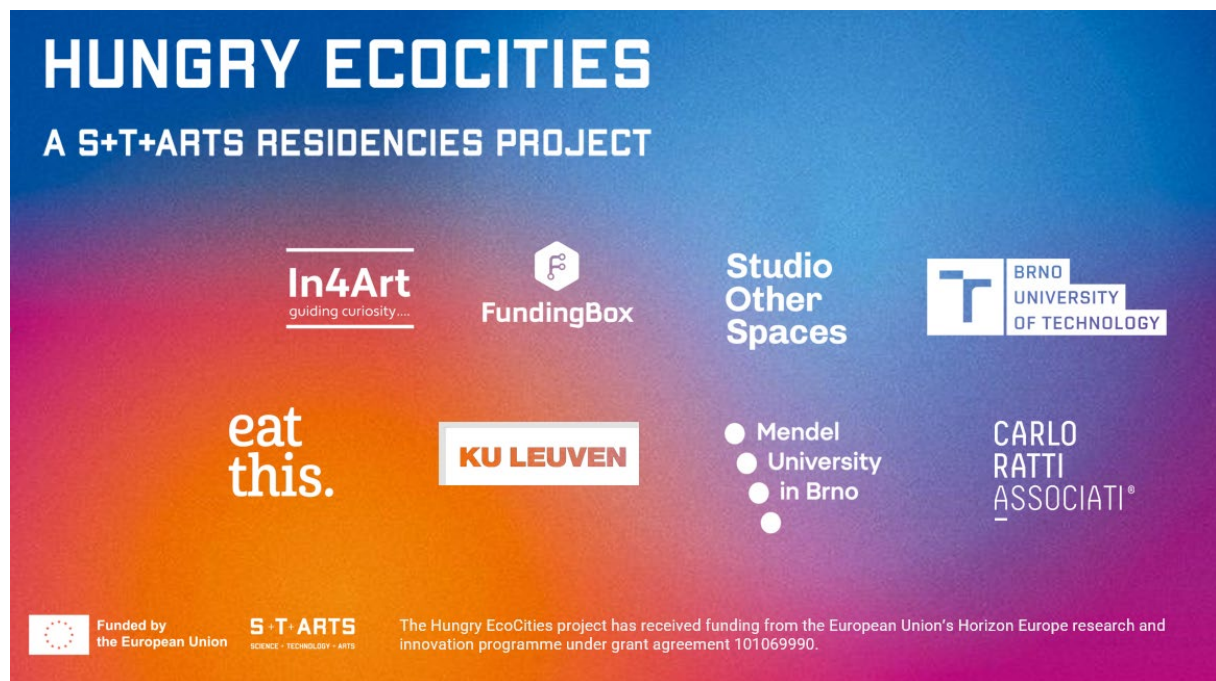




Deliverable 4.5 Success stories

Version 0.1

Grant Agreement Number	101069990
Project title	Hungry EcoCities
Start date of the project	Sep 1 st 2022
Duration of the project	42 months
Date of submission of the report	Dec 22 nd 2025
Workpackage No.	4

Project coordinator: Brno University of Technology
 WP leader: Monika Löve + Carlo Ratti Associati
 Lead author: Vincent Leung + Carlo Ratti Associati
 Reviewers: Aart van den Bos + EatThis/ Network

Objective of the deliverable

Success stories: a set of 19 videos made from each HTE and PPE representing the journey to re-imagine AI technologies + 1 trailer video for HECLab

Objective

This deliverable documents and disseminates the success stories of Hungry EcoCities by presenting a curated set of video narratives that capture the outcomes, impact, and future potential of the project's artistic-industrial collaborations. Its objective is to highlight how art-driven innovation, combined with digital technologies such as AI, can contribute to more sustainable, resilient, and human-centred agri-food systems.

Content

The deliverable showcases **19 experiments (9 Humanizing Technology Experiments and 10 Paths to Progress Experiments)** alongside the ongoing **HECLab**, each documented through a dedicated success story video published on the S+T+ARTS YouTube channel.

A particular focus is placed on the **Paths to Progress Experiments**, where artists and SMEs collaborated on real-world, industry-oriented use cases tested in operational environments. The report contextualizes these outcomes within key food-system focus areas—such as growing conditions, economic value, eating culture, knowledge sharing, and market dynamics—and reflects on lessons learned regarding collaboration, technology adoption, and scalability. Together, the success stories demonstrate the tangible impact of Hungry EcoCities and provide inspiration for future uptake by industry, policymakers, and cultural actors.

History of changes

Date	Version	Author	Comment
20.06.24	0.1	Klara Kaluzikova	Setup of deliverable
25.11	0.2	Vincent Leung	Set-up draft
26.11	0.2	Lija Groenewoud van Vliet	Input draft
28.11.2025	0.3	Vincent Leung	First full draft
19.12.2025	0.4	Aart van den Bos	Review + summary

Table of Content

History of changes	2
Table of Content	3
1. Abstract	4
2. Table of success story videos	5
3. Success stories from the PPE residency	6
3.1 Be(e)together	7
3.2 Compostable Altar	8
3.3 Crafts Meats AI	9
3.4 Open Source Harvesting Community	10
3.5 Phygital Seasoning	11
3.6 Quiet Storm	12
3.7 Re.Source-Society	13
3.8 Sprouting Embryonic Futures	14
3.9 Straw Return	15
3.10 Tomato Brain	16
4. Lessons learned	17
About Hungry EcoCities	18

1. Abstract

This deliverable offers a summary of the HEClab and 19 experiments conducted over the two residencies of Hungry EcoCities. Based on extensive scientific research and prototyping processes, all these 20 outcomes have generated distinctive contributions to different aspects of the agri-food industry. The journey and outcomes of each project are documented in a success story video uploaded to the YouTube channel of S+T+ARTS.

A significant part of this report is dedicated to the success stories of the 10 Paths to Progress Experiments (PPEs). With the takeaways from the nine Humanizing Technology Experiments in mind, the second residency of Hungry EcoCities was designed to leverage the expertise of forward-looking artists and small and medium enterprises (SMEs) across Europe to collaborate with one another and conceive innovative and practical ideas, in order to make the urban food market more sustainable and resilient. The use case and accomplishments of each partnership will be highlighted below.

2. Table of success story videos

For each of the nine Humanizing Technology Experiments, 10 Paths to Progress Experiments and HECLab, a success story video was created by the artists and SMEs involved. The videos corresponding to the first residency were uploaded to the S+T+ARTS YouTube channel in May and June 2024. The rest went live on the same channel in October and November 2025.

The following is a complete list of the success story videos:

Experiment Phase	Project name	Project page	Link to the video
Humanizing Technology	Acoustic Agriculture	Project page link	Video link
	The Council of Foods	Project page link	Video link
	Ecoshroom	Project page link	Video link
	Future Protein	Project page link	Video link
	MVP x FFF	Project page link	Video link
	Symbiosis.AI	Project page link	Video link
	Symposio	Project page link	Video link
	Vegetable Vendetta	Project page link	Video link
	WTFood	Project page link	Video link
Paths to Progress	Be(e)together	Project page link	Video link
	Compostable Altar	Project page link	Video link
	Crafts Meats AI	Project page link	Video link
	Open Source Harvesting Community	Project page link	Video link
	Phygital Seasoning	Project page link	Video link
	Quiet Storm	Project page link	Video link
	Re.Source-Society	Project page link	Video link
	Sprouting Embryonic Futures	Project page link	Video link
	Straw Return	Project page link	Video link
	Tomato Brain	Project page link	Video link
Entire duration of Hungry EcoCities	HECLab	Project page link	Video link

3. Success stories from the PPE residency

For the second residency, separate open calls were launched in 2024 to solicit 10 groups of artists and SMEs. The winners were then paired up to form 10 Paths to Progress Experiments.

These experiments are a key component of the KPIs of Hungry EcoCities. They represent use cases oriented towards industrial application. Each has been tested in the real environment and proven to carry the potential to enrich the food system. Their diverse impacts are reflected in the five “focus areas” characterizing the existing food infrastructure, as proposed by Carolyn Steel, one of the leading thinkers in food and cities. The five “focus areas” are: Growing Conditions, Economic Value, Eating Culture, Knowledge Sharing and Market Competition.

The PPEs are particularly concerned with how the agro-food industry can evolve in a contemporary social context. As such, they actively engaged with emerging concepts and resources surrounding sustainability and digital technology, such as the circular economy and artificial intelligence (AI), in an effort to understand and promote how these elements could help address the challenges faced by business and public actors.

Descriptions of each PPE prototype, as well as discussions of their impact on food producers, distributors and consumers, can be found over the following pages.

Note: The working process and outcomes of the Humanizing Technology Experiments can be found in the deliverable D4.3, while further information about the HECIab will be included in the upcoming deliverable 2.9.

3.1 Be(e)together

Focus area: Growing Conditions

Prototype description

Be(e)together is a collaboration between artists Maria Castellanos and Alberto Valverde, Olaya Miel, a family-run ecological beekeeping initiative in Northern Spain, and SME Beesage which produces beehive monitoring software and hardware. The experiment fostered three outcomes: the (Be)together Set of Sensor System to offer actionable information on sustainable hive management, an AI image recognition tool to prevent varroa mite infestation in hives, as well as the Interface, a physical device that showcases how bees react to changing environmental conditions through light, vibration and other cues perceivable to human.

Impact on the agri-food world

A third of the food we eat depends on pollinators, especially bees. (Be)etogether explored how technology can help human understand their needs. By combining knowledge and skills in art, apiculture, and technology, the apparatuses created by the experiment help us, on one hand, extend the longevity of species, and on the other hand, forge a stronger bond with them.

Industry takeaway

SME Beesage cited better understanding of the Spanish market and the practice of organic beekeeping as notable takeaways of the experiment. With a sustainable beekeeping business from Northern Spain deeply involved in the prototyping phase, the Sensor System encompasses solutions that can address the pain points faced by small, ultra-local producers like extreme heat and diseases. At the same time, it has inspired Beesage to initiate a scientific network to continue gathering insights into the environmental and economic outcomes of organic apiculture across Europe. In the Netherlands, Koppert Biological Systems – working with bumblebees for pollination in a.o.greenhouses – was introduced to the findings of this experiment and is exploring the potential of working with the artists.

Links to the prototype for further uptake and development opportunities:

Community Varroa Monitoring Tool:

<https://heclab.eu/prototypes/a9881eb5-e2b3-4c69-a3eb-012a4975d976>

(Be)etogether Interface:

<https://heclab.eu/prototypes/4ca46df9-db21-450f-bf05-ded655b5432a>

(Be)etogether set of sensors:

<https://heclab.eu/prototypes/3725c48b-7584-455a-ac8b-d4634f39ae85>

3.2 Compostable Altar

Focus area: Growing Conditions

Prototype description

Compostable Altar is a PPE conducted by artist Betiana Pavón and organic farm Le Terre di Zoé. Using a large-scale 3D printing device, it repurposes different agricultural by-products into decomposable sculptures that can be planted to the farmland. Sensors inserted underground would then detect the soil's changes in pH value, nutrients and other environmental data to understand the object's benefits to cultivation activities.

Impact on the agri-food system

Compostable Altar underscores the power of art and technology in raising environmental awareness. The results of advanced biomaterial research were transformed into objects that are tangible and emotionally engaging. In this way, it has great demonstrative potential for both international and local settings, empowering food producers and consumers to embrace their positions in the circular economy and use waste as a launchpad for creative ideas.

Industry takeaway

Industry players like the SME involved could reap multiple benefits from the concept, the most direct one being lower expenses on waste disposal. Focusing on agricultural production, the biodegradable objects are a value-adding element to improve the farmland's fertility. The PPE has actually inspired additional data-driven investigations analyzing the relationship between biomaterials and soil in other geographical and climatic environments, which could help the sustainable agricultural sector build resilience.

Link to prototype for further uptake and development opportunities:

<https://heclab.eu/prototypes/1f60a5d5-39b8-4806-ac91-385941926bd3>

3.3 Crafts | Meats | AI

Focus area: Eating Culture

Prototype description

The experiment between artist Damian Alexandru and cured meat producer Capanna generated two main outcomes: first, a film outlining the traditional curing process and a scientific analysis of how it contributes to the flavor of cured ham; second, a book prototype on Capanna's history, leveraging AI assistance and a salt-based printing technique to reference the expertise of the SME.

Impact on the agri-food world

Crats | Meats | AI exemplifies how technology can help reinforce the value of food heritage and humanity. As traditional, artisanal production methods are at risk of being eliminated by industrial processes nowadays, the PPE interprets complex scientific findings in an artistic way, showcasing the superiority of slow curing and prompting consumers to forge an intellectual connection with the product beyond the gustatory elements.

Industry takeaway

Capanna considers the digital and printed prototypes valuable additions to its marketing and storytelling initiatives, as they can be displayed at various events and fairs to show the brand's commitment to craftsmanship. From an industrial perspective, the studies of the cured ham's chemical and molecular properties are measurable evidence affirming the product's Protected Designation of Origin (PDO) status, and have inspired new plans to conduct extensive laboratory research involving more members from the Parma Ham Consortium.

Link to prototype for further uptake and development opportunities:

<https://heclab.eu/prototypes/c280a9de-43d8-4138-86fc-e82fc7754a4a>

3.4 Open Source Harvesting Community

Focus area: Growing Conditions

Prototype description

Developed by artist Georg Kettele and mobile growing systems specialist Logiqs, Open Source Harvesting Community comprises, first, a digital interface that manages the agricultural activities within the controlled environment growing units (CEMs). The second part of the prototype, known as the Spider, is a monitoring device to track plant growth inside the CEMs.

Impact on the agri-food world

The most promising impact of the experiment is the possibility of breaking the barriers to partaking in agricultural activities. Whereas vertical farming is currently dominated by large-scale structures, its open-source nature allows individuals, especially those from the new generation, to assemble and operate the entire system themselves. The modular farms are also lightweight and compatible with basements, garages and a wide variety of indoor spaces. Cities populated with such agile agricultural infrastructure could become more self-sufficient and reduce food miles.

Industry takeaway

Logiqs noted that the PPE has aided its future research on identifying the best environment for plant growth and ways to maximize their nutritional value. The creation of the Spider allows it to measure the crops' conditions more precisely and reduce the cost per experiment.

Links to prototype for further uptake and development opportunities:

OpenCEM: Spider

<https://heclab.eu/prototypes/181d957f-d881-41b2-bd88-bb1848026acb>

OpenCEM: Controlled Environment Growing Unit

<https://heclab.eu/prototypes/86539a5c-bb75-4fdb-8f25-9a1c6730e0c6>

3.5 Phygital Seasoning

Focus area: Eating Culture

Prototype description

Phygital Seasoning was created by sensory food designer Laila Snevele and Sensebit, an SME that studies end-user behavior via data analysis. Their digital prototype is an Augmented Reality (AR) platform supported by scientific research on sensory perception. Users wearing a mixed-reality headset will experience visual overlays, soundscapes, and spatial illusions while tasting certain food items. The specifically designed ambient elements will alter their gustatory impressions of what they have eaten.

Impact on the agri-food world

The experiment advances the application of AI and digital technology to enrich our food experiences. On an educational level, the prototype is set to be shown publicly to let visitors cultivate a greater appreciation towards what they eat. Furthermore, the prototype's ability to influence taste perception could make healthier options more appealing, improving our collective dietary habits.

Industry takeaway

The PPE resulted in a prototype close to being ready for commercial deployment. Whilst food companies nowadays produce a variety of flavors around certain products, the AR platform could likewise satisfy consumers' different tastes and help businesses streamline their lineup, in turn lowering their production costs and food waste associated with diversification.

Link to prototype for further uptake and development opportunities:

<https://heclab.eu/prototypes/de5a4ba9-1587-4ec9-96ad-34f5de4a23a0>

3.6 Quiet Storm

Focus area: Growing Conditions

Prototype description

A joint effort between sound artist Samuel Van Ransbeeck and biotech company Protiberia, Quiet Storm's primary outcome consists of a music track played to *Tenebrio Molitor* (darkling beetle) to stimulate its fertility. The content of the track, and the timing of playing it, was determined by data on the insect's life cycle obtained from Protiberia's experiments.

Impact on the agri-food world

Through a demonstration event, Quiet Storm engaged the public in its efforts to popularize insects as a food item, establishing the beetles as a reliable source of protein with a small energy footprint. A walkthrough of the PPE and the beetles' cultivation process assured the attendants of their hygiene, while the food tasting session gave them reference points for incorporating the insects into their dining practices.

Industry takeaway

Scientifically speaking, the PPE has given Protiberia the necessary resources to study the biological properties of the beetles, not only their reactions to sounds, but also light and air vibration. Such insights are vital for improving the efficiency of the company's farming activities. In broader terms, by showcasing the value of insects, the experiment could also open up the field for prospective farmers.

Link to prototype for further uptake and development opportunities:

<https://heclab.eu/prototypes/d0e13c96-ce71-41e6-8227-f23df123a627>

3.7 Re.Source-Society

Focus area: Growing Conditions

Prototype description

Artist Nicola Rotta and urban farming SME Instagreen collaborated in the experiment that encompasses three indoor climate moderation systems, all of which are light on energy consumption: The Cooling Cactus draws outdoor air to lower the temperature of internal spaces while maintaining the humidity level. Conversely, the Living Lung dehumidifies indoor areas with air from outside while keeping the temperature constant. Lastly, the Basic Brain tracks internal and external climatic conditions and activates the two devices accordingly.

Impact on the agri-food world

The Cooling Cactus and Living Lung exemplify how design can combine the intelligence of natural ecosystems and digital technologies to achieve the common good. While they are low-tech climatic solutions created through biomimicry, the devices can evolve with the assistance of digital twin simulations. Their forms can be altered according to the projections to overcome the specific atmospheric conditions faced by farms from different terrains.

Industry takeaway

Re.Source-Society promises passive moderation of temperature and humidity at indoor farms and greenhouses. Farming practitioners were especially impressed by the possibility of altering either the temperature or humidity of a space without affecting the other. They were also intrigued by its ability to cool irrigation water at a demonstration event. Considering the frequent occurrence of heatwaves, it could offer immediate relief to an issue likely to persist in the near future.

Link to prototype for further uptake and development opportunities:

<https://heclab.eu/prototypes/730a57a6-d512-4627-b022-b3c716b8d1c8>

3.8 Sprouting Embryonic Futures

Focus area: Growing Conditions

Prototype description

Sprouting Embryonic Futures was developed by artist Haseeb Ahmed and Sprout Dynamics, an industrial sprouting technology developer and producer. Dedicated to the cultivation of edible sprouts, the experiment prototype is a sensor-driven installation that monitors and optimizes the environmental conditions (light, airflow, temperature, humidity etc.) of the crop's habitat. A built-in camera tracks its growth and produces footage that can be used for educational or artistic purposes.

Impact on the agri-food world

Sprouting Embryonic Futures puts equal emphasis on scientific research and public understanding. The addition of artistic elements to what is otherwise a biotechnology experiment allowed its target audience to not just learn about sprouting as a sustainable branch in agriculture, but also build a solid connection with it through first-hand experience. This was clearly illustrated by the demonstration event held at the end of the residency, where the sprouts were introduced to industry leaders and the general public through data visualization and food tasting, which appealed to the attendees' intellectual and emotional senses.

Industry takeaway

Sprout Dynamics states that working with the university mentors from Hungry EcoCities lends credibility to its work among investors and validates sprouts' potential as an agricultural product. Beyond that, the collaboration has sparked further discussion and publication projects about sprouting in the academic circles, paving the way for it to gain wider acceptance.

Link to prototype for further uptake and development opportunities:

<https://heclab.eu/prototypes/c34f7b21-ecce-45f6-aec3-874aae9eab60>

3.9 Straw Return

Focus area: Economic Value

Prototype description

New material artist Isaac Montè and biodegradable drinking straw maker Staramaki completed a PPE that gives value to the byproducts of wheat cultivation. Wheat stem defects from Staramaki's workshop were tested in over 100 AI-supported material experiments to create a variety of compostable products, from coasters to acoustic panels to bricks with load-bearing qualities.

Impact on the agri-food world

Considering the prominence of wheat in the global food system, Straw Return has immense potential in lowering agricultural waste. The fact that it generates value for the "leftover of the leftover" makes the new material a leading case study of circular design, encouraging food producers to leave no part of their crops behind.

Industry takeaway

Staramaki regards Straw Return as a tactile representation of its sustainability-oriented business. The prototypes were presented to various boutiques of an international coffee chain, in which the staff members reaffirmed their use value in enriching retail venues and helping the brand meet sustainability targets. Such experience has triggered further real-world collaboration opportunities and scaling-up activities.

Link to prototype for further uptake and development opportunities:

<https://heclab.eu/prototypes/3d0a9a08-2326-4ac9-9b10-53e29521b2a8>

3.10 Tomato Brain

Focus area: Knowledge Sharing

Prototype description

In Tomato Brain, artist Jo Kroese and tomato seed seller Axia Seeds established an AI system to enhance meeting efficiency. The three digital agents are equipped with specialized knowledge of the SME (sales, seed properties and cultivation method), and can automatically generate key insights based on the inputs of different meeting participants ahead of time to smoothen the decision-making process.

Impact on the agri-food world

While the prototype of Tomato Brain was conceived to aid the flow of confidential information within the seed company, the digital infrastructure can be repurposed to facilitate market-wide growth, especially in regions suffering from a lack of public agents in the dissemination of agricultural know-how. For instance, it has been deployed to aid knowledge sharing among farmers in Botswana and South Africa.

Industry takeaway

Axia Seeds states that the prototype has helped the company to make meetings more focused and productive. Disperse ideas and insights are quickly juxtaposed and processed, and as a result, decisions are made in less time.

Link to prototype for further uptake and development opportunities:

<https://heclab.eu/prototypes/7fc18422-33e7-4265-bb90-577c2d0b101c>

4. Lessons learned

We discovered the success story videos are a powerful tool for amplifying the outcome of the residency. On one hand, they can be shared directly with stakeholders operating in the relevant fields of the experiments to inspire potential uptake. On the other hand, they have been, and will continue to be, key media assets in project demonstrations, exhibitions and industry fairs to convey the importance of digital innovation to agricultural and culinary spheres. Both scenarios carry substantial value for all the artists, SMEs and consortium partners involved.

More specifically, collaboration with artists proved highly valuable in helping SMEs reframe the challenges they are facing and achieve ground-breaking innovation beyond incremental improvements. Artistic perspectives encouraged the questioning of established assumptions and opened up new directions for technological, social, and business development.

Despite differences in languages and working methods, successful collaborations were built on shared curiosity and experimentation. Prototyping played a key role in bridging artistic exploration and industrial applicability, making ideas tangible and enabling real-world testing.

The experiments showed that artistic value and business value can reinforce each other. While artists strengthened storytelling, user engagement, and public visibility, SMEs ensured feasibility, scalability, and market relevance. Real-world testing further built trust and clarified impact.

Finally, the collaborations often generated effects beyond the initial prototypes, influencing organizational thinking, research agendas, and future innovation strategies within SMEs.



**Funded by
the European Union**

S + T + ARTS
SCIENCE + TECHNOLOGY + ARTS

Horizon Europe Research and Innovation Action – This Hungry EcoCities project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement 101069990.

This publication (communication) reflects the views only of the author(s), and the European Commission cannot be held responsible for any use which may be made of the information contained therein.

The project is part of the S+T+ARTS programme. S+T+ARTS is an initiative of the European Commission to bring out new forms of innovation at the nexus of arts, science and technology.

Hungry EcoCities aims to explore one of the most pressing challenges of our times: the need for a more healthy, sustainable, responsible, and affordable agri-food system for all enabled by AI. More info: starts.eu/hungryecocities