WhitePaper

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NeuroLF IHE Framework Conformity

Enabling Seamless Integration of dedicated Brain PET for Better Patient Care

IHE INTERNATIONAL
Integrating the Healthcare Enterprise

Camilia Hoorvash, PhD
Head of Clinical Applications

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Executive Summary

NeuroLF's software has achieved Scheduled Workflow.b (SWF.b) conformity with the Integrating the Healthcare Enterprise (IHE) interoperability standards Radiology profile as an actor "acquisition modality"— setting a new benchmark for connected dedicated Brain PET.

This achievement ensures:

- Seamless integration with PACS and RIS systems using DICOM standard, for importing patient and study information in NeuroLF and sending the acquired images to the storing system and image reviewing workstation.
- Streamlined workflows that eliminate redundant data entry and accelerate diagnostic turnaround times.
- Enabling comparison of PET images with available images of the patient from other modalities (i.e. MRI and CT datasets) in PACS.
- Consistent image presentation across sites, i.e. for efficient multidisciplinary collaboration.
- Future-ready interoperability that reduces IT maintenance costs.

By aligning with IHE Radiology profile SWF.b, our system delivers a clinically efficient and interoperable platform, eliminating manual data entry errors and the consequent patient safety risks, for advanced brain imaging in neurology and neurodegenerative disease care.

What Is IHE and Why It Matters

Interoperability, the ability of two or more systems or components to exchange information and use the exchanged information, has become a cornerstone of modern medical imaging. As healthcare systems evolve toward integrated, data-driven environments, imaging devices must communicate seamlessly with hospital information systems, picture archiving and communication systems (PACS), and other diagnostic tools.

Integrating the Healthcare Enterprise (IHE)[1] is a global initiative launched by healthcare professionals and industry to improve the way computer systems in healthcare share information. Rather than defining new standards, IHE leverages established ones, such as DICOM (Digital Imaging and Communications in Medicine) and HL7 (Health Level Seven), by mapping data elements from one standard to another and organizing them into interoperable frameworks called IHE Profiles. These profiles describe specific, practical clinical use cases, such as image acquisition, reporting, and data archiving, and define how systems should implement existing standards to achieve seamless communication.

Figure 1: IHE-Europe Connectathon Floor (Rennes, 2019)[1]

Connectathon: an evidence-based interoperability test marathon

To evaluate a supplier's system's conformance with IHE specifications, an annual live multi-vendor event gives vendors the opportunity to test the interoperability of their products across vendors in real world clinical scenarios in a structured environment, detect issues and certify conformance[1,2]. IHE communicates the vendor's Connectathon participation and registers and discloses the IHE Profile, actors and options that have succeeded in the Connectathon Results Matrix[3].

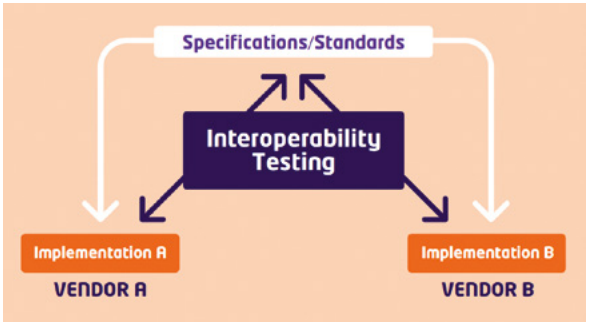

Figure 2: Connectathon IHE Europe[2]

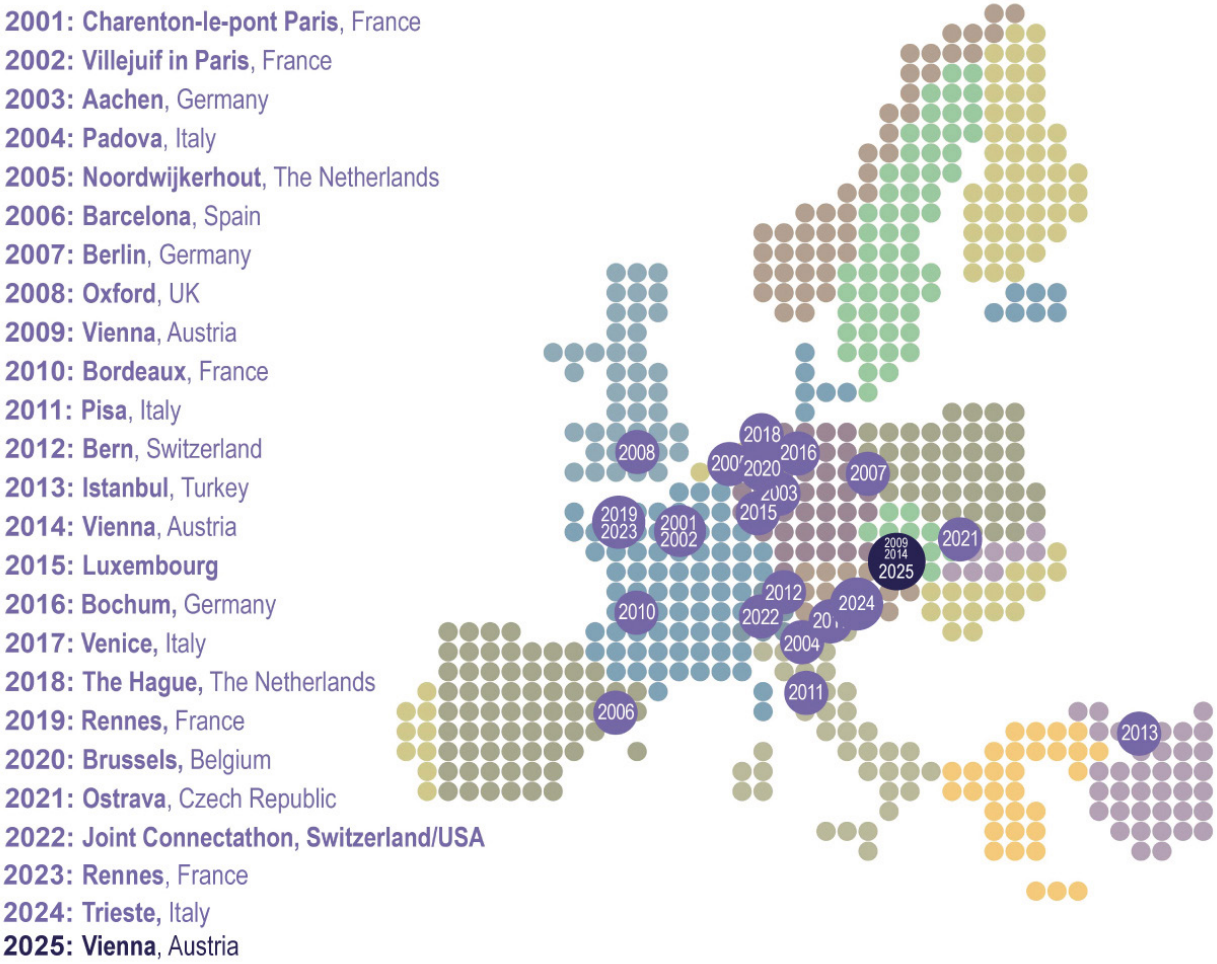

Figure 3: IHE Europe[2]

Benefits for the vendors and purchasers

By conforming to IHE profiles, medical devices ensure predictable data exchange, reduced integration costs, and enhanced workflow efficiency. For imaging devices, IHE conformance provides evidence to purchasers and users that the product meets interoperability specifications as part of a large ecosystem: PACS, RIS (Radiology Information System), hospital EHR (Electronic Health Record), possibly cloud/enterprise imaging archives, analytics/AI workflows. This is critical to ensure proper transmission of images and metadata across diverse hospital infrastructures so that they are not isolated data silos but integral components of the clinical ecosystem.

To meet the global standards, NeuroLF, our dedicated Brain Positron Emission Tomography (PET) system's software architecture has been designed and validated to conform to the IHE standards.This ensures that our system can integrate efficiently within clinical workflows, enabling clinicians to access, interpret, and share diagnostic information securely and efficiently. This white paper outlines the importance of IHE, the process through which our device achieved conformity, and the clinical relevance of this certification for healthcare institutions and patients.

NeuroLF IHE Conformity

Our dedicated brain PET device software was engineered from the outset with interoperability in mind. The conformity process included the following steps:

Standards-Based Design: The device software architecture was developed around DICOM communication protocols, ensuring that image acquisition, reconstruction, and reporting modules are fully compatible with standard hospital systems.

NeuroLF implements Scheduled Workflow.b (SWF.b) IHE Radiology profile[4] as an actor "acquisition modality": this allows NeuroLF to interact with the RIS – from where the study and patient information are imported- and with the PACS – where acquired images are sent in standardized DICOM.

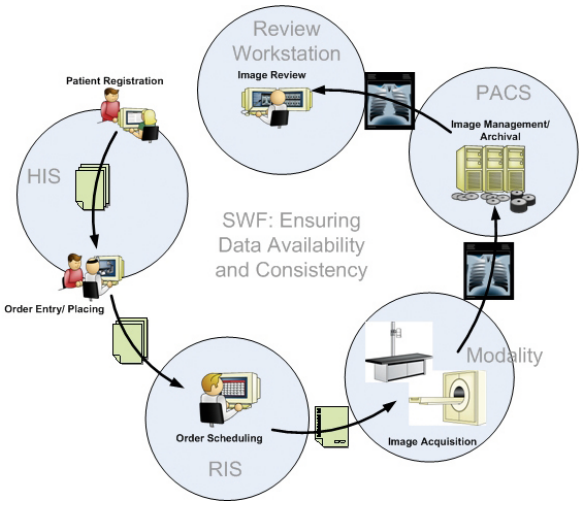

Figure 4: NeuroLF allows Scheduled Workflow.b[4] (SWF.b) which integrates the ordering, scheduling, imaging acquisition, storage and viewing activities associated with PET exams.

Validation and Connectathon Testing: Our software underwent validation using the IHE testing tools and successfully passed the IHE Connectathon evaluation, demonstrating interoperability with systems from multiple vendors. This process confirmed that the NeuroLF system meets the requirements for secure, standardized communication across the clinical imaging ecosystem.

Company	IHE profile	Actor	IHE Connectathon
Positrigo AG	Scheduled Workflow.b	Acquisition Modality	Europe 2023

Figure 5: IHE International Connectathon Results[3]

Clinical Workflow Benefits

IHE conformity directly translates into tangible clinical benefits for users of our dedicated brain PET system:

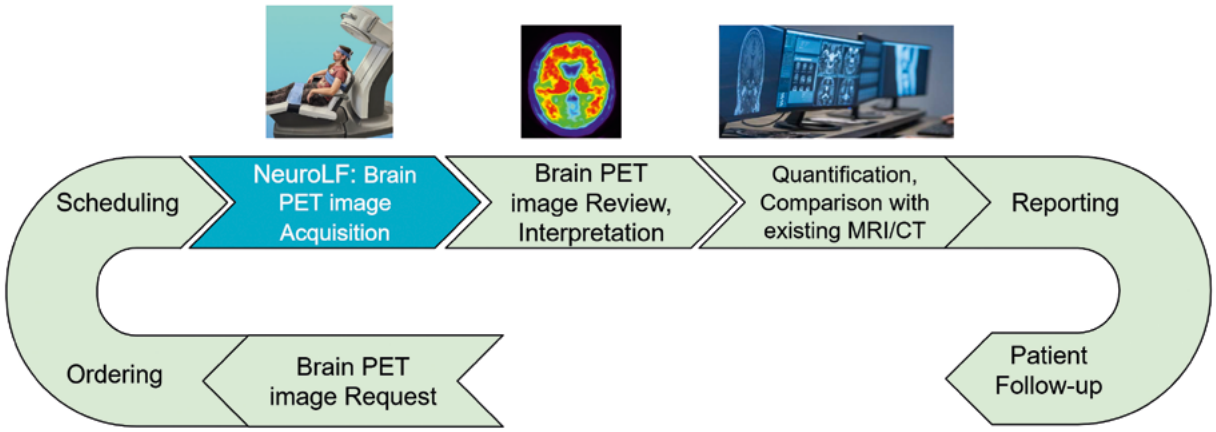

Figure 6: NeuroLF integrates seamlessly within the Radiology Workflow activities associated with PET exams.

Streamlined Clinical Workflow through Seamless Data Integration:

PET studies registered in the worklists are automatically retrieved and available in NeuroLF, ensuring accurate patient identification and eliminating manual data entry errors which can pose a significant threat to patient safety, potentially leading to consequences like misdiagnosis or incorrect treatments.

This allows clinicians to focus on interpretation and patient care rather than correcting manual errors which can be time-consuming and costly.

Enhanced Patient Care and Improved Diagnostic Efficiency:

PET images can be pushed to PACS facilitating faster reading, analysis, and comparison with prior studies, without loss or misinterpretation.

DICOM standard conformity and efficient transfer of images to PACS enables comparison with available images from other modalities (i.e. MRI and CT datasets), correlation or co-registration within the reviewing workstation, if available, as well as multidisciplinary collaboration crucial for neuro-oncology and dementia assessments.

Research and Data Sharing:

Conformity with standardized formats supports multicenter research and data pooling initiatives, enabling reproducibility and facilitating the development of AI-based diagnostic tools.

Future-Proof Interoperability:

With healthcare IT environments constantly evolving, IHE conformity ensures that the system remains compatible with future PACS and RIS solutions without requiring costly proprietary interfaces.

Regulatory and Procurement Advantages:

Increasingly, healthcare providers and regulatory agencies consider IHE conformity a prerequisite for system procurement and certification, as it demonstrates compliance with international best practices for interoperability

Examples of Clinical Use Cases

Dementia and Neurodegeneration or Neuro-Oncology

- Integration with hospital PACS allows immediate comparison between PET and MRI/CT images.
- PET images are available through PACS for multidisciplinary dementia/tumor board review.
- Supports research protocols with consistent DICOM exports.
- Facilitates data sharing for usage of quantification tools.
- Consistent DICOM export supports longitudinal monitoring of treatment response.

Conclusion

IHE conformity is not merely a technical achievement, it is a foundational requirement for modern, connected, and patient-centered healthcare. As part of their scalability, hospitals increasingly participate in multi-site networks, tele-imaging, cross-enterprise sharing, and AI/analytics pipelines. Using devices that are interoperable and IHE-certified allow the smooth "plug in" to those future workflows with lower integration costs and faster go-live.

However, choosing devices that do not meet IHE or equivalent interoperability evidence may carry serious consequences that jeopardize patient safety and hospital's scalability and return on investment (ROI). These risks include:

- Custom integration required, which translates to higher cost, longer time-to-live, and more risk of bugs or failures.
- Proprietary or siloed data, limiting the ability to share images, collaborate across sites, or leverage future analytics/AI.
- Difficulty in scaling up when moving from single-site to multi-site networks, or enabling tele-imaging.
- Increased risk of interoperability-related errors such as data mismatches, missing metadata, or security gaps.
- Procurement disadvantages, as some tenders may disqualify or penalise non-certified devices.

It is strongly recommended that hospitals or imaging centres who consider acquiring a new scanner evaluate the compatibility of their existing IT ecosystem with the new device, how it will integrate with their standard workflows, the costs and timeline of integration, resources needed to perform custom-made adjustments, security and privacy compliance in the context of interoperability such as node authentication.

A Commitment to Interoperability and Innovation

By obtaining IHE certification, NeuroLF demonstrates a commitment to open standards, data integrity, and clinical interoperability. This ensures that clinicians receive consistent, reliable imaging data within their existing workflows, ultimately improving diagnostic confidence, operational efficiency, and patient outcomes. Our continued alignment with IHE principles underscores our mission to deliver an advanced neuroimaging solution that is as interoperable as innovative.

About the Author

CAMILIA HOORVASH, PHD

Camilia Hoorvash, PhD, completed a Msc and first years of Doctorate research in MRI Neuroimaging from Universities of Joseph-Fourier Grenoble and Aix-Marseille, France, and then received her PhD in Electrical engineering in design and performance improvement of small-animal PET from University of Sherbrooke, Canada, in 2011. She has since worked in the medical industry in roles such as senior scientist and AI enabler at Siemens Healthineers, and digital health and innovation lead in Alzheimer's disease at Roche. She is currently heading the clinical applications of NeuroLF dedicated brain PET at Positrigo.

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CONTACT

info@positrigo.com

+41 44 51 55 330

Positrigo AG
Technoparkstrasse 1
8005 Zurich
Switzerland

Our office is in:
Zeppelin Wing, 5th Floor, Office 5009-5010