Mapping large organizations

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1. Subject of the thesis, definition of the problem, and research questions

Mapping affinities
visualizing academic practice through collaboration

- Academic practice is composed by many activities
- Academic practice is not literature only
- Research disciplines have different practices

Mapping affinities
visualizing academic practice through collaboration

- Academic practice implies collaboration
- Collaboration can be measured
- Metric of scholars and laboratories

Mapping affinities
visualizing academic practice through collaboration

- The affinity is the multitude of opportunities of collaboration
- When an affinity becomes **actual**, a collaboration occurs; otherwise the affinity stays **potential**.
- Affinity is the way to describe the academic practice

Mapping affinities
visualizing academic practice through collaboration

- Academic practice is mostly hidden
- Making academic practice visible
- Making actual and potential affinities visible

Mapping affinities
visualizing academic practice through collaboration

- How to *translate* academic practice
- How to visualize affinities
- How to convey the visualization

Questions

- How can actual and potential affinities be **identified** and **measured**?

- What **visual language** is appropriate to represent these affinities?

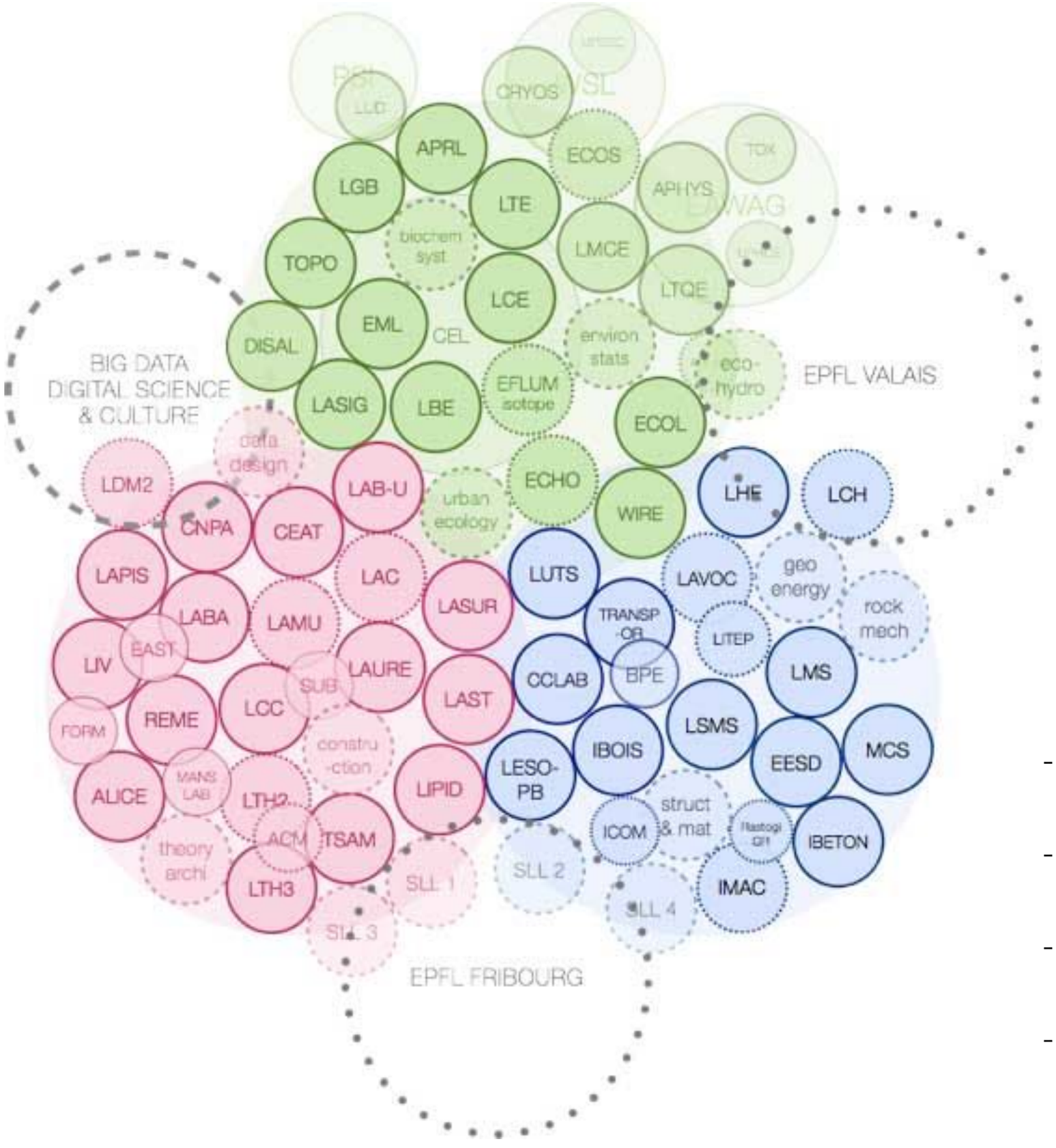
- Can such representation be **collectively accepted**?

2. ENAC case study

The map of affinities that relies on the digital traces left by the **ENAC.**

School of Architecture, Civil and Environmental Engineering gathers different disciplines concerning building constructions.

The ENAC is composed of almost **a thousand of scholars**, who are organized in **seventy laboratories**, and **three institutes**: **architecture**, **civil engineering**, and **environmental engineering**.



Limits

- Manually drawn
- Subjective
- No research expertise
- No individuals

Marilyne Andersen drawing illustrates the affinities of laboratories through closeness.

3. Measuring affinities

Information	Affinity type	Source
Lab thematics	Potential	Symphony
Lab thematics	Potential	EPFL website
Individual expertise	Potential	Symphony
Individual expertise	Potential	EPFL website
Keywords	Potential	Audit 2011
Keywords	Potential	Infoscience
Co-authoring	Actual	Infoscience
Co-teaching	Actual	IS-Academia
Co-advising	Actual	IS-Academia
Co-funding	Actual	Grant database
Industrial partners	Actual	Audit 2011

Table of digital traces.

Information	Affinity type	Source
~~Lab thematics~~	~~Potential~~	~~Symphony~~
~~Lab thematics~~	~~Potential~~	~~EPFL website~~
~~Individual expertise~~	~~Potential~~	~~Symphony~~
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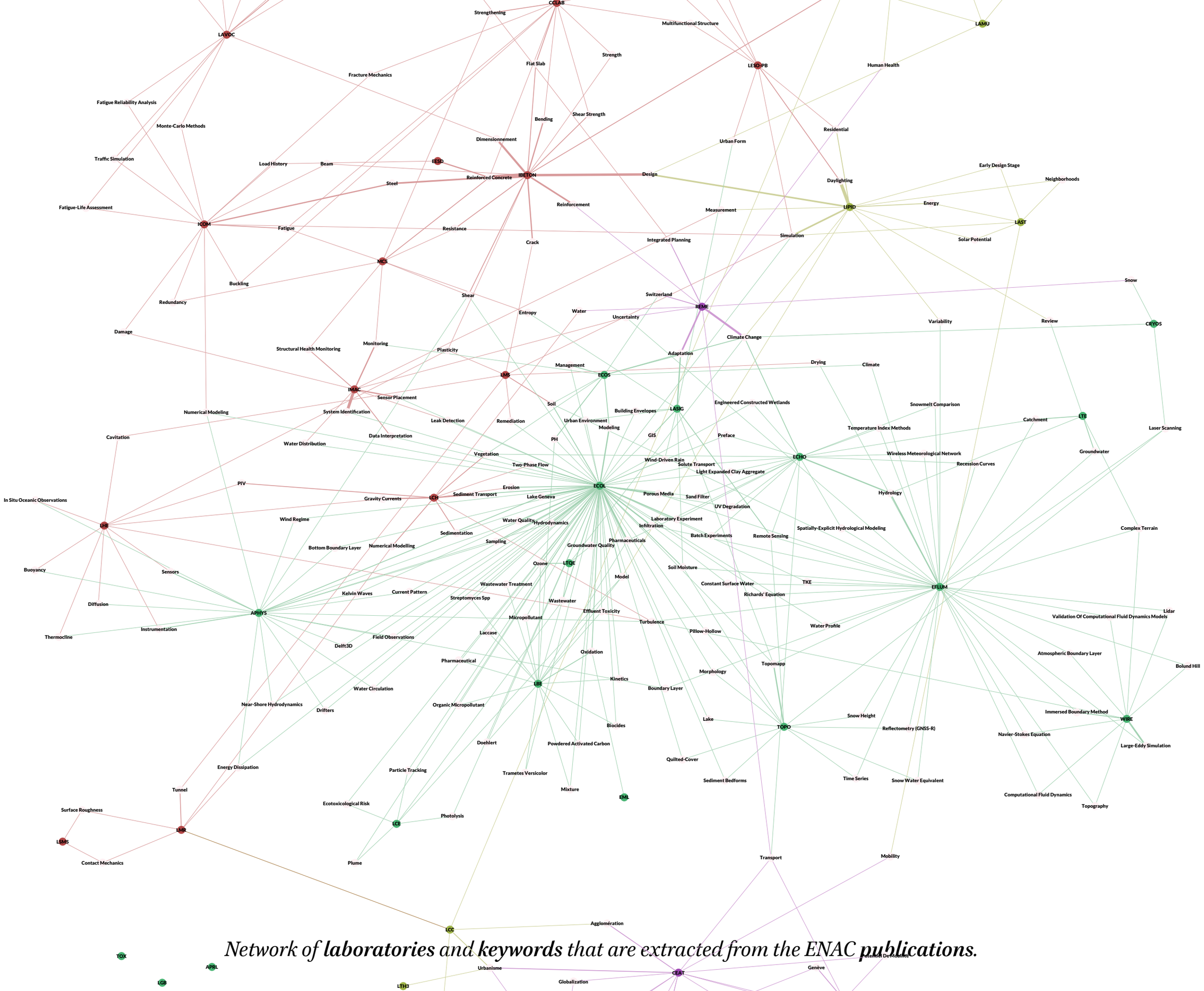
~~Industrial partners~~	~~Actual~~	~~Audit 2011~~

Table of digital traces, the strikethrough identifies not usable data.



*Network of **laboratories** and **keywords** that are extracted from the ENAC **publications**.*

Potential affinities were generated as **keywords** through the algorithm of **term frequency–inverse document frequency (TFIDF)** working on the publication abstracts of the ENAC laboratories.

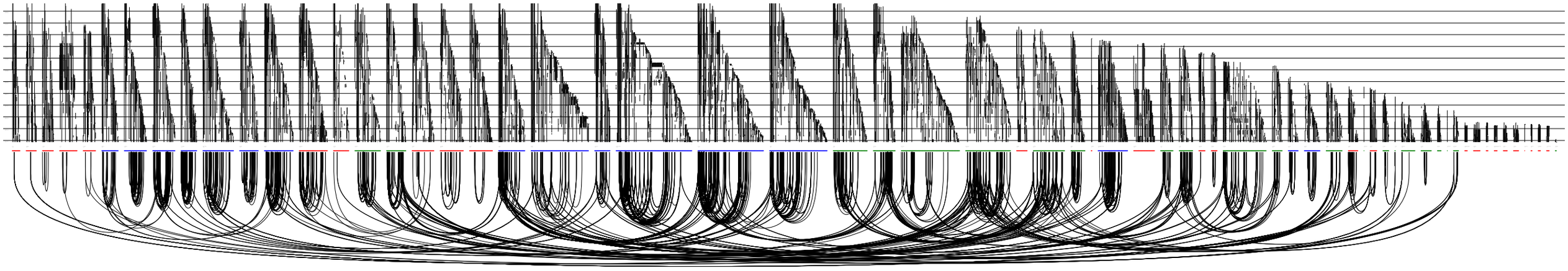
Potential affinities.

We identifies three types of *actual affinities*: the **publications** stored in the *Infoscience system*, the **courses** and the **supervision** recorded in *IS-Academia*.

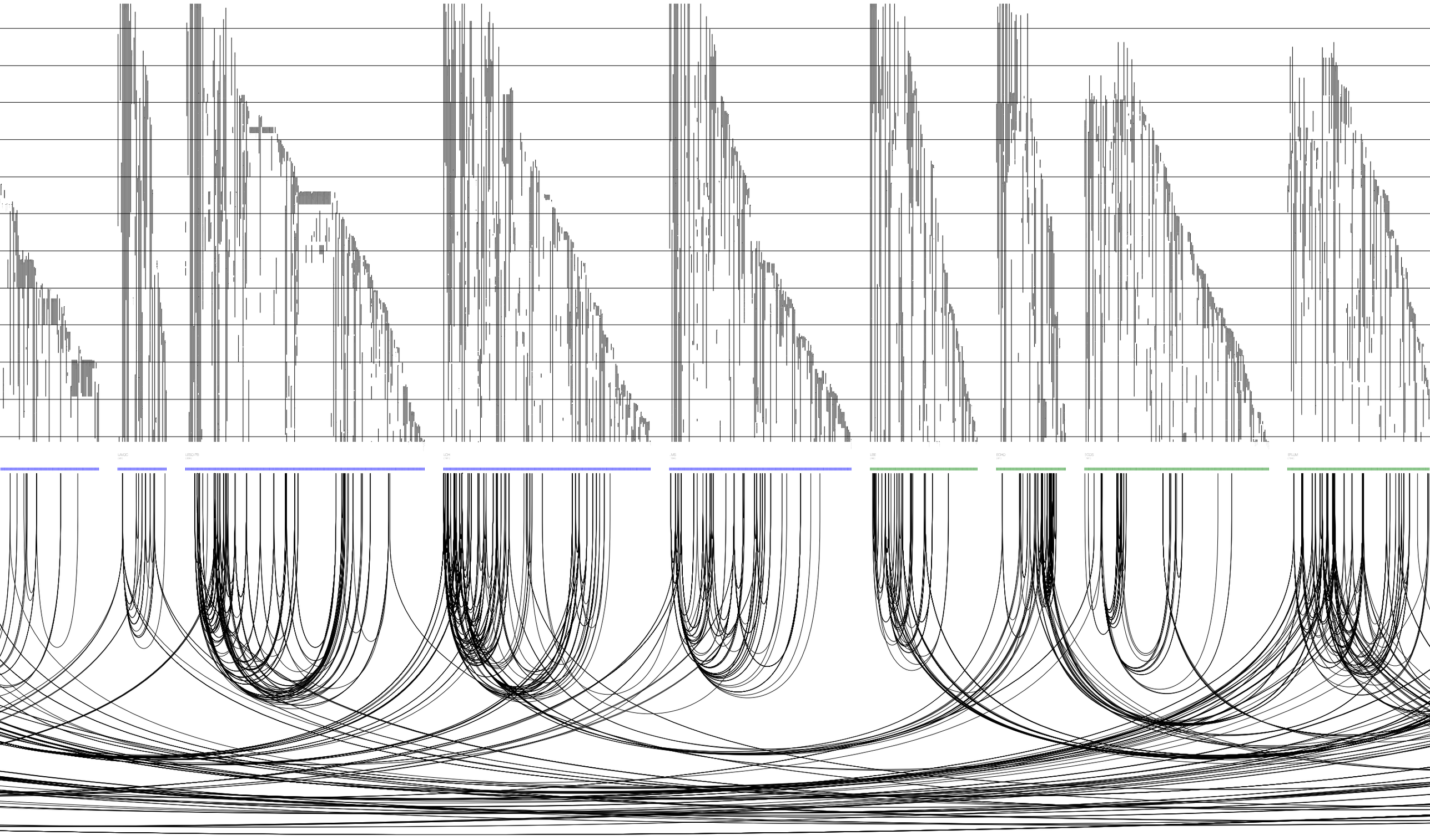
Actual affinities.

The *structure of the school* was used to reassemble laboratories and institutes. In particular, the **personal ID** (SCIPER), the **affiliations** of the staff and the **hierarchical structure** of the EPFL.

Structure of the school.



Making individuals and affinities visible together.



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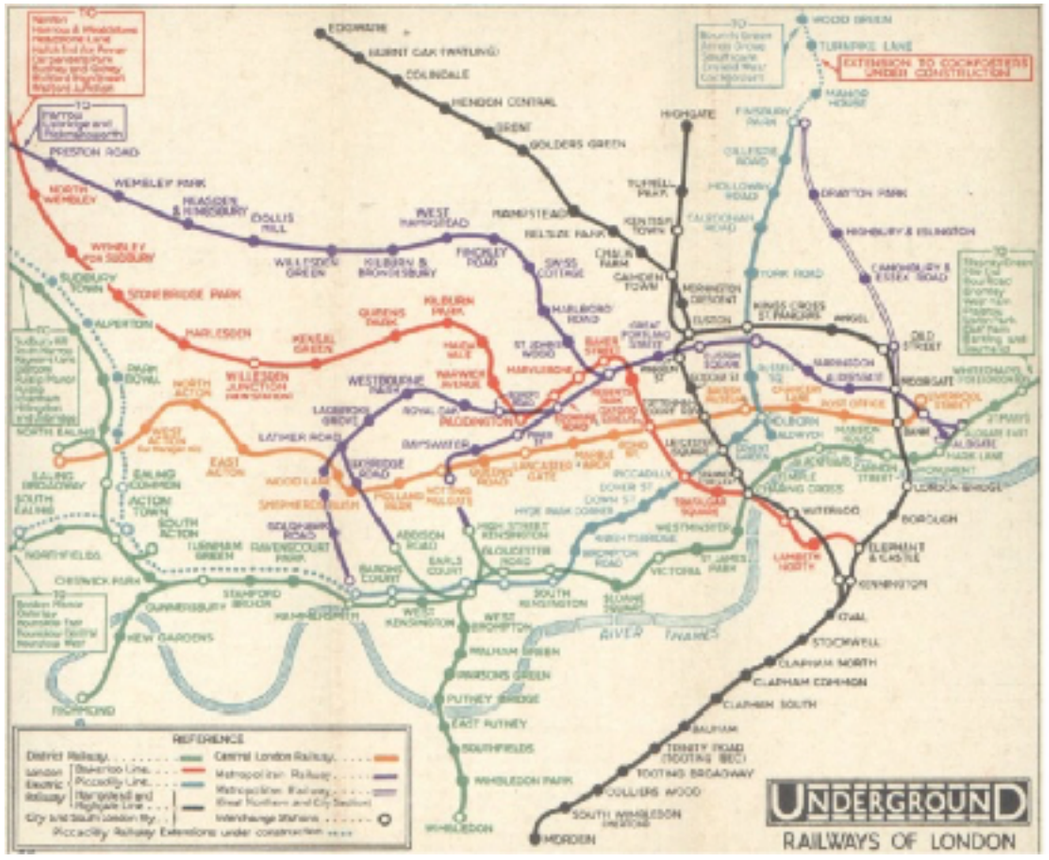
Identified digital traces.

4. Visual network-principles



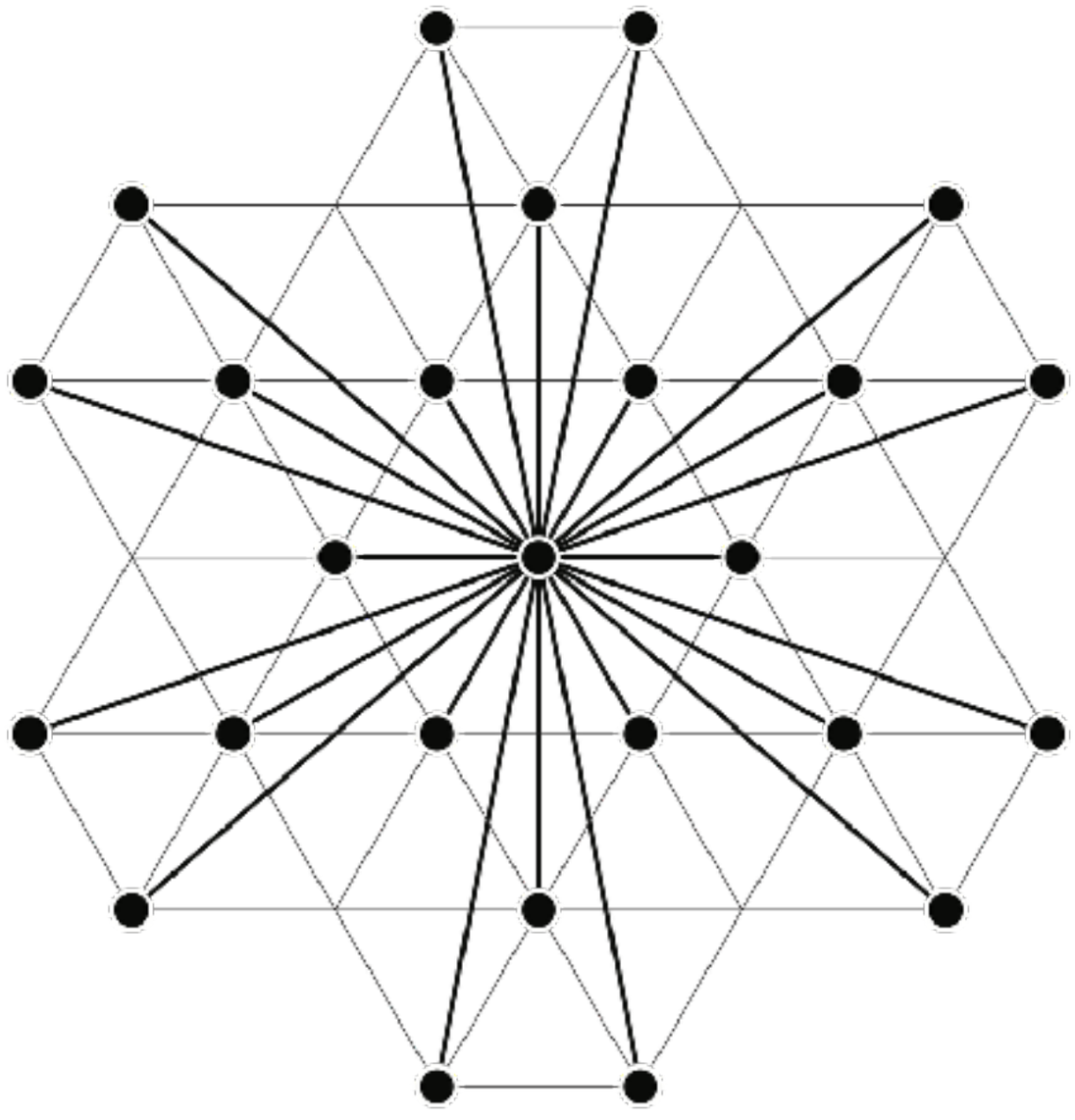
Pre and post Harry Beck's London underground map.

Characteristics

- Reduce overlapping
- Create regular distances
- 24 connections (example)
- Infinite pattern

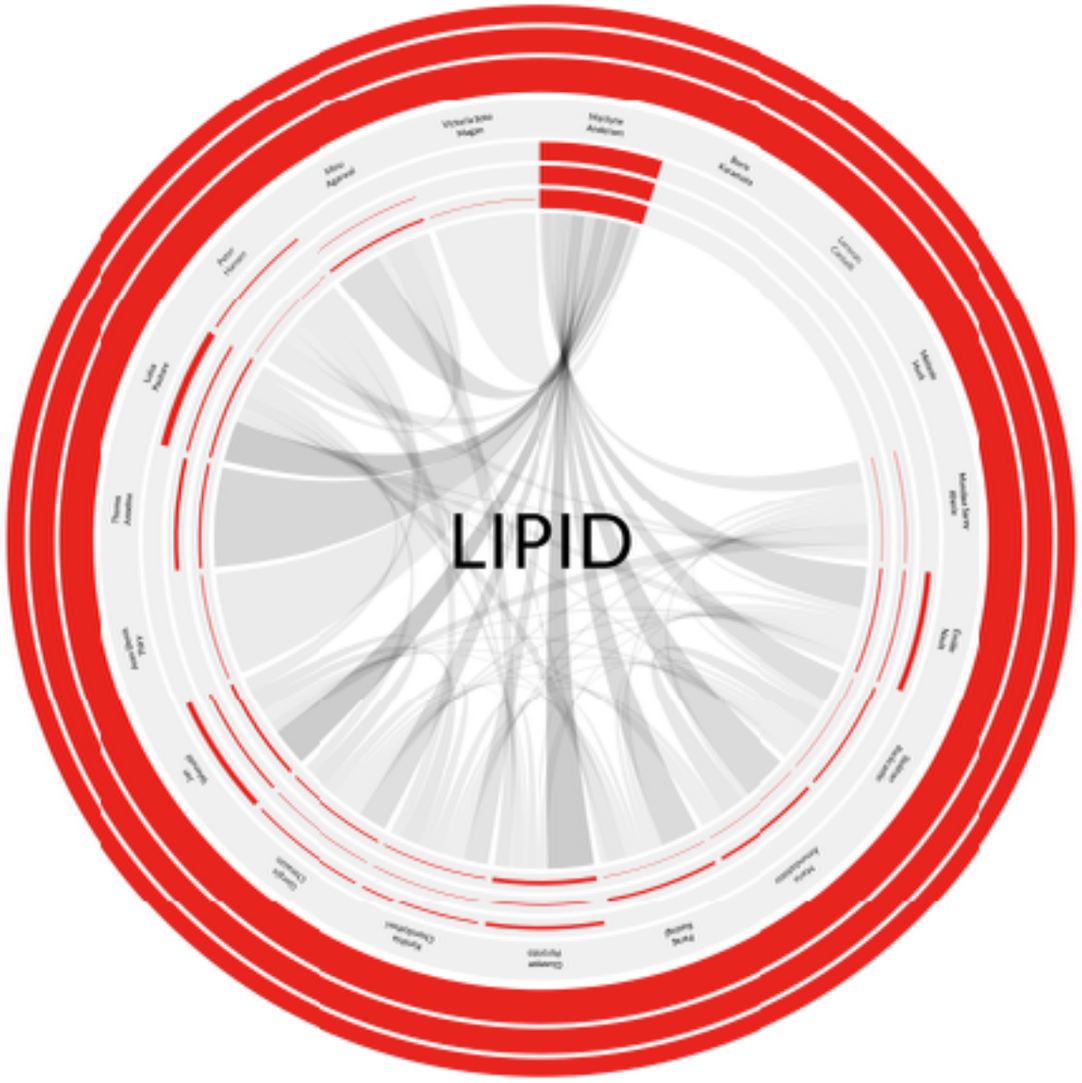
Forces applied

- Attraction to arrange nodes
- Repulsion to obtain the grid
- Gravitation to avoid orphans



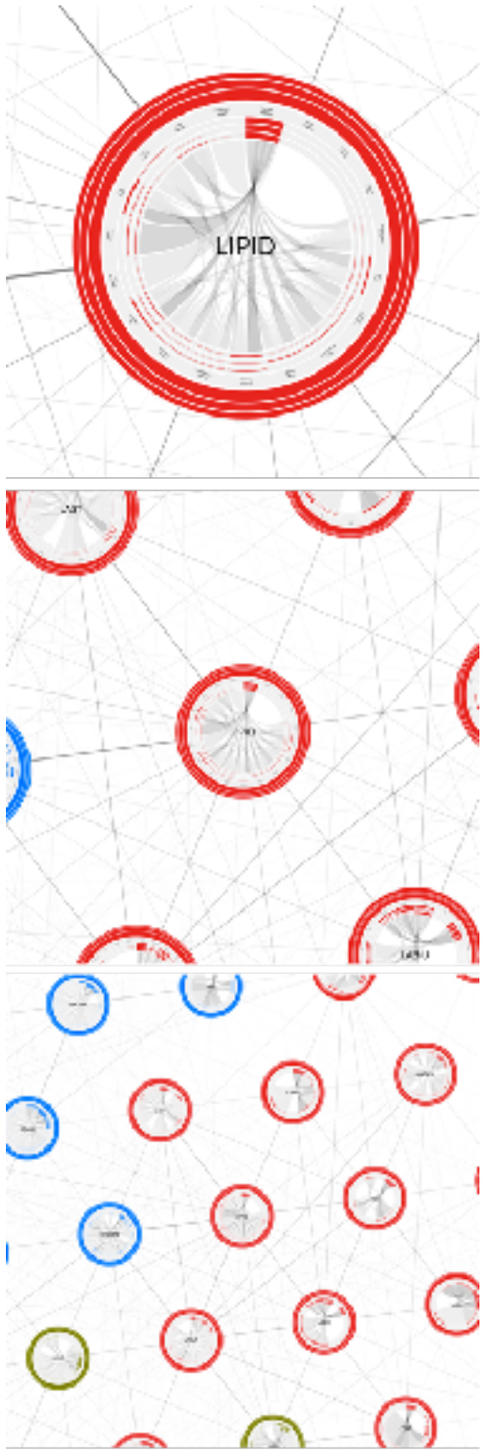
Hexagonal pattern.

- Individuals
- Clockwise distribution by seniority
- Segments for quantitative indicators
- Affinities inside laboratory
- Avoid orphans
- External rings for academic practice



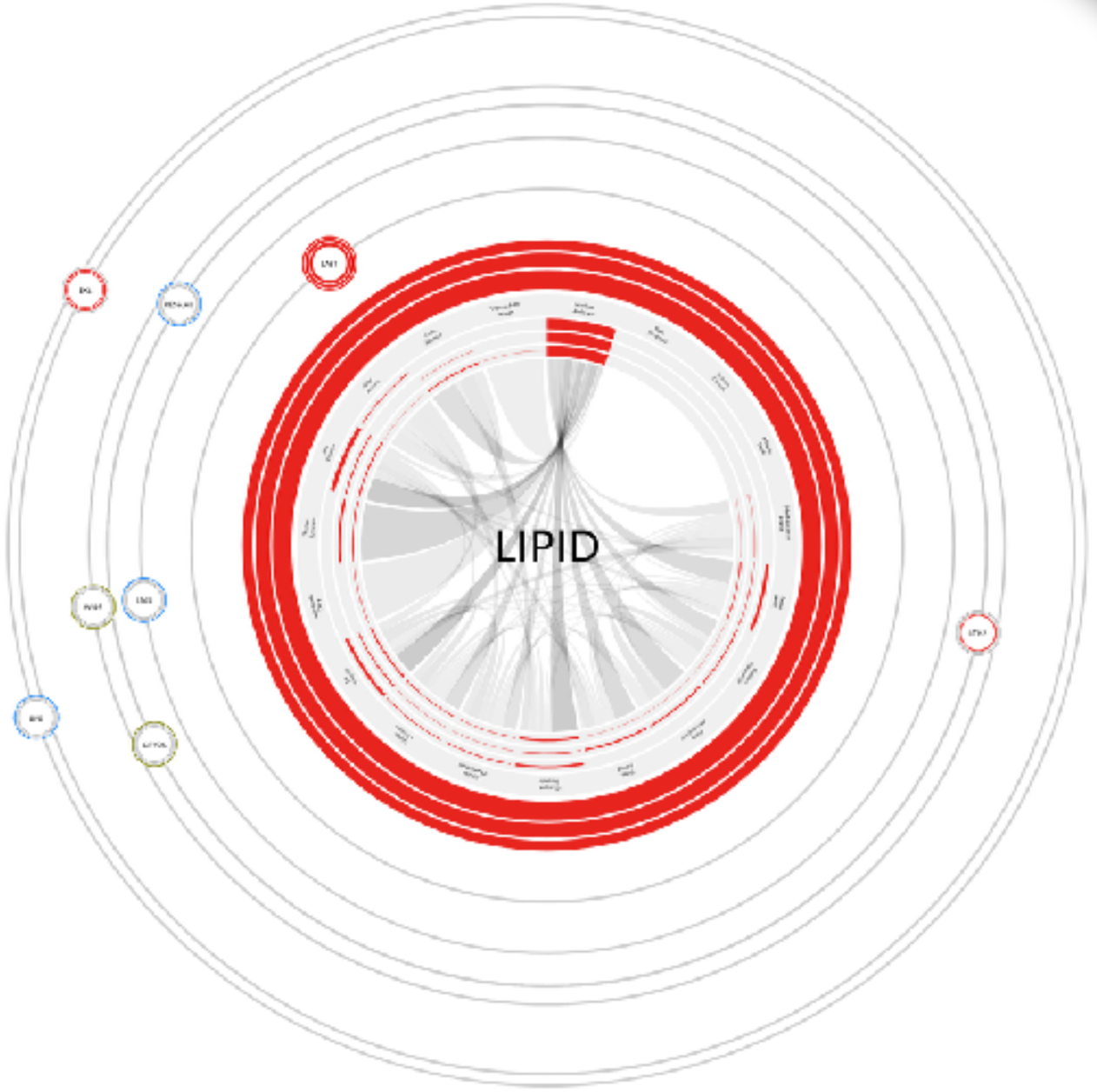
Physiognomy of laboratories.

- Fusion of visualizations
- Multi-scale
- Zoom to change scale

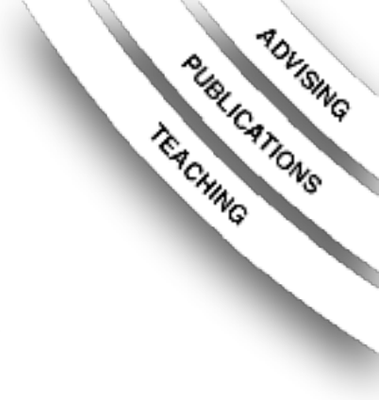


Zooming back and forth.

- Contextual to the network
- Multi-dimension of affinities
- Quantitative indicators
- Proportional distance
- Orbits as position quality



Orbiting satellites for actual affinities.



- Use of hexagonal grid
- Justification of closeness
- Semantic layer
- Color-code meaning

Keywords as potential affinities.

Actual affinities

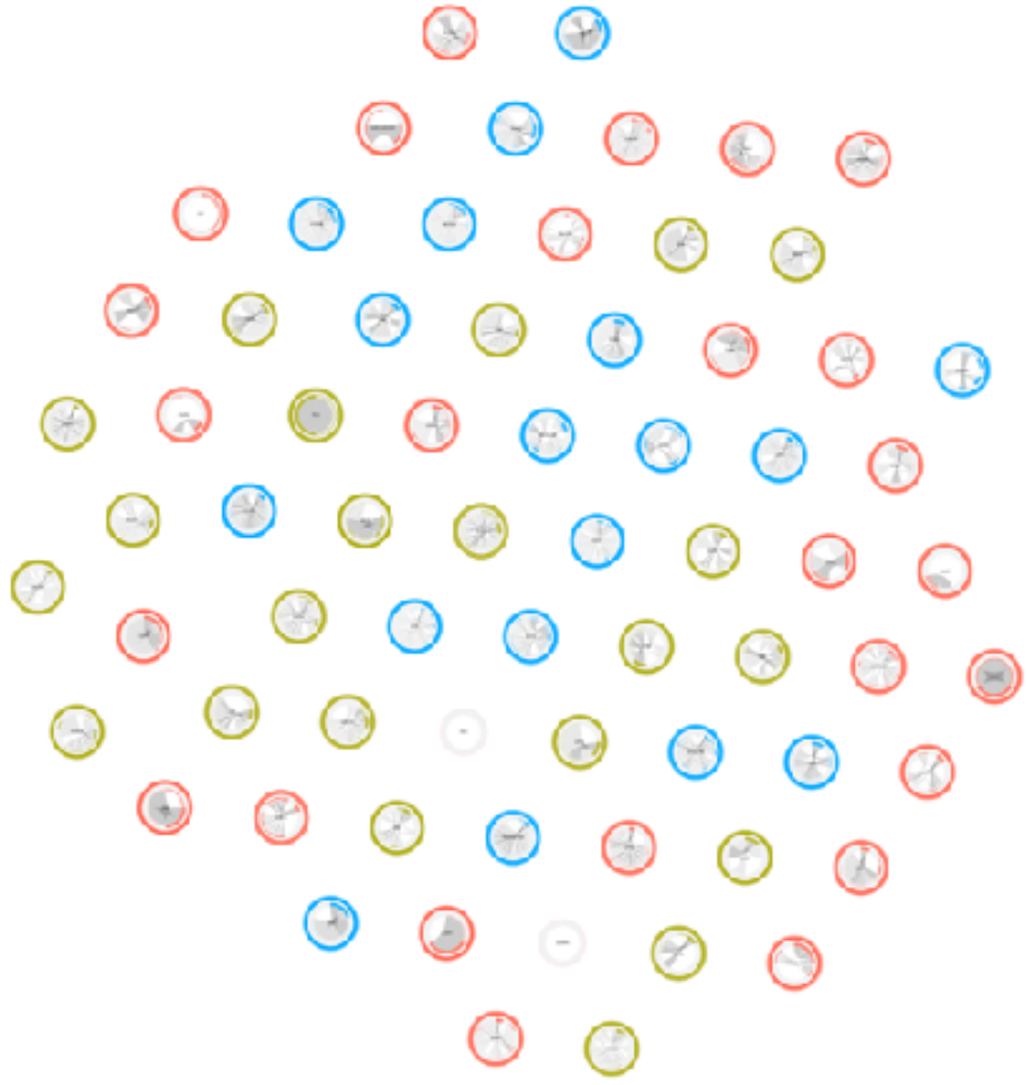
- Co-advising
- Co-authoring
- Co-teaching

Potential affinities

- keywords

Combinations

- Research (co-authoring + keywords)
- Education (co-advising + co-teaching)



Constellations of affinities.

5. Reception of the map

	Full Professor	*Tenure-track Prof.*	*Senior Scientist*
Architecture	A	B	C
Civil Engineering	D	E	F
Environmental Engineering	G	H	I

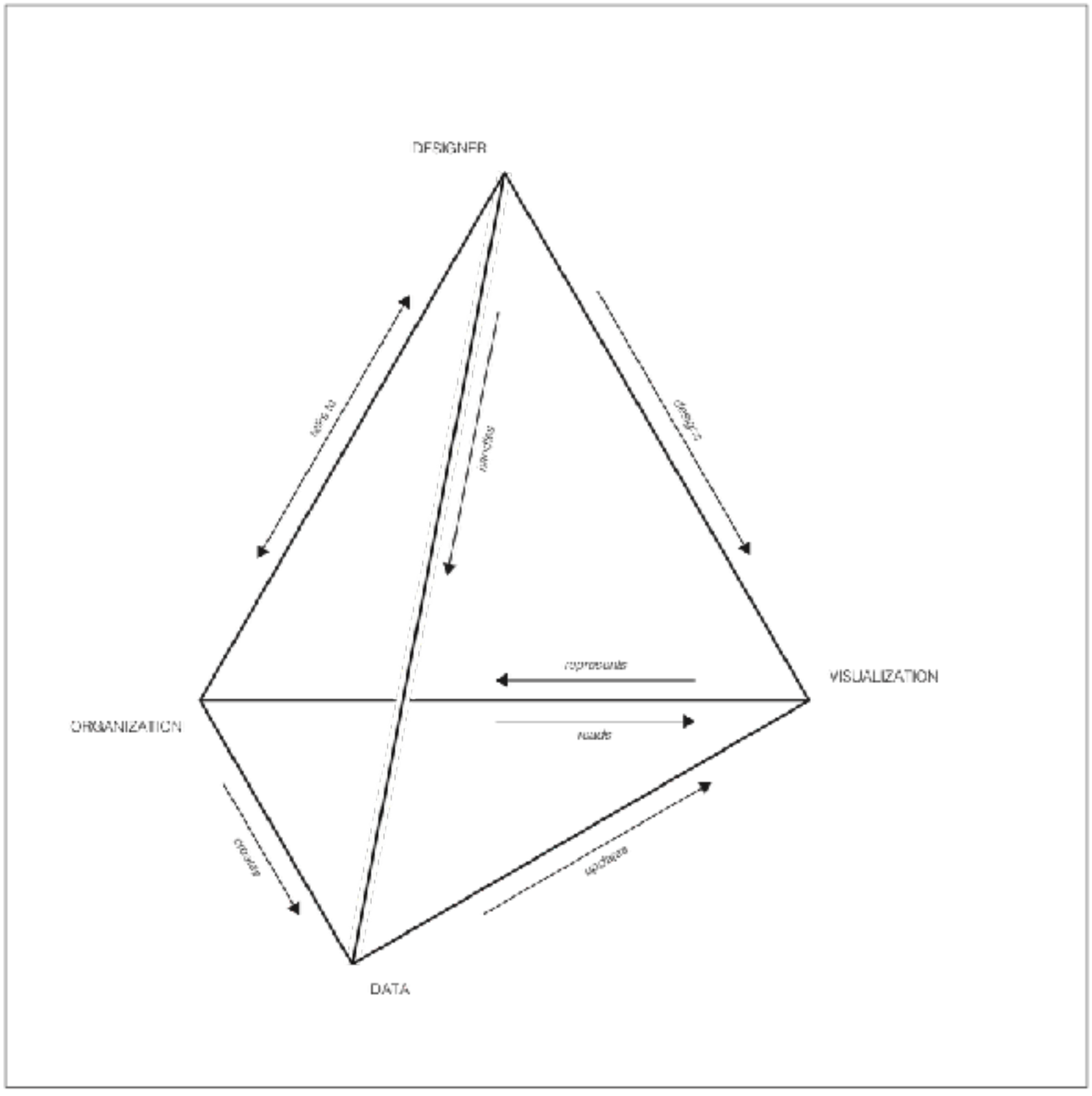
ENAC scholars selected to do the interviews.

	Questions	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*
Individuals	1. Did you see yourself?	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂
	2. Do quantitative indicators represent your role?	🙂	😡	🙂	🙂	😡	😡	🙂	🙂	🙂
	3. Is the laboratory structure appropriate?	🙂	😡	🙂	🙂	😡	🙂	🙂	🙂	🙂
Neighborhood	4. Do satellites represent ongoing collaborations?	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂
	5. Do you collaborate with surrounding units?	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂
	6. Are keywords appropriate?	🙂	😡	🙂	🙂	🙂	🙂	🙂	🙂	🙂
Organization	7. Is your position appropriate?	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂
	8. And your institute's position?	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂
	9. Is the map accurately representing the school?	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂
Usage	10. Is the map useful for you?	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂
	11. Is it an instrument of governance?	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂	🙂
	12. Is it useful for a generic public?	🙂	🙂	😡	🙂	🙂	🙂	🙂	🙂	🙂

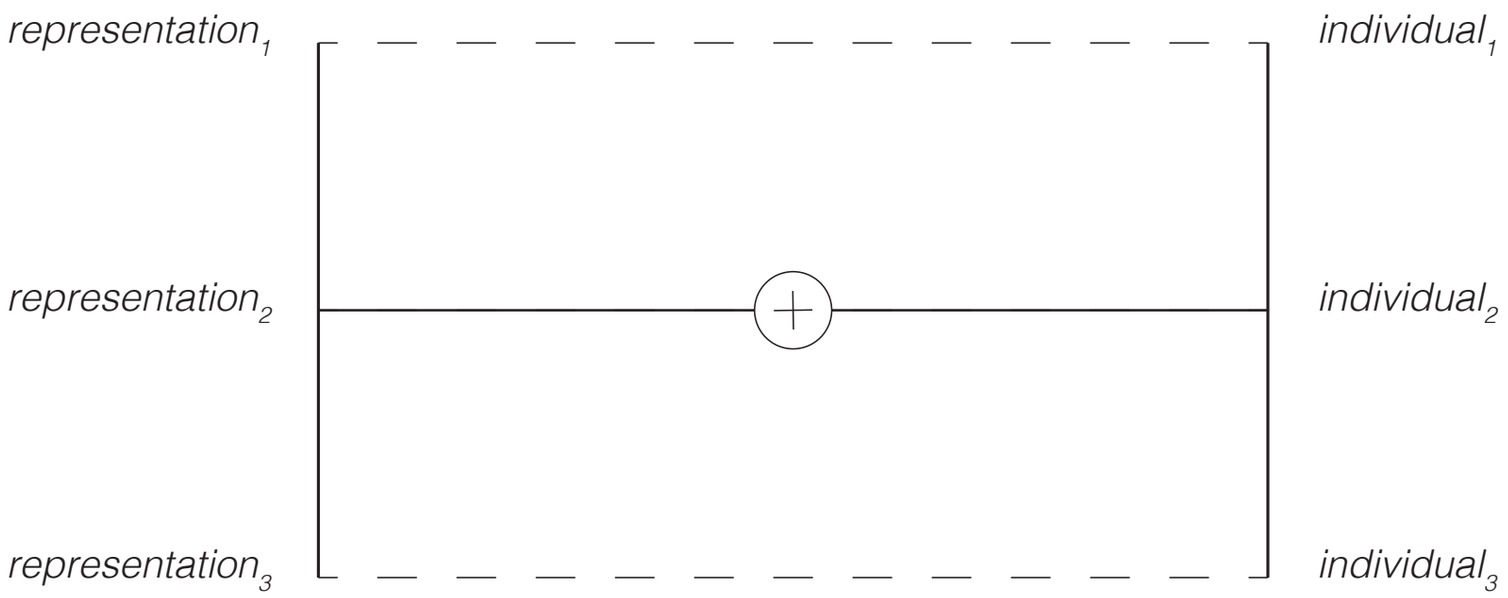
Questions and interviewees are intertwined in order to get a general view of interviews.

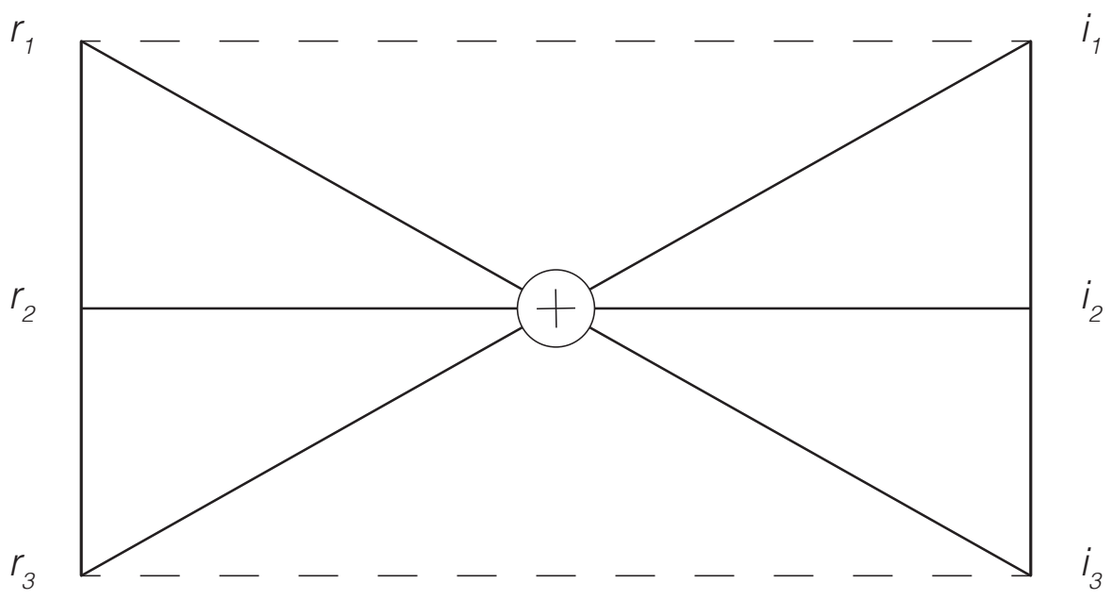
Remark	Publication indicator is empty for a tenure-track professor
Problem	A metadata **error** in the Infoscience publication system
Solution	Metadata were corrected and map was updated
Remark	Teaching indicator is empty for teaching assistants
Problem	Teaching assistants work is **not *translated*** into digital traces
Solution	The problem goes up to the EPFL
Remark	The laboratory comprehends old members
Problem	The map is **updated on annual base**
Solution	Show members on a present-day base?

6. The reader and the visualization in environment

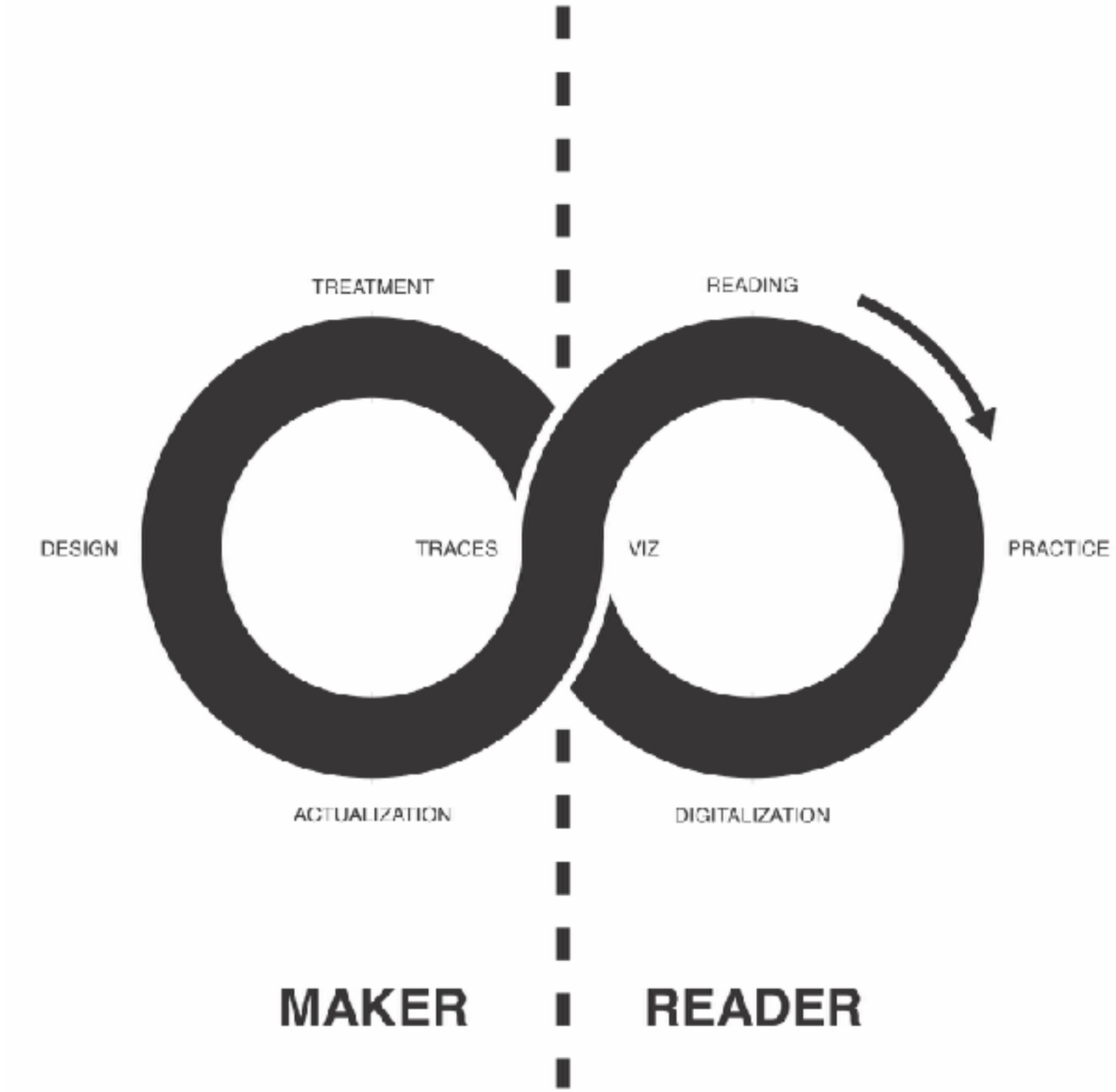


Actors contributing to the map reading.





Self and collective reading of the map.



The lifecycle of the map.

Intimate distance

Personal distance

Social distance

Public distance

Distances of reading.

7. Affinity Map actualized as carpet

Features of the carpet

- Invitation to the map reading
- Sharing the ongoing work
- Transparency of design
- Invitation to discuss
- Collective reading

The installation.

Personal reading.

Public reading.

Collective discussion.

Portrait.

Sharing the design.

The map from inside and outside.

Map affection continue with recycled bags.

8. Conclusion

Questions

- How can actual and potential affinities be **identified** and **measured**?

- What **visual language** is adapted to represent these affinities?

- Can such representation be **collectively accepted**?

The **concept of the affinity** was introduced and discussed

The Affinity Map represents the collective and its **cohesion**

The map is a representation of the **individual** as part of a collective

Scholars were invited to reflect about the academic practice, the **threshold of the sensible**, and their representation

Process, **discussion**, **awareness** were important as much as the map

Open scenarios

- Affinity Map for the whole EPFL
- Affinity Map for the theatre of Vidy
- Affinity Map for private companies