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>>> NEWSLETTER <<<

dairy 4.0

Advanced, trustworthy AI and data solutions for individualised automated milking & feeding of dairy cows

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Project overview

CHALLENGE

The dairy industry, vital to the EU economy, faces challenges with rising global demand and CO_2 emissions. Automated Milking Systems (AMS) and Automated Voluntary Milking Systems (AVMS) are vital. AI-driven advancements are needed to enhance efficiency, animal health, milk quality, and feeding strategies.

"The International Farm Comparison Network (IFCN)

reports that despite fewer dairy farms, those remaining will grow larger to meet rising global demand. Technological advancements aim to reduce emissions per kilogram of milk by 28% by 2050."

SOLUTION

dAIry 4.0 integrates AI, Data, and Robotics to optimize AVMS, reducing environmental impact. It focuses on individual cow health via AVMS and introduces a laser sensor for real-time milk quality analysis. These innovations allow personalised milking, tailored feeding, and milk partitioning by quality, demonstrated in real-world cases.

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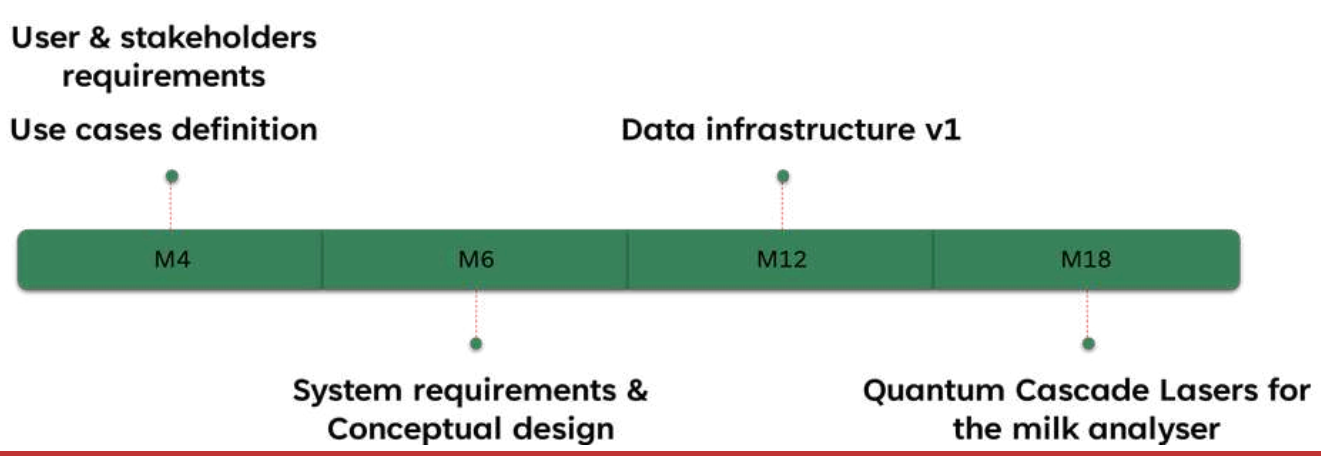
Objectives

- Automated health assessment while exploiting data from both the AVMS and activity sensors on the animal
- Development and integration of a novel milk analyzer for at-line milk quality assessment
- Upgraded individualization of the forage-to-concentrate ratio and quantity of concentrate in AVMS, for more efficient automated monitoring of nutrient balance per animal
- Development of a novel Decision Support System (DSS) based on new simulation models, and Digital Twin of farm providing individualised decision support for stakeholders.
- Upgraded individualization of milking settings

Timeline of technical outcomes



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Impact

- Automated milk quality detection with a novel milk analyzer and automatic milk partitioning leading to new dairy products based on different milk compositions.
- Individualised milking settings for healthier cows, which also affects milk yield.
- Automated health assessment for early detection and treatment of cow health conditions
- Healthier animals, with improved nutritional status expected to deliver enhanced milk quality, reaching the animal's genetic potential, improving farm's profitability.

OVERALL IMPACT

"The optimization of both milking and feeding is expected to positively impact the environmental footprint of the farms. The new integrated system proposed by dAIry 4.0 also aims for significant reduction in CO_2 emissions."

- Individualised feeding of cows for reduced overall feeding costs, enhanced farm financial sustainability and improved animal health with individual handling of metabolic disorders and reduced susceptibility to disease.

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Green Deal objectives

The European Green Deal is the EU's strategy to become climate-neutral by 2050 focusing on reducing greenhouse gas emissions, promoting resource efficiency, and preserving biodiversity.

dAIry 4.0 aligns with European Green Deal by leveraging AI, Data and Robotics to:

- enhance efficiency in dairy farming,
- reducing resource consumptions,
- minimizing emissions,
- promoting sustainable practices.

Through optimization of Automated Milking Systems and adoption of advanced technologies, it aims to improve productivity, support biodiversity, and contribute to the Farm to Fork strategy's goal of innovation and sustainability in dairy sector.

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Common Agricultural Policy (CAP) Eco-schemes

Eco-schemes are part of the CAP, providing financial incentives to farmers who adopt environmentally friendly practices such as organic farming and biodiversity conservation to support the European Green Deal objectives.

dAIry 4.0's adoption of precision agriculture techniques and data-driven decision-making not only contributes to animal welfare and environmental goals but also aligns with CAP eco-schemes, potentially informing policy recommendations and advancing climate action and carbon mitigation in agriculture

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Kiick-off Meeting

A successful dAIry 4.0 kick-off meeting was held on 24th-25th October 2023 in Maassluis, Netherlands and hosted by the project partner LELY. The two-day meeting was a great opportunity for all partner teams involved in the Consortium to meet in person and discuss the project in detail.

6M Meeting

A successful 6M dAIry 4.0 project meeting was held on 3rd-4th April 2024 in Nicosia, Cyprus, hosted by project coordinator CyRIC. Partners reviewed progress, updated Work Packages, and discussed technical challenges, concluding with workshops to exchange ideas and establish action items for the next six months.

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Dissemination & Communication

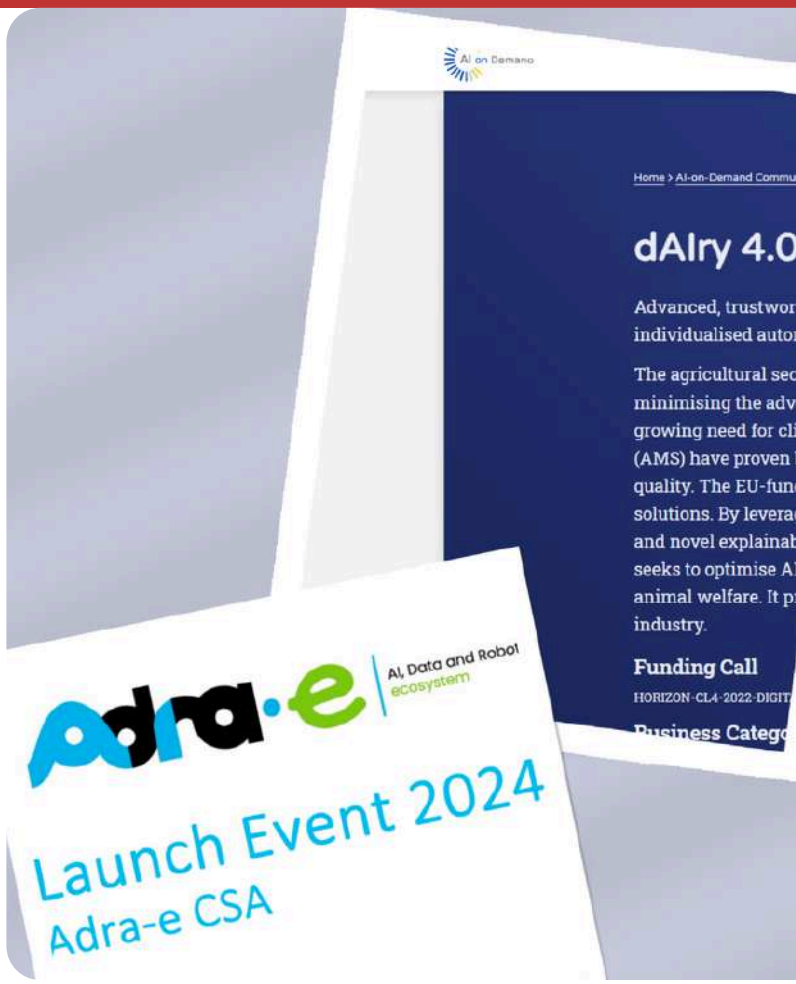
Press release

“The Cyprus Research and Innovation Centre (CyRIC) this week announced that it is spearheading the EU-funded dAIry 4.0 project, focusing on advanced artificial intelligence (AI) and data solutions for individualised automated milking and feeding of dairy cows.”

Adra-e/AIoD platform

Adra-e project aims to create a sustainable European ecosystem for AI, Data and Robotics by supporting strategic research, fostering innovation, and developing regulatory standards.

AI-on-Demand (AIoD) platform provides a collaborative environment for AI researchers and developers, offering access to tools, datasets, and services to accelerate AI adoption and promote trustworthiness and quality in AI technologies.



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Contact

Wrapping up our first newsletter edition, we're thrilled by the progress within our dAIry 4.0 project. From dynamic discussions in Nicosia to our vision for sustainable agriculture, collaboration propels us forward.

With gratitude to our partners, we stride into the future, eager to pioneer advancements in dairy farming.

Stay tuned for updates as we revolutionize the field though technology and commitment.

dAIry 4.0

www.dairy40.eu

info@dairy40.eu

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