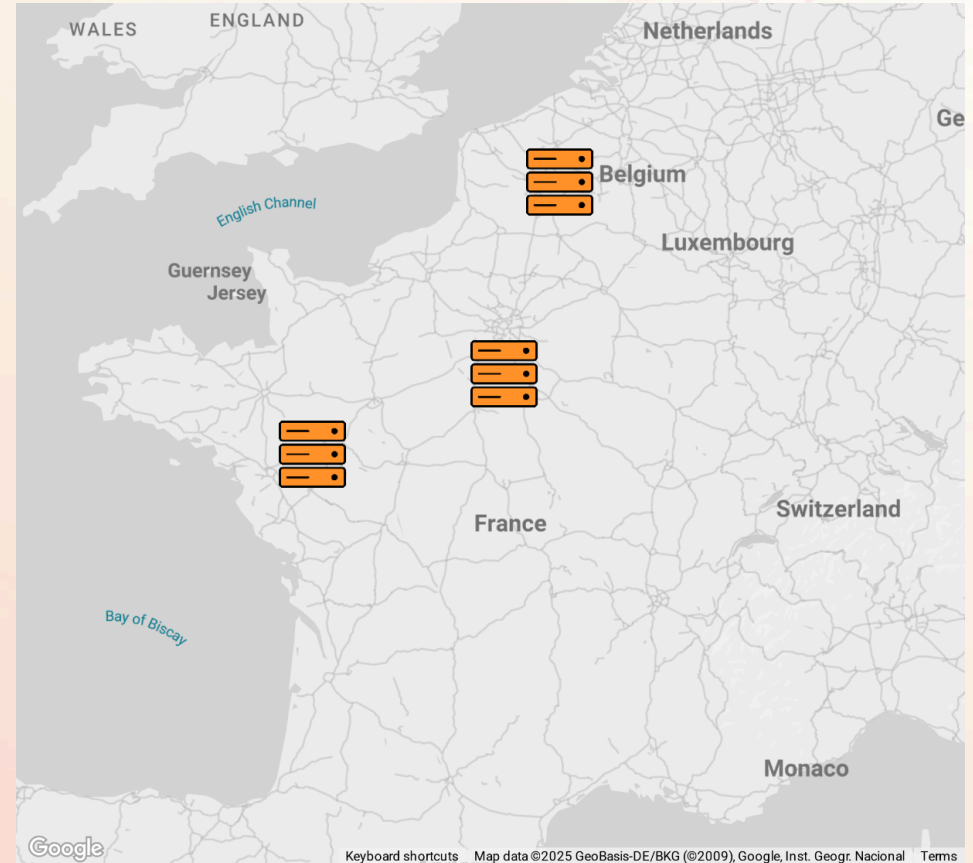


Figure 4: Deuxfleurs diverse geographical sites



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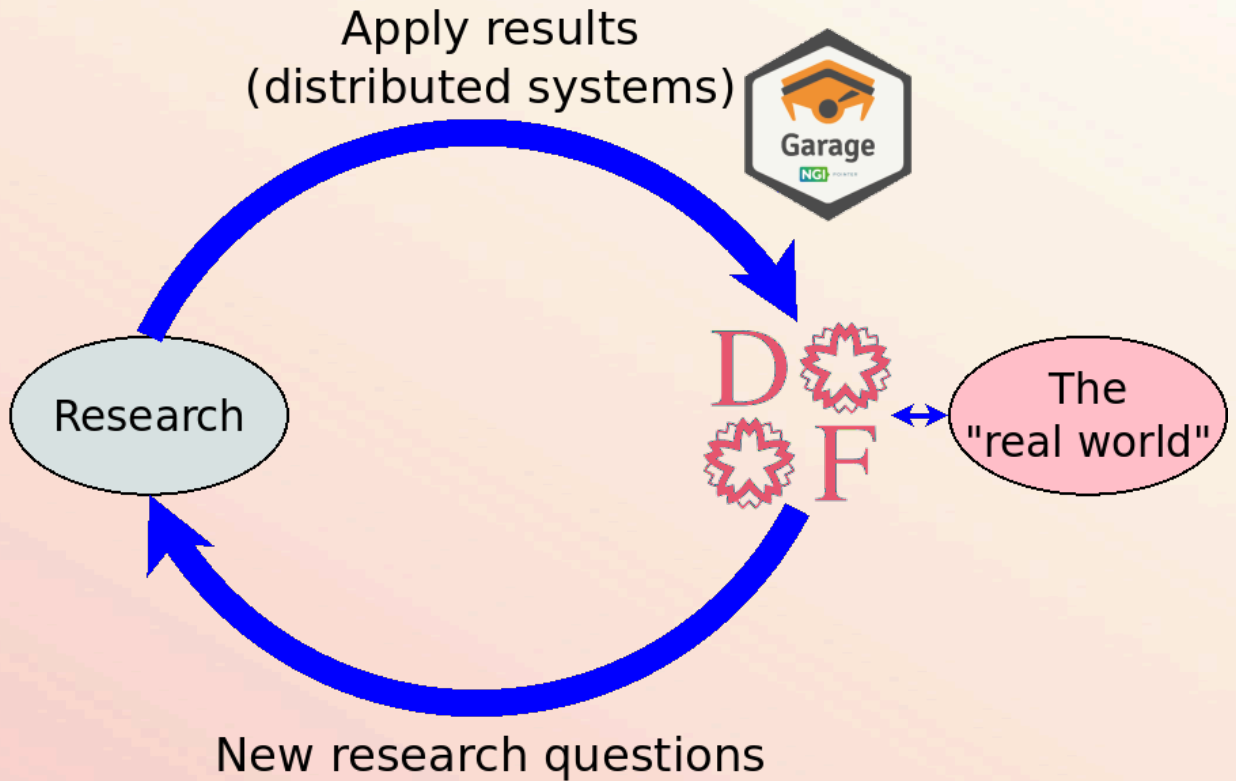
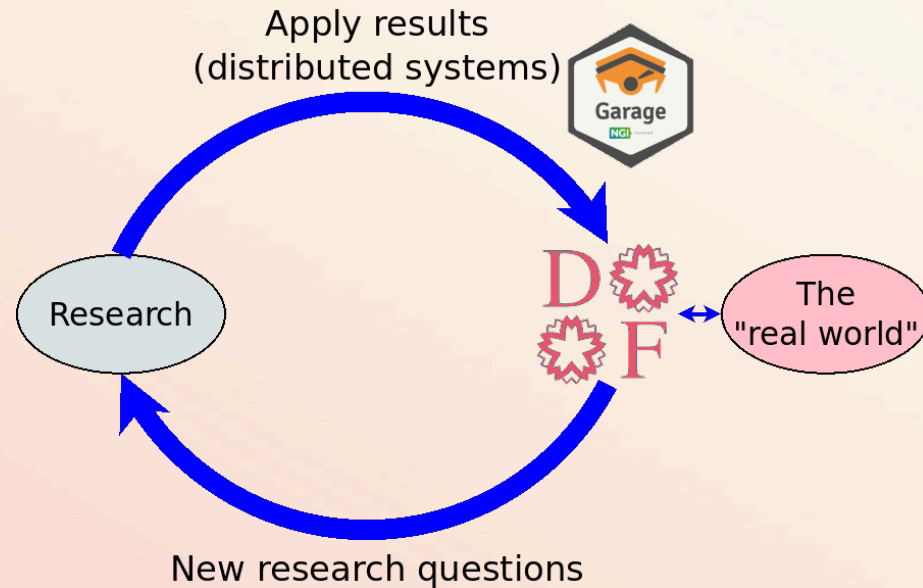


Figure 5: Undone feedback loop?

From research to Deuxfleurs and back again



RQ: How can we involve users in technical decisions?



Towards digital services infrastructure as commons



What exactly is a common ?

Commons have been theorized by Elinor and Vincent Ostrom¹ in the 70's in response to the tragedy of the commons.

They consist in :

1. A **C**ommon **P**ool **R**esource (CPR)
2. A community with boundaries
3. A set of rules to maintain and enable viability of the CPR

Historically commons were used for shared natural resources. Examples would be : *Forestry in switzerland or irrigation canals in Spain.*

Could we envision Deufleurs as a digital commons then ?

¹Governing the commons: the evolution of institutions for collective action, Ostrom 1990

What exactly is a *digital common* ?

Traditionally digital commons are knowledge commons (e.g. *Wikipedia*, *Openstreetmap*).

While they are commons in their organisation and governance, their core resource *knowledge* can easily be replicated and expanded without any physical limits.

We want to add on the definition of digital commons, and take into account the materiality of digital infrastructure.

Digital Commons

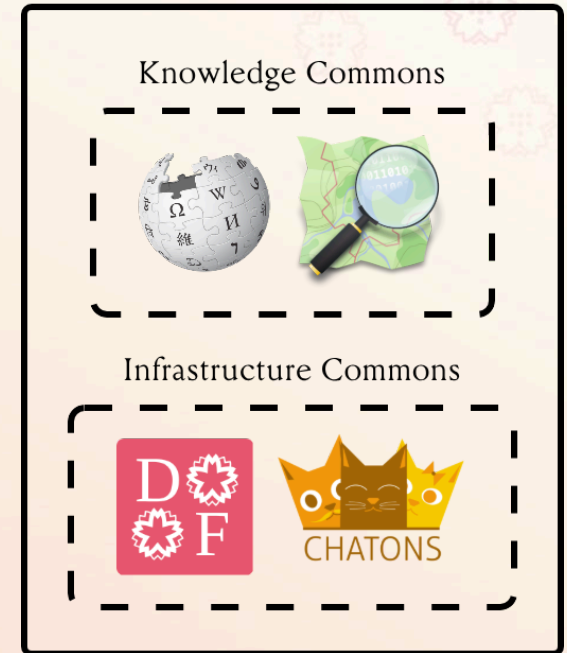


Figure 7: Subcategories in digital commons



Can Deuxfleurs be considered a common ?

Let's try and consider Deuxfleurs as a commons according to Ostrom definition :

The core resource: Not solely hardware infrastructure, nor only software stack. Deuxfleurs **CPR** would be the combination of both.

The community¹: Members of the collective, and users that are actively using services (e.g. *website hosting, email*). We chose not to include website visitors.

The rules¹: Explicit rules of the association. (e.g. *Quotas*)

¹More on that in the next slides...



Ostrom's CPR criterias

Ostrom has defined eight criterias to establish whether or not a resource is managed as a common.

1. *Clearly defined boundaries*
2. *Rules regarding the appropriation and provision of common resources that are adapted to local conditions*
3. *Collective-choice arrangements that allow most resources appropriators to participate in the decision making process*
4. *Monitoring the CPR*
5. *Graduated sanctions within the community*
6. *Conflict resolution mechanisms which are cheap and easy to access*
7. *Minimal recognition of rights to organize*
8. *Nested enterprise*



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Ostrom's CPR criterias

1. Clearly defined boundaries

After a discussion with the members, we tried to define precisely where we put the limits of Deuxfleurs users.

- Members of the association
- Someone with a user account
- Someone paying a partner company to develop a static website and host it on our infra
- Someone browsing the web and stumbling on one of our hosted website
- Someone contributing to our softwares



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Our decision : **People interacting directly with our services.**



Ostrom's CPR criterias

2. Rules regarding the appropriation and provision of common resources that are adapted to local conditions

Deuxfleurs was built with quotas from the start due to its limited infrastructure : everyone starts with a max 50Mo website size that can be expanded to 200Mo if needed.

We do note that this kind of rule is not adapted to every type of usage (*blogging vs. media portfolio*).



For provision it's reserved to trusted members of the association and mostly technical administrators because the machines contain personal data.



The bundle of rights

Another tool used for commons analysis is the bundle of rights¹ revisited by Ostrom in 1992². Where she explains that in a CPR collective-choice property rights include **Management, Exclusion** and **Alienation**.

	Collective choice	Appropriator <i>individual</i>
Access and withdrawal		✓
Management	✓	
Exclusion	✓	
Alienation	✓	

¹J. Commons, *The Distribution of Wealth*, New York, Macmillan & Co, 1893

²Property-Rights Regimes and Natural Resources: A Conceptual Analysis, Ostrom 1992



The bundle of rights

When we look at Deuxfleurs, we see that it does not fit entirely. We have unspoken rules that could be taken advantage of and every member has the right to invite users.

	Legal entity <i>collective choice</i>	Administrator <i>individual choice</i>	Members <i>individual choice</i>	Users <i>individual choice</i>
Access and withdrawal			✓	✓
Management	✓	✓		
Exclusion	✓		?	
Alienation	✓			



Conclusion

So, is Deuxfleurs a common ? The answer is no as of today.

But we also note that our analysis is based on Ostrom's work which is founding work in the discipline but might be quite limited with the particular nature of the studied resource (hardware + software).

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Thank you for your attention

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