Impuls Agritech

New Product Development

AgriTech and Food Innovation

Generalitat de Catalunya
Departament d'Empresa i Treball

Cofinançat per la Unió Europea

Subvencionat pel Departament d'Empresa (**Programa Primer)** i amb el cofinançament del Fons Social Europeu Plus

Impuls Agritech

Alegría Serna

Innovation Specialist Future Food Institute
B.Sc, Biological Engineering
M.Sc., Food Science and Engineering
Innovation specialist **Future Food Institute**
Founder of Scientific Communication Platform **@cuina_lab**

Specialist in NPD, sustainable product innovation (formulation, prototyping and scale-up).

With a mission to promote innovation and sustainability in global food systems.
One of my passions is scientific outreach in the field of food, to show the wonderful world of what we eat.

Co-funded by the European Union

EMPOWERING WOMEN IN AGRIFOOD

ITALIA 2026

FUTURE FOOD INSTITUTE

Agenda

Day 1 - September 10st

Integral Ecology, desing thinking and prosperity thinkin

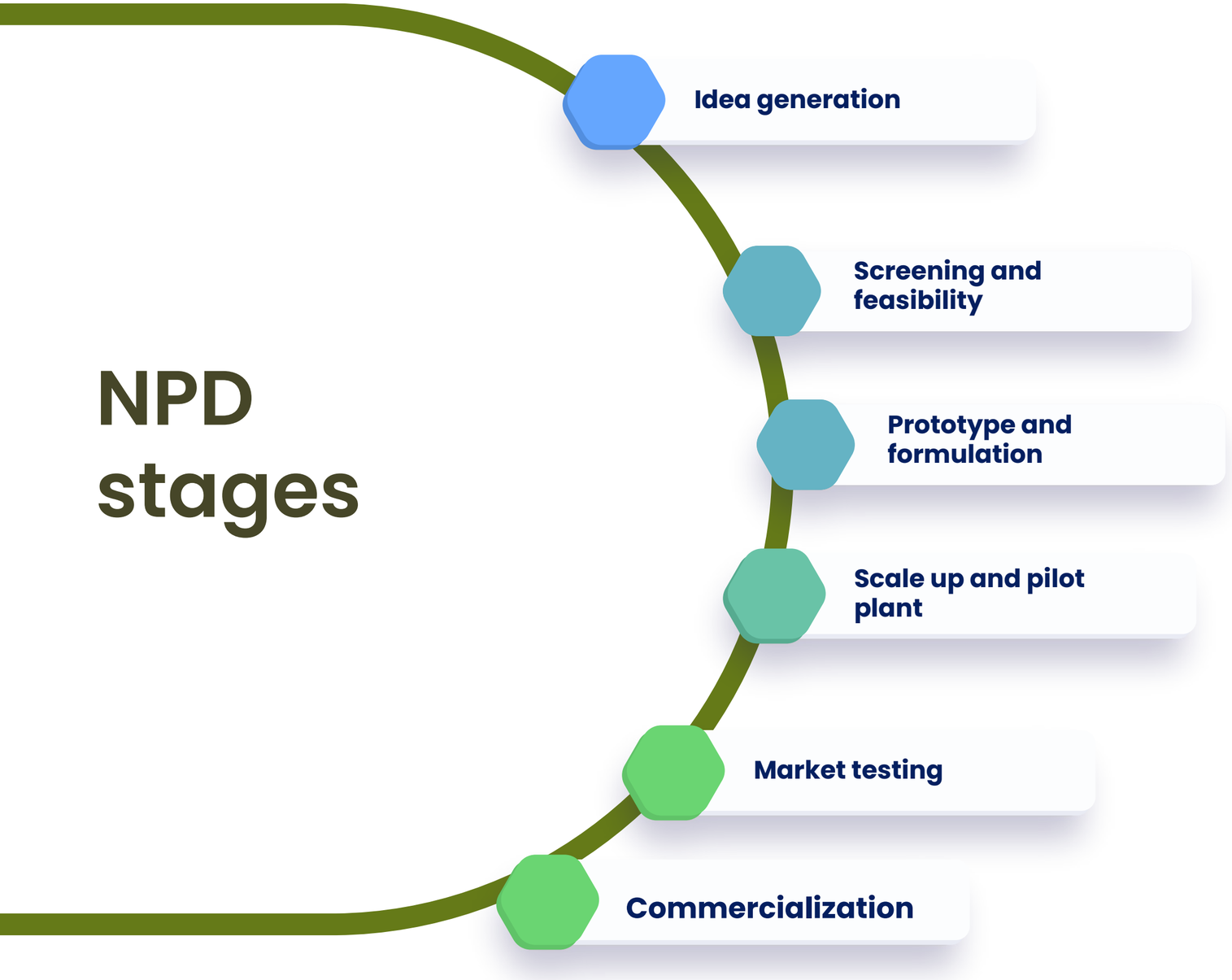
Introduction to NPD strategies

Day 2 - September 15 th

NPD strategies and case of study

Activity

NPD stages



ICEBREAKER

What is the most challenging stage in developing your product concept?

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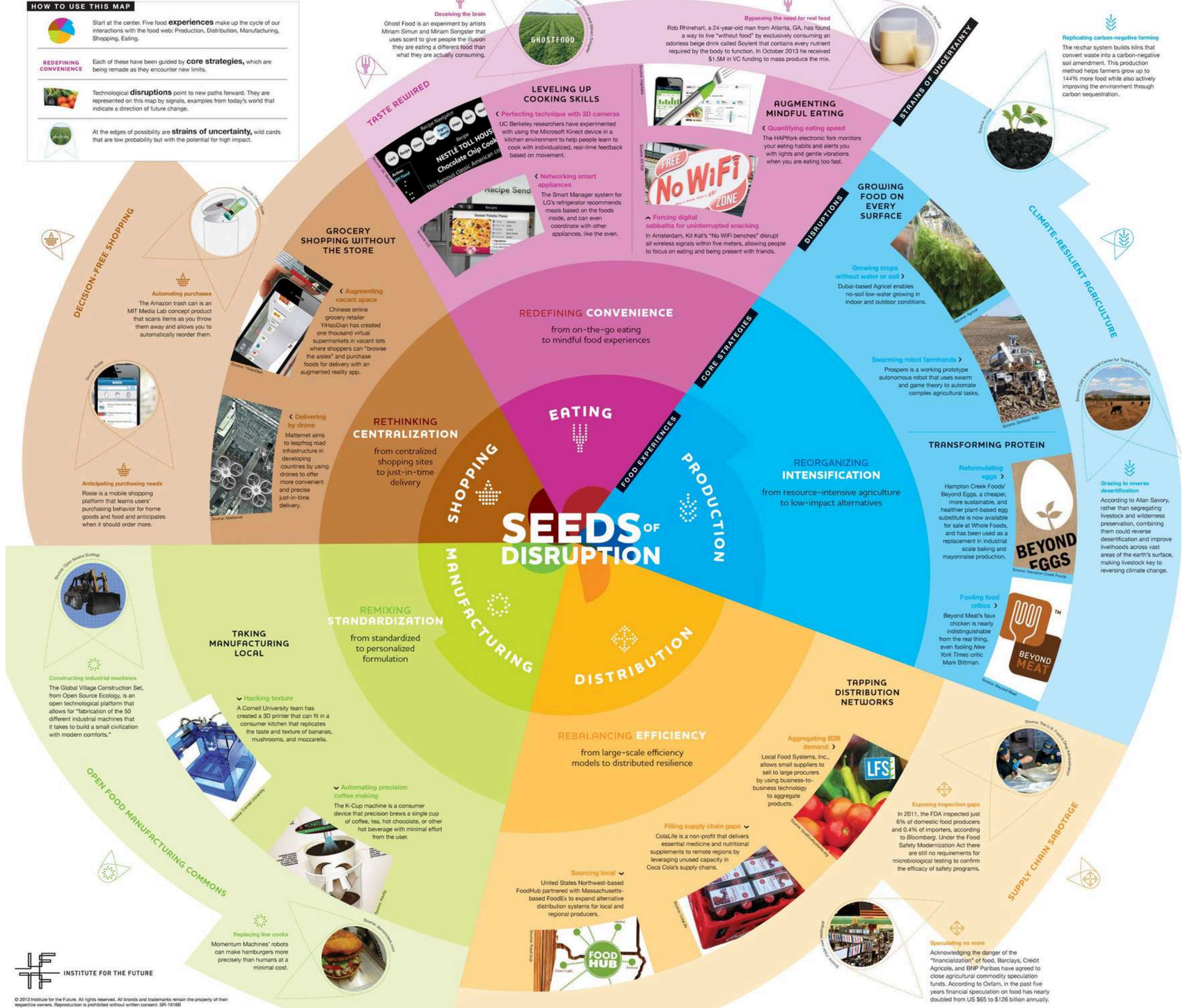
Seeds of disruption

How Technology is Remaking the Future of Food



https://legacy.iftf.org/maps/seeds-of-disruption/seeds-of-disruption-map/


Design Thinking
Prosperity Thinking
MAKING PEOPLE WANT THINGS
MAKING THINGS PEOPLE WANT
MAKING THINGS PLANET WANTS


Design Thinking
Prosperity Thinking
HUMAN CENTERED INNOVATION
HUMAN-NATURE CENTERED INNOVATION

Human centered innovation

Primary stakeholder: The consumer / user

Success Metric: Adoption, user delight, market share

System Boundary: The product-to-consumer journey

Human-nature centered innovation

Primary stakeholder: The consumer / user plus natural resources (soil, water, carbon.)

Success Metric: Systemic resilience, circularity, net-positive ecological impact

System Boundary: Full lifecycle (cradle-to-cradle) and agroecological systems

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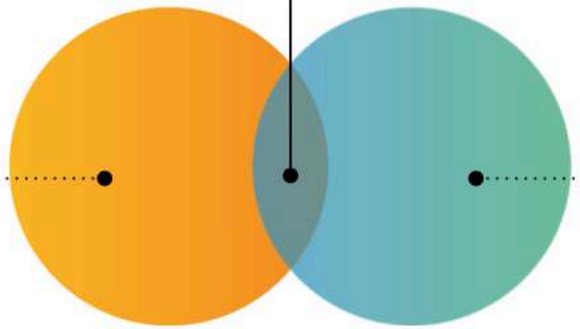
INNOVATION SPACE



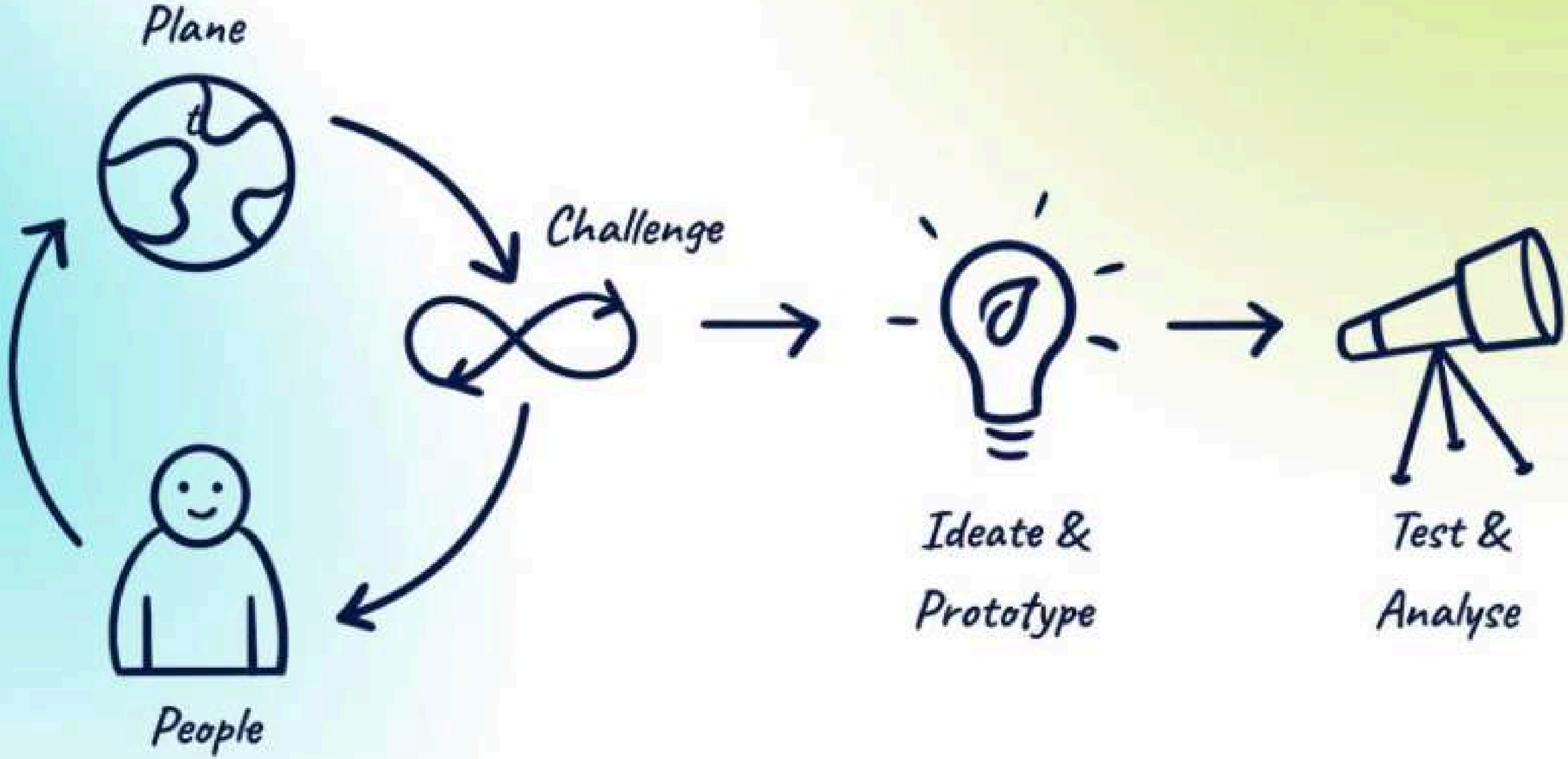
HUMAN NEED

Eg. Access to safe drinking water to all

PLANET NEED

Eg. Excess production of non-biodegradable material

Process



ICEBREAKER

Analyze your current NPD concept:
What **human need** and **planet need** is it addressing?

EARTH REGENERATION

Earth regeneration passes through the deep relationship between man, the Planet, and all the living entities living on that can be restored and maximized in different forms and through different approaches.

It implies restoring the ancient wisdom on regenerative and sustainable practices, favouring a responsible and efficient usage of natural resources, enhancing the role of innovation and technologies to increase the resilience of the whole natural ecosystem, implementing adaptation and mitigation strategies, promoting climate-smart approaches.

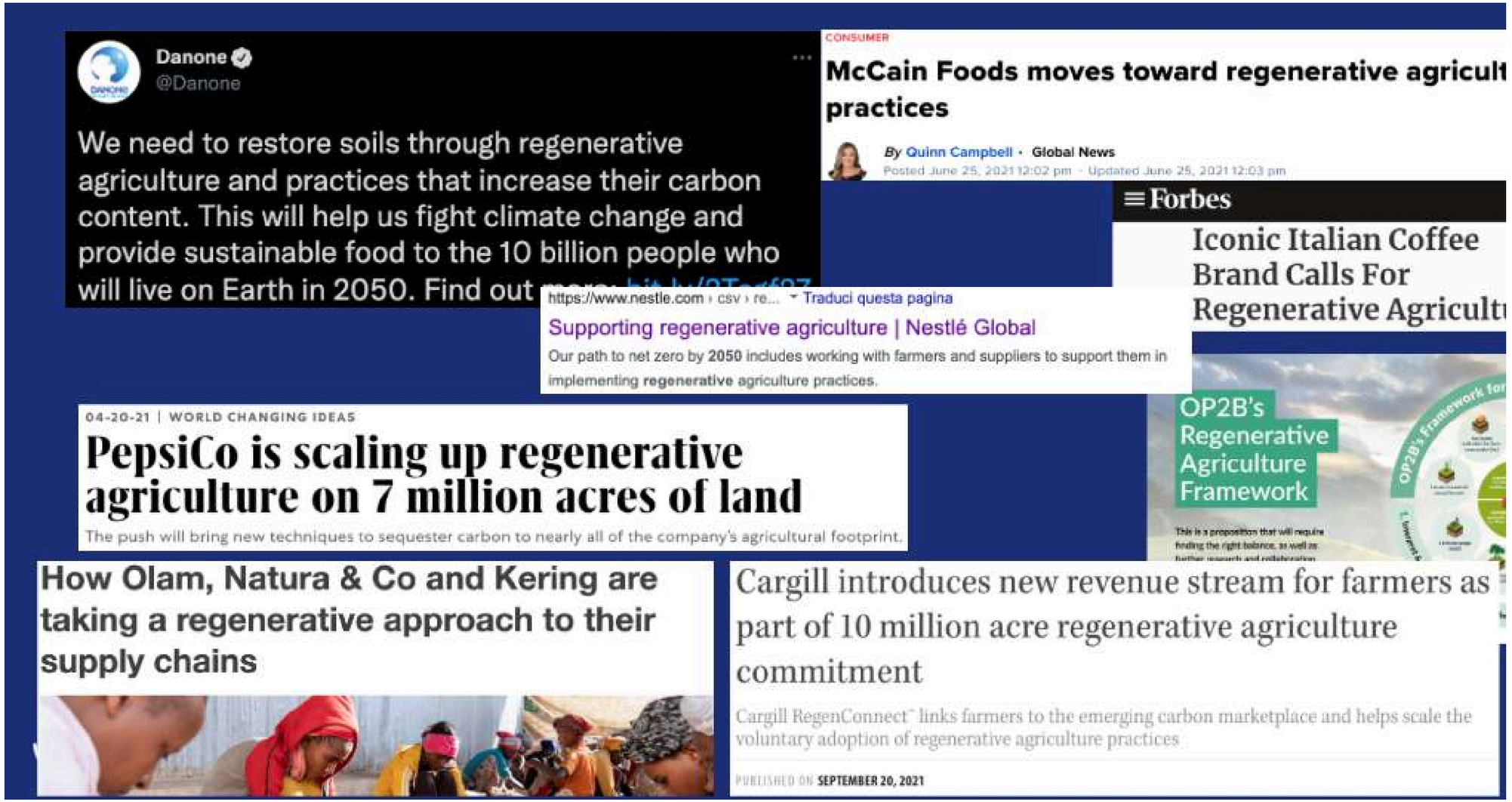
Regenerative Agriculture & Agroecology

“Agroecology is an essential solution for transforming food systems into healthy, resilient, equitable, and sustainable systems.”[1]
Some related buzzwords include: agroecology, nature-inclusive agriculture, permaculture, biodynamic agriculture, organic farming, conservation agriculture, regenerative agriculture, carbon farming, climate-smart agriculture, high-nature-value farming, low external input agriculture, circular agriculture, ecological intensification, and *sustainable intensification.*[2]

Robert Rodale (Image courtesy Rodale Institute)

“An agriculture that, at increasing levels of productivity, expands our biological base of land and soil production. It possesses a high degree of intrinsic economic and biological stability. It has minimal or no impact on the environment beyond the boundaries of the farm or field. It produces food free of biocides and ensures the productive contribution of an ever-growing number of people during a transition toward minimal dependence on non-renewable resources

Is regenerative agriculture ready to scale up?

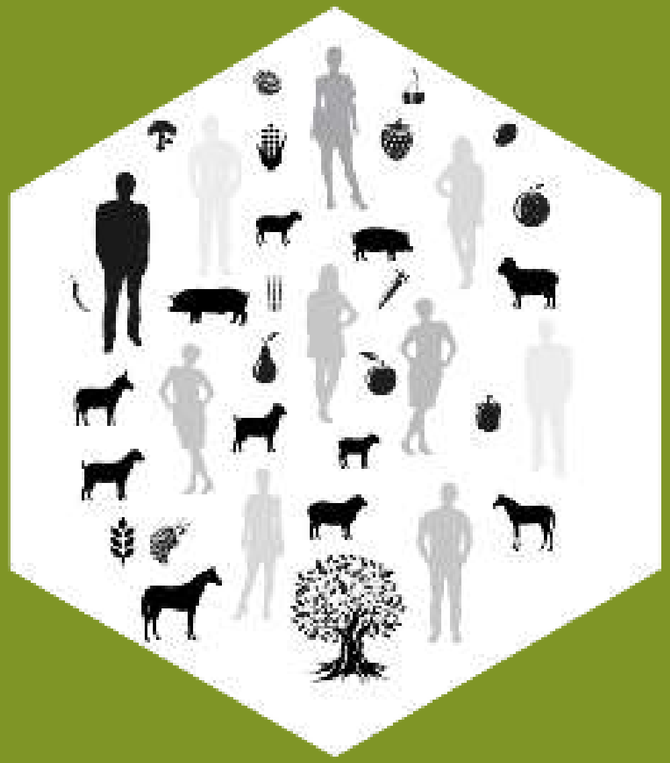


Ego-system

The belief that humans are on top of an ego-system, that we can “use” our planet and shape it according to our needs.

Eco-system

Where humans are and feel part of Nature.



Regenerative Agriculture

SOIL IS THE FOUNDATION

DIVERSIFICATION OF CROPS AND ACTIVITIES

REDUCTION OF INPUTS

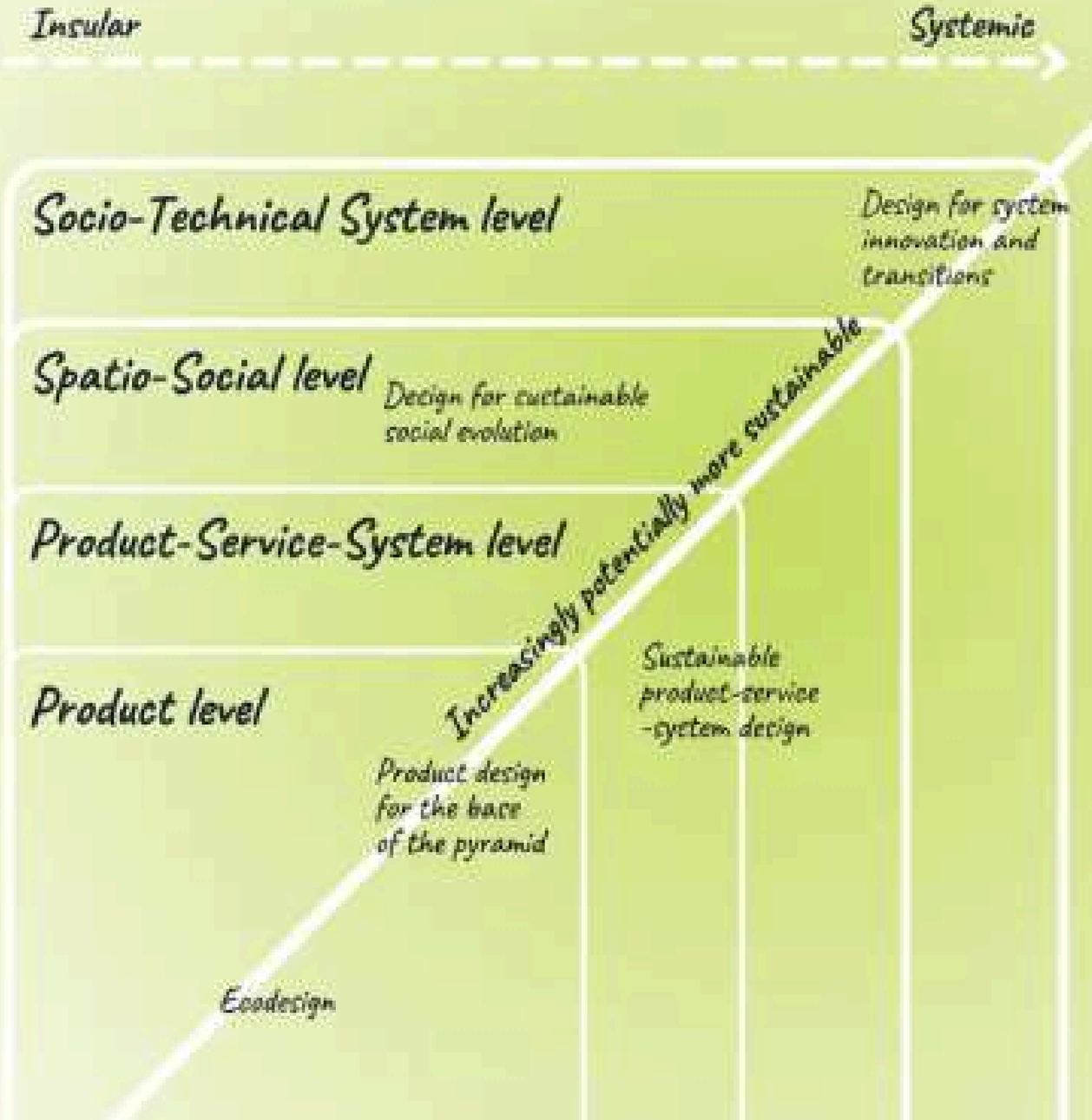
Local food systems and resilient communities

How can we design products and services that strengthen local food systems and build community resilience?

Importance of a systemic approach

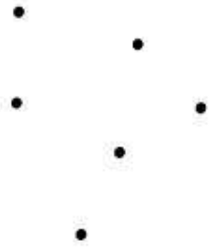
Linking micro and macro

Design methods have evolved passing from a product-centered approach to a more systemic one. We need to continue to link micro and macro-innovations in a continuous dialogue in order to be coherent.

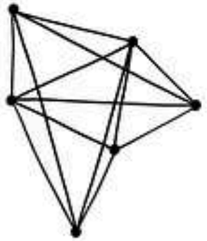


The DfS evolutionary framework

TOOLS OF A SYSTEM THINKER



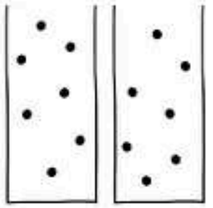
DISCONNECTION



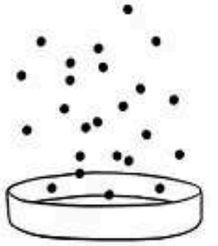
INTERCONNECTEDNESS

LINEAR

CIRCULAR

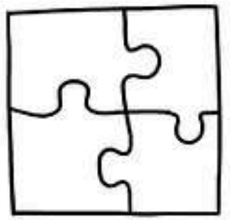


SILOS

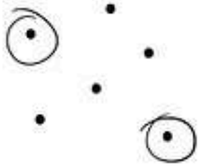


EMERGENCE

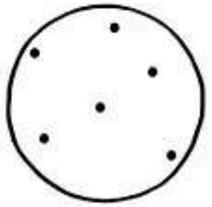
PARTS



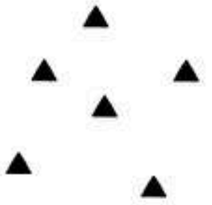
WHOLES



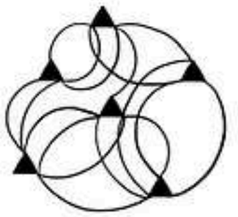
ANALYSIS



SYNTHESIS

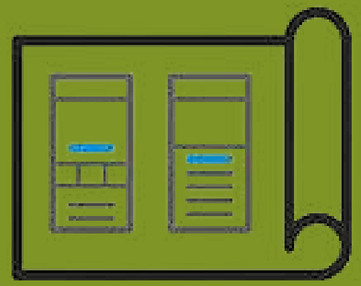


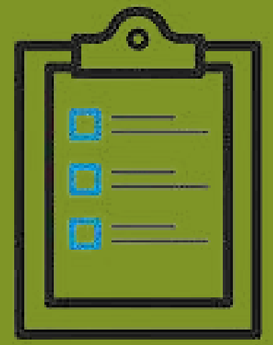
ISOLATION



RELATIONSHIPS

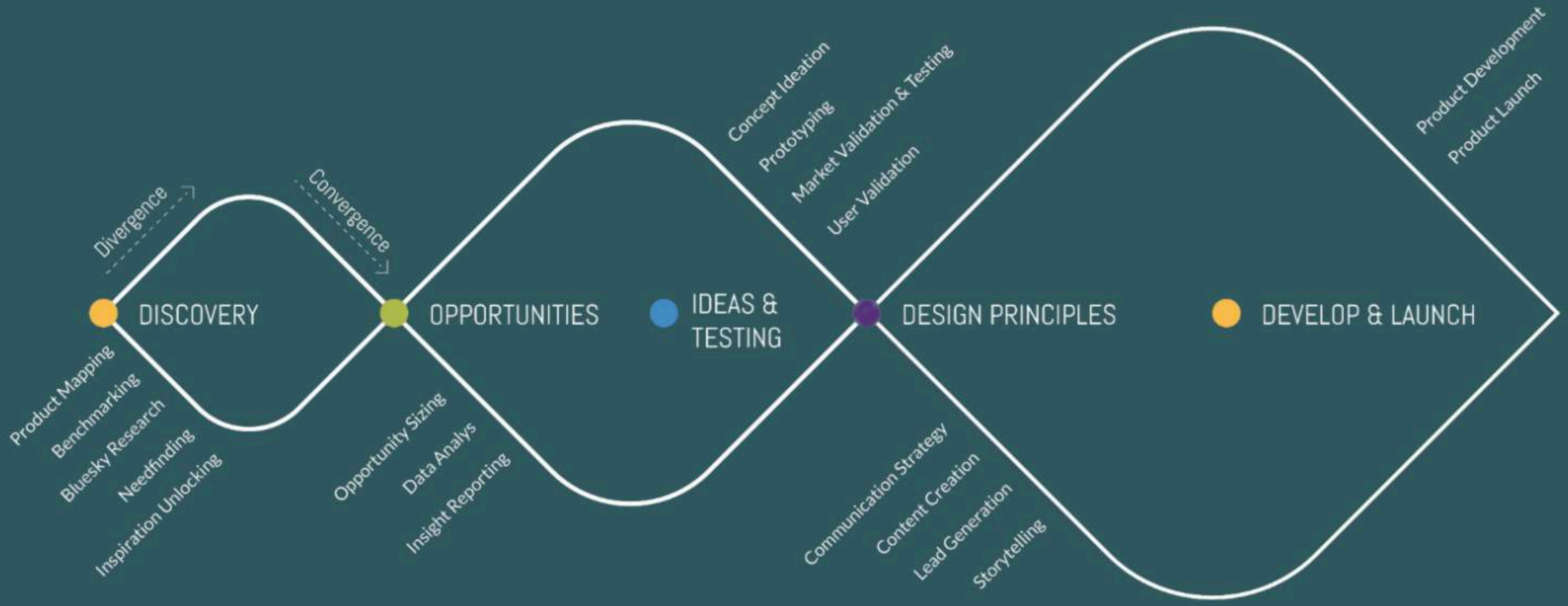
WHAT IS DESIGN-THINKING





1. **Empathize** 2. **Define** 3. **ideate** 4. **Prototype** 5. **Test**

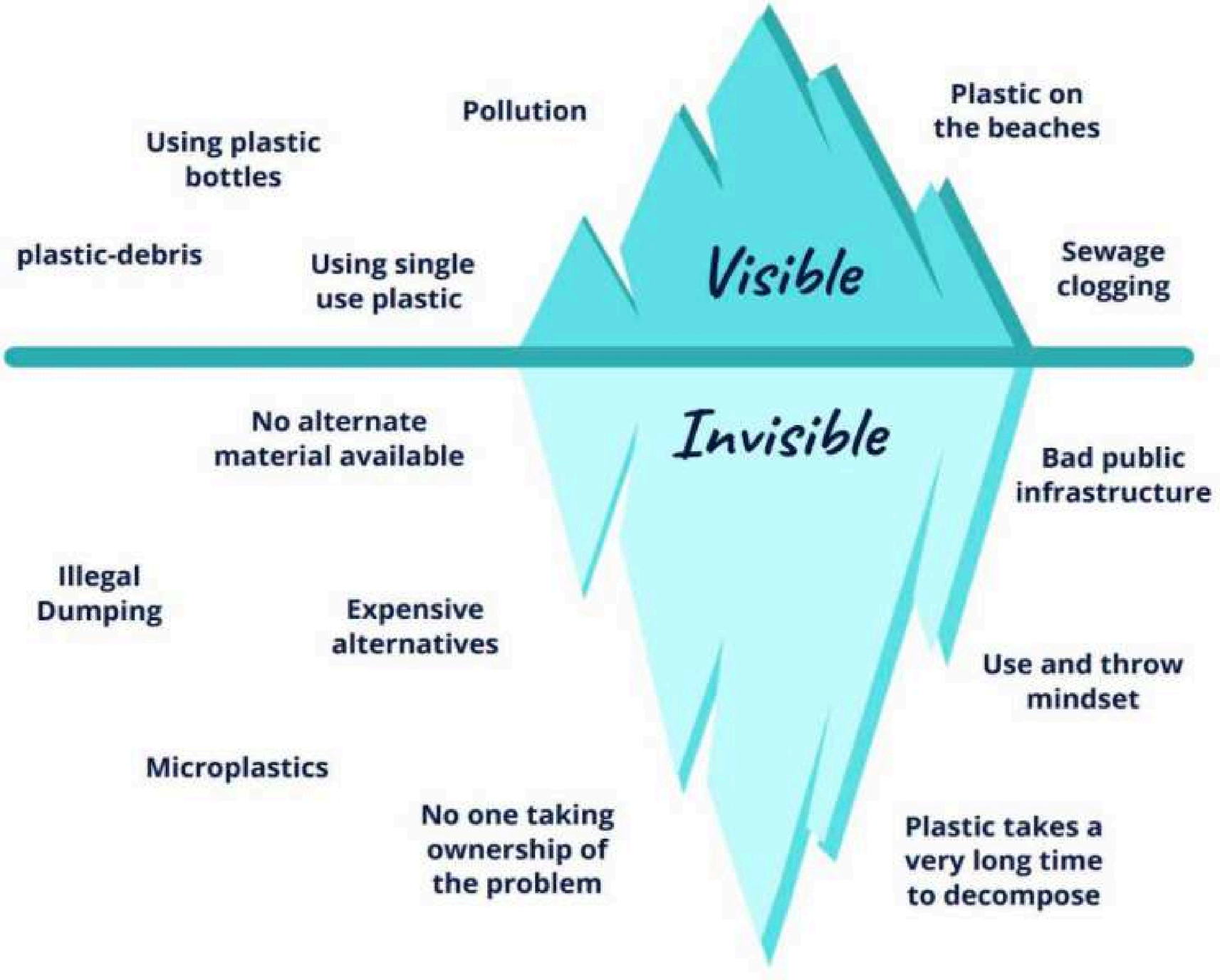
Innovation Process - Design thinking



What is system thinking?

An approach that identifies the interaction between different elements of a system (e.g. city, society, sector, etc.) and ensures that they deliver more than the sum of their parts.

Plastic pollution in the sea



What is NPD?

New Product Development (NPD) is the **systematic process of transforming ideas** and raw resources i**nto market-ready products or services** that meet consumer needs, align with regulatory and sustainability standards, and leverage advances in technology, science, and agriculture.

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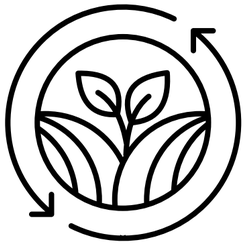
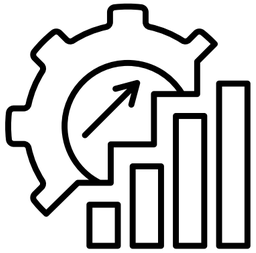
Importance of NPD in the Agritech



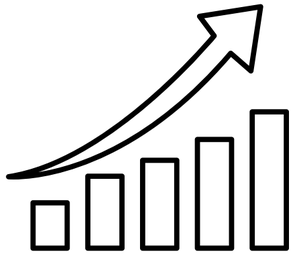
Bridge between agriculture and consumer markets

Sustainability and resource efficiency

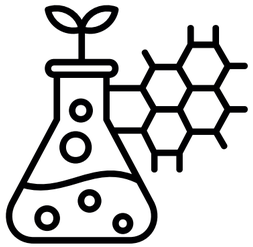
Added value for primary producers



Data-driven and consumer-centered



Scalability and traceability



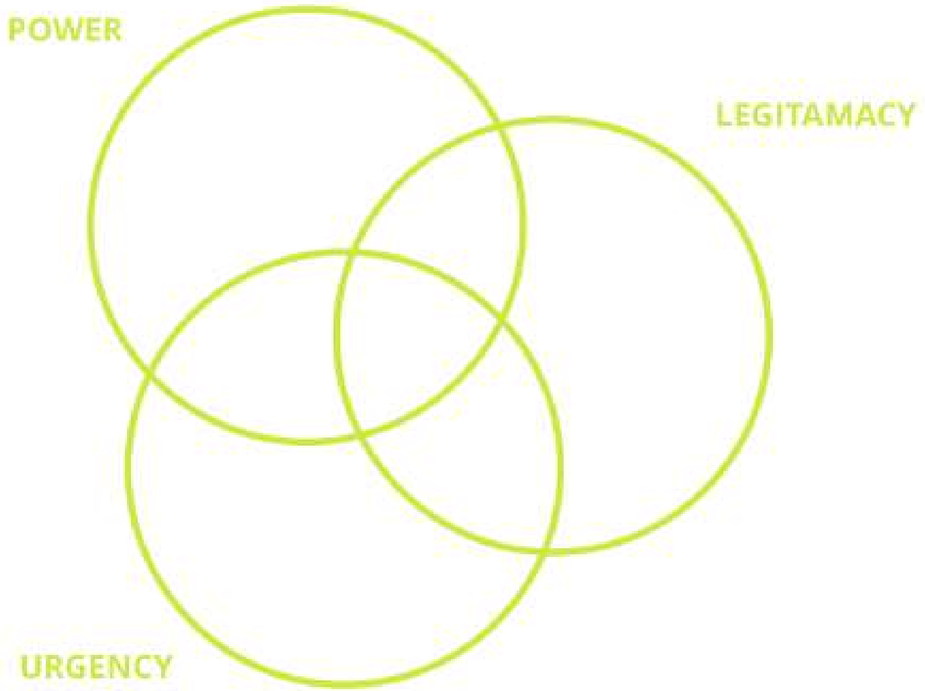
Innovation through biotechnology and fermentation

1. Problem Framing

In this phase, the problem challenge is analyzed and reframed just like in the Design Thinking process, but with the very important change of stressing the planet's needs just like the humans' ones.

Stakeholder System Map

Create a map identifying all relevant stakeholders within the scope of your challenge. Who will benefit from potential new solutions, who will fund it, who will be indirectly impacted by it, whose knowledge will be relevant...etc. (Customers, Companies, organizations, institutions, service providers)



To truly innovate for sustainability, it is crucial to **stop and identify the right question or challenge to solve** for before jumping into solutions to vague problems.

This way of defining the challenge focuses on solving for sustainability by **helping to connect the dots between human actions and planetary needs.**

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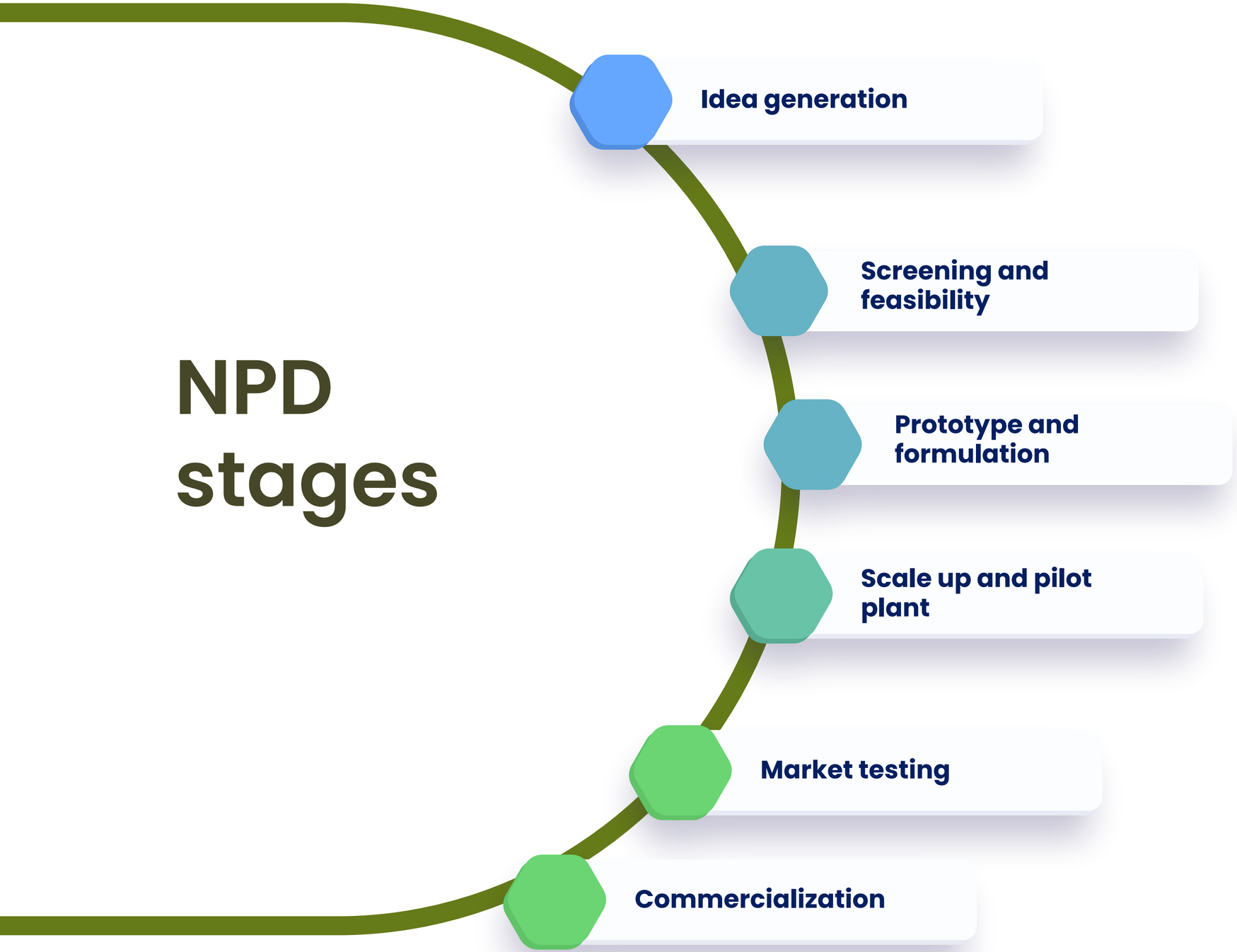
Human & Planet
Balance Statement

HUMAN AND PLANET BALANCE STATEMENT

How might we enable **‹Stakeholder›**
to **‹planetary boundary / social foundation›**
while their **‹need/goal› ?**

How might we enable [mid-sized grain farmers] to [eliminate synthetic nitrogen runoff and halt freshwater eutrophication] while [protecting their seasonal profit margins and maintaining baseline crop yields]?

NPD stages


Idea generation
Screening and feasibility
Prototype and formulation
Scale up and pilot plant
Market testing
Commercialization

NPD stages

1. Idea generation OR PROBLEM FRAMING
2. Screening and feasibility
3. Prototype and formulation
4. Scale up and pilot plant
5. Market testing
6. Commercialization

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Stage 1. Idea generation, concept development

How many radically different ways can we address our core challenge?"

Why do we need new ideas?

- To replace existing products or services in the range which have declining needs
- Exploring cross-industry inspiration (e.g., applying pharmaceutical micro-encapsulation techniques to stabilize food nutrients).
- Identification of a gap in the market

Brainstorming

It exploits the team power to look for ideas and solutions, exploring different topics, unravel information that would otherwise be difficulty noted. The best policy is to promote openness, lots of ideas, and creativity over immediate feasibility.

- Identifying the need
- Creative thinking
- Generation of new ideas

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Challenges in AgriTech

THE DIGITAL DIVIDE

Limited access to digital infrastructure by small-scale farmers

SUSTAINABILITY & CLIMATE RESILIENCE

Resource efficiency and ecosystem health in a changing climate

TECHNOLOGY ADAPTATION

Local suitability of innovations to diverse farming systems

FINANCING & INVESTMENT

Access to funds for agritech startups in developing regions

DATA GOVERNANCE

Ownership, privacy, and interoperability of agricultural data

HUMAN CAPACITY & EDUCATION

Digital skills and knowledge transfe to rural communities

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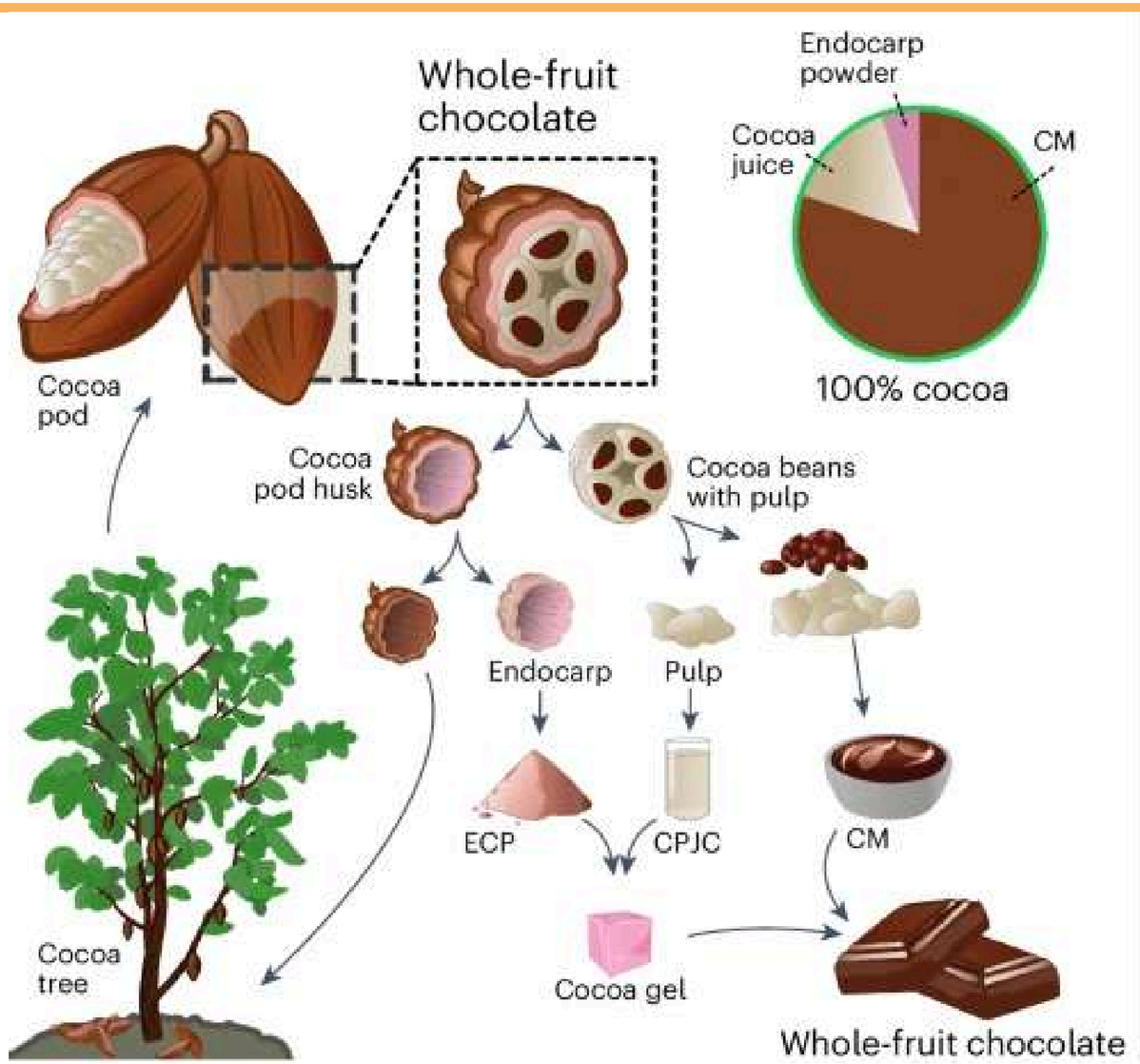
Example

Valorization of cocoa pod side streams improves nutritional and sustainability aspects of chocolate



Reference: Nature Food

NPD stages

1. Idea generation
2. Screening and feasibility
3. Prototype and formulation
4. Scale up and pilot plant
5. Market testing
6. Commercialization

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Stage 2. Screening and feasibility

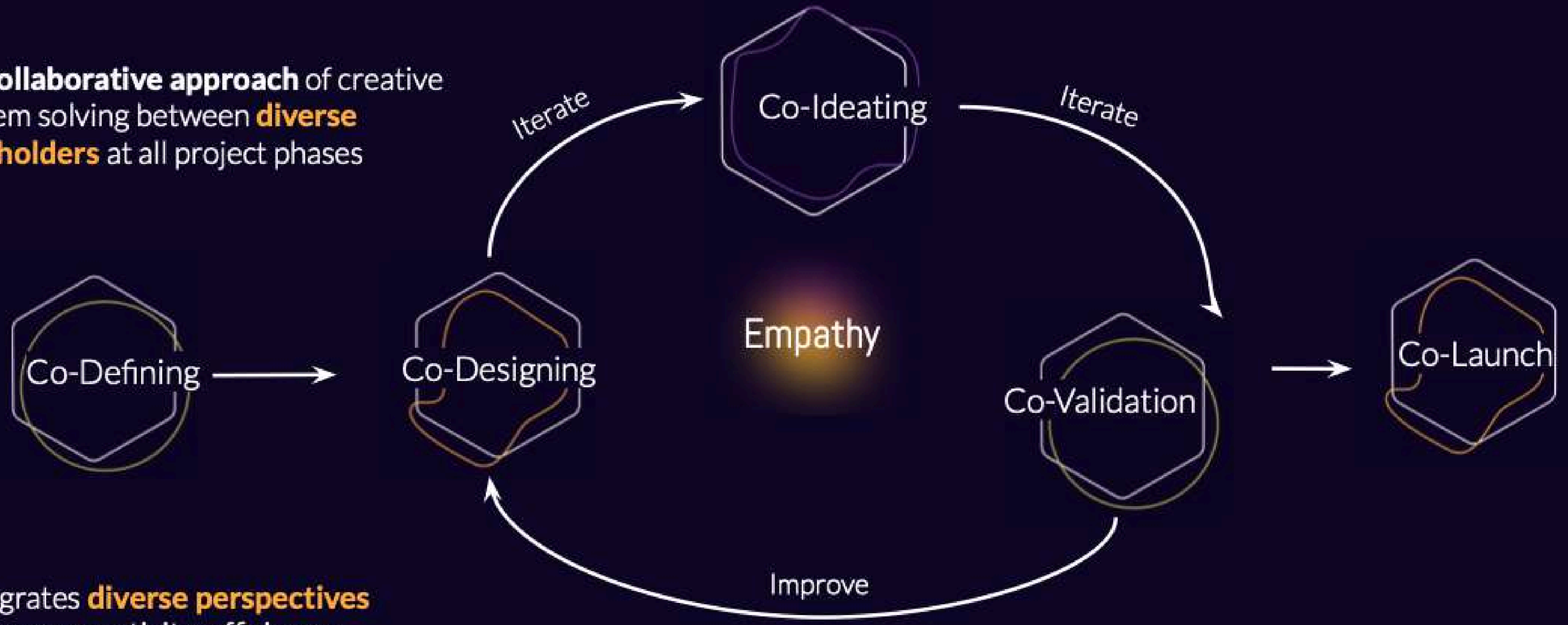
Filtering and prioritizing ideas

Common screening criteria include:

- Market potential: Does this idea solve a real consumer need or trend?
- Uniqueness and differentiation: Is it innovative compared to existing products?
- Technical feasibility: Can we actually make it with available technology and ingredients?
- Cost and profitability: Can it be produced at a competitive cost and price?
- Sustainability and compliance: Does it meet safety, environmental, and regulatory standards?

Co-creation phases

Our **collaborative approach** of creative problem solving between **diverse stakeholders** at all project phases



It integrates **diverse perspectives** to enhance creativity, efficiency, and impact.

STAKEHOLDERS

Consumers | Farmers | Researchers | And many more


Consumer feedback or expert panels

NPD stages

- Idea generation
- Screening and feasibility
- Prototype and formulation
- Scale up and pilot plant
- Market testing
- Commercialization

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Stage 3. Prototype

The goal is to develop a first version of the product or service

Essays

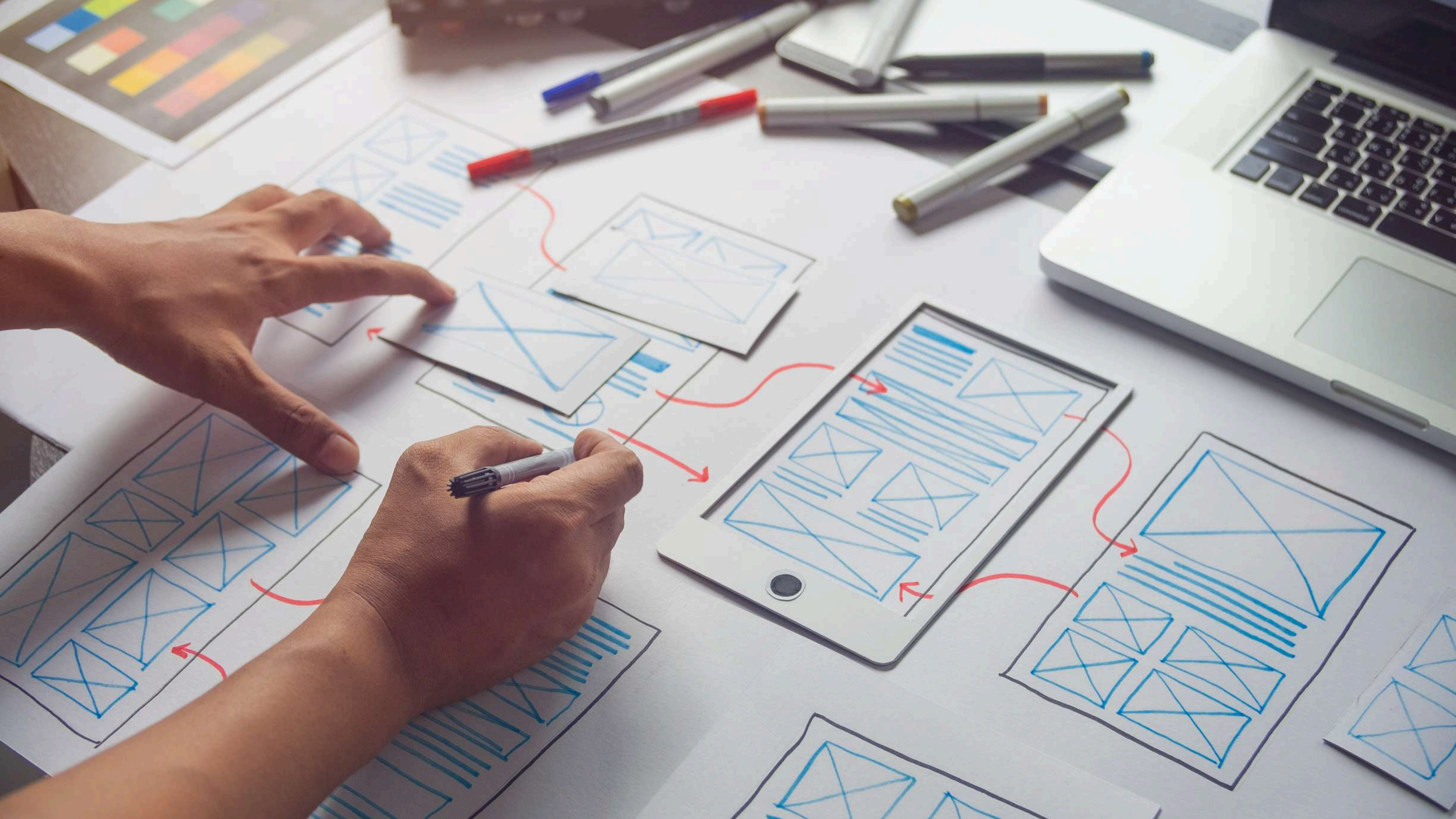
- Translating the concept into an actual formulation or process.
- Testing ingredients, processing conditions, and technologies.
- Adjusting texture, flavor, appearance, shelf life, and functionality.
- Evaluating consumer acceptance and technical performance.

Prototype

A prototype is a tangible expression of an idea.

It is a tool used to test and validate concepts or ideas developed directly with people, by iteratively improving products, services, or experiences.

By creating a prototype, it becomes possible to communicate and demonstrate a vision of the future in a concrete form.



Prototyping

Key Objectives

1. Fail Fast & Cheap: Build rough versions early to expose biological, sensory, and technical flaws before investing in expensive pilot plant runs.

2. Bridge Concept to Reality: Translate abstract concept statements and formulations into tangible, interactive artifacts (kitchen batches, 3D mockups, wireframes).

3. Test Critical Assumptions: Isolate one high-risk variable at a time—taste, texture, shelf stability, or user interface flow.

NPD stages

- Idea generation
- Screening and feasibility
- Prototype and formulation
- Scale up and pilot plant
- Market testing
- Commercialization

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Q&A
Session

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Thank you!
Gracias!

AgriTech and Food Innovation

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Subvencionat pel Departament d'Empresa (**Programa Primer)** i amb el cofinançament del Fons Social Europeu Plus

NPD stages

- Idea generation
- Screening and feasibility
- Prototype and formulation
- Scale up and pilot plant
- Market testing
- Commercialization

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Stage 4. Scale up

From lab to Pilot

Replicate product quality in an industrial level

Scale-up is the process of translating a laboratory formulation or small-batch process into a larger, semi-industrial process, without losing the product’s quality, safety, or sensory attributes.

SCALING UP

Scaling up a product or service is the high-stakes transition from a validated prototype or minimum viable product (MVP) to full-scale commercial deployment.

While early-stage development focuses on desirability (does the market want it?)), scaling up is strictly about feasibility and viability (can we deliver it repeatedly, efficiently, and profitably at high volume?).

KEY VARIABLES TO CONSIDER DURING SCALE-UP

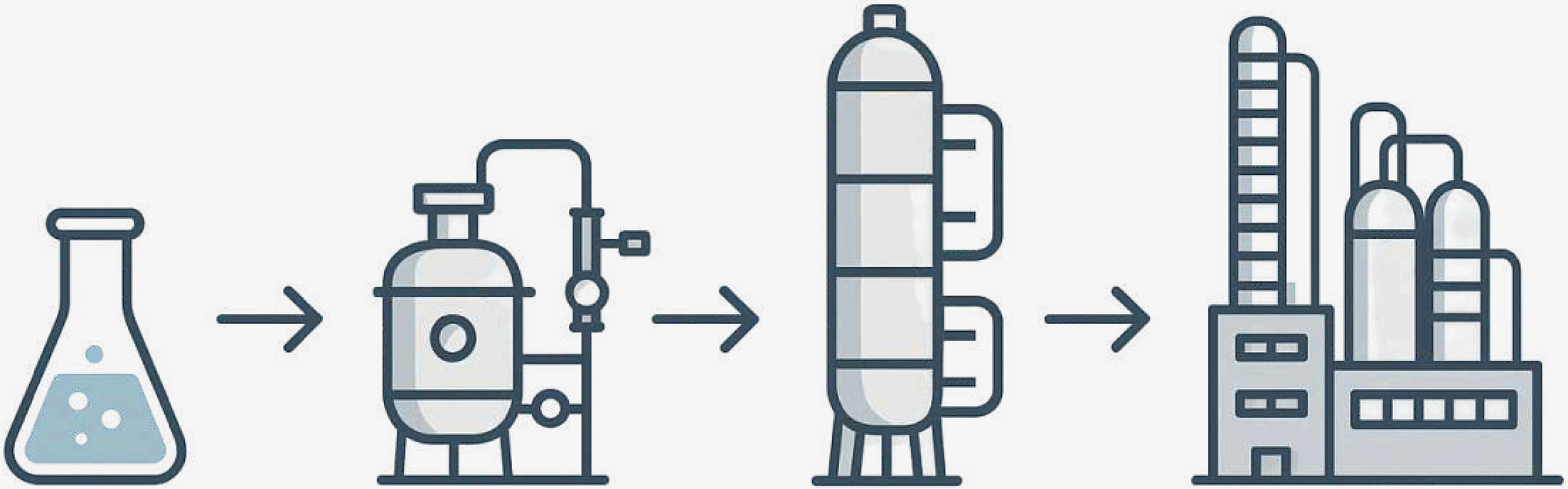
01 SUPPLY CHAIN & SOURCING

02 MANUFACTURING & OPERATIONS

03 FINANCIAL & UNIT ECONOMICS

04 QUALITY & COMPLIANCE

05 TECHNOLOGY & INFRASTRUCTURE



BENCH SCALE

PILOT SCALE

DEMONSTRATION

FULL-SCALE PRODUCTION

SCALE-UP

Key variables to consider

01

Supply chain & sourcing

Lead times, raw-material availability, vendor reliability, BOM cost.

02

Manufacturing & operations

Tooling, yield rates, QA/QC, scrap reduction, SOPs, workforce training.

03

Financial & unit economics

Working capital, inventory cost, gross margin at scale, CAC and LTV.

04

Quality & compliance

Certifications, stress testing, warranty forecasting, data privacy, error rates.

05

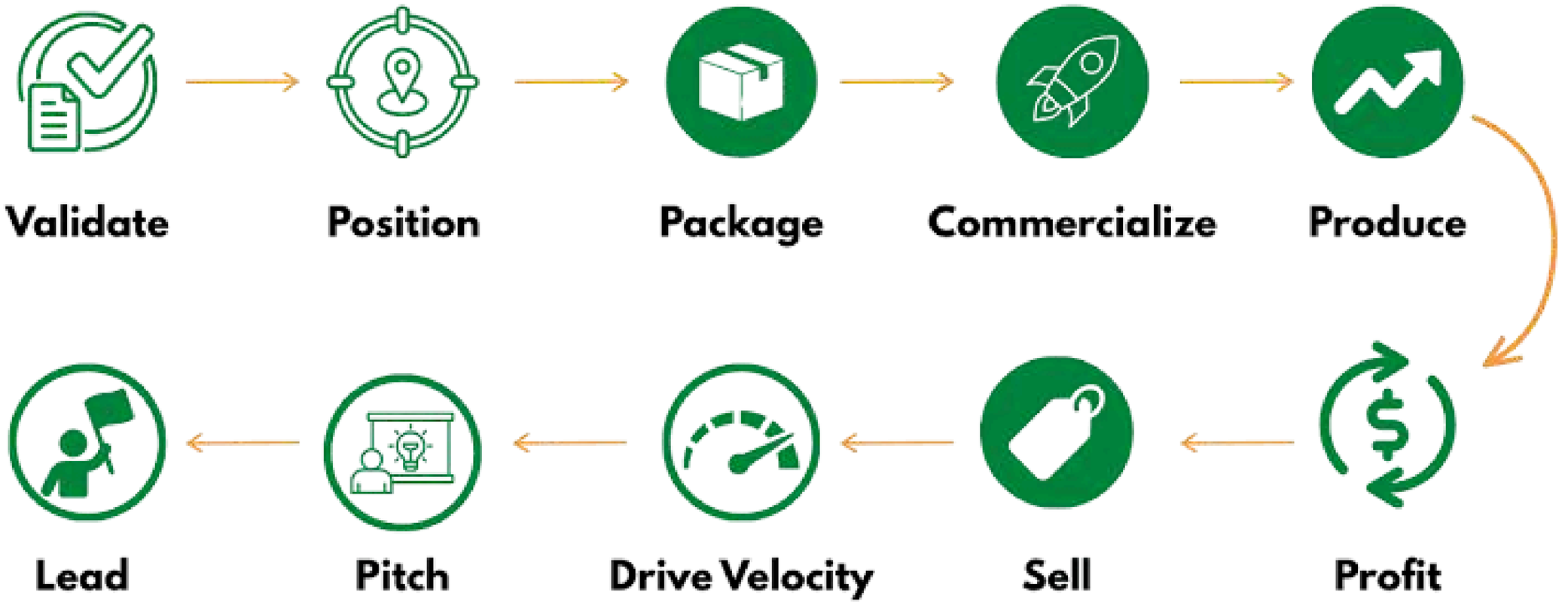
Technology & infrastructure

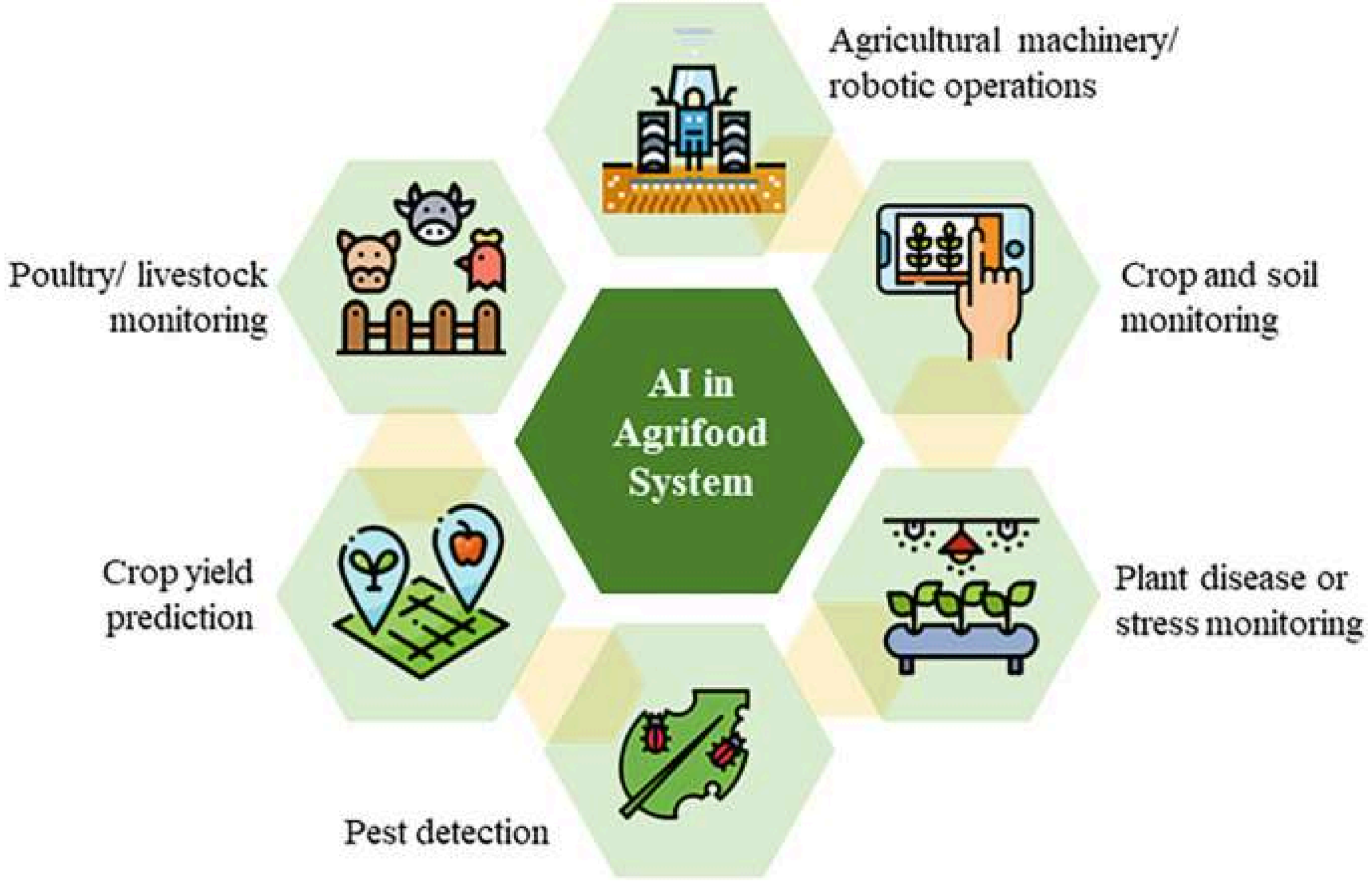
Platform dependencies, third-party SLAs, API and infrastructure limits.

SCALE-UP · VARIABLES IN DETAIL

Physical product vs. service & software

VARIABLE	PHYSICAL PRODUCT	SERVICE & SOFTWARE
Supply chain & sourcing	Component lead times, raw-material availability, vendor reliability, BOM cost reduction.	Vendor and SaaS platform dependencies, third-party SLAs, API infrastructure limits.
Manufacturing & operations	Tooling investment (DFM/DFA), yield rates, QA/QC, scrap-rate reduction.	SOPs, workforce training, onboarding capacity, service-delivery automation.
Financial & unit economics	Working capital, inventory holding costs, gross margins at scale, scrap cost impact.	CAC, lifetime value, payback period, labour utilisation rates.
Quality & compliance	Regulatory certifications (CE, FDA, ISO), stress testing, warranty claim forecasting.	SLA compliance, data privacy (GDPR/SOC 2), brand consistency, error rates.


Validate
Position
Package
Commercialize
Produce
Profit
Sell
Drive Velocity
Pitch
Lead


Agricultural machinery/ robotic operations
Crop and soil monitoring
Plant disease or stress monitoring
Pest detection
Crop yield prediction
Poultry/ livestock monitoring
AI in Agrifood System

SCALE-UP · THE FAILURE MODE

The critical point

Also called the **scale-up chasm** or valley of death: the exact junction where operational complexity outpaces original organizational capabilities, and fixed costs rise faster than revenues.

It occurs when a system designed for low-volume output is forced to handle high volume without the requisite infrastructure — leading to systemic failure.

IN AGRIFOOD SPECIFICALLY

Strict biological constraints, volatile climate conditions, rapid perishability and stringent food-safety regulation. A formula that yields a pristine product in a 5-litre benchtop setup will almost certainly fail at 5,000 litres unless the biological, physical and chemical transformations are systematically re-engineered.

SCALE-UP · THREE REGIMES

What changes between 5 litres and 5,000

KITCHEN / LAB

5 L batch

Static heating Organoleptic focus

→

THE CRITICAL POINT

500 – 5,000 L batch

High shear & thermal mass Process-integrity focus

→

INDUSTRIAL LINE

Continuous production

Aseptic / automated Yield & compliance focus

Field failure

Sensors, autonomous weeding systems and computer-vision models trained in clean, predictable pilot plots meet a different world at scale.

Sensor drift	Dust and mud
Lens fouling	Extreme temperatures
Uneven soil topography	Unpredictable crop density

98%
accuracy in a controlled pilot plot

↓

70%
in dynamic field conditions

Key challenges in scaling digital agritech

Scaling up carries substantial financial and brand risk. Structured engineering and operational practice is what lowers the probability of failure — the next six slides are that toolkit.

Implement stage-gate verification

Step-by-step validation. Do not skip phases to rush to market.

EVT

Engineering validation test

Proves the product works functionally, using production-intent materials.

DVT

Design validation test

Ensures the product satisfies environmental, regulatory and aesthetic standards in its final form factor.

PVT

Production validation test

Validates that the production line itself can produce units at rate, at yield and at target cost.

Standardize and codify

Eliminating reliance on tribal knowledge.

Write it down

Create strict Standard Operating Procedures and modular service-delivery blueprints, so quality does not depend on who happens to be on shift.

Automate the non-value-add

Invoicing, onboarding and scheduling should run themselves — so high-cost human capital is reserved only for critical interactions.

Design for X (DFX) principles

Engineering for scale early — while changes are still cheap.

DFM / DFA

Manufacturability & assembly

Reduce part counts, standardize fasteners, and eliminate manual assembly steps.

DFS

Serviceability

Ensure parts can be maintained easily in the field, to prevent runaway warranty costs.

Dual-sourcing & supply-chain redundancy

Never rely on a single supplier or a sole-source component for critical-path elements.

> Qualify second-source vendors early — even when initial volumes don't strictly require them. Qualification takes months; a supplier failure takes days.

Run load and stress testing early

Finding failure points in controlled environments.

Hardware

Run HALT / HASS — highly accelerated life and stress testing — to identify physical weakness before mass production.

Services & software

Perform synthetic load testing, chaos engineering and simulated operational rushes to find system limits before real peak traffic does.

Process validation

Regulatory expectations have shifted: the current approach emphasizes lifecycle validation rather than one-time qualification activities.

1

Process design

Build on knowledge gained during development and scale-up: define the commercial manufacturing process and the control strategy.

2

Performance qualification

PPQ demonstrates the process performs as expected under routine conditions — typically multiple consecutive batches at proposed commercial conditions.

3

Continued verification

Ongoing monitoring and evaluation, to ensure the process stays in a state of control across the whole product lifecycle.

What structured risk assessment returned

Reduced batch failures.

An established design space allowed process optimization **without new regulatory approval** .

Campaign duration shortened by **three weeks** through improved process understanding.

REGULATORY IMPACT

The FDA accepted the design-space approach, providing flexibility for process adjustments during seasonal strain changes without prior approval.

Scaling digital solutions well

01

From dashboards to actionable nudges

Don't build screens with twenty charts. Give clear, low-bandwidth recommendations: *“Irrigate Field 3 today at 4:00 PM with 20 mm of water”* — not an evapotranspiration plot.

02

Use “phygital” distribution

Pure digital acquisition rarely works at scale for rural farmers. Partner with trusted local entities — extension officers, input retailers, cooperatives — to build trust and physically onboard users.

03

Explore B2B2C or B2B models

If farmers won't pay recurring fees, monetize value elsewhere in the food chain: processors wanting traceability, insurers seeking climate-risk models, banks de-risking agricultural loans.

Build for the device, earn the data

04

Build lightweight UI/UX first

Optimize image compression, limit video playback, and make sure the app works reliably on budget Android devices with cracked screens and poor battery health.

05

Establish strict data governance

Be transparent about who owns the farm data. Comply with farm-data codes — the EU Code of Conduct on Agricultural Data Sharing, US Ag Data Transparent certification — to build trust.

PART I · SUMMARY

Three principles for scale-up

01 Fix the process before adding volume

Scaling an inefficient process amplifies the inefficiency — it doesn't solve it.

02 Protect your cash flow

Scale-up consumes massive working capital — inventory, tooling, hiring — long before revenue arrives.

03 Decouple growth from linear cost

A successful scale-up means revenue grows exponentially while marginal cost increases linearly — or tapers off.

THE NPD PROCESS

Next: does anyone buy it?

01	02	03	04	05	06
Idea generation	Screening & feasibility	Prototype & formulation	Scale-up & pilot plant	Market testing	Commercialization
			COVERED	YOU ARE HERE	

NPD stages

1. Idea generation
2. Screening and feasibility
3. Prototype and formulation
4. Scale up and pilot plant
5. Market testing
6. Commercialization

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Stage 5.
Market testing

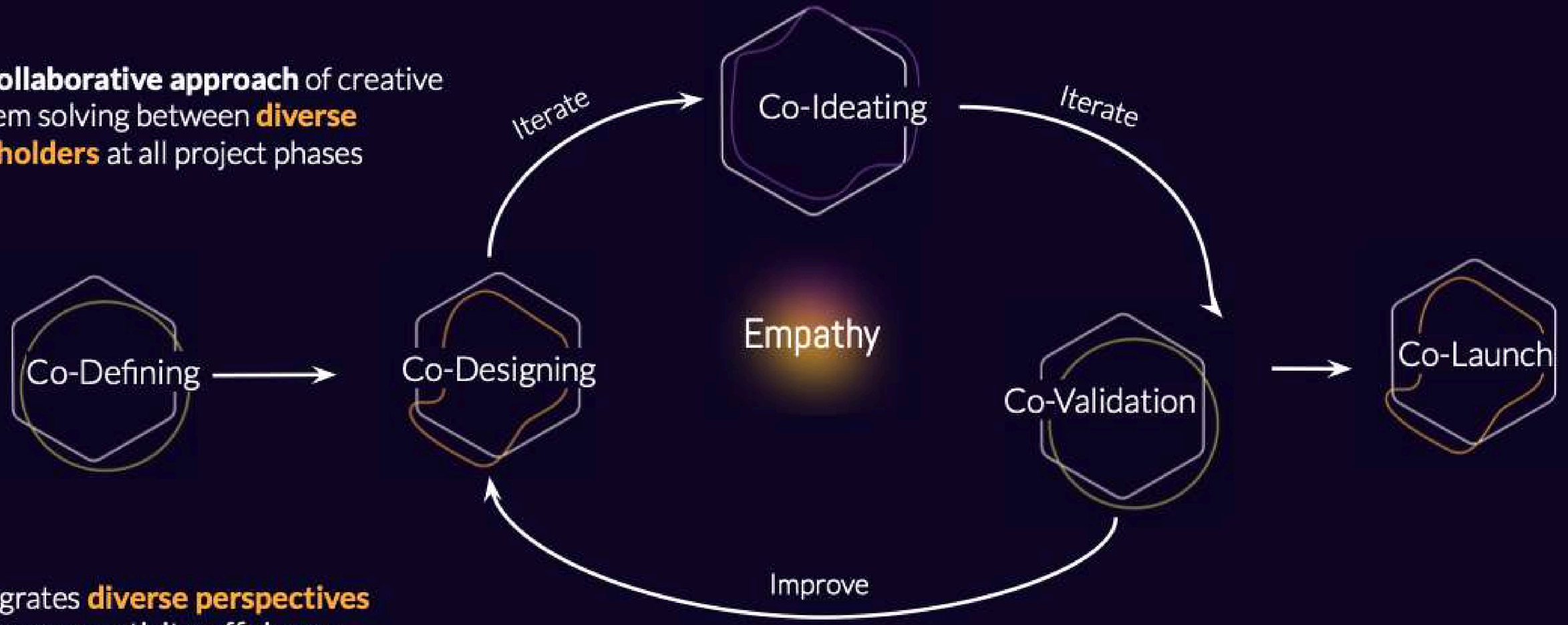
Meets consumer expectations, market needs, and business goals before a full commercial launch.

Is it worth buying?

- Validate consumer trust and acceptance of innovative ingredients (e.g., fermented proteins, upcycled flours, precision-fermented dairy).
- Assess sustainability perceptions — how consumers understand and value eco-friendly or farm-to-table attributes.
- Ensure the communication of technological innovation (biotech, fermentation, or traceability) is clear and credible.
- Provide feedback loops to farmers, processors, and technologists to improve the value chain.

Co-creation phases

Our **collaborative approach** of creative problem solving between **diverse stakeholders** at all project phases



It integrates **diverse perspectives** to enhance creativity, efficiency, and impact.

STAKEHOLDERS

Consumers | Farmers | Researchers | And many more

What to validate in an agrifood test

Consumer trust in novel ingredients

Fermented proteins, upcycled flours, precision-fermented dairy — acceptance is not a given.

Sustainability perceptions

How consumers actually understand and value eco-friendly or farm-to-table attributes.

Credibility of the innovation story

Biotech, fermentation or traceability claims must be communicated clearly and believably.

Feedback loops into the value chain

Findings must reach farmers, processors and technologists — not just the marketing team.

Four vectors a market test validates

01

Trial vs. repeat rates

Measuring trial is easy — marketing noise drives it. The repeat purchase rate is what reveals true product–market fit.

02

Willingness to pay

How target segments react to real price points, discount structures and subscription tiers — price elasticity, not stated intent.

03

The go-to-market engine

Stress-testing messaging, positioning, packaging visibility, acquisition channels and trade marketing.

04

Operational strain

Friction in logistics, inventory shelf-life, supply lead times, customer support and return handling.

Set the rules before you start

1 Define hypotheses & success thresholds

Prevents moving goalposts

Establish explicit quantitative pass/fail metrics *before* launching — e.g. “achieve a 25% repeat purchase rate within 60 days”, or “keep CAC under $40”.

2 Select an isolated, representative market

Minimizes noise and spillover

Choose a geography or panel that mirrors your broader target in demographics, purchasing power and competitive density — but is isolated enough to avoid marketing spillover.

3 Expose the product to real friction

Avoid artificial support

Don't over-subsidize or over-promote. Sales reps and discounts you can't sustain at full commercial scale only generate artificially inflated performance data.

Capture behaviour and attitude

Numbers tell you what happened; interviews tell you why.

QUANTITATIVE

Behavioural data

- Sales volume
- Conversion rate
- Repeat purchase interval
- Churn rate

QUALITATIVE

Attitudinal data

- Post-purchase exit surveys
- Customer support tickets
- Unboxing reviews
- Non-buyer interviews

Scale, pivot, or kill

METRICS MET

Scale

Proceed to full commercial production.

PRODUCT WORKS, GTM FAILED

Pivot

Messaging, packaging or pricing missed. Re-test the go-to-market, not the product.

LOW TRIAL AND LOW REPEAT

Kill

Terminate the project before committing full CapEx. This is the cheapest bad news you will ever buy.

THE NPD PROCESS

Final stage: build the business engine

01
Idea generation

02
Screening & feasibility

03
Prototype & formulation

04
Scale-up & pilot plant
COVERED

05
Market testing
COVERED

06
Commercialization
YOU ARE HERE

NPD stages

1. Idea generation
2. Screening and feasibility
3. Prototype and formulation
4. Scale up and pilot plant
5. Market testing
6. Commercialization

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Stage 6. Commercialization

Commercialization is the process of bringing a new product or service to the market at scale, supported by marketing, distribution, regulatory compliance, and continuous quality control.

It requires close collaboration between:

R&D and production teams (to ensure process consistency),

Marketing and sales teams (to position the product effectively), and

Supply chain and agritech partners (to ensure raw material availability and traceability).

COMMERCIALIZATION · WHO MUST ALIGN

Three teams, one launch

R&D and production

To ensure process consistency as volume rises.

Marketing and sales

To position the product effectively in a crowded shelf or channel.

Supply chain and agritech partners

To ensure raw-material availability and traceability at commercial volume.

COMMERCIALIZATION · KEY COMPONENTS

Four workstreams, running in parallel

A

Production scale-up

Full industrial manufacturing begins; all process parameters — temperature, mixing, packaging speed — are finalized from pilot data. In agritech this usually means automation, precision control and digital monitoring for reproducibility.

B

Supply chain and sourcing

Raw materials must be consistent in quality, traceable and certified, and delivered at scale with minimal environmental impact. Blockchain and digital traceability platforms increasingly carry the “farm to fork” proof.

C

Marketing and branding

A value proposition that communicates innovation, sustainability and nutrition: packaging and messaging, pricing strategy, channel selection (retail, foodservice, e-commerce), and launch storytelling.

D

Regulatory compliance

All labelling, claims and certifications must meet food-safety and regulatory standards — allergen declarations, nutritional facts, sustainability certifications and local approvals.

COMMERCIALIZATION · AGRIBUSINESS TIMING

Miss the season, wait a year

Full-scale entry requires securing production facilities, finalizing supply chains, training personnel, and making last adjustments from test-market findings.

In agribusiness, timing dominates. Launches must align with farmers' purchasing cycles: a new corn seed variety has to be available *before* planting-season decisions are made — often months in advance.

MANAGE THE RISK

Phase the rollout

Launch in one geography before expanding nationally — you keep learning while capping exposure.

Launch activities: sales-team training, distributor education, and campaigns built to drive awareness and first-time trial.

WHY EVERY STAGE MATTERS

Each stage is a checkpoint, not paperwork

95%

of product ideas fail to reach successful commercialization without a proper NPD process.

Skip screening — and you launch products nobody wants.

Skip business analysis — and you discover, too late, that the product can't be made profitably.

Skip market testing — and you launch at scale only to find the product underperforms in real conditions.

Research consistently names **inadequate marketing planning and poor launch timing** among the most common causes of failure — both of which the NPD framework directly addresses.

PART IV

AI & NPD strategy

Embedded strategically, AI restructures how products are discovered, formulated, tested and commercialized — turning a linear stage-gate progression into an iterative, data-driven engine.

30–70%
shorter product development cycles

Lower
early-stage R&D cost

Fewer failures
specs aligned to real-time market intent

Three platforms, three parts of NPD

CONSUMER INTELLIGENCE

FlavorWiki

Sensory mapping and formulation validation for food & FMCG.

GENERATIVE HARDWARE DESIGN

Autodesk Fusion

Generative CAD for machinery, robotics and structural parts.

MOLECULAR FORMULATION

Giuseppe (NotCo)

Plant-based reformulation at the molecular level.

Your customer...

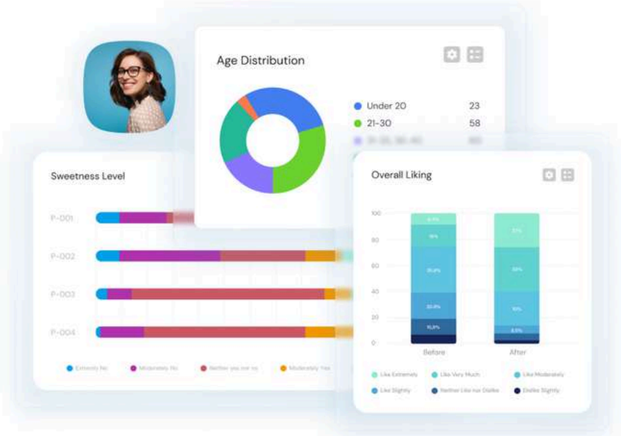
In focus

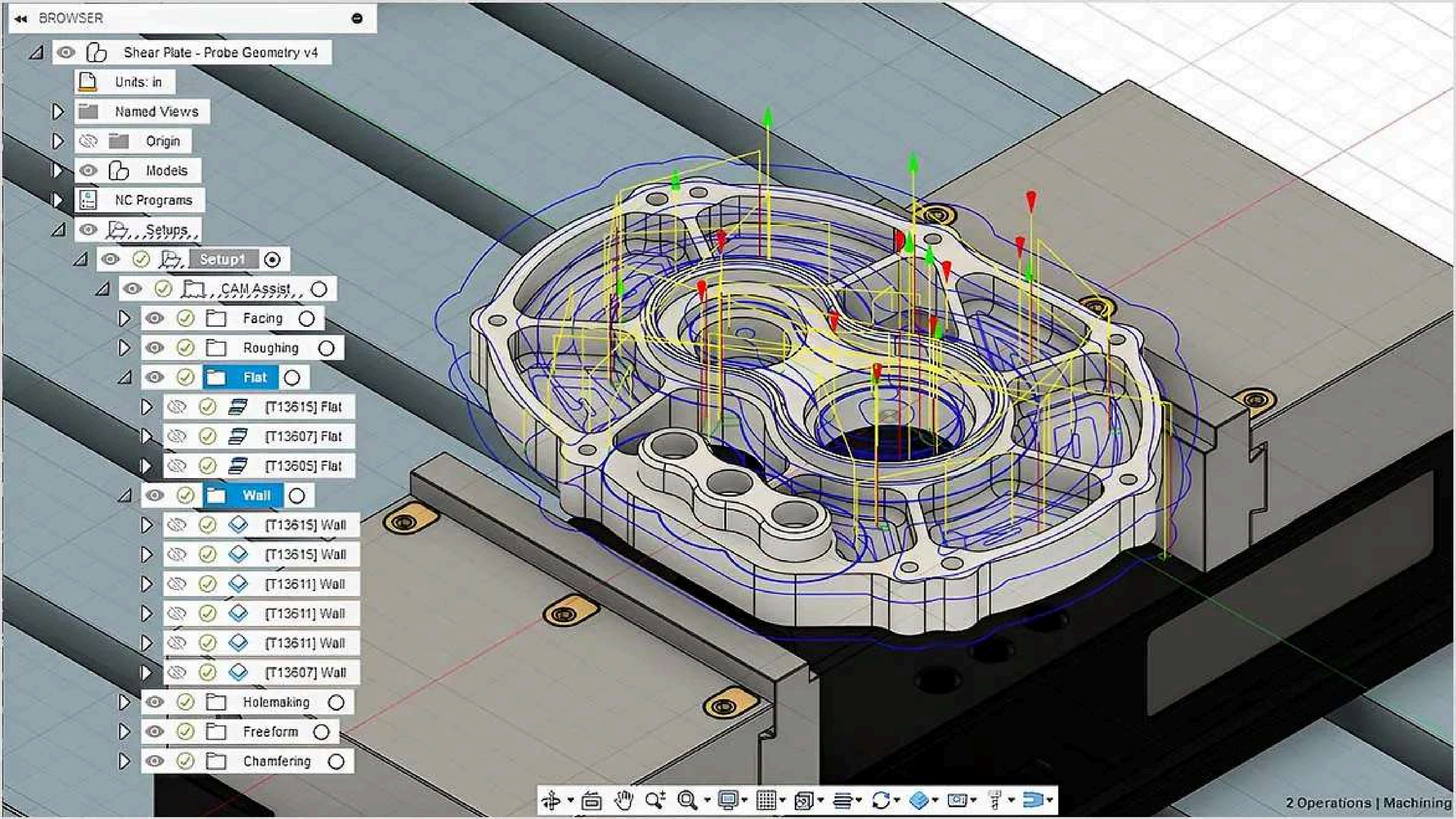
Businesses thrive when they align with their customers' needs. **Gain consumer understanding faster** and access **actionable and affordable data.**

SIGN UP AS TESTER

Insights solution for the consumer of the future

- Reduce your development time by shortening test cycles
- Perform data collection and analysis in real time
- Build a comparable library of proprietary and benchmark data
- Powerful platform-based statistical tools. No more wasting time

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2 Operations | Machining

AI TOOL 01

FOOD & FMCG

FlavorWiki

AI-driven consumer intelligence and formulation validation — an AI-powered sensory mapping platform built for fast-moving consumer goods and food & beverage.

WHAT IT DOES

Replaces slow, expensive sensory panels by combining computer vision, machine learning and structured consumer feedback. Consumers log real-time evaluations — flavour, mouthfeel, texture, package appeal — by smartphone, and the algorithms aggregate them into predictive sensory maps.

RAPID RECIPE ITERATION

Food scientists compare experimental formulations against benchmark competitors in days rather than months.

GLOBAL FLAVOUR TRANSLATION

Maps how regional preferences differ — predicting how a North American formulation must change for Latin American or European palates.

BEST FOR — EARLY-STAGE FORMULATION, REFORMULATION (SUGAR OR SALT REDUCTION), TASTE-PROFILE MARKET TESTING

AI TOOL 02

HARDWARE & CAD

Autodesk Fusion

Generative AI inside the CAD and manufacturing process for physical hardware, machinery and consumer devices.

WHAT IT DOES

Instead of drawing a part manually for weeks, engineers feed the model operational parameters — structural constraints, weight targets, materials, manufacturing process — and it generates hundreds of high-performance, manufacture-ready CAD designs in minutes.

DESIGN FOR MANUFACTURABILITY

Generated geometries are structurally optimized while adhering strictly to the constraints of the intended factory line.

WEIGHT & COST REDUCTION

Parts can be lightweighted — often 20% to 50% less mass — without compromising mechanical integrity or safety tolerances.

BEST FOR — AGTECH EQUIPMENT, ROBOTICS, ELECTRONICS CHASSIS, MECHANICAL COMPONENTS

AI TOOL 03

FOOD SCIENCE

Giuseppe by NotCo

Generative plant-based food formulation and molecular AI, from the FoodTech company that reset plant-based innovation.

WHAT IT DOES

Holds an extensive database of plant species, molecular structures and sensory attributes. Asked for a plant-based alternative to milk, mayonnaise, chicken or beef, it analyses the target at molecular level and generates novel ingredient combinations to replicate taste, texture, aroma and functionality.

COUNTER-INTUITIVE DISCOVERY

Finds pairings human food scientists would never attempt — cabbage and pineapple juice to mimic milk molecules, mushroom powder for dairy creaminess.

ACCELERATED R&D

Reduces benchtop development timelines from years to weeks.

BEST FOR — SUSTAINABLE FOOD DEVELOPMENT, INGREDIENT SUBSTITUTION, FUNCTIONAL FOOD SCIENCE

AI & NPD · DIGITAL PROTOTYPING

Turning field workflows into interfaces

When prototyping a digital agrifood tool — a farm management app, grain marketplace, crop disease scanner, traceability platform — the hardest part is translating complex field workflows into an intuitive interface. Three platforms, each for a different depth of prototype:

Uizard

Sketch → clickable mockup.

v0

Prompt → working front-end code.

Lovable

Prompt → full-stack live app.

Uizard

An AI-first design and wireframing platform that generates interactive multi-screen prototypes from plain text or hand-drawn sketches.

HOW IT WORKS

Type a prompt — *“a mobile app for farm managers to log field irrigation, track soil moisture sensors and receive weather alerts”* — and it generates a complete multi-screen UI with buttons, charts and input forms. Or sketch a layout on paper, photograph it, and its computer vision turns your boxes and arrows into an editable prototype.

AGRIFOOD USE CASE

Testing with farmers and agronomists in the field. Sketch a layout with a farmer in the tractor cab, scan it, generate an interactive prototype on a tablet in minutes, and ask: *“would this button layout work while wearing work gloves?”*

PROTOTYPING TOOL 02

FRONT-END CODE

v0 by Vercel

Generates functional web UI components and dashboard screens as live-rendering React code.

HOW IT WORKS

Rather than static images, it generates real front-end code that renders in the browser. Prompt it with *“a dashboard for grain elevators showing real-time inventory levels, truck queue times, moisture content graphs and price per bushel”* and you get a working interface with live charts and interactive controls.

AGRIFOOD USE CASE

B2B agrifood platforms — grain trading desks, processing-plant control panels, cooperative management portals — where stakeholders need to see complex data visualisation: yield maps, temperature trends, inventory lists.

OUTPUT — CLEAN REACT / TAILWIND CODE DEVELOPERS CAN DROP INTO A REAL REPOSITORY

PROTOTYPING TOOL 03

FULL-STACK

Lovable or Bolt.new

Full-stack AI app generators: they write the front-end interface *and* the back-end logic.

HOW IT WORKS

Describe a complete application and the AI creates database models, an authentication flow, API integrations and the interface: *“build a crop disease diagnostic app where a grower uploads a leaf photo, mock-runs an image classification API, and logs disease history to a database”* .

AGRIFOOD USE CASE

Investor demos, pitch decks and fast pilot testing. Build a working MVP in an afternoon that lets real users sign up, save records and upload images — market-testing a digital tool before hiring an engineering team.

OUTPUT — A HOSTED, DEPLOYED, LIVE URL WITH WORKING FRONT-END AND BACK-END

Three gates, one question each

STAGE 4

Can we make it at volume?

Fix the process before you add volume. Re-engineer the biology and physics, don't just buy a bigger tank.

STAGE 5

Will they buy it twice?

Set pass/fail thresholds first, remove artificial support, and be willing to kill before CapEx.

STAGE 6

Can we build a business around it?

Align R&D, commercial and supply chain on one launch calendar — and respect the season.


Case of studies

Impuls Agritech

Goterra

AUSTRALIA

Agritech Area: Waste Valorization / Circular Economy

Product Example: Modular insect bioreactors to process food waste

Goterra’s system uses modular, robotic insect farms (called Maggot Robots) that process organic waste close to where it’s produced , such as in supermarkets, restaurants, or food distribution centers.

Insect waste systems

Impuls Agritech

SolarFoods

Finland

Agritech Area: Biotechnology / Carbon Capture

Product Example: Protein powder made from CO_2, air, and hydrogen via microbial fermentation

Solar Foods has developed a biotechnological process that uses microorganisms and clean energy to produce a natural protein powder with minimal environmental impact.

Air Protein (Solein)

Impuls Agritech

Upcycled Foods Inc

USA

Agritech Area: Circular Economy / Upcycling

Product Example: Upcycled barley flour from beer brewing by-products

Applies food science and process innovation to valorize byproducts, turning what was once waste into premium, sustainable ingredients.

Brewer’s Spent Grain Flour

Impuls
Agritech

CropX

Agritech Area: Digital and technological services

Services Example: combines hardware, software, and data science into a subscription-based service that supports precision agriculture.

CropX Technologies is a global agritech service company that provides farm management and soil intelligence solutions using IoT sensors, satellite data, and cloud-based analytics

Precision agriculture insights as a service

Activity:

You will choose one case. Discuss:

1. Which NPD stages can you identify in this case? Explain them
2. Why is it relevant for the future of Agritech?”

(Allow 10 minutes work + 5 minutes sharing.)

Goterra

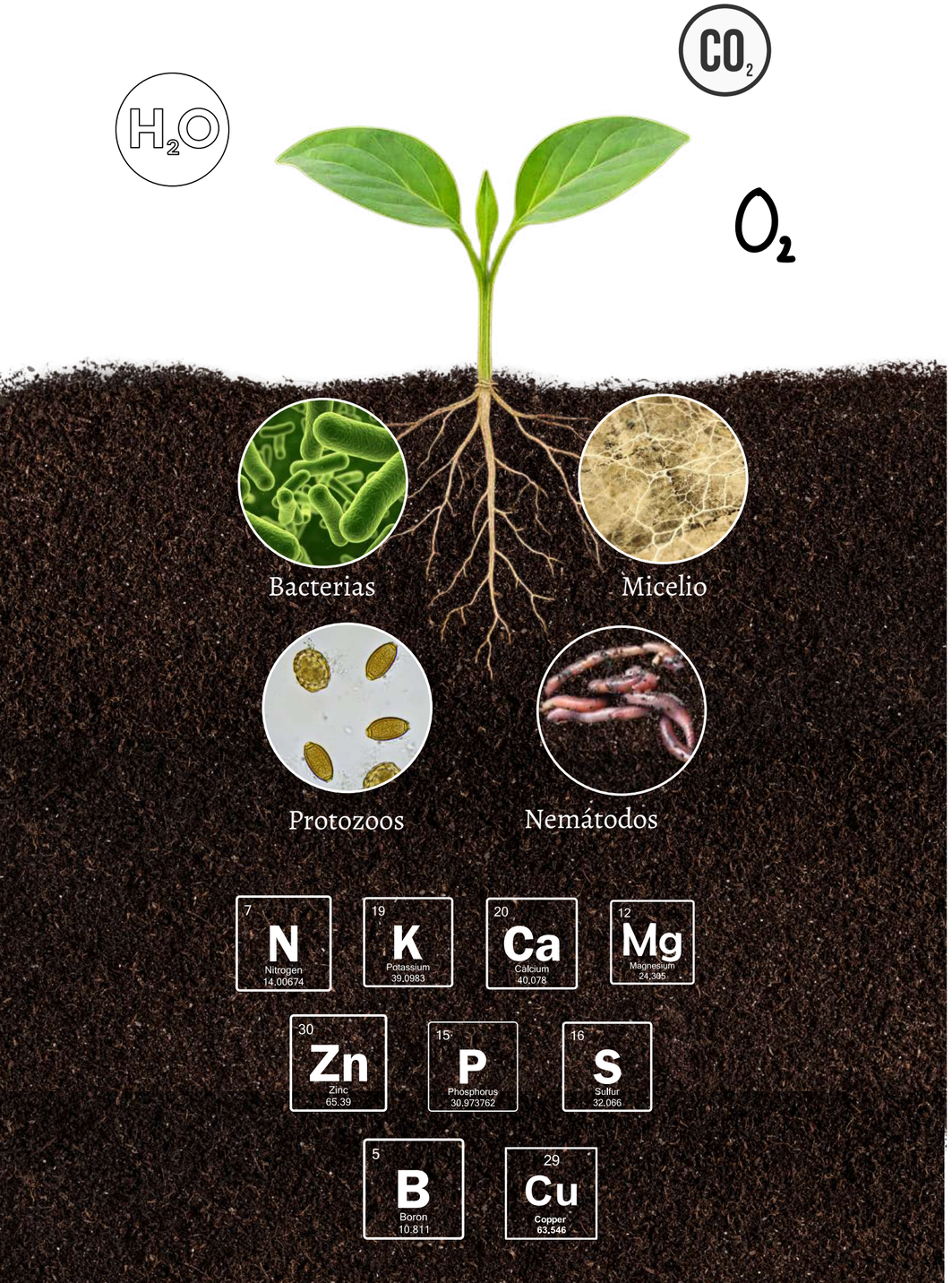
SolarFoods

Upcycled Foods Inc

CropX

Trends


Regenerative Agriculture & Biodiversity



Soil restoration, carbon farming, local crop valorization.

Fermentation and precision BIOTECH

Microbial fermentation for proteins, flavors, and functional foods.

AI and Farming Digitalization

Circular economy and Upcycling


Functional & Personalized Nutrition

Smart & Sustainable Packaging

Bio-based, compostable, and
active materials.

NEGLECTED CROPS FOR MORE NUTRITIOUS FOOD

Local biodiversity, just as forgotten and neglected crops have the potential to provide key micronutrients and act as an important source of food and income, leading community to strengthen resilience to climate change and prevent economic turbulence.

DIGITALIZATION OF THE AGRI-FOOD SECTOR

Agronomic efficiency through sensors for environmental monitoring, a digital platform for farm management, DSS to reduce water footprint and reduce phytosanitary treatments, traps for insect monitoring, and connecting the fleet to their app and web app.

Thank you!

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Generalitat de Catalunya
Departament d'Empresa i Treball

Cofinançat per la Unió Europea

Subvencionat pel Departament d'Empresa (**Programa Primer)** i amb el cofinançament del Fons Social Europeu Plus

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