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Using systemic design to drive the transition of a professional kitchen towards the circular economy scenario

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The current situation

A **compromised environmental situation:**
resource scarcity, pollution and climate change

We need to change current way of producing and consuming soon otherwise 2050 will be the year of non-return with +1,5° (IPCC, 2018)



The current situation

Sustainability needs to become one of the primary goals of our actions (UN, n.d.).

The EU has stated clearly the mission for 2050 with the European Green Deal (EC, 2021): being climate-neutral with an economy with net-zero greenhouse gas emissions. One of its building blocks is that the economy must shift from a linear to a **circular economy** (EC, 2020).



Professional appliances in a professional kitchen

**What if they are considered
'products are systemic objects'?**



Professional appliances in a professional kitchen

What if they are considered
'products are systemic objects'?

The **kitchen can be considered a system** itself where the food and the work of cooks draw connections among different tools and appliances to produce a meal

To **drive the transition to a circular economy scenario** starting from the current linear economy situation, it is fundamental to **change the cultural point of view** and integrate the system thinking (Ellen Macarthur Foundation, n.d.)

- the products at the end of their life cycle are **no waste to dismantle in the landfill**, but are considered **valuable resources** to be reintegrated in the life cycles creating closed (or open) loops
- there is no need to create more landfills but systems to **re-insert the resources in the cycles**
- products are no more viewed as single objects but are **part of the systems** where they are inserted.

To reach and implement this scenario, a systemic design approach can be helpful to use to design different solutions applying its specific tools and methods (Barbero, 2017).

Research goal



Application of systemic design approach to design the future of professional appliances into a circular economy scenario, not taken in isolation but as part of the system of a professional kitchen. !

A systemic design approach can be useful to use and apply with its tools and methods to reach different design solutions than the current ones conceived in a linear economy scenario

Why ?

The design discipline embraced its ethical responsibilities (various movements as the **'design for sustainability'** (Ceschin and Gaziulusoy, 2016; Vezzoli and Manzini, 2007; Bistagnino, 2011).

Although many publications, the **changes** in the design sector and the market are **not always visible**. However, it is **becoming a requirement**.

Broad Research goal



Part of a broader research that wants to understand

If the task is to design an appliance, is there the need to:

- **re-design the current one,**
- **design new ones, or**
- **invent something else ?**
- "Are we considering all the aspects of the question ?".

Focus of this research is the sector of the big appliances in the professional kitchen

Methodology and research steps



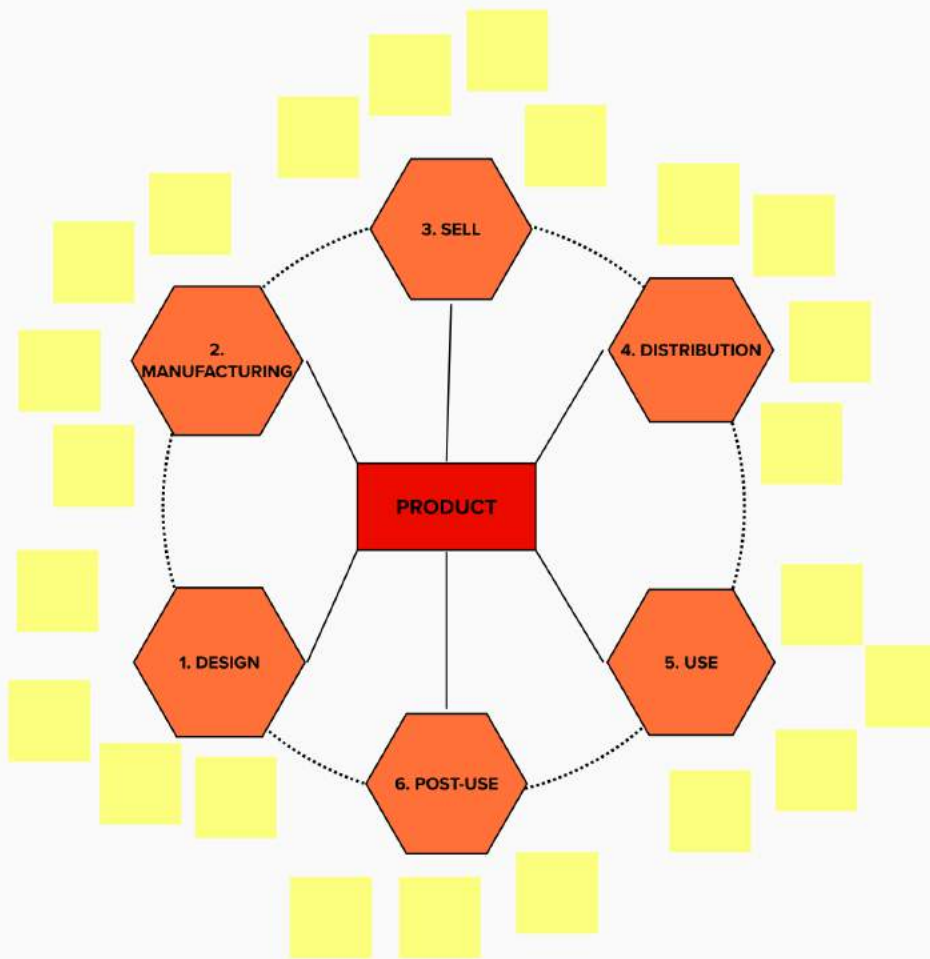
Inductive + deductive approach

Some tools are in development phase to help the work of designers in the process.

- 1) **Holistic Diagnosis** (Battistoni et al., 2019) of the context to have a complete picture of the state-of-the-art around the topics included in this research (**paper in publishing stage**): literature review + scouting of different solutions already designed.

Result: a framework

GUIDELINES



CASE STUDIES

Methodology and research steps



Inductive + deductive approach

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+

2) **Holistic Diagnosis phase 2**: an **assessment of the flow** of information and resources (in developing stage) , to deep more into the kitchen environment where there is a great use of resources (food, energy, water,..)

Methodology and research steps

Assessment of the flows

This part can give insights into understanding what they are (in quantity and quality) and how they are used.

Flow assessment

In kitchens there is a great use of resources, such as:

energy



is the one where the appliances industries are more focused on, thanks also to the introduction of **energy labels** (EU, n.d.)

water



great use of **drinkable water for all uses**, indeed there is no serious attention to the quantity and quality. However, it will become more and more a scarce resource in the future and an expensive one

food

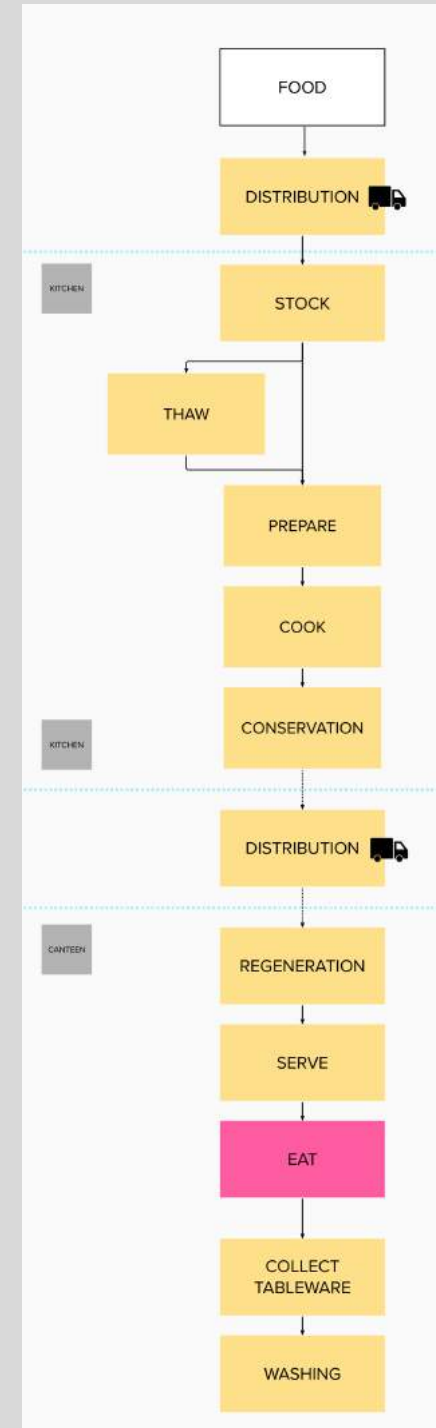


today there are many studies, especially on food waste and on the circularity of the food system (Fassio and Tecco, 2018), but although it is essential for the function of the kitchen, its use and quality are very **dependent on the clients/users choices in the menu and the cooking process**

Results (in development)

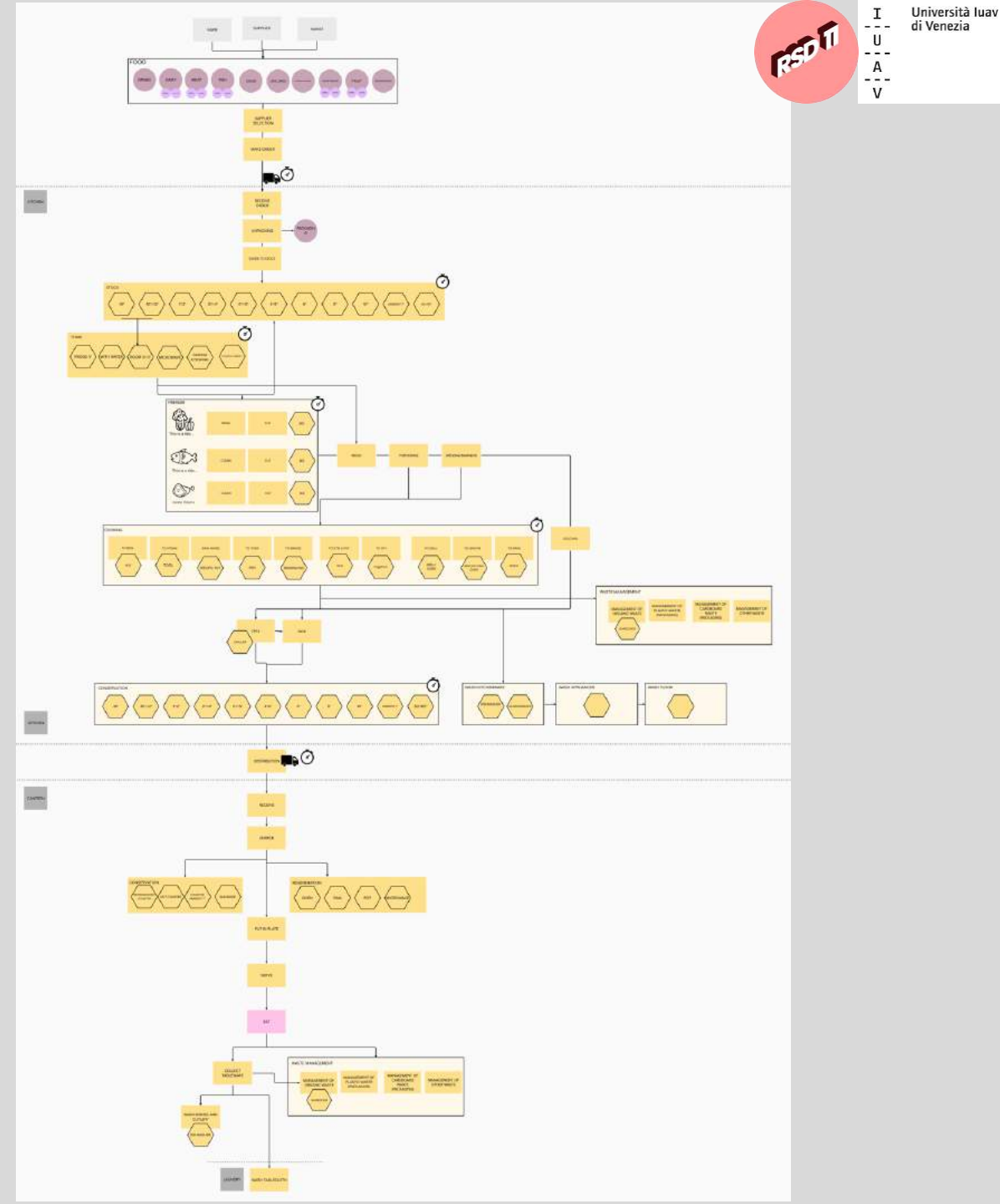
A flow map (Holistic diagnosis phase 1: energy and matter analysis) developed starting from the core of the process

(example: a canteen)



Results (in development)

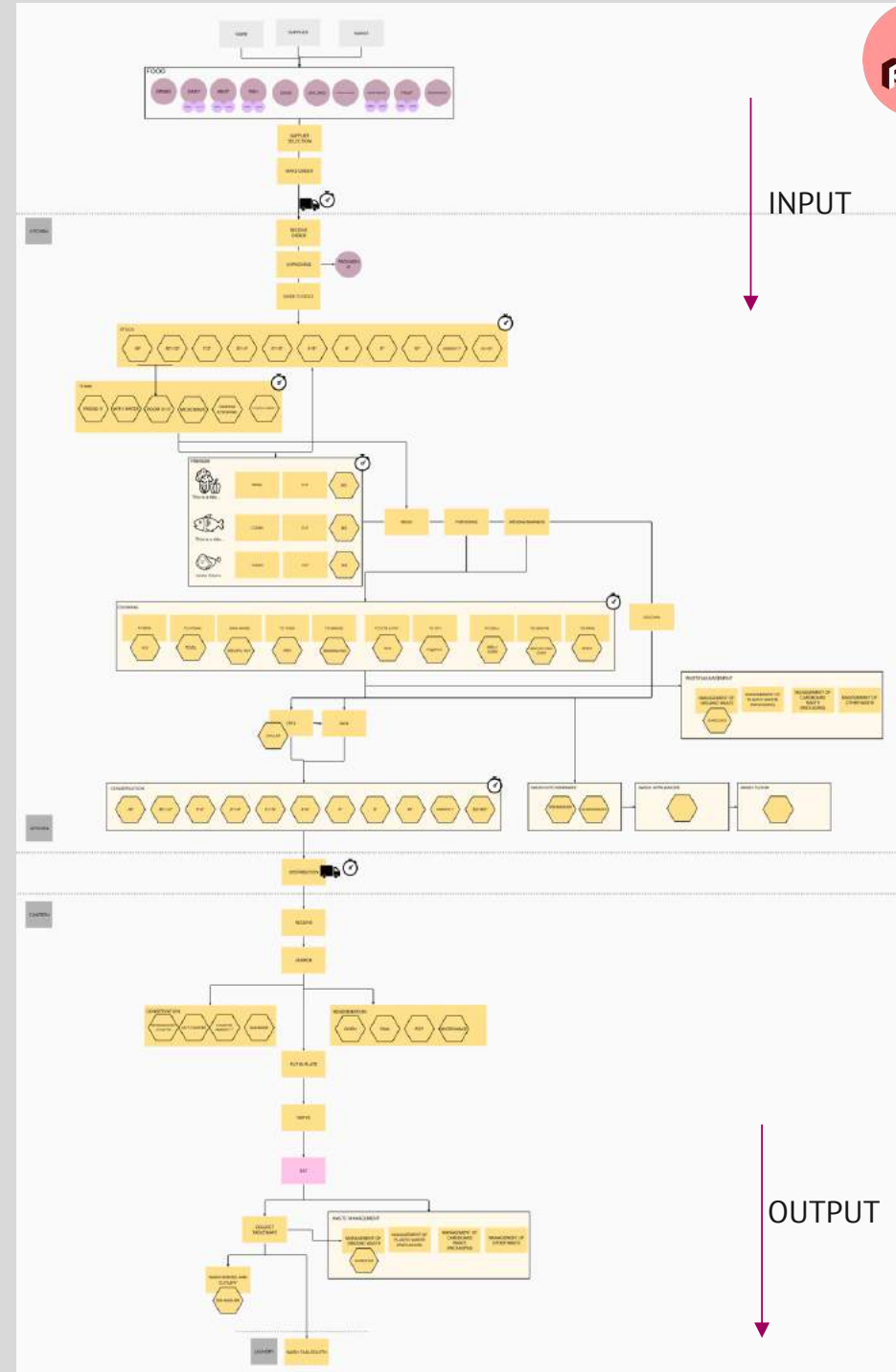
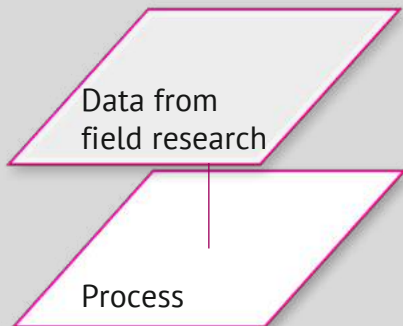
A **flow map** (Holistic diagnosis phase 1: energy and matter analysis) developed starting from the core of the process.



Results (in development)

A **flow map** (Holistic diagnosis phase 1: energy and matter analysis) developed starting from the core of the process.

information and data from field research in a professional kitchen (output-input and management information)



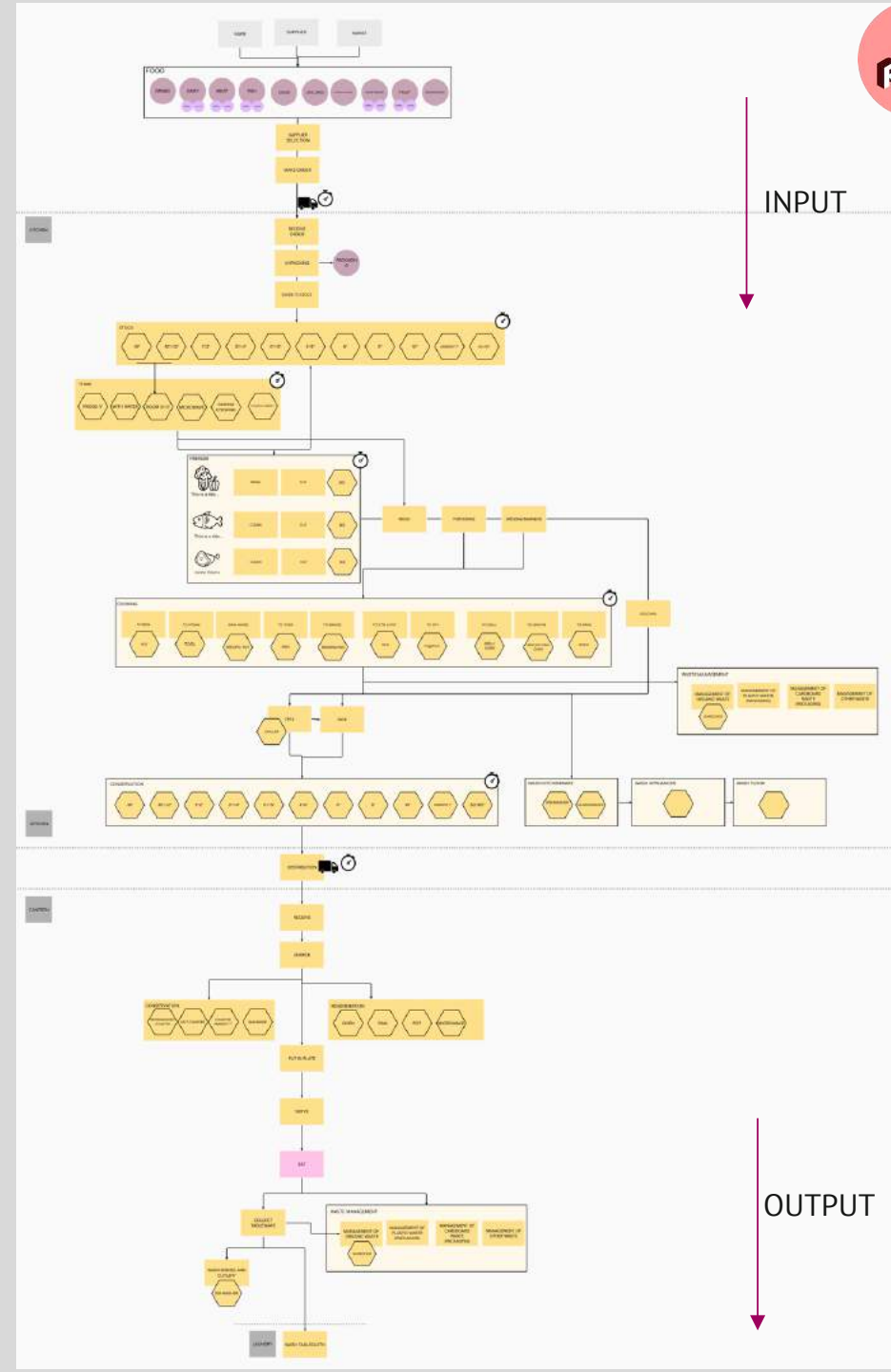
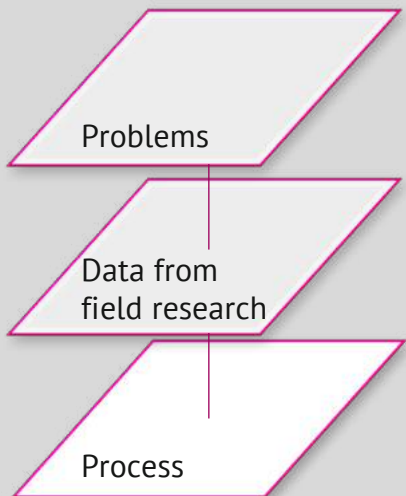
Results (in development)

A **flow map** (Holistic diagnosis phase 1: energy and matter analysis) developed starting from the core of the process.

information and data from field research in a professional kitchen (output-input and management information)

+

the data regarding the problems faced with the management of the resources and processes.



Results (in development) – test phase

This map will be afterward shown to people working in this professional environment for a review and the **collection of feedback** coming from their experience.

All the giga-maps are created on **'mural' open software** that makes more accessible the share of the work with other people and the collection of feedback even on remote mode.

Thanks to the **involvement of a large industry producer of professional appliances** in this research, this stage will be eased thanks to the possibility to **interview** directly chefs working with the industry and the possibility to use their kitchens for their canteen for the study.

Discussion and future works

At the end of the data collection process and the development of the tools, a future work will be **to test** their efficacy in a workshop with design students and discuss the results.

The research indeed also wants **to reflect on the understanding of the usefulness of this approach to design solutions for a circular economy scenario.**



THANK YOU

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