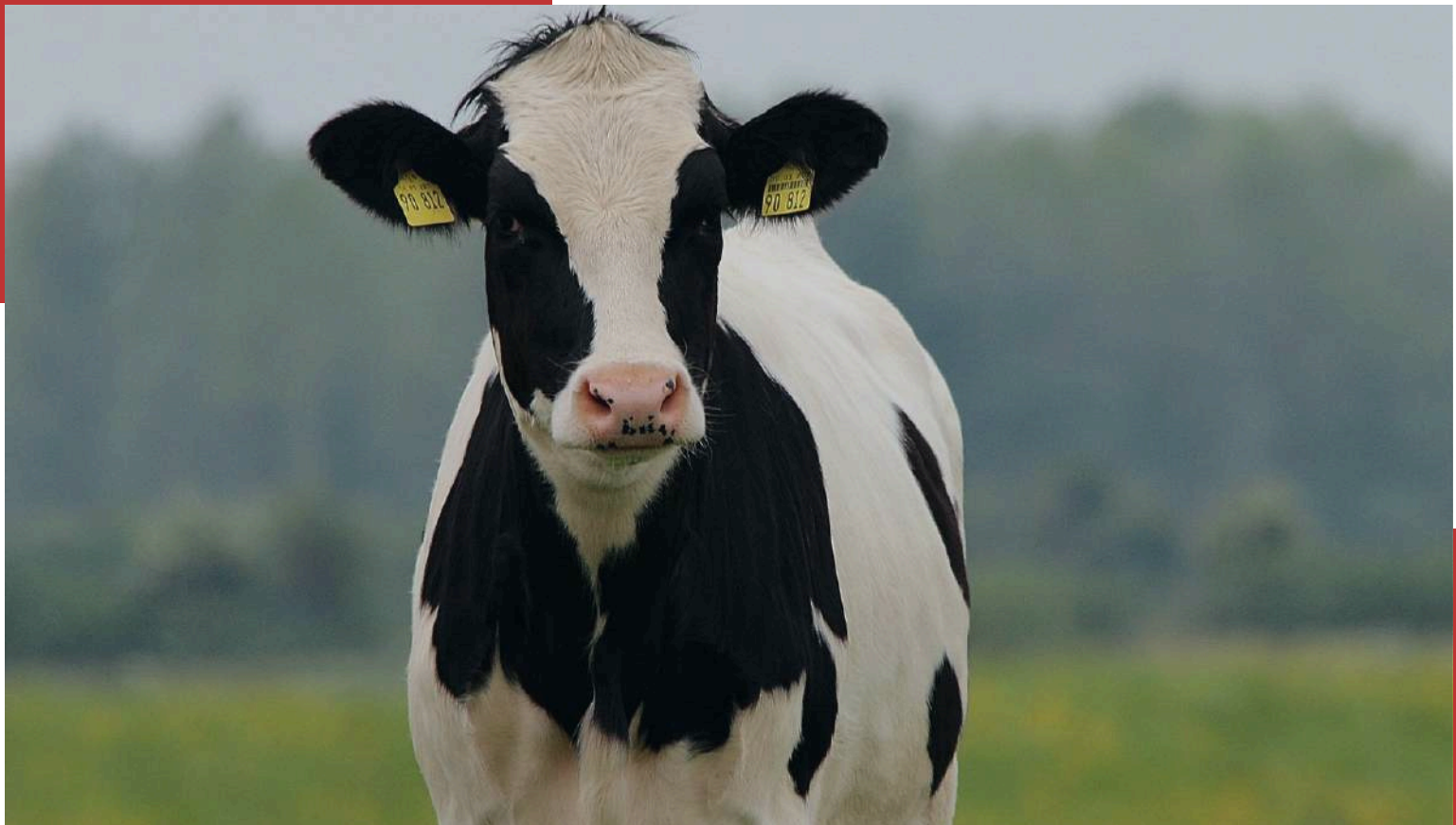


»» NEWSLETTER ««

dairy_{4.0}

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



Co-funded by the European Union

Project funded by

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»»» CHALLENGE

The dairy industry, vital to the EU economy, faces challenges with rising global demand and CO₂ 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

dAlry 4.0 integrates AI, Data, and Robotics to optimize AVMS, reducing environmental impact. It focuses on individual cow health monitoring 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.





- **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 milking settings**
- **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.**



During the first 12 months of the project, significant progress was made in several key areas:

»»» Use cases detailed definition

We successfully defined detailed use cases, leveraging input from partners and stakeholders to ensure they align with real-world needs and project goals.

»»» User & stakeholder requirements

Comprehensive requirements were collected and analysed from users and stakeholders, forming a solid foundation for system development

»»» System requirements and conceptual designs

We defined detailed use cases, leveraging input from partners and stakeholders to ensure they align with real-world needs and project goals.





»»» Action plan for clustering with EU projects & services

A strategic action plan was established to foster collaboration and knowledge exchange with other EU projects & services, ensuring synergy and maximizing impact. First try to connect **dAIry 4.0** with EU projects was with **BROMEDIR project** (<https://bromedir.eu>), also an EU-funded project, focusing on sustainable farming enabling continuous on-farm monitoring of milk sample on nutritional value and health traits.

»»» Data infrastructure

We developed the initial version of the data infrastructure, which serves as the backbone for collecting, storing, and managing project-related data. This foundational framework will support seamless integration of data from farms and sensors ensuring scalability and reliability for future iterations.

TECHNICAL UPDATES COMING NEXT

- First versions of all novel, AI-driven modules
- Initial version of the integrated robot
- Comprehensive real-world validation protocol



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12M Consortium Meeting

A successful **dAlry 4.0** meeting was held on 13th-14th November 2024 in Maassluis, Netherlands hosted by the project partner LELY. The two-day meeting was a great opportunity for all partner teams to discuss the project progress in detail.





Tour of LELY farm

On the second day, LELY organized a tour of its farm. This insightful visit gave partners the opportunity to see a milking robot in action. The tour was invaluable for helping partners understand the adjustments needed to integrate all modules into the milking robot during the first integration phase.



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ANEMBE 2024

dAIry 4.0 participated in ANEMBE 2024, showcasing its innovative approach to advancing the dairy industry through IoT, AI, and data-driven solutions



Digital and emerging technologies for competitiveness and fit for the green deal

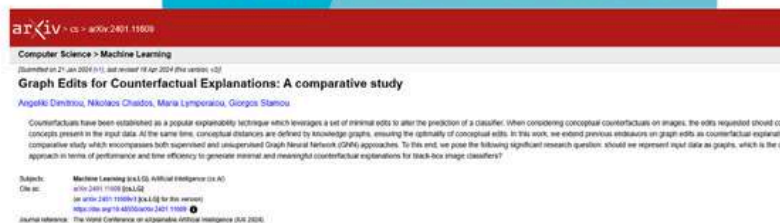
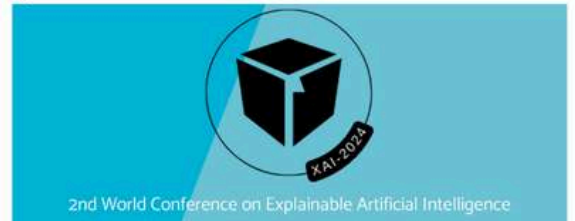
- Inteligencia artificial, datos y robótica (robot de ordeño):
- Mejora la **Salud y el Bienestar Animal**
 - La **Calidad de la leche**
 - Optimizar la **Alimentación**



Automated Voluntary Milking System (AVMS)

CVPR 2024 / xAI-2024

dAIry 4.0 was also represented at CVPR 2024 and xAI-2024 by our partner ICCS, highlighting its cutting-edge research in explainable AI and computer vision applications for agriculture



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Adra-e forum #ADRF24

At **ADRF24**, Lely represented the **dAlry 4.0** project, showcasing how Data, Robotics, and AI are transforming dairy farming to enhance animal welfare, improve farmer well-being, and reduce CO₂ emissions. The event emphasized Europe's commitment to advancing innovation and competitiveness in AI, Data, and Robotics for a sustainable future.

Web Summit 2024

dAlry 4.0 showcased its groundbreaking integration of IoT, AI, and data analytics at **Web Summit 2024** in Lisbon, highlighting advancements in dairy productivity, animal welfare, and product traceability. The event provided an excellent platform for networking, exploring collaborations, and sharing insights on transforming the dairy industry through technology.



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Wrapping up our second newsletter edition, we're thrilled by the progress within our **dAlry 4.0** project.

Our vision for sustainable agriculture 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.



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