

WHY **DIGITAL  
TRANSFORMATION**  
REQUIRES NURSING  
LEADERSHIP, NOT JUST  
PARTICIPATION

# MISSION AND VISION OF THE ESNO DIGITAL NURSING PROGRAMME

**OUR VISION:** As the digital domain in healthcare becomes increasingly central to patient outcomes, efficiency of care, and system sustainability, it is imperative that health professionals are equal partners in this process – not only as end-users, but also in innovation, governance, and implementation. Our observation is that nursing professionals remain significantly underrepresented at the interprofessional level where these digital decisions are shaped.

**OUR MISSION:** To empower nurses across Europe to actively shape, lead, and govern the digital transformation of healthcare, ensuring that technologies enhance patient autonomy, clinical excellence, safety, dignity, and quality of care. By embedding nursing expertise in the design of digital tools, algorithms, and data governance, we strengthen the contribution of nurses to sustainable, equitable, and high-quality health systems.

**WHAT DO WE STAND FOR:** Nurses are by character adaptive, innovative, and solution-driven, they engage naturally with change at the point of care. It's well recognised that technology is inherently non-neutral, necessitating thoughtful integration into healthcare delivery. The evidence demonstrates that without inclusion, even the most sophisticated technologies fall short of achieving meaningful outcomes; however, when nurses are actively involved in co-creation, digital health solutions prove safe and effective.

**OUR COMMITMENT:** We commit to ensuring that digital health is shaped by clinical reality, grounded in nursing expertise, and accountable to the values of our profession. Through evidence, advocacy, education, and collaboration we will position nurses as co-creators and leaders of safe, ethical, and effective implementation of digital innovation.

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# A MESSAGE FROM THE CHAIR

There is no looking away, Digital health is embedded in infrastructure across European healthcare: artificial intelligence, electronic health records, remote monitoring, predictive analytics. Yet nurses, Europe's largest healthcare workforce of over 3.7 million practising professionals, who are present at every stage of the patient journey, are often positioned as end-users rather than co-creators. When nurses co-lead the design and governance of digital tools, those technologies integrate seamlessly into practice and deliver clinically meaningful impact.

Technology reaches its full potential when it aligns with the workflows, values, and realities of clinical practice. When nursing insight is embedded in design, digital innovation amplifies care quality and patient outcomes. Publications show that nurse involvement leads to more intuitive systems, higher adoption, improved safety, and sustainable implementation.

At the midpoint of the ESNO Decade of the Specialist Nurse (2020-2030), we confront

an uncomfortable truth: digital innovation advances faster than our profession's capacity to influence it. This is not a failure of nursing motivation or ambition. It is a structural failure of health systems to equip, position, and recognise nurses as contributors to digital transformation rather than merely its recipients. The education frameworks, institutional pathways, and professional recognition mechanisms that would enable nurses to shape digital health simply have lagged the pace of technological innovation. The ESNO Digital Nursing Programme addresses this systemic gap, ensuring technology serves nursing values: patient autonomy, clinical judgment, safety, dignity, and care quality.

Questions still remain. Under what conditions will digital transformation succeed? Whose values guide development? Who is accountable? These fundamental questions of digital technology ignite a call-to-action for all nurses and a central question of their own:

# WHY SHOULD NURSES CARE ABOUT THE DIGITAL DOMAIN?

Four interconnected realities, naturally evolving from one another, lead us to act with intention.

## 1/ BECAUSE DIGITAL COMPETENCE AND AI ARE ALREADY EMBEDDED IN EU REGULATION

Nursing engagement with digital health is no longer a future consideration – it is already part of clinical practice and academia. Across Europe, AI-enabled tools are reshaping care delivery, decision-making, and professional responsibility.

Since the EU Artificial Intelligence (AI) Act entered into force in August 2024, this shift is now legally anchored. A considerable proportion of digital systems used in clinical practice are expected to be classified as high-risk and will need to meet strict requirements for safety, transparency, and human oversight by 2027.

The AI Act does not replace existing regulation but adds a critical layer to it. Where the EU Medical Device Regulation governs the safety and performance of a digital tool as a product, the AI Act governs how the decision-making intelligence within that tool must behave and be overseen in practice.

A certified device can still contain an AI system that requires separate accountability, and that

accountability rests with the professionals using it. For nurses, this is not abstract policy. They are becoming legally accountable actors in a regulated digital environment, yet the education, support, and institutional frameworks needed to prepare them have not kept pace. The European Commission's Digital Competence Framework for Citizens, known as DigComp 3.0, offers a critical starting point. Developed by the Joint Research Centre and in its fifth iteration, DigComp 3.0 defines digital competence across five core areas: information literacy, communication, content creation, safety, and problem solving. Designed as a common standard for education, assessment, and policy across professional contexts, it provides the foundation upon which a nursing-specific digital competence framework must be built. The gap is clear, and so is the need for action.

Nurses are trusted stewards of patient data and are often first line users of digital systems. Strengthening

sector-specific applications of the DigComp framework and related credentialing can enhance nurses' confidence in data protection, AI-supported care,

and digital accountability, while empowering nurses to recognise and challenge bias and to contribute to safer, more equitable digital health systems.

- Regulation without education and inclusion cannot deliver its promise. As digital competence becomes a requirement for healthcare professionals, Accessible education is essential to turn policy into practice and to ensure healthcare professionals can lead in a digital health landscape.

## 2/ BECAUSE TECHNOLOGY IS SHAPING OUR SOCIETY

This regulatory and educational gap is significant because, as confirmed by the European Commission's State of the Digital Decade 2025 report, digital transformation is simultaneously reshaping every sector of European society: work, education, services, and civic life. Technology is being developed within the healthcare delivery system which drives internal change that subsequently extends beyond the hospitals walls- placing healthcare at the centre of societal transformation.

In healthcare, this societal shift manifests in every digital platform and algorithm. In the development of medical technology, there are user requirements that shape the application of the tool. Finalizing user requirements can require trade-offs between features and performance. These decisions require input from those who understand what matters to patient care: efficiency vs relationship, standardisation vs context, measurability vs meaning. These are deeply human choices, yet they are rarely made by those delivering or receiving care.

Emerging developments in agentic and enterprise AI signal a move toward more contextual, relational, and personalised systems. Just as clinical practice evolved from standardised protocols toward personalized care, technology must evolve to fit the needs of patients. The direction is promising, but promising trajectories require the right people to shape them. As the healthcare professionals closest to patients, nurses must be involved from the initial stages of development.

Nurses experience digital transformation every day in clinical practice, and their perspective shows where alignment with quality care needs strengthening. For example, originally conceived as administrative and billing tools, many electronic health records prioritize administrative efficiency over care planning. These systems often place significant documentation burdens on clinicians to satisfy regulatory and billing requirements, and their suboptimal usability can consume substantial nursing time without enhancing patient care. Empirical evidence has associated these

demands with increased clinician burnout. These challenges extend beyond usability and workflow burden. They reveal structural issues in how digital technologies are designed and implemented, issues that become even more visible with the growing integration of AI-enabled systems.

AI systems are often trained on incomplete datasets, underrepresenting women, gender diverse people, ethnic minorities, the very young, and older adults. This is not a simple oversight, but a structural challenge shaped by data privacy regulations, the absence of federated public databases, the cost of obtaining representative data, and ongoing legal debates around data sharing. Additional alerts generated by clinical decision support systems contribute to alert fatigue, with direct consequences for patient safety. Remote monitoring, meanwhile, frequently fails to account for the complexity of multimorbidity. These realities highlight why nurses must be central to shaping digital solutions that truly support safe, effective, and equitable care.

Research shows that digital solutions shape behaviour in subtle and powerful ways: automation bias leads clinicians to over-rely on algorithmic recommendations which can cause out-of-the-loop syndrome that reduces the situation awareness needed for clinical judgment, while repeated

dependence on AI systems can gradually erode the clinical skills gained through critical thinking. Digital solutions need to support clinicians' situation awareness to more efficiently enable clinical decision making. The literature also highlights persistent barriers, including lack of trust, concerns about data security, and organisational resistance to change. Too often, data and information remain trapped within systems, disconnected from clinical meaning and patient care.

The consequences touch the fundamental relationship between technology and human dignity. Classic nursing theory anchors this concern. Virginia Henderson defined nursing as enabling patients to achieve self-determination. Dorothea Orem positioned patients as in principle inherently capable. And last, the International Council of Nurses (ICN) Code of Ethics requires respecting patient rights and ensuring informed consent. Without the meaningful involvement of clinicians and patients in the design and governance of digital systems, these principles risk being violated: (1) AI recommendations that obscure reasoning undermine informed consent; (2) algorithms that remove agency contradict the purpose of care; (3) technology that creates dependency conflicts with what nursing exists to achieve.

- **Technology alignment with human values requires human-centred design, robust governance, and critical engagement from those closest to care. As the bridge between technology and human values, nurses are the stewards of care in society.**

### 3/ BECAUSE HEALTHCARE AND PUBLIC HEALTH ARE INCREASINGLY DEPENDENT ON DIGITAL INNOVATION

The alignment of technology with human values is urgent because healthcare and public health systems are quickly becoming dependent on digital innovation. Across Europe, billions of Euros are invested in digital health technologies in response to the population ageing, the workforce shortage, the growing burden of chronic disease, hospital capacity and throughput issues, and the rising cost pressures.

Digital innovation is often presented as the answer: AI to automate tasks, telemedicine to extend access, and predictive analytics to prevent hospitalisations. However, many digital solutions have not yet achieved sustained clinical use. While technical validation of AI-enabled tools is increasingly common, the pathway from innovation to everyday practice remains complex, and a tool's real-world effectiveness is often difficult to determine until it is embedded in clinical settings. When nurses and other clinicians have been actively involved in implementation, evidence suggests more sustained benefits and greater real-world impact. Closing this gap remains one of the most pressing challenges in digital health today.

Commonly, resistance to change is cited as the primary reason for slow translation of technology from bench to bedside. However, the root cause of the problem is implementing a technology

solution to address personnel, organizational, structural, and workflow challenges without wholistic implementation science driven by clinicians and patients. Healthcare systems are deeply traditional organisations shaped by established workflows and cultural norms. Attempting to introduce advanced systems without addressing organisational culture produces friction. Digital offices often operate separately from clinical operations, lacking a direct insight of care complexity. Without the input of those who deliver and receive care, innovation becomes supply-driven rather than demand-driven.

Poor digital usability has measurable consequences for both nurses and patients. In one large study, hospitals with poorer EHR usability had 21% higher patient mortality and significantly higher nurse burnout, with the authors concluding that nurse involvement in digital system development is critical to avoiding such outcomes. While studies directly measuring the benefit of nurse involvement in design remain limited, the direction of evidence is consistent: technologies become more intuitive, adoption increases, and usability risks are identified early. Strengthening nursing participation requires addressing well-documented barriers, including gaps in training and knowledge, fragmented infrastructure,

organisational resistance, and concerns about role change. Overcoming these barriers is

essential to unlocking the full potential of digital health.

- Underrepresenting nurses does not reflect individual error; it reveals systemic failure in how nursing roles are positioned and valued.

## 4/ BECAUSE PATIENT OUTCOMES AND QUALITY OF CARE ARE LINKED TO NURSES' ABILITY TO NAVIGATE THE DIGITAL DOMAIN

Nurses' ability to use, interpret, and critically evaluate digital tools has direct implications for patient safety and care quality. Nursing informatics has been associated with reductions in medication errors, pressure ulcers, and length of stay, as well as improved compliance with evidence-based care guidelines. Navigating interoperable systems also enables safer transitions of care. In a regulatory environment where digital systems increasingly fall under EU AI and medical device legislation, these competencies are not optional enhancements but professional requirements.

At the same time, gaps in digital competence introduce risk. Research shows that digital training does not always translate into confident use in practice. AI-driven decision support can improve early detection but can also produce high false-positive or false-negative rates that contribute to alert fatigue. Technology is only as

effective as the professional using it.

However, competence alone is insufficient. Models that position nurses as passive recipients of digital tools have repeatedly resulted in systems that do not reflect practice realities, disrupt clinical workflows, and drive disengagement.

A more effective approach places nurses at the centre of human centred design with involvement in defining governance, user requirements, usability testing, clinical evaluations, and change management. Clinical value propositions and usability cannot be retrofitted onto a technology that was not developed from a medical need. This is not a call for nurses to become engineers. It is a call for structural inclusion of the nursing profession in digital health innovation – through representation in EU policymaking, integration

of digital competence in curricula, leadership of implementation research, and recognition of

nurses as digital health professionals.

- Without this shift, digital transformation will continue to be imposed on nursing, leading to suboptimal adoption, workarounds, burnout, and missed opportunities.

## OUR FOUR INTERCONNECTED AMBITIONS, NATURALLY EVOLVING FROM ONE ANOTHER AND LEADING US TO ACT WITH INTENTION.

### 1. DIGITAL COMPETENCE AND AI ARE ALREADY EMBEDDED IN EU REGULATION

Regulation without education cannot deliver its promise. As digital competence becomes a professional requirement, coherent and accessible educational infrastructure is essential to turn policy into practice and ensure professionals are fully equipped to lead in a digital health landscape.

### 2. TECHNOLOGY IS SHAPING OUR SOCIETY

Technological alignment with human values through design, governance, and critical engagement. Nurses, as both members, involvers, stewards of care in society.

### 3. HEALTHCARE AND PUBLIC HEALTH ARE INCREASINGLY DEPENDENT ON DIGITAL INNOVATION

Underpositioning nurses does not reflect individual error; it reveals systemic failure in how nursing roles are positioned and valued.

### 4. PATIENT OUTCOMES AND QUALITY OF CARE ARE LINKED TO NURSES' ABILITY TO NAVIGATE THE DIGITAL DOMAIN

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# LOOKING AHEAD: HOW THE ESNO DIGITAL NURSING PROGRAMME 2026 WILL POSITION NURSES AS LEADERS OF DIGITAL TRANSFORMATION

The ESNO Digital Nursing Programme 2026 operationalises this vision through interconnected activities designed to move digital innovation from concept to care:

## SHARED LANGUAGE

This strategic guide, thematic webinars exploring implementation gaps and ethical challenges, and high-level interviews with leaders who have successfully embedded nurses in digital health leadership.

## EVIDENCE GENERATION

In-depth studies examining where and why digital innovations fail to reach nursing practice, analysing structural barriers and identifying facilitators of successful adoption. Policy briefs translating findings into actionable recommendations for EU institutions.

## EVENTS

ESNO Congress 2026, featuring strategic presentations and a digital nursing hackathon focused on real clinical challenges where digital solutions fail to integrate. Active participation in EU initiatives, including AI Act implementation and DigComp framework revisions.

## EDUCATION

Promoting embedded, competency-based nursing informatics education across the spectrum from end-user to expert levels, aligned with international curricula. Curriculum integration support for nursing education institutions.

## DISSEMINATION

Social media campaigns, podcasts, and interviews are raising awareness of nursing's role in digital health, challenging outdated narratives and showcasing nurse-led innovation.

# HOW TO GET INVOLVED

Nurses and Organisations: Endorse the programme. Participate in events. Advocate for nursing representation in digital health governance and for the inclusion of digitalisation and digital competencies in nursing education.

**POLICYMAKERS:** Recognise nurses as digital health professionals. Invest in nursing-specific education. Mandate nursing involvement in procurement and the inclusion of digital competencies in nursing curricula.

**INDUSTRY:** Engage nurses early and continuously. Publish transparent evidence on real-world adoption. Support nursing-led innovation.

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*“Europe’s digital health future will be shaped by those who deliver care, or it will fail.”*

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The European Specialist Nurses Organisation (ESNO) is a non-profit organisation and the goal is to facilitate and provide an effective framework for communication and co-operation between the European Specialist Nurses Organisations and its constituent members. ESNO represents the mutual interests and benefits of these organisations to the wider European community in the interest of the public health. Members of ESNO consist of individual European specialist nurses organizations.



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