

OncoView™ Image Management and Storage Solution: An Oncology-Specific Approach to Image Management and Storage

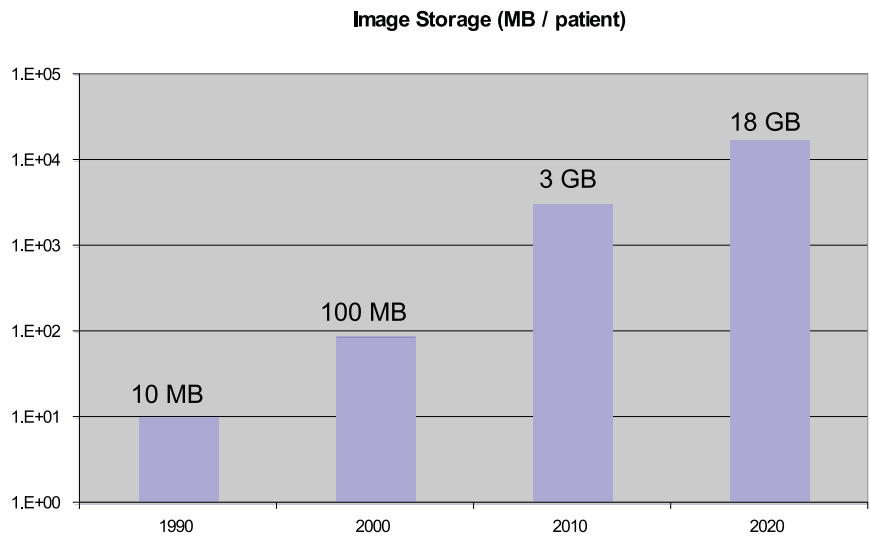
Introduction

The OncoView™ image management and storage solution is a long-term image management and storage solution that integrates image viewing, managing, storing, and archiving of oncology images and data. OncoView, Varian Medical Systems' interpretation of an oncology-specific PACS, provides a contextual relationship between patient and procedure at every phase of cancer treatment—from initial diagnosis to response, and on to survivorship supporting workflow specific to oncology.

OncoView is designed to operate in a heterogeneous PACS environment and augment existing infrastructure to improve multidisciplinary collaboration. Adherence to industry standard DICOM RT and HL7 communication protocols, combined with distributed storage will ensure seamless scalability. This total image management and storage solution will deliver to oncology clinics and departments, a cost-effective solution that provides a competitive advantage to users and measurable improvements in long-term care to patients.

State of the Market

Radiation oncology is undergoing a rapid and dramatic workflow transformation. Within three to five years the average oncology department will experience exponential growth in the size, complexity, and volume of images generated. The increase is due, in part, to the success of image-guided oncology programs, which generate new images at each step in the treatment process—diagnosis, staging, planning, verification, setup, response, and follow-up. Storing, managing, and providing access to these images long-term will become critical as the giga- and terabyte needs of today expand to the petabyte requirements of the future.



Oncology department image storage needs per patient are expected to double roughly every 2 to 3 years. Based on 2007 Varian market research data

The management and storage of images is compounded by various medical regulatory agency requirements which stipulate that the images must be maintained as part of the patient's permanent record for up to 50 years. Existing systems are ill equipped to provide the flexibility and scalability needed to handle such volumes of images. Systems that can offer scalability are often limited by the inability to provide a viable means of viewing the stored images, specifically DICOM RT layers so important to oncology.

The Oncology Challenge

Rapid adoption and expanded use of digital imaging by radiology and radiation oncology departments—specifically cone-beam CT (CBCT) and RT objects within radiation oncology—has necessitated a significant increase in scalable data storage architecture.

Adequate image storage for radiology departments may be attainable using current PACS solutions, but the proprietary nature of these systems limits their usefulness in radiation oncology. Conventional PACS that are accessible to radiation oncology departments are most often incapable of viewing DICOM RT objects. None are able to adequately represent these images in context in treatment planning and delivery processes.

Radiation oncology has very specific needs that standard PACS systems are simply not designed to meet. Whereas radiology is very much about securing images for use with a one-time task, radiation therapy employs an iterative and collaborative process that requires diagnostic medical records to integrate with an increasingly digitized treatment workflow to provide a living and readily accessible patient archive. Disparate systems must provide fast and efficient means with which to share patient information between medical, radiation, and surgical oncology departments.

However, hospital-wide infrastructure compatibility alone is not enough to view a patient's longitudinal health record across the full spectrum of care. It must be extensible to outside oncology clinics and other similar entities that possess information that weighs in on the long-term care of patients.

Why Image Management and Storage Specific to Oncology Workflow

A comprehensive image management and storage solution works with existing infrastructures to effectively manage this volume increase in digital images, allowing any oncology department to add on storage capacity as needed, versus having to make costly and/or unwanted capital expenditures that outweigh current needs. Thin-clients provide immediate access to patient information, helping to speed decision-making related to patient treatment options and improving the overall quality of patient care.

Longer term, oncology-specific solutions optimized to support information integration initiatives such as IHE-RO, which extend the use of industry-standard communications protocols, will be able to further distinguish themselves as preferable to conventional PACS.

The Varian Solution

Collaboration between all of the oncology professionals involved in the treatment of a given cancer patient is instrumental to improving care. More than simply maintaining an informal verbal communication link, it requires creating a complete patient chronology that will require all available digitized information and images to be shared, as if handing them across a table. The size and volume of information and images should not impact the exchange, and the transfer of data from one practitioner to the other should be transparent.

Varian answers the challenges that radiation oncologists currently face. Our image management and storage solution—OncoView—integrates image viewing, storage, and management, including all DICOM RT objects, to create an oncology-specific workflow that is organized and presented longitudinally. This provides a contextual relationship between all procedures and patient treatment to date, and enables clinicians to make more informed therapeutic decisions moving forward. Planned support of IHE-RO integration profiles will further the dynamic information-sharing ability of the Varian solution.

The initial implementation of OncoView provides enterprise-wide connectivity, existing heterogeneous PACS compatibility, scalable direct- and network-attached storage, and both thin and thick client access. Ongoing will be the introduction of industry-standard DICOM and HL7 connectivity to extend system scalability to distributed storage, and allow the addition of web-based thin clients. This dynamic sharing of information will significantly reduce the time and productivity constraints associated with manually retrieving archived data.

OncoView is nonproprietary and modular by design, which allows it to operate effectively within any environment, including heterogeneous or best-of-breed environments.

Image Management

The OncoView™ image management and storage solution provides a single, all-encompassing record of a patient undergoing cancer treatment.

Using standards-based search engine technology and industry-standard DICOM and HL7 connectivity, OncoView locates and accesses patient-specific images and information from distributed storage—HISs, RISs, EMRs, and heterogeneous PACS—within a hospital, as well as outside hospitals and clinics. Search, access, and retrieval of all desired data is accomplished in a matter of just a few minutes, and can be automated to gather the information overnight or at off-peak times on the network.

The end result is a single electronic medical record (EMR) that provides a comprehensive, secure, and vendor-independent view of the patient's treatment information. A solution-integrated Cross-Enterprise Master-Patient Index (C-EMPI) reviews, cleanses, and reconciles the assembled patient information to ensure accuracy, then links all clinical information—documents and images—associated with the patient into a single, up-to-date record, viewable on demand from anywhere via networked and web-based interfaces.

Images and information compiled within the patient record can be returned to the repositories from which they were retrieved using the same intelligent rule-based routing and mapping algorithms used to retrieve them. Assigning lesser-used patient data to archival or similar storage follows the same easy-to-use protocol.

Image Storage

OncoView will provide easily configurable and highly scalable storage using existing infrastructure and high-speed, industry-standard connectivity to access and store patient treatment images and information in repositories distributed across departments, clinics, and hospitals, both locally and globally. HIPAA-compliant access to the stored data, continuous monitoring, auditing, encrypted communication, and role-based authentication ensure the information is secure at all times.

Image Viewing

OncoView incorporates proven technology from Velocity Medical Solutions. Initially, oncologists will be able use a multimodal viewer capable of viewing a patient's oncology images and information while still archived. No image retrieval would be required. The assumption is that all images in the archive that should be registered are registered, thereby rendering image fusion superfluous.

In future implementations, OncoView will provide enhanced capabilities for viewing stored images and information as part of the process. The incorporation of Varian's leading-edge techniques for rapid and precise image fusion will provide oncologists with a powerful new tool for cancer visualization and assessment.

The solution's image registration and fusion tools will allow clinicians to rapidly fuse diagnostic imaging modalities—CT, MR, PET and SPECT—to planning images to ensure the best match for anatomical and biologic modeling.

The incorporation of standard uptake value (SUV) measurements for PET imaging will allow clinicians to make an objective assessment of changes in the biologic activity of a patient's cancer over time. Varian imaging will utilize SUV and intensity shareholding methods for automatically contouring and planning the PET tumor/target volume.

The Long-Term Solution

Demand for a comprehensive long-term solution for storing and managing patient treatment information and images specific to oncology workflow continues to grow. Hospital and clinical oncologists are anxious for a solution.

The introduction of Varian's OncoView™ image management and storage solution answers their immediate and future needs, integrating image viewing, storage, and sharing, including RT objects, into an oncology specific workflow that accurately reflects the contextual relationship between patient and procedure longitudinally. The components that make up this workflow can be accessed and stored using existing infrastructure and industry-standard connectivity. The use of distributed storage to house images and information ensures virtually unlimited scalability.

More importantly, we are delivering a cost-effective solution that provides a competitive advantage to users and measurable improvements in long-term care to patients.

The part of Varian's OncoView™ image management and storage solution subject to 21 CFR Sec. 892.2050 is manufactured by Velocity Medical Solutions.

Varian Medical Systems Oncology Systems

3100 Hansen Way
Palo Alto, CA 94304-1038
Tel: 650.424.5700 | Tel: 800.544.4636
<http://www.varian.com>

USA Headquarters

California

Varian Medical Systems
Palo Alto, CA
Tel: 650.424.5700
800.544.4636
Fax: 650.493.5637
www.varian.com

USA Regional Offices

California

Varian Medical Systems
Corona, CA
Tel: 951.280.4401
Fax: 951.280.4300

Georgia

Varian Medical Systems
Marietta, GA
Tel: 770.955.1367
Fax: 678.255.3850

Illinois

Varian Medical Systems
Des Plaines, IL
Tel: 847.321.6810
Fax: 847.321.6811

New Jersey

Varian Medical Systems
Clark, NJ
Tel: 732.340.9346
Fax: 732.381.1060

European Headquarters

Switzerland

Varian Medical Systems
International AG
Zug, Switzerland
Tel: 41.41.749.8844
Fax: 41.41.740.3340

Austria

Varian Medical Systems
Gesellschaft m.b.H.
Voersendorf, Austria
Tel: 43.1.698.56.56
Fax: 43.1.698.56.59

Belgium

Varian Medical Systems
Belgium N.V./S.A.
Diegem, Belgium
Tel: 32.2.720.10.08
Fax: 32.2.720.77.07

Finland

Varian Medical Systems
Finland Oy
Helsinki, Finland
Tel: 358.9.430.771
Fax: 358.9.455.4585

France

Varian Medical Systems France
Buc, France
Tel: 33.1.30.83.83.83
Fax: 33.1.30.83.83.00

Germany

Varian Medical Systems
Deutschland GmbH
Darmstadt, Germany
Tel: 49.61.51.73130
Fax: 49.61.51.731313

India

Varian Medical Systems
India Pvt Ltd.
Mumbai, India
Tel: 91.22.26162301
Fax: 91.22.26162277

Varian Medical Systems
India Pvt Ltd.
Chennai, India
Tel: 91.44.28295970
Fax: 91.44.28295980

Italy

Varian Medical Systems
Italia, S.p.A.
Cernusco s/N (MI), Italy
Tel: 39.02.921.351
Fax: 39.02.921.35240

Netherlands

Varian Medical Systems
Nederland B.V.
Houten, Netherlands
Tel: 31.30.634.0506
Fax: 31.30.636.2466

Scandinavia

Varian Medical Systems
Scandinavia AS
Herlev, Denmark
Tel: 45.44.500.100
Fax: 45.44.500.190

Spain/Portugal

Varian Medical Systems
Ibérica, S.L.
Madrid, Spain
Tel: 34.91.33.44.800
Fax: 34.91.33.44.801

UK/Ireland

Varian Medical Systems
UK Ltd.
Crawley, West Sussex, UK
Tel: 44.1293.601.200
Fax: 44.1293.510.260

Asian Headquarters

Hong Kong

Varian Medical Systems
Pacific, Inc.
Kowloon, Hong Kong
Tel: 85.22.724.2836
Fax: 85.22.369.4280

China

Varian Medical Systems
China Ltd.
Beijing, P.R. China
Tel: 8610.6512.7169
Fax: 8610.6523.2039

Japan

Varian Medical Systems K.K.
Chuo-ku, Tokyo, Japan
Tel: 81.3.3639.9700
Fax: 81.3.3639.9623

Latin American Headquarters

Florida

Varian Medical Systems
Miami, FL USA
Tel: 305.929.1970
Fax: 305.929.1971

Brazil

Varian Medical Systems
do Brasil Ltda.
São Paulo, Brazil
Tel: 55.11.3457.2655
Fax: 55.11.3286.0034

Australian Headquarters

Australia

Varian Medical Systems
Australasia Pty Ltd.
Sydney, Australia
Tel: 61.2.9485.0111
Fax: 61.2.9485.0119

© 2008 Varian Medical Systems, Inc. All rights reserved. Varian, Varian Medical Systems, and the Varian Medical Systems logo are registered trademarks, and OncoView is a trademark of Varian Medical Systems, Inc. All other trademarks are the property of their respective owners.

