



IMPAC MEDICAL SYSTEMS

EMR and Clinical Trial Support

Joel Goldwein, MD



managing the spectrum of cancer care



April 2005

www.impac.com

So much to do, so little time...

ATC EMR wish list...

- Make it easier for participating institutions to submit protocol specific digital diagnostic, treatment planning, and treatment verification data
- Provide a query-able database for diagnostic studies and RT objects that could be linked to cooperative group outcome databases
- Provide data mining tools for these linked databases.



Brief background, shameless plug...



- Device Integration
- Process Integration
- Enterprise Integration via standards (HL7, DICOM...)
- Cross-modality
- Cross-product

We capture and manage virtually all critical cancer data.

Cooperative groups should be among those who reap the rewards

IMPAC's clinical-trials-related initiatives

Incorporate trial support within EMR

- **Provide trial “header” data**
- Incorporate eligibility determination
- Manage data and image import and export
- Embrace standards
(HL-7, caBIG, DICOM, 21 CFR 11, etc.)
- Cross-modality, platform, vendors, systems... and remain resource efficient



cTrack

– Incorporate and support Trial header data

The screenshot displays the cTrack software interface. At the top, there is a menu bar with 'Window' and 'Help' options. Below the menu bar, there are several icons: a document, a magnifying glass, a microscope, and a chart. The main area of the interface is divided into several sections. The top section displays 'Patient: Applewood, Donald, MedRc: 97-9999' next to a green icon of a person with a white 'CT' on their chest. Below this, there is a section for 'Trial Id: 96-02' with a similar green icon. To the right of the trial ID, there are two icons: a green bottle and a green icon of two people. A blue horizontal bar is positioned below the trial information. In the bottom left corner, there is a text box containing 'Attending: Franklin, Edward' and 'Course: 1'. A small globe icon is visible at the bottom right of this text box.



Data captured at point of care

Radiation Prescriptions - Applewood, Donald

Dx: 10/ 1/2003: Left Prostate gland, NOS
Adenocarcinoma, NOS Course: 1

| » Site | Technique | Modality | Fractions | | | | Rx Dose | | Total Do: |
|----------|--------------|----------|-----------|----|---------|---------|---------|----------|-----------|
| | | | Act | Rx | Dose | Pattern | Act | Rx | Act |
| Prostate | 5 Field IMRT | x18 | | 41 | 180 cGy | | | 7380 cGy | |

Rx Site: Prostate Status: Pending View Fractions: By Course
Technique: 5 Field IMRT Number Fractions: By Course
Modality: x18
Dose Spec: Plan

| Rx Dose | Fractional Dose | Number of Fractions | Fractionation Pattern | Status |
|----------|-----------------|---------------------|-----------------------|--------|
| 7380 cGy | 180 cGy | 41 | | |


| Week | S | M | T | W | T | F | S |
|-----------------|---|---|---|---|---|---|---|
| ? 41Fx Pattern? | | | | | | | |

Dose Limits: Total Cum: cGy
Pattern:
Comment:

Radiation Rx is View Only

Buttons: Close, Add, Change, Delete, Dosimetry, Note, Status, Fx Notes

Populate Report Forms – proof of concept

|  Radiation Therapy Oncology Group Initial Protocol Treatment Form | | RTOG Study: 96-02 Case #: RT056 Institution: Radiation Oncology Center Institution No: 1 Patient Initials: R.T. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|-------------------------|-------------|-----------|------------|------|----|------------------|-------|--------------|------|--|----|---|--|-------------------|-------------|-----------------|-------|--------------|--------------|-------------|-----------------------|-------------------|-------------|----------------|---------|---------------|----|--|--|-----------|-------|----|------|---|----|--|--|------------------------|--|
| Option # | Description Arm 2 RT + Cisplatin | RT Start Date 10/20/2003 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Surgical Stage: T 2 N 2 M 0 | | Primary Site Tonsillar pillar | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BRACHYTHERAPY IMPLANT/ INSERTION/APPLICATION <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, specify source _____ # OF INSERTIONS _____ PLANNED IMPLANT DOSE (Gy) _____ | | Fractionation Schemes Used: <input checked="" type="checkbox"/> 5 FX/Week; once per day <input type="checkbox"/> 10 FX/Week; twice per day (hyperfx) <input type="checkbox"/> Other, specify _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Site</th> <th>Energy</th> <th>Technique</th> <th>Dose (Gy)</th> <th>Fx Size</th> <th>Fractions</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>R Tonsil + Necks</td> <td>6MVPh</td> <td>Opposed Lats</td> <td>0/40</td> <td>2</td> <td>20</td> <td>10/20/2003</td> <td></td> </tr> <tr> <td>R Tonsillar Boost</td> <td>6MVPh</td> <td>Oblique - Right</td> <td>0/26</td> <td>2</td> <td>13</td> <td></td> <td></td> </tr> <tr> <td>L Neck Node Boost</td> <td>10 Me Ve-</td> <td>Electron boost</td> <td>0/26</td> <td>2</td> <td>13</td> <td></td> <td></td> </tr> <tr> <td>Ant SCLAV</td> <td>6MVPh</td> <td>AP</td> <td>0/44</td> <td>2</td> <td>22</td> <td></td> <td></td> </tr> </tbody> </table> | Site | Energy | Technique | Dose (Gy) | Fx Size | Fractions | From | To | R Tonsil + Necks | 6MVPh | Opposed Lats | 0/40 | 2 | 20 | 10/20/2003 | | R Tonsillar Boost | 6MVPh | Oblique - Right | 0/26 | 2 | 13 | | | L Neck Node Boost | 10 Me Ve- | Electron boost | 0/26 | 2 | 13 | | | Ant SCLAV | 6MVPh | AP | 0/44 | 2 | 22 | | | Planned Total Dose: 60 | |
| Site | Energy | Technique | Dose (Gy) | Fx Size | Fractions | From | To | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Solving the general problem

Q: How to do this efficiently for all forms for a particular trial, and then all trials for a particular group, and then all groups...?

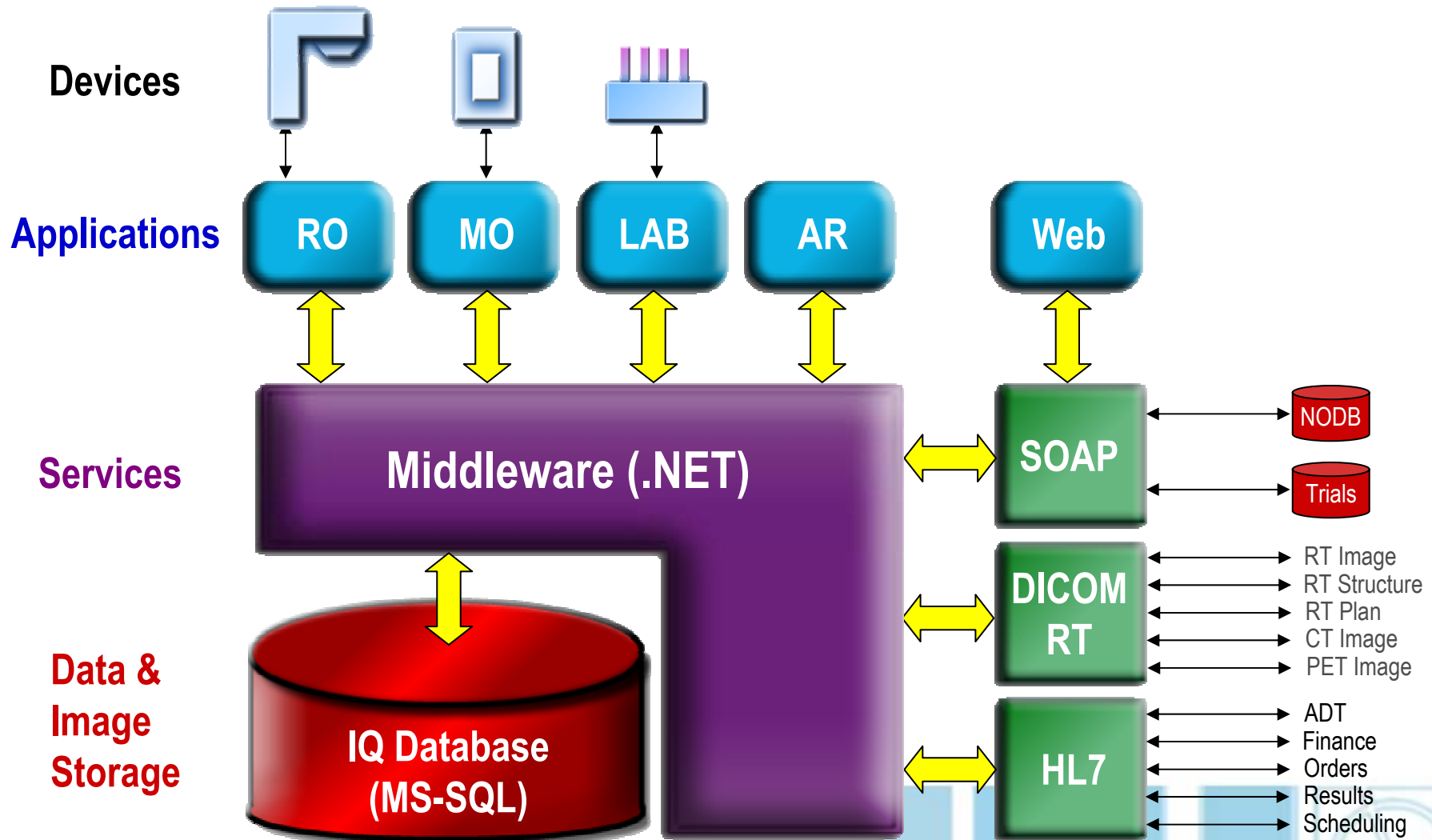
A: Standards

Image-related data submission initiatives

- **Complete support for imaging within application**
- Implicit –interoperability, standards...
 - IHE-RO technical committee representation
 - EMR RT-archive as single point of contact for system → clinical trial data
 - DICOM WG-7 committee representation
 - Participation in other venues such as caBIG, NHII...

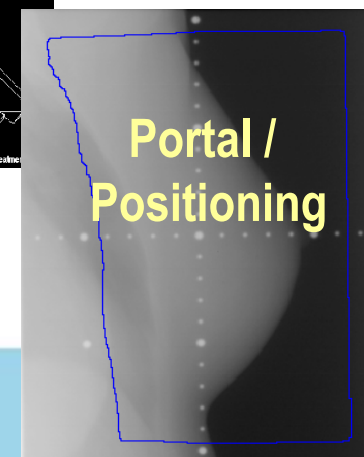
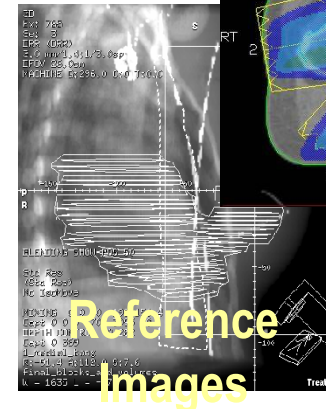
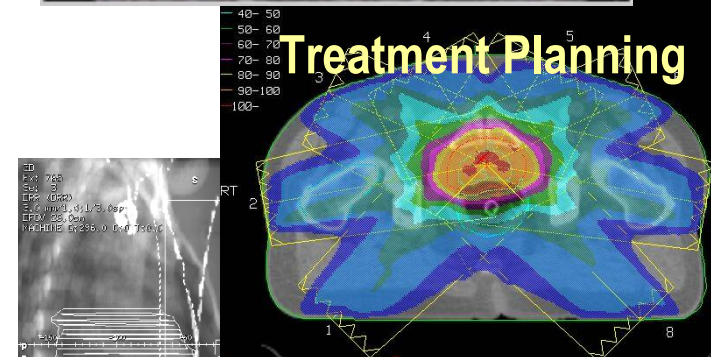
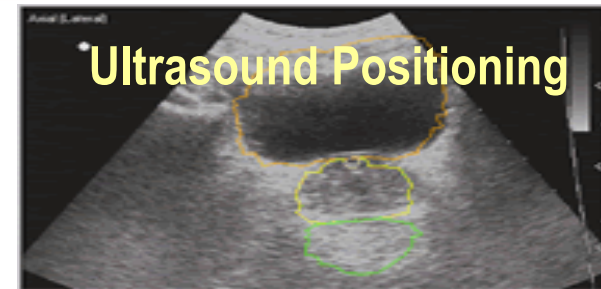


IMPAC: Next Generation (MOSAIQ) Architecture



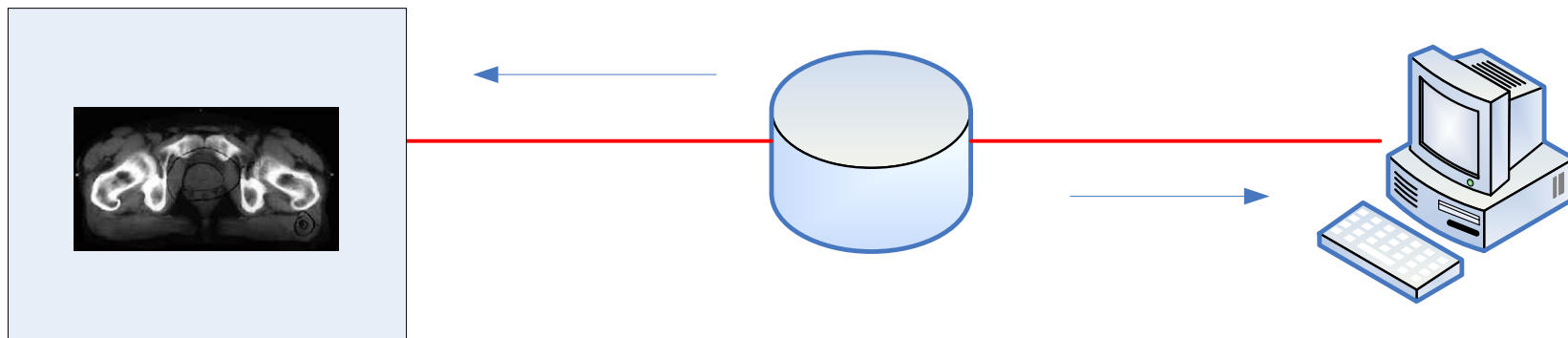
MOSAIQ Oncology PACS

- **DICOM/RT Foundation**
to Support All RT Related Images and Information Object Definitions
- **Oncology-Specific Process Support**
 - Diagnostic Image Export / Study Receipt
 - Image-Guided Treatment Management
 - Internet-Based Review
- **Centralized Storage & Archiving**
 - High Volume Storage Capacity
 - Hot/Warm/Cold Archive & Retrieval Options
 - Disaster Recovery
- **Image archive in support of clinical trials**
 - EMR archive as single point of contact for system → clinical trial data



DICOM Diagnostic Workflow

DICOM Support for Querying External Systems



Multi-ACCESS - DICOM Print

Multi-ACCESS - Mountain View Radiation Oncology

File Schedule eChart Tools Code Mgmt Claims

Image - KIRK, JAMES T. MedRc: 93-0022

| Date | Time | Type | Assoc | AI |
|-----------|----------|------|-------|----|
| 1/26/2004 | 12:51 PM | DRR | 1 | AI |

Detail Name
000 5311
27 12:51 2002
INTEL, CHESTER
Kirk, James T.
GTV
1.00 X

AP LUNG

low: 300
sl: 0
Ramp

Dicom Print

Printer Type:
 Standard Printer
 Dicom Print

Image ID:
 Patient Name
 Patient Med Rec #

Scaling:
 Scale (%) 82.7
 Fit to Image Box
 SAD 100 cm
 SID 100 cm
 Custom SID 100 cm

Film Printer:
ATC DICOM Print Server

Application Entity: ATC_PRINT_SCU
Host Name: atc.wuats.edu
Status: Unknown

Media:
Type: CLEAR FILM
Size: 14INX17IN
Layout: STANDARD\1.1
 Portrait Landscape

Session:
Number of Copies: 1
 Collate
Priority: HIGH

Format:
AGFA Drystar 3000 with v3.32 Print Manager

Preview: Film 1 of 1

Field:
Block:
Other:
Re-Image:

Comment:
LUNG

Staff: ZZZ

Multi-ACCESS - DICOM Print

Dicom Print [?] [X]

Printer Type

Standard Printer

Dicom Print

Image ID

Patient Name

Patient Med Rec #

Scaling

Scale (%)

Fit to Image Box

SAD 100 cm

SID 100 cm

Custom SID

Cancel

Print

Film Printer

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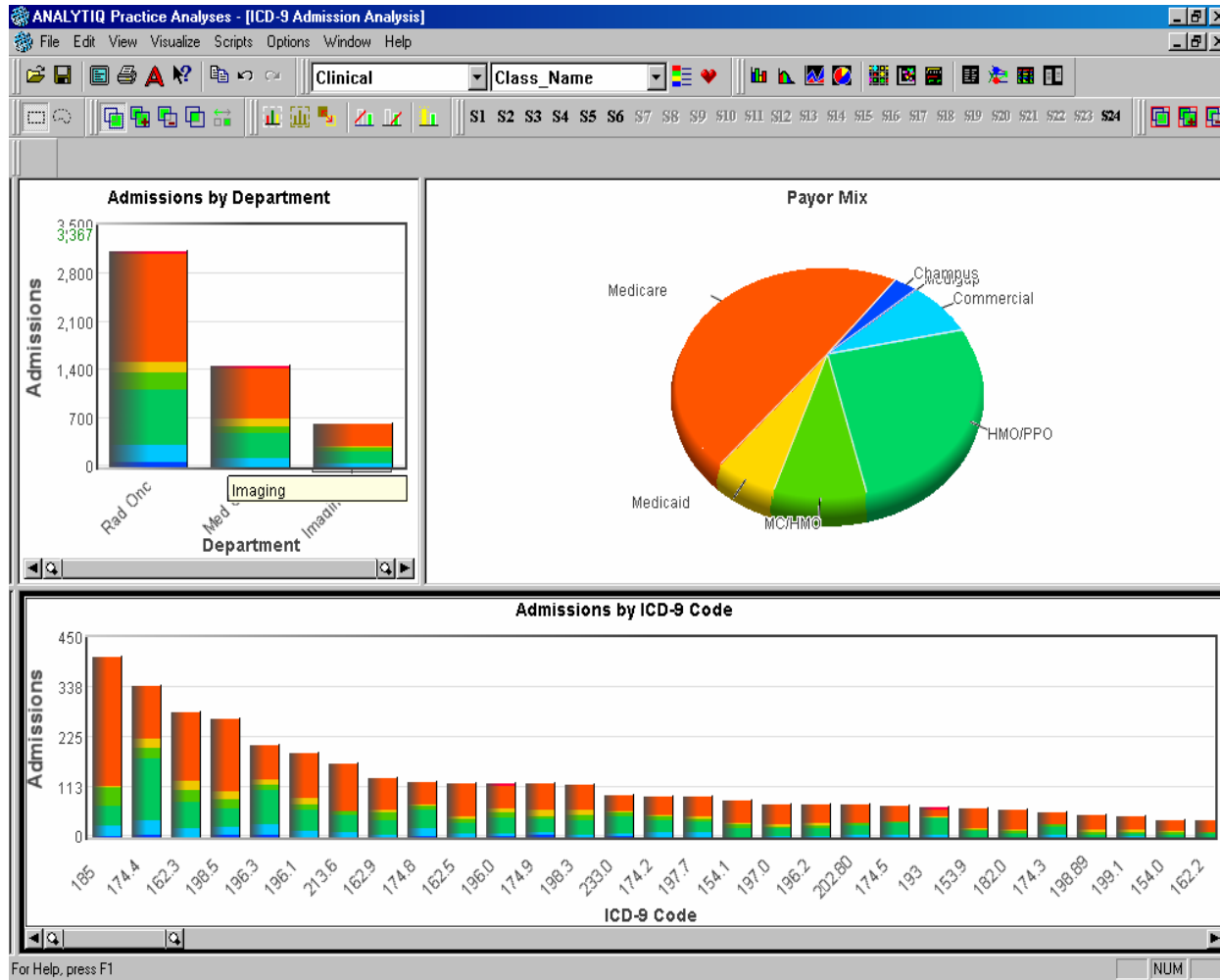
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Data Visualization Tools





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Thank You



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