BIO-INSPIRED METHODOLOGY KIT

CONTENTS
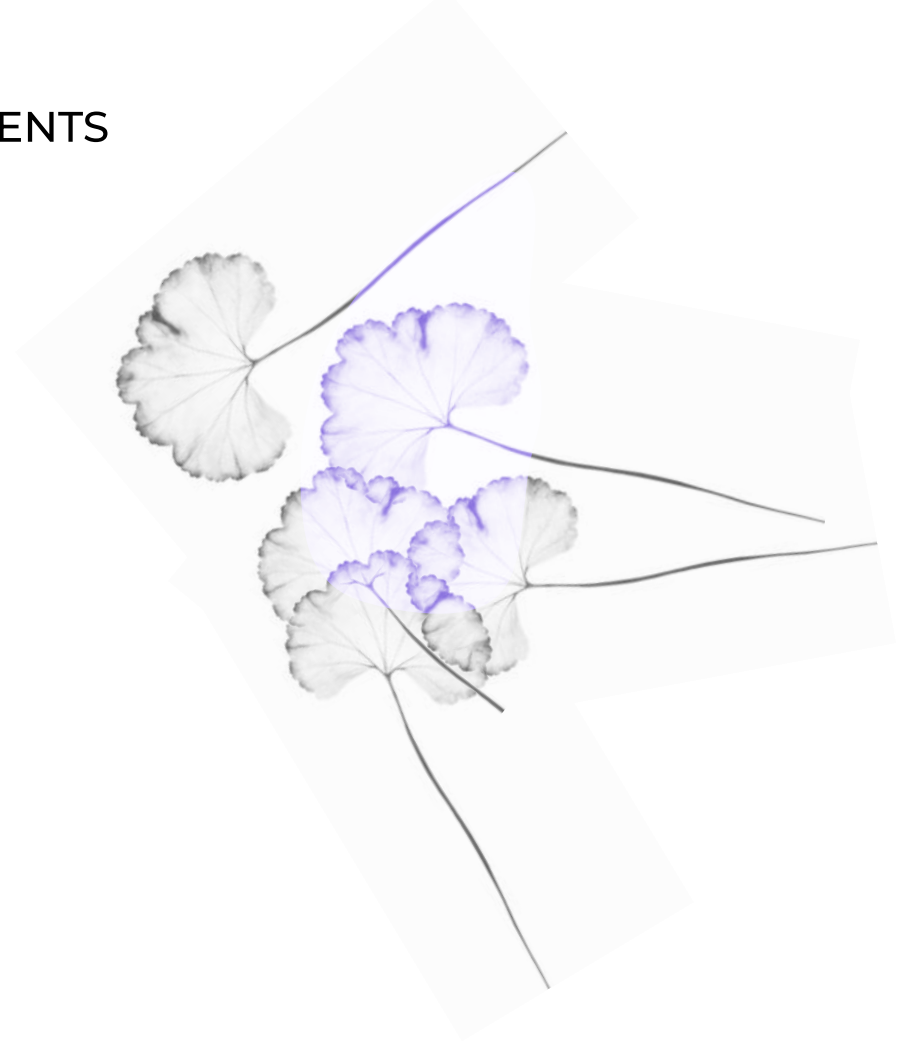
1. Discovering bio-inspired strategies
2. Field analysis
3. Bio-inspired diagnosis
4. Trend analysis
5. Ecosystem mapping
6. Action plan matrix
7. Project sheet

A. PROCESS

Why a methodological kit inspired by the living world?

The living world offers vast - and remarkable - potential for exploration and inspiration, with its 3.5 billion years of adaptation and resilience in the face of multiple crises.

Historically a focus of scientific interest, it remains far removed from the decision-making practices of major organizations, even though it is intrinsically linked to all human and public activities (food, health, education, economy, mobility, digital...). Environmental and health crises have accelerated the breaking down of the symbolic boundary between nature and culture, and the living world as a whole (biodiversity, plants, animals, microcosms, etc.) is now becoming the foundation and condition for the survival and harmonious development of our societies and human activities.

Based on our knowledge of ecosystems and the achievements of systemic design, "bio-inspiration" is a new methodological proposal that makes the necessary link between scientific approaches (ecology, sociology, anthropology) and the transformation of organizations and work cultures. Its aim is twofold:
to provide tools for the resilience/robustness and sustainability of projects for all structures, and more generally for territories, based on trajectories inspired by the living (decentralization, circularity, cooperation, self-repair...)
accelerate changes in outlook, enabling us to connect and reintegrate the living world at all levels of individual and collective strategies, and thus to accompany cultural changes.

During a creative workshop to support 6 public actions, we devised an integrated 12-day bio-inspired itinerary. The result of this experimental approach, this kit is made up of a set of tools and resources designed to accompany a project, from its analysis to the design of solutions conceived with "living glasses".

In this booklet, you'll find an overview of the process, a presentation of the tools and how to use them, and recommended conditions of use.
This toolbox is available to all under the ByNcSa 4.0 open license: feel free to use it, adapt it to your own projects, and stay in touch!
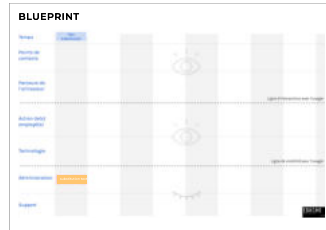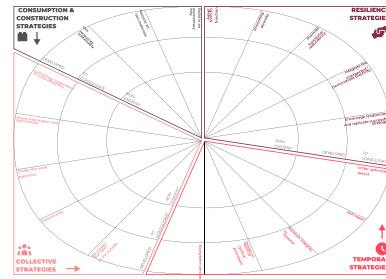
B. TIMELINE

These processes and tools have been designed as part of a global approach and organized sequence. They can, of course, be used in new ways, and the associated feedback will be all the most interesting!
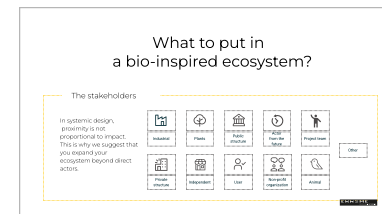
2. Field analysis

3. Bio-inspired diagnosis

4. Trend analysis

5. Ecosystem mapping

PROTOTYPING EXPERIMENTATION

1. Immersion in bio-inspired strategies

6. Action plan matrix

THINKING OUT OF THE BOX

DESIGN & ACTION PLAN

C. TOOLS PRESENTATION

1. DISCOVERING BIO-INSPIRED STRATEGIES

This booklet simplifies the functioning of living organisms into 18 principles, divided into 4 categories: collective strategies, construction strategies, temporal strategies and resilience strategies.

🚀 Objectives

Discover how living organisms develop and transmit essential functions during the time.

Make connections with our own organizations.

Identify strategies and principles that make sense for your project.

📋 How do I use it?

- Take the time to assimilate these bio-inspired strategies and sub-principles on your own or with others. Use the examples given from the living world and from organizations to understand the challenges
- involved in implementing each strategy and principle.

  Start projecting these principles onto your own subject.

- To make these bio-inspired strategies as concrete as possible, we suggest that you accompany them with demonstrators; they take the
- form of games for an active, non-rhetorical understanding of these strategies. (on the right)
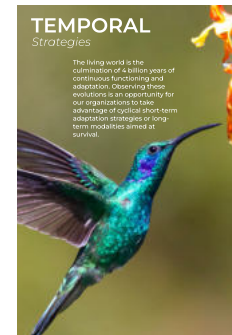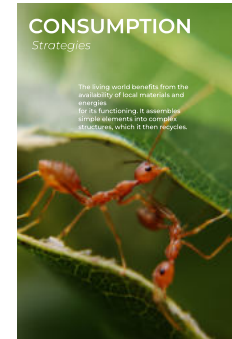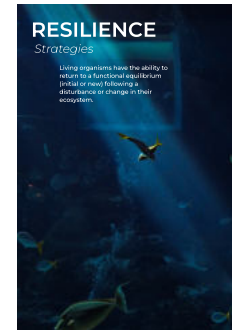
➡️

📎 Ingredients

A5 booklet of bio-inspired strategies demonstrators and a facilitator in case of presentation

👤 X

🕐 45 min

Bio-inspired Strategies booklet

RESILIENCE
Strategies

Living organisms have the ability to return to a functional equilibrium (initial or new) following a disturbance or change in their ecosystem.

CONSUMPTION
Strategies

The living world benefits from the availability of local materials and energies for its functioning. It assembles simple elements into complex structures, which it then recycles.

COLLECTIVES
Strategies

Every species is interdependent with other species. Thanks to ongoing collective exchanges, living organisms can achieve high levels of robustness and resistance to change.

TEMPORAL
Strategies

The living world is the culmination of 4 billion years of continuous functioning and adaptation. Observing these evolutions is an opportunity for our organizations to take advantage of cyclical short-term adaptation strategies or long-term modalities aimed at survival.

Demonstrators

🤝 Resilience strategies

The Echoes in the Network game.Each player creates a profile with his or her key skills. Sharing your profile with other players leads to a sharing of skills in the eco-system, reinforcing the group's resilience.

🧱 Consumption strategies

Imagine different ways of delivering services based on a specific local or cyclical constraint. The aim is to bring the local back into the public sphere.

👥 Collective strategies

The Space Team application. To assimilate the principles of cooperation and synchronization, team members become astronauts and have to share information aloud within a given timeframe, at the risk of having their dashboard damaged if communication has not been good enough.

🕐 Temporal strategies

Immerse yourself in a fictional scenario: in 2042, electricity is no longer a common resource, and tablets and other digital objects are becoming useless. One team against another, the aim is to find as many alternative uses for touch-screen tablets as possible.

2. FIELD ANALYSIS

There are a thousand and one ways to gather information about a plot of land! Here are 4 of them:
In situ interview
Photographic report
Persona creation
User journey

🚀 Objectives

Immerse yourself in the subject and get an in-depth view

Document the information gathered in the field.
Identify typical use cases/ situations/personas related to the topic.

📋 Advice

- On-site interviews:
  Beforehand, target interesting players to contact to enrich your knowledge of the subject. What is their position on the subject? What information are you looking for?
  Take notes of exchanges according to a time frame.
  Pay attention to the emotions conveyed by the information, both positive and negative.
  Take note of verbatins.
  Photographic report:
- Take photos on the ground (play with temporalities and points of view, etc.).
  Persona creation:
  Embody your personas via identity cards
- Your personas will help you identify the key use cases they face.

  User journey (e.g. blueprint):
  Choose the personas and their use cases that seem most relevant to your subject.
- Be exhaustive in the user journey, describing each step.

📎 Ingrédients

Note-taking aids (diagramming, brainstorming) blueprint

👤 X
🕐 X

BLUEPRINT

Time	Substitute text				
Contact points				👁	
User story					
				User interaction line	
Employee's actions			👁		
Technologies					
				Visibility line for the user	
Administration	Substitute text				
Support			👁		
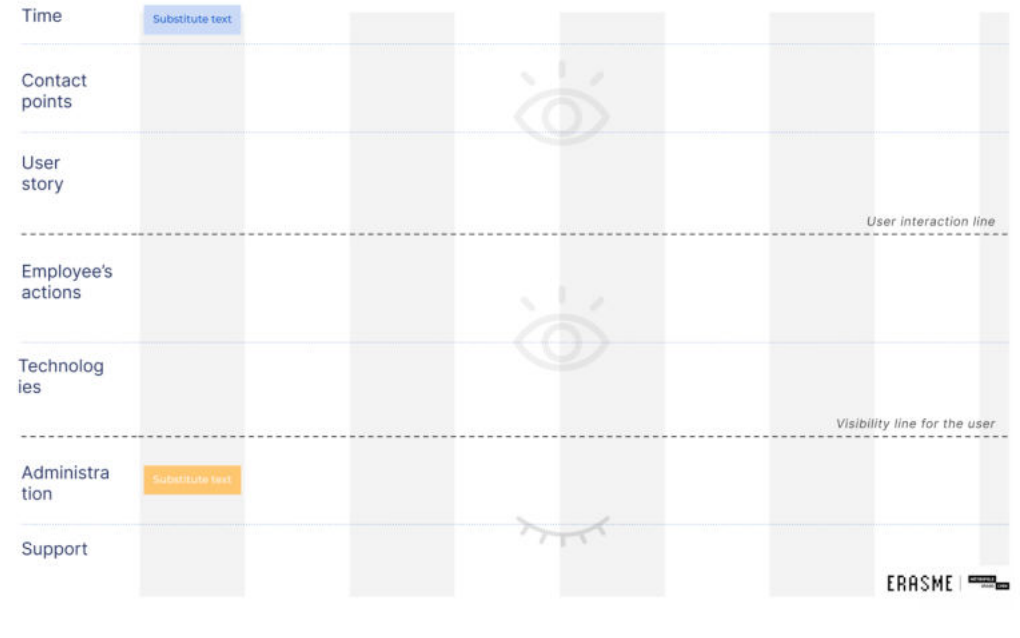
ERASME

3. BIO-INSPIRED DIAGNOSTICS

This tool was produced by ERASME especially for the workshop. It is based on our own reinterpretation of living principles in the form of strategies and sub-strategies (see posters).
Each of the cards represents a sub-strategy related to a family (consumption, energy consumption, etc.).

🚀 Objectives

Learn about living strategies.

Translate what they mean in concrete terms for your project and use case.

Diagnose your position in relation to the different living strategies.

📋 How do I use it?

- Read the sub-strategy cards one by one as a team.

- Translate each card, indicating what it represents in your use cases, and what it says about your context (project). You may not be able to translate certain cards in relation to your use case.
Think in terms of additive logic ("what I want to evolve") as well as subtractive logic ("what is no longer relevant").

- Once translated, fold the cards on the fold line and take the caneva. This ellipse is divided into living sub-strategies (corresponding to your cards) and three levels are represented: non-existent, to be consolidated, developed. Place the cards on the caneva in the right place according to the sub-strategy applied to your use case.

- You can then plot your diagram on the small format, using dots instead of cards to get a synthetic view.
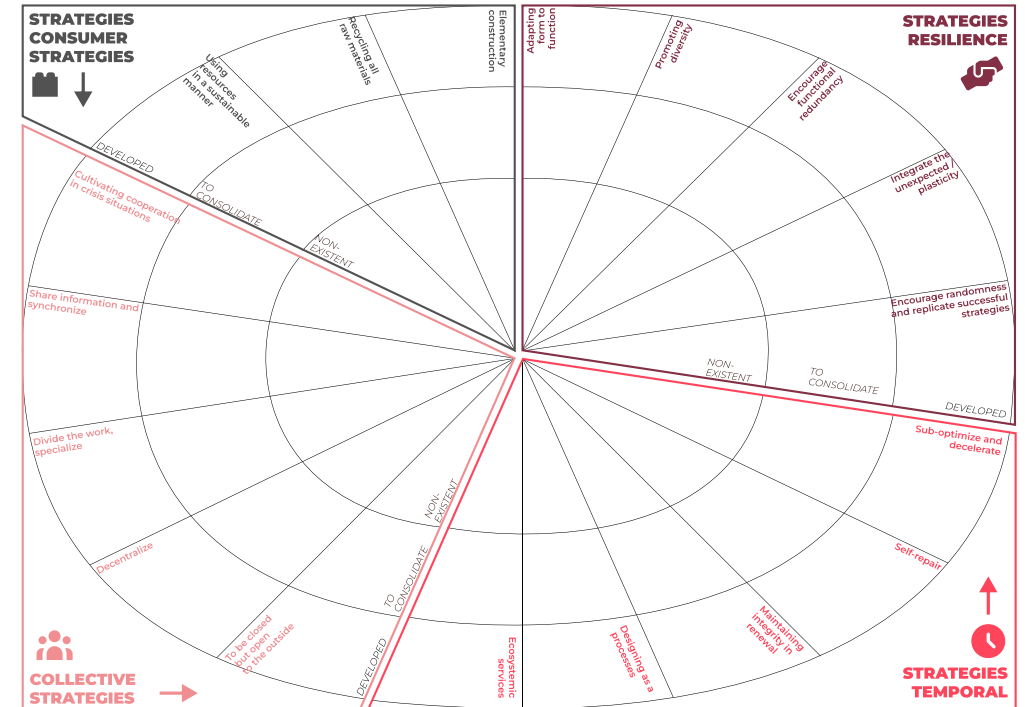
🔗 Ingredients

Bio-inspired diagnosis A1 cards bio-inspired strategies fixed past pens a facilitator to present the objectives
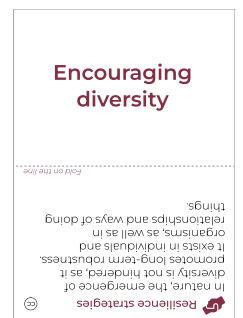
max 6

1h30

Bio-inspired diagnosis

Consumption strategy cards

Collective strategy cards x5

Time strategy cards x5

Resilience strategy cards x5

Recycling all raw materials
Consumption strategies
Waste from one organism becomes a resource for another. Living organisms use the most abundant atoms, which facilitates the circularity of life.

Decentralize
Collective strategies
In nature, there is no centralizing body: on the contrary, all information is decentralized: each individual has the minimum necessary information and communicates with his neighbors through dense networks.

Self-repair
Time strategies
The living world's preventive strategies do not always protect against problematic consequences. It is then necessary to repair oneself without depending on an external agent. This is the case for a cut on our skin.

Encouraging diversity
Resilience strategies
In nature, the emergence of diversity is not hindered, as it promotes long-term robustness. It exists in individuals and organisms, as well as in relationships and ways of doing things.

4. TENANCIES ANALYSES

This tool addresses what is known as systems thinking. It's based on the idea that our world is made up of a multitude of systems, characterized by the principle of interdependence. This tool is used to represent and synthesize the system in which your theme is embedded.

🚀 Objectives

Identify the future trends your system will have to face.

Identify inspiring current initiatives that anticipate these trends.

Identify the players and immersion sites to contact for inspiration.

📋 How do I use it?

- Fill in the "today" area of the caneva with post-it notes.

- Familiarize yourself with the trend cards and place the trends you consider relevant to your context in the "in 5 years" area. Complete the same area according to your knowledge and intuition.

- As you complete the "in 5 years' time" zone, identify niches of inspiring initiatives and complete the "initiative" zone.

- For each piece of data entered above, identify its nature by applying the given legend (stickers).

- Based on the elements you've just placed on the caneva, think about the people you'd like to interview and/or the immersion sites you'd like to observe.

📎 Ingredients

The A1 format canvas "Trend analysis" + trend cards + post-its + a facilitator to present the objectives of the tool if necessary

👤 max 6
🕐 1h

LOW SIGNALS
What are the signs of change underway? What innovations are shaking up the system? Who is driving change?

TODAY
How is the system structured today? What are the system's current rules? What are the objectives?

IN 5 YEARS
What structure will the system have in 5 years? What is driving the system to evolve?

For each item of data given above, identify its nature by sticking the corresponding stickers to the:

ACTORS Stakeholders. Those with power, influence and resources.

TRENDS The landscape, the pressures to maintain the status quo or change the system.

FACTORS The factors and components of system sustainability and stability.

ANALYSIS OF TRENDS

1 TODAY
How is the system structured today? What are the current of the system? What are the objectives?

2 IN 5 YEARS
What structure will the system have in 5 years? What is driving the system to evolve?

3 LOW SIGNALS
What are the signs of change underway? What innovations are shaking up the system? Who is driving change?

CRISIS ECONOMIC
#economy
#politics

- Reduced international trade: protectionism, a muted identity crisis. Trade between states deteriorate and become rare.
- Savings are depleted, and liquidity is in short supply. Inflation brings the country to its knees, and citizens call on the State to react!
- The euro no longer has enough value to continue serving as "currency".

Text source: AP 2042-Jeu Vraiment Vraiment

ERASME

Trend cards by theme x24

5. SYSTEMIC MAP

There are many different ecosystem visualization models. Here's one that takes a little more inspiration from the living world!

🚀 Objectives

Gain a broader view of the different players in your ecosystem.

Qualify the nature and type of interactions maintained by its players.

Identify issues.

📝 How do I use it?

- The aim is to build your complex ecosystem. Feedback from the field will enable you to enrich and build this ecosystem.

- To build your ecosystem, you use the format and medium of your choice.

- Use the players already identified with the trend analysis tool to start your complex ecosystem.

- Personalize the legend, while preserving the nature of the elements suggested.

ⓘ You'll find this tool on figjam via this link: https://www.figma.com/community/file/1121734304066179274 Copy and paste the interface into your space, so you can create your cartography on your computer with the help of figjam.

📎 Ingredients

The A4 "Ecosystem Mapping" legend sheet a large blank medium

👤 max 6

🕐 2H

Printable legend A2 format

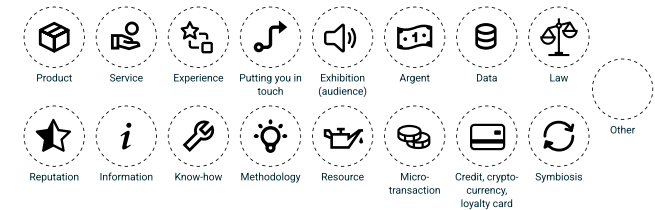# What to put in a bio-inspired ecosystem?

The stakeholders

In systemic design, proximity is not proportional to impact. That's why we advise you to broaden your ecosystem beyond direct players.

| Industriel | Plants | Public structure | Actor from the future | Project team |
| Private structure | Independent | Usager | Non-profit organization | Animal |
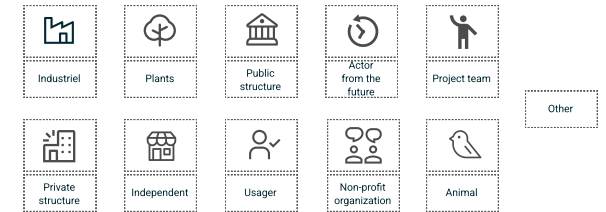
Other

Exchange elements between assets

What links you to the other players? What do they bring to the table?

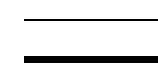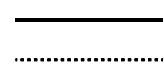| Product | Service | Experience | Putting you in touch | Exhibition (audience) | Argent | Data | Law |
| Reputation | Information | Know-how | Methodology | Resource | Micro-transaction | Credit, crypto-currency, loyalty card | Symbiosis |

Other

Types of interaction

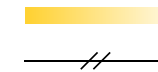transmit / receive

low / high dependence

official / unofficial

Taking an interest in the types of interactions with other stakeholders in the ecosystem offers the possibility of identifying those to be consolidated, created or, on the contrary, discontinued (subtractive logic).

missing link / to be undone

willingness to partner

ERASME
GRAND LYON

4. ACTION PLAN MATRIX

The aim of this design tool is to build an action plan based on living principles, using the action cards identified above:
- Systems of organization and thoughts
- Culture & storytelling
- Individual knowledge & behavior
- Decentering and Booster

🚀 Objectives

Obtain courses of action based on living principles.

Build an initial personalized action plan operating as a "system.

📋 How do I use it?

- First, select the living principles cards (A3 cards) that are inspiring and/or levers for the project.

- From these cards, cut out proposals for concrete action. Make them your own and complete them on the reverse. Once the actions have been selected, place them on the action plan matrix. The aim of this action system is to strike a balance on either side of the axes:
  control and stability vs. openness and instability
  global / thinking vs local / doing

  As with living organizations, several dimensions can be added to this exercise:
 - **Cohesion**: representing interactions and complementarity by connecting bricks, in order to
  - **Regeneration**: while preserving identity, imagine long-term cycles that enable continuity and transmission within a collective, while integrating renewal.
  - **Facilitation**: using transit actions / hubs as local laboratories, hiring facilitators

🔗 Ingrédients

The living principles & action cards + the action plan matrix

👤 max 6
🕐 1h30

Living principles

X18

**Action cards
(to cut out)**
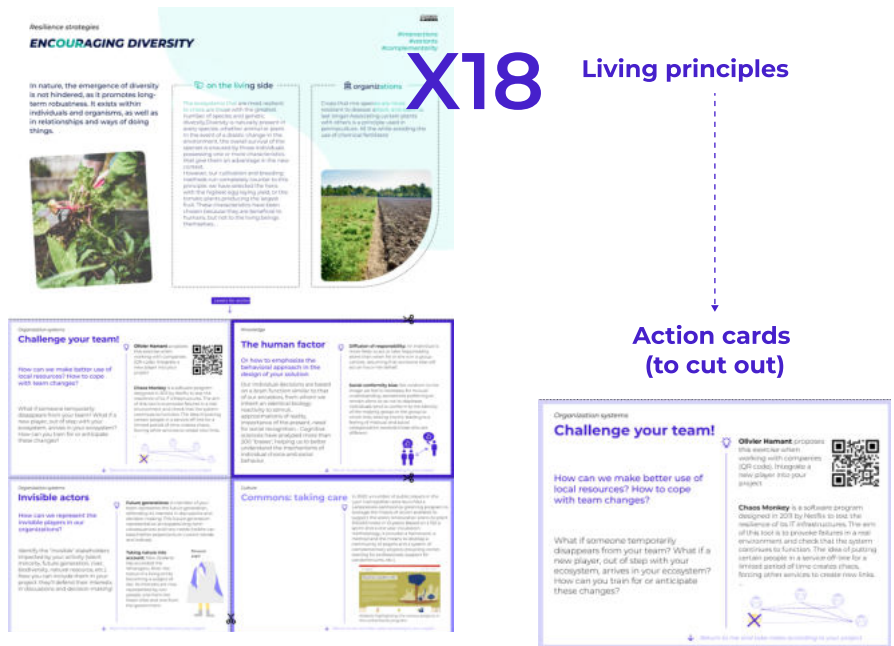
Action plan matrix
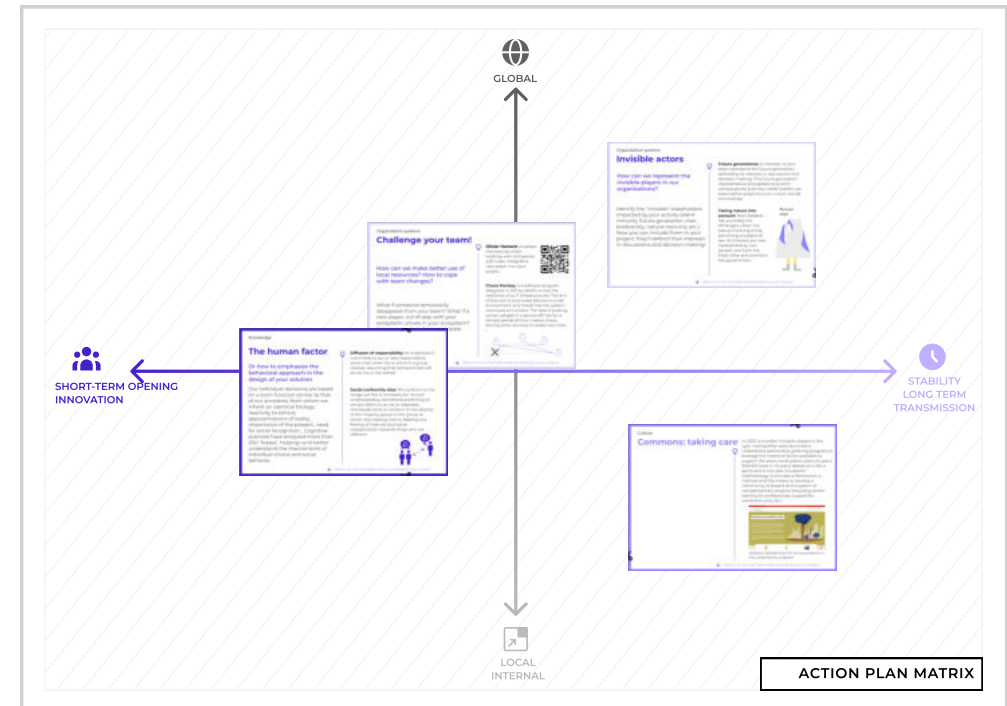
7. PROJECT SHEET

This Caneva comes into play once the solution has been imagined. It allows you to define the main lines and actors of your solution.

🚀 Objectives

Structuring & framing a new project.

Have an overview.

Answer the questions: Who? Why? What ? How ?

📋 Advice?

- Detail your solution

- Choose your vocabulary carefully, so as to be as precise as possible and understandable to everyone.

- This project sheet must be intelligible. (mediation)

📎 Ingredients

Printed project sheet

max 6

30 min

PROJECT SHEET
WHO, WHY, WHAT, HOW?

Challenge : ....

ERASME

PROBLEMATIC

Challenges	Beneficiaries	Indicators

SOLUTION

Title & pitch:	The principles of life:

User journey & scenario	How it works ?

IMPLEMENTATION

Leaders	Implementation

Credits / Licences

LET'S CONTINUE TOGETHER!

Website

Follow us

Contact us

bioinspiration@erasme.org

UrbanLab - Pôle Pixel
26 rue Émile Decorps
69100 Villeurbanne

GRAND**LYON**
la métropole

ERASME