

CLARITY OF  
*Vision*



 LORAD® *Selenia*™

**HOLOGIC**®  
CLARITY OF VISION

# A Vision of Clarity for Digital Mammography

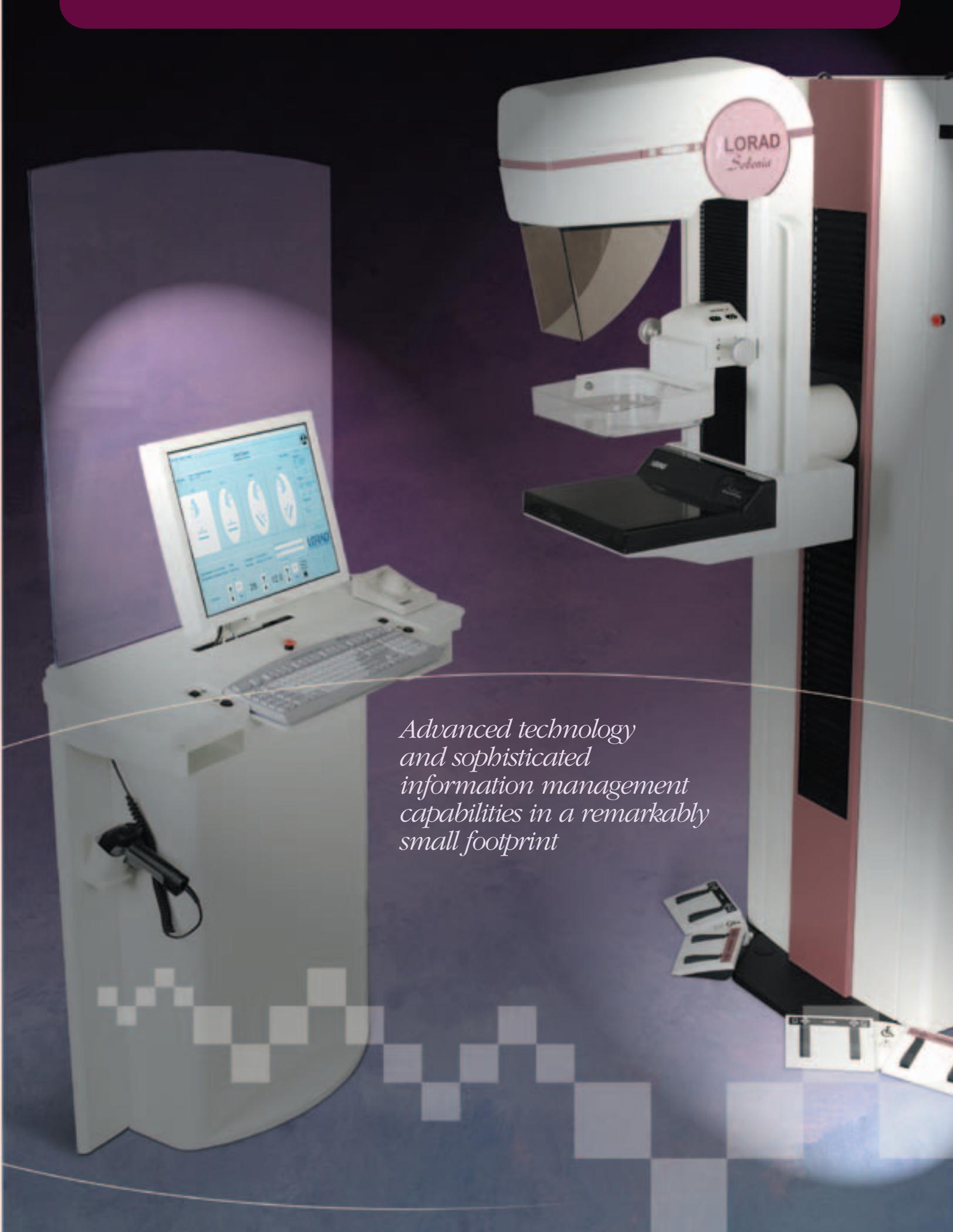
*Imagine the possibilities...*

Introduction of the Selenia™ full field digital mammography system signals the beginning of a new era in the world of digital mammography. This elegant and innovative system combines the latest advances in technology with sophisticated information management capabilities to bring you the total solution for your digital mammography needs.

- Revolutionary DirectRay® Direct Conversion Detector preserves image sharpness by completely eliminating light diffusion
- Largest digital detector in the industry, 24 x 29 cm field of view accommodates almost all breast sizes
- Renowned High Transmission Cellular (HTC®) Grid significantly reduces radiation scatter for higher contrast images
- Exclusive Smart Paddle System™ allows accurate, easy positioning



- Custom designed softcopy workstation streamlines workflow and provides flexible user configurability
- Flexible image management capabilities: DICOM compatible connectivity solutions for any clinical setting
- Remarkably small footprint fits easily in a standard exam room

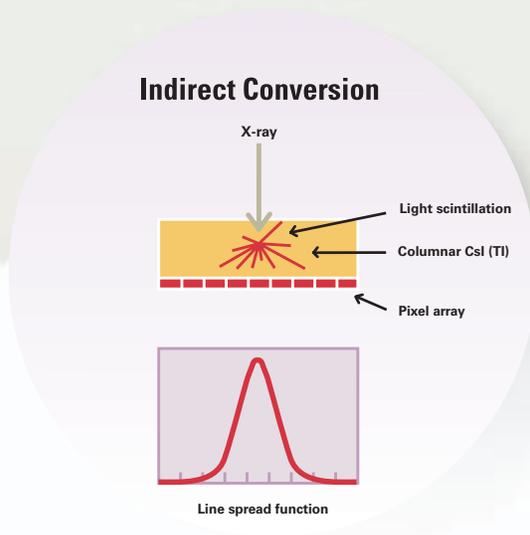


*Advanced technology  
and sophisticated  
information management  
capabilities in a remarkably  
small footprint*

# Experience the Hologic Direct-to-Digital Imaging Advantage

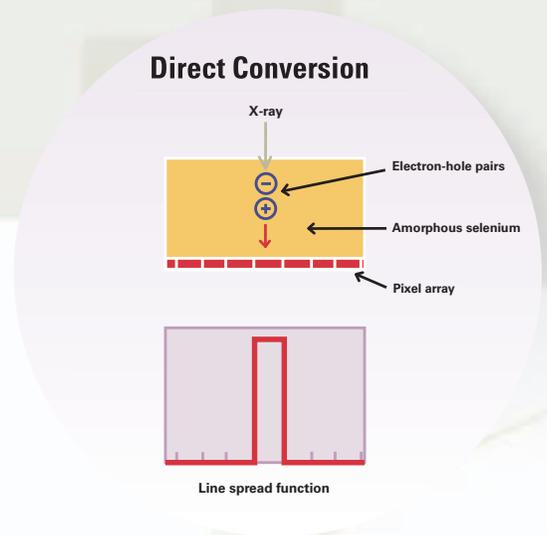
The Selenia's innovative detector technology brings the advantages of direct-to-digital imaging to mammography for the first time. Powered by our DirectRay digital image receptor, the Selenia uses amorphous selenium to directly convert x-rays to electronic signals, without first converting them to light, a step required in systems using indirect conversion technology.

By completely eliminating the image-degrading effects of light diffusion, our proprietary direct conversion process preserves image sharpness, giving you and your patients incredibly sharp images – quickly, efficiently, and consistently.



*In systems using indirect conversion detectors, an intensifying screen captures and converts x-rays to visible light, which are then converted to electronic signals.*

*In this process, visible light diffuses laterally across a large distance. Light diffusion results in reduced image sharpness and loss of tissue contrast, for less than optimal imaging performance.*



*With Selenia's direct conversion detector, x-rays are absorbed by the amorphous selenium; negative and positive electrical charges are directly generated.*

*Under the influence of an external electrical field, the electrical charges are pulled directly towards a pixel electrode and collected on a pixel capacitor. Because the electrical charges travel along electrical field lines, there is no lateral movement of the charge and no diffusion across pixels. The result is an exceptionally sharp digital image.*

# New Standards in Digital Mammography



Selenia is the culmination of many years of research and development and represents the union of intricate engineering with superior clinical expertise. The result is a feature-rich system designed to accommodate all clinical situations with accuracy, precision, and efficiency.

## Largest Digital Detector

The Selenia features the largest digital detector in the industry. With a 24 X 29 cm field of view, almost all mammography patients can be imaged with a single exposure, for improved patient care and higher patient throughput.

## Smart Paddle System

The system's patented Smart Paddle System is engineered to provide a unique level of precision and control. Each compression paddle contains a microprocessor that controls movement of the system's Automatic Exposure Control\* (AEC) and automatic collimation function. When the paddle is placed in one of three positions (craniocaudal, left mediolateral oblique, or right mediolateral oblique), AEC and collimation controls automatically shift to the proper position. This effortless operation streamlines workflow, enables accurate positioning and assures consistent acquisition of high quality mammographic images.

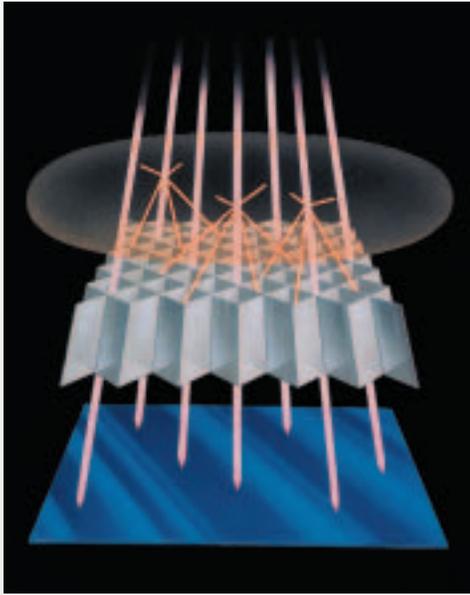
The system's seven-position AEC virtual sensor extends up to 12.5cm from the chest wall to allow greater tissue sampling and accurate calculation of proper exposure technique. In fully automatic mode, the AEC determines the densest area of breast tissue, assuring the utmost precision in exposure settings.



\* AEC is a Works-in-Progress—FDA Clearance required.

# Trusted Features Innovative Design

## The High Transmission Cellular (HTC) Grid



Patterned on our industry-renowned M-IV screen-film platform, the Selenia incorporates the gold standard features of the M-IV in a system specifically designed to address image quality, workflow, and efficiency in digital mammography.

Our exclusive HTC Grid, optimized for the Selenia's digital detector, provides even greater enhancements in image quality. The HTC Grid is the industry's leading technology designed to increase both the absorption of radiation scatter and the transmission of primary x-ray, for higher contrast images.

The HTC Grid's focused cellular pattern reduces radiation scatter in both the X and Y directions. Its structure is self-supporting, so interspace material is eliminated and primary transmission is increased. Its micro-processor controlled movement is designed to eliminate grid artifacts.

The fully integrated HTC Grid automatically retracts when the Selenia's magnification platform is detected. This unique feature allows magnification views to be obtained without removing or handling the Bucky, for safe and streamlined workflow.



## Fully Automatic Self-Adjusting Paddle

In addition, our Fully-Automatic Self-Adjusting Tilt (FAST) Paddle has been incorporated as a standard component of the Selenia. The FAST Paddle automatically adjusts to the natural contour of the breast, providing more uniform compression across the entire breast for improved imaging.

*The FAST Compression Paddle is especially useful where there is a disproportionate thickness at the chest wall compared to the anterior of the breast. By automatically conforming to the natural contour of the breast, imaging of the structures in the sub-areola regions may be improved without compromising the image quality of the breast at the chest wall.*

# State-of-the-Art Image Acquisition

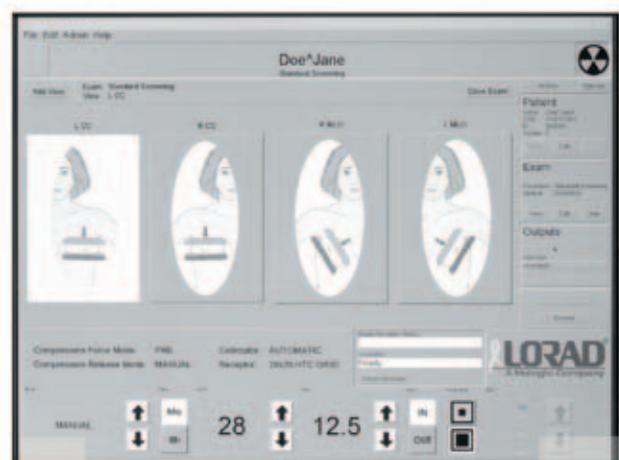
Selenia's acquisition station features integrated x-ray control capabilities and an image acquisition console with local storage and archive capabilities. Intuitive display screens and user interfaces provide enhanced ease of use and higher patient throughput.

With this flexible system, images can be acquired within seconds, allowing the technologist to confirm proper positioning. Exam parameters can be adjusted quickly and efficiently to meet the requirements of the examination. An average of two weeks of exams can be stored locally on the acquisition station, to effectively accommodate recalls. The operator has the option of using the trackball or function keys to activate the generator control.

Built-in quality control measurements and service tools streamline maintenance and assure optimal performance with minimal effort. A repeat analysis report is generated automatically upon request, greatly simplifying MQSA reporting.

## *DICOM Compatible*

*The acquisition station is DICOM 3.0 compatible, allowing images to be sent to the Selenia Softcopy Workstation, DICOM compatible hardcopy printers, and long-term archives. Patient demographics can be input by means of the barcode reader or by accessing modality worklist, ensuring accurate, efficient patient flow.*



*Intuitive display screens and interfaces provide enhanced ease of use for higher patient throughput.*



# Customized Softcopy Image Review

*Imagine the possibilities...*

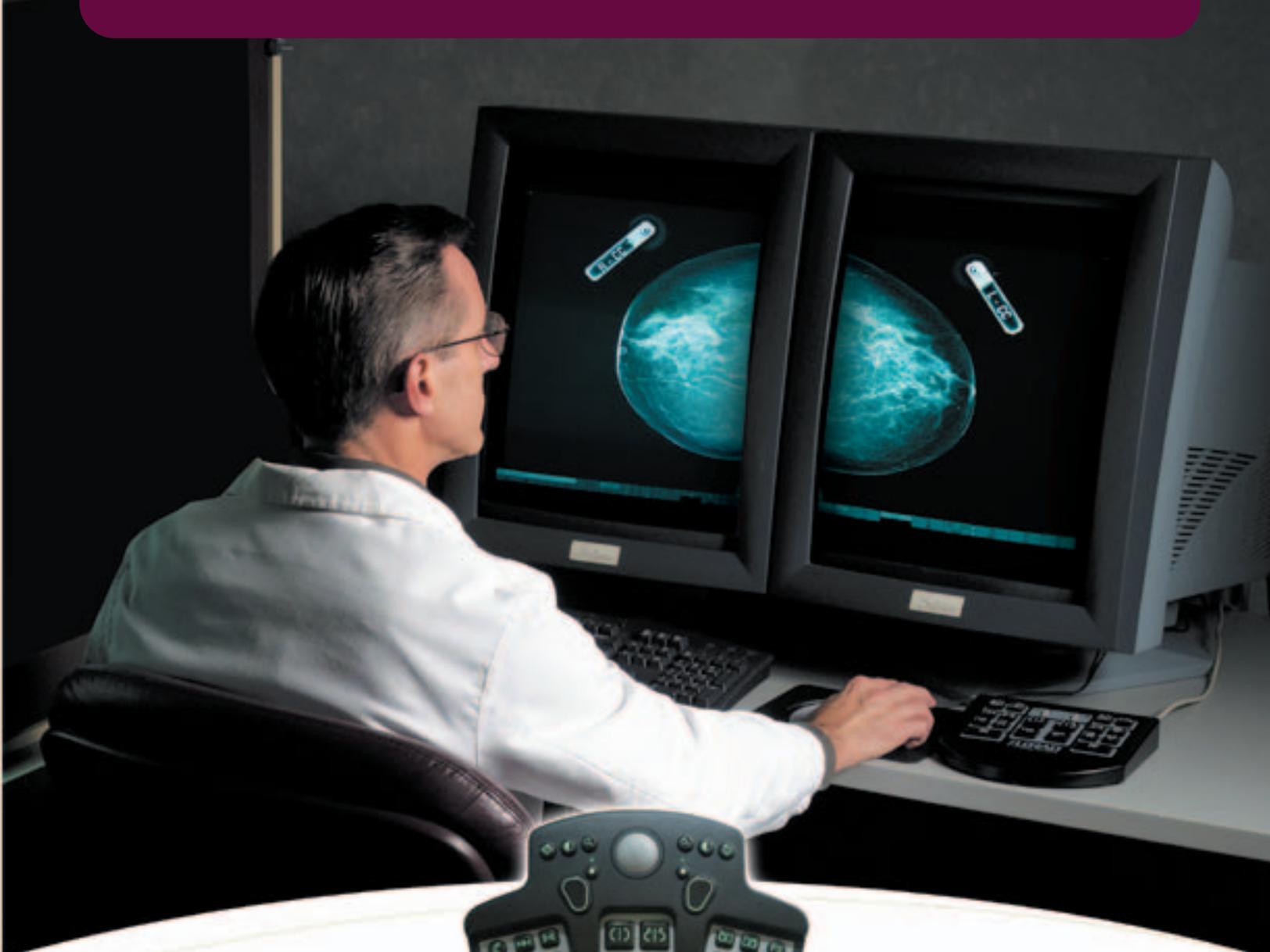
The Selenia Softcopy Workstation provides the ideal pathway to tomorrow's filmless mammography environment. This system incorporates the features needed to maximize efficiency and accuracy in softcopy image review, including automatic image processing, versatile image manipulation options, full resolution viewing capabilities, high-volume throughput, user-friendly controls and full DICOM connectivity.

The workstation supports high-volume reading of screening and diagnostic mammography. Dual 5-mega pixel monitors with 1024 true shades of gray allow full resolution display of images. An image display time of 0.2 seconds per patient ensures maximum efficiency in case throughput.



Selenia's Softcopy Workstation provides automatic image processing functions that optimally enhance each digital mammogram based on breast tissue compositions. The Softcopy Workstation also utilizes an exclusive image processing feature, Peripheral Contrast Enhancement (PCE)\*, to enable instantaneous visualization of all breast tissue with optimal image contrast across the entire breast, from chest wall to skin line.

\* PCE is a Works-in-Progress—FDA Clearance required.



An ergonomically designed workflow keypad places all controls at the physician's fingertips. Views and functions used most frequently are grouped and ordered, to streamline workflow and allow the physician's attention to remain focused on case review. Each user can easily define their own preferences for hanging protocol and workflow. The system saves user preferences, which are automatically accessed upon login.

The workflow keypad provides single-click image manipulation and allows the physician to enact a variety of image display and manipulation tools including:

- **Digital Magnifying Glass** – image detail can be viewed at increased resolution to better visualize fine detail, in both normal and inverse video mode
- **Window/level adjustment** – brightness and contrast changes can be interactively applied to images
- **Display of prior studies** – user can quickly toggle between current and prior studies from multiple years
- **Single-click view comparison** – user can select flexible comparison choices among views



- **Roaming** – images can be displayed at full resolution for efficient review of sub-regions
- **Marking and annotation** – suspicious areas can be marked, annotated, and the results archived in electronic or hardcopy format for future reference
- **Measurement tools** – measurement lines can be drawn to mark suspicious areas, with automatic indication of length (in millimeters)
- **Image layout and orientation** – images can be displayed in different layouts at different resolutions, including ability to interactively mirror and flip

The Selenia Softcopy Workstation is DICOM 3.0 compatible and supports connectivity to the Selenia Acquisition Station, long-term archives, and DICOM compatible printers. In addition, DICOM images from other modalities, including ultrasound and MRI, can be displayed (for viewing only) on the workstation.

# Connectivity Solutions

*Imagine the possibilities...*

**for any Clinical Setting**

The Selenia is a remarkably versatile system designed to meet the unique connectivity and bandwidth requirements of digital mammography. Built with a flexible architecture and incorporating DICOM open standards, this system is configured to interface with a wide variety of information management system components — connecting you to the benefits of digital mammography and enabling seamless integration of all workflow functions from image acquisition to long-term archive.

#### **PACS Broker**

*Allows integration with HIS/RIS and enables modality worklist features (including scheduling) at the acquisition station*

#### **DVD Archive**

*Provides permanent, longterm storage of studies and rapid retrieval of prior exams*

#### **Workflow Manager**

*Manages routing, archival and retrieval of studies*

#### **Selenia Softcopy Workstation**

*Supports image viewing and interpretation*

#### **Selenia System**

*Provides mammographic image acquisition*

#### **Approved DICOM Compatible Printers**

*Support hardcopy printing of digital images*



## A Platform for the Future

The Selenia was designed to accommodate future advances in breast imaging technologies. Its flexible architecture allows incorporation of system enhancements to support emerging applications such as tomosynthesis, digital subtraction angiography, and dual energy imaging. In addition, the Selenia Softcopy Workstation is fully configured to support Computer Aided Detection (CAD)\* technologies.

We have also developed an effective pathway to allow our M-IV screen-film systems to be upgraded to Selenia systems – easily and efficiently. This allows you to protect your original equipment investment and plan your migration to digital mammography at the pace that's best for your facility and your practice.

With our Selenia Total Solution you can be connected to the world of digital mammography — today and tomorrow.

*\*Works-in-Progress*



*Caring for*  
**Women**  
is a Way of Life for Us

Because of our unwavering commitment to women's health, Hologic constantly seeks better ways to detect breast cancer earlier. The Lorad Selenia mammography system with direct-to-digital imaging is the most advanced technology available to ensure the best possible breast health and breast cancer screening.



*The power of Hologic is the power of clear innovation and a singular focus . . . to challenge the boundaries of science and technology everyday to raise the standards of image quality. Our passion has led to discoveries that contribute to earlier detection, more accurate diagnoses, and better overall patient care. As we focus on the future, we are bound by our clarity of vision. A vision created solely to enhance yours.*

**Osteoporosis Assessment ■ DirectRay® Digital Imaging**  
**LORAD® Breast Cancer Detection ■ FLUOROSCAN™ C-arm Imaging**



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