

## MPR and 3D

# the most efficient way to read MDCT

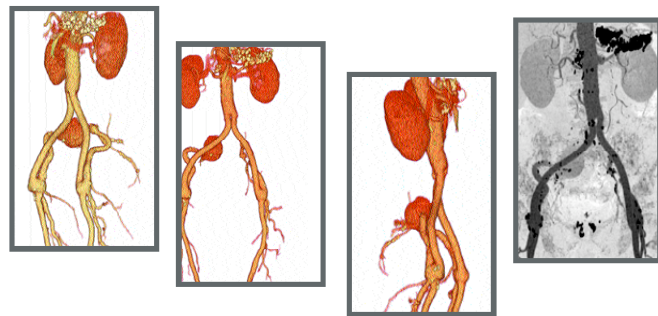
### The problem

#### Too many images

The development of 8 and 16-detector CT scanners has enhanced the quality of CT imaging by improving resolution spatially and temporally. However, this improvement comes at a price; the radiologist is now faced with the daunting task of reviewing thousands of images rather than hundreds.

#### Film reading now impossible

Interpretation of MDCT studies presents new challenges for the radiologist. Reading film has become cost prohibitive. Even printing 36 images on one piece of film can generate 50 sheets of film. Some radiology departments have considered printing every 4th image or 'summing' multiple images together to reduce the film burden. In addition to the cost of printing film, the time required to interpret a large number of films has become a major burden for the radiologist.



### The solution

#### Voxar 3D™ enabled PACS

The development of combined 2D and 3D workstations permits the radiologist to interrogate the data in stack mode with real time cine. The addition of MPR allows the radiologist to view the anatomy in any plane in real-time. These images can be created live on the workstation without any need for technologist pre-processing on the CT console. Failing to view the datasets created by MDCT

#### Conventional 2D PACS reading is only a partial solution

Although PACS viewing is a substantial improvement over film, it is an incomplete solution. Cine review of the original axial slices presents only a fraction of the available information. Most pathology does not lie within the transverse plane. The increased spatial resolution of MDCT aids the production of high quality multiplanar reconstructions (MPR) in any plane. For the first time, CT has surpassed MRI as a truly multiplanar imaging technique; however, only if the PACS system is capable of producing on-the-fly MPR.

#### Difficult to communicate findings

Radiologists typically employ two methods to communicate findings: a typed text-based report, or a summary series of images attempting to represent key pathology. Text-based reports do not adequately convey the complex anatomical relationships of pathology. On MDCT scans, summary series may require duplication of dozens, if not hundreds, of images.

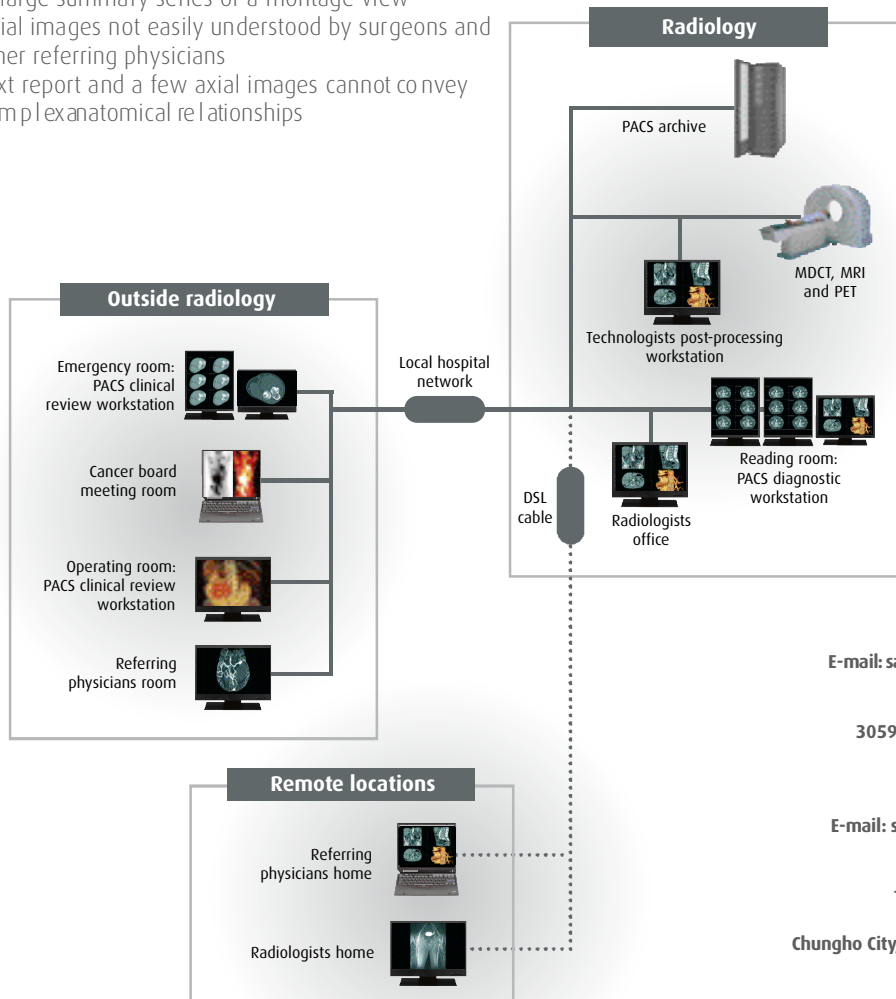
in MPR mode eliminates the major advantage of MDCT over single-slice scanners: increased z-axis resolution and improved reconstructions. Important findings which need to be communicated to the referring physician can now be represented with a few 3D or MPR images. Unlike routine 2D images, MPR and 3D images are easily interpreted by the referring physician and radiologist alike.

## The problem

- **MDCT produces too many images**
  - Film reading now impossible
  - Increased spatial resolution requires MPR review
- **Sagittal and coronal MPR produced on a scanner console**
  - Technologists time reduces scanner throughput
  - MPRs further increase image number
  - MPRs in the wrong plane require repeats
- **Conventional 2D PACS is only a partial solution**
  - Only presents axial images or console produced MPR
  - Radiologist is unable to generate views in real-time
  - Difficult to cross-reference spatial location between MPR series
- **Difficult to communicate findings**
  - Demonstrating pathology may require reproduction of large summary series or a montage view
  - Axial images not easily understood by surgeons and other referring physicians
  - Text report and a few axial images cannot convey complex anatomical relationships

## The solution

- **VOXAR 3D™ enabled PACS**
  - Combined 2D and 3D functionality
  - Technologists pre-processing available off the scanner console
  - Radiologist retains the ability to change technologists pre-processing using LIVE IMAGES™
  - Real-time cine in any plane (axial, sagittal, coronal, oblique, curved)
  - On-the-fly MPR and 3D image generation
  - MPR and 3D reduce the number of images necessary to convey findings to referring physicians



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