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

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Alegría Serna

Innovation Specialist Future Food Institute

B.Sc, Biological Engineering

M.Sc., Food Science and Engineering

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

I research bioactive compounds and ingredients at the molecular level, 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.

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Lesson objectives

- Understand the New Product Development (NPD) framework in agrifood.
- Analyze case studies of technology-driven food startups.
- Explore emerging Agritech trends driving product innovation
- Learn how to connect research → pilot → market adoption


Ready?

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.


"Why do you think New Product Development is important for you as future professionals?

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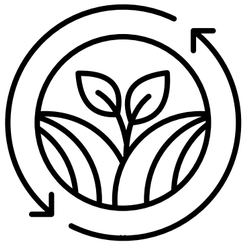
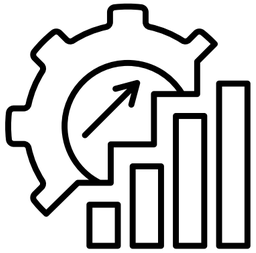
Importance of NPD in the Agritech



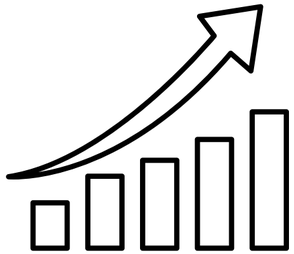
Bridge between agriculture and consumer markets

Sustainability and resource efficiency

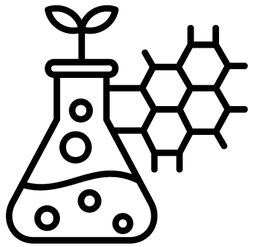
Added value for primary producers



Data-driven and consumer-centered

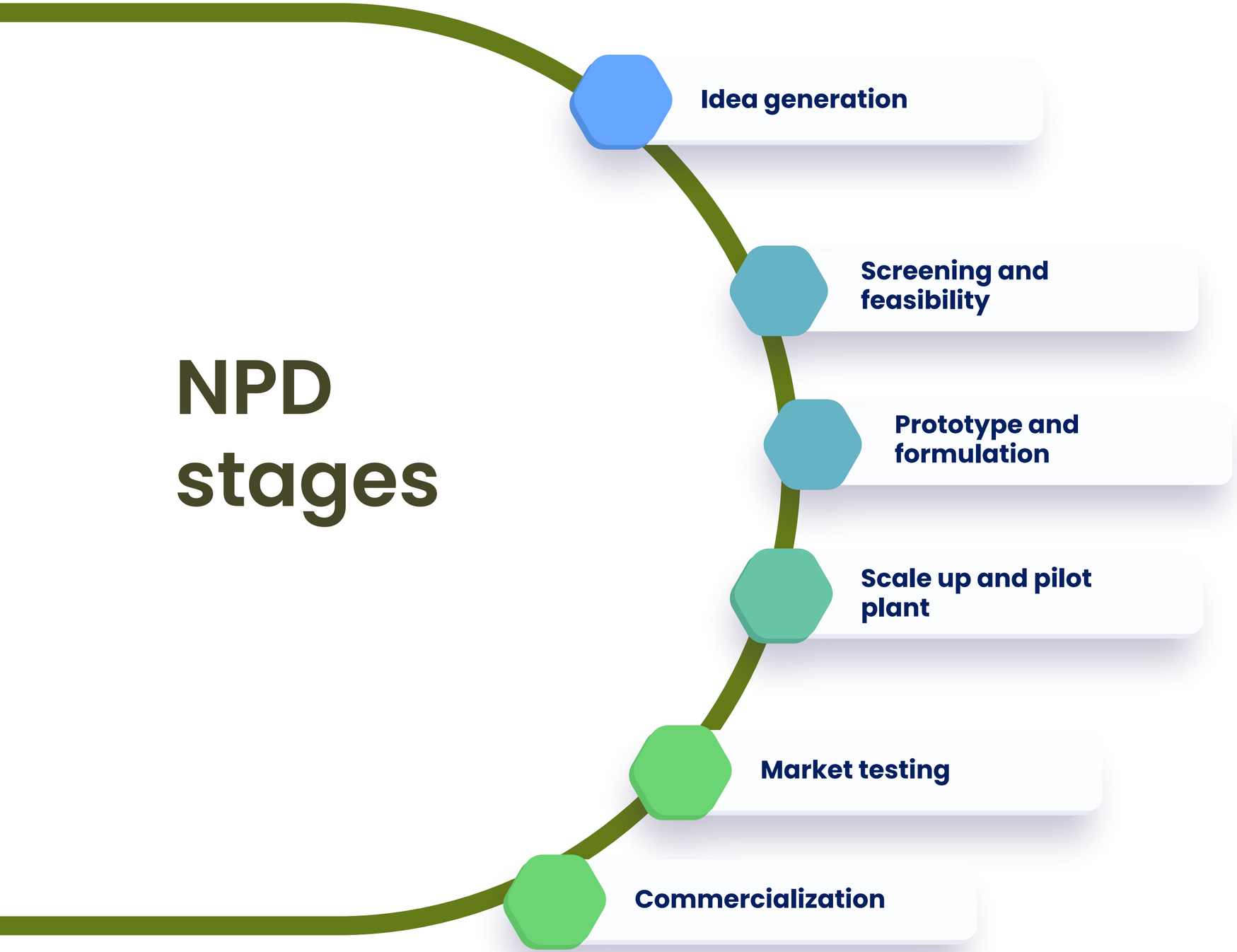


Scalability and traceability



Innovation through biotechnology and fermentation

NPD stages


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

NPD stages

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

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Stage 1. Idea generation, concept development

Why do we need new ideas?

- To replace existing products or services in the range which have declining needs
- To revitaliza a product or service range
- extended exiting product range
- To create new market concept
- Identification of a gap in the market
- To utilise spare capacity

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

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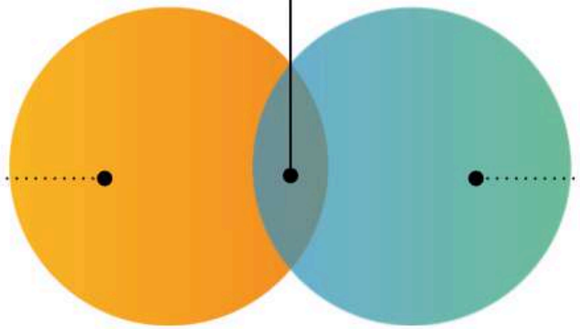
INNOVATION SPACE



HUMAN NEED

Eg. Access to safe drinking water to all

PLANET NEED

Eg. Excess production of non-biodegradable material

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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

What are three major challenges you believe will shape the future of NPD in the food and agritech sectors?

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“The challenge for Agritech is not only technological, it is social, ethical, and systemic. Innovation must serve farmers, preserve ecosystems, and strengthen food sovereignty.”

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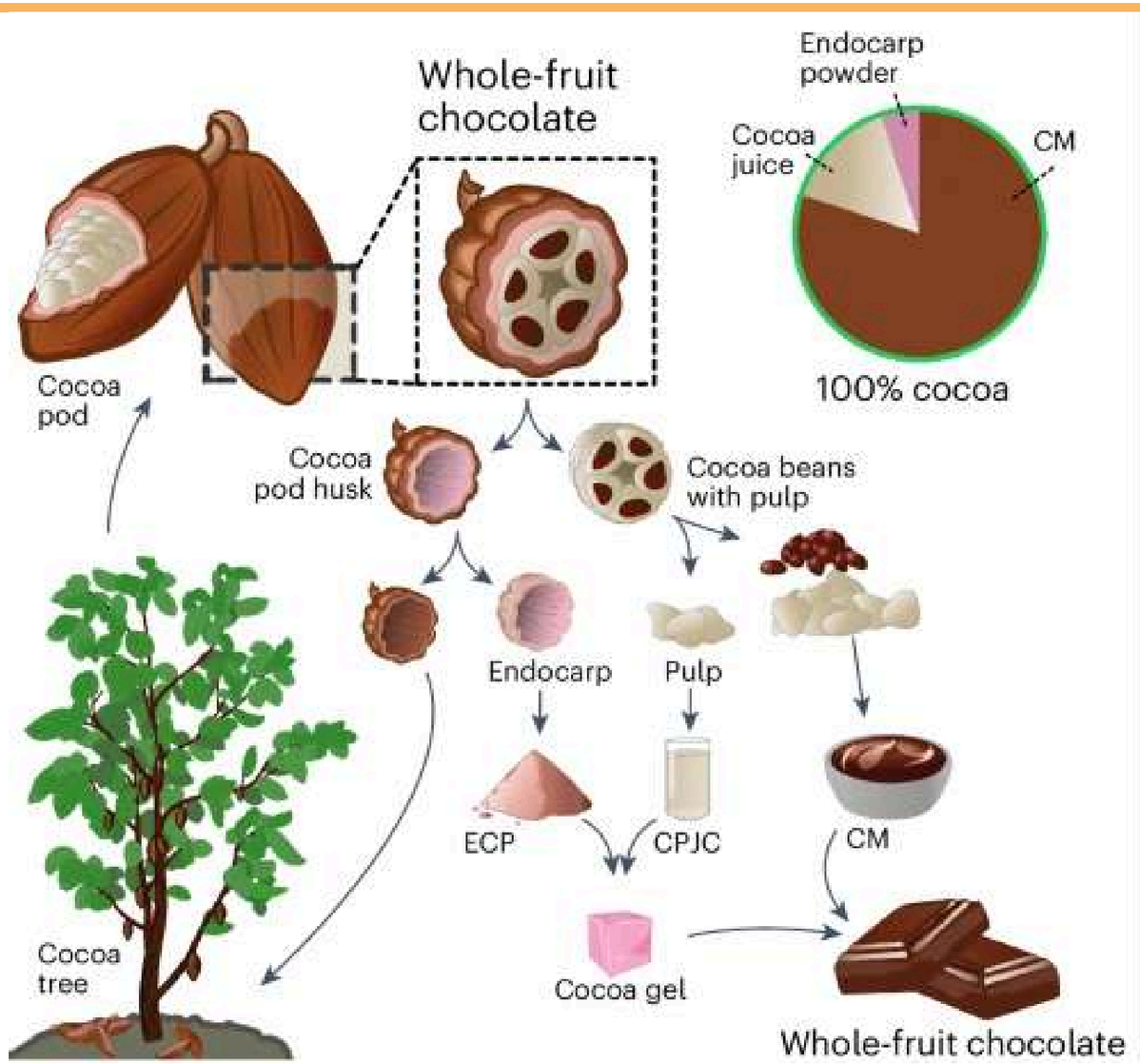
Example

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?


Consumer feedback or expert panels

NPD stages

- Idea generation
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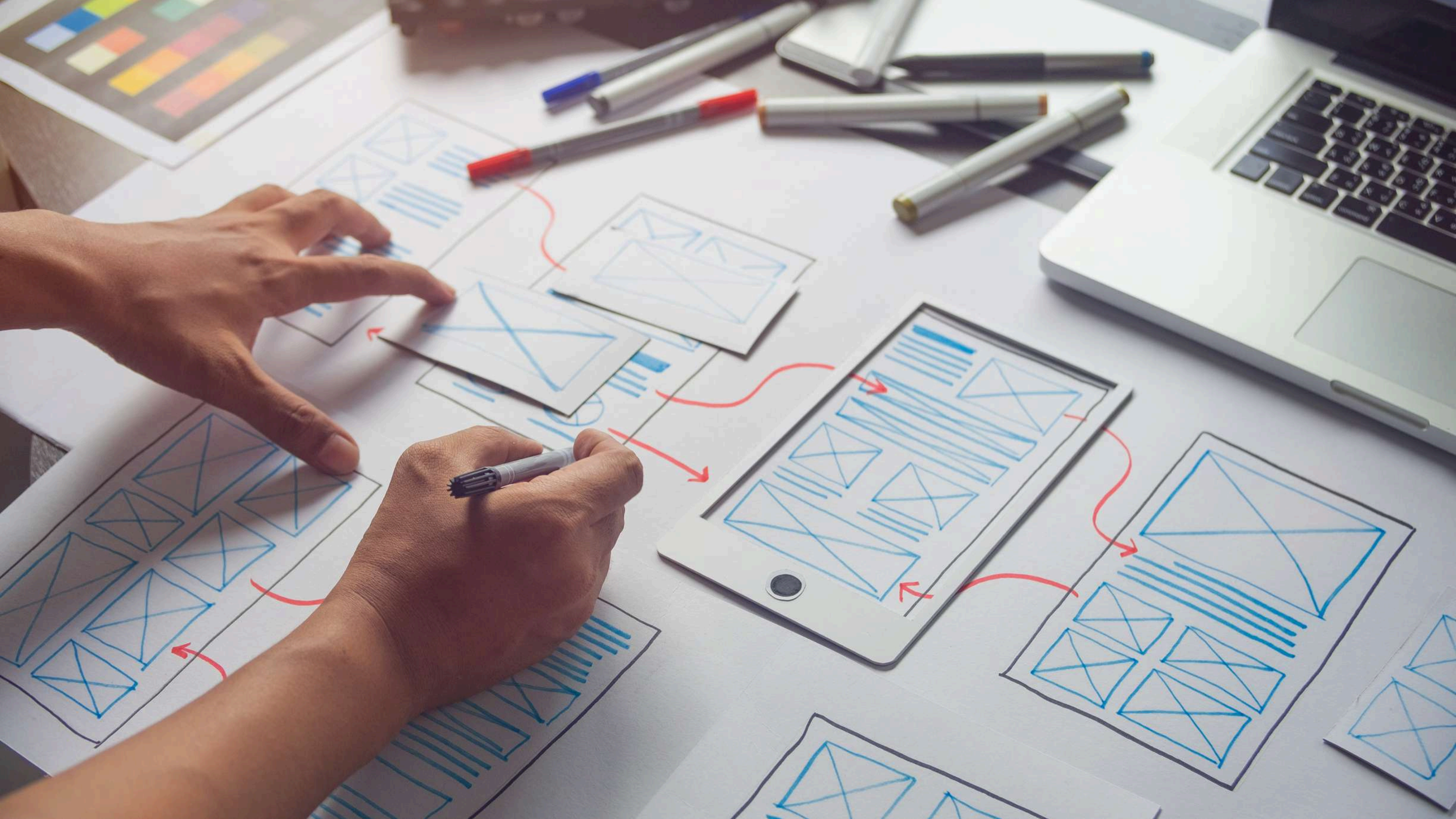
Stage 3. Prototype

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.



NPD stages

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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.

NPD stages

1. Idea generation
2. Screening and feasibility
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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.

NPD stages

1. Idea generation
2. Screening and feasibility
3. Prototype and formulation
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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).


Case of studies

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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

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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)

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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

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CropX

Agritech Area: Digital and technological services

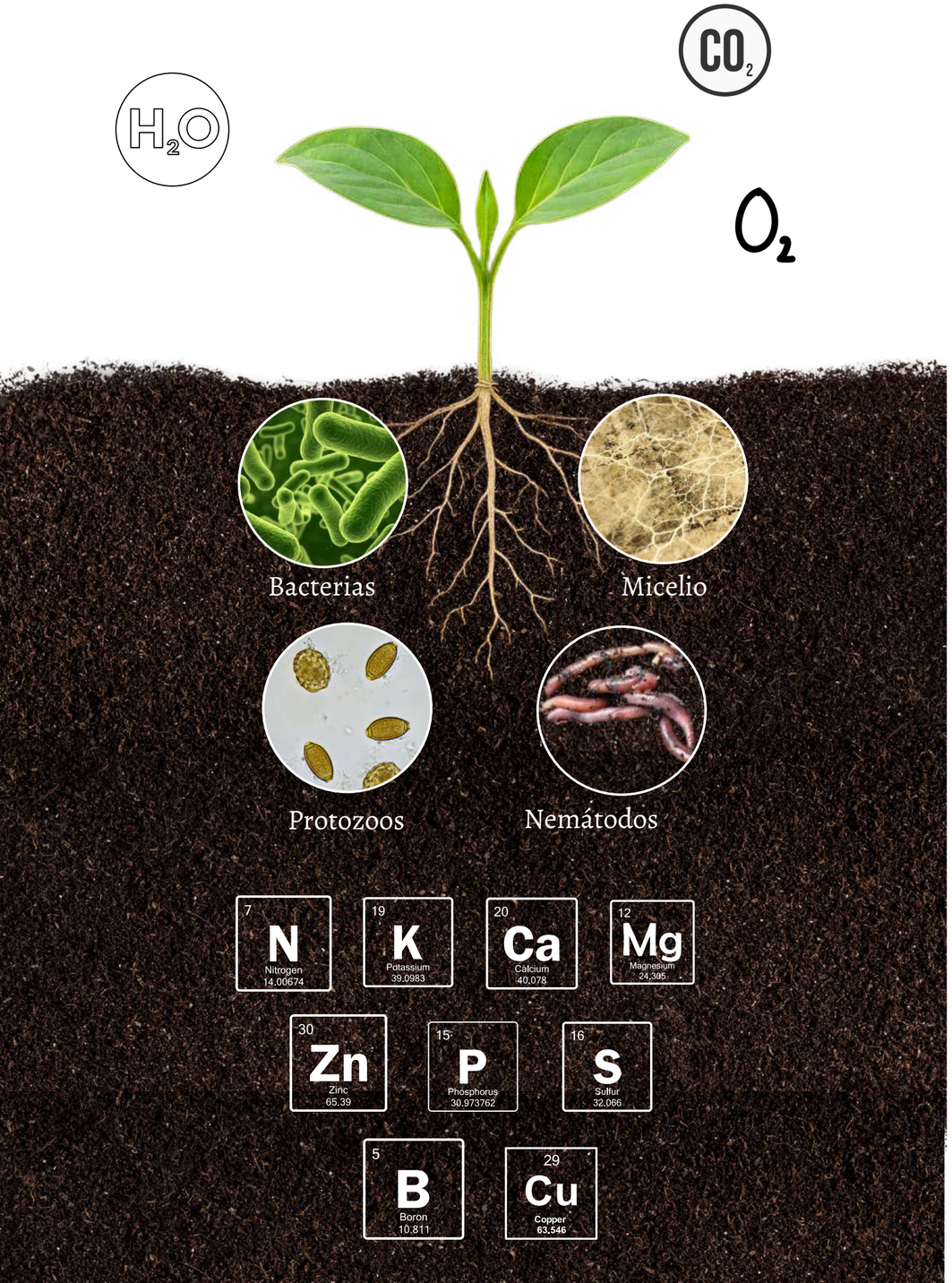
Services Example: combines hardware, software, and data science into a subscription-based service that supports precision agriculture.

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

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.

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Q&A
Session

Thank you!

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