

20 State of the trends 25 Shaping the future of food

Discover the trends behind the upcoming food revolution



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HELLO,

We are DigitalFoodLab, and we bring you this report to share our vision of the trends shaping the future of food.

- ⚙ DigitalFoodLab is an **insight and strategy consultancy** on the future of food.
- ⚙ Founded by two entrepreneurs, Jérémie and Matthieu, DigitalFoodLab **works with leading companies** to help them **define their innovation ecosystem** and set up the most efficient **innovation strategies** to build the future of food.
- ⚙ We bring to the table a unique blend of expertise, entrepreneurship, investment mindset and corporate culture. It goes far beyond the experience of our team as it leverages our **global network of experts.**



Welcome to the future of food!

First of all, we thank you for reading this report. This is the sixth edition of our report on trends shaping the future of food. Each year, we gather all our knowledge on innovation all along the food value chain, from seeds to food products to grocery stores to health.

Innovation is coming from researchers and large corporations and, above all, from startups. Indeed, the entrepreneurial mindset is more agile and enables more risky ventures. While the food industry was long regarded as not disruptive enough for venture capital investments, things have changed. Even in the current context of tech investments decline, agriculture and food startups are getting heavily funded to reinvent how we grow food, shop and cook it.

From our analysis, we have identified **31 trends shaping the future of food**. We have **grouped them into six megatrends**: the resilient farm, sustainable ingredients, food as medicine, the smart supply chain, digital retail, and food automation.

Compared to last year's edition, even if we added new trends that emerged during the year, the global evolution is less dramatic than it was previously. This is a visible consequence of the current lack of appetite of investors (and somewhat of large companies) to invest in long-term and unproven trends.

A pipeline full of innovation to lead the food revolution

While the rhythm of innovation is slowing down in many categories, it is not always a sign of an imminent end or an eventual bubble exploding. It is instead a rationalisation of some excesses and elsewhere a sign of maturity. New challenges, such as scaling up these new technologies at an affordable price, are appearing, but again, they are also proof that in most segments of the value chain, things are moving forward.

Piece by piece, all the elements of the upcoming food revolution are taking shape. If we look at the big picture (precisely what we are trying to do with this report), it should lead us to a new stage where food is, at the same time, healthier for humans, animals and the planet.

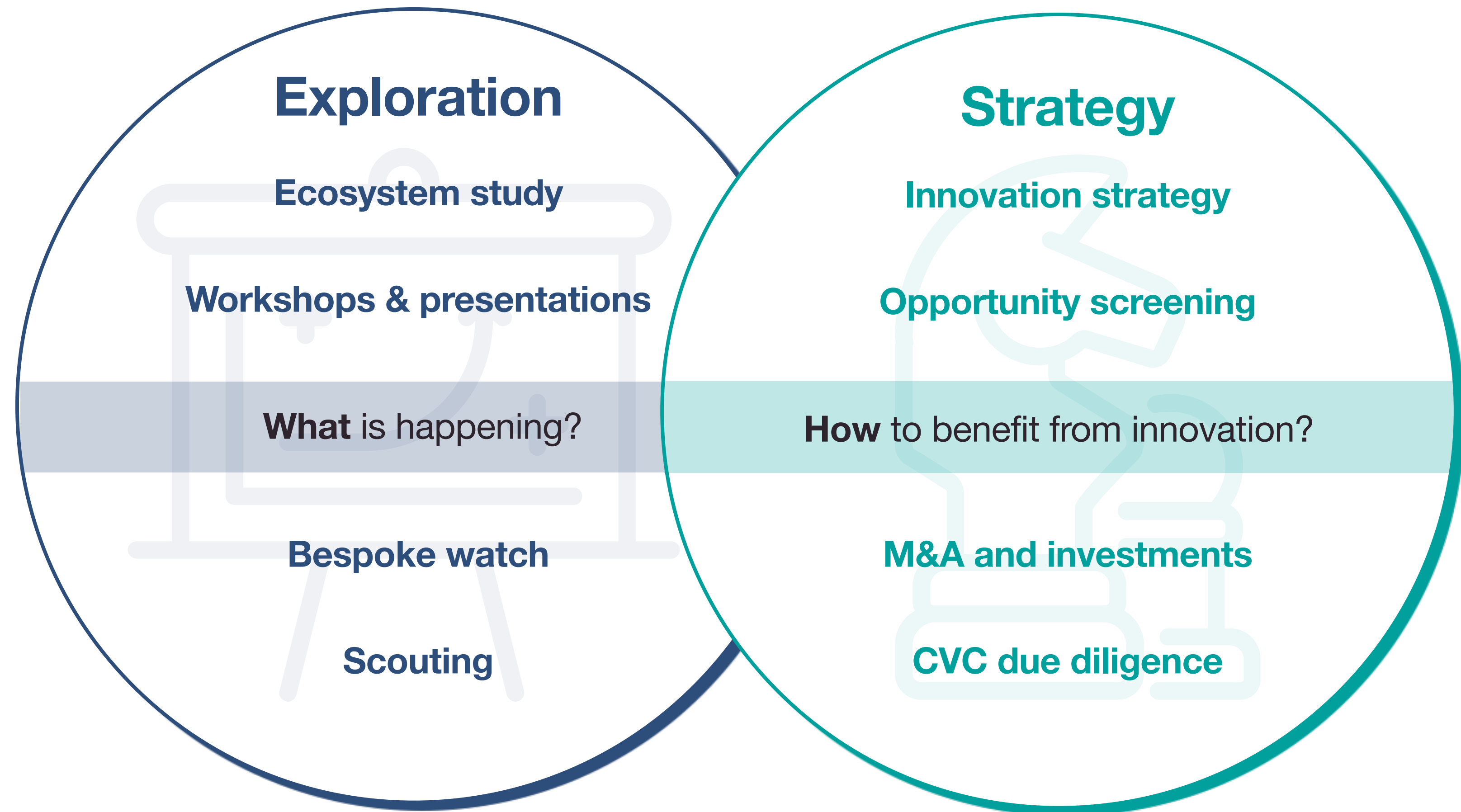


DigitalFoodLab

Insight and strategy consulting to help you be part of the future of food

DigitalFoodLab works with a broad array of clients (food companies, retailers, banks, investors) on consulting missions to help them:

- 1 - explore innovation ecosystems
- 2 - define their innovation strategy
- 3 - identify the right partners and targets



50+
clients

Cargill

METRO

DANONE
ONE PLANET. ONE HEALTH

bel
for all for good

Aj
AJINOMOTO

L'ORÉAL

Nestlé

Limagrain
de la terre à la vie

Coca-Cola

MSCI

Carrefour

DigitalFoodLab

Our territories of exploration

Global approach

We look for innovation all over the world



Through our network of partners, databases, and expertise, we can source innovation globally.

Innovation from startups to large corporations

We look for innovation where it happens: startups, corporations, and research labs.

Among our key indicators are regulation, funding, and new products.

Agriculture, food, and beyond



Some examples: alternative proteins, functional ingredients, agtech, decarbonisation, new brands, digital retail/restaurant, healthy ageing.

What is FoodTech?

DigitalFoodLab's definition is: “**FoodTech** is the ecosystem made up of all the agrifood entrepreneurs and startups (from production to distribution) innovating in terms of products, distribution, marketing or business model.”

Foodservice: startups reinventing the hospitality industry. They improve the management of out-of-home businesses today. They also create the conditions for the restaurant of the future with robotics and cloud kitchens.

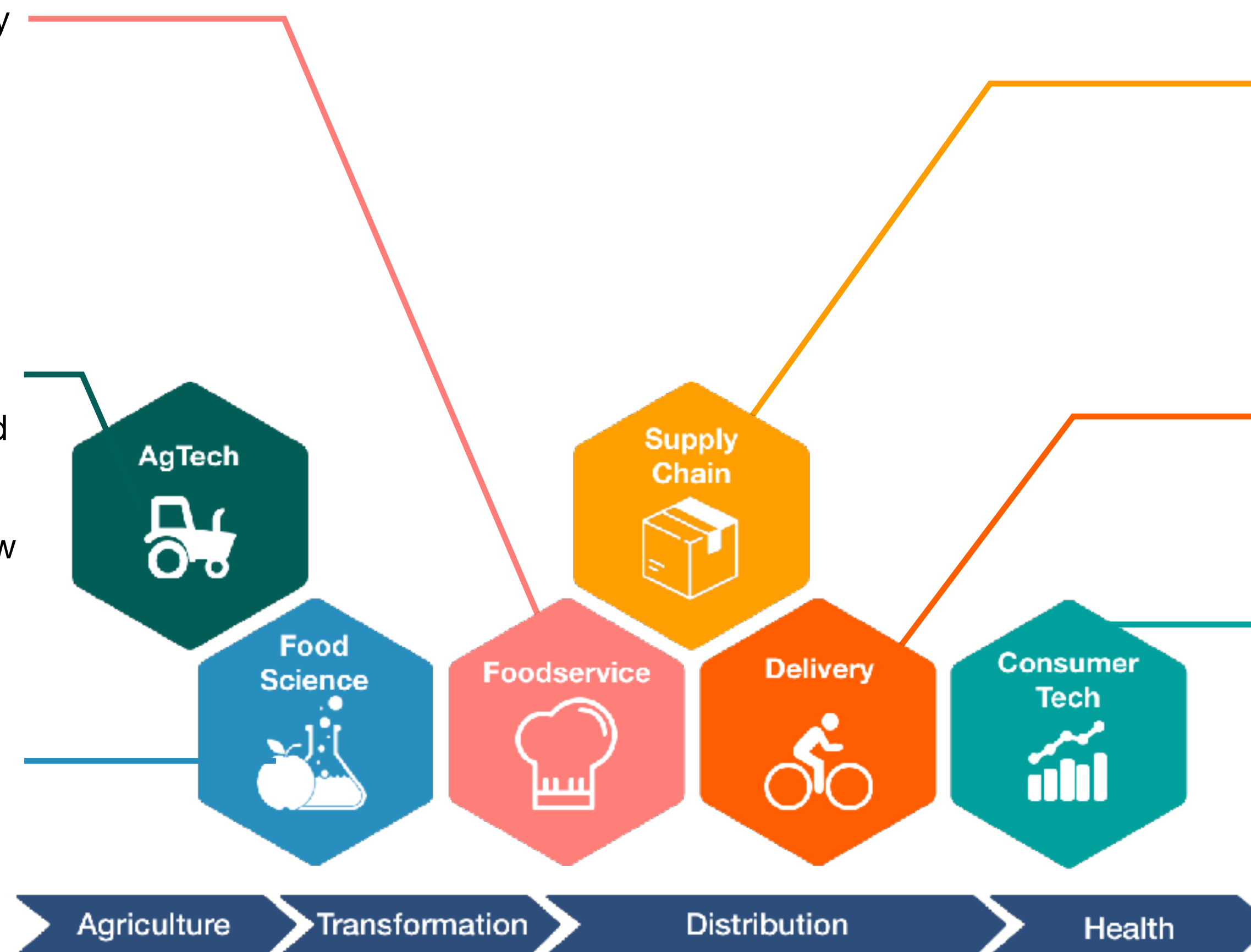
AgTech: startups disrupting agriculture. They develop solutions to improve farming output and quality using drones, sensors and farm management software. AgTech is also about new farm products, next-generation farms and urban farming.

Food science: startups developing new ingredients and food products.

Supply chain: startups developing solutions for the food supply chain and food retail industry, from digitalisation to automation.

Delivery: startups developing services to order and deliver groceries and meals.

Consumer tech: startups developing services and devices to help consumers cook, identify the best foods for them and help them reach their personal goals.





Why is FoodTech the **future of agriculture and food?**



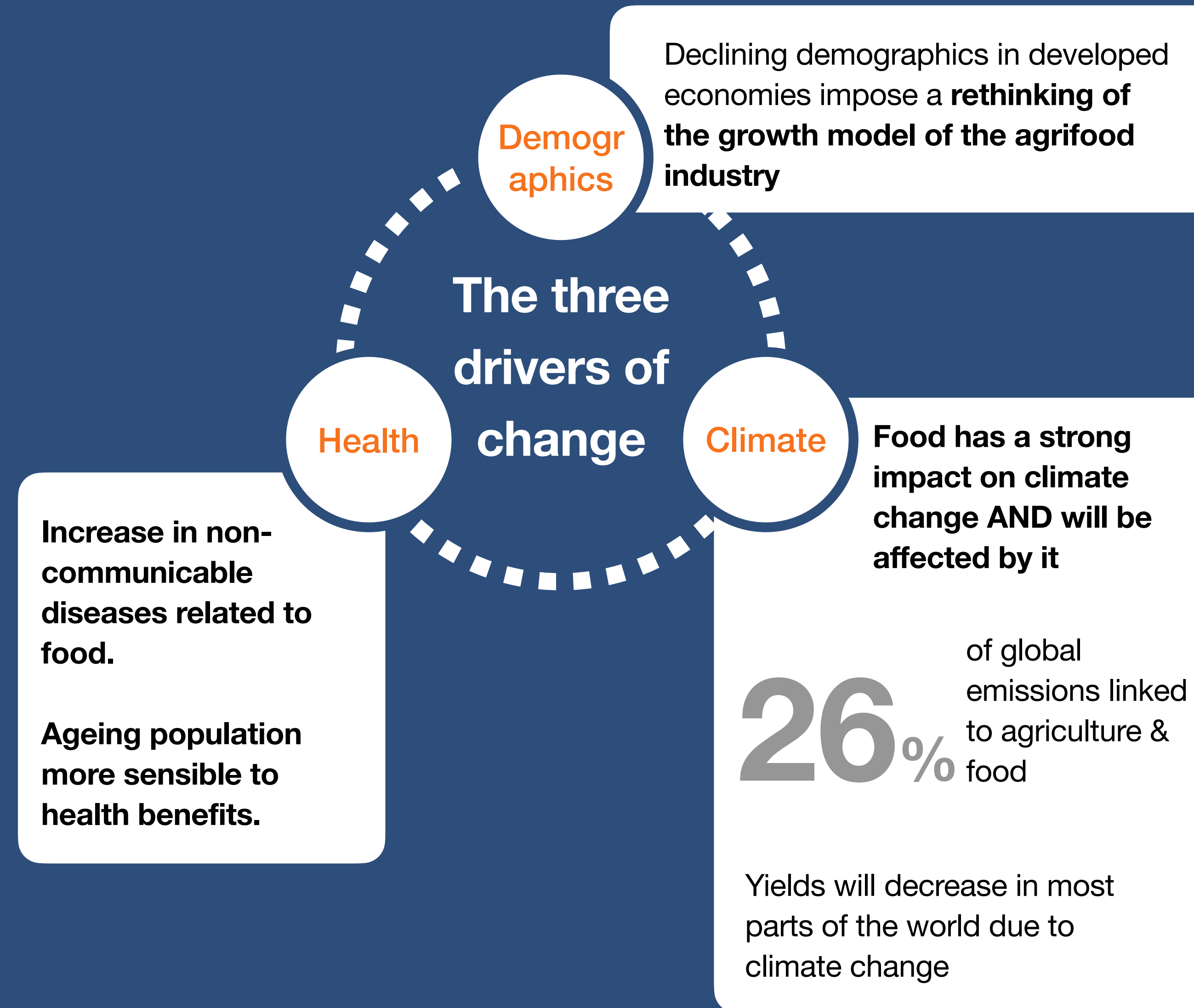
Why does our food system need a revolution?

While we are used to it, our current food system is relatively recent. It results from the post-war revolution in chemicals used in agriculture and downstream industrialisation. This brought significant benefits, such as reliable food supply chains, cheap food products, and reduced famine risks.

Today, this system is ready for a new revolution as it has become unsustainable due to its threefold impact on:

1 - Climate change as:

- ⚙️ Food, especially animal farming, is responsible for a quarter to a third of the world's emissions.
- ⚙️ Global warming and extreme climate events are increasingly disrupting supply chains.



Why does our food system need a revolution?

2 - Demographics:

- ❖ Declining demographics: our current food system was built on access to cheap labour for agriculture (notably through immigration), food manufacturing, and foodservice. Rarer and more expensive labour will require accelerated automation, a process that took other industries decades.
- ❖ A change in growth models: the population increase has driven the food industry's growth. However, changing demographics and a global population peaking sooner than anticipated will force the industry to rethink its growth model. New models focusing on products with added benefits, personalisation, and services will be required.

3 - Health: an ageing population and the rise of non-communicable diseases (such as diabetes, obesity, and inflammatory diseases) are creating growing regulatory and consumer pressures on the food industry to change its practices.



The enablers of change

The elements that make this new food revolution possible now

- ⚙️ **Maturing technologies developed outside of food:** multiple technologies developed for other applications are now used in agriculture and food. Among the most important are synthetic biology, genetic engineering, artificial intelligence and robotics.
- ⚙️ **Energy transition and the foreseeable decline in the cost of clean energy:**
 - ⚙️ First, the current decline in the price of clean energy is a significant enabler of some of the technologies mentioned above (notably synthetic biology and indoor farming).
 - ⚙️ Also, the energy transition, with the steep decline in the cost of solar panels or electric vehicles supported by regulation and massive public and private investments, inspires what could be done to transition to a new agricultural and food model.
- ⚙️ **Regulations that support the transition to a new food system** and create incentives for healthier food products (e.g., a tax on sugary products) and more sustainable practices (such as a meat tax) are now increasingly being discussed and implemented.



Aligned with 9 SDGs

The food revolution is only part of a larger goal to make the world more sustainable. At least nine of the 17 United Nations Sustainable Development Goals (SDGs) refer to areas where some or all of the improvements required are linked to the agrifood value chain.

Why FoodTech is the future of food

Like many other industries, agrifood businesses have externalised long-term innovation to research centres, with poor results in terms of applicable innovation. Startups, however, are leveraging this research and are taking risks to innovate. **That's why, in a word, foodtech is the future of food!**



Startups alone won't have access to enough capital to scale these innovations to their full potential. **For the main part, we expect incumbent leaders to manage this transition through partnerships, investments and acquisitions.** In the coming years, great divergences will appear between today's leaders as we'll see the results of today's innovation strategies (or lack of in some instances).

A manifesto for the future of food

Six principles guiding DigitalFoodLab's vision for food

- ⚙️ **Food will look and taste the same, but its composition will radically differ.** Whether through fermentation, cultivated ingredients, plant-based innovations, or a combination of the above, the shift will make food production more efficient, sustainable, and accessible. Consumers won't notice the difference, but the planet and our health will.
- ⚙️ **Technology is only an enabler, not a goal in itself.**
- ⚙️ **You can't change consumer food behaviours from the top.** Consumers don't respond well when you tell them what they should do. Instead, let's focus on creating better products.
- ⚙️ **Food needs to become a service that is personalised.** The future of food is about personalisation. To get there, food products must be blended with services such as recommendations and tests.
- ⚙️ **The agrifood value chain must improve for humans, the planet, and animals.** While the sustainability imperative is evident, we must always prioritise the consumer's needs and long-term health. We are also convinced that animal welfare will become a major topic in the coming decades.
- ⚙️ **Startups and innovation are paving the way to the future of food, but large agrifood companies will scale it.**



Too long to read? Have a presentation

100+ high-quality talks already delivered by DigitalFoodLab

Trends discovery presentation

- Based on this report, we create a presentation focused on your industry and how the different trends can create opportunities and threats.
- We notably include top examples of startups in your industry and how your competitors work with them.

Format: 30min executive presentations or 2h of in-depth presentations & discussions

Bespoke presentations, panels and workshops

- We can create curated presentations, panels, and workshops focused on your needs.
- Our formats generally include an expert presentation by DigitalFoodLab, panels or pitches from entrepreneurs, and a discussion to see how to immediately leverage the information for your company.





**What are the
megatrends** shaping the
future of food (and more)?



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What is a trend, and how does it evolve?

A « trend » combines an ecosystem of startups, a set of technologies or new business models, and B2B or B2C needs.

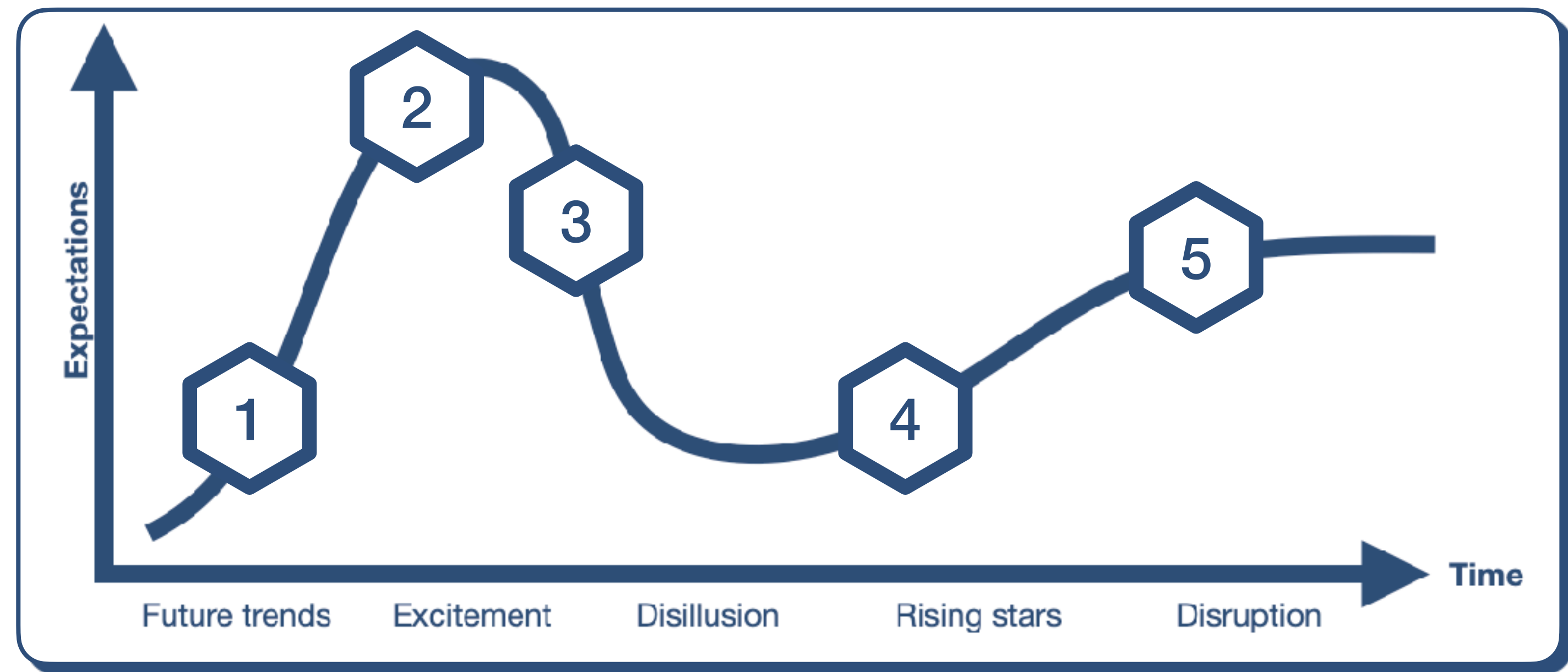
1 - **A new technology appears**, starts getting some attention, and eventually becomes a « trend ».

2 - **Excitement builds up**: At some point, the technology starts to deliver some initial results and/or gains traction from investors, corporations, consumers...

3 - **The initial excitement fades** as either the technologies or business models appear to work at scale.

4 - **Trends (eventually) re-emerge with legacy or new ventures** to find a way to address these challenges.

5 - **We enter the productivity stage**, where the trend is now becoming something obvious and seen by every observer.



How do we position trends?

To position trends, we use our expertise and discussions with entrepreneurs, investors, and large companies. We combine this « soft » information with « hard » data, such as investments and the number of startups. More precisely, we gather four categories of elements:

- ⚙ A view of **the strength of the ecosystem** focused on investments and the number of startups. We also look at these elements over time to see if they are going up or down and at what speed.
- ⚙ A similar quantitative and qualitative approach to **corporate involvement** and its evolution
- ⚙ **Tech maturity**
- ⚙ **Market readiness**, including the « market pull » (is there an actual demand?) and the regulatory context

With all this information, we can position trends on the curve. This explains why some trends may spend years blocked at the same spot as if waiting for something to happen, while others can jump from one spot to another in a few months. It is then essential to understand that the position on the curve is not predictive of the speed of evolution.



A warning about trends

This report provides a general overview of the main trends shaping the future of the agrifood value chain at a global level. We highly recommend having an industry and geographic-specific view for any strategic decision. Here are two examples of such differences when you dive into a specific topic:

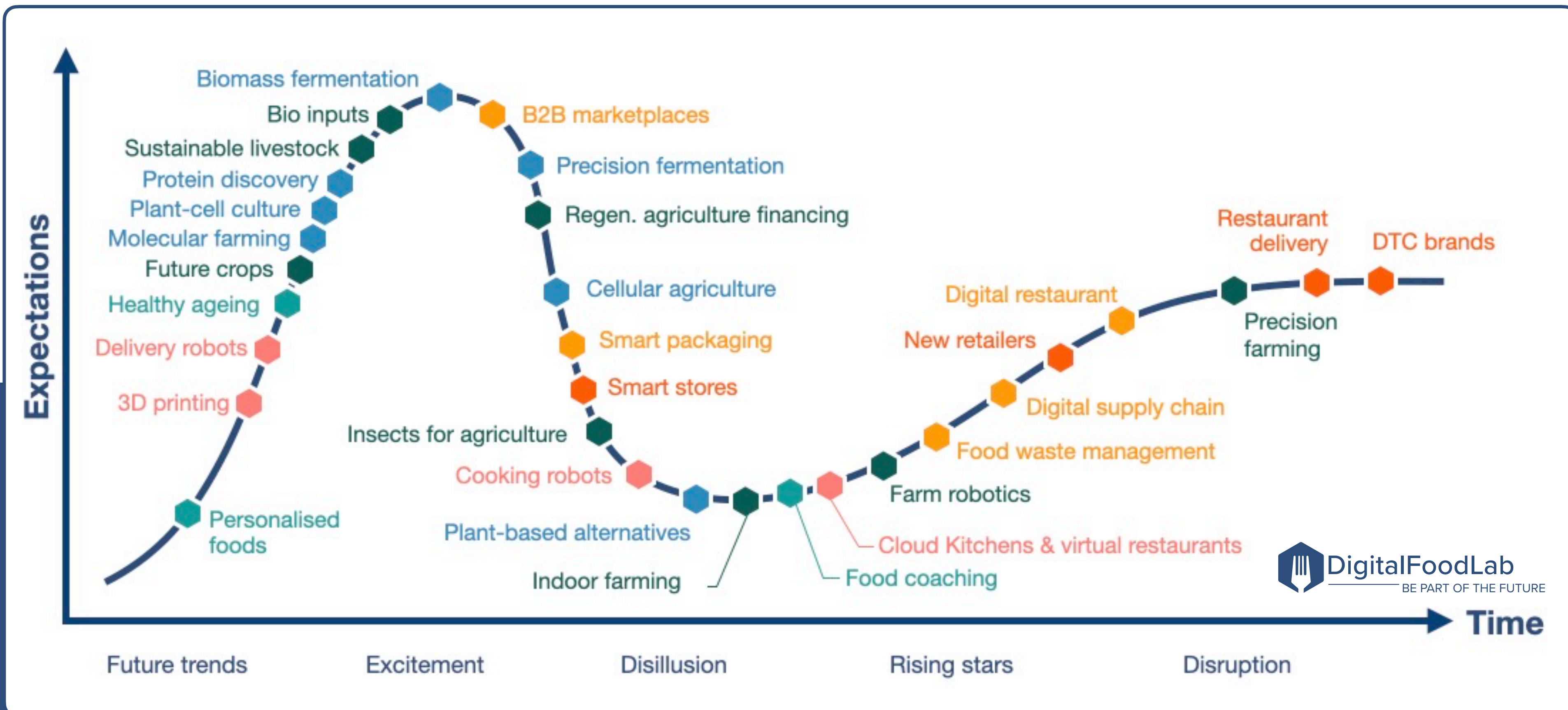
- ⚙️ **A single technology can have multiple applications with various maturity levels:** this is the case of precision fermentation used for dairy proteins, sweeteners, or materials. The molecules produced in these industries (caseins or whey on one side, brazzein or thaumatin on the other) would be placed on the curve differently.
- ⚙️ **Some trends are more advanced in specific geographies:** cellular agriculture or food robotics would be at very different positions in Europe, Asia, or North America due to regulations and different market pulls.

In a word, consider working on your company or industry-focused trend curve (and give us a call to do it!).



Trends shaping the future of food

Six megatrends and 31 trends with a sharp evolution from a year ago



Megatrends



Sustainable ingredients



Food as medicine



Smart supply chain



Resilient farm



Digital retail



Food Automation

Four groups of trends

A good strategy should be to even your bets on each of these groups.

Hype trends

What everybody is talking about right now. If it is indispensable to have a vision on these topics, it is also extremely risky to engage its efforts only on this set of trends.

Obvious trends

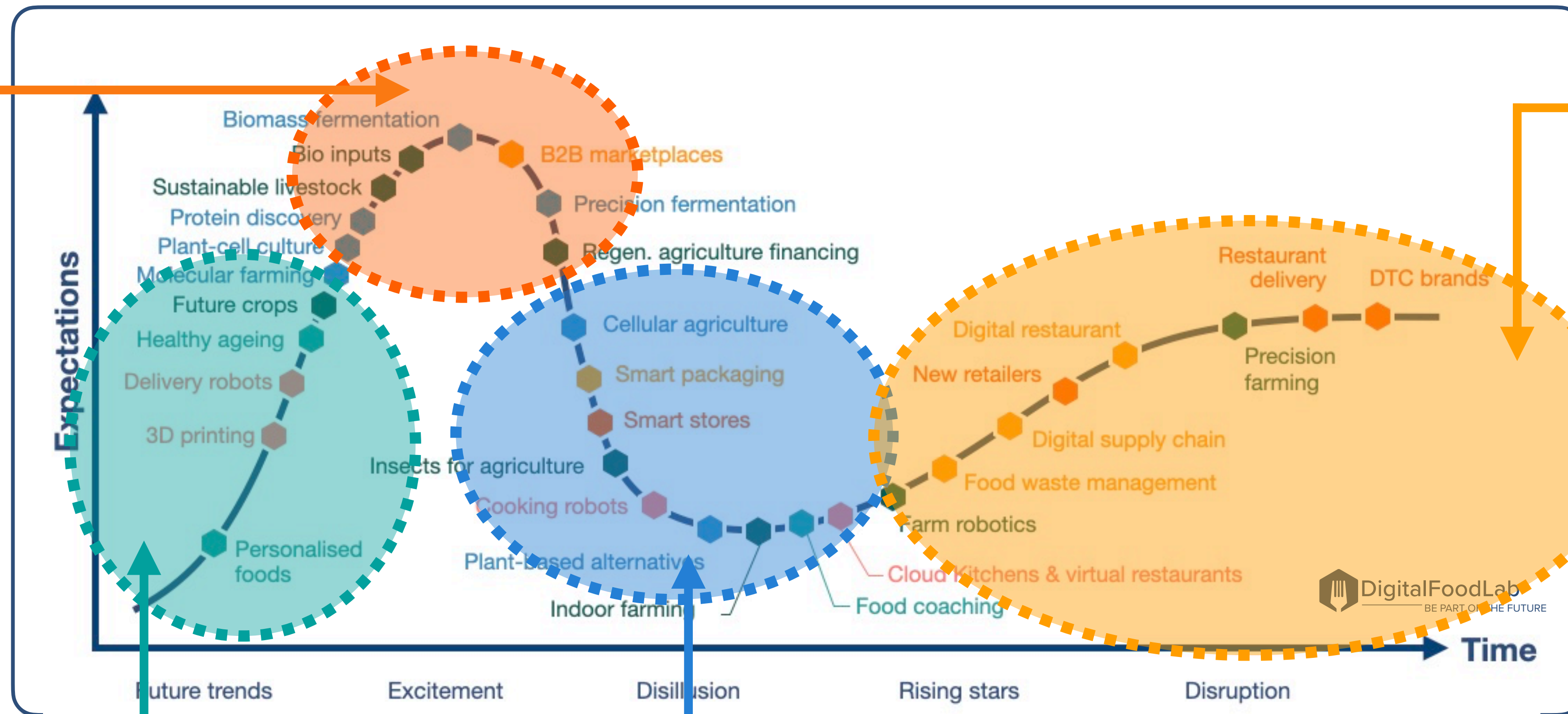
Trends which are re-emerging, with viable business models and technical approaches. It is necessary to have a vision on these topics that goes beyond open innovation and integrates R&D and marketing... as they will soon impact the business.

Emerging trends

Trends where the innovation ecosystems are still small and technologies mostly unproven. Bringing the ability to do proof of concepts can make all the difference.

Disliked trends

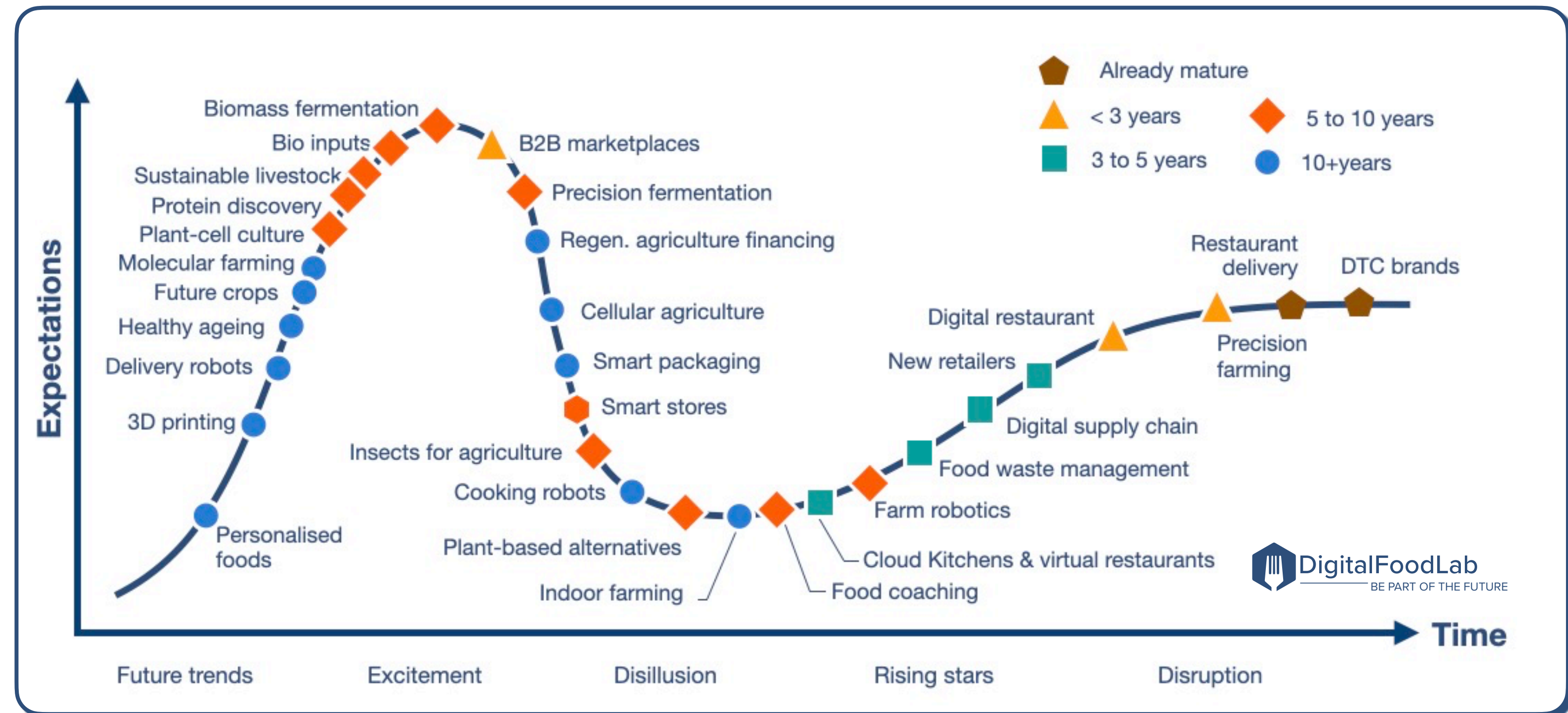
Trends that are past favourites and now are mostly commented negatively on. Identifying the gems here can be highly rewarding.



When will these trends have an impact?

These estimations should be understood as an **average between the minimum and the maximum time for each trend to reach maturity.**

The predictions are based on our estimation of when the trends will reach **maturity** (when 20 to 30% of the market has adopted them).



FoodTech beyond food

From materials to cosmetics

While most of the technologies used by FoodTech players originated from other categories, such as biotech, they can be applied elsewhere. When a new technology such as synthetic biology is applied to food, the main challenge is to reach the required scale while lowering the price. In turn, these « powered up » technologies can be used in areas such as:

- ⬢ Materials, notably high-end materials such as leather alternatives being created through cellular agriculture or biomass fermentation.
- ⬢ Cosmetics with
 - ⬢ alternative protein or healthy ageing technologies used to create new « recipes ».
 - ⬢ Indoor farming to strengthen supply chains
- ⬢ Pharma and biotech, which can benefit from the alternative protein technologies being scaled up for treatment applications.



Bespoke innovation curve

Use case #1

Project for a global ingredient company looking for a clear view of the agrifood trends specific to its business and geographies.

What we did:

- Information sharing to understand better the client's capabilities, core values and long-term strategy.
- From our expertise, the shared information, and our network of startups, we identified the 20 opportunities and threats created by the innovation ecosystem that creates the client’s innovation ecosystem.
- Analysis of these trends in the client’s context and then creation of the innovation curve.
- Workshops to present the results to the different stakeholders in the company.

Results:

- A clear map of the client’s innovation ecosystem that can be leveraged internally and used to make decisions on which opportunities to prioritise.

This report gives a general overview of the trends shaping the future of food. The work for our client was bespoke to its business activities and many industry-specific trends were added).

Some of the frameworks used:

Key startups

Biomass fermentation

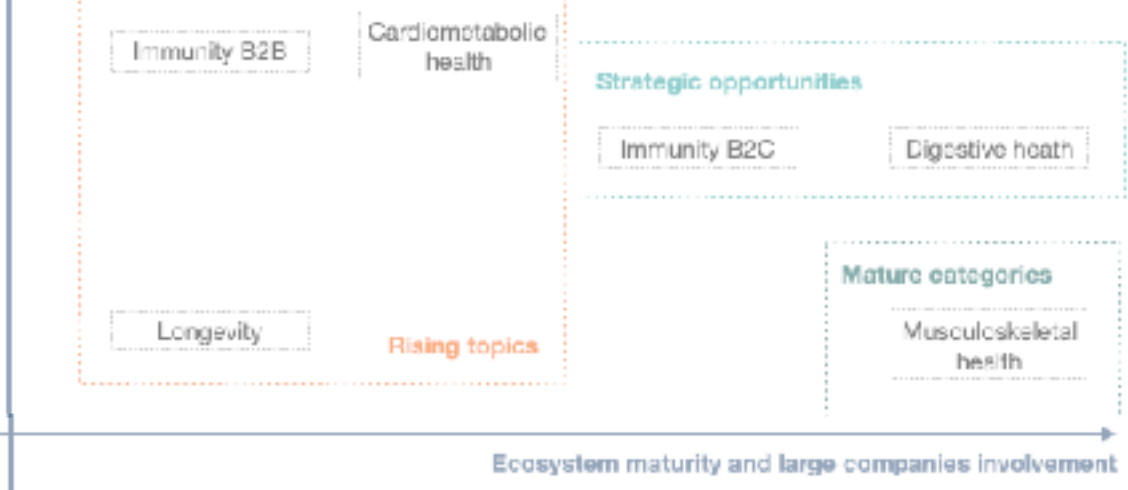
Key startups

- Fynd** Nature's Fynd is a US-based startup that produces sustainable protein from a microbe found in geothermal springs.
- Solar Foods** Solar Foods is a Finnish company that produces protein from air and electricity, using carbon dioxide to feed microorganisms.
- Superbloom Food** Superbloom Food is a US-based startup which develops probiotics for human and animal consumption. It partners with BBL and Doherty.

Trends analysis



TRL & Maturity analysis



Category	Immunity B2B	Cardiometabolic health	Immunity B2C	Digestive health
Strategic opportunities				
Mature categories				
Rising topics				

Ecosystem maturity and large companies involvement



Megatrend #1: **Sustainable ingredients**



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Sustainable ingredients

What are we talking about?

Sustainable ingredients is the ecosystem of startups using new approaches to create ingredients and products that answer the double « food sustainability imperative »: being better for the planet and our health.

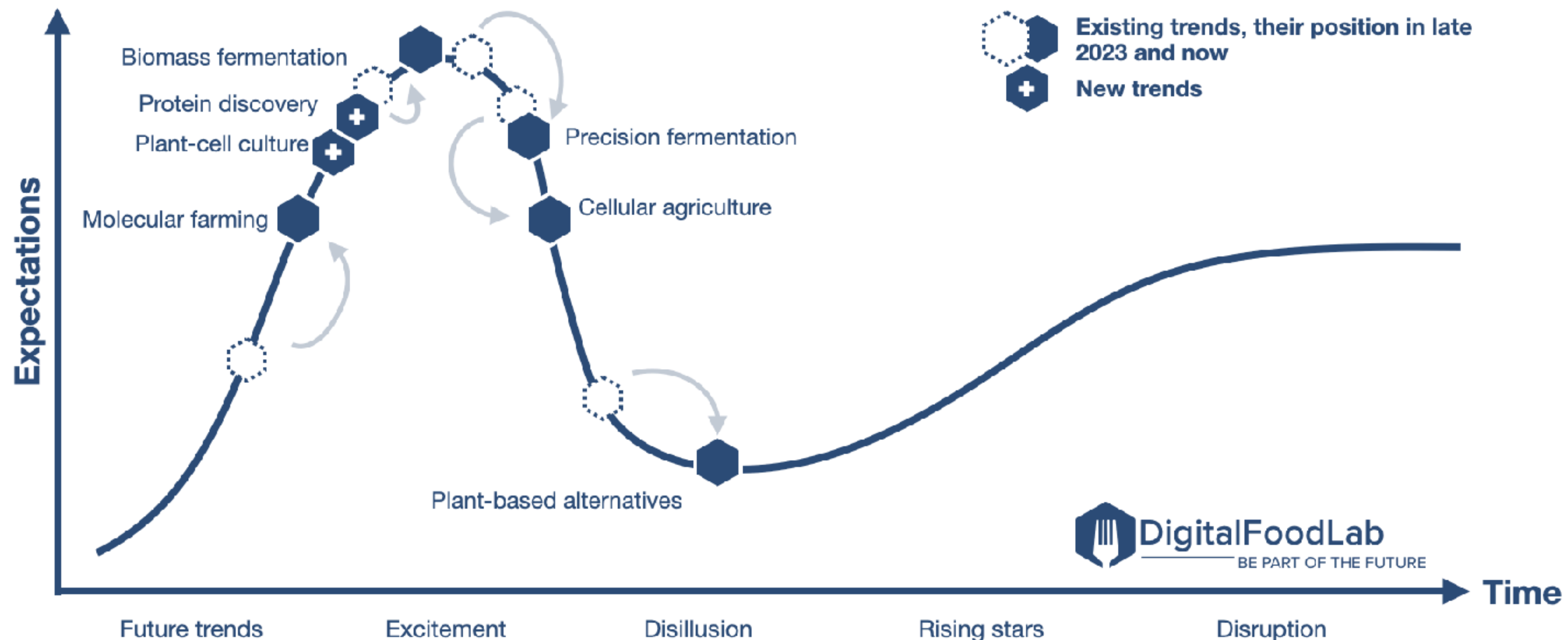
This ecosystem attracted thousands of entrepreneurs and billions of euros in investments while being a source of intense debate. Indeed, the responsibility of our food system for the climate (about a quarter of all emissions, primarily due to animal proteins) and our health still needs to be widely understood. While we mapped seven approaches to sustainable ingredients, the question isn't about which is the « best ». Some may be more suitable for specific ingredients, while we have a growing conviction that the future will be hybrid with products combining ingredients from different sources.

For this year's report, we have « updated » the megatrend name from alternative proteins to sustainable ingredients. This change reflects a strong evolution beyond meat and dairy alternatives toward other products, such as sugar, coffee, or chocolate.



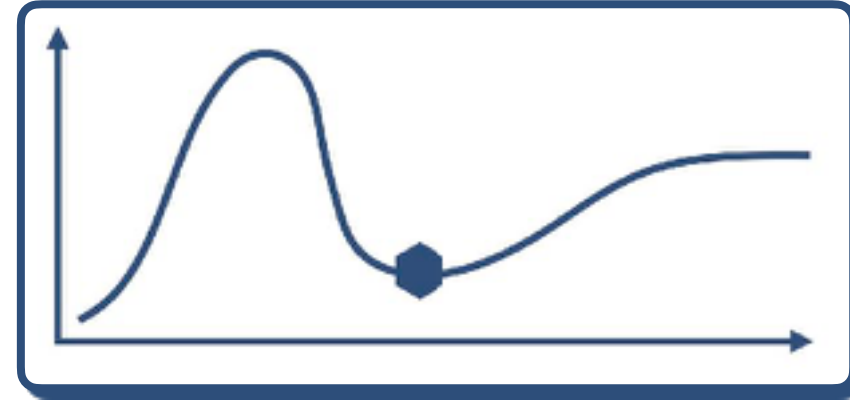
Seven approaches which are as much building blocks for a sustainable future of food

This year, we are adding two new trends, one linked to AI with protein discovery and plant-cell culture. We also have two very significant evolutions beyond the trends. First, there is a switch from a focus on protein towards ingredients. Then, there is less competition between the technologies as they appear complementary to build a future that increasingly seems to be hybrid.



Plant-based

On the verge of a come back?



Plant-based refers to using plants to create alternatives to existing products, mainly meat and dairy, but also alternatives to other plants with a limited supply or a high environmental impact (such as coffee and cacao).

State of the ecosystem in 2025 & analysis: after complicated years in terms of sales and funding, there is some light at the end of the tunnel. Volumes are increasing in many categories and geographies while solutions are being developed to face the multiple challenges that plant-based faces:

- Cleaner labels, new formulations and ingredients are being developed.
- Tastier and « meatier » textures, notably focused on whole cuts, are emerging ([Juicy Marbles](#), Slovenia).
- Established companies and startups are now grouping their efforts to communicate better to decision-makers and the public.

In the short term, dairy alternatives and new cacao/coffee alternatives seem to have the most room for growth.




Plant-based

We are only at the beginning of the story

As shown in this table, the road ahead remains challenging. The evolution of this industry will also largely depend on the support it receives from regulators and decision-makers. Promoting plant-based can help reach climate goals and also promote better health outcomes. However, in many countries, these promises seem quite distant compared to the power of farmer lobbies.

The future of plant-based meat alternatives



Challenges	Price & Scale	Taste & Texture	Nutrition & health claims	Acceptability		
				Asia	N.America	Europe
Short-term solutions <i>1-2 years</i>	Marginal improvement	Improvement	No improvement	Marginal improvement	No improvement	No improvement
Medium-term solutions <i>2-5 years</i>	Improvement	Significant improvement	Marginal improvement	Improvement	Marginal improvement	No improvement
Long-term solutions <i>5+ years</i>	Significant improvement	Significant improvement	Significant improvement	Significant improvement	Improvement	No improvement

Significant improvement

Improvement

Marginal improvement

No improvement

Precision fermentation

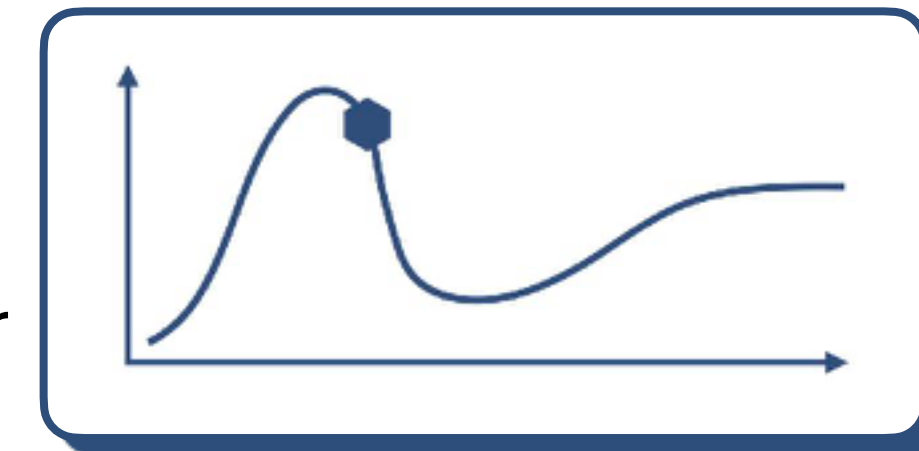
Rising doubts on how to scale and the most suitable applications

Precision fermentation (PF) is a synthetic biology technology leveraging engineered microorganisms (yeasts and fungi notably) to produce specific proteins through fermentation.

Applications: most startups focus on **dairy proteins** such as whey (Perfect Day, US) and caseins (Standing Ovation, FR) for cheese applications. **Other fields are being explored, such as egg proteins** (Every, US) or sugar alternatives. Also, some players are reorienting their efforts toward **healthy ageing ingredients**, notably lactoferrin or HMOs.

On the positive side:

- ⚙ Large Food companies are venturing into this space through partnerships (Unilever, BEL, Nestlé) or directly themselves by developing or co-developing their own processes
- ⚙ An impressive number of startups have received regulatory approval in the US, and other regions are closer to approving them.



Among the **multiple challenges ahead, scalability stands out:**

- ⚙ Few players, if any, have demonstrated an ability to scale their production profitably.
- ⚙ Most companies rely on contract manufacturers to produce for them. Still, there will be a shortage of capabilities, and we don't see the relevant funding being invested to create an adequate production level.

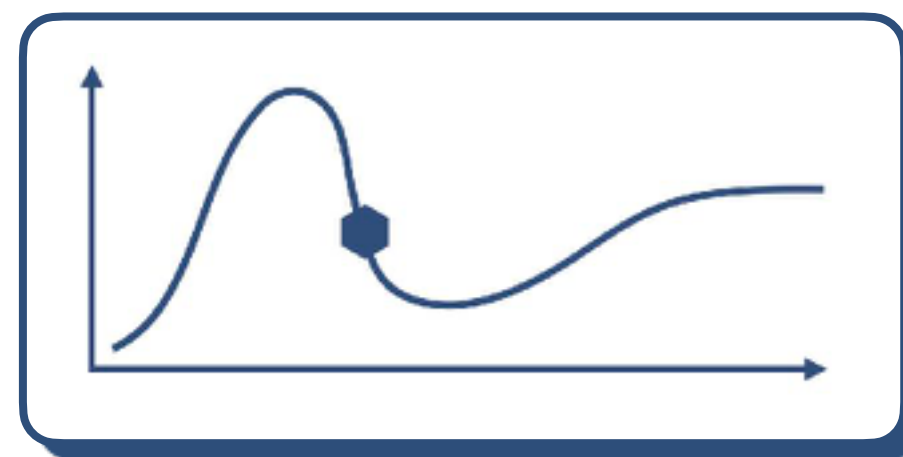
Cellular agriculture

A technology in the middle of an existential crisis

The principles behind cellular agriculture are simple to state but much harder to apply profitably at scale: cells are cultured to re-create proteins, fats, and tissues. This can lead to many applications, such as meat, seafood, dairy products, and ingredients.

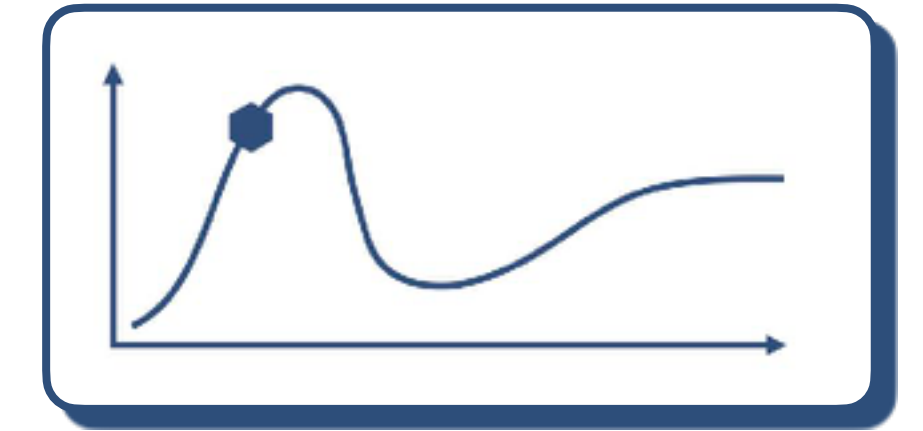
Applications: most startups are still working on animal protein alternatives, mostly beef ([Aleph Farms](#), IS), pork, poultry ([Gourmey](#), FR), fat, and fish.

State of the ecosystem in 2025 & analysis: funding has dried up quite noticeably in the past couple of years. Many ventures have shut down as doubts are rising about their ability to scale production profitably.



Plant-cell culture

Answering the challenge our breakfast's rising cost (and more)



Plant-cell culture is the application of cellular agriculture to plant cells. Compared to animal cells, plant cells are much less challenging regarding the feed (or medium) they need to grow and their scalability, making the process economically viable in the short term.

Applications: among the many plants being considered, coffee and cacao ([Food Brewer](#), Switzerland) are getting most of the attention as their prices have risen exponentially in recent years. The technology can also be applied to valuable ingredients such as vanilla.

State of the ecosystem in 2025 & analysis: while still relatively small, this ecosystem is now noticeable enough to constitute a trend. Numerous new ventures, helped by increasing funding and partnerships with industry leaders, are pushing it forward. The first products could land as soon as 2026.



Biomass fermentation

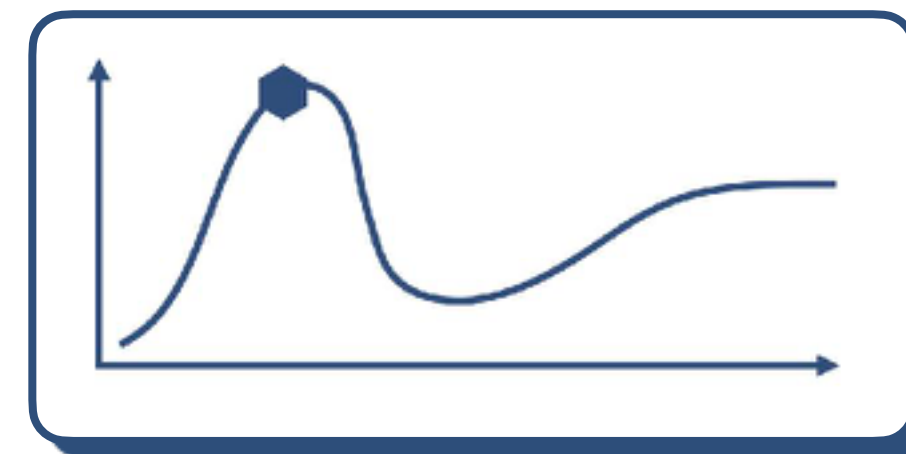
A widening array of technologies and ingredients

Biomass fermentation is about identifying natural microorganisms that have the property to create an exceptional amount of high-quality proteins through fermentation.

Applications: we can split this ecosystem into two categories:

- Startups leveraging the capability of a microorganism to produce large quantities of proteins, which can be used as an ingredient to create alternatives to animal products (Meati, USA) or as a functional ingredient (Superbrewed, USA).
- Startups using carbon dioxide to feed a microorganism and create proteins or amino acids powder via fermentation (Solar Foods, Finland).

State of the ecosystem in 2025 & analysis: this ecosystem is getting wider even if the first wave of mycoprotein players is having difficulty seducing consumers. There will be three areas to follow in 2025. First, the postbiotics and other proteins with benefits. Second, the CO₂ to protein space is moving forward fast with regulatory updates and partnerships. Finally, the solid-state fermentation category, which is promising in terms of costs and scale.

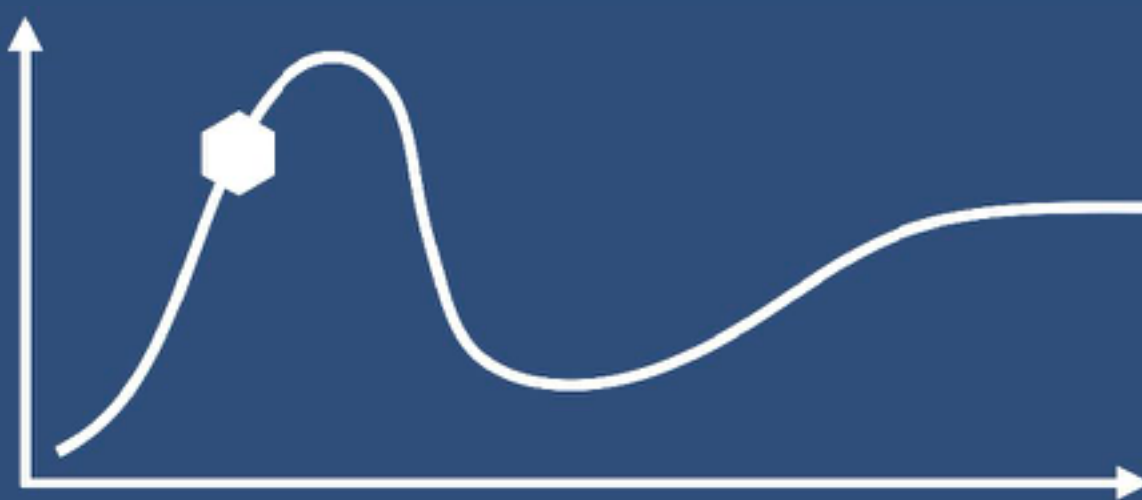


Molecular farming

Plants as scalable bioreactors

Molecular farming is using genetically modified plants to make them produce specific ingredients (hence turning plants into bioreactors).

Compared with other technologies, its main benefit is its theoretical scalability. Indeed, once the seed has been engineered, the only barrier is agricultural output.



Applications: this young technology can be applied in multiple fields, such as dairy proteins (Alpine Bio, US), meat (Moolec), or to produce growth factors used in cellular agriculture.

State of the ecosystem in 2025 & analysis: molecular farming is receiving much more attention, with multiple new startups being founded in this space and the first steps of regulatory approval in the US. However, we should keep in mind that the level of funding remains relatively low and that the output will mostly be genetically modified organisms (GMOs), which will be hard to accept for many consumers.

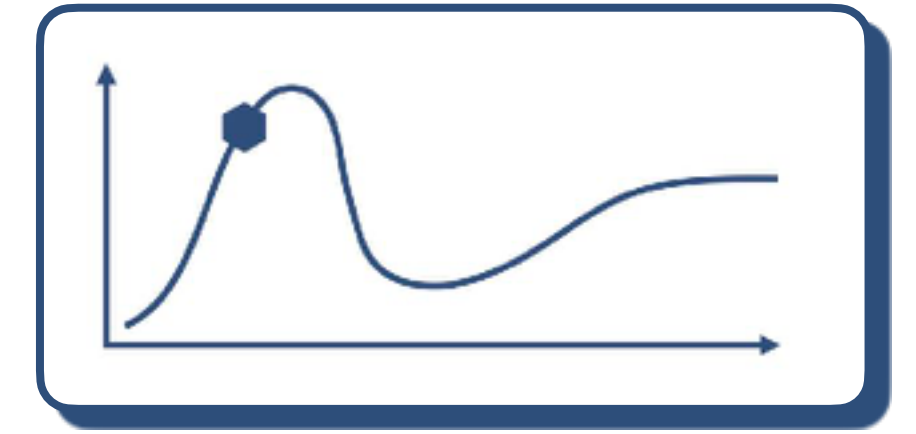
The technology is highly promising, mainly because it is more scalable than precision fermentation or cellular agriculture.

However, it is still mostly experimental, with multiple regulatory and technical challenges ahead (such as the concentration of the desired proteins in cultivated plants).



Protein discovery

Will AI be the enabler that will boost alternative proteins?



Artificial intelligence (AI) applications to sustainable ingredients have created a whole new « trend » or ecosystem where the technology is leveraged to discover and/or create new proteins matching our needs.

Applications:

- ⚙️ **Protein discovery:** exploration of natural compounds to discover proteins that have desired properties (sweeteners, fats, casein-like) and which could be produced through synthetic biology more easily than producing the « real thing » through precision fermentation ([Shiru](#), USA).
- ⚙️ **Designer proteins:** creation of enzymes (through AI) to turn existing proteins into ones that match a desired function ([Amai](#), Israel).

Exploring nature to create the largest protein database

As for other AI applications, data is a central element. That's why companies are competing for their ability to create the largest database of natural compounds.





Ecosystem study

Use case #2

Project for a global CPG company to develop a strategy on the healthy ageing ecosystem

What we did:

- Education of the board through a couple of workshops to define the perimeter
- Identification of key opportunities and threats created by long-term evolutions (technologies, business models, behavioural changes).
- Deep dives on each of the priority categories.
- Co-construction of a vision on how the company should address these challenges.
- Identification of partners (startups, incubators, funds) to move forward.

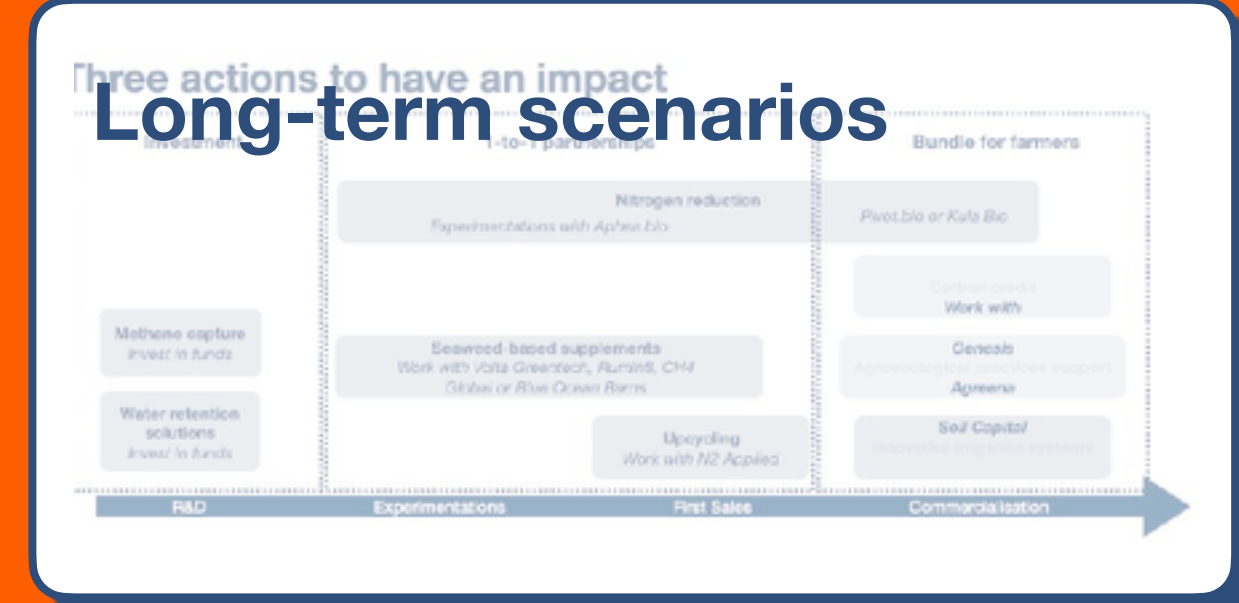
Results:

- Creating a consensus on which categories to prioritise and how to address them.
- Implementation of an open innovation strategy through the development of partnerships (by setting up the discussions) with startups, a VC fund, and an accelerator.

Opportunity screening



Long-term scenarios



Workshop



Scouting



Megatrend #2: **The resilient farm**



The resilient farm

What are we talking about?

AgTech is an integral part of the FoodTech ecosystem, not a separate one. While upstream and downstream players are still very separated and often work in silos, disruptive innovation creates a growing convergence and integration in the farm-to-fork value chain.

Multiple trends drive us toward a more sustainable and resilient farm: the growing appetite for locally grown foods, fewer farmers and workers, increasing energy costs, climate change concerns, notably regarding arable land, and the convergence of technology and farming.

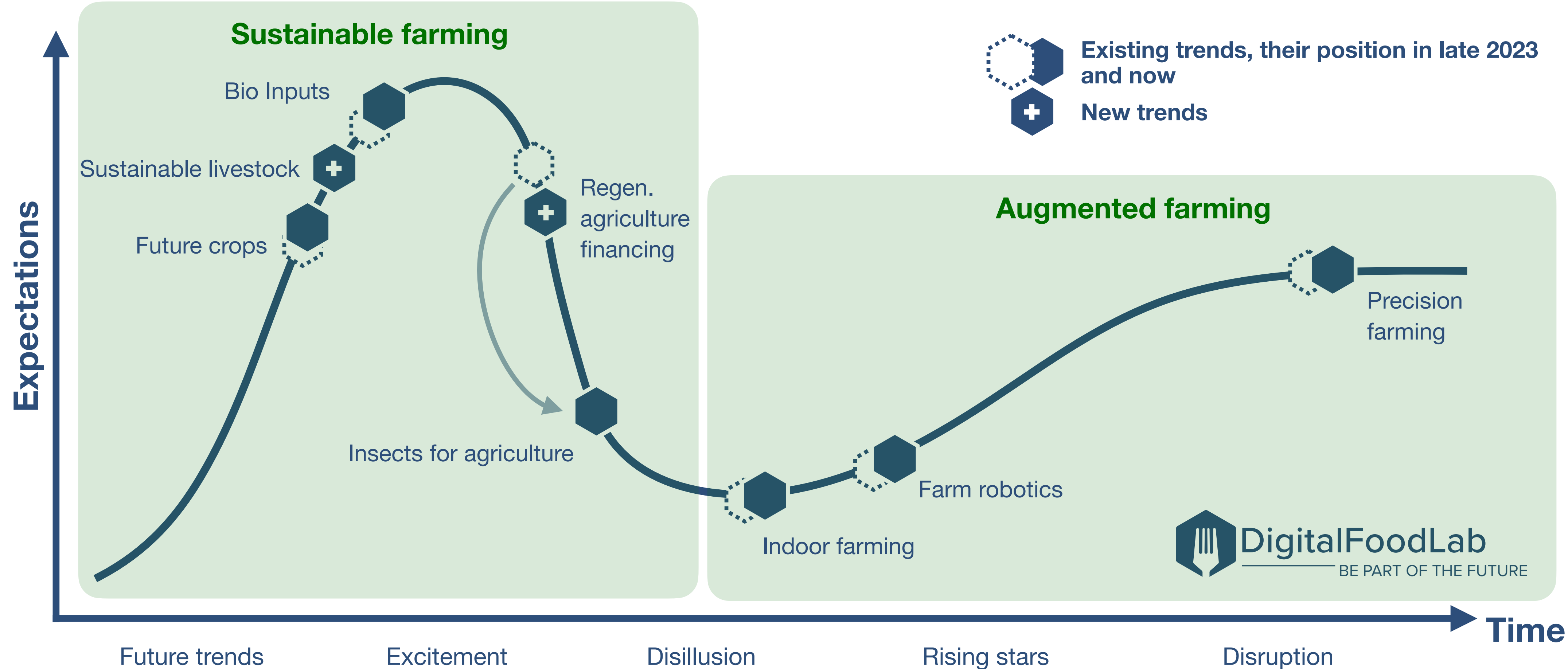
We can split the resilient farm ecosystem into two categories:

- ⚙️ **Augmented farming:** making the current farm more intelligent and automated (precision farming, farm robotics, indoor farming).
- ⚙️ **Sustainable farming:** creating the conditions to reduce the impact of farming on the environment and to resist the shocks produced by climate change through practices such as regenerative agriculture and new technologies (insects for animal feed, bio inputs, sustainable livestock and future crops).



Two sets of trends shaping the future of agriculture

The resilient farm megatrend can be split quite neatly into two blocks: augmented farming with innovations near maturity to make the current farm more productive and autonomous, and sustainable farming with longer-term innovations to reduce the impact of agriculture on the environment and mitigation. It embodies well how the vision of innovation in agriculture has evolved over the past few years.



Precision farming

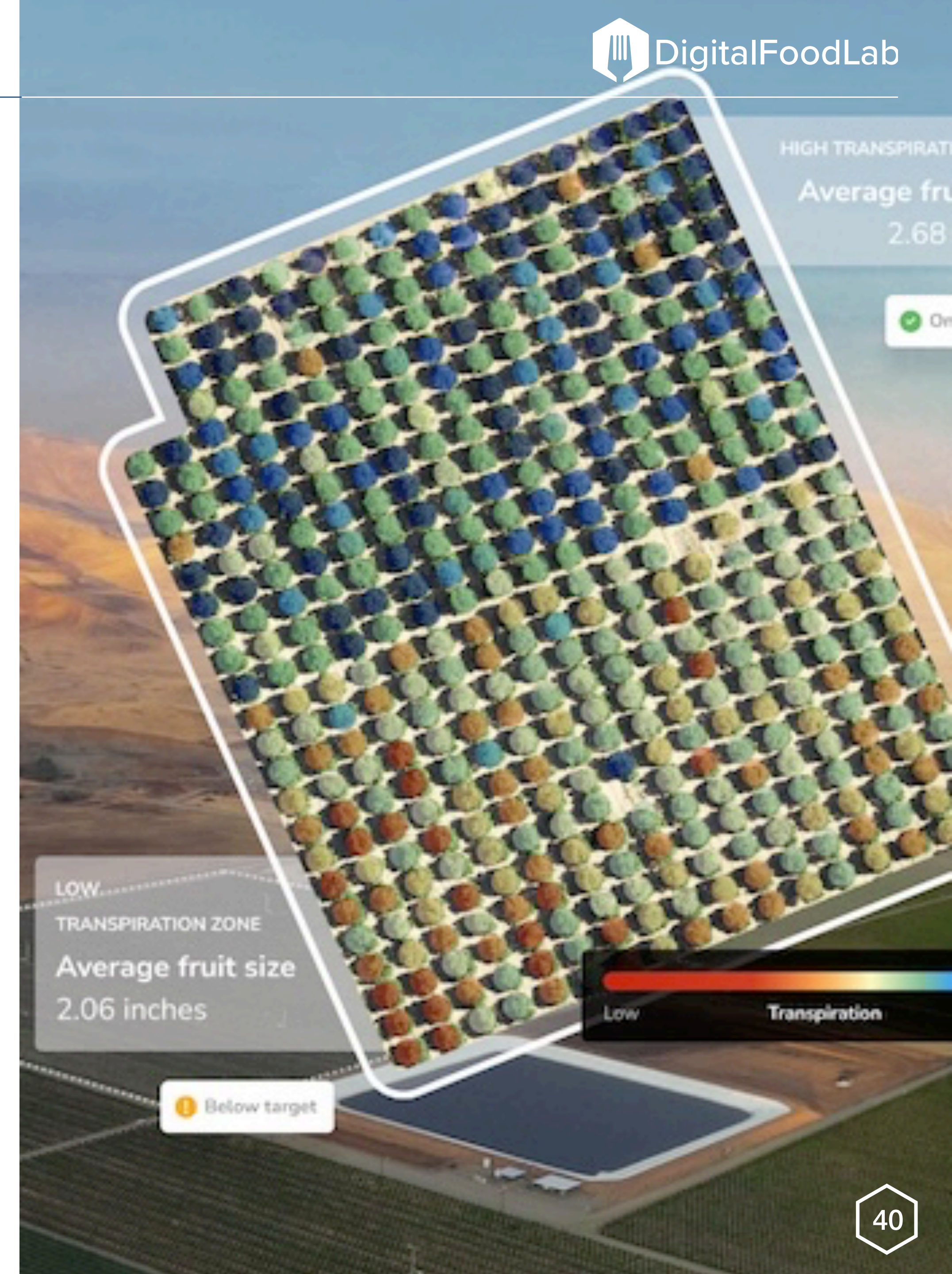
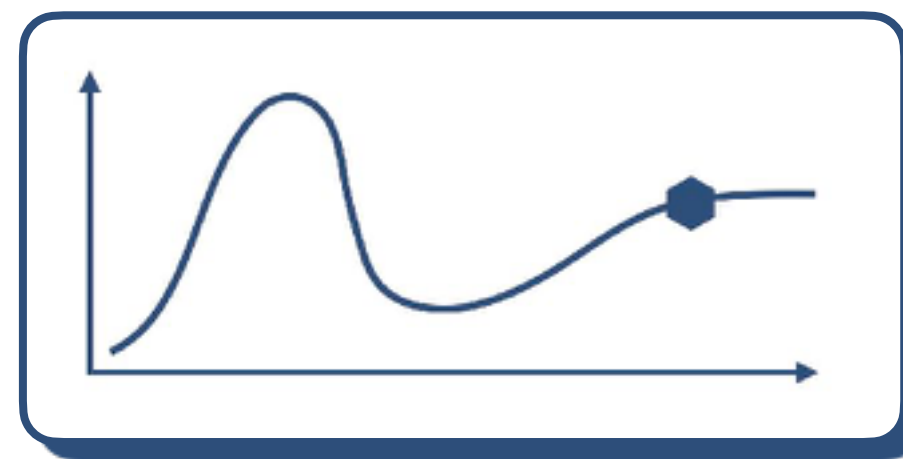
Mass adoption is still a challenge

Precision farming is a farming management concept based on measuring and analysing data from the field. It aims to increase food production by improving in-farm decision-making, product traceability and quality.

Applications are numerous, but most fall into two fields

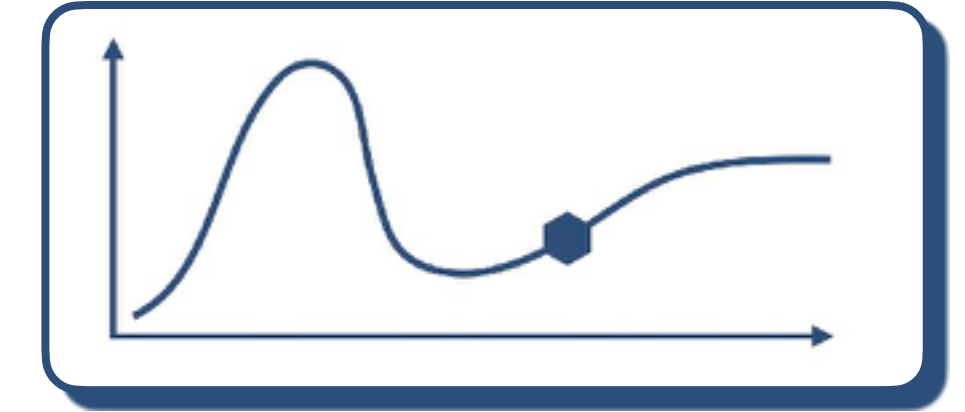
- ⚙ Providing intelligence by measuring what's happening on the farm at the smallest scale possible with sensors (Sencrop, France) or drones.
- ⚙ Acting on this intelligence with personalised dashboards, advice, and increasingly with AI-assisted autonomous actions such as performing smart irrigation.

State of the ecosystem in 2025 & analysis: funding has remained high compared to other categories, but mass adoption by farmers is still a challenge that very few of these companies have yet cracked.



Farm robotics

Out of disillusion, agriculture robots are entering a new phase



The applications of robotics in agriculture are widening. Applications include a growing number of players moving to the development of trailers put behind conventional tractors, with a focus on more sustainable weeding ([Ecorobotix](#), Switzerland), autonomous robots performing demanding tasks such as picking up fruits in orchards ([Nanovel](#), Israel) and fully autonomous robots ([Monarch](#), USA)

State of the ecosystem in 2025 & analysis: the situation has radically changed in a few years. Post-COVID, there was a disillusion on the startups' ability to scale and deliver measurable results to farmers. Now, with a focus on sustainability and increasing productivity rather than on pure robotics, we observe numerous partnerships between startups and large companies, which could lead to broader adoption.



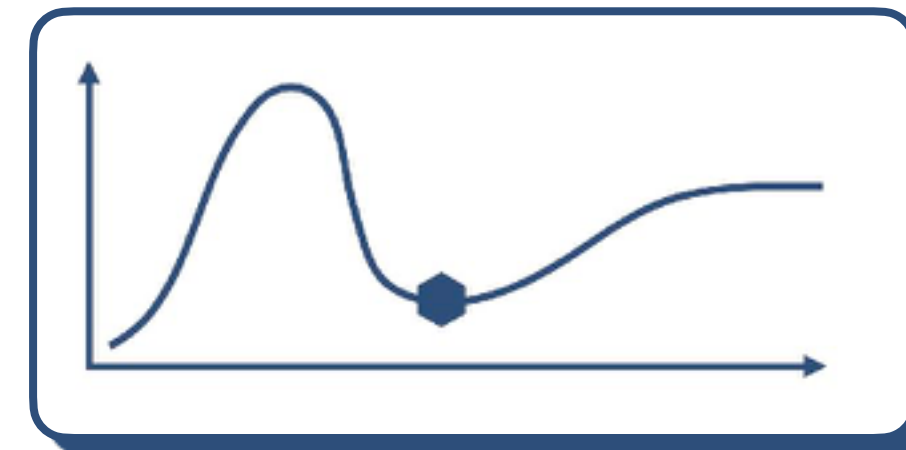
Indoor farming

Beacons of hope among a very complicated situation

Indoor farming involves companies developing urban, vertical, and/or indoor farms to reduce the distance between production and consumption and increase yields, quality, and sustainability.

Applications: initially, most of the startups (and funding) were focused on growing leafy greens which is also the space where we observed the most resounding failures (such as Infarm's). As this ecosystem has been largely wiped out, the other parts are much more visible, notably those focused on high-value crops (Oishii with strawberries, USA) and mitigation (Ekonoke with beer hops, Spain).

State of the ecosystem in 2025 & analysis: this is not the end for indoor and urban farming. Indoor farms remain an answer to climate change. We expect a « rebirth » of the ecosystem around new business models and startups that will be more tech companies than farm operators. Also, indoor farming becomes much more relevant if we believe that sustainable energy will become increasingly cheap, the rise of the impact of climate change on agriculture and increasing geopolitical tensions on food supply chains.

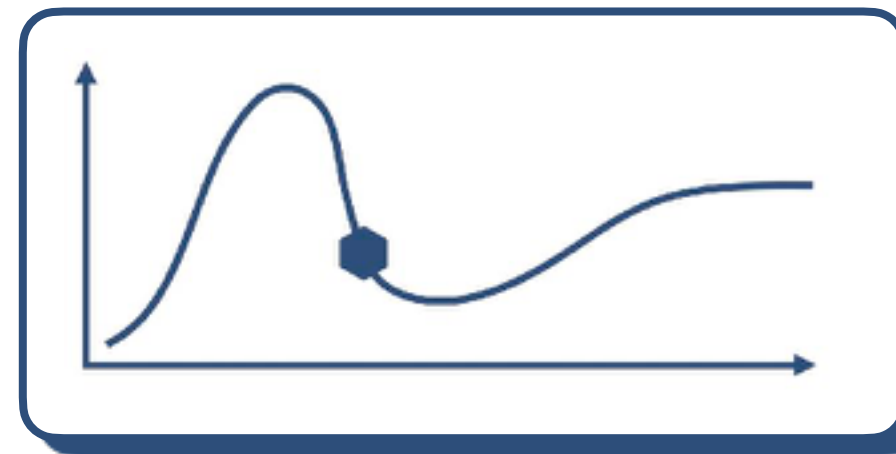


Insects for agriculture

Through a rough patch

Insect farming companies are acting on 3+1 markets: animal feed, pet food, inputs for agriculture and human nutrition, with the latter being more an aspiration than a reality.

State of the ecosystem in 2025 & analysis: after a decade, there is a really check as some startups are (finally) reaching commercialisation.



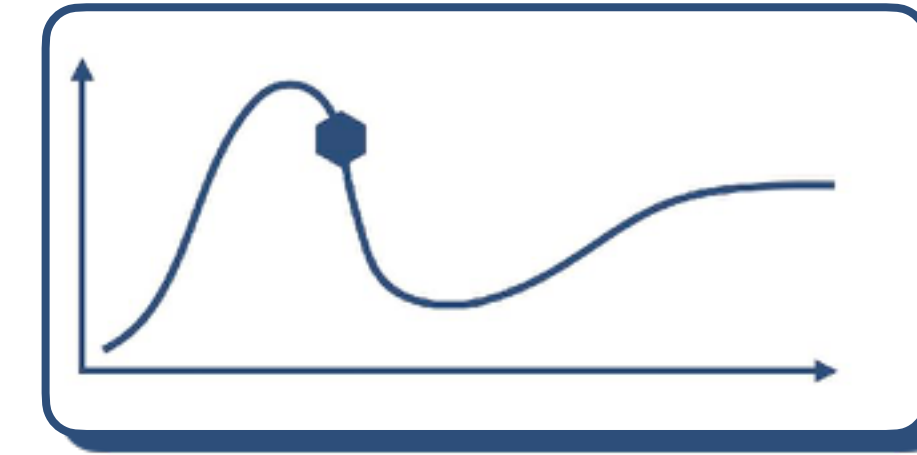
After years of heavy investments, the initial technological bets and the industrialisation choices are finally reviling themselves as good or bad. This explains why some startups are failing while others are raising funds and signing deals with agrifood giants.

We still expect some consolidation and further supply chain specialisation in the year ahead. In the long term, we still have doubts about the ability of this ecosystem to deliver on its initial promise and reach maturity.



Regenerative agriculture financing

Finding solutions to set up and finance the agriculture transitions



This ecosystem comprises companies developing solutions to help farmers transition to regenerative agriculture (a set of farming practices that help rebuild organic soil and biodiversity to increase resilience to extreme weather or pests).

Applications:

- ⬢ The ecosystem's main components are platforms (Agreena, Denmark), bridging the gap between farmers adopting regenerative agriculture practices and corporations financing them through carbon credits or other programs.
- ⬢ It also includes a growing number of players « fact-checking » the impact of these new practices (with satellite imagery and sensors).

State of the ecosystem in 2025 & analysis: the development of the carbon credits part of this ecosystem may have been too quick as there are still few clients for them. We expect some additional consolidation in that space alongside the development of new tools to measure the « real » amount of carbon stored in the soils. Only through the development of serious and data-backed carbon accounting will this ecosystem be able to grow.



Bioinputs

The growing appetite for an alternative to chemicals

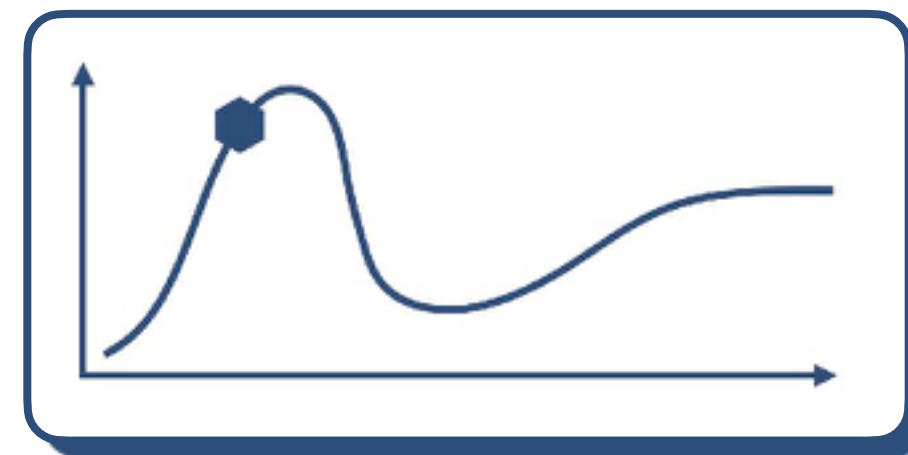
Companies in this field aim to develop a new generation of organic, more efficient, and more sustainable fertilisers, pesticides or herbicides.

Applications: startups approach the subject of bioinputs in two ways.

- ⦿ First, they work on fertilisers themselves, offering **biological alternatives to synthetic and nitrogen-based fertilisers**.
- ⦿ Others are looking for solutions to **reduce the use of fertilisers**, particularly by improving seeds to reduce their input dependency and CO2 emissions.

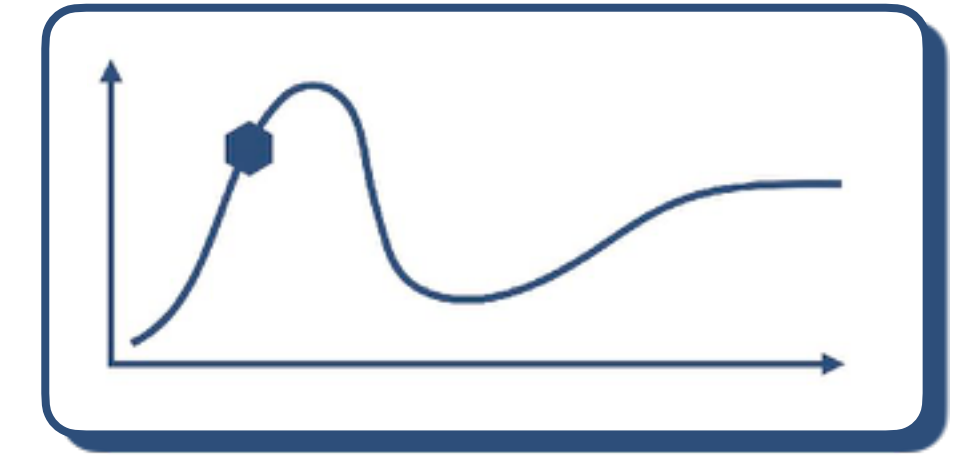
State of the ecosystem in 2025 & analysis: the sector is developing quickly, with products already on the market, and some startups have raised impressive amounts of money: \$600M for Pivot Bio (USA) and €101M for

Aphea.bio (Belgium). Now, they will have to show their ability to scale to reach a reasonable price point while convincing farmers to switch to their products.



Sustainable livestock

The holy grail to reduce the need to change in herding



Animal farming, especially cows, is responsible for a large share of methane emissions, a potent cause of global warming. A growing number of companies are seeking solutions to reduce methane emissions and make livestock more sustainable.

State of the ecosystem in 2025 & analysis: multiple solutions are being developed, such as masks ([Zelp](#), UK), vaccines ([ArkeaBio](#), USA), and feed additives ([CH4 Global](#), Australia). This young ecosystem has been boosted by a growing appetite from dairy companies for solutions to reduce their impact. The trend should continue in 2025 with some new results on the efficiency of these new technologies. The wide array of solutions also shows that sooner than later, there will be some consolidation around a handful of companies and one or two winning strategies.





Bespoke watch

Use case #3

Ongoing project to set up a bespoke watch for an ingredient company to follow the trends and detect opportunities as they emerge

Set up:

- Kick-off to present an overview of the AgriFoodTech ecosystem, select the categories to cover and, for each, the level of information required.

What we do:

- Monthly newsletter:** each month, we send a newsletter with the articles that we have gathered ranked by relevance, their summaries, and a layer of analysis.
- Database:** we set up a personalised database that will be filled month after month with the information gathered on the companies identified for the watch.
- Workshops:** twice a year with the client’s innovation team and other “innovation curious” team members, we present an overview of the evolutions, key trends and a dashboard of the topics followed by the watch.

Alternative proteins beyond dairy

Watch

Protein Brewery Earns US & Singapore Regulatory Approval for Fermotein Ingredient

- The Protein Brewery, a Dutch biomass fermentation startup, has received regulatory approval in the US and Singapore for Fermotein, a fungi-derived fermented ingredient.
- Fermotein is produced from crops like cassava and sugarcane, offering a high yield of protein and fiber with low environmental impact.

Comment:

- The startup has not raised funds since 2020 (when it raised around €20M to create a pilot plant facility) and it has not yet announced neither production nor commercial partnerships.
- While functional ingredient companies (see below with Onego Bio's example) are getting funding and commercial traction, protein producers seem to have a much harder time (even if the number of regulatory approvals increases).

Green Queen

Database

	Last ce...	Stage	Raising ?	HQ	Market read...
Breastmilk				USA	
meat	118	115	July 16, 2021	Series B	Israel
					as soon as 2022, simple beef steaks
Milk	11.8	11.8	September 9, 2021	Seed	Australia
meat				IPO	USA
					burgers, sausages, chicken products on the market
Milk	3			IPO	yes
					Israel
					R&D
SUM 254.8 MEDIAN 58.4					
me of the deal announcement + only pre-IPO fundings					





Megatrend #3: **Food as medicine**



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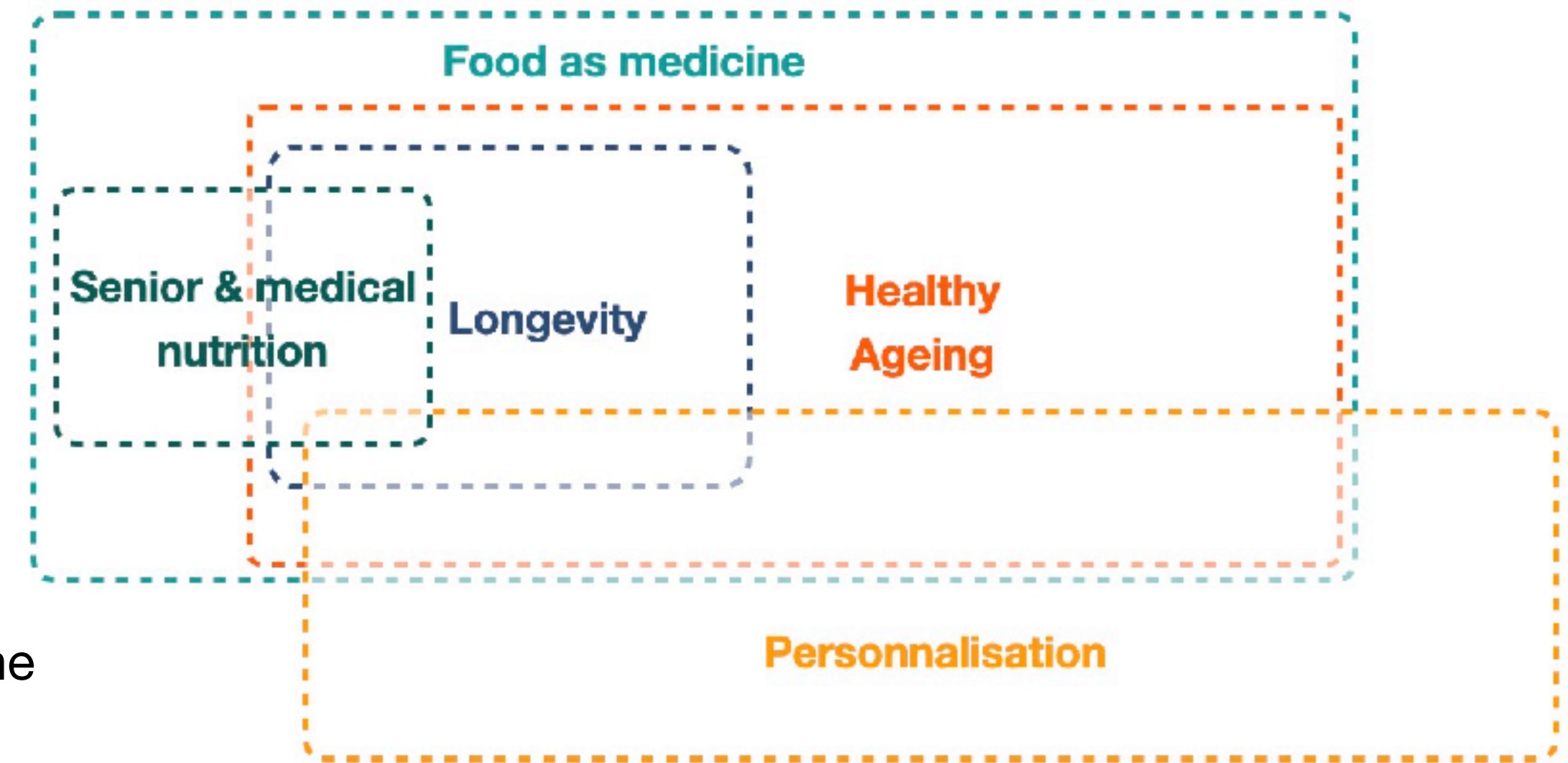
Food as medicine

What are we talking about?

“Food as medicine” refers to the broad space where food and health interact with each other to increase lifespan and health span.

It covers different topics that often overlap:

- **Medical nutrition:** supporting people with health conditions through food.
- **Longevity:** increasing the lifespan
- **Healthy ageing:** developing food ingredients to increase « health span », or the life we live in good health.
- **Personalisation:** providing consumers with insights and food products matching their needs.



GLP-1 drugs such as Ozempic, created to manage diabetes, are now massively used for weight loss and have helped to put this topic back at the centre of discussions in the food industry. Leading companies and startups are seeking to seize the opportunity to launch healthier food products.



Food as medicine vs. personalisation

The challenge

- 1 - there is now a wealth of research showing that simple changes in our diet could dramatically impact our health ([such as this study](#)). However, even if we know what we should eat or drink (or rather what we should avoid), we do not observe any movement towards a better diet.
- 2 - The number of non-communicable diseases related to food, such as obesity and diabetes, is rapidly increasing. For instance, it is anticipated that more than half of the world's population will be overweight by 2035. Beyond the human cost, this strains our economies and health systems.

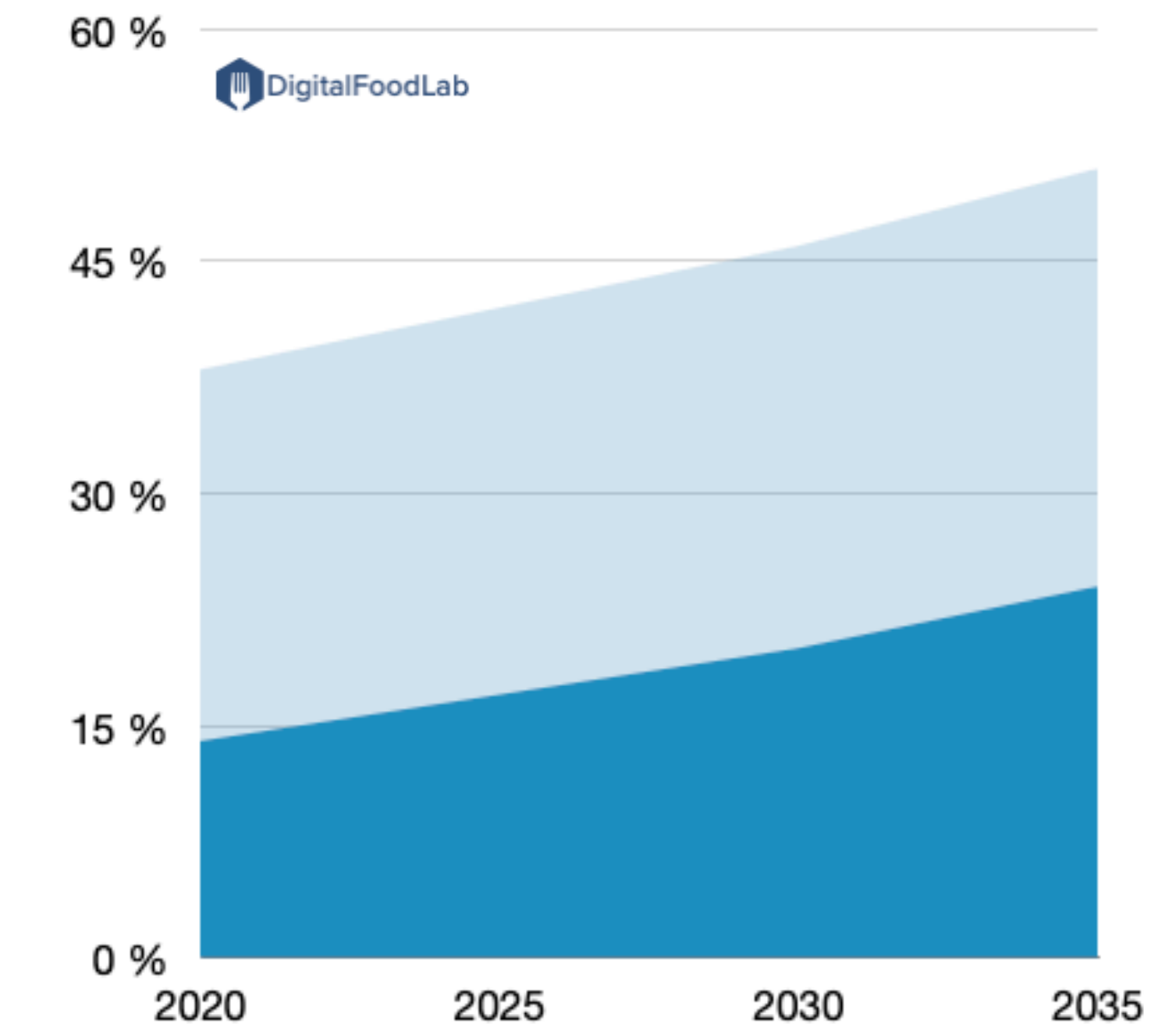
Food as medicine and personalisation are intertwined concepts

- 🔗 New technologies can support the creation of healthier ingredients and food products, but the challenge of which product each consumer should choose will remain.
- 🔗 Through personalisation services, data collection, and advice based on artificial intelligence, consumers can access the information required to improve their diets.
- 🔗 Eventually, tailored supplements could achieve a real level of personalisation, allowing consumers to adjust their nutrition to match their needs.

MORE THAN HALF OF THE WORLD'S POPULATION WILL BE OVERWEIGHT BY 2035

Share of the global population with:

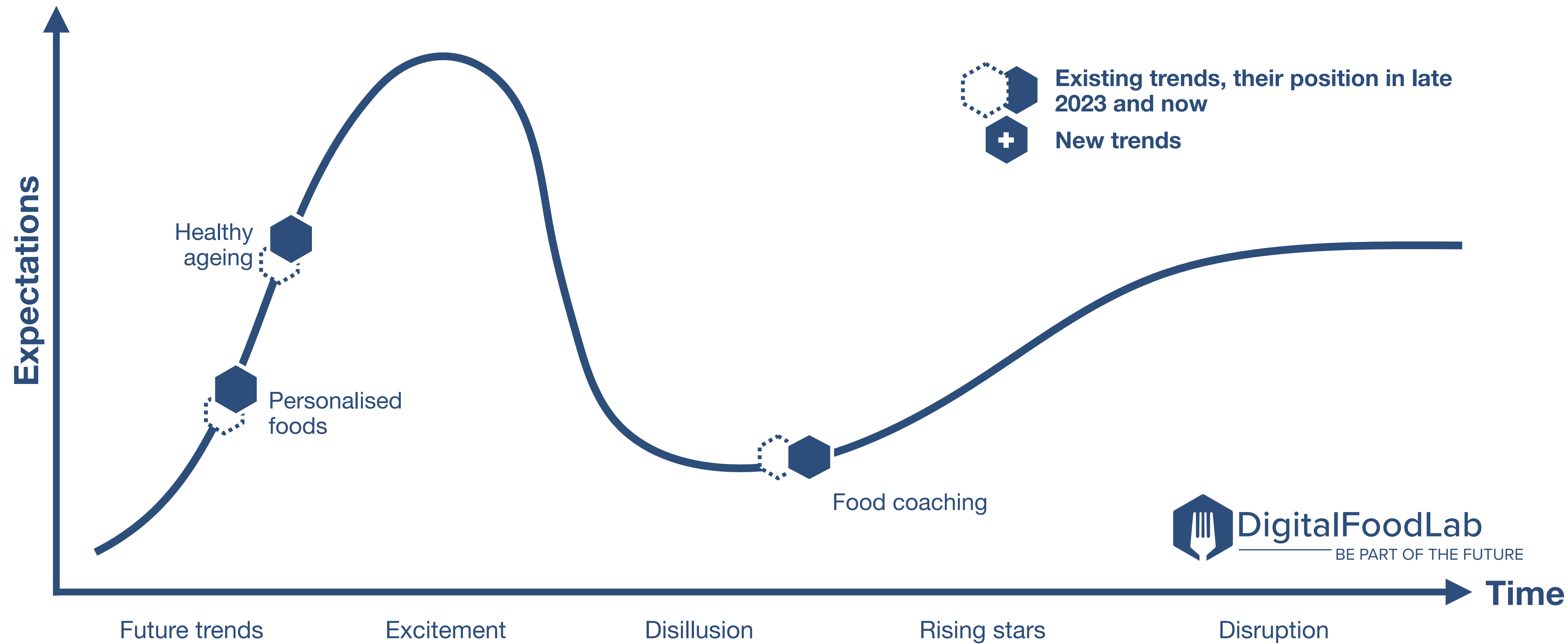
- obesity (BMI > 30)
- overweight or obesity (BMI > 25)



Source : world obesity report, DigitalFoodLab

A lot of discussion, but little movement

This ecosystem is getting a lot of attention. However, we should point out that many startups operating in the healthy ageing space are former « alternative protein » players rebranding themselves into suppliers of high-value functional ingredients.



Food coaching

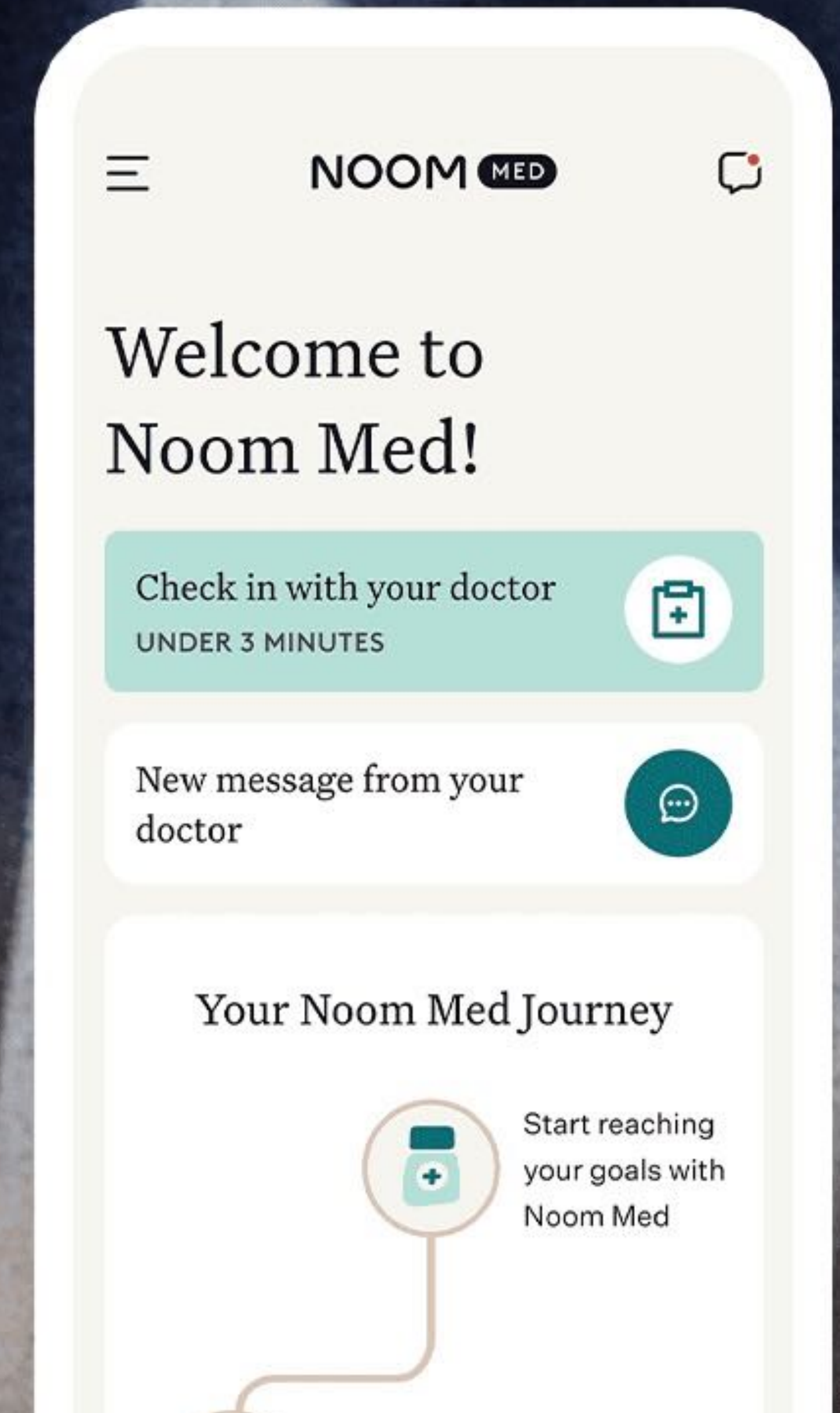
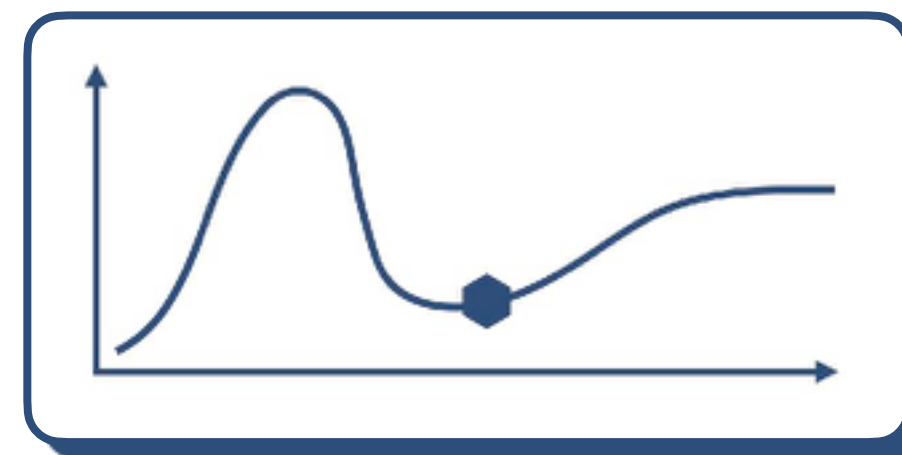
Boosted by GLP-1 and rising concerns about glucose

Food coaching comprises startups trying to help consumers manage their diets and follow nutrition plans.

Applications include:

- 🔗 **devices and testing kits** (DNA, microbiome, glucose monitoring) to learn about the users and offer them diet recommendations.
- 🔗 **nutrition platforms used by consumers** to provide personalised nutrition plans either to lose weight ([Noom](#), USA) or to manage conditions such as diabetes ([Oviva](#), UK).

State of the ecosystem in 2025 & analysis: with the combined rise of GLP-1 (and the need for solutions to reduce drug side effects), concerns about the impact of high blood glucose levels, and the emergence of artificial intelligence and chatbots, we could be on the verge of a breakthrough in this space. Pharma players and tech companies (notably Apple with its watch that will eventually include glucose monitoring) will make a huge difference when they venture into this space.



Healthy ageing

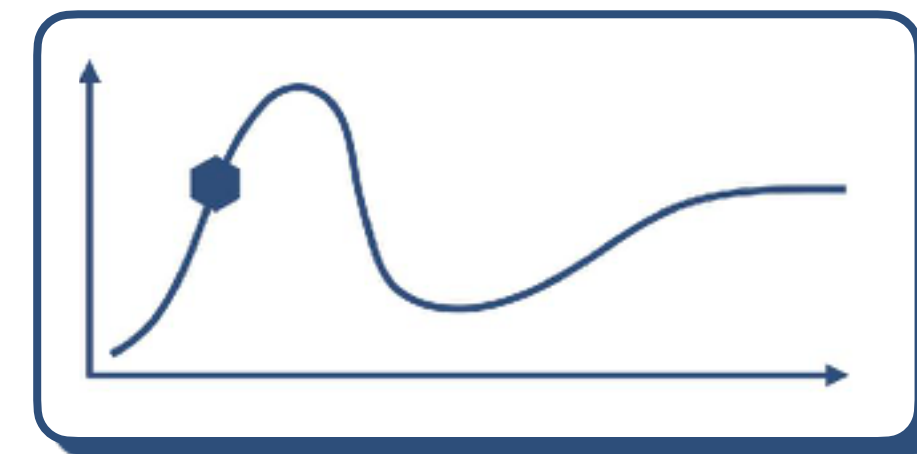
Ingredients that will make us live longer

Healthy ageing is the sub-category of innovators (startups, researchers, large companies) developing ingredients that have a positive impact on our health.

This space includes an increasing number of startups moving from the alternative protein space, now offering functional ingredients with health benefits instead of bulk proteins. At first glance, we can divide them into two categories:

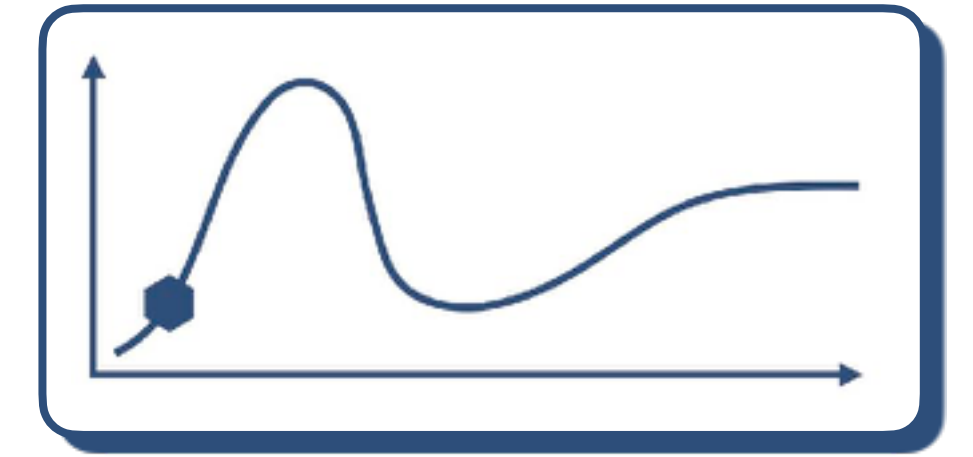
- ⦿ New ingredients to be added to existing food products to provide nutrients we metabolise less as we age. This ecosystem is young and quite broad, with **ingredients for many functionalities created with new technologies like precision fermentation**. It could be specific proteins (like lactoferrin, derived from breastmilk), ingredients or molecules like oligosaccharides.
- ⦿ Ingredients that will lessen the long-term damage of processed foods on our health (notably healthier oil, fats, and sugars).

State of the ecosystem in 2025 & analysis: this ecosystem is getting a lot of attention from large companies. This will continue in 2025. Beyond, some challenges exist, such as regulation, proving the ingredients' health benefits, and scaling up.



Personalised food

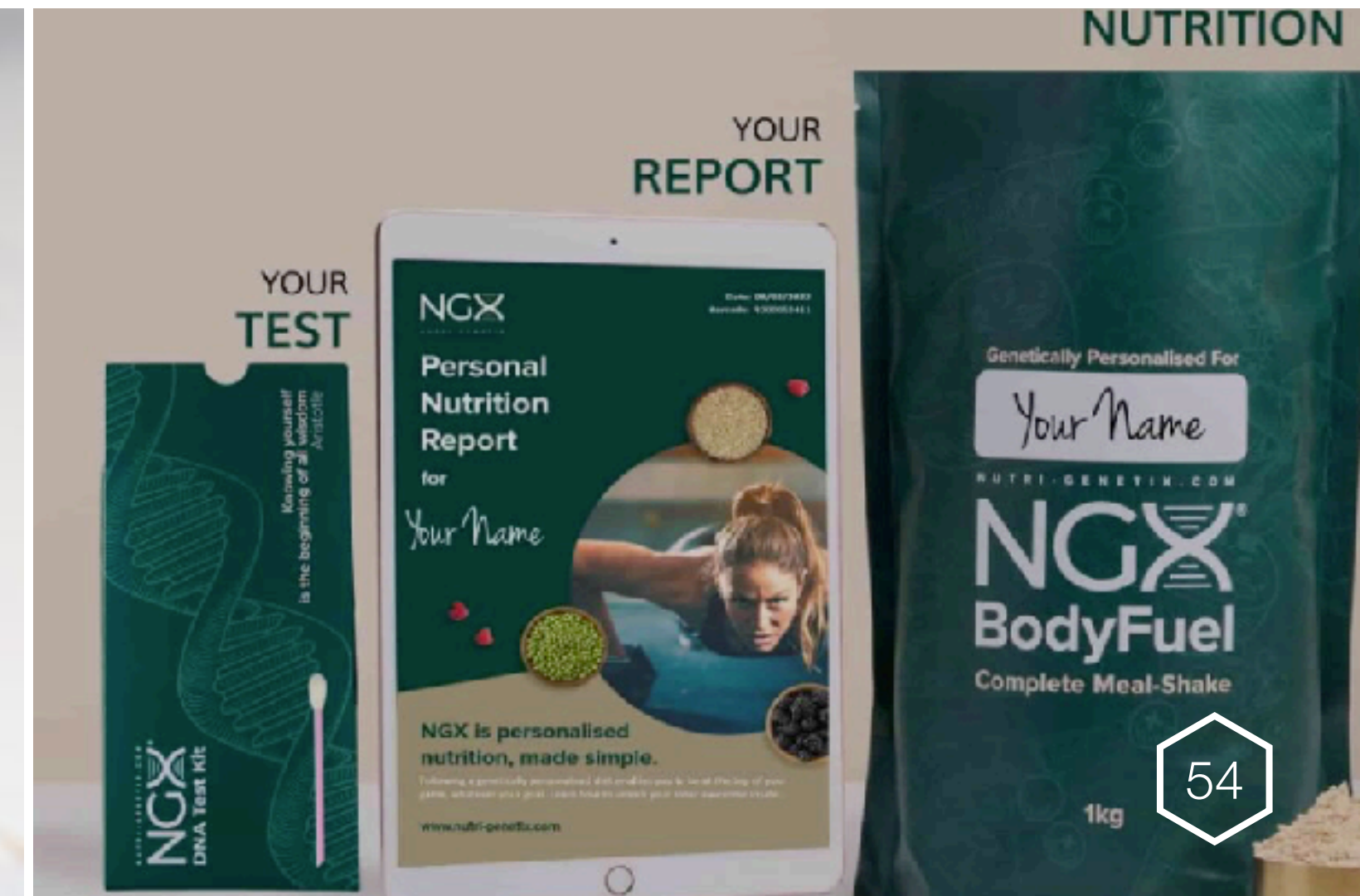
Still far away



Personalised food refers to products or supplements that are truly bespoke to a consumer's specific needs and daily activities. These products help consumers live their lives to the fullest in the short term (energy, digestion...) and the long term (longevity, prevention...).

After years of trial and error, creating personalised meals is out of the question. Now, the focus remains on personalised micro-nutrition with simple combinations of supplements (Cuure, France) and bespoke blends based on questionnaires or tests (such as microbiome tests done by Floré, USA).

This is the most realistic path right now, even if this model has many limitations and profitability issues. Care/of (USA), a personalised supplement company acquired by Bayer in 2020, has just closed. Adding a layer of services (based on AI) could certainly boost these offerings and eventually create a path towards personalised food products.



Scouting

Use case #4

Scouting project for an agriculture coop to identify startups for an ad hoc project and then on an ongoing basis

Set up:

- ⬢ Kick-off to define the client's perimeter, the goals of the scouting (partnerships) and the criteria on which startups should be evaluated.

Ad hoc project:

- ⬢ We selected the first batch of 20+ key startups following the client's criteria.

Ongoing project:

- ⬢ On-going scouting: then, we set up a quarterly scouting of about ten startups.
- ⬢ For each scouted startup, we created an ID card with key information such as its business and technological maturity, funding, and corporate partnerships. We also explained why we selected it.





Megatrend #4: **Digital retail**



Digital retail

What are we talking about?

Retail is changing fast and at many levels. A few years ago, the debate was centred on the existence of food e-commerce and consumers' appetite for grocery delivery. Now, the question is much more about the speed of its deployment, how stores can adapt, and the new paradigm for food retailing in the future.

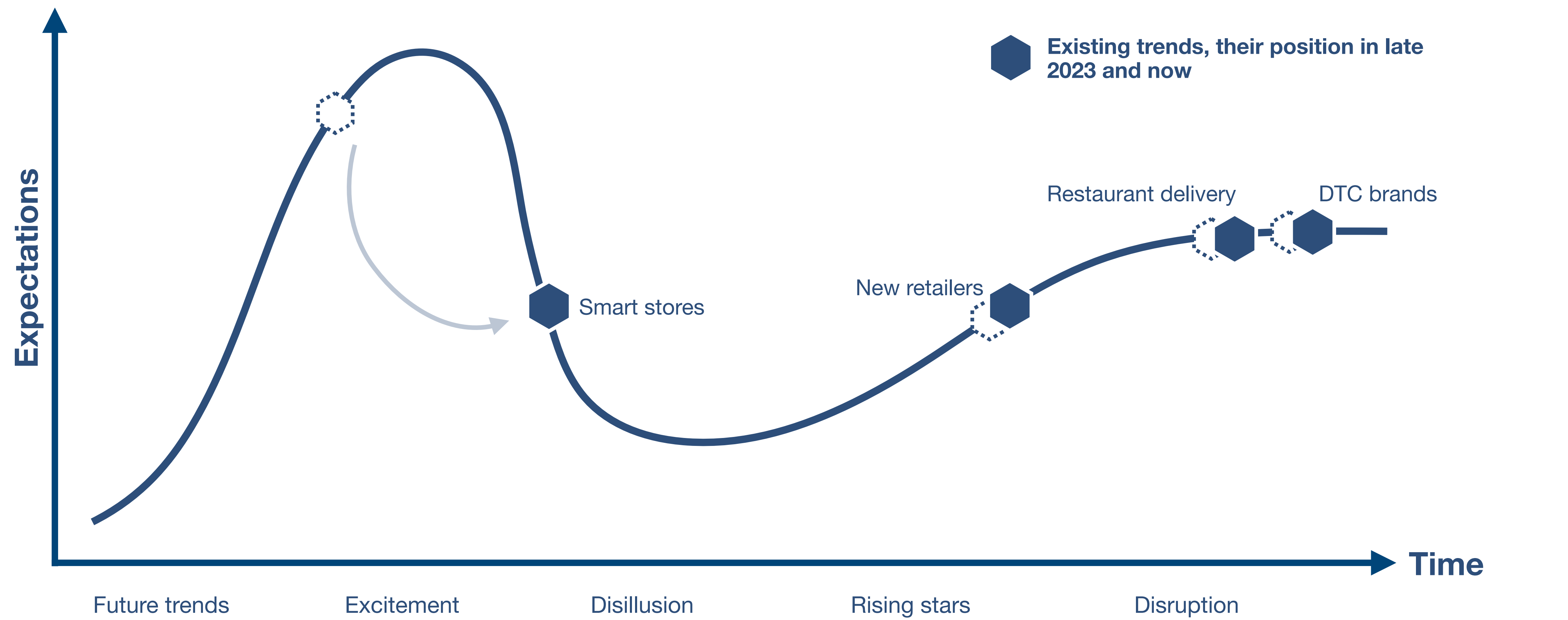
Behind the name digital retail, we want to gather all the innovations enabling consumers to access food items more quickly and efficiently from their screens, as well as from the next generation of stores. In a word, this is the ecosystem that leverages digital tools to create more convenient and personalised experiences for consumers.

This is not only a task for retailers, new and old, but it is also something that concerns brands, as they have to reinvent how they talk to the consumer to create, again, more convenience and personalisation.



An ecosystem getting mature

While the main elements of this megatrend are already mature or nearing maturity, one ecosystem, smart stores, is doing extremely poorly.



DTC

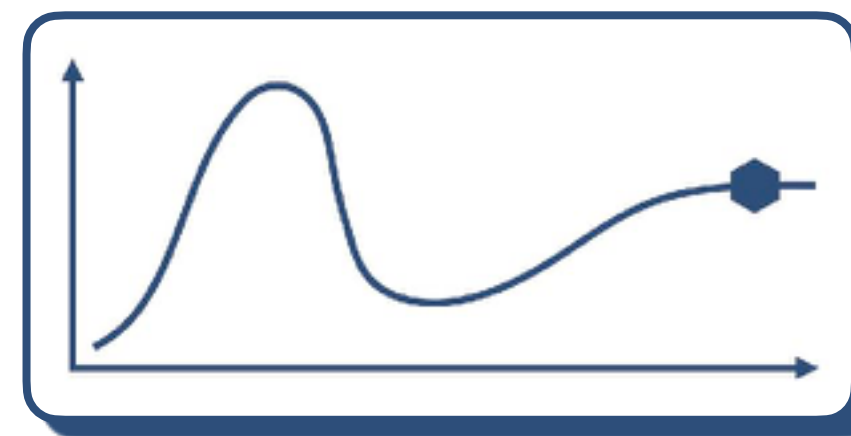
The future of food brands

DTC, or Direct-To-Consumer, refers to new brands, often created online, which offer incremental innovation by addressing an untapped market.

DTC brands are now emerging in all consumer segments, notably:

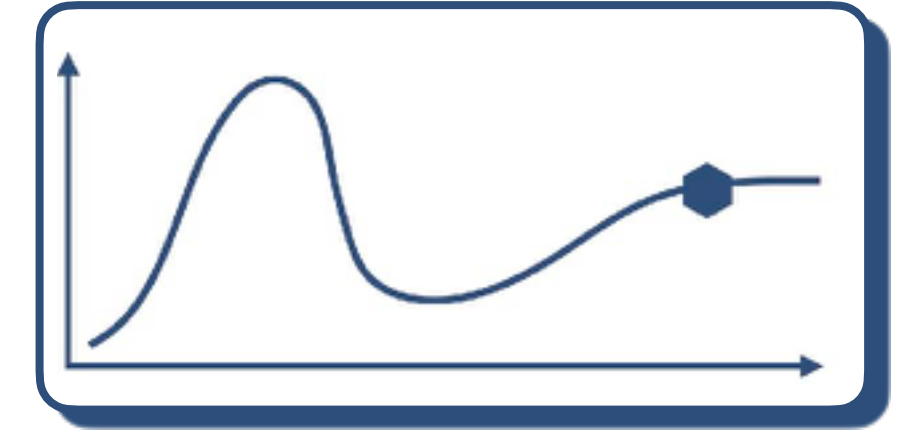
- 🏠 PetFood (Butternut Box, UK)
- 🏠 Food supplements (AG1, USA)
- 🏠 Snacks (Koro, Germany)
- 🏠 Healthy beverages (Olipop, USA)

State of the ecosystem in 2025 & analysis: this ecosystem is doing quite well, even in the current context. The few brands that successfully emerge as leaders (\$100M+ in sales) are very attractive targets for CPG companies seeking to expand their portfolio.s



Restaurant delivery

And now, what's next?



Restaurant delivery refers to all the marketplaces connecting consumers to restaurants to order meals (and groceries).

The main marketplaces connecting consumers to restaurants are now all mature and mostly publicly traded companies. They now have to communicate their data each quarter to investors (and so, to us) and showcase a path toward profitability. As the ecosystem reaches maturity, we observe multiple evolutions. First, regulation of driver status remains a long-term challenge (notably in Europe). Second, some consolidation movements are still happening, but at the margin. Now, a handful of global giants are the leaders, and grocery delivery is becoming a key part of their business activity, which is often the fastest-growing one.



New retailers

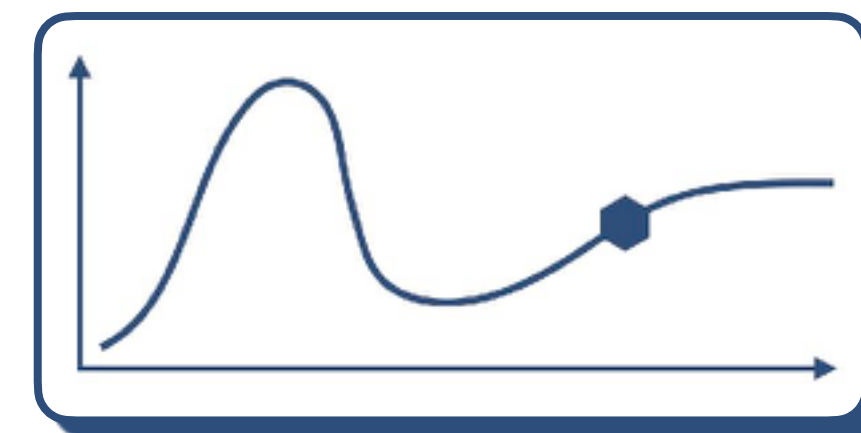
Focused on profitability rather than growth

New retailers are companies reinventing how grocery retail is done online, often by rebuilding the whole infrastructure (warehouses, stocks, software, relationships with suppliers) from the ground up or focusing on convenience with quick deliveries.

Applications include:

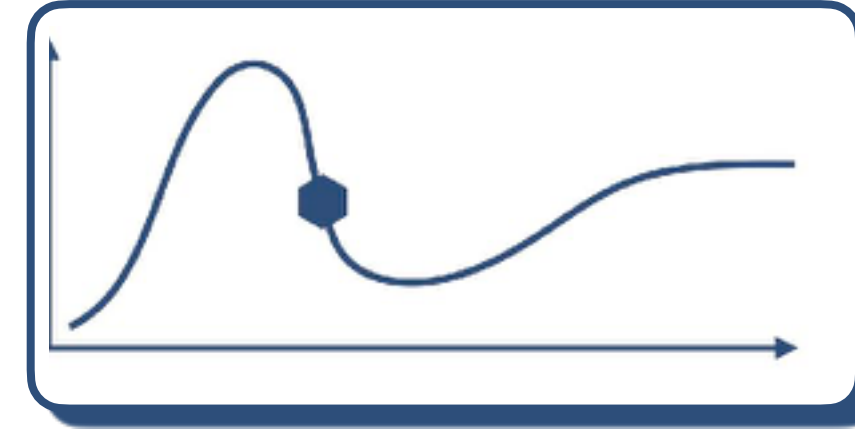
- ⚙️ **Online groceries** (Picnic, Netherlands) with an offering often almost identical to incumbent retailers. They “just” do a better job by focusing only on online consumers.
- ⚙️ **Innovators** focused on niche markets such as leftover produce (Misfits, USA), ethnic products (Hungry Panda, UK), reusable packaging, subscription models and many other approaches.
- ⚙️ **Quick-commerce**: far from being dead, startups delivering food products in 15 to 30 minutes (Zepto, India) are thriving in many parts of the world

State of the ecosystem in 2025 & analysis: these startups faced a doubly challenging context with decreased food sales due to inflationary pressures and a depressed funding environment. After a necessary consolidation, the remaining players appear much stronger, notably in developing economies.



Smart stores

Is it the end?

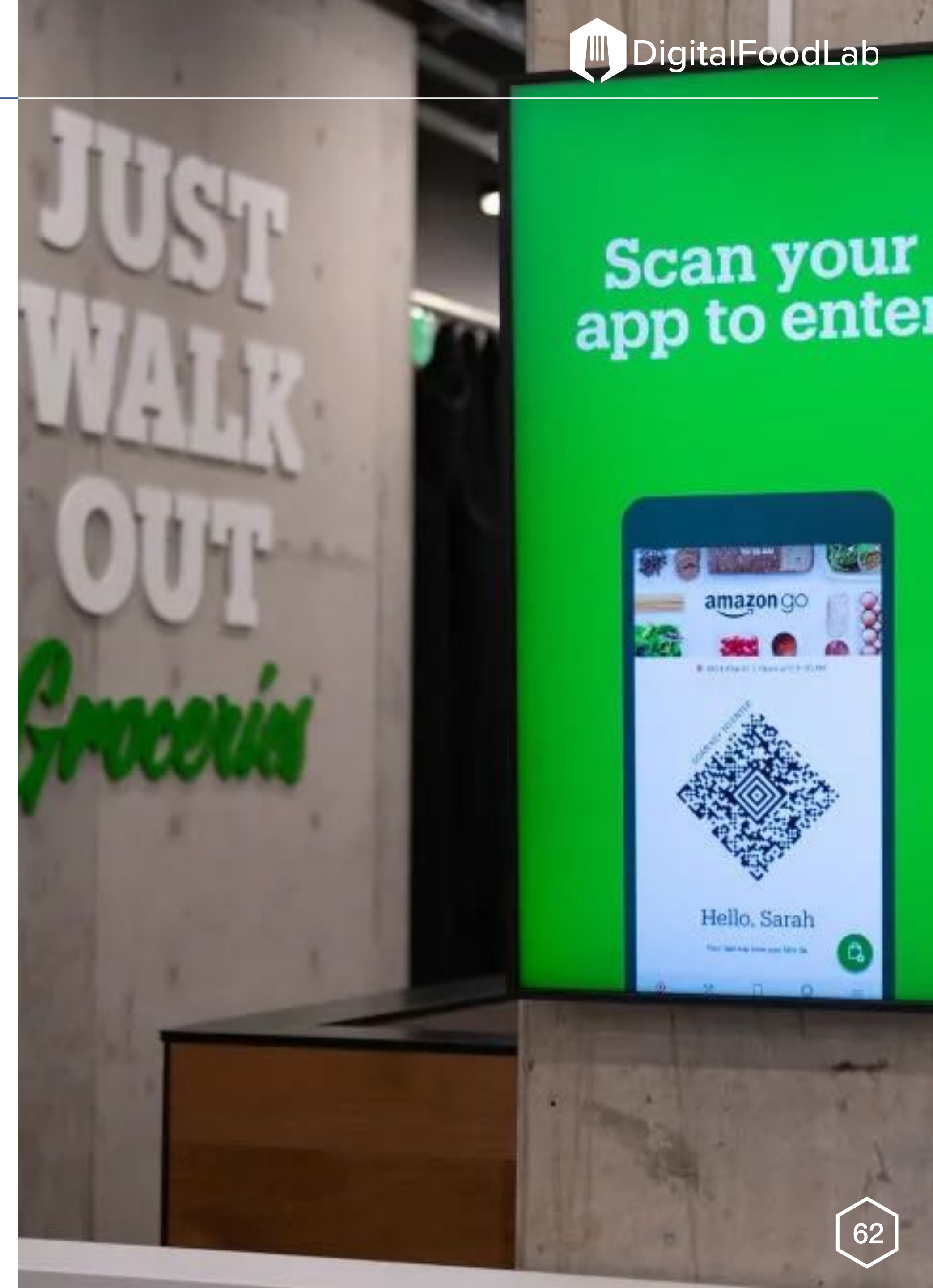


Smart stores refer to several topics related to automation and AI, which aim to make retail operations more efficient and less reliant on a large human workforce.

Applications include:

- ⦿ Upstream, with warehouse automation (notably for grocery delivery such as Ocado's warehouses).
- ⦿ On the shelves, with technologies for identifying products and transforming existing stores into checkout-free ones ([Sensei](#), Portugal).
- ⦿ The possibility of fully automating the store by offering “connected convenience stores”.

State of the ecosystem in 2025 & analysis: this space is performing extremely poorly, with many startups closing down and some negative signals from leading companies. The technology and price components are still not fully functional. However, we remain optimistic about the medium-term potential of this ecosystem, as the underlying hurdles remain.





M&A and investments

Use case #5

Working with a CPG company on an investment process to target emerging startups

Set up:

- ⬢ Kick-off to define the client’s criteria, notably in terms of maturity.
- ⬢ Workshop based on a mapping of the different innovation ecosystems adjacent to its activities to select some priorities and discuss inspiring examples of acquisition stories.
- ⬢ Identification of 20+ targets.
- ⬢ Workshop to select the most relevant to engage with.
- ⬢ DigitalFoodLab worked as a sparing partner during the acquisition process, notably helping design how the acquired startup could be integrated into the company’s overall strategy.

Results:

- ⬢ Different results from traditional M&A processes with a focus on the long-term strategy.
- ⬢ Identification of a good match for an acquisition.





Megatrend #5:
Smart supply chain



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The smart supply chain

What are we talking about?

The food supply chain is fascinating, even if often ignored. However, its current structure is quite old and desperately needs to become smarter and more digital. Just consider this figure: 40% of all food is never eaten and never leaves the farm or the factory (15% never leave the farm in the UK, and 16% in the US).

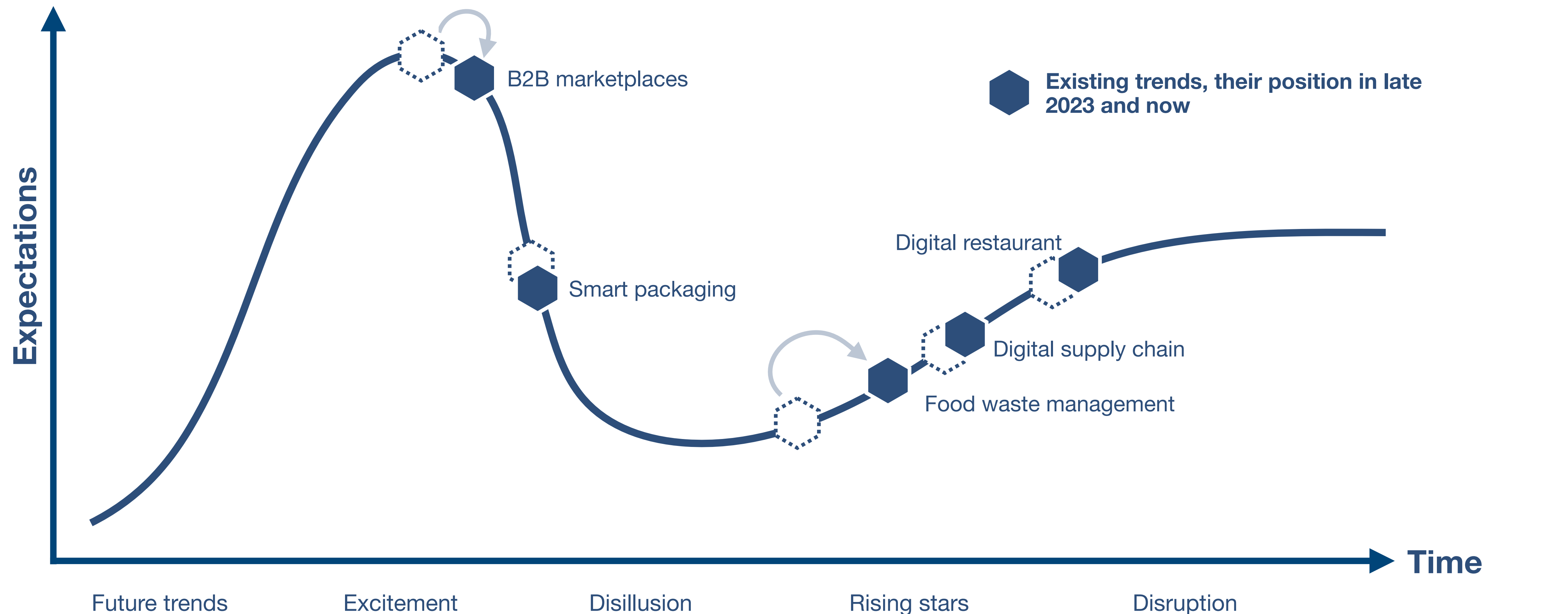
Two underlying forces are driving this megatrend:

- ⚙️ **The fight against waste** (from packaging and food waste): this is directly related to climate change and the growing concern of consumers and companies about their impact.
- ⚙️ **Digitisation to reduce labour costs and promote standardisation:** the accessibility of new digital tools throughout the food supply chain is changing how people work and collaborate. Digitisation's development is linked to the decreased availability of unskilled workers and the desire for more standardisation from CPG companies and restaurant chains. Indeed, with the use of B2B marketplaces and digital tools, consumers can have a much more similar experience from one store (or restaurant) to another.



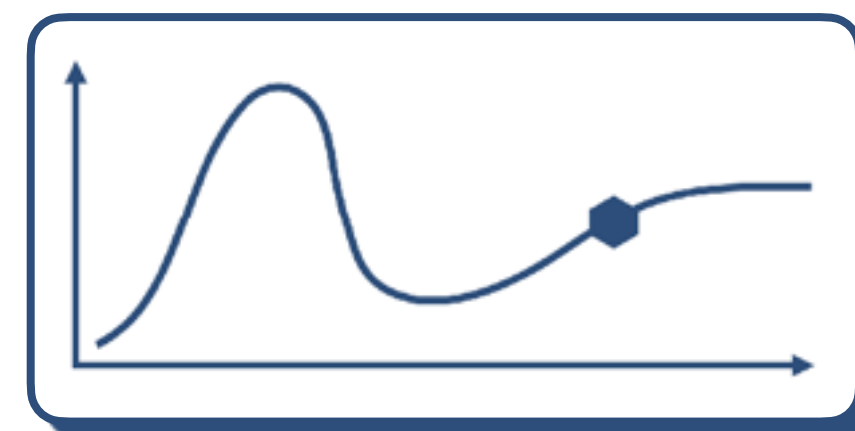
Three trends becoming mainstream

This megatrend has not moved significantly. However, we removed the “reusable packaging” trend because its startup ecosystem all but vanished in 2024. Large companies now handle the topic, offering incremental innovations rather than disruptive ones.



The digital restaurant

Digitalisation of all professions



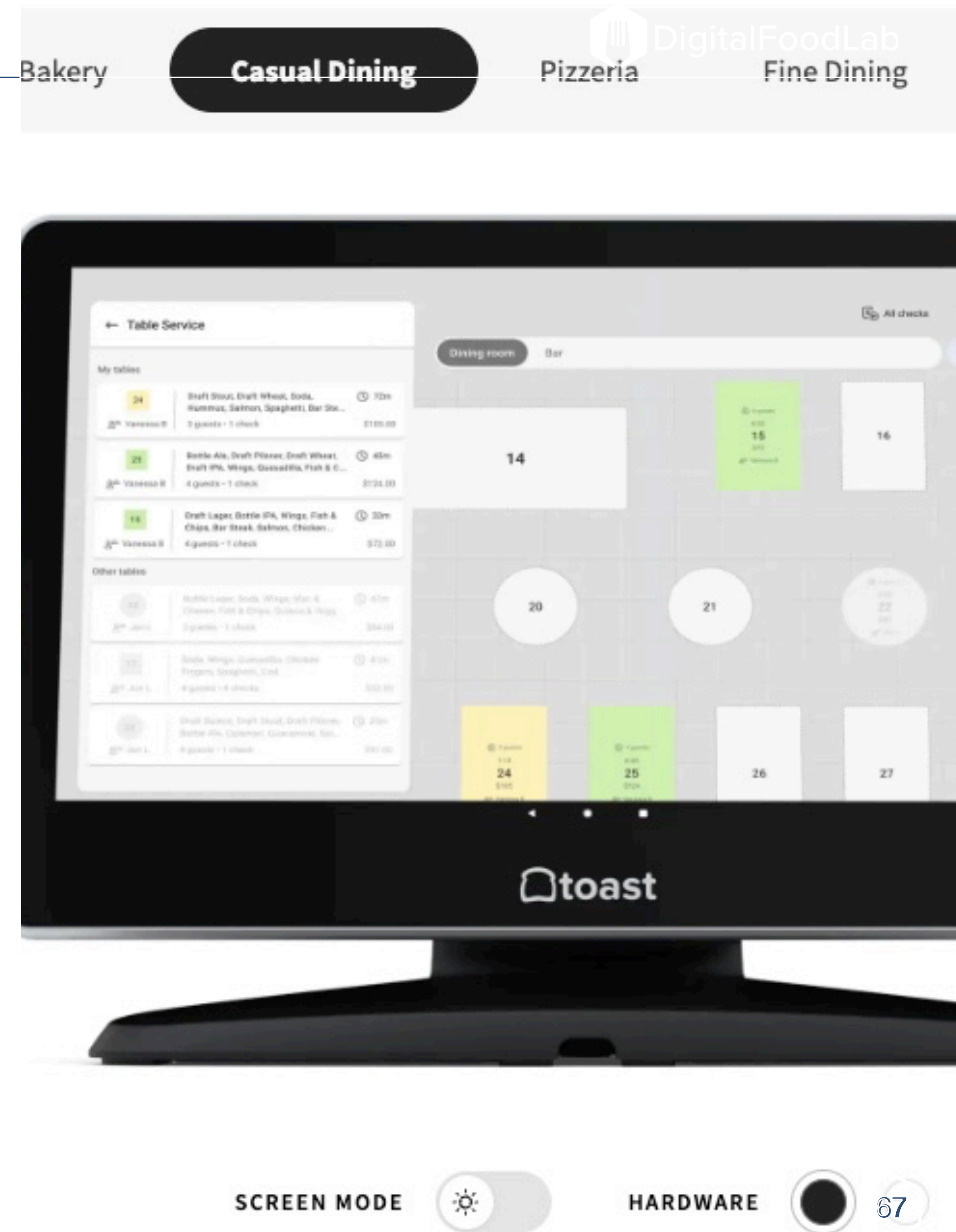
The digital restaurant category comprises all tools and services that digitise the foodservice market.

Digitalisation impacts all restaurant professions, including kitchen work, staff management, and relationships with consumers or suppliers.

- ⚙️ **Consumer side:** online booking (the Fork, FR), payment, loyalty, online ordering
- ⚙️ **Restaurant side:** HR, Point of Sale (Toast, USA), online order aggregation (Deliverect, Belgium)
- ⚙️ **Kitchen side:** procurement (Choco, Germany), foodwaste, recipe management

State of the ecosystem in 2025 & analysis: the diversity of tasks generates a complex ecosystem, where each actor positions itself on a specific functionality, and the **ePOS appears as the central aggregator of all these functionalities.**

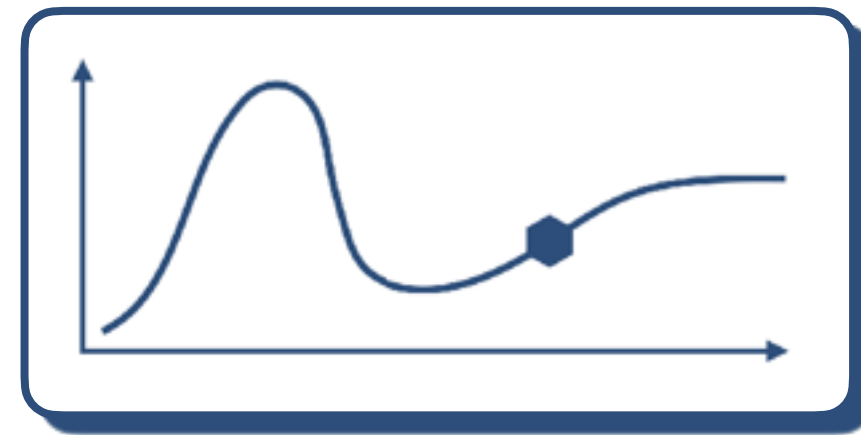
The ecosystem consolidated after COVID, differently in each continent. Now, AI is boosting digitisation with new tools.



Digital supply chain

Traceability along the supply chain

“Digital supply chain” refers to using digital tools to increase traceability and transparency along the supply chain.



Applications:

- ⚙️ **Upstream:** services related to monitoring agricultural operations, allowing the traceability of production or breeding.
- ⚙️ **Traceability:** from production to the retailer, consumer or restaurant.
- ⚙️ **Quality controls (transparency)** to ensure the quality of the products.
- ⚙️ **At the end of the chain:** services allowing consumers to obtain information on the products they buy ([Yuka](#), France).

State of the ecosystem in

2025 & analysis: the

blockchain hype is behind us,

and the ecosystem has

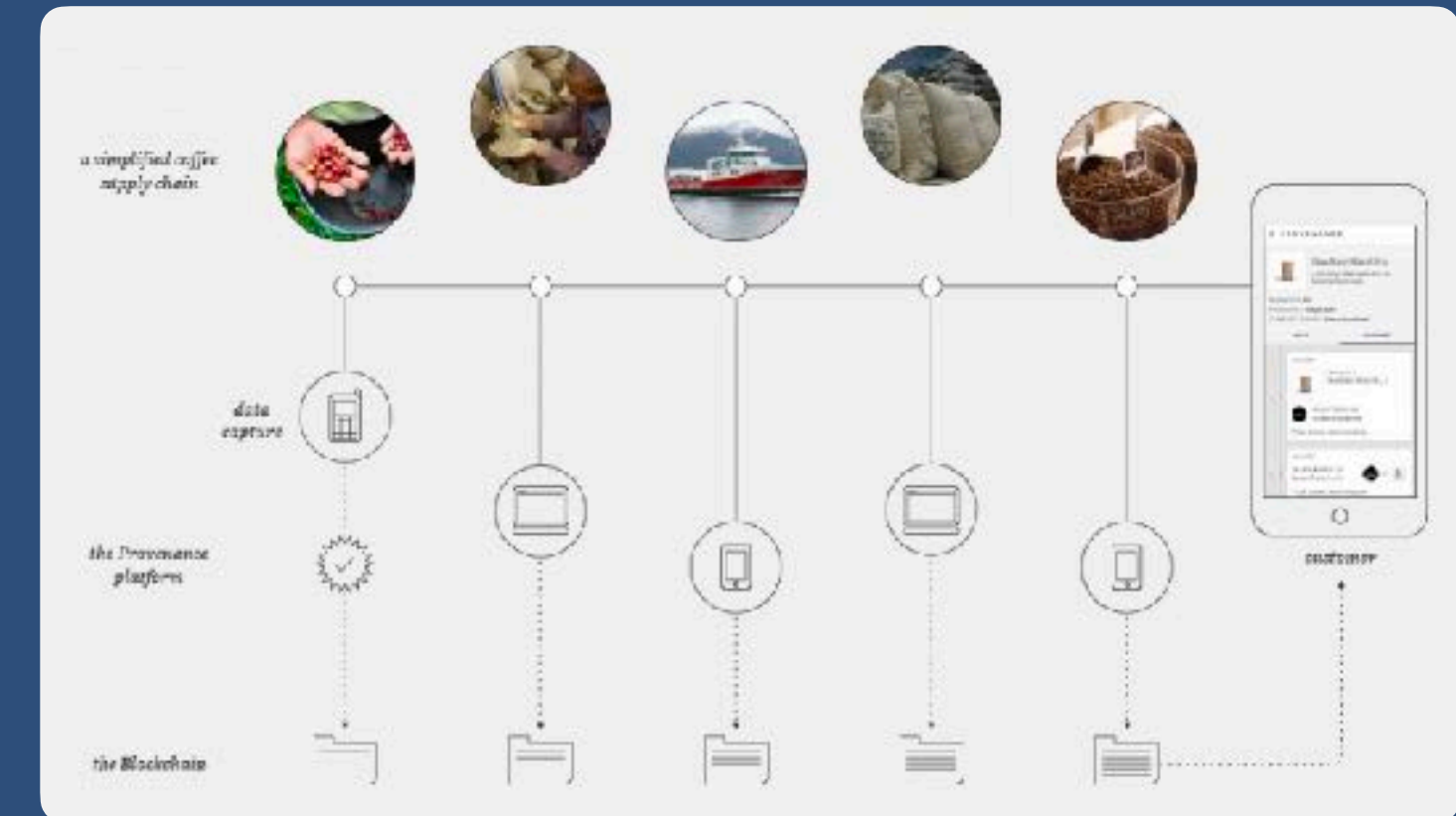
matured. Initial promises of full

traceability turned out to be

more complex than expected,

and some actors have had to refocus on quality controls. Also, after focusing

on food, companies are diversifying ([Provenance](#), UK).



We also note a group of startups focusing on **carbon counting**.

- Some offer platforms allowing industry players to calculate their products' life-cycle assessment and carbon footprint ([CarbonCloud](#), Sweden).
- Others work on providing consumers with information about the CO2 they “consume” by labelling the pack with a climate footprint ([Oatly](#), Sweden) or calculating the carbon impact of dishes ([Klimato](#), Sweden).

Food waste management

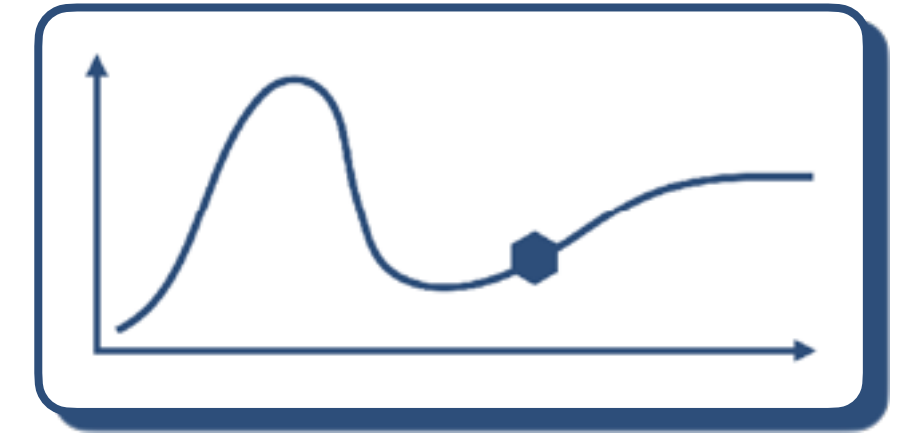
AI tools to limit food waste

Food waste management involves developing solutions to minimise the quantity of food waste throughout the food supply chain, from farm to restaurant to grocery store.

It involves various solutions:

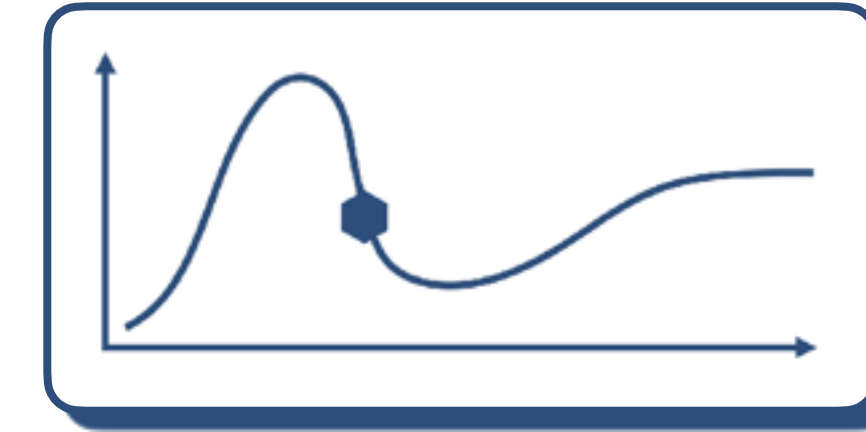
- 🏠 **Foodservice:** tools that improve food waste monitoring ([Winnow](#), UK) and optimise actions to reduce it.
- 🏠 **Unsold food:** applications connecting customers to restaurants and stores with surplus unsold food ([Too Good To Go](#), DK).
- 🏠 **On-shelf solutions:** dynamic shelf life labelling and pricing for fresh products ([Smartway](#), France; [Afresh](#), USA), with demand forecasting and inventory solutions for supermarkets.

State of the ecosystem in 2025 & analysis: the future of this ecosystem is with “on-shelf solutions”. New AI tools and data management allow companies to accelerate in this sector, and funding and partnerships with large retailers are regularly announced.



Smart Packaging

A slow development



Smart packaging refers to solutions that reduce waste, improve product shelf life, protect produce against diseases, and promote a clean way to create food packaging with less plastic and more biodegradable or compostable elements.

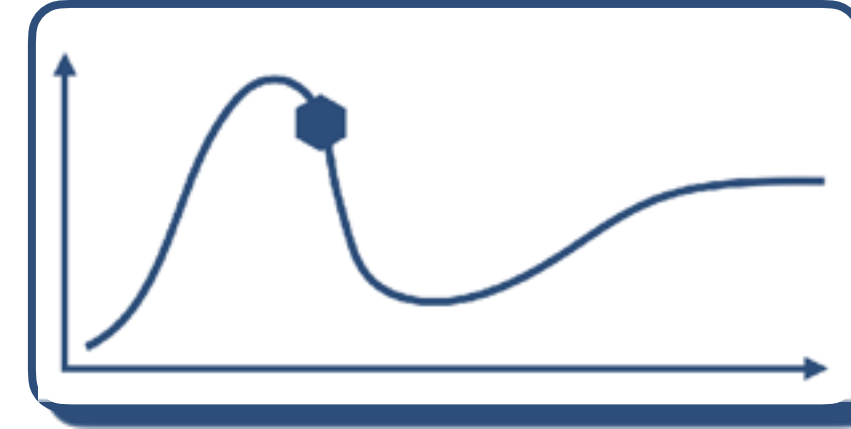
Applications:

- ⚙️ **Biodegradable solutions:** products capable of decomposing in a favourable environment (Tipa, Israel).
- ⚙️ **Protective layers:** by applying protective layers to fresh products (fruits, vegetables, meat, or fish), some companies (Apeel, USA) are reducing food waste, improving product shelf-life, and reducing food costs.
- ⚙️ **Sensors:** sensors integrated into the packaging to detect the development of bacteria and alert on the shelf life of products (Innoscentia, Sweden)

State of the ecosystem in 2025 & analysis: the ecosystem is evolving slowly, with difficulties convincing large companies to adopt its solutions. To move forward, adoption by other categories (cosmetics, etc.) and more stringent regulations will be required.

B2B Marketplaces

Alternative ordering services

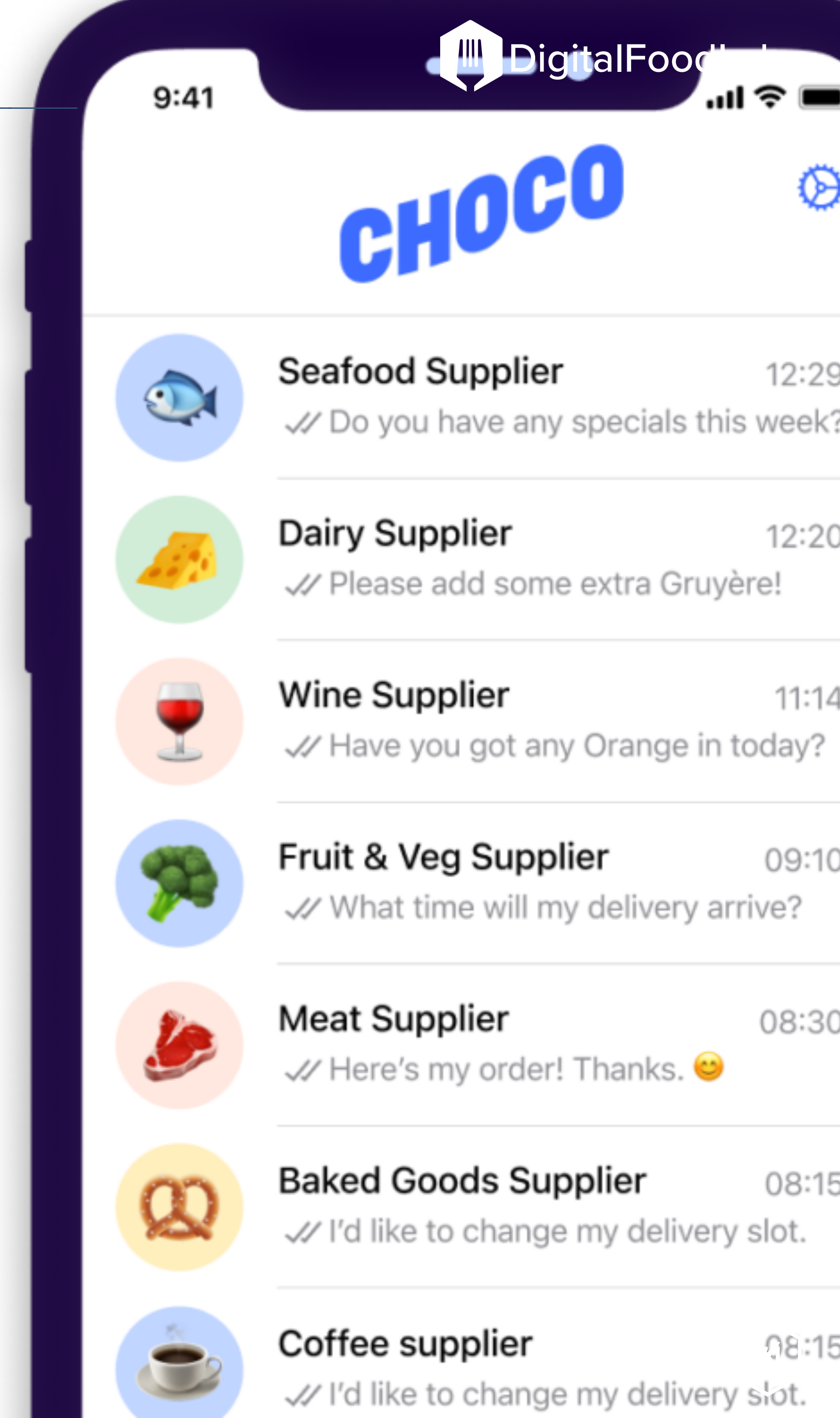


B2B marketplaces, or new supply players, are startups that use digital technologies to offer an alternative ordering service for restaurants or retailers.

Applications:

- 🔗 **Ordering apps:** tools allowing restaurant managers to place orders with their suppliers via a mobile application (Choco, Germany).
- 🔗 **Supplier marketplaces:** marketplaces that reference as many suppliers as possible (generally food producers) and enable a restaurateur or retailer to place an order in a single basket and payment (Deliveristo, Italy).
- 🔗 **Fully integrated solutions:** players that recreate a distribution network within large cities. They source suppliers, purchase and store products according to demand, and deliver (Cheetah, USA; Meicai, China).

State of the ecosystem in 2025 and analysis: the ecosystem is still young and fragmented but has experienced a first wave of consolidation. The adoption by restaurants and retailers should increase with each generation of new owners.





Megatrend #6:
Food automation



DigitalFoodLab

BE PART OF THE FUTURE

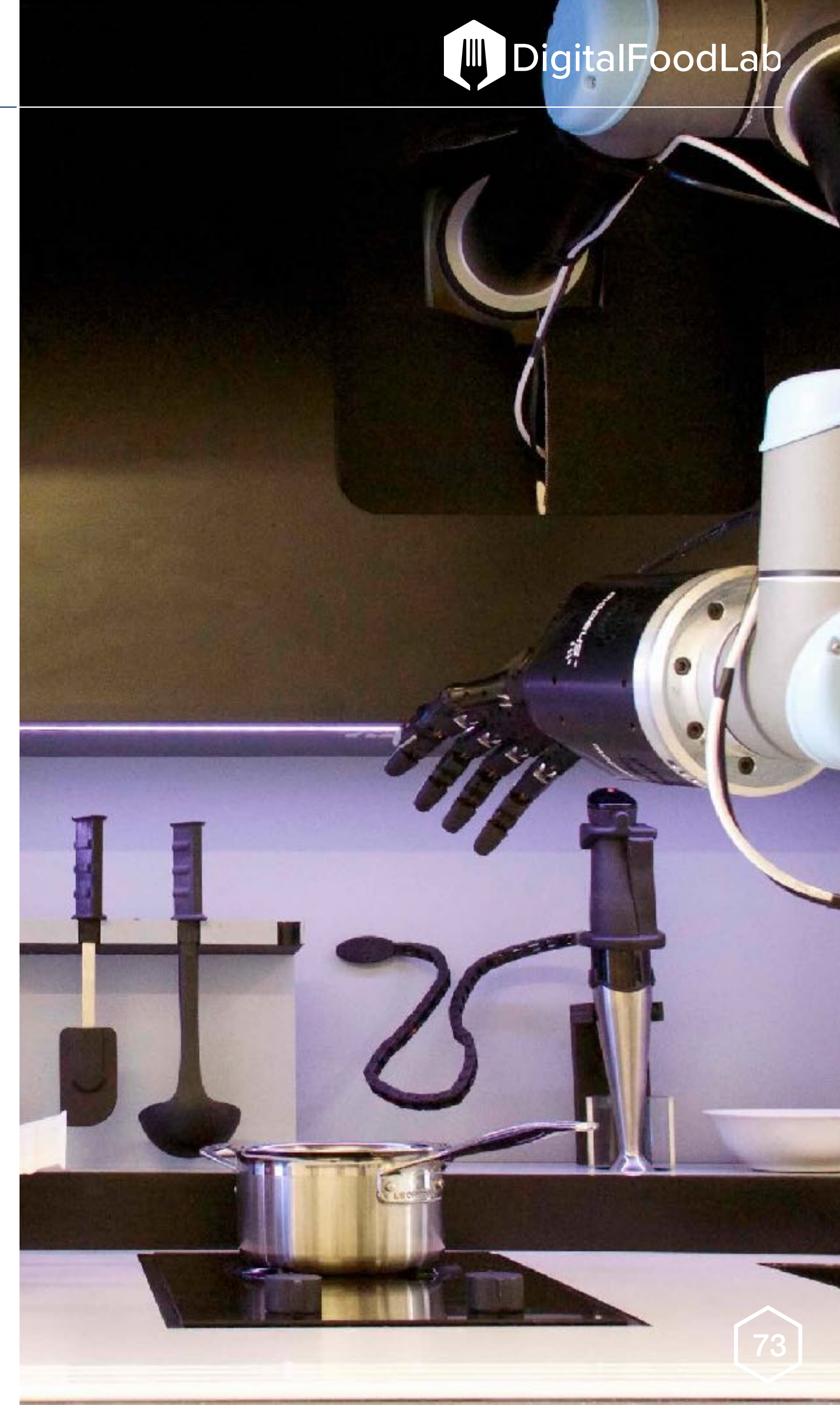
Food automation

What are we talking about?

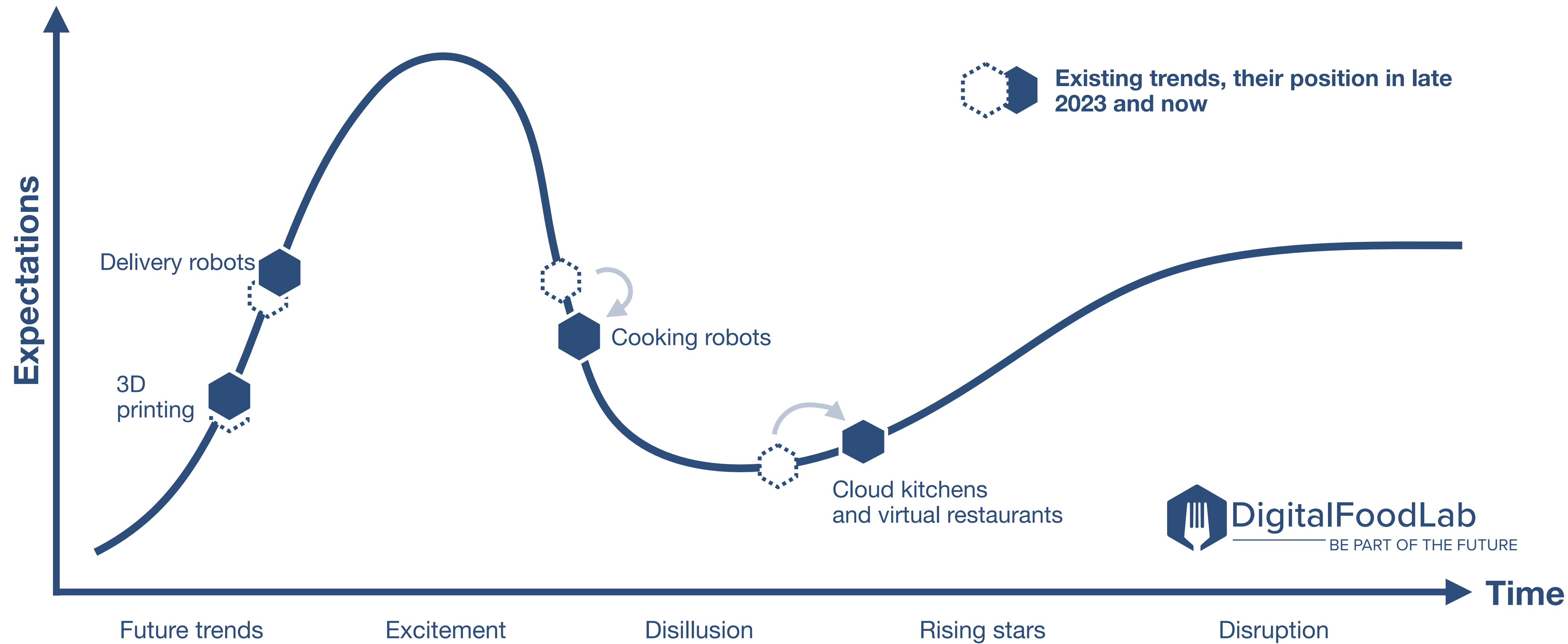
Automation refers to applying robotics and digitalisation to streamline the food value chain, primarily for efficiency gains.

Compared to most industries, agriculture and food are still mostly unautomated, with a high reliance on unskilled and cheap labour in kitchens, warehouses, and for deliveries and consumer services. That's not because we lack imagination. Indeed, when you watch a science fiction movie, the first thing that sets us in the future is often some food delivery robot or a 3D printing cooking robot. We are still in this phase because the food industry was able to gain efficiency (and lower its costs to the final consumer) without automation. This is changing fast, with labour shortages striking in many areas while commodity prices increase: it could finally be the time for automation in the food industry.

However, startups in this field are not doing well. Over the past years, many (or, to be more exact, most) have shut down. However, a few ventures are emerging, and the first hints indicate that we are nearing large-scale adoption.



An apparent standstill with important movements in the background



Cloud kitchens and virtual restaurants

Things are getting better

A cloud, dark, or ghost kitchen is primarily a space operator. It manages modular kitchens that are then rented to other companies.

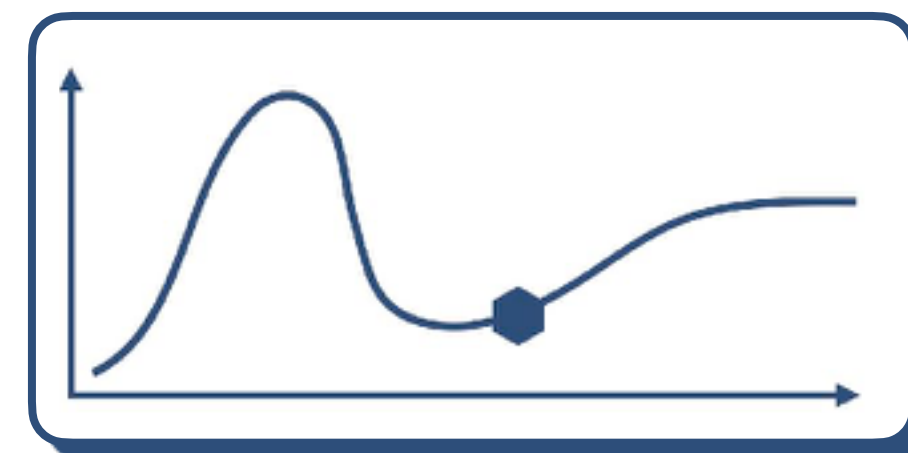
A virtual restaurant creates one or multiple foodservice brands operated online through central kitchens (often cloud kitchens) and delivery platforms.

The two ecosystems are quite logically intertwined. However, they are growing apart, as is often when a part of the food value chain gets disrupted. At first, some brands operated the kitchens, the brand, the software, and the delivery. Now, most of the elements are managed by specialised companies. Beyond restaurant brands, applications include drinks, bakery, and canteen management.

State of the ecosystem in 2025 & analysis

Multiple models exist, including purely virtual brands operated by franchisees in cloud kitchens or in existing restaurants. While the road ahead is unclear, the market is still growing in all segments.

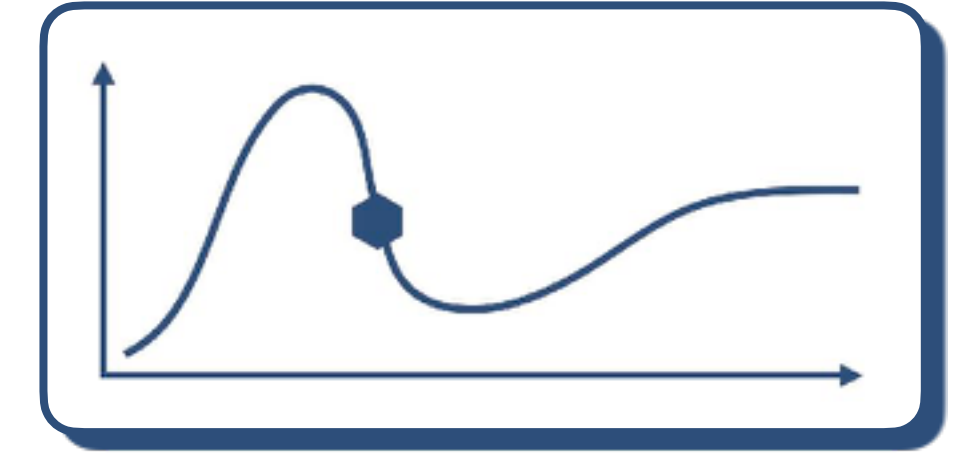
We still expect, in the medium term, to see more B2C brands venturing into this space.



Cooking robots

Recovery through a new generation of startups

Cooking robots refers to the application of robotics in restaurants, commercial kitchens, and consumer kitchens.



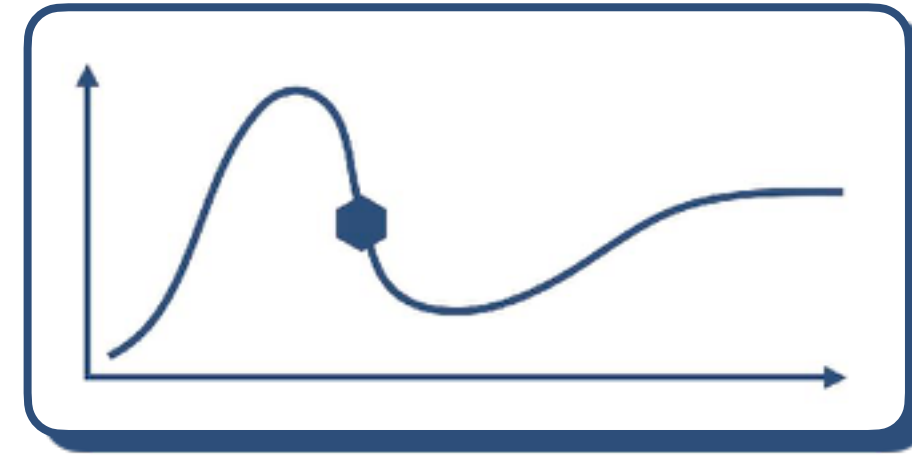
There are multiple applications, each referring to a different set of technologies and business models:

1. **Collaborative robots** which replace an employee for complex tasks ([Miso Robotics](#), USA)
2. **Automated restaurants** which can perform several recipes « like a chef ».
3. **Automated kiosks and vending machines** that can serve a meal, a coffee, or a salad according to the user's choice of ingredients ([Café X](#), USA).
4. **Connected robots at home** used by consumers to cook for them ([Moley Robotics](#), UK)
5. **Service robots** to assist or replace humans ([Bear Robotics](#), South Korea)



Cooking robots

Some convincing first large-scale experiments



State of the ecosystem in 2025 and analysis

Cooking robots have had a bad time in recent months (and years). Since Zume's shutdown in 2020, we have seen numerous failures in the ecosystem. For example, DoorDash (a leading US delivery service) shut down Chowbotics, the salad robot maker it acquired. Also, most fully robotised and automated restaurants closed down.

A new set of startups is developing robotics solutions (often mechanical tools rather than robots) and finding solutions to have them work with humans. What's even more notable is the involvement of industry leaders: Chipotle is working with [Hyphen](#) (USA), and the salad chain Sweetgreen (USA) is experimenting with its « [infinite kitchen](#) » where robots assist humans (see opposite). For the first time, the unit economics are making sense: using robotics can bring high levels of profitability to challenging locations. New partnership announcements should lead to the broader development of this ecosystem.



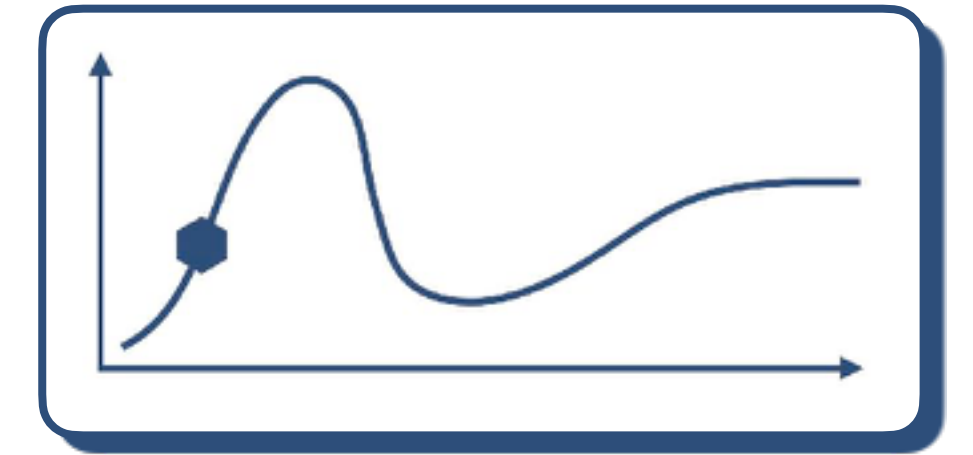
Delivery robots

A slow growth

The following characteristics define delivery robots:

- **Their ability to circulate** on the sidewalk (Starship Technologies, USA), on the road, or in the air (Manna, Ireland).
- **Their level of autonomy**: some of these vehicles are fully autonomous, while others are tele-operated.

State of the ecosystem in 2025 & analysis: the pandemic and labour shortage led to a wave of robotic delivery experimentations, which are turning into large-scale deployments. This is still a slow movement due to the high costs of the robots (which limit scalability) and as each city presents a different set of challenges, notably in terms of regulation. However, the current ecosystem is mainly made up of solid players who have gone through a rough patch over the past years, and we expect additional partnership announcements and deployments in the year ahead.



3D Printing

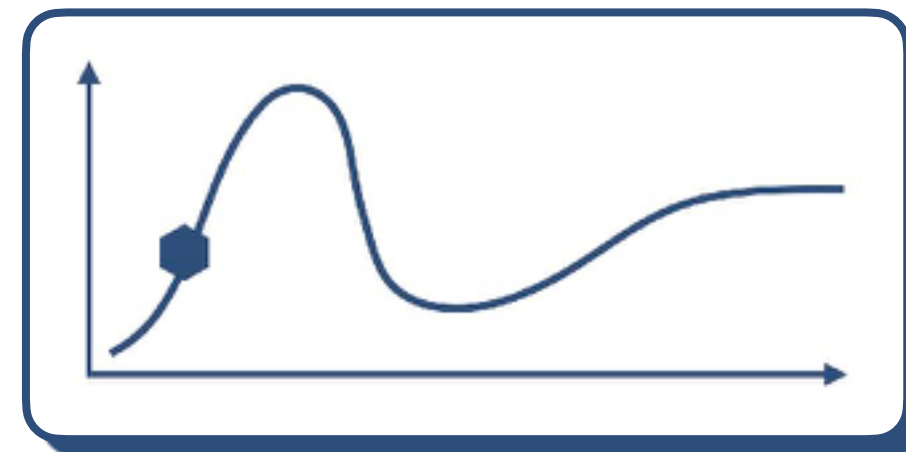
Still futuristic

3D printing for food consists of creating new food forms in precise portions and shapes or recreating known food forms but with new ingredients.

Applications include:

- ⚙️ **Creativity** and personalisation. For example, Nourished (UK) uses 3D printing to create customised batches of chewable supplements. Others use 3D printing to create original shapes with chocolate or sugar.
- ⚙️ **Alternative proteins** to imitate the complex texture of meat and fish products. 3D printing can be used in plant-based products (Redefine Meat, Israel) and cellular agriculture (Revo Foods, Aleph Farms, Israel).

State of the ecosystem in 2025 & analysis: for now, the ecosystem remains extremely small and dependent on applications in alternative proteins. We are still waiting for a breakthrough that would widen the applications of 3D printing, notably in personalisation.



Other contents by DigitalFoodLab

FOODTECH UNICORNS

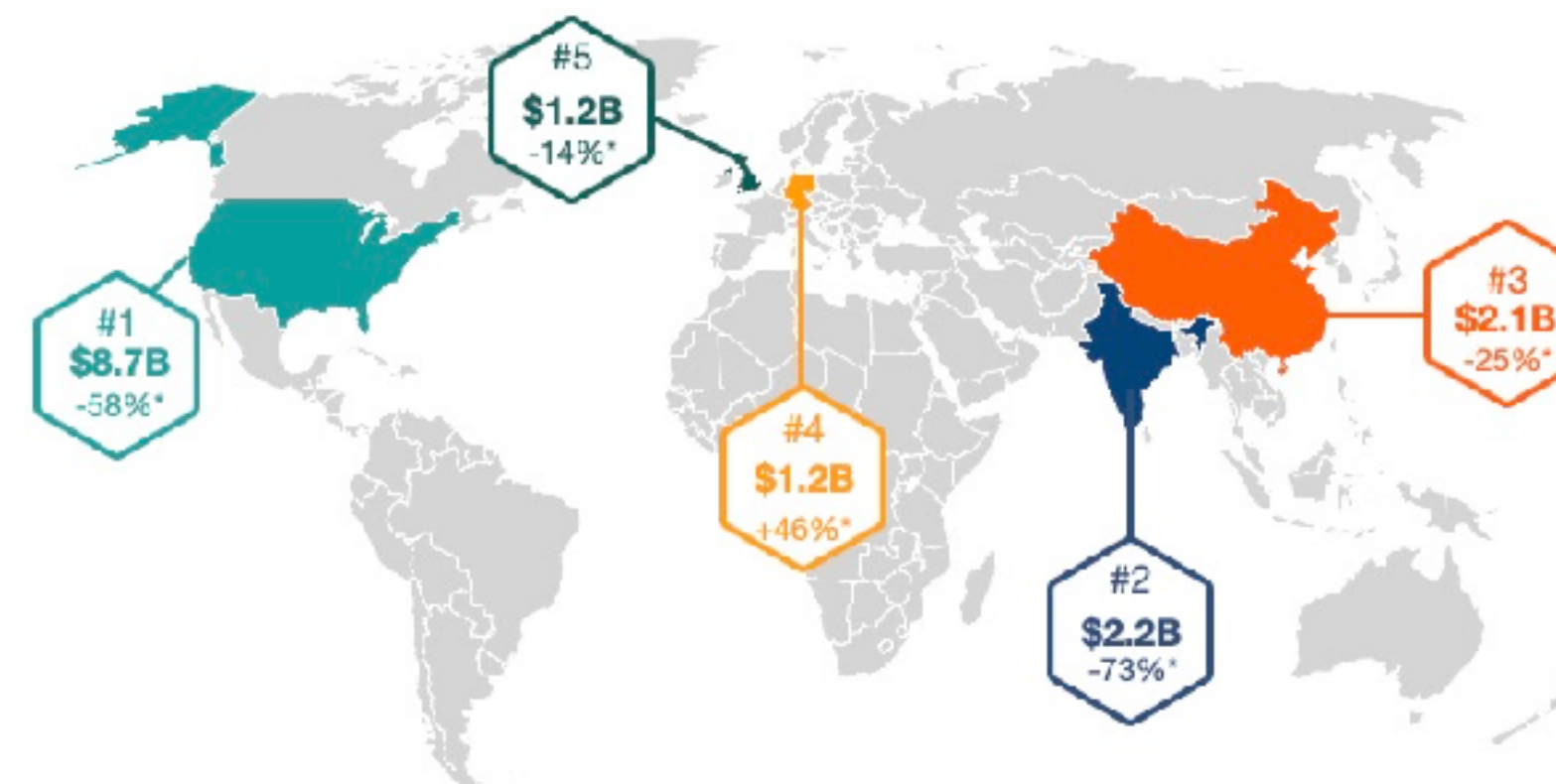
Mapping and analysis of the evolution of the FoodTech startups valued \$1B+



FOODTECH INVESTMENTS

Yearly reports on investments in key geographies:

- Global investment report
- European investment report
- Focus on France.



Future of food Newsletter

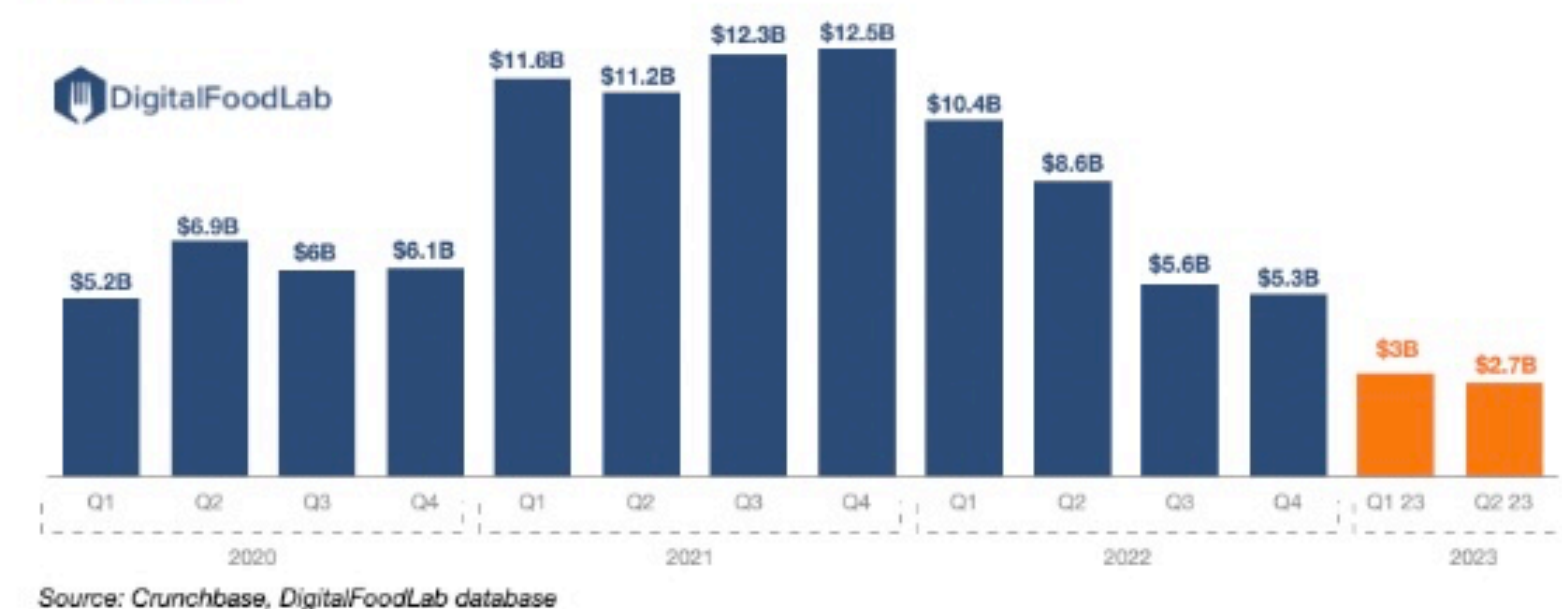
Hi,

A month ago, we released the [FoodTech Top deals for the first half of the year](#), both at a Global and a European level. Now, I can share with you the level of investments. I'd love to say that they are bouncing back, but that's quite far from the reality we observed in the data. However, everything is not dark. Hidden in the data, I have found things that make me reasonably optimistic and indicate that we are not far from bouncing back.

Global FoodTech investments are stabilising... at low levels

Investments in Q2 2023 have again decreased, but "only" by 10%. They reached a very low level compared to previous years.

GLOBAL INVESTMENTS IN FOODTECH STARTUPS H1 2023



Join 20,000+ people in the most in-depth newsletter on FoodTech. Each week, we dive into one topic that will be key for the upcoming food revolution.

Image credits

Name of the startups whose images we used to illustrate the trends

Mega Trend #1 - Sustainable ingredients

- Cover: Oobli
- Plant-based: Juicy Marbles
- Cellular agriculture: Vow, Gourmey, Aleph Farms
- Biomass fermentation: Solar Foods
- Plan-cell culture: Food Brewer, Kokomodo
- Molecular farming: Moolec
- Protein discovery: Basecamp Research

Mega Trend #2 - The resilient farm:

- Cover: Carbon robotics
- The resilient farm: Plenty
- Precision farming: Aeorobotics
- Farm Robotics: Ecorobotix, Monarch
- Indoor Farming: Oishii
- Insects for agriculture: Innovafeed
- Sustainable livestock: Volta GreenTech, Zelp

Mega Trend #3 - Food as medicine:

- Cover: Midjourney (AI)
- Food Coaching: Noom
- Personalised food: Cuure, Bioniq, NGX

Mega Trend #4 - Digital Retail

- Cover: Zepto, Picnic
- New retailers: Daki
- Restaurant delivery: Uber Eats, Zomato, DoorDash
- DTC: Koro

Mega Trend #5 - Smart Supply Chain

- Cover: Afresh
- Definition: Dall-e (AI)
- Digital restaurant Toast
- Smart Packaging: Apeel
- Food waste management: Winnow, Too Good To Go, Smartway

- Digital supply chain: Provenance
- B2B marketplaces: Choco

Mega Trend #6 - Food Automation

- Cover: Hyphen
- Mega Trend definition: Moley Robotics
- Delivery robots: Starship Technologies, Wing
- Cooking robots: AitMe, Hyphen, Bear Robotics, Sweetgreen
- Cloud Kitchens: Kitopi



Learn more on the future of food & discover how we can work together at digitalfoodlab.com