

# Product Bulletin

## VOXEL Q VISUALIZATION SYSTEM

*Fastest, most accurate image reconstruction: 10 million tri-linear interpolations per second*

*Push & pull data to & from scanner*

*Differential diagnosis of CT, MR & Nuclear images*

*Coordinates & unifies operator interfaces across modalities*

*Segmentation of applications improves scanner throughput*

*1 second per slice from disk to memory*

*ACR/NEMA DICOM 3.0 multimodality, multivendor networking*

*Local & remote image viewing*

*Manage spiral & dynamic datasets*

*2-D, 3-D, 4-D & MPR viewing modes*

*Axial, sagittal & coronal views*



### OPTIMIZED IMAGE QUALITY & ACCURACY

Voxel Q is the Picker® International medical image visualization system of choice for efficient high-speed 3-D reconstruction of the most complex Computed Tomography (CT) spiral datasets. In addition, Voxel Q offers unsurpassed multimodality capabilities for Magnetic Resonance (MR), and Nuclear devices. Designed to exceed industry standards in image reconstruction viewing and output clarity, the Voxel Q provides volume scan data at a rate of 10 million tri-linear interpolations per second (TRIPS).

The Voxel Q reconstructs 2-D, 3-D and 4-D image data, and offers a multitude of utilities for viewing enhancement. Multiplanar reformatting (MPR) and reconstruction in volume rendered angiography or surface rendered cranio-facial modes are generated - without the preprocessing or preselection of views.

Voxel Q's suite of features also includes tissue localization, contouring, segmentation, slice plane mapping, transparency, and add-on options such as dental planning, CT and MR Angiography, and InnerView for soft tissue visualization. Voxel Q™ capabilities are extensible to meet hospital requirements for multimodality and multivendor capabilities with robust network connections.

### FEATURE-RICH FUNCTIONALITY

Key to the Voxel Q's high-performance level and flexibility in the selection, identification and viewing of patient data structures is its operator interface. The Voxel Q operator interface is both consistent and efficient. Image manipulation tools such as 3-D and MPR viewing modes, filming, archiving and segmentation are uniformly easy to use.

### ADHERENCE TO INDUSTRY STANDARDS

- Modular industry standard hardware & software.
- Accepts medical image data from any Q Scanner CT system, ACR/NEMA DICOM 3.0 compliant devices, or 9-track tape media.
- Future ready: standards-based software design provides the platform for cost-effective product enhancements.

### EASY TO LEARN, EASY TO USE

- User interface incorporates consistent placement of pull-down menus, buttons & dialog boxes, eliminating the need to memorize commands.
- Select viewport size & number (up to 48).
- Execute local & remote filming.
- Color mapping.
- Use keyboard or mouse for operations.

### 3-D

- Reconstruction time:  $\leq 2$  seconds, typically.
- Identify center of 3-D image.
- 360° rotation of images.
- Real-time interactive generation & manipulation.
- Toggle between window/level settings.
- Rectangular volume cuts (X, Y & Z planes).
- Transparency of a specified tissue type to view a second tissue type behind it. Uses all study data. Degree of transparency is user-selectable.

### MULTIPLANAR REFORMATTING (MPR)

- Plan & modify the angle, number of slices, spacing & thickness of captured data.
- Specify curved planes, including spinal viewing.
- Generate views in arbitrary planes.
- Interactively adjust plane orientation & generate new views in real-time.
- Reformat 8 slices per second.
- Loop through images on X, Y & Z planes.
- Rotate angles in side viewports.

### CONTOUR & REGION BASED SEGMENTATION

- Place seed points & contours on screen images.
- Tag tissues on a pixel to pixel level on axials.
- Auto-interpolate for volume tissue tagging.
- Grow Region color-tagged seed points, in display slices, show voxels of the same gray scale ranges.
- Grow Volume propagation of color tagging throughout contiguous slices or image volume.
- Tag and/or contour any tissue types on a screen using 15 different colors.

### DISARTICULATION

- Segment/tag tissues & disarticulate them to see underlying structures.
- Rotate disarticulated masses for alternate views.
- Use multiple viewports to show disarticulated masses - such as left and right sides of the hip - & rotate for side by side comparative views.



## SUPERIOR IMAGE QUALITY

The Voxel Q provides superior image quality with 24 bit, full color image display. Gray scale capability is identical to the PQ-2000 with a 19" Invar™ shadow mask CRT for optimal contrast resolution. The Voxel Q's tri-linear interpolative processing capability ensures maximum image viewing accuracy.

## IN EVERY RENDERING MODE...

- Window/Level mapping selection & adjustment.
- Slice selection (2-D, MPR & 3-D; Object selection for 4-D slices).
- Zoom magnification.
- Cine with speed adjustment.
- Screen saves to an output device.
- Save menu selections.
- HELP provides instant access to descriptions of menu items, function keys & instructions for their use.

## MULTIMODALITY NETWORKING

- CT, MR & Nuclear applications at one location permit comparative viewing, differential diagnosis & improved patient care & outcome due to visualization accuracy.
- Connect almost any number & combination of modalities, including CT, MR & Nuclear Medicine.

## COMMUNICATIONS

- IEEE 802.3 Ethernet, HYPERLAN II.
- ISDN.
- ATM.
- ACR/NEMA DICOM 3.0.

## PICKER CT NETWORKING

- Connected via Picker HYPERLAN II, MTE & ENTRY networking devices, Voxel Q visualization systems & Q scanners have access to a number of laser cameras, archival devices & plain paper printers.

- All Picker Q Series scan data is transferred to Voxel Q via HYPERLAN II, an efficient, Ethernet® compatible standards-based network link, or via 8mm tape.

## MULTIMODALITY VISUALIZATION WITH FUSION

Simultaneously load images from multiple modalities on the Voxel Q. Then, incorporate multimodality image fusion techniques. Manipulate images to overlap, or map data points to view a region of interest. Fuse Nuclear data over CT data - or CT data over MR data. With the utilization of *colorwash* and the parallel rotation of images from multiple modalities, Voxel Q can combine a unique level of perspective and dimension in viewing quality.

## MULTIVENDOR SUPPORT

- Voxel Q supports networked devices which are ACR/NEMA DICOM 3.0 Storage User Service Class compliant.
- Voxel Q can exchange, backup & transfer medical image data using industry standard 9-track tape.

## SUPPORT FOR HARDCOPY DEVICES

- Point & click selection, plus independent image capture & storage for output locations or modes.
- Onscreen, online status reporting.
- All filming operations occur in the background, leaving scanner & Voxel Q functions fully executable.

## AUTOMATIC SLIDE GENERATION

Film image segmentation and disarticulation to slide formats in both color and black & white.

## FILMING FORMATS

- Autofilming.
- Batch filming.
- All available lasers supported.

## REMOTE FILMING

- Eliminates cost of laser multimodality package.
- Upload & download files using standard phone lines, eliminating the costs associated with additional hardware.

## COLOR MAP OPTIONS

- Tag screen data using 15 different colors. There is no limit to the number of tagged areas per color selection.
- Use color to denote over a dozen maps, including RTP beam maps, monochrome tag scale, cardiac flow maps & segmentation.

## MEASUREMENTS

- Distance between selected points, angles or curves.
- Area, min./max. voxel values mean & standard deviation.
- Volume.
- Histogram.

## VOXEL Q VISUALIZATION OPTIONS

- Dental.
- InnerView.
- CT/MR Angiography.
- 128 MB Voxel Accelerator.
- Color Printer.
- Slide Printer.
- Tools for user-written applications.

## COMPONENTS

- **Voxel Q Tower** (SPARC CPU with Voxel Processor.)
- **Voxel Q Console**
  - 8mm Cartridge Tape Drive.
  - 9-track Tape Drive Unit (optional).
  - Keyboard.
  - 3 Button Mouse.
  - 19" Color Display Monitor.
- **Voxel Accelerator**
  - MIPS: 1000.
  - Million Ray Traces: 10 tri-linear.

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