



TRANSFORM
TO SUSTAIN THE FUTURE

cerealdocks
GROUP



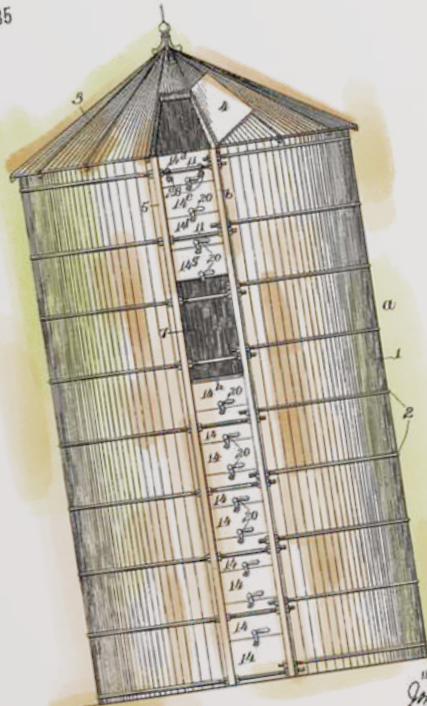
Research & Innovation Strategic Plan

SILO

J. FARRELL

Aug 4, 1905

No. 755,485



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Business has only two basic functions:
Marketing and Innovation.

Peter Ferdinand Drucker

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**Giacomo Fanin**

GROUP BUSINESS
DEVELOPMENT MANAGER

Living in the present with an eye on the future, ready to embrace challenges and opportunities, and continuously adopting new and innovative models and strategies. The values of foresight and courage are the foundation of the Cereal Docks Group's future vision. The Group considers its commitment to Research and Innovation as a key driver of its growth.

The shared vision for the Group's future is crystal clear: to maintain its leadership in understanding and implementing innovative industrial processes to produce ingredients that prioritize safety, quality, and sustainability. These ingredients should contribute to the well-being and health of people, animals, and the planet. With this vision, the Cereal Docks Group aspires to play a role in shaping the future of the Italian and European food ecosystem. We aim to provide valuable products and services with the same passion and humility that have been our roots, while also leveraging the experience and stability that a leading European agribusiness Group can offer.





Enrico Costanzo
GROUP INNOVATION
MANAGER

At the outset of the 21st century, scientists have concluded that we have entered a new era in the history of our planet, the Anthropocene, characterized by humanity and its growing needs.

Everything now operates on a global scale: markets and public policies, environmental and social challenges, and their respective solutions. Cereal Docks recognizes this reality; originally rooted locally, it now expands its presence globally, engaging in areas that are witnessed daily: the human and animal food and nutrition sectors, sustainability, and the circular economy. Moreover, Cereal Docks now has another valuable tool: scientific research and innovation.

This “supporting engine” has the capability to generate new value, thus creating new business opportunities with corresponding impacts, both within and beyond the company. However, just as bows and arrows are insufficient without a clear target, new ideas are not enough unless they are integrated into a coherent strategy. The following document not only outlines the direction we are taking but also serves as the ‘instruction manual’ for Research and Innovation.



1

Three key questions: Why? Where? What?

The research and innovation strategy aligns with the overall framework of the Group's strategy.

The Research & Innovation Department contributes to the Cereal Docks Group's overarching strategy: **“from feeding to nourishing”** and **“from commodities to ingredients”**.

The strategic aspects can be categorized by **three fundamental questions:**

- **Why** does the Cereal Docks Group have a Research & Innovation department?
- **Where** do we want to go?
- **What** is the role of the Research & Innovation department?

Why a Research & Innovation department?

In an ever more intricate and swiftly evolving world, the Research & Innovation department serves as the **"supporting engine" of the Cereal Docks Group**, empowering it to propel towards the future.

Where do we aim to reach?

The guiding principle behind our research and innovation endeavours is:

"to facilitate the growth of the Cereal Docks Group in the domains of **nutrition and the well-being associated with food**, with the aspiration to establish ourselves as one of the leading companies in Europe in the fields of food, human and animal nutrition, sustainability, and the circular economy."





What does the Research & Innovation department do?

Within the Cereal Docks Group, the Research & Innovation Department, in collaboration with all the Group's activities and departments, is responsible for:

"Developing new opportunities for Cereal Docks by **identifying novel avenues for value creation** and contributing to significant improvements in internal processes, moving beyond mere continuous enhancements."

New opportunities arise from the successful implementation of innovations: **new products or services that are embraced and adopted** because they fulfill one or more needs or address critical pain points.

Through their utilization and adoption, innovations generate value for the customer/user and the Group, paving the way for new business.

Achieving these goals requires two fundamental activities: **Market Science** and **Technological Research**.

The latter is a crucial activity, especially for an industrial company closely related to life sciences, starting from the crops in the field and extending to animal and human life, with the aim of enhancing them.



Continuous Improvement

Continuous improvement activities are embraced by every individual unit of the Group and should permeate the corporate culture on a daily basis.



Innovation

Innovation, often but not always of a scientific and technological nature, is valuable because it is utilized by an “user”.



Market Analysis

It begins with the study of underlying societal trends and then delves into identifying needs and pain points that can be leveraged to develop innovations based on market scenarios.

Benefit Corporation

In the context of the Benefit Corporation, which, as of 2021, represents the values of the Group, some aspects are shared with the entire Cereal Docks Group, while others are specific to scientific research and innovation activities.

These areas are:



People



Culture and Common Good



Wellness/well-being



Creativity



Environment



Future



Resilience



Value Creation



Growth



Science & Technology






2 Future businesses drive Research & Innovation

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The Research and Innovation activities of the Cereal Docks Group cover 6 main areas, that we call **“innovation areas”**, with the goal:

“to facilitate the growth of the Cereal Docks Group in the domains of nutrition and the well-being associated with food, with the aspiration to establish ourselves as one of the leading companies in Europe in the fields of **food, human and animal nutrition, sustainability, and the circular economy.**”

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Circular and functional ingredients for feed



Gluten-free ingredients and functional flours




By-product utilization



Innovative proteins



Nutraceuticals and superfoods



Healthy nutrition and Enjoyable eating

The six exploration fields are:



Circular and functional ingredients for feed

New or improved components for animal husbandry, including the utilization of co-products and by-products from other industrial processes. We are seeking components with higher added value compared to the current situation, such as components with specific technical and biological functionalities.



Innovative proteins

New high-protein food ingredients derived from non-animal sources, especially plant-based sources. The supplementation of diets with proteins from sources other than traditional animal origins is a well-established trend, particularly in Western countries among young generations. The transition from viewing products as commodities to considering them as ingredients will also follow this path.



Gluten-free Ingredients and Functional Flours

Expanding the range and variety of new ingredients with distinguishing properties and characteristics (e.g., gluten-free) to meet the needs of the food industry and consumers. Innovations may pertain to all components and ingredients that are not protein-enriched (e.g., gluten-free flours, oils and fats, fibers, etc.).



By-Product Utilization

This area relates to the pursuit of enhanced environmental sustainability through the utilization of by-products from industrial processes. Applications primarily target the feed and food sectors, with the possibility of exploring other sectors if viable opportunities arise.

5



Healthy Nutrition and Enjoyable Eating

The research area that is perhaps closest to the end consumer where the actual application of new ingredients in innovative recipes and formulations is explored, the goal is the pursuit of a pleasurable and satisfying diet that is delicious, nutritious, and environmentally friendly. The development and refinement of recipes in the Research & Innovation department's kitchen laboratory help us to communicate effectively with our industrial customers and provide a direct link to the end consumer.

6



Nutraceuticals and Superfoods

Highly valuable ingredients with maximum functionality, not only from a technical standpoint but also biologically. Research in this area considers synergies with Aethera Biotech, the Group's business unit dedicated to nutraceuticals and cosmetics.





FEEDS & TECHNICAL USES



Extraction flours
Vegetable oils



New materials
**Functionalized
extraction flours**





BIOTECH



Plant ingredients for cosmetics

Special oils for cosmetic use



Science-based plant ingredients for health

Functional plant ingredients for nutraceuticals

FOOD & NUTRITION



Lecithins
Vegetable oils



Protein ingredients
Gluten-free ingredients and flours
Innovative Oils & Fats





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The innovation process in Cereal Docks

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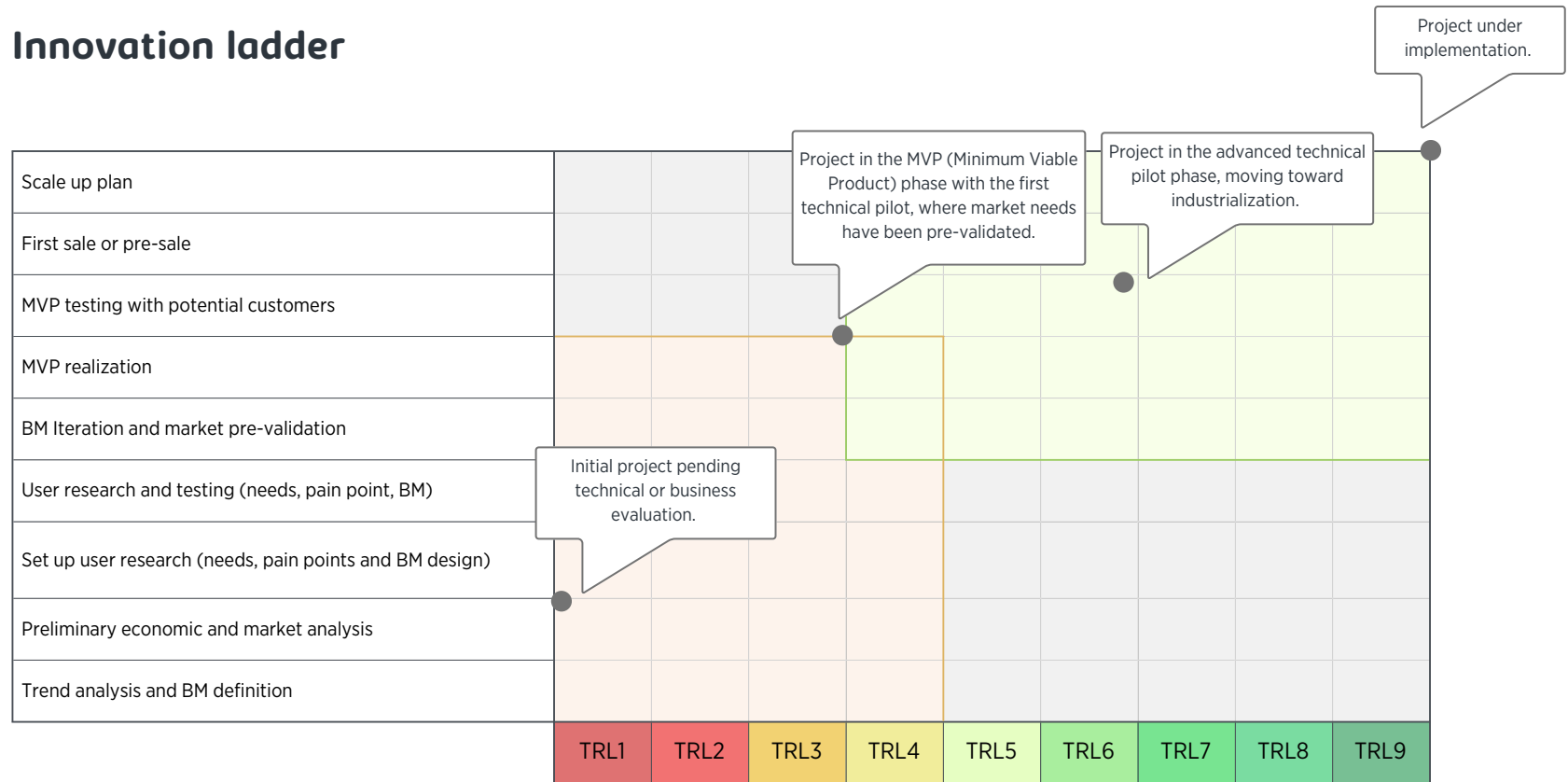
Innovation is evaluated on two levels: its impact on the **market** and its **technological readiness**.

Two rating ladders are employed, which, when combined, provide an overview of the project's technological advancement and its development level for the target market (or internal user).

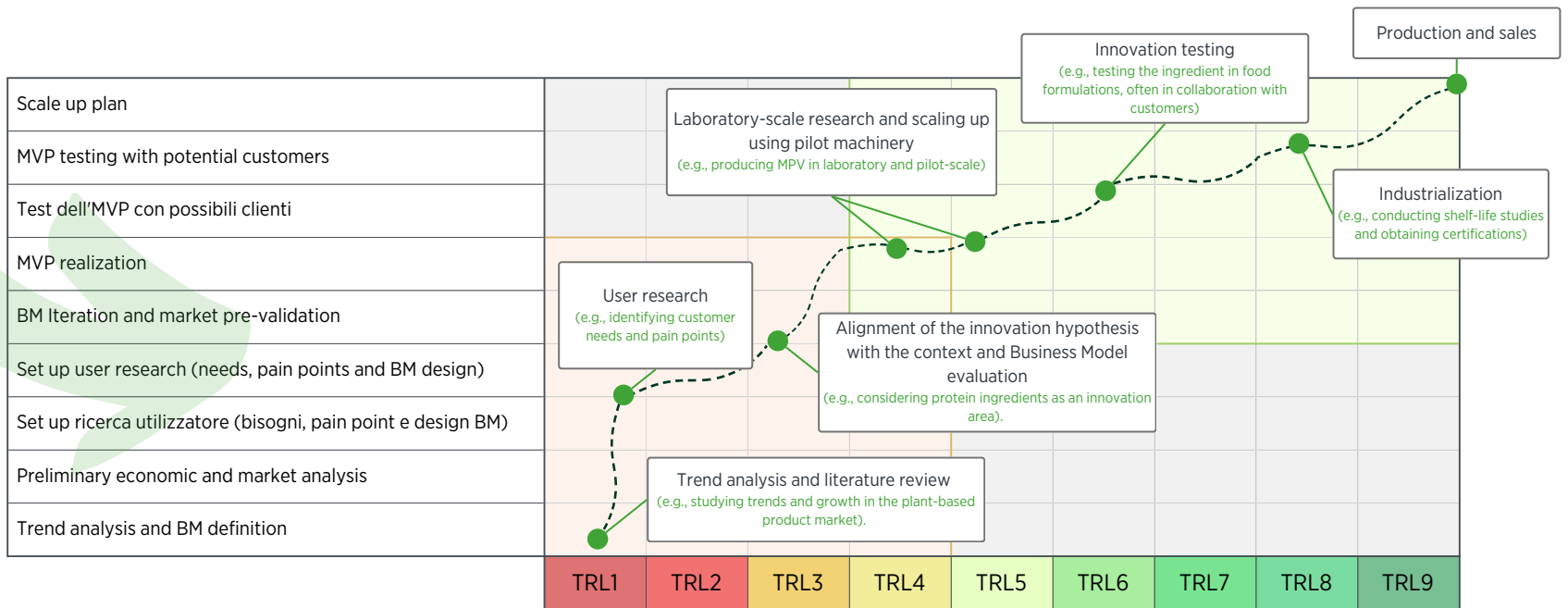
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Projects developed or coordinated by the Research & Innovation department are advanced up to **TRL (Technology Readiness Level) 6** and undergo **'MVP testing with potential customers'** before they are transferred to other departments or entities within the Group and subsequently integrated into the implementation phase.

Innovation ladder



The birth and development of an innovation project, such as the **creation of a new protein ingredient**, goes through the following stages to evaluate its impact on the market and technological advancement.







4 Extra-economic impact of innovation



Innovation can yield **non-economic** advantages beyond the generation of monetary value. These advantages can be both **internal and external**.

These advantages contribute to the non-economic impact, which is a fundamental aspect of the 'Benefit Corporation.



Internal impact

It is evaluated within the Group. It quantifies all those innovative processes or services whose recipients are **people**, making a positive contribution to **well-being, creativity, and cultural development**.



Examples of internal impact

- ❗ On-demand technical support
- 📶 Digital transformation
- 🧠 Sharing knowledge generated by research and innovation activities

External impact

External impact is assessed through partnerships with universities, companies, and research centers, as well as through **outreach activities, conferences, and publications**. It is generally gauged by external recognition of the significance of the Group's research and innovation endeavours.

Examples of Research & Innovation activities with external impact

- **Collaboration with start-ups**

The Research & Innovation Department collaborates with several start-ups in the **foodtech and agritech sectors**, located in Europe, Israel, and occasionally North America and other parts of the world.

For instance, Cereal Docks was a founding member of the **Food Tech Accelerator** initiative, the first real example of **open innovation in the Italian agri-food industry**, with the participation of the most important national companies in the sector.



Since 2022, Cereal Docks has adopted an even more structured approach to working with start-ups by investing through **Grey Silo Ventures**, the Group's corporate venture capital (CVC) division.



Corporate Venture Capital

An in-house investment fund for innovative start-ups. It invests with a dual purpose: achieving long-term economic returns and medium to long-term strategic industrial benefits by closely monitoring promising innovations with the potential to impact current business operations.

• Creation of Academic and Industrial Research Collaborations

At Cereal Docks, our scientific research activities are centered on establishing **collaborative networks** with various Italian academic and industrial stakeholders. Over the years, our collaboration with universities and research centers, such as CNR, the National Research Center in Italy, has grown through participation in various research grants and programs.

Recent Research Grants:



- **F.A&A.F Grant - Veneto Region (2020-2022)**

This POR call, funded by the Veneto Region, focuses on "Functional foods as a catalyst for the agriculture of the future." It has enabled Cereal Docks to partner with universities such as the University of Padua and Alma Mater Studiorum - University of Bologna, as well as CNR, to explore fundamental scientific aspects in two areas of significant interest to the company: the impact of diets enriched with dorella (*Camelina sativa*) on the intestinal microbiome of piglets and the antioxidant properties of the sunflower seed protein isolate developed in Cereal Docks laboratories.



- **Cariverona Foundation Grant (2021-2023)**

The Cariverona Foundation has provided funding for two young researchers at the Free University of Bolzano (UniBz) as part of a joint research project between Cereal Docks and UniBz. The project aims to investigate the production of renewable proteins from by-products of oilseed processing and their application in the food industry.

The universities that have been actively involved in recent years include:

- **University of Padua**
- **Free University of Bolzano**
- **University of Bologna**

Among the **research centers**, CNR, ICMATE (Institute of Condensed Matter Chemistry and Energy Technologies), and IN (Institute of Neurosciences) departments have played a significant role.












Collaboration with other companies in the food industry is also of paramount importance. Specifically, the Cereal Docks Group maintains ongoing, multi-year collaborations with **Promocoop Lombardia, Esselunga, and Symrise Italia.**

• Mantegna Campus: University thesis in Cereal Docks

The Mantegna Campus was established in 2019 within Cereal Docks' **Mantegna Academy**.

The project's primary goal is to strengthen ties with the world of university and research, focusing on a common theme: hands-on training for the benefit of industry, academia, and, most importantly, students selected from top universities through a semester-based call.

Each semester, a new focus area is announced, typically targeting students in technical and scientific disciplines, although at times, it may encompass humanities and economic-management disciplines.

Edition	Focus theme	Involved universities
2020 edition	<ul style="list-style-type: none"> • Alternative proteins • Green chemistry 	Catholic University of the Sacred Heart  University of Padua   UNIVERSITÀ CATTOLICA del Sacro Cuore
2021 edition	<ul style="list-style-type: none"> • New oils and protein ingredients • Alternative proteins • Valorization of agro-industrial by-products 	Free University of Bolzano  University of Parma  University of Padua  
2022 edition	<ul style="list-style-type: none"> • Alternative proteins • Plant biotechnology 	University of Padua  University of Pisa  
2023 edition	<ul style="list-style-type: none"> • Valorization of vegetable oils and fats • User and UX research: the "Protilla" digital project 	University of Padua  UNIVERSITÀ DEGLI STUDI DI PADOVA





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A decorative graphic consisting of numerous thin, curved lines in a dark teal color, sweeping from the top left towards the bottom right, creating a sense of motion and depth.

Cereal Docks Group
Research & Innovation - Strategic Plan
2023-2027