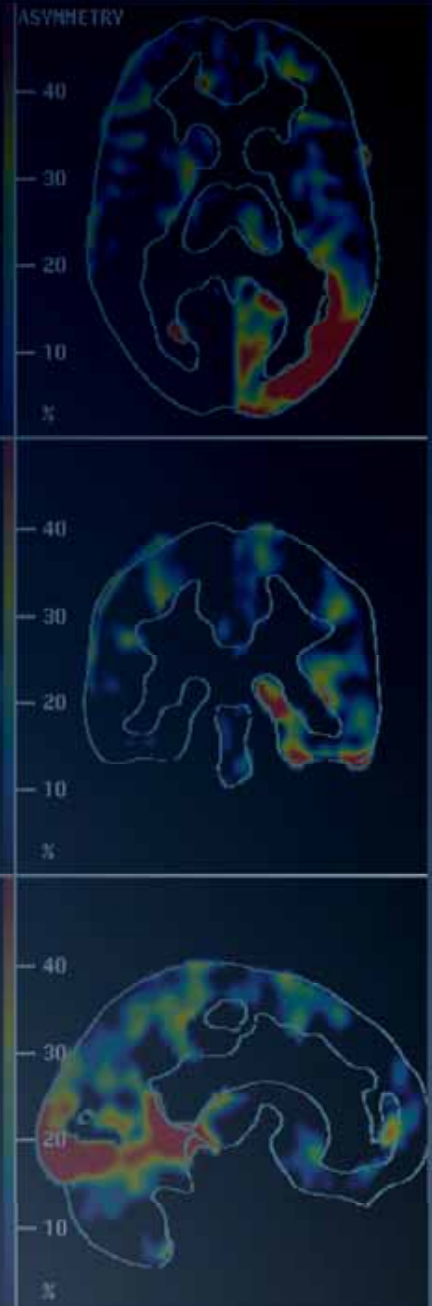


# HERMES in Clinical Trials

Richard Lewis

*Director of Clinical Services*



# Hermes Medical Solutions

## *Who we are and what we do*

- Market leader in **modality integration** and medical imaging **fusion** software
- Strong foundation based on:
  - 30 years industrial experience
  - Installations in over 1,500 hospitals in 32 countries
  - 12,000 doctors using HERMES in clinical environment
- Dana-Farber/Harvard Cancer Center Tumor Imaging Metrics Core (TIMC)
- Pediatric Brain Tumor Consortium (PBTC)

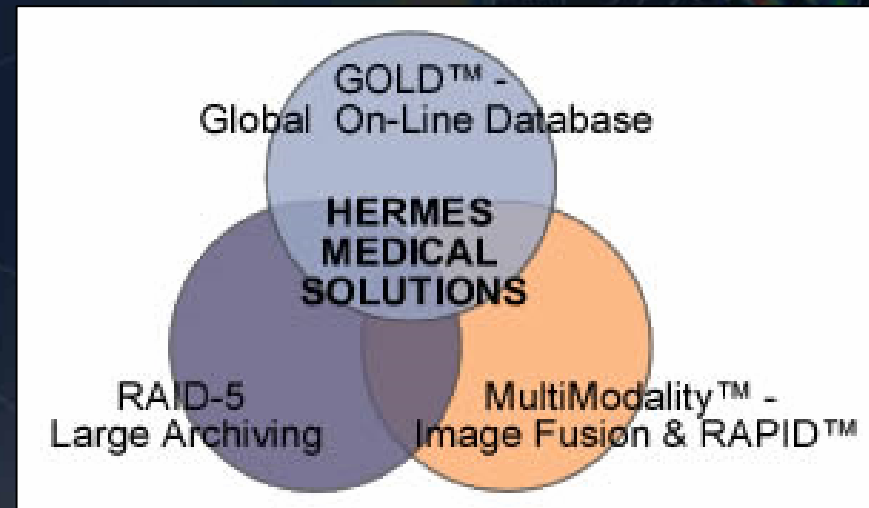


Image Fusion MIP

# Areas of Excellence

## *Archiving, Analysis, Viewing*

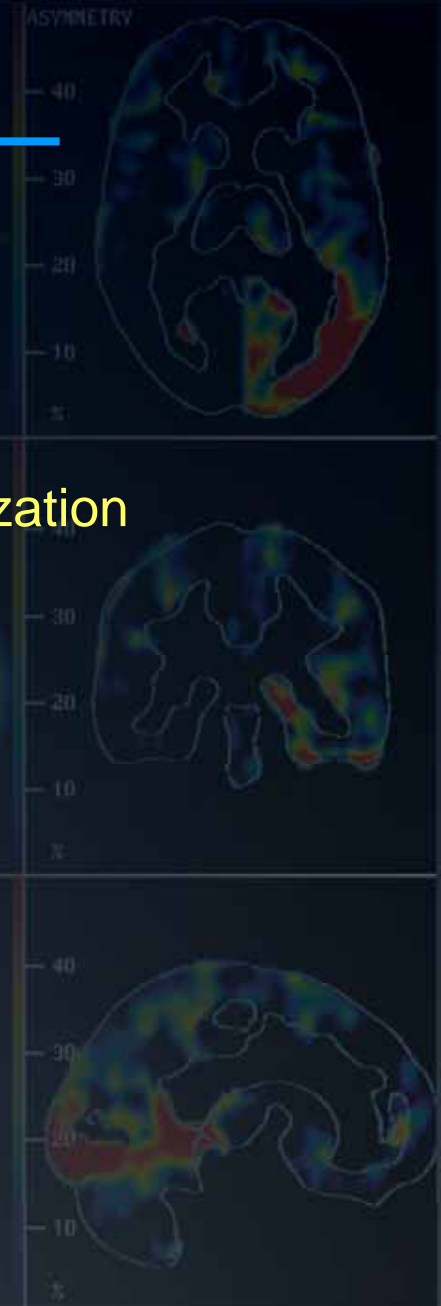
- Archiving and workflow solutions for Nuclear Medicine and PET departments
- Connectivity in all file formats for diagnostics imaging
- Fully automated On-Line archiving
- Multi-modality fusion
- Automatic co-registration
- Remote viewing & reporting
- Routine & advanced analysis



# HERMES in Clinical Trials

## Summary

- 1. Data import and storage
  - Data formats and validation
  - Architecture, workflow, anonymization, customization
- 2. Audit trail
  - HIPAA, 21CFR part 11, data security
- 3. Advanced processing
  - Automatic image registration
  - 2D and 3D ROI analysis
- 4. Remote viewing solutions
  - HERMES Explorer Suite



# 1. Data Import & Storage

*Support for all manufacturers' PET formats*



**DISCOVERY ST**



**BIOGRAPH**



**GEMINI**



**ECAT ACCEL**



**ALLEGRO**



**DISCOVERY LS**



**ADVANCE**



**ECAT EXACT**



**REVEAL RT**



**CPET**



**REVEAL**



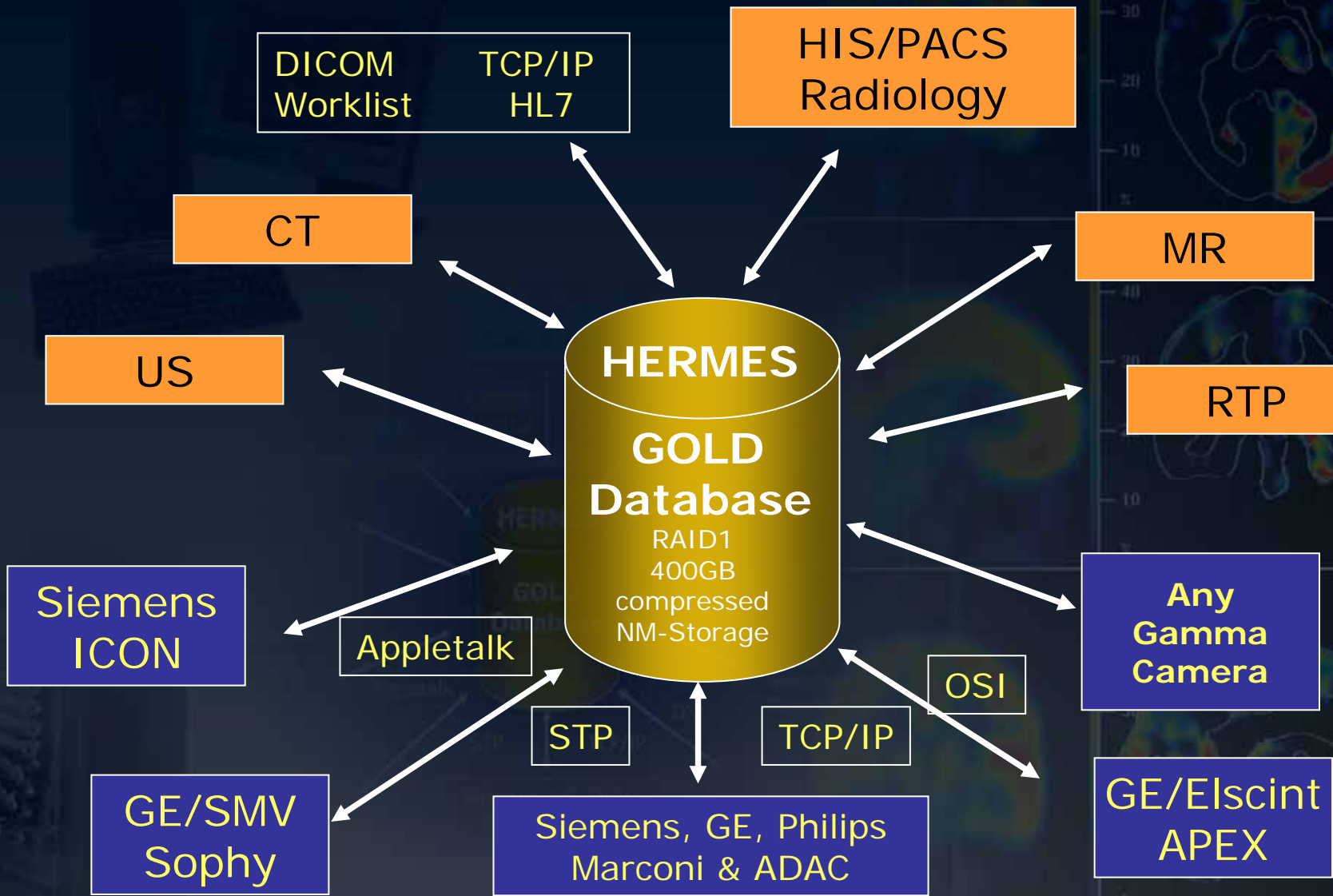
**ART**

# 1. Data Import & Storage

## *Global OnLine Database (GOLD)*

- Import & storage of any PET and NM format on the market
  - Validated 'SUV' calculation for all manufacturers
- Storage of any DICOM format
  - Central storage archive for all modalities
  - Manufacturer independent

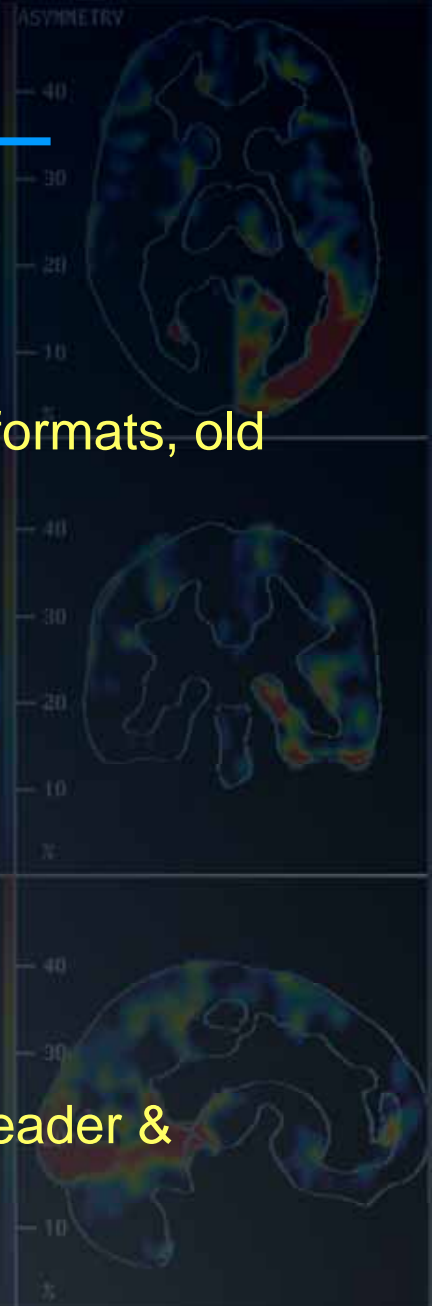
# HERMES GOLD™



# Multi-format Archive

## *Global OnLine Database (GOLD)*

- Multi-format archive
  - Supports DICOM, Interfile, ECAT 6&7 + all NM formats, old and new
- Multiple archives supported
  - Each project resides in its own archive
- Data anonymization
  - According to HIPAA regulation
- Access restrictions
  - Access restrictions per archive
  - Permissions set for demographics editing, full header & delete

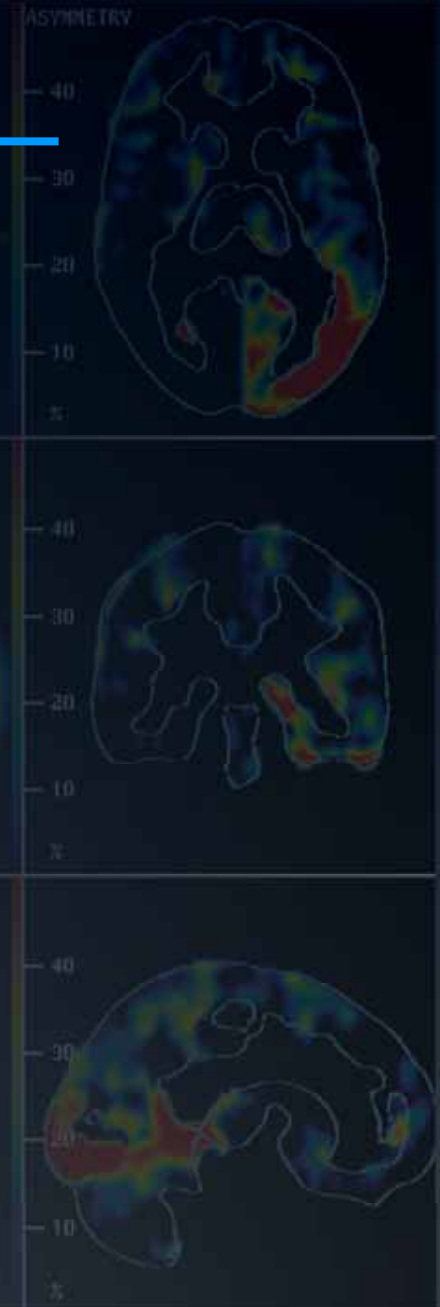




# Multi-format Archive

*Global OnLine Database (GOLD)*

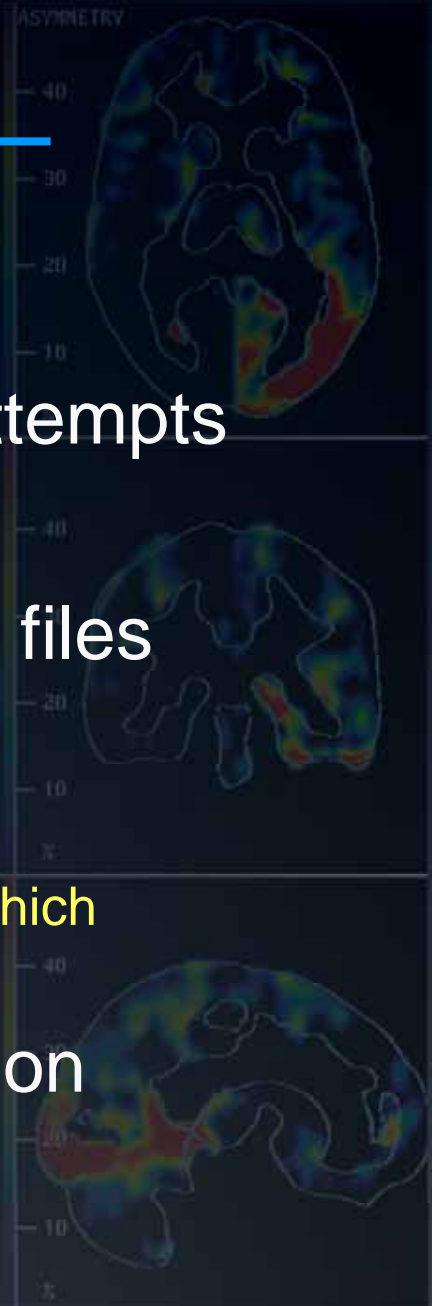
- Data Redundancy
  - RAID-1 disk mirroring
    - System disk and user settings
  - RAID-5 data storage
    - Imaging data
  - TANDEM server arrangement
    - Backup server as failover



## 2. Audit Trail

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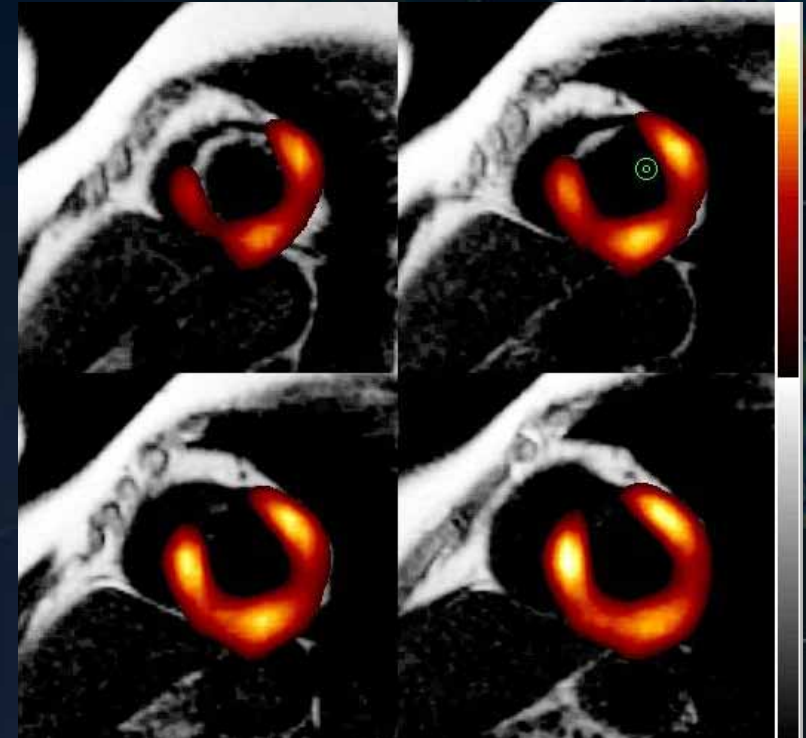
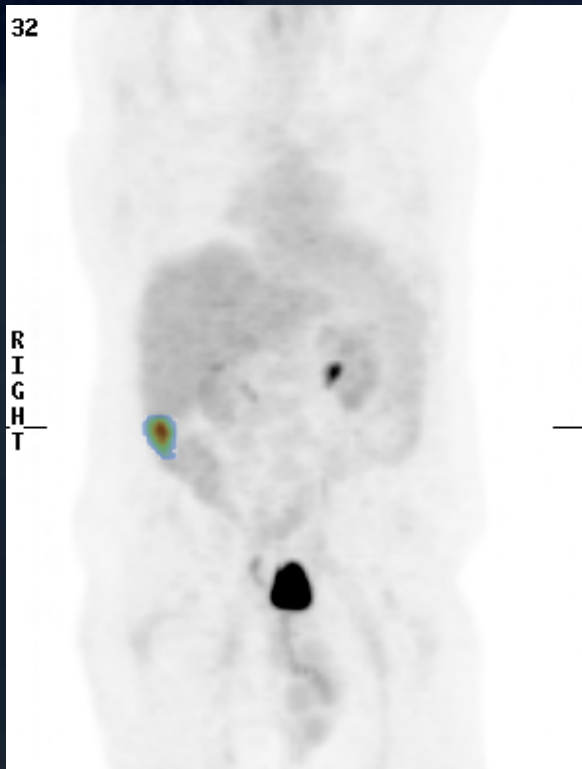
- Individual user login
- Log of login, logout, wrong password attempts
- Log of all image transfers
- Log of editing changes made to header files
  - 'Before' and 'After' state is stored
- Log of individual user activity
  - Which user accessed which patient info using which applications
- Screen locking and auto logout of session



# 3. Advanced Processing

## Processing Tools

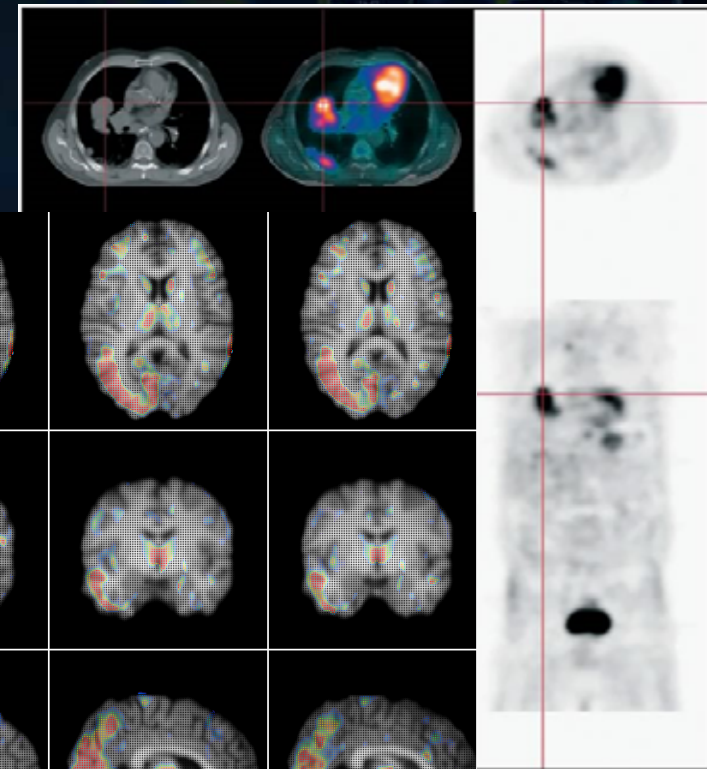
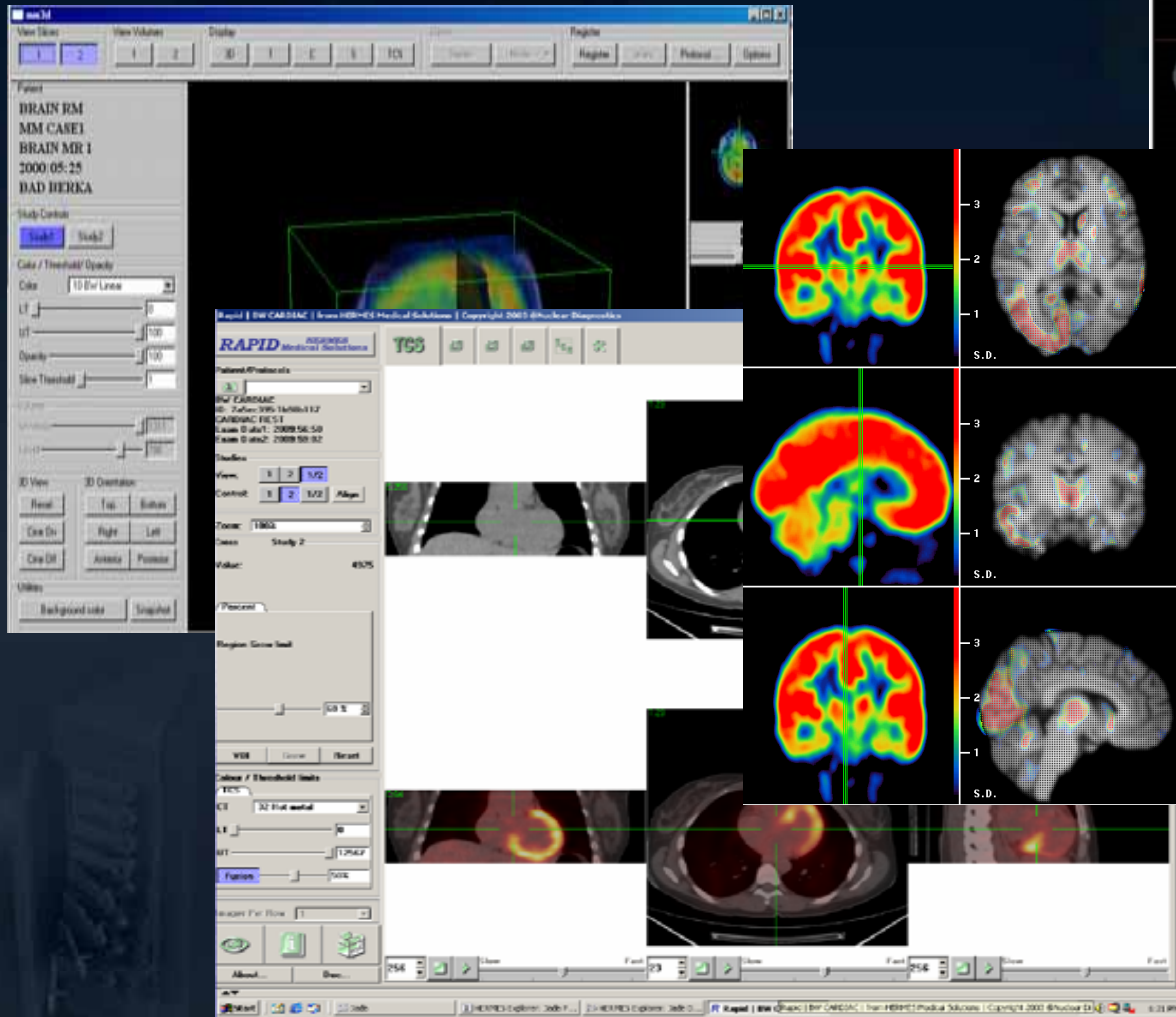
### 1. Automatic Image registration



### 2. Volume-of-interest (VOI) analysis

# 3. Advanced Processing

## Image Registration Tools



HERMES from Nuclear Diagnostics

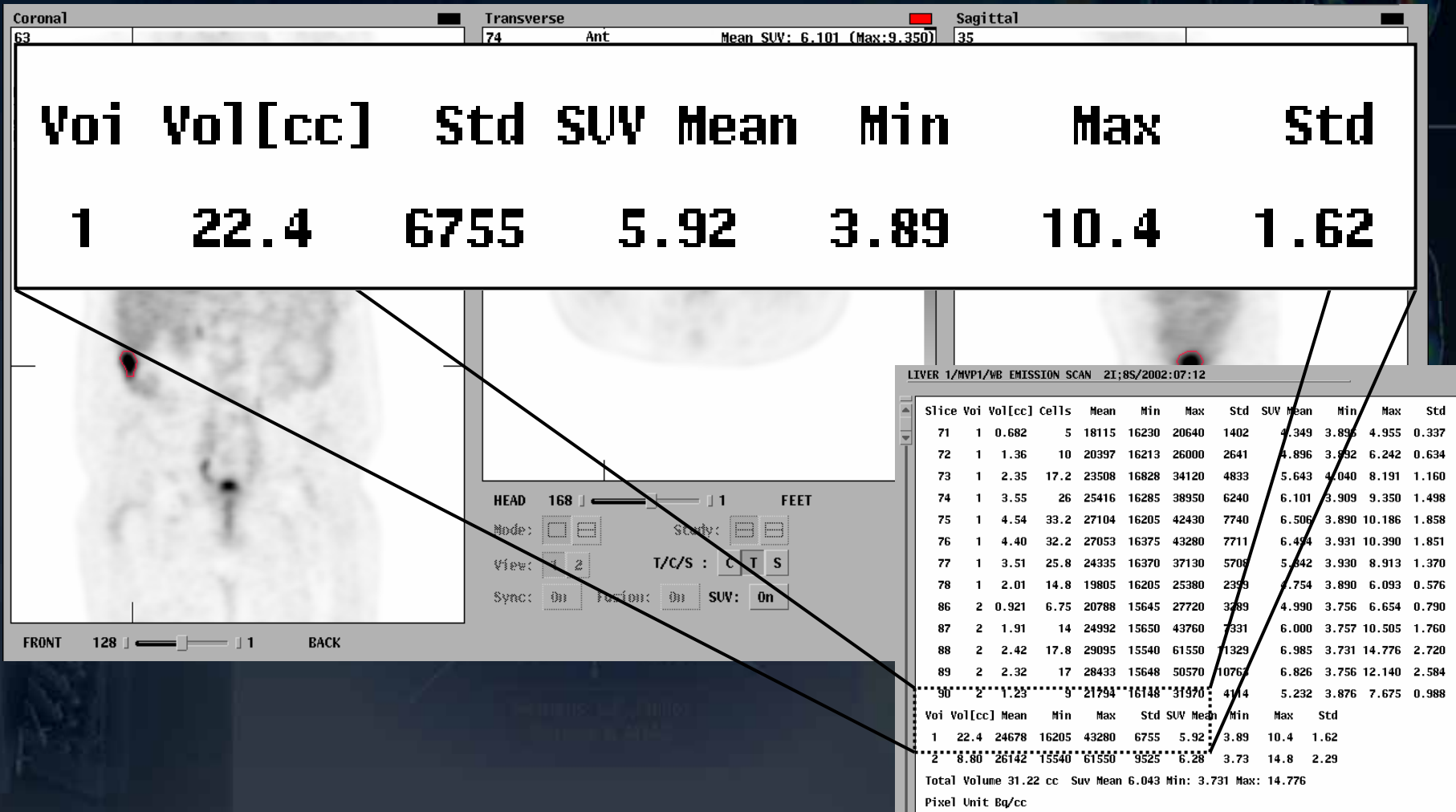
# 3. Advanced Processing

## *Spectrum of Fusion*

- CT  $\leftrightarrow$  PET
- MRI  $\leftrightarrow$  PET
- PET  $\leftrightarrow$  PET
- CT  $\leftrightarrow$  CT
- PET-CT  $\leftrightarrow$  PET-CT
- CT  $\leftrightarrow$  SPECT
- MRI  $\leftrightarrow$  SPECT
- SPECT  $\leftrightarrow$  SPECT
- PET  $\leftrightarrow$  SPECT
- X-ray  $\leftrightarrow$  NM Statics

# 3. 3D ROI Analysis

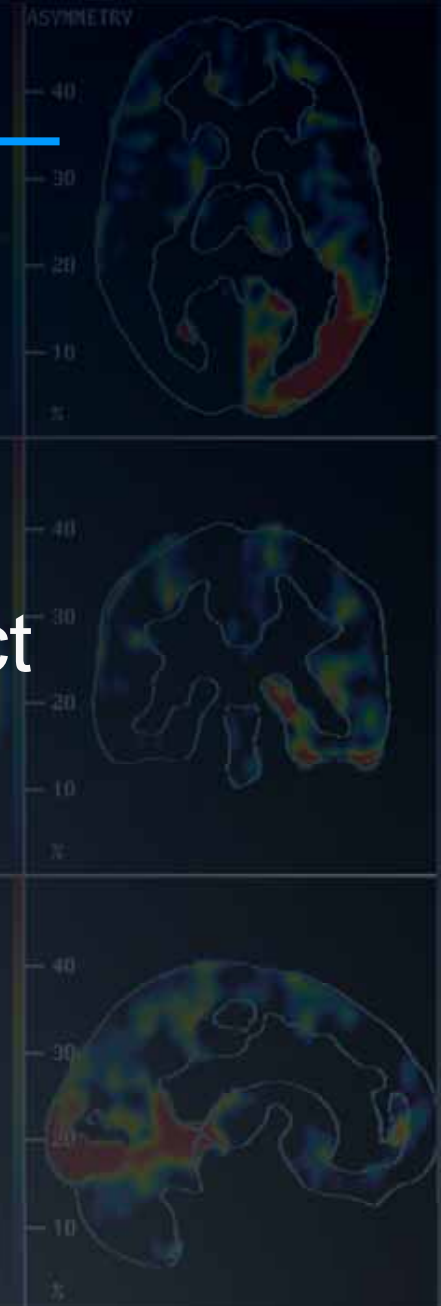
## Defining a Volume-Of-Interest



# 3. 3D ROI Analysis

## Features

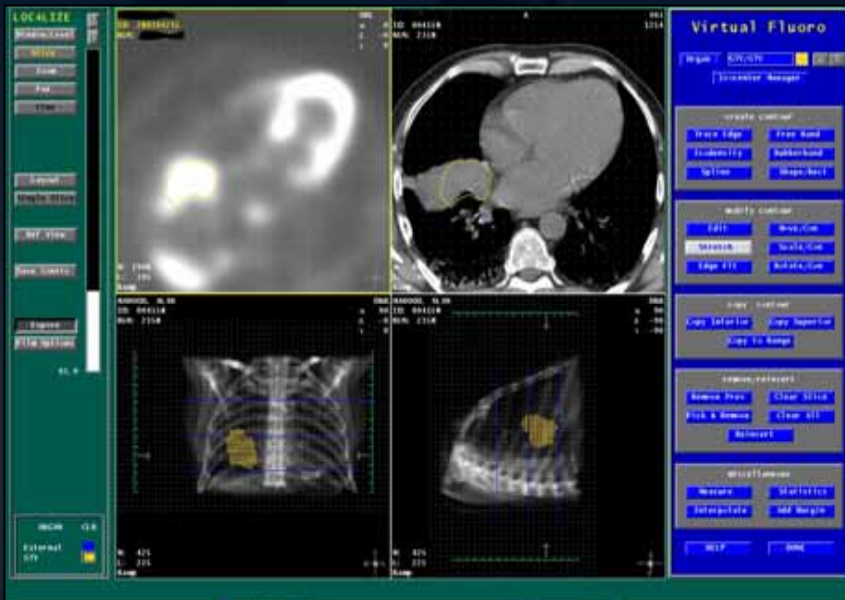
- CT or MR-guided VOI definition
- Storage of VOI in database
- Export of VOI as DICOM RT object
- Use of VOI templates
- Export of VOI statistics
  - ASCII or XML



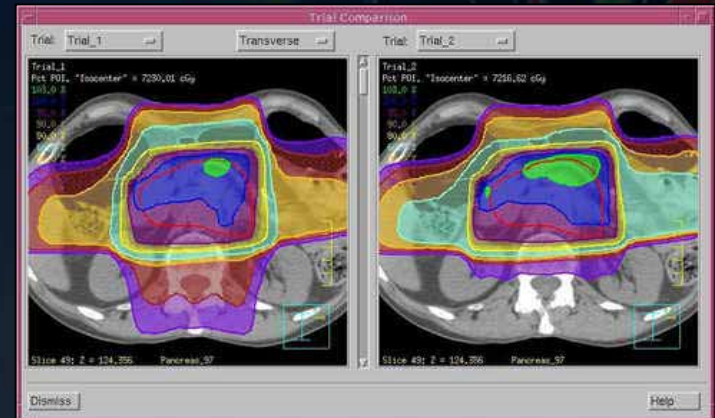
# 3. Connection to Planning Systems

*Send 3D ROI as DICOM object*

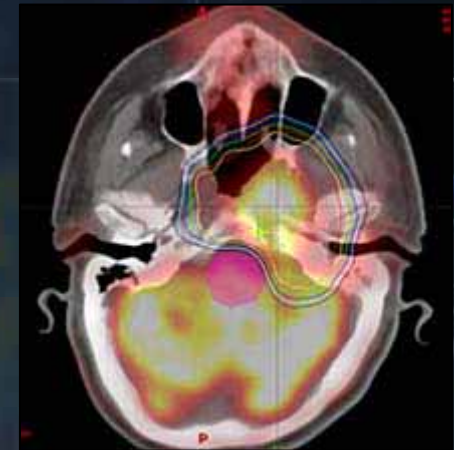
**Marconi**



**Pinnacle**



**Varian**



**CMS**

**Nucletron**



# 4. Remote Viewing

## *HERMES Explorer*

- Remote software-only viewing solutions
  - Validation of received images
  - Image reporting
- JADE comprehensive viewer for all radiology modalities
- RAPID dedicated PET-CT viewer

# 4. Remote Viewing

## JADE

- Local Database
- Image Viewer
- Supports CT, MR, PET, SPECT
- Image fusion
- Flexible layout
- Protocol-driven

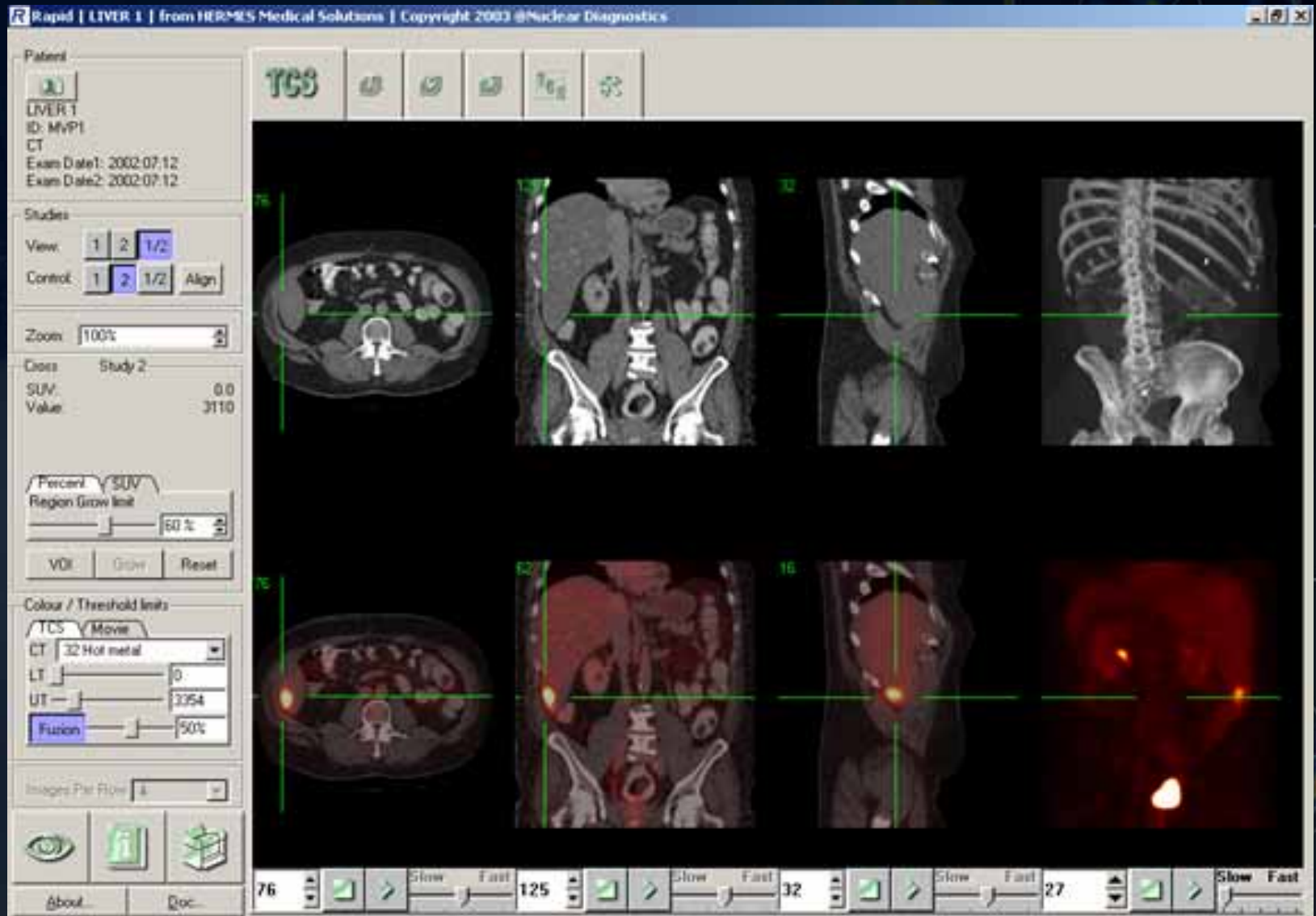
The screenshot displays the HERMES Explorer JADE Display Application interface. At the top, there is a search bar with fields for 'Name' and 'ID', and buttons for 'Today', 'Yesterday', and 'Rapid'. Below this is a table listing patient studies:

Name	ID	Exam Type	Process Label	Study ID	Study Date	Data Type	Organ
PATI EM	9R60-00...	ECAT	Rem	ONCO_0081...	2006 06 24	TOMOGRAPHIC	#T
PATI_TR	9R60-00...	ECAT	RTR	ONCO_0081...	2006 06 24	TOMOGRAPHIC	#T
BW_CARDIAC	7AF6C09...	CARDIAC REST	SNAPSHOT SEGMENT	6296005	2006 06 06	TOMOGRAPHIC	CT THORAX
BW_CARDIAC	7AF6C09...	CARDIAC REST	CT REST	6296005	2006 06 06	TOMOGRAPHIC	CT THORAX
BW_CARDIAC	7AF6C09...	CARDIAC REST	PET REST	6296005	2006 06 06	TOMOGRAPHIC	PET & CAL-HEP+18-02
BW_CARDIAC	7AF6C09...	CARDIAC STRESS	CT STRESS	7AF6C09B1...	NCOO...	TOMOGRAPHIC	CT THORAX
BW_CARDIAC	7AF6C09...	CARDIAC STRESS	PET STRESS	7AF6C09B1...	NCOO...	TOMOGRAPHIC	PET & CAL-HEP+18-02

Below the table is a multi-panel image viewer. The top-left panel shows a line graph of a cardiac cycle. The top-right panel shows a PET scan image. The middle row contains three panels: a CT scan, a PET scan, and a fused PET/CT scan. The bottom row shows a PET scan and a fused PET/CT scan. The interface includes a toolbar with various tools for navigation and analysis.

# 4. Remote Viewing

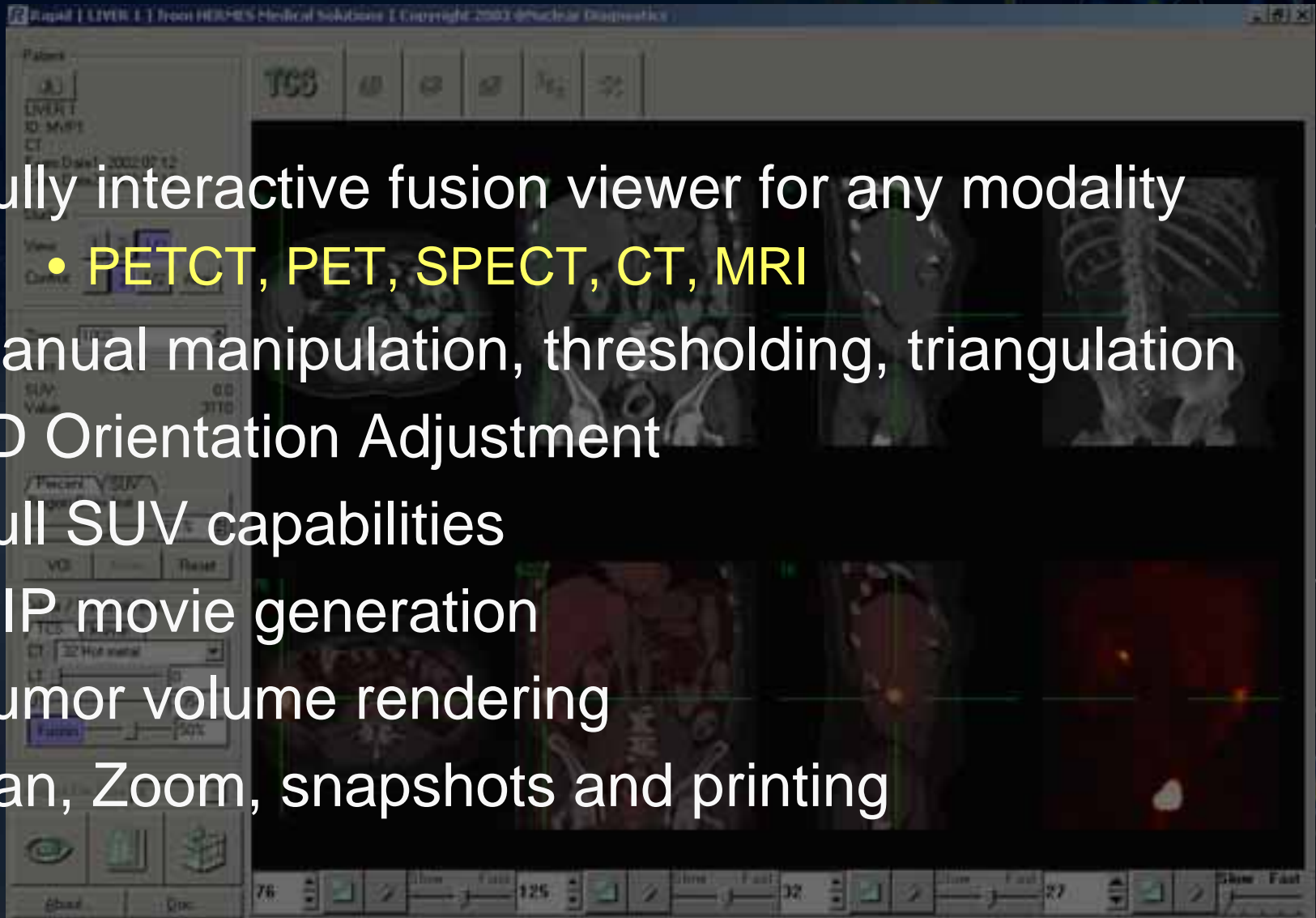
RAPID



# 4. Remote Viewing

## RAPID

- Fully interactive fusion viewer for any modality
  - PETCT, PET, SPECT, CT, MRI
- Manual manipulation, thresholding, triangulation
- 3D Orientation Adjustment
- Full SUV capabilities
- MIP movie generation
- Tumor volume rendering
- Pan, Zoom, snapshots and printing



# HERMES in Clinical Trials

## *HERMES Workstation Summary*

1. Fully functional workstation for clinical trials
2. Validated data import for all modalities
3. Configurable storage for varied settings
4. Image registration and VOI analysis
5. Validated audit trail
6. Remote viewing solutions

Thank you!

[www.hermesmedical.com](http://www.hermesmedical.com)

