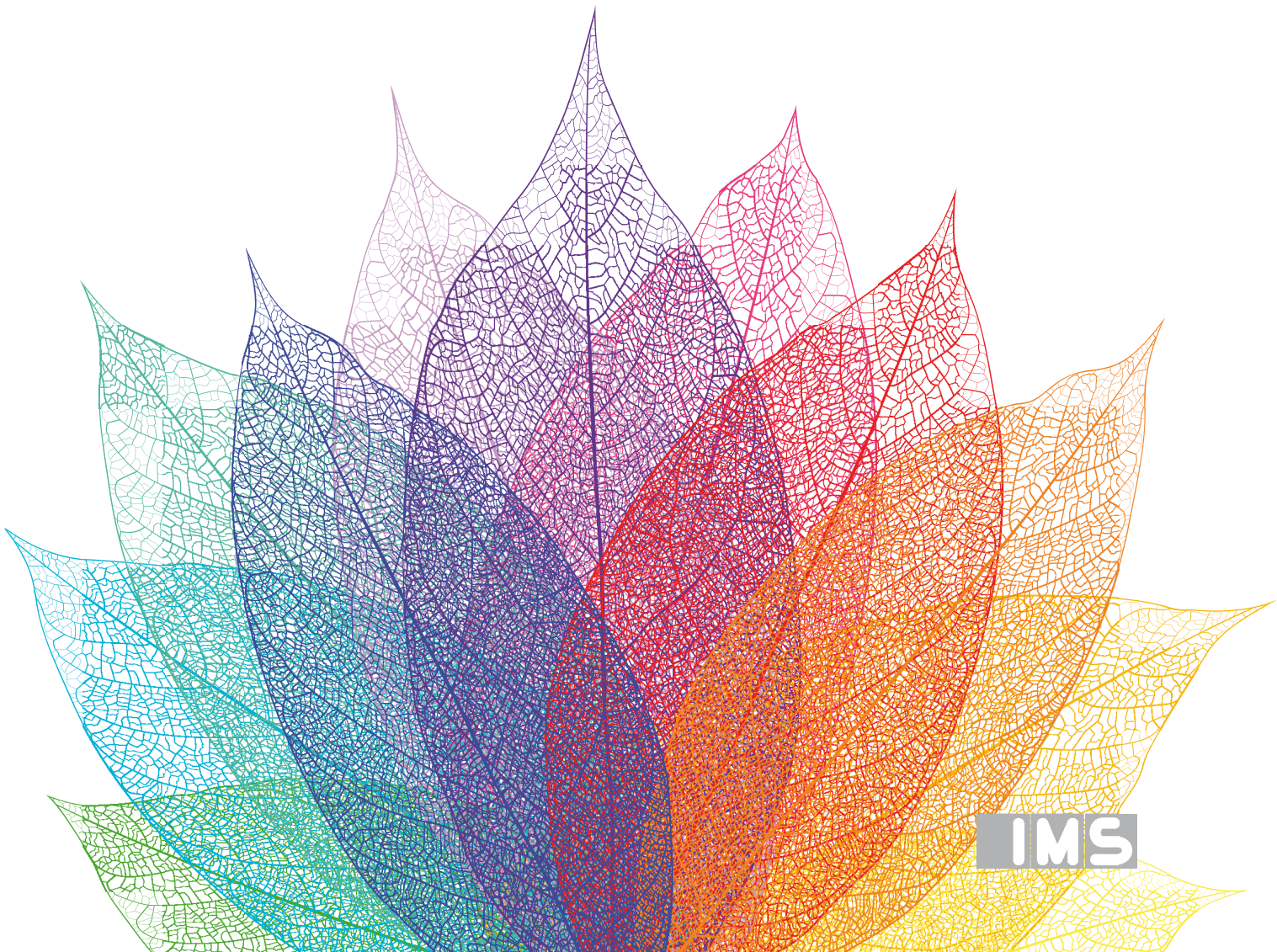


Giotto

TOMO

2nd generation
TOMOSYNTHESIS



IMS



2nd generation DBT true innovation in breast imaging

- Advanced Technology, simplicity and ergonomics
- Raffaello AWS: complete and intuitive software conceived for breast imaging
- Touch screen controls



- Tomosynthesis
- Mammography
- Combo mode
- Stereotactic Biopsy

Works in progress:

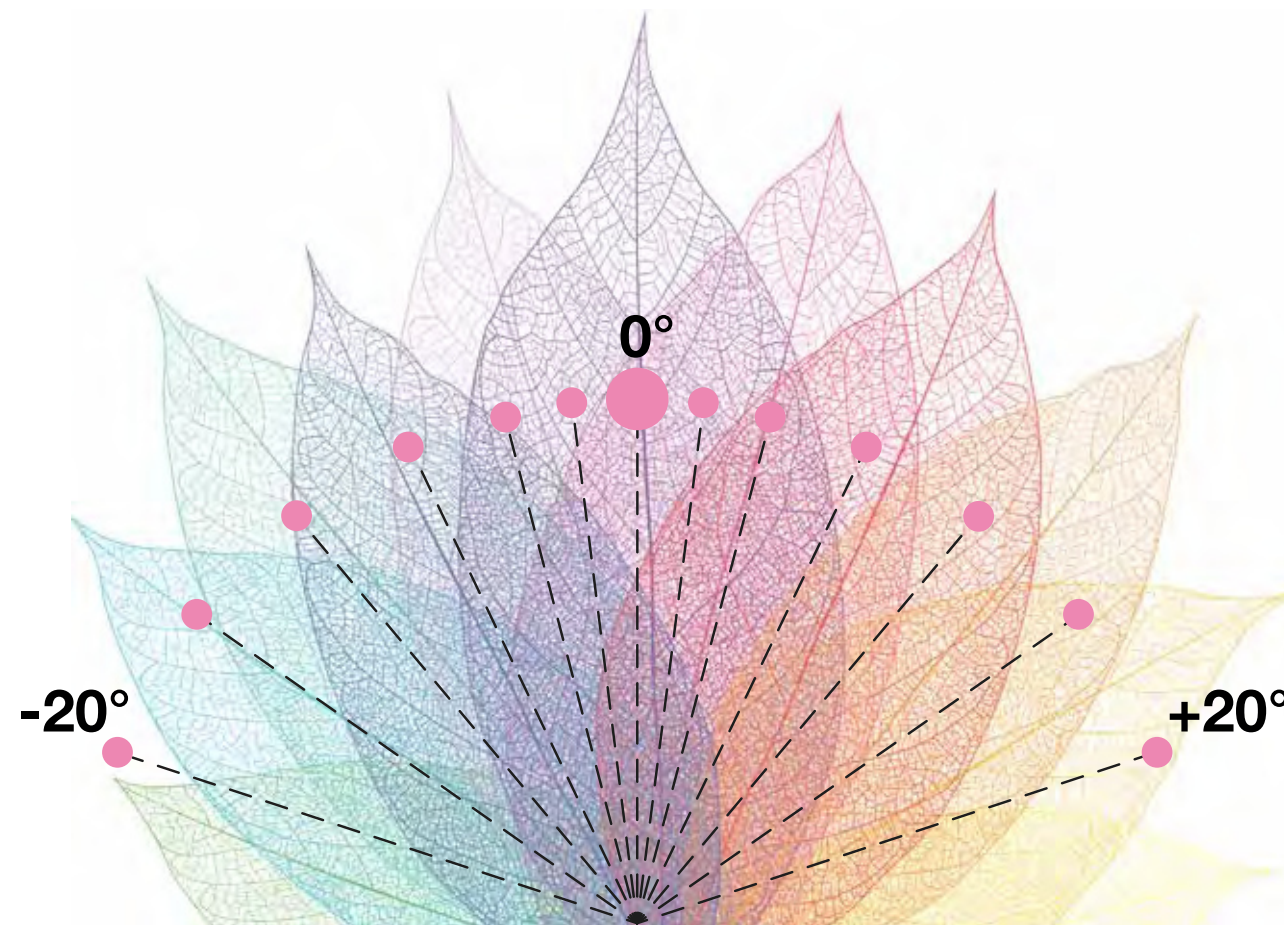
- Tomo Biopsy
- 2D synthetic imaging
- Angio-mammography CEDM

Step & Shoot: ideal for microcalcifications



GIOTTO Tomo: 2nd Generation tomosynthesis

- GIOTTO TOMO is the first to have introduced **Step & Shoot** movement, which enables images to be acquired while the X-ray tube is stationary. The result is a complete absence of “blur” in the images. Small details are clear and distinct. And it is precisely the small details that the expert eye of a radiologist appreciates, as they are decisive for choosing a diagnosis
- With GIOTTO TOMO, the pixel size used for the tomosynthesis exam is **identical to the one used for a mammography exam: 85µm**. The spatial resolution in tomosynthesis is thus identical to that in mammography: 6 lp/mm, without the use of image processing.
- A **wide angle (40°)** ensures all the necessary resolution in depth. Eliminating overlaps: this is main reason why tomosynthesis was born!



Low dose:

- A reduced number of **exposures (only 13)** maintains a high s/n (signal-to-noise) ratio for each exposure. Thus insuring the acquisition of contrast-enhanced images in which the grey levels are clearly differentiated.
- **Extremely low X-ray dose** thanks to the minimal number of exposures, high efficiency of the a-Se detector and iterative reconstruction algorithm.
- The GIOTTO TOMO is the first to have introduced the use of an **advanced iterative algorithm**. Ideal for 3D reconstruction of the images obtained from limited angles: it ensures an ideal quality of the reconstructed images while simultaneously minimizing artifacts.
- **3rd generation amorphous selenium detector**: it is fast in reading and transmitting data and boasts the highest DQE in its category. The signal-to-noise ratio is high under all conditions, even at low energies, as is necessary in tomosynthesis.

Ergonomic **design** and sharp **images**



An ergonomic, versatile, user-friendly system



Convenient, well-placed pushbuttons on both sides of the unit enable the user to work quickly and effectively. Isocentric and automatic rotation movements of the gantry.

Ergonomics is important in advanced equipment with multiple operating modes: switching from Mammography to Tomosynthesis to the Combo mode, or else to the Biopsy mode, is immediate and simple with the Giotto TOMO.

Fast, quiet movements, total comfort for the patient and technologist: these are all important prerequisites for performing examinations capable of producing images of superior quality.

All scans, including in the Tomosynthesis and Combo modes, can be performed with any angle of incidence.



Unmatched **image quality**

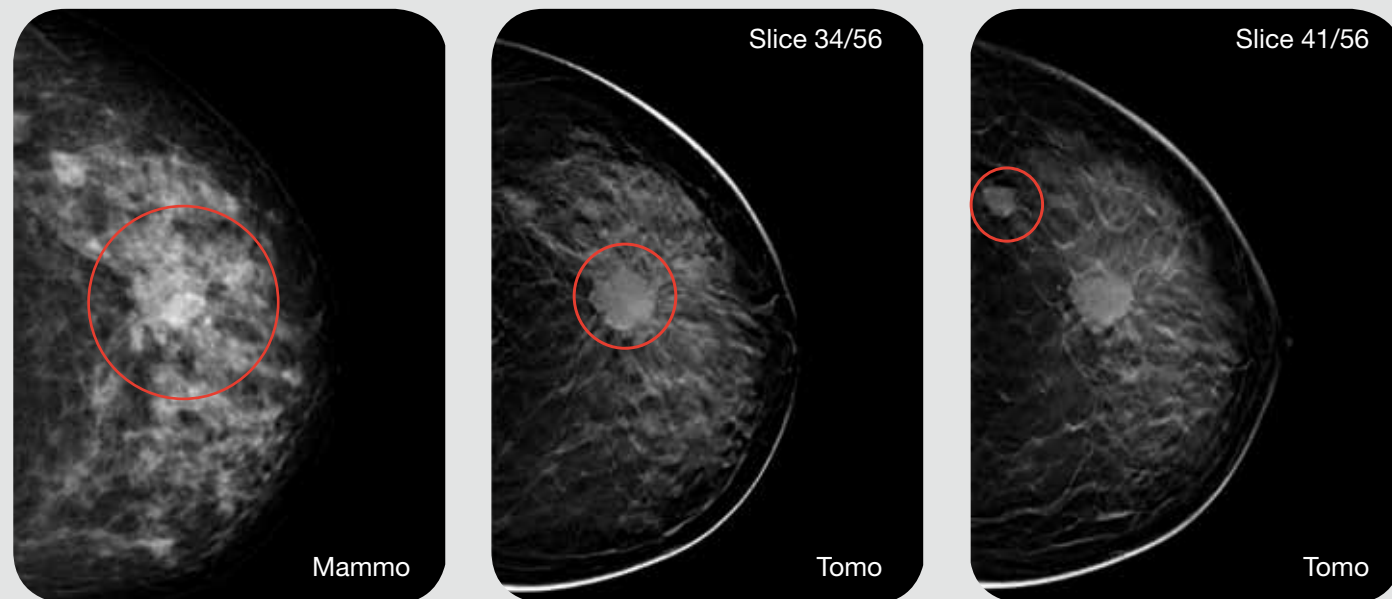
GIOTTO TOMO delivers images of superior quality thanks to the advanced solutions of “second generation tomosynthesis”. The 3D reconstruction is fast and accurate by virtue of the advanced iterative reconstruction algorithm.

The display of contrast-enhanced images rich in the finest details (microcalcifications) ensures good quality information enabling the radiologist to arrive at the most accurate diagnosis.

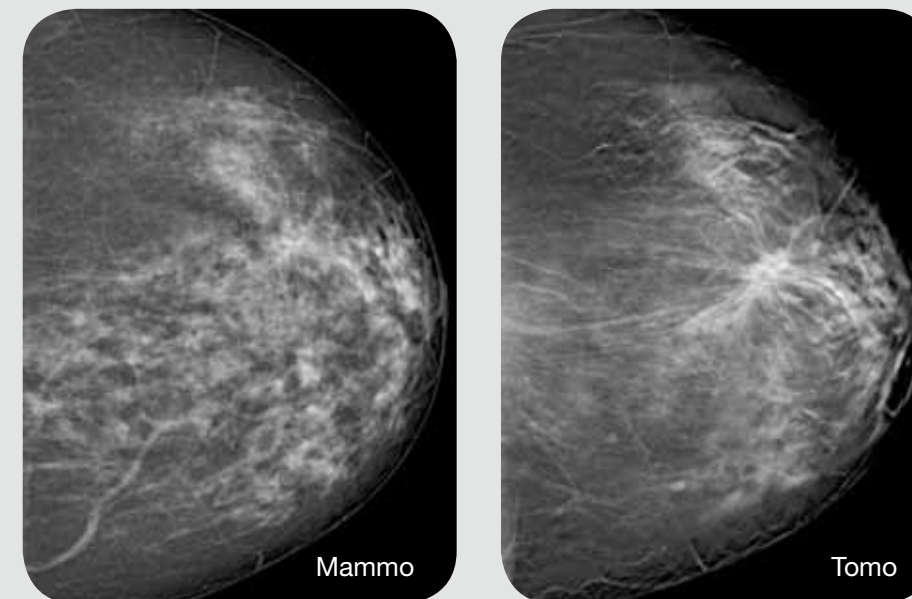
Post-processing was conceived for reaching a complete and accurate diagnosis. The Raffaello® software is intuitive and fast while structured for customizable image sequences, with a wide range of options among the various hanging protocols.

Multimodality capability is a characteristic of Raffaello®: Mammography, Biopsy, Tomosynthesis, MRI and Ultrasound images can be displayed in order to make comparisons that are useful for diagnostic purposes.

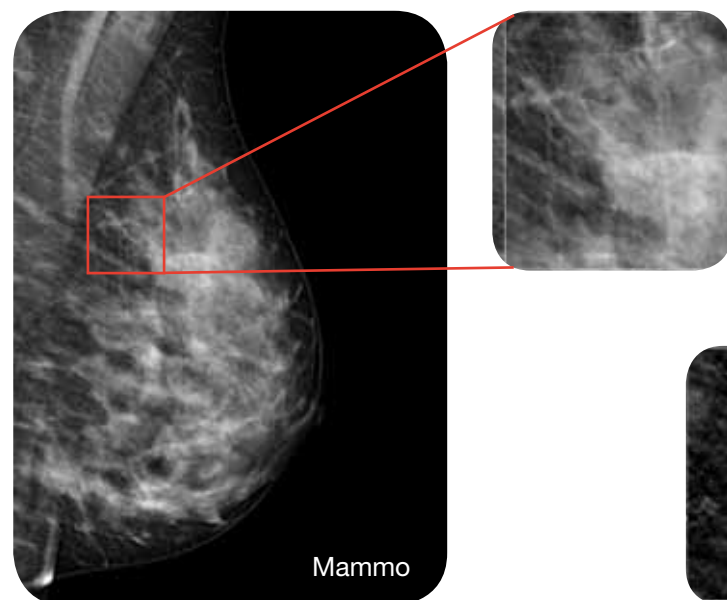
superior image quality with the lowest dose



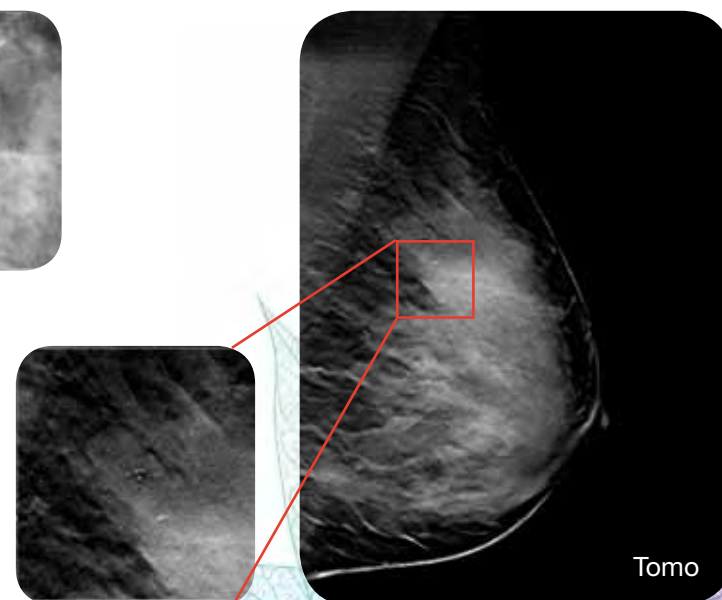
Digital screening mammogram (first image on the left) shows a suspected dense area. Tomosynthesis confirms the pathological area (slice 34) and shows the multicentric character of the neoplastic pathology (slice 41).



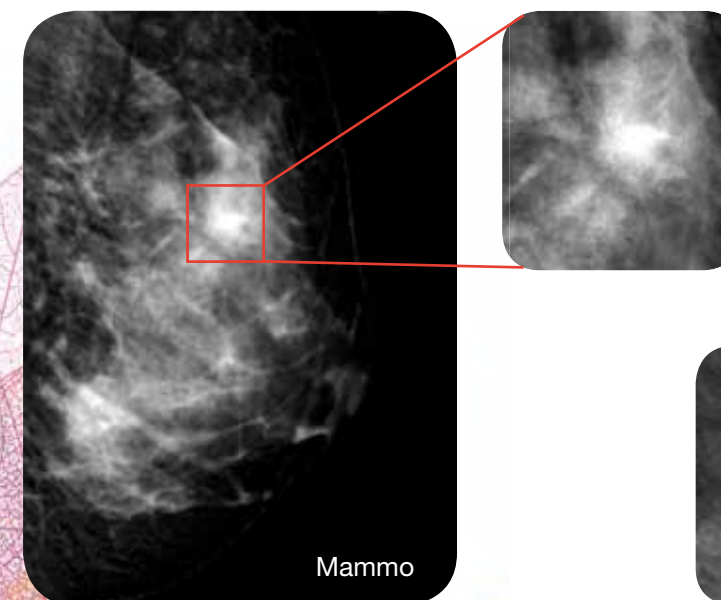
The parenchymal distortion revealed by Digital Mammography in the upper outer quadrant is better demonstrated, in terms of spicules, in Tomosynthesis, with better definition of the extent of the lesion.



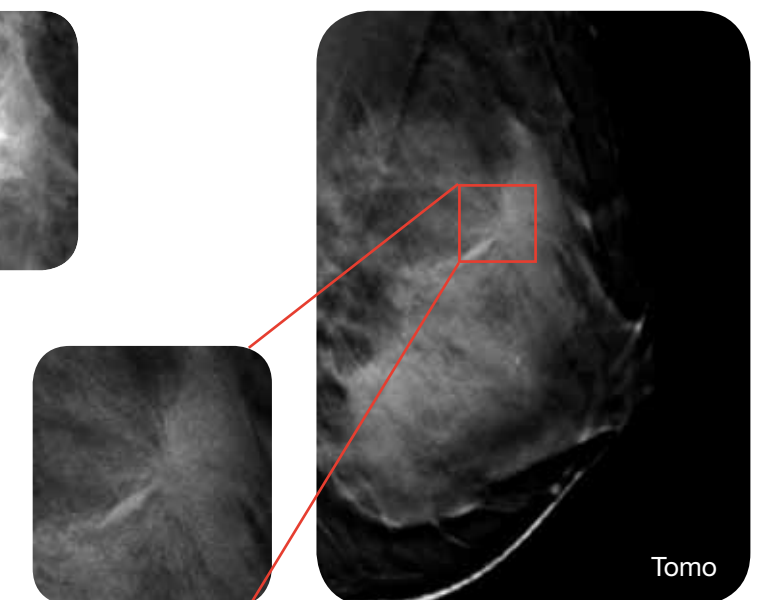
2-dimensional mammogram. A suspicious cluster of microcalcifications is barely visible due to the superimposed structures.



Tomosynthesis helps to better evaluate the distribution of the microcalcifications in specific slices and increase the overall visibility.



Digital mammography revealed dense breast tissue and a parenchymal distortion not clearly identified with the magnification.



Tomosynthesis is an improvement in detection and in lesion's characterization specially in dense breast.



user friendly and
intuitive functions

Raffaello® display software



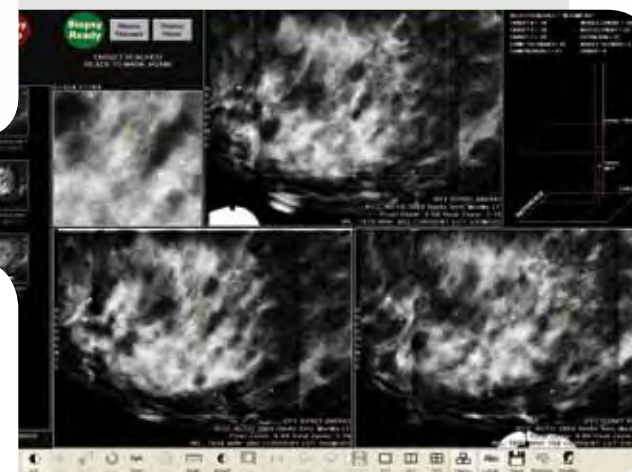
Touch-screen monitor



Frontal
access

**breast
biopsy**

Software Interface



Virtual Needle
Positioning



Lateral
access

The high-definition monitor displays the mammographic and tomosynthesis images in just a few seconds after completion of the scans. The Raffaello visualization software can also display images from ultrasound, magnetic resonance and nuclear medicine modalities.

Tomosynthesis scans are rapidly reconstructed and displayed with a low-definition preview to aid the technologist, who must decide on their quality before sending them to the diagnostic review station (RWS) .

The images produced comply with DICOM standards and the acquisition station can interface with another computer, printer, PACS or other equipment complying with the same standards.

All exams are controlled via a touch screen monitor, which acts as a control console for choosing the type of exam (Mammo – Tomo – Combo – Biopsy) and selecting all the parameters.

The extremely intuitive, user-friendly interface helps to improve the technologist's productivity.

The high performances of the generator and X-ray tube in terms of mA, mAs and kV ensure the quality of the X-ray beam, which is always capable of obtaining the best results with the minimum dose.

The GIOTTO TOMO also enables stereotactic biopsies to be performed with absolute precision (maximum deviation from the target on the three axes $\leq 0.5\text{mm}$).

The biopsy is totally automatic: the needle guide is motor driven in the three directions x, y and z and the extremely sophisticated software guides the user step by step so as to safely obtain a precise result.

The system is capable of using any vacuum-assisted core biopsy device or other simpler devices, such as FNA, without any limits. Access to the breast is perpendicular, inclined 6° or lateral depending on the support selected for each specific case.

Coming soon...

The **Giotto Tomo** represents a platform that is growing and evolving toward other methods and techniques which IMS will soon be launching on the market.

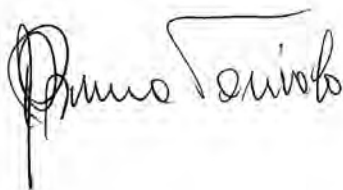
The **Giotto Tomo** is thus already configured for:

- CEDM or angio-mammography.
- Synthetic 2D images derived from the data acquired with the tomosynthesis scans.
- Tomosynthesis-guided biopsy. It uses tomosynthesis images to identify the target for taking biopsy samples. It is an alternative to stereotactic biopsy.

*In the history of IMS, research has always had
and will always have a foreground role.
The encouragement and advice users have given us
has been invaluable in inspiring advanced,
innovative projects like the Giotto Tomo.*

Thank you.

Bruno Toniolo
President



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1965

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