AI and data in Estonia

Does AI and the use of data play a leading role in preparedness for the future and support of defence preparedness?

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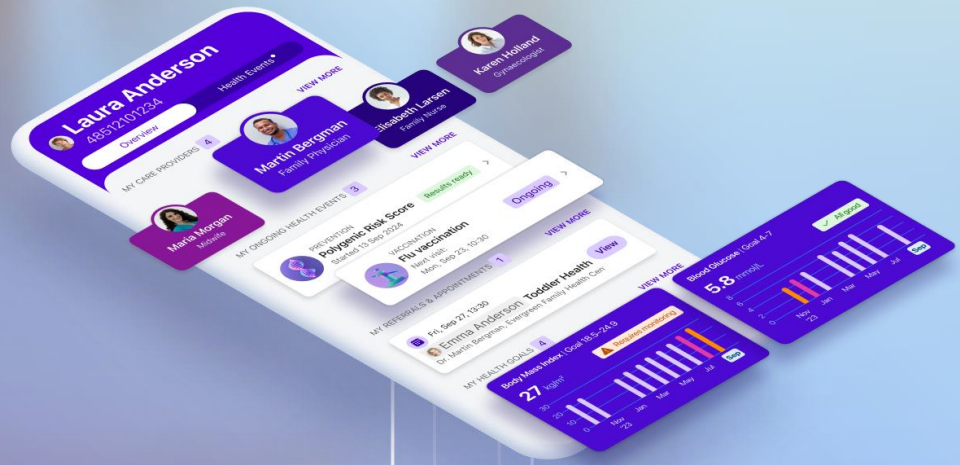


Governance Before Technology

Advanced technology layered over chaotic data only accelerates confusion. Standardizing data structures is the critical prerequisite for any meaningful healthcare automation.

AI is not Estonia's strategy.
Preparedness is.

Person-centeredness

Supporting the healthcare specialists

Extracting the value of data

Priorities

Foundation

Sustainable infrastructure

Cybersecurity

Innovation

Supportive legal environment

Why Data Comes First

The next leap in Estonian digital health is data-driven

Policy priorities:

- Improve health data quality
- Standardize health data nationally
- Ensure real-time accessibility
- Enable secondary use for research and innovation

Key challenges today:

- Fragmented data
- Uneven data quality
- Limited reuse

Policy response:

- “Data as a strategic asset”
- AI depends on structured, standardized and reusable health data

Estonia’s first transformation is architectural

Policy actions:

- National health data standards
- FHIR-based interoperability
- Migration from document-based to structured data
- Modular architecture for all major health information systems

2030 target architecture:

- XaaS model
- Data as a Service (DaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)

A growing body of evidence demonstrates that AI performance in healthcare is more strongly constrained by data quality and interoperability than by algorithm sophistication. The Lancet Digital Health has repeatedly highlighted that scalable AI deployment depends on robust data infrastructures rather than isolated AI tools.
(Topol, 2019; The Lancet Digital Health, 2023)

Estonian Approach to Using AI in Healthcare

AI is a support tool, not a decision-maker

National principles:

- AI supports healthcare professionals
- Human oversight remains mandatory
- Clinical responsibility remains with providers
- Risk-based implementation
- Evidence-based deployment

Strategic use cases:

- Clinical decision support
- Documentation automation
- Speech-to-text solutions
- Imaging analysis
- Population health analytics

Current AI Use Needs Systemization

AI adoption already exists—but governance lags behind

Survey findings:

- 80% of clinicians already use some AI tool
- 45% use AI daily
- Most adoption is individual rather than organizational

Key challenges:

- Lack of validated tools
- Legal uncertainty
- Limited governance
- Uneven implementation

Studies in NPJ Digital Medicine demonstrate that organizational governance is one of the strongest determinants of sustainable AI implementation, often more important than technical performance itself .

(Bakken et al., 2022)

Rules for Clinical AI

Higher clinical impact = stronger evidence and governance requirements

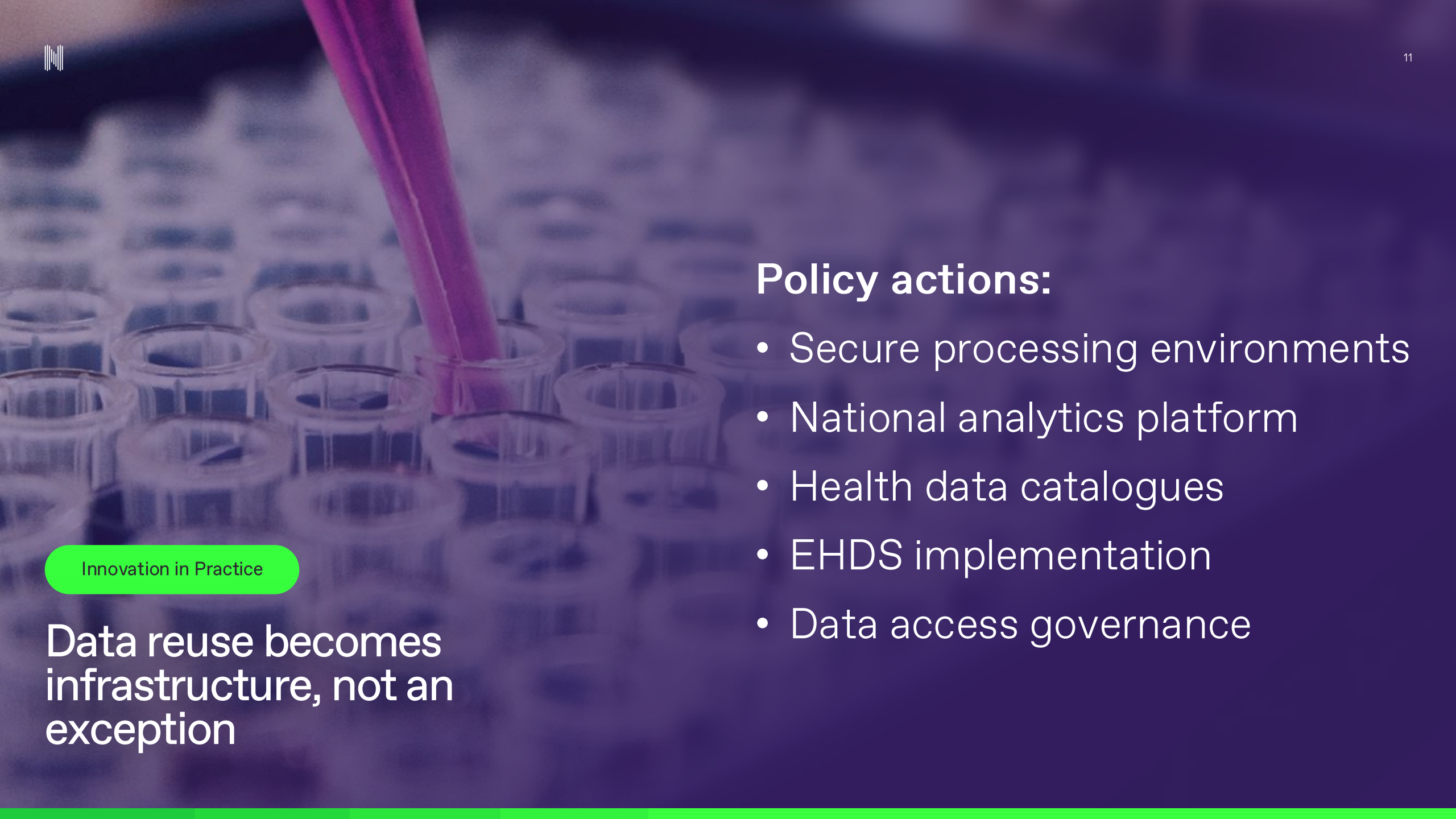
Risk categories:

- Minimal risk
- Transparency obligations
- High-risk systems
- Medical device AI

Requirements include:

- Human oversight
- Documentation
- Auditability
- Clinical validation
- Cybersecurity controls
- Continuous monitoring

Secondary use of health data becomes a national capability



Innovation in Practice

Data reuse becomes infrastructure, not an exception

Policy actions:

- Secure processing environments
- National analytics platform
- Health data catalogues
- EHDS implementation
- Data access governance

Innovation is structured through governance mechanisms

- Regulatory sandboxes
- National AI tool catalogue (TARK)
- Public AI assessment toolbox
- Innovation-aware legal framework
- National implementation roadmaps

Digital health remains citizen-centered

Key policies:

- Expanded Health Portal
- Consent services
- Personal health management
- Citizen-generated data
- Transparent data access

Future vision:

- Personalized recommendations
- Preventive care pathways
- Person-centered digital services

Nortal 25 years

Estonia’s future preparedness depends on trusted data, interoperable systems and governed AI adoption.

- Data strategy precedes AI strategy
- Standardization precedes automation
- Governance precedes scaling
- Secondary use becomes national infrastructure
- AI is integrated into health system transformation—not treated as a separate agenda

Nortal 25 years

Thank you!

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