

ENDURANCE Project Presentation

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2026 ECSCI Webinars Series

ENDURANCE

Funded by
the European Union

ENDURANCE – Strengthening Europe's Essential Services Resilience

- **From protecting infrastructure to ensuring service continuity**
  - Developing an integrated approach to the resilience of **essential services**
  - Supporting the implementation of the **CER** and **NIS2** Directives
  - Improving preparedness, business continuity and coordinated response
  - Addressing complex, cascading and cross-border disruptions



ENDURANCE – Project at a glance

23 **Project partners**

7 **European countries**

€5M **EU-funded project** (October 2024–September 2027)

7 **Competent Authorities**

5 **Critical Infrastructure Operators**

1 **Health-sector SME**

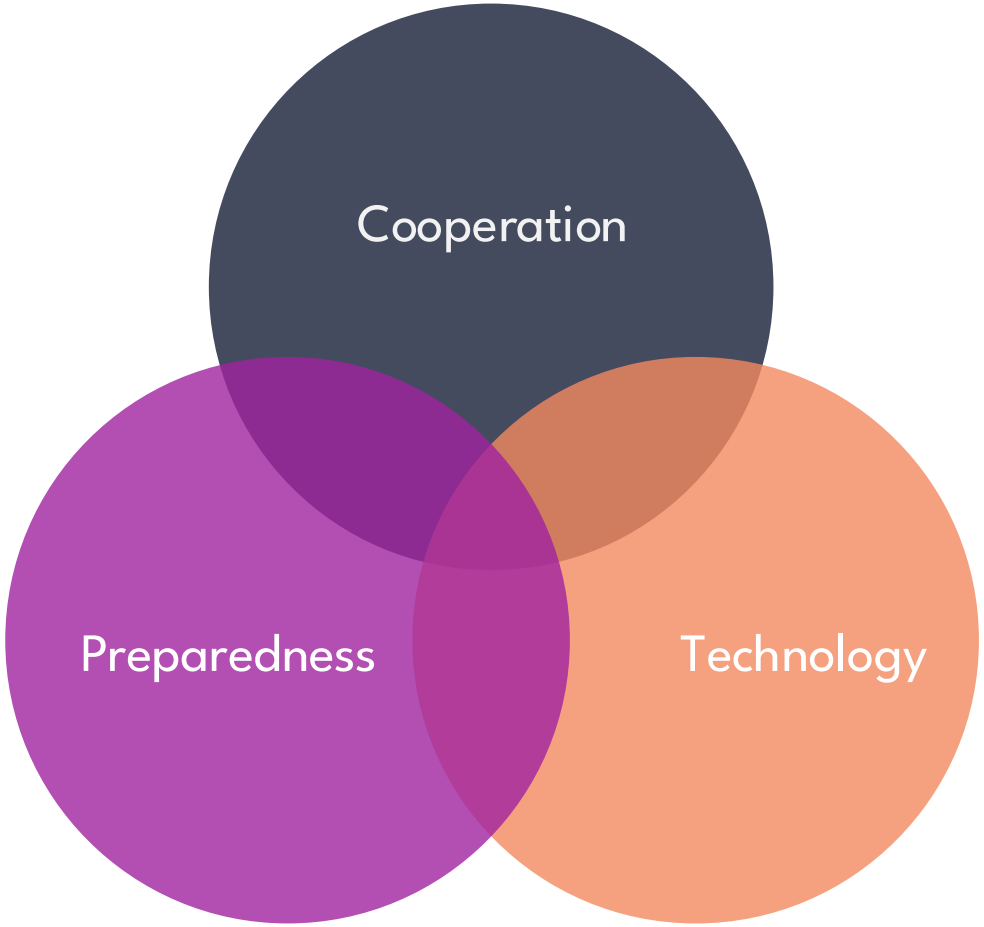
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ENDURANCE – Project objectives

↗ **Building practical solutions for resilient essential services**

- Enhanced cooperation between EU, national, regional and local stakeholders
- Secure data sharing and federated information processing
- Joint risk and resilience assessment methodologies
- Large-scale resilience stress testing
- Interoperable technologies, datasets and services
- Harmonised resilience framework validated to **TRL 6–7**
- Support efforts to implement the **CER** and **NIS2** Directive



ENDURANCE – Critical Infrastructure sectors

↗ **6 sectors covered by ENDURANCE:**



ENDURANCE – Key technologies and solutions

Digital Twins

Virtual models of interconnected CIs.

Trusted CER Data Space

Secure and interoperable data sharing across sectors and countries.

Secure Data Exchange & Federated Processing

Collaborative data analysis while protecting sensitive information.

Risk & Resilience Assessment

Tools to identify vulnerabilities and evaluate infrastructure resilience.

Interdependency & Cascading-Effect Analysis

Understanding how disruptions can spread across essential services.

Disruption Simulation & Stress Testing

Testing preparedness against large-scale disruption scenarios.

Resilience Intelligence Framework

Indicators and metrics to support resilience monitoring and decision-making.

Harmonised Data Models & Knowledge Base

Common structures and terminology to improve interoperability.

Decision-Support Dashboards

Visualising risks and supporting coordinated action by authorities and infrastructure operators.

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ENDURANCE - Pilots

↗ The ENDURANCE project is conducting a series of **Pilots:**

↗ **MICRO** pilots – **Italy & Greece**

- Country, regional & sector-specific challenges
- Cross-organisation & cross-site resilience

↗ **MESO** pilots – **Slovenia & Romania**

- Cross-sector challenges at local, regional & national levels

↗ **MACRO** pilot – **Pan-European**

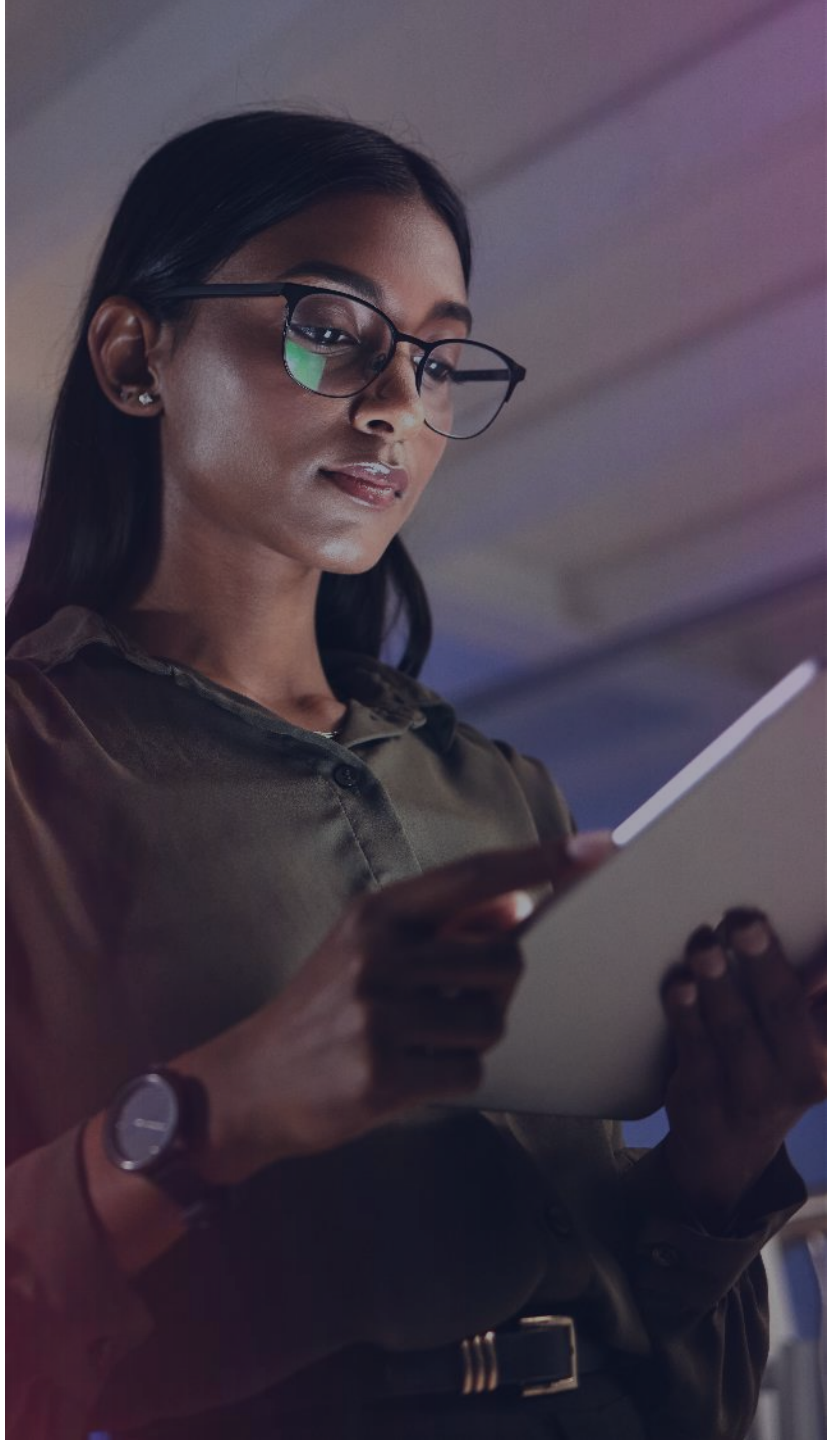
- Cross-border, strategic, large-scale resilience scenarios



→ *Objective: Validate ENDURANCE solutions across operational, regional and European scales*

ENDURANCE – Key achievements

- **Technical foundations established:** Integrated architecture connecting data, analytics, Digital Twins and resilience services.
- **Digital Twins developed:** Initial operational versions model critical infrastructure assets, essential services and cross-sector dependencies.
- **Trusted Data Space implemented:** Core capabilities for dataset registration, catalogues, access management and secure data exchange are operational.
- **Risk and resilience intelligence advanced:** Framework for risk assessment, resilience indicators, interdependency analysis and scenario evaluation established.
- **Initial prototypes validated:** Phase 1 solutions and pilot workflows validated at TRL5.
- **European cooperation strengthened:** 8 Local and 2 European workshops, the Pan-European Working Group and Advisory Board support stakeholder engagement.



ENDURANCE – Join the Pan-European Working Group on Disruption Resilience

↗ **Collaborate. Share. Shape the future.**

- The ENDURANCE Working Group brings together experts to strengthen the resilience of Europe's Critical Infrastructure through collaboration and knowledge exchange.

↗ **Members can:**

- Learn about ENDURANCE results and technical developments
- Exchange best practices and operational experience
- Contribute to future EU policies and standardisation
- Network with authorities, operators, researchers and security experts

↗ **Who can join?**

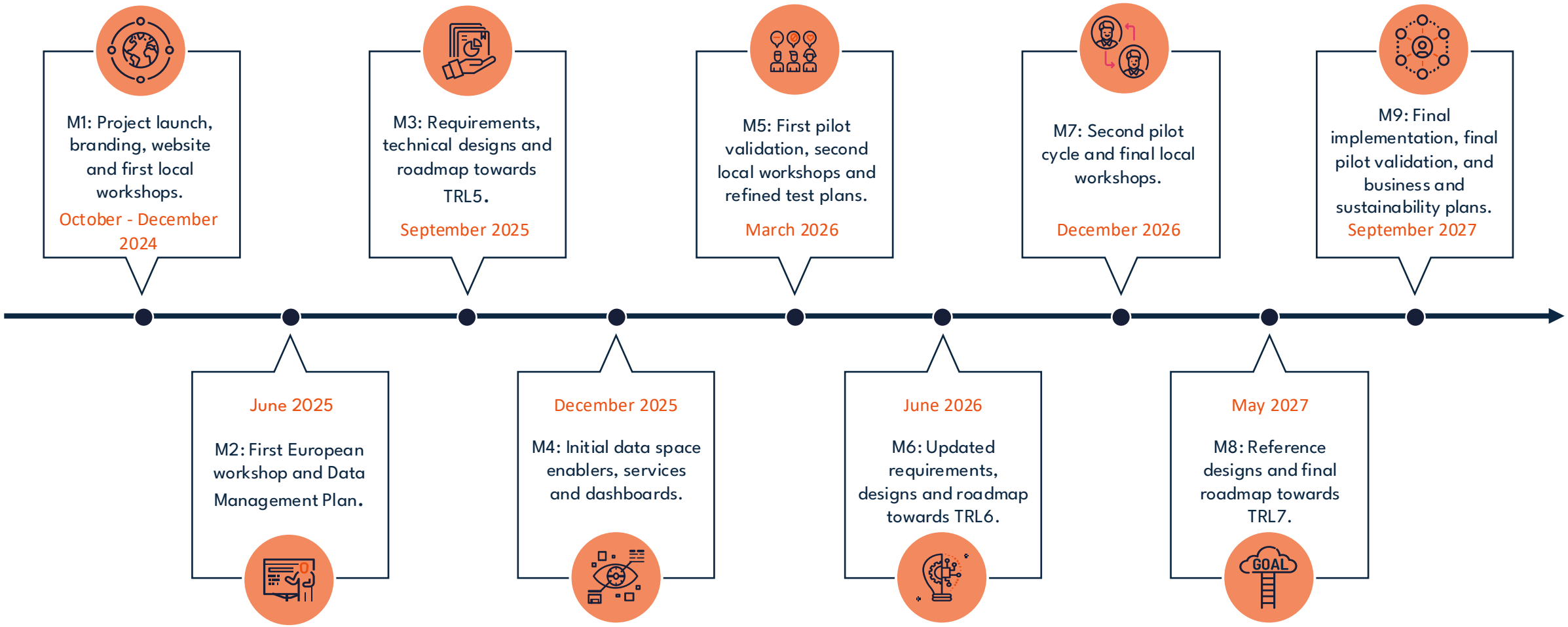
Competent authorities • Critical infrastructure operators • Security experts • Research projects • Law enforcement • Standardisation bodies

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ENDURANCE – Milestones



ENDURANCE - Next Steps



Refine and integrate

Improve Digital Twins, data exchange and interoperability. Enhance analytics and decision-support tools.

Validate through pilots

Test solutions across local, regional and European levels. Assess performance, usability and resilience.

Support wider uptake

Finalise the European Disruption Resilience Strategy. Strengthen policy alignment, standardisation and exploitation.

Advance technology readiness

Refine solutions based on pilot feedback. Progress towards operational validation.



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Thank you!

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