

Virtual Navigator for Real-Time PET-CT/Ultrasound Fusion Imaging

Genoa (ITALY), November 18th 2013 - **In 2002 Esaote** designed and introduced its own revolutionary cutting-edge system dedicated to **Fusion Imaging** modality, the **Virtual Navigator**, specially focused on **Interventional Imaging**.

The need of developing such an advanced system arose because of the intrinsic characteristics of the Ultrasound imaging modality. Ultrasound is the most widely diffused imaging modality for real-time guidance/monitoring of diagnostic and therapeutic interventional procedures in all their phases, also due to its nearly universal availability, portability, ease of use and cost-effective features. However, Ultrasound has also some limitations, like patient's body habitus, bowel gas distention, insufficient sensitivity for the detection of small lesions in some conditions.

In recent years real-time Ultrasound (US) image fusion with a pre-acquired second imaging dataset - Computed Tomography (CT) and/or Magnetic Resonance Imaging (MRI) - has become widely used both for diagnostic purposes and image-guided interventional procedures, especially in clinical applications where liver is the main anatomical region to be examined.

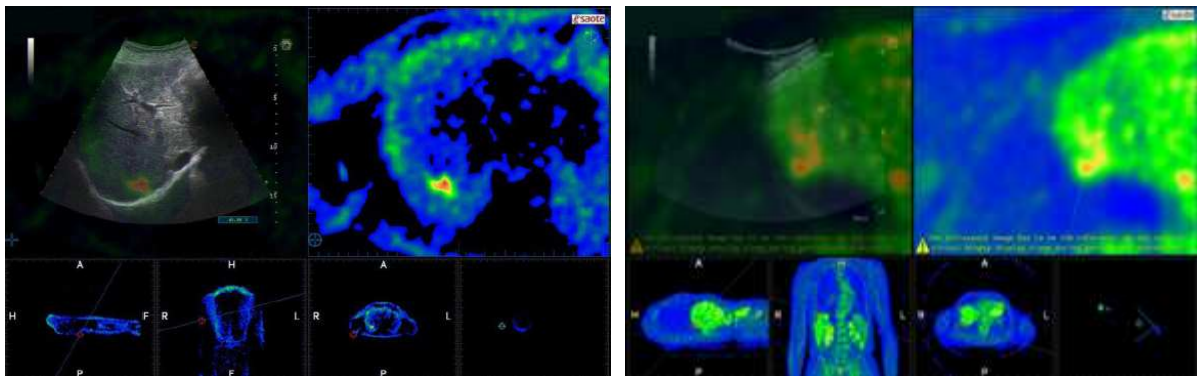
Esaote Virtual Navigator represents the leading-edge system that combines the real-time visualization of enhanced Ultrasound images with all the other advanced complementary imaging technologies. The fusion of US with CT/MRI imaging allows the Ultrasound real-time focusing on the panoramic view offered by CT/MR scanning.

As a further step ahead Esaote introduces the capability of adding the fundamental information coming from Positron Emission Tomography (PET) imaging to US modality, using CT scans coming from PET-CT examinations only for PET-Ultrasound fusion registration.

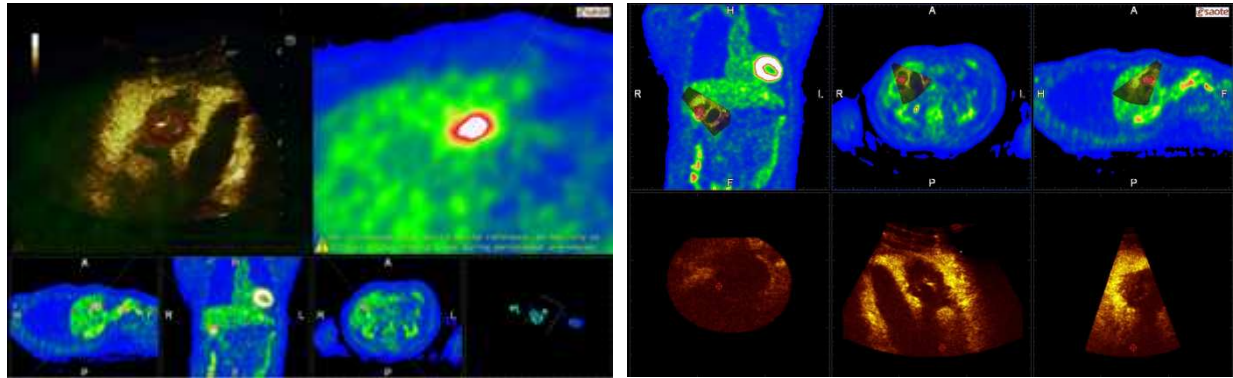
The possibility to perform US-guided interventional procedures by exploiting real-time functional information from the tissues examined with PET, eventually supported by **Contrast-Enhanced Ultrasound (CEUS)**, represents an outstanding valuable additional tool. This innovative modality can improve the anatomical localization of actively uptaking lesions, especially when the target lesion is poorly visualized by the Ultrasound modality itself.

Esaote Virtual Navigator can even enable easier differentiation between uptaking and non-uptaking lesions on PET. The **Esaote CnTI™*** advanced technology used to perform CEUS procedures at the maximum level, and its direct fusion with pre-treatment PET data, can ensure the outmost confidence also in the follow-up phase.

A new era in **Interventional Ultrasound Imaging** has started with the **Esaote Virtual Navigator**, a Step Ahead in **Fusion Imaging**.



PET-Ultrasound real-time Fusion Imaging (Esaote Virtual Navigator)



Contrast-Enhanced Ultrasound (Esaote CnTI™) after ablation treatment fused with pre-acquired PET images

Download the [ESAOTE at IOSF 2013 - Interventional Oncology Sans Frontières](#) video [YouTube, 4 parts]

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About Esaote

With €325.3 million in consolidated sales in 2012 (of which 70% were generated from international markets), Esaote Group is a leading player in the biomedical equipment sector, with a particular focus on ultrasound, dedicated magnetic resonance, and software for managing the diagnostic process. Esaote has over 1,360 employees, 20% of which are employed in R&D activities. Esaote has industrial and research units in Italy (Genoa, Florence, Naples), the Netherlands (Maastricht) and China (Shenzhen). Esaote is internationally recognized as one of the “Top Ten” diagnostic imaging companies in the world. Information about Esaote and its products is available at www.esaote.com

Virtual Navigator is not available for sales in the USA.

The use of contrast agents in the USA is limited by FDA to left ventricle opacification and visualization of the left ventricular endocardial border.

Technology and features are system/configuration dependent. Specifications subject to change without notice.

Information might refer to products or modalities not yet approved in all countries.

For further details, please contact your Esaote sales representative.

To learn more, please refer to:

- 1) Di Mauro E., Solbiati M., De Beni S., Forzoni L., D’Onofrio S., Solbiati L., “*Virtual Navigator Real-Time Ultrasound Fusion Imaging with Positron Emission Tomography for Liver Interventions*” - 35th Annual International Conference of the IEEE EMBS - Osaka, Japan, 3 - 7 July, 2013
- 2) Crocetti L., Lencioni R., De Beni S., See T. C., Bartolozzi C., “*Targeting liver lesions for radiofrequency ablation: an experimental feasibility study using a CTUS fusion imaging system*”, Invest Radiol 2008; 43: 33-9.
- 3) De Beni S., Macciò M., Bertora F., “*Multimodality Navigation Tool ‘Navigator’*”, in Proc. IEEE SICE 2nd International Symposium on Measurement, Analysis and Modeling of Human Functions, Genova, Italy, 2004.
- 4) Forzoni, L., D’Onofrio, S., Beni, S. De, Laganà, M. M., Kolev, V., Baselli, G., Ciuti, G., Righi, D., “*Virtual Navigator Tridimensional Panoramic Imaging in Transcranial Application*”, - Biomed Tech 2012; 57 (Suppl. 1) 2012 by Walter de Gruyter – Berlin – Boston, Pages 38 – 41, 10.1515/bmt-2012-4282, August 2012
- 5) Forzoni L., De Beni S., D’Onofrio S., Laganà M. M., Nori J., “*Virtual Navigator 3D Panoramic for Breast Examination*”, 35th Annual International Conference of the IEEE EMBS Osaka, Japan, 3 - 7 July, 2013, 1394-1397