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NOUS

Empowering
Europe's Data
Future

USE CASES



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USE CASE #1

Perception of Connected Vehicles using camera data



What is the technology that has been tested through the UC?

Edge cloud communication between cameras and users.

What social problem has been addressed by the UC?

Road safety and city information.

Who are the main beneficiaries from the UCs?

Road users and local authorities.

What is the expected result from the UC?

Edge safety application to alert road users about incoming possible accidents + city dashboard.

To what extend this solution is innovative and what makes it different from others?

Combines edge and cloud information with minimal latency (when needed).

How has the NOUS ecosystem redefined your workflow, and which specific component proved most vital to achieving your goals?

Dataspace interaction allow to flexibly share information with multiple stakeholders. Edge infrastructure allows to deliver data with minimal latency.

USE CASE #2

Energy Prediction and Energy Data Lifecycle Management



What is the technology that has been tested through the UC?

ML training at the Edge & Federated Learning, FIWARE auto-standardisation, Zero-Trust cybersecurity & Blockchain for immutability, Data Space Connections.

What social problem has been addressed by the UC?

Supports the green energy transition, optimises energy production and pricing planning.

Who are the main beneficiaries from the UCs?

Energy producers, grid operators, market traders, and end-consumers.

What is the expected result from the UC?

The delivery of highly accurate Day-Ahead and Intra-Day energy production forecasts through a decentralized architecture.

To what extend this solution is innovative and what makes it different from others?

Combines local Federated Learning with Blockchain to share secure, audited insights without exposing raw data, creating a sovereign data economy.

How has the NOUS ecosystem redefined your workflow, and which specific component proved most vital to achieving your goals?

NOUS transformed our isolated data silos into a secure, collaborative network. Integrating Federated Learning with the Data Space Connector was vital, since this allows us to safely share high-value market predictions with internal and external stakeholders, while ensuring our raw production data never leaves the edge.

USE CASE #3

Crisis Management and Civil Protection Platform



What is the technology that has been tested through the UC?

Data Space connections, Zero-Trust cybersecurity, Blockchain-based trust mechanisms for secure data exchange.

What social problem has been addressed by the UC?

Reduces information silos and improves operational efficiency during emergency responses to enhance public safety.

Who are the main beneficiaries from the UCs?

First responders, law enforcement, government authorities, and citizens.

How has the NOUS ecosystem redefined your workflow, and which specific component proved most vital to achieving your goals?

What is the expected result from the UC?

Harmonised data life-cycle management and shortened decision cycles for multi-organisation crisis operations.

To what extend this solution is innovative and what makes it different from others?

A sovereign, interoperable backbone that preserves data ownership while enabling trusted collaboration via the NOUS Data Space.

By enabling more secure and transparent information sharing with multiple external stakeholders without requiring tight system coupling or data centralisation. It allowed CS to seamlessly integrate complementary services, such as blockchain-based trust mechanisms, into operational crisis workflows. The NOUS Data Space proved to be the most vital component, acting as the interoperability and governance layer for trusted collaboration. It also opens the way for future capabilities, such as automated data standardisation.

USE CASE #4

Scientific Data HPC Storage and AI Analytics



What is the technology that has been tested through the UC?

HPC-enabled AI workflows, Active Learning & Bayesian Optimization, Surrogate models, NOUS dataspace layer via secure connectors.

What is the expected result from the UC?

Substantial reduction in data requirements and computational time and accelerated scientific discovery through scalable, secure collaboration.

Who are the main beneficiaries from the UCs?

Researchers, engineers, industrial R&D teams, and organizations in secure data ecosystems.

How has the NOUS ecosystem redefined your workflow, and which specific component proved most vital to achieving your goals?

What social problem has been addressed by the UC?

Addresses high costs and environmental impact of compute-intensive scientific workflows, and enables sustainable, resource-efficient AI discovery.

To what extend this solution is innovative and what makes it different from others?

Shifts from static ML pipelines to adaptive, decision-driven workflows that jointly optimize data usage and computational effort within an HPC and dataspace-enabled environment.

The NOUS ecosystem enabled us to move from fragmented experimentation to a streamlined and scalable workflow. By combining high-performance computing with secure data access, we can run complex tasks more efficiently and reliably. This significantly reduces both the time and data required to achieve high-quality results.