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*Editorial*

# Year III: The *NDT—Journal of Non-Destructive Testing* 2025 End-of-Year Editorial

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The year 2025 marked a defining stage for *NDT—Journal of Non-Destructive Testing*, consolidating its position as a global platform for advancing non-destructive evaluation science and technology. It will be remembered as the year of the journal's title update [1], a strategic move aimed at strengthening identity, improving discoverability, and ensuring clarity of purpose for researchers and practitioners worldwide. This initiative aligns with the foundational objectives of the ICNDT Strategic Plan [2], which advocates for global harmonisation and greater visibility of NDT to drive the scientific innovation and multi-disciplinary research essential for global safety.

Reflecting the synergy between the journal's output and broader community engagement in 2025, the year's guiding theme, designated as "Sensing Resilience, Engineering Sustainability", emerged naturally from a synthesis of published articles and discussions within our *NDT Webinar Series*. This 2025 vision supports the United Nations Sustainable Development Goal 9 (SDG 9), which calls for resilient infrastructure and innovation [3]. By bridging fundamental research and industrial application [4], the journal aligns with the global mandate of upgrading infrastructure to be sustainable and resource efficient.

The expectations outlined in the 2024 editorial [5] regarding dynamic growth and transdisciplinary advancements have been successfully realised. Building on the momentum since the journals' launch in 2023 [6], this year saw a consolidation of interdisciplinary approaches, with research spanning electrical instrumentation, environmental imaging, concrete diagnostics, and AI-driven solutions. This evolution parallels global trends, such as the NDE 4.0 Strategic Roadmap [7], where digital transformation becomes integral to sensing mechanisms.

During 2025, the journal published 30 contributions across four issues of Volume 3, along with early releases for Volume 4. These include 22 research articles, 3 reviews, 1 technical note, 1 communication, and 1 correction, alongside 2 editorials—including the present piece—that shaped the strategic direction. Authorship demonstrated strong international engagement, led by India (7 publications) and the United Kingdom (6), followed by the United States (3), Greece (2), and contributions from Germany (1), Brazil (1), China (1), Nigeria (1), and Mexico (1), among others. This broad geographical representation reflects the global movement toward harmonisation, aligning once more with the ICNDT Strategic Plan [2], and emphasising the importance of international diversity in the advancement of NDT science. The institutional landscape reflects a "Triple Helix" of innovation: research universities ($\approx$70%), national research institutes ($\approx$20%), and industrial partners ($\approx$10%), reinforcing the journal's role in connecting academia, research, and industry.

Collaboration patterns evolved significantly. At the end of 2024, most collaborations occurred within the same organisation (51.3%), followed by inter-organisational

collaborations (30.8%), with international collaborations (10.3%) and single-author contributions (7.7%) making up the remainder. In 2025, the balance shifted toward broader networks: domestic intra-organisational collaborations decreased to ≈40.6%, domestic inter-organisational collaborations rose to ≈36.2%, international collaborations increased to ≈13.0%, and single-author works to ≈10.1%. This trend demonstrates a more networked authorship structure and represents practical progress toward the expanded international cooperation within the global NDT community advocated in the *NDT* 2024 end-of-year editorial [5], while echoing the collaborative spirit of the ICNDT's Multilateral Recognition Agreement (MRA) framework [2] and the global guidelines for personnel qualification established in ISO 9712:2021 [8].

Subject-area analysis from Scilit [9] shows Electrical Instrumentation & Measurement as the leading domain (34.3%), followed by Asphalt (10%), Environmental Imaging & Sensing (8.6%), and Concrete (7.1%). Emerging areas, such as AI & Machine Learning, Archaeology, Biomedical Physics, Computer Vision & Graphics, and Geometrical Optics, each contributed 4.3%, while Cardiology represented 2.9%, and other topics collectively 15.7%. Compared to 2024, Electrical Instrumentation & Measurement strengthened its share (from ~32.5% to 34.3%), while AI-related domains exhibited incremental growth, signalling deeper integration of digital technologies into NDT workflows.

The research published in 2025 reflects methodological innovation and thematic breadth. Key trends include hybrid approaches combining acoustic monitoring, ultrasonic phased arrays, and X-ray computed tomography; advanced infrared thermography for rapid inspections; and optical techniques such as shearography and digital image correlation for high-resolution strain mapping. The landscape of research can be summarised through six major themes:

- In-Process Qualification and Advanced Manufacturing, marking a shift from end-of-line checks to real-time quality assurance in additive manufacturing and high-performance composites.
- Predictive Maintenance and Digital Twins, using AI and machine learning to enable condition-based monitoring and optimise industrial operations.
- Resilience of the Built Environment, addressing ageing infrastructure and climate challenges through multi-source, multi-scale strategies aligned with global risk-reduction frameworks [10].
- From Detection to Characterisation, moving beyond flaw identification to detailed quantification of geometry, orientation, and growth potential.
- Physics-Informed Machine Learning (PIML): integrating physical laws with data science to tackle complex inverse problems.
- Expansion into "Soft Matter" and Remote Sensing: applying NDT principles to biological systems and agriculture while incorporating large-scale environmental monitoring.

These advances were further supported by the launch of several new Special Issues and multidisciplinary Topics, providing dedicated venues for cutting-edge research in specialised NDT domains. These achievements position *NDT* for continued growth and indexing in major databases, including Scopus. Central to community engagement was the *NDT Webinar Series* [11], which provided a live forum for bridging theoretical modelling with field applications, covering topics from subsurface imaging and autonomous drone mapping to AI-enabled disaster risk reduction. To sustain this momentum, there is commitment to continuing the *NDT Webinar Series*, providing a permanent interactive forum for the global NDT community. In parallel, it is aimed to strengthen and expand the Editorial Board. *NDT*'s goal is to achieve a broader geographical representation of lead experts in the field, ensuring that the journal benefits from a truly global perspective on NDT innovations. Looking ahead, priorities for 2026 include advancing hybrid NDT

methodologies, promoting AI-driven decision support, and strengthening engagement with under-represented regions. The launch of an Early Career Editorial Board (ECEB) and the first *International Online Conference on Non-Destructive Testing (ICNDT2026)* [12] will further enhance global collaboration and knowledge exchange. These initiatives ensure that *NDT—Journal of Non-Destructive Testing* remains a trusted, inclusive, and forward-looking venue for the scientific community.

To conclude, gratitude is extended to authors, reviewers, and readers for their insightful contributions, and to the Editorial Office and Board for their dedication and commitment to excellence. Together, we aim to advance the science and practice of non-destructive testing in the years ahead.

**Conflicts of Interest:** The author declares no conflicts of interest.

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## Short Biography of Author

**Prof. Dr. Fabio Tosti** received his M.Sc. and Engineering degrees (*cum laude*) in Infrastructure and Transportation Engineering from Roma Tre University, Rome, Italy, in 2010, and his Ph.D. in Civil Engineering, awarded with the European Doctorate Label (*excellent rating*) from Roma Tre University in 2014. He is a registered Chartered Engineer, a Professor of Civil Engineering at the School of Computing and Engineering, University of West London (UWL), London, U.K., and the Director of "The Faringdon Research Centre for Non-Destructive Testing and Remote Sensing" at UWL. Prof. Tosti is the Deputy President (President-Elect, 2027–2029) of the *Geosciences Instrumentation and Data Systems (GI)* Division of the European Geosciences Union (EGU). His research focuses on the development of new algorithms, methodologies, and models for geoscience applications, with particular emphasis on non-destructive testing and remote sensing for the assessment of civil and green infrastructure, as well as cultural heritage assets. He serves as Principal Investigator (PI) and Co-Investigator (Co-I) on numerous national and international projects, including those funded under EU Horizon ERC and British Academy programmes. Prof. Tosti has authored/co-authored over 260 research publication records and delivered numerous keynote speeches and invited lectures worldwide. He was a recipient of the EGU Early-Career Scientists (ECS) Award (2017) and several Best Paper Awards at major international conferences, including GIRST 2023, IEEE AGERS 2021, and IEEE TSP 2020. He served as the General Chair of the *International Conference on Advanced Remote Sensing (ICARS 2025)*, co-Chair of the *International Workshop on Signal Processing Techniques for GPR Applications (SPT4GPRA)* in 2024, 2022, and 2020, and has chaired or led technical sessions in 50+ international conferences. Prof. Tosti is the Founding Editor-in-Chief of *NDT–Journal of Non-Destructive Testing* and serves as Associate Editor for several international peer-reviewed journals. He is also an Expert Evaluator for the European Commission's Horizon programmes, supporting excellence and equity in research and innovation across Europe.