

A Practical Implementation of the General Purpose Worklist Standard for efficient Access to Ward and Clinic Lists

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Types of PACS User

- **The Radiologist**

- Access to an integrated RIS\PACS workstation
- Needs access to diagnostic quality images
- Reporting worklist

- **The Specialist**

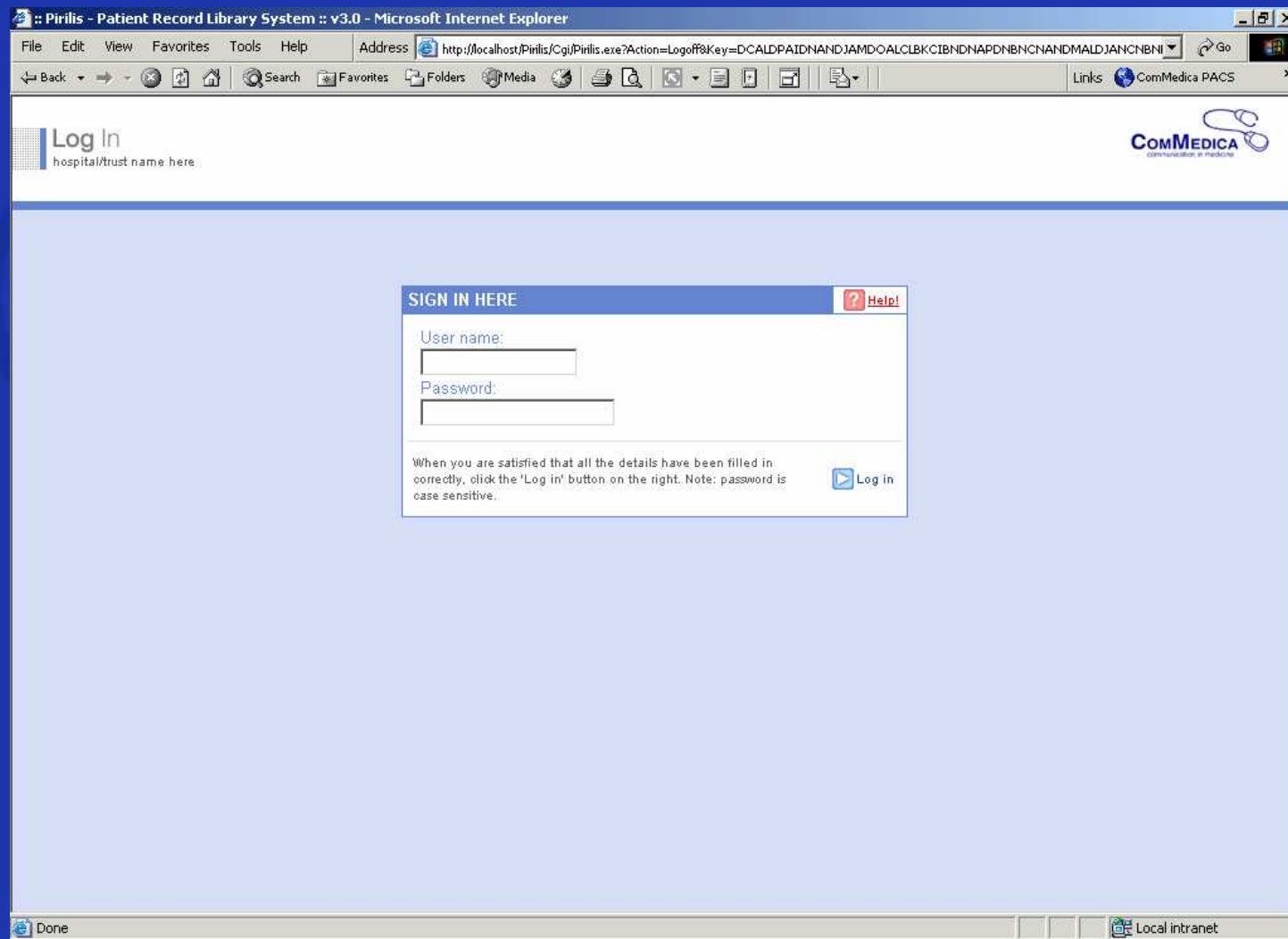
- Examples include the orthopaedic consultant running a clinic or a neurosurgeon in theatre
- Needs access to diagnostic quality images
- No worklist!

- **Nursing staff, General Practitioners**

- Do not need access to diagnostic quality images
- No worklist!

Log in to the system

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Communication in Medicine



Search for a patient record

Dr Rasu Bickram :: Pirilis - Patient Record Library System :: v3.0 - Microsoft Internet Explorer

File Edit View Favorites Tools Help Address http://localhost/Pirlis/Cgi/Pirlis.exe Go

Back Forward Stop Home Search Favorites Folders Media Print Links ComMedica PACS

Dr Rasu Bickram
User Name: rasu
Last Login: 25th Aug 2003

Clinician's Homepage hospital/trust name here

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Clinician Menu [Help!]
[Add New Patient](#)
[Search for Patients](#)

Your Information [Help!]
[You have 0 Alerts](#)
[You have 0 Appointments](#)

Add a New Patient [Help!] If you wish to add a new patient to the system, click on the button to the right to access the 'New patient form'. [Add New Patient](#)

Search All Patients [Help!] Use one or more of the form fields below and click 'Search patients' for a list of patients based on your criteria.

Last Name: Starts with Contains Exact spelling

First Name:

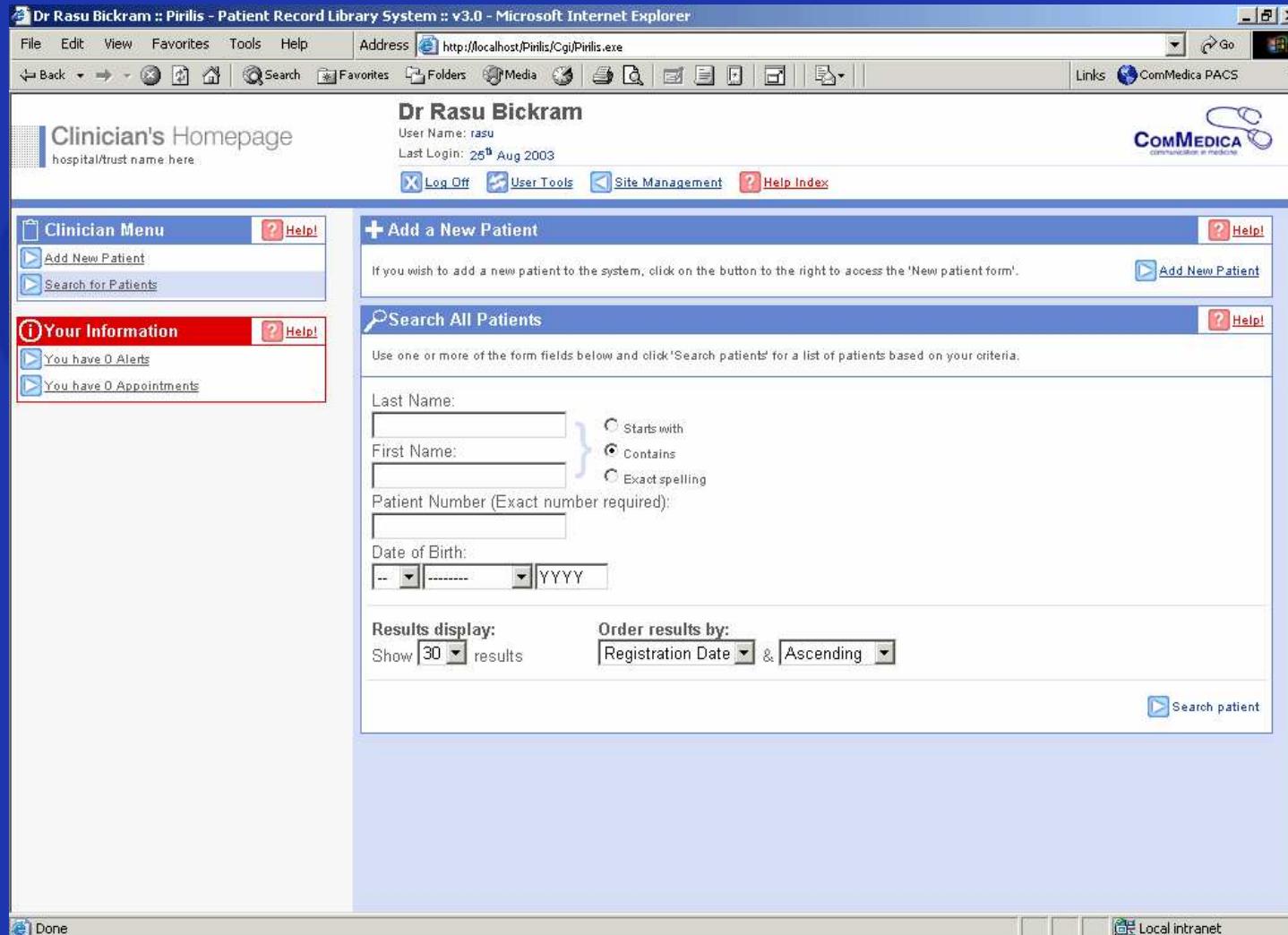
Patient Number (Exact number required):

Date of Birth: YYYY

Results display: Show 30 results Order results by: Registration Date & Ascending

Search patient

Done Local intranet



Locate the patient record

Dr D Brown :: Pirilis - Patient Record Library System :: v3.1 - Microsoft Internet Explorer

File Edit View Favorites Tools Help Address http://localhost/Pirilis/Cgi/Pirilis.exe Go Links

Clinician's Homepage ComMedica PACS Demo System

Dr D Brown
User Name: BrownD
Last Login: 3rd Dec 2003

Log Off User Tools Help!

Clinician Menu Help!

- Add New Patient
- Search for Patients
- Search for Studies

Your Information Help!

You have 0 Alerts (Radiologist)

Search Results

Your search criteria found 20 results.

Patient No.	Patient Name	Sex	Date of Birth	Registration Date
6765438548	Mr. Jim Green	M	12-02-1971	22-09-2003
7412596128	Nicky Green	Female	05-01-1988	22-09-2003
7214813238	Umah King	Male	15-08-2003	15-08-2003
56412398	Mr. Robert Lee	U		22-09-2003
008	Mr David Lopez	Male	25-09-1944	21-03-2003
9783905023	Douglas Markham	Male	26-12-1987	15-08-2003
12343	Oliver Opacs	Male		16-11-2003
6451293946	ADISA QUINN	Female	17-12-1934	15-08-2003
009	Mr Nelson Sanchez	Male	25-09-1944	29-11-1998
6071087414	Athene Silver	Other	15-08-2003	15-08-2003
7451032140	Kerry Simms	Female	01-01-1938	23-09-2003
7201369203	Ms. Monica Simms	U	01-01-1938	23-09-2003
7201369202	Ms. Sarah Simms	E	01-01-1938	23-09-2003
8765403423	Mr. Mark Smith	M	06-07-1975	22-09-2003
9832112389	Mrs. Mary Taylor	E	05-01-1938	22-09-2003
1122334455	Mary Taylor	Female	05-01-1938	25-09-2003
4643382074	Bernard Test	Male	02-08-2003	02-08-2003
4664273819	Debbie Test	Female	22-08-1975	15-08-2003
6068572994	HILARY VALENTINE	Female	12-03-1970	15-08-2003
9875545422	Mr. John White	M	05-01-1981	22-09-2003

Search again Local intranet

Locate the imaging study

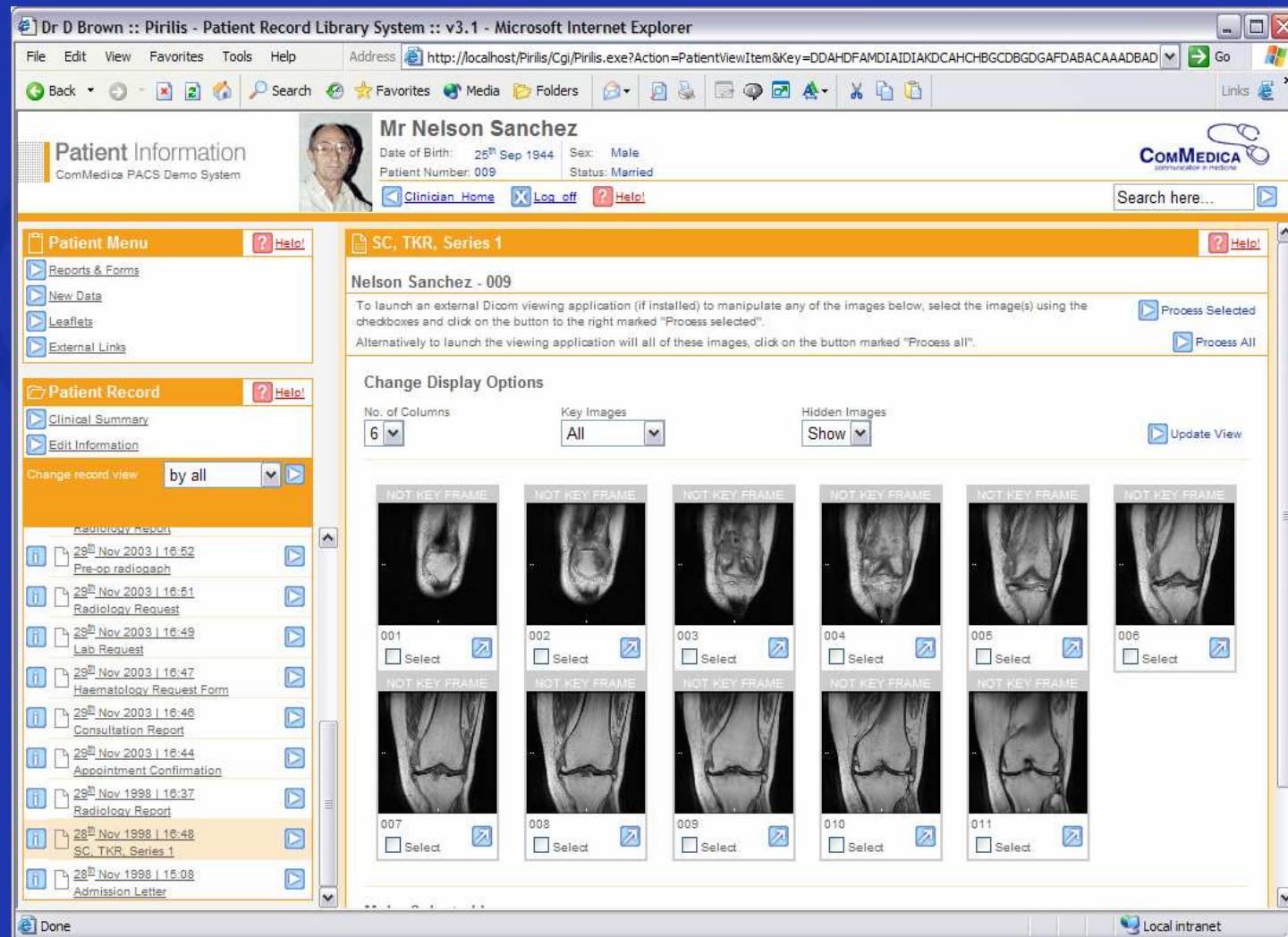
The screenshot shows a Microsoft Internet Explorer window displaying the ComMedica Patient Record Library System. The title bar reads "Dr D Brown :: Pirilis - Patient Record Library System :: v3.1 - Microsoft Internet Explorer". The address bar shows the URL: <http://localhost/Pirilis/Cgi/Pirilis.exe?Action=PatientClinicalSummaryShow&Key=DCAKDNAJDBAIDMAKDDAACABBCEBBDBACDHB>.

The main content area is divided into two main sections:

- Patient Information:** Displays a photo of Mr. Nelson Sanchez, his date of birth (25th Sep 1944), sex (Male), and patient number (009). It also shows his marital status (Married).
- Clinical Summary:** Shows a table of clinical variables with their values, dates, and times. The variables listed are BP Systolic / BP Diastolic, Height / Weight, Alcohol, Smoking, Pulse, and Temperature.

The left sidebar contains a "Patient Menu" with links to Reports & Forms, New Data, Leaflets, and External Links. Below that is a "Patient Record" section with a "Clinical Summary" link, an "Edit Information" link, and a dropdown menu set to "by all". A list of medical documents is shown, each with a timestamp and a preview icon. The documents include Discharge Note, Radiology Report, Post-op radiograph, Pathology report, Pathology slide, 3D post processed TKR image 02, 3D post processed TKR image, Surgical Treatment Note, and Lab Results.

...And finally review the study



The Solution

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- Very cumbersome to get to a study
- Traditional PACS does not cater well for the non-radiologist user
- Short-cut lists for each user
 - Who is on my ward?
 - Who is attending my clinic?

The users' home-page

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Mr Chris Davies :: ComMedica Web Module :: v3.6 - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Home Search Favorites Media Links Go

Address C:\CommedicaDocs\Documentation\Product Specifications\Pirlis\Technical Design Specification\3.6\Ward-Diary\WL-IP-res2.htm

Clinician's Homepage
ComMedica Demo System

Mr Chris Davies
User Name: DaviesC
Last Login: 10th Feb 2005

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X Log Off User Tools Site Management ? Help!

Clinician Menu

- Add New Patient
- Search for Patients
- Search for Studies
- Current Inpatient
- Expected Admissions
- Clinical Patients
- Recent Discharges
- Ward Attenders

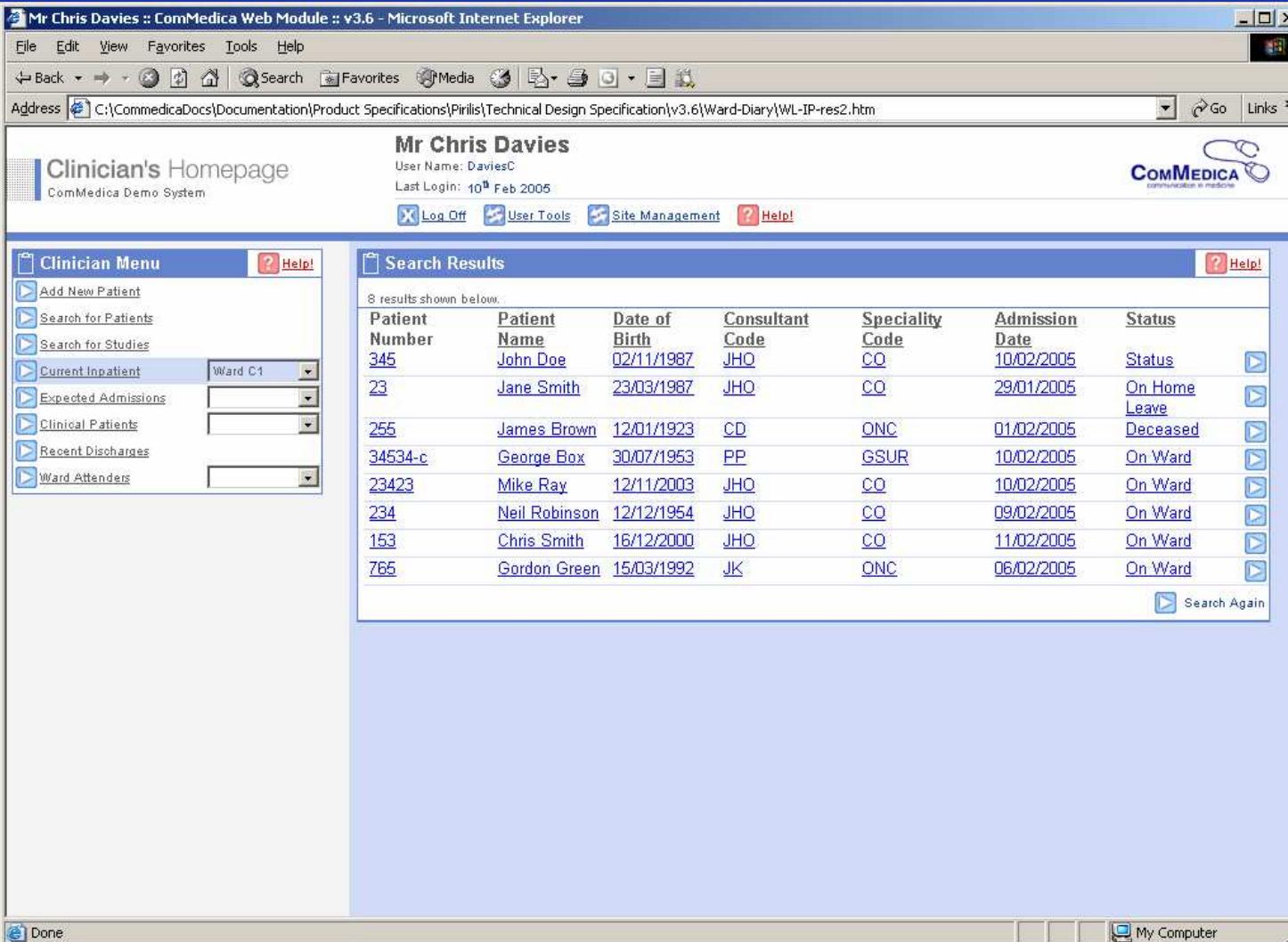
Search Results

8 results shown below.

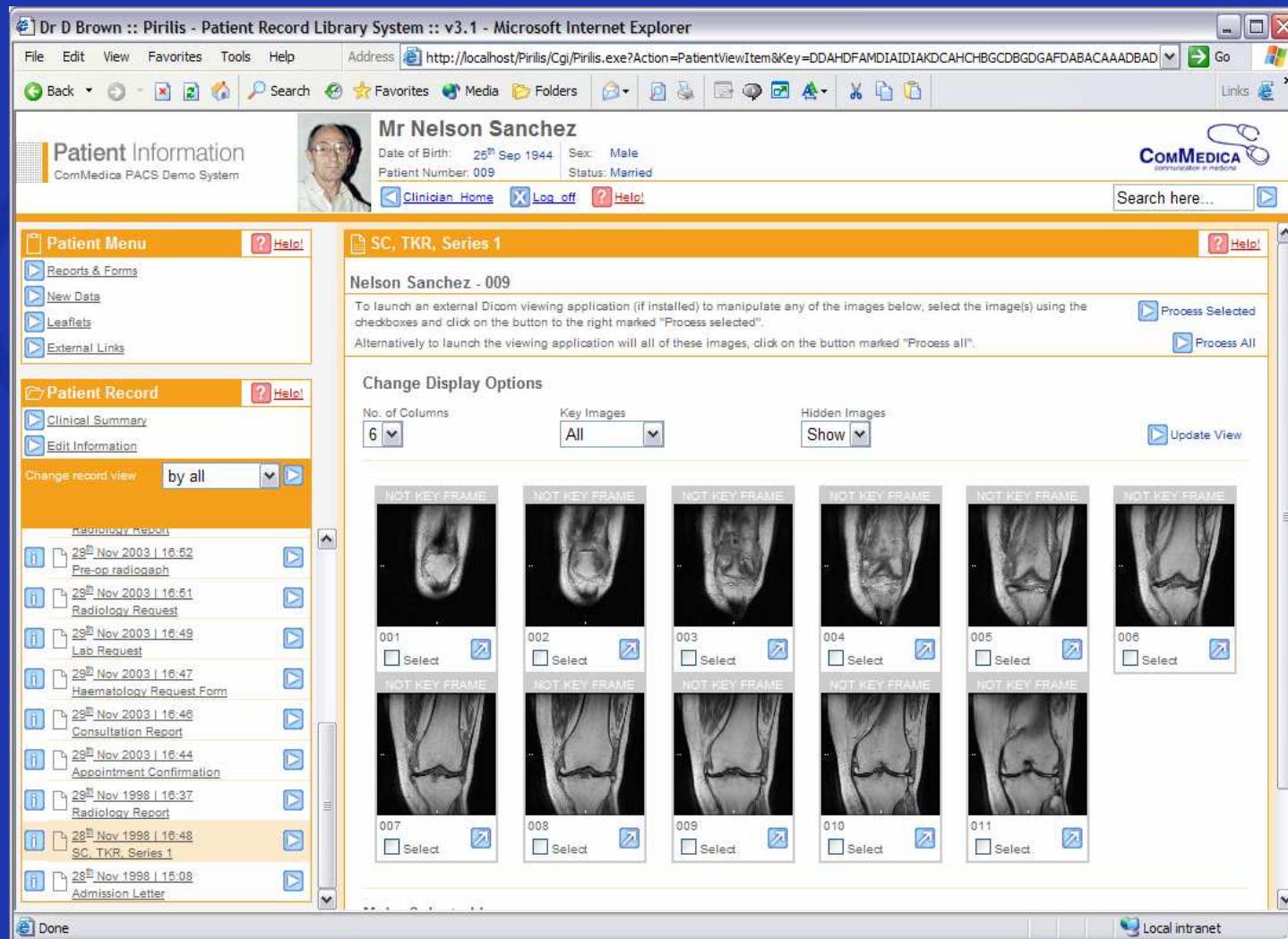
Patient Number	Patient Name	Date of Birth	Consultant Code	Speciality Code	Admission Date	Status
345	John Doe	02/11/1987	JHO	CO	10/02/2005	Status
23	Jane Smith	23/03/1987	JHO	CO	29/01/2005	On Home Leave
255	James Brown	12/01/1923	CD	ONC	01/02/2005	Deceased
34534-c	George Box	30/07/1953	PP	GSUR	10/02/2005	On Ward
23423	Mike Ray	12/11/2003	JHO	CO	10/02/2005	On Ward
234	Neil Robinson	12/12/1954	JHO	CO	09/02/2005	On Ward
153	Chris Smith	16/12/2000	JHO	CO	11/02/2005	On Ward
765	Gordon Green	15/03/1992	JK	ONC	06/02/2005	On Ward

? Help! [Search Again](#)

Done My Computer

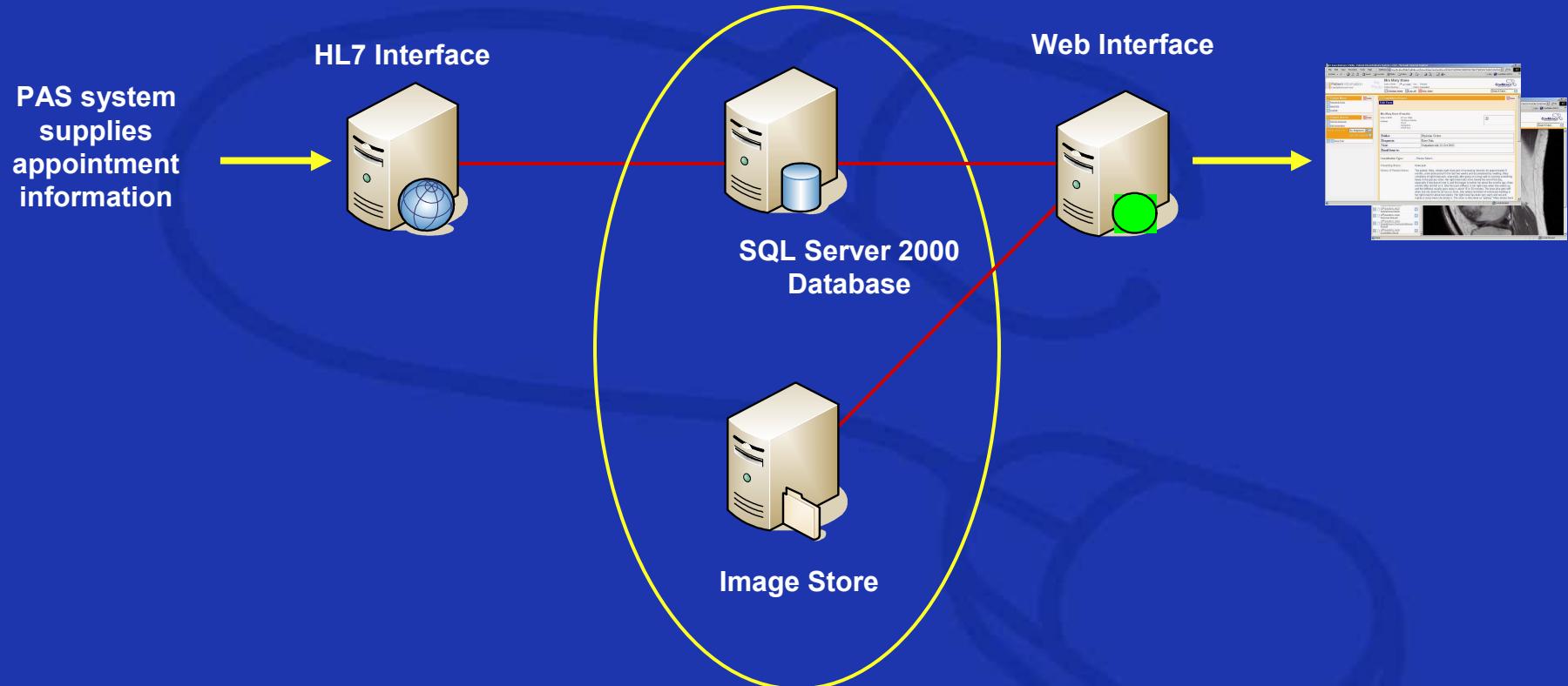


And directly to the study



Technical Overview

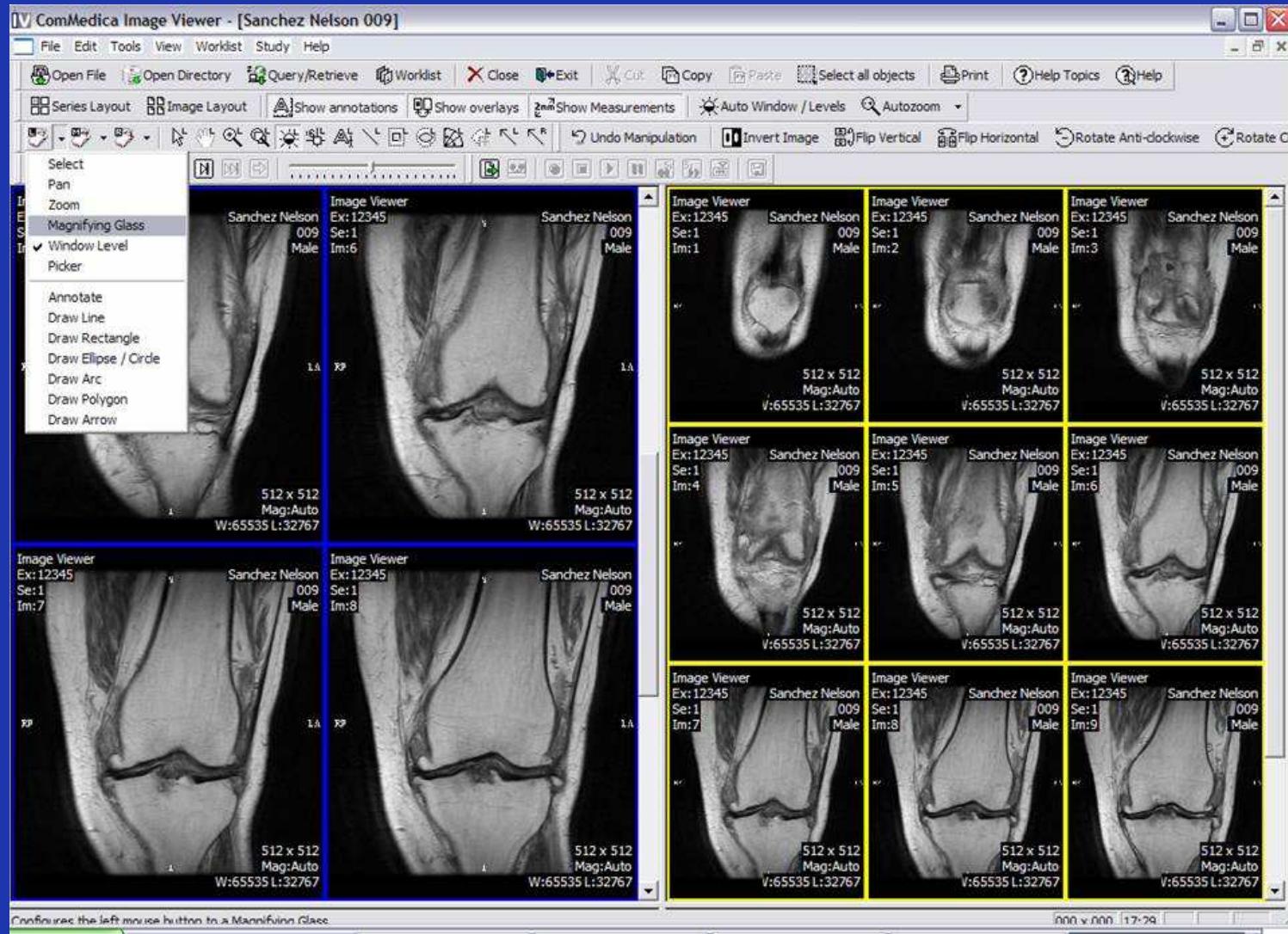
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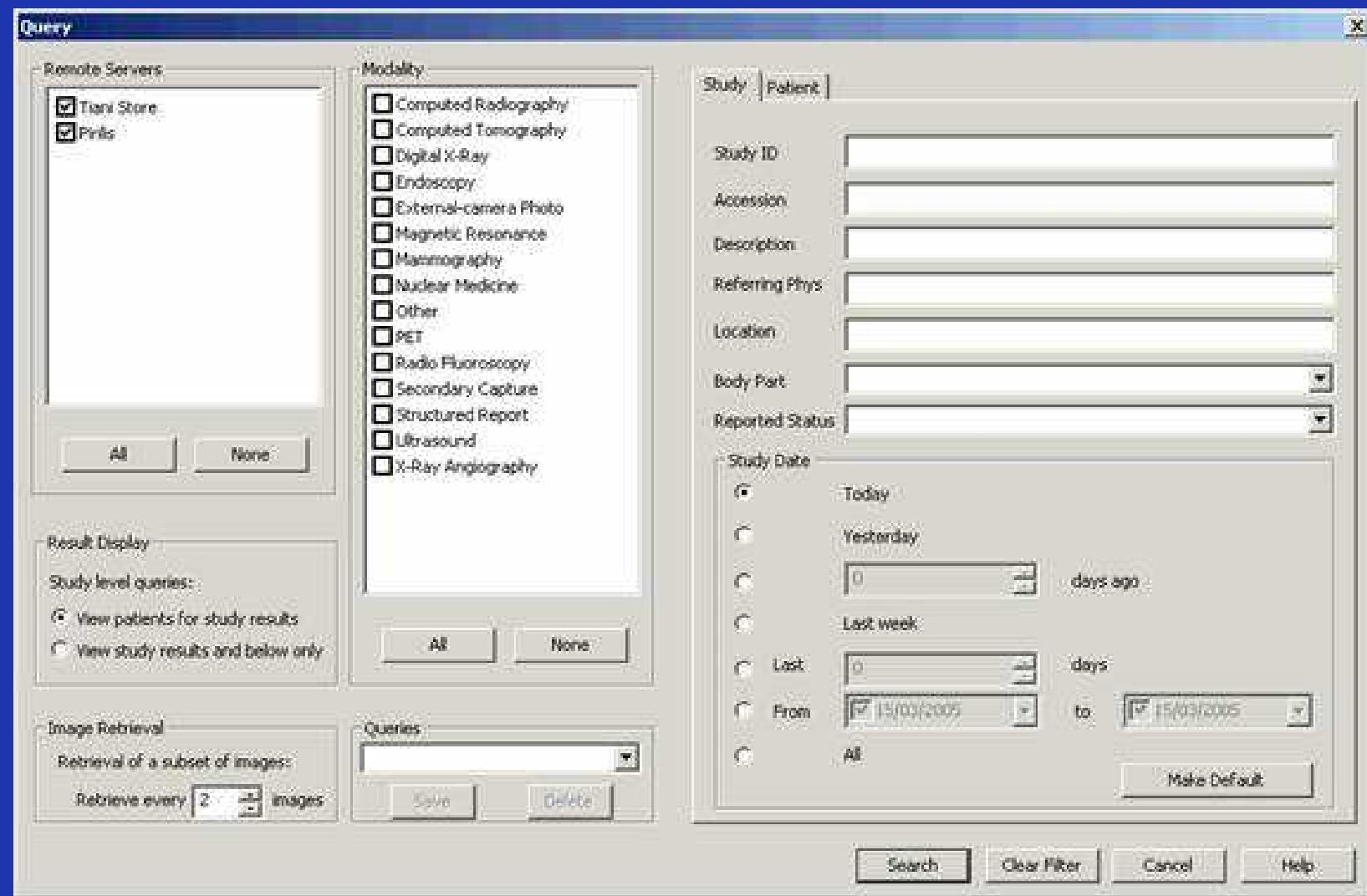
But what about the specialist?

- There is a need to communicate worklist information to the PACS workstation
- We could have used a proprietary method, but...
- General Purpose Work List functionality is so close!

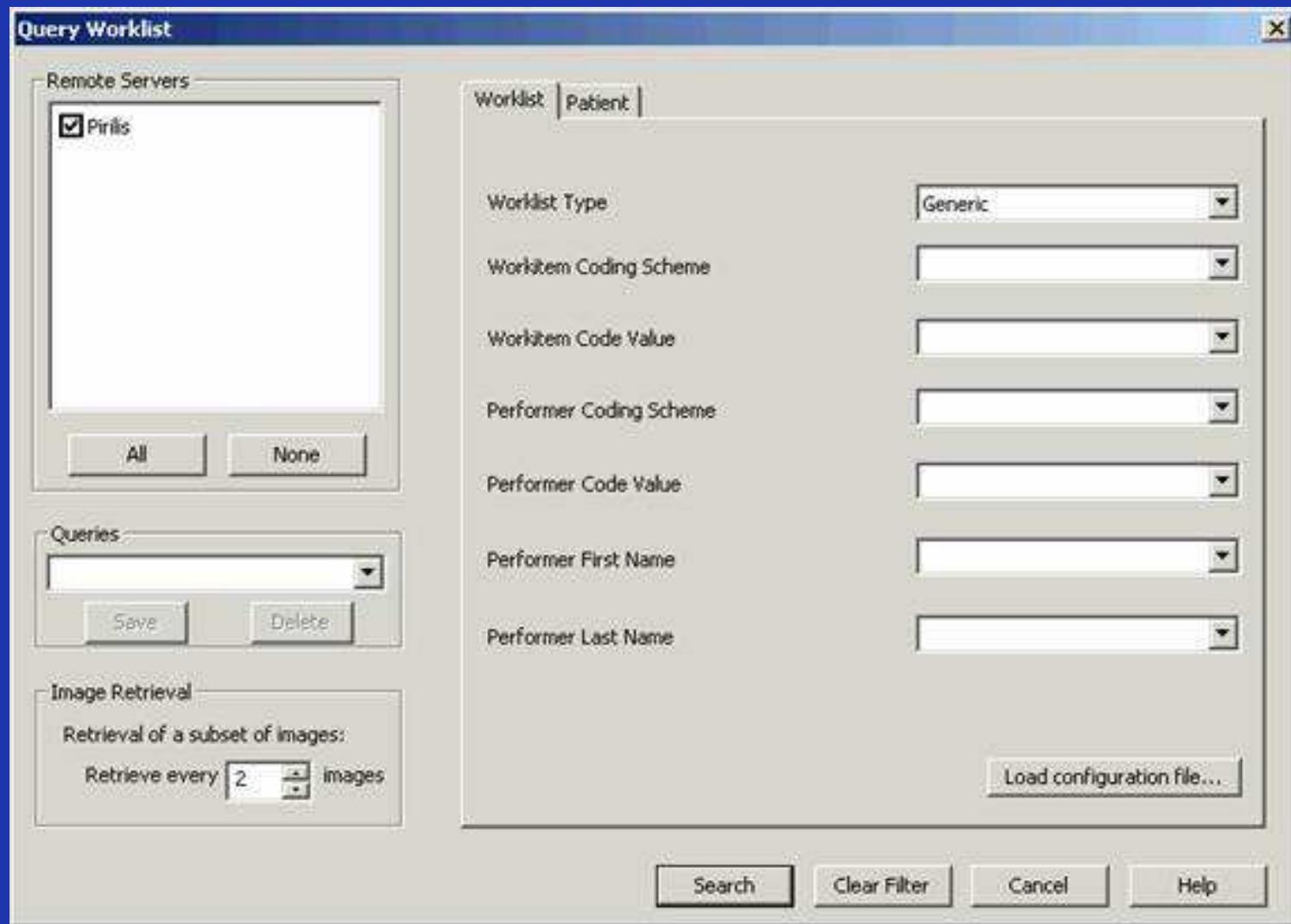
The Image Viewer workstation



The standard search configuration



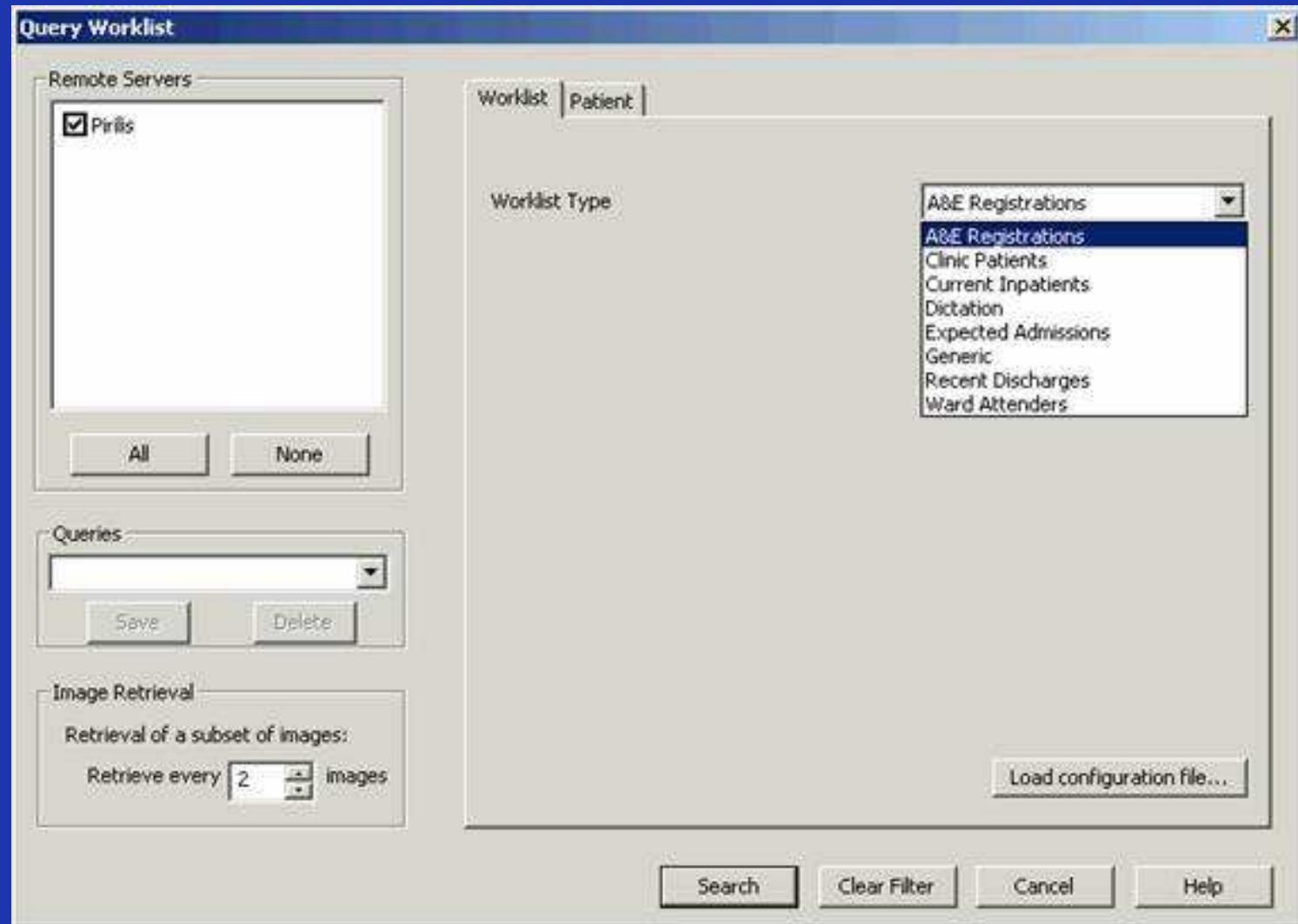
GPWL integrated into searches



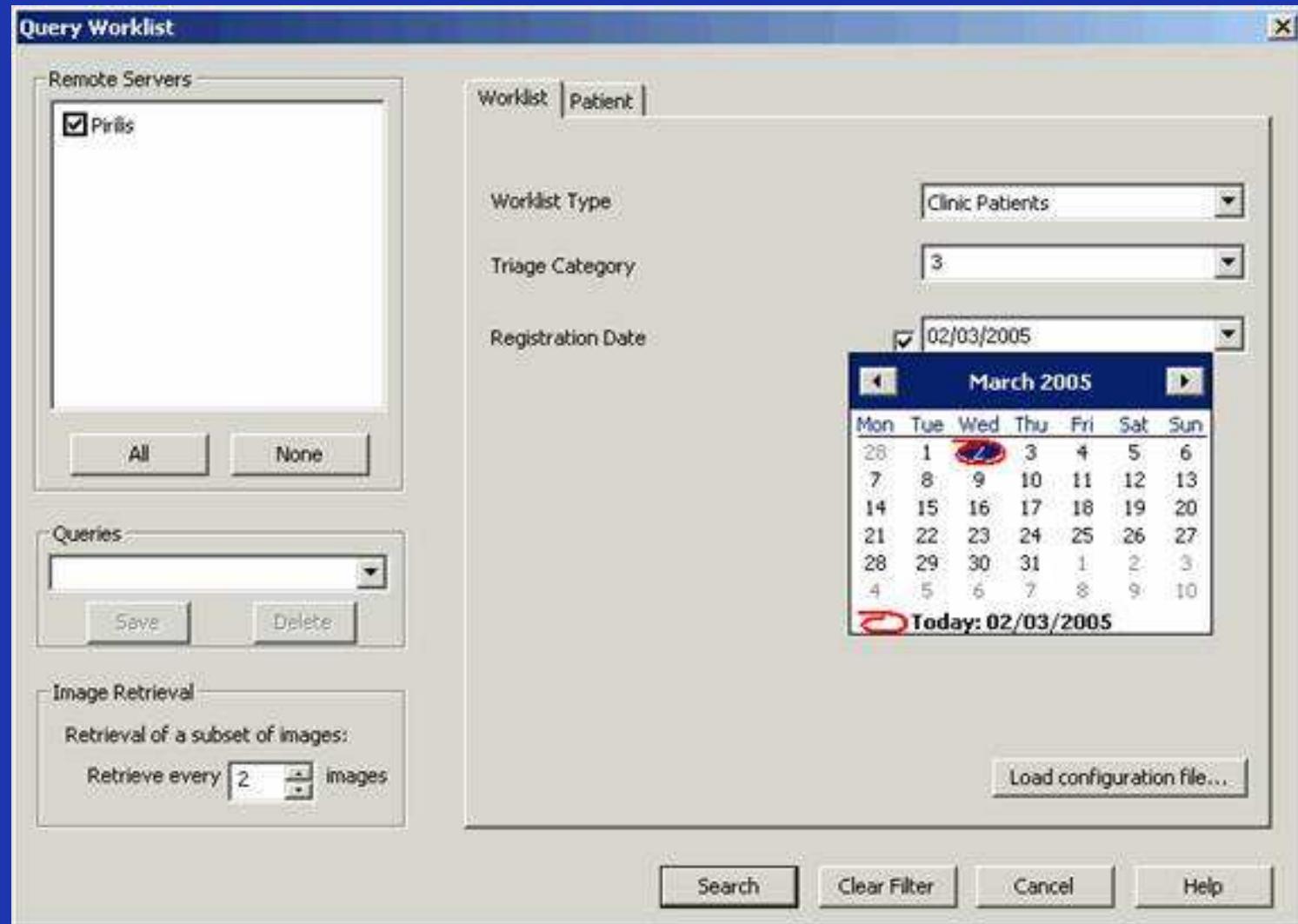
Still a bit cumbersome...

- Users don't understand Code Scheme Macros...
- ...and if they do, they can't remember the values.
- Need something more user-friendly

Preloaded configuration (1)



Preloaded configuration (2)



Worklist saved search - shortcut

ComMedica Image Viewer - [Query Results]

File View Tools Worklist Patient Help

Patients

No.	Server	Fst	Middle	Last	Suffix	Patient ID	Sex	Coll	Other ID
1	Pels	Paul		Andrews		675-571-0394	Male	22/06/1909	
2	Pels	Jason		Dunn		467-492-3429	Male	15/07/1968	
3	Pels	Terence		Sutton		615-342-6719	Male	03/04/1965	
4	Pels	Heather		Chest		465-977-6295	Female	17/05/1965	
5	Pels	John	J	Jones		132-290-4466	Male	03/06/1963	
6	Pels	Sarah		Eve		499-213-1395	Female	24/05/1937	
7	Pels	Ron		Bronchitis		672-399-1225	Male	08/07/1933	
8	Pels	Sally		Orton		672-399-1227	Female	23/09/1937	
9	Pels	Peter		Green		09-24-00	Male	04/02/1977	
10	Pels	Jenny	Mrs	Compkins		05-73-09	Female	15/04/1928	

Studies

No.	Server	Fst	Middle	Last	Suffix	Patient ID	Sex	Coll	Study ID	Study Description	Study Date	Study Time	Reported Status	No. Series
1	Pels	Mr	Peter	Green		09-24-00	Male	04/02/1977	0001	TEST1 Mamm	07/05/2002	12:32	Reported	2
2	Pels	Mr	Peter	Green		09-24-00	Male	04/02/1977	0002	Retrieval Selected Study	07/05/2002	14:22	1	
3	Pels	Mr	Peter	Green		09-24-00	Male	04/02/1977	0003	Retrieval Reports	07/05/2002	09:56		
									0004	Retrieval Key Images Only				
									0005	Retrieval every 2 images				
									0006	Expand Selected Study				

Series

No.	Server	Fst	Middle	Last	Suffix	Patient ID	Study ID	Study Description	Series No.	Series Date	Series Time	Series Description	Protocol	Modality	Body Part
1	Pels	Mr	Peter	Green		09-24-00	0010	TEST1 Mamm	703			C-A-P...	SR		
2	Pels	Mr	Peter	Green		09-24-00	0010	TEST1 Mamm	708			C-A-P...	CT		

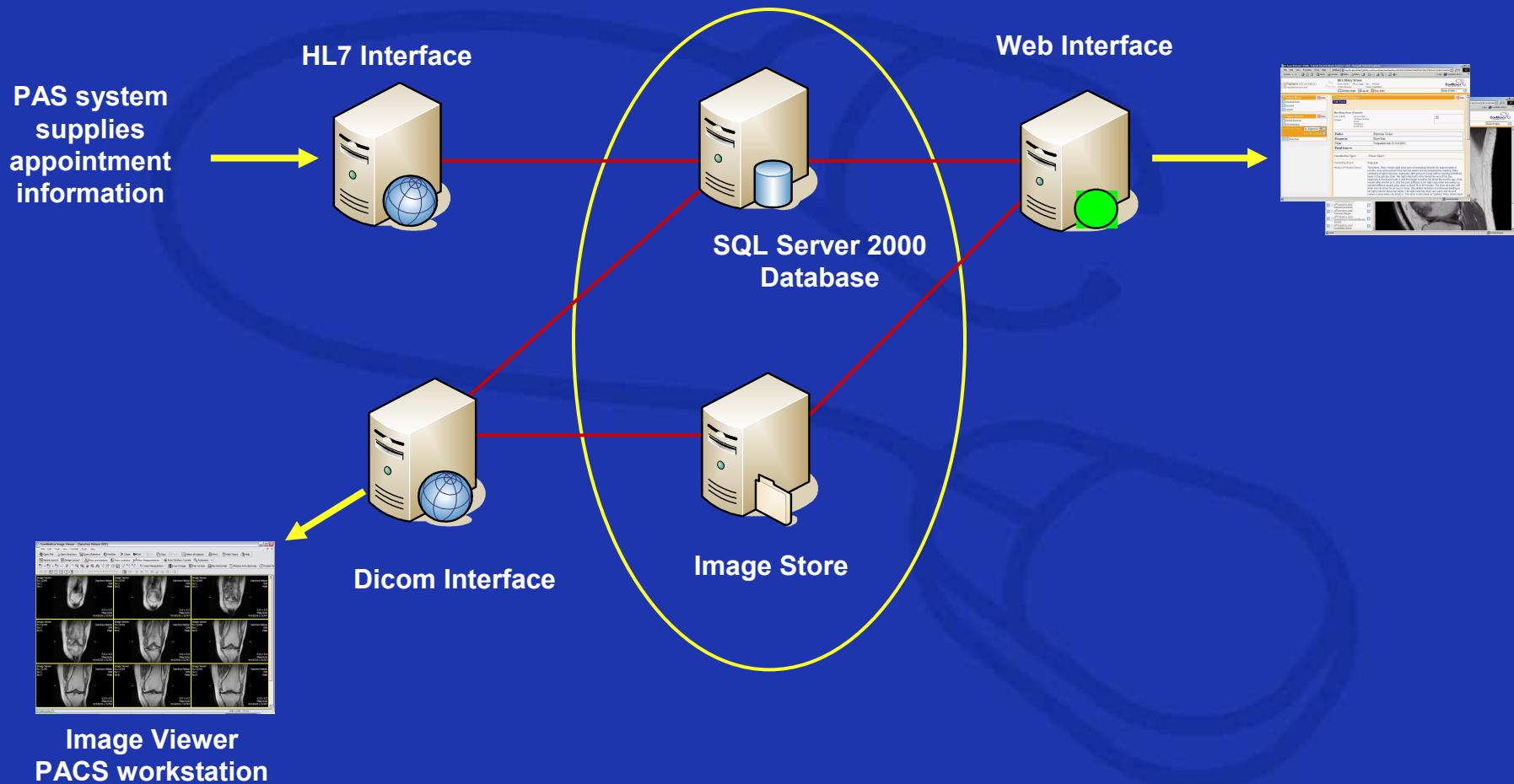
Reports

No.	Server	Fst	Middle	Last	Suffix	Patient ID	Study ID	Study Description	Content Date	Created Date	Verified	Verification Date	Verification Time	Verifying Observer Name
1	Pels	Mr	Peter	Green		09-24-00	0010	TEST1 Mamm						

For help press F1 Report

How does it work?

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Tying it all together (1)

- Define a map from HL7 messages to parameter names
- Parameters are stored in the database
- A worklist search actually searches the parameter tables
- Map GPWL code sequence macros to parameters

Tying it all together (2)

- Use of XML document to load predefined types of worklists
- XML configurations for HL7 field maps and worklist code sequence maps are defined and loaded by field engineers
- Dicom attributes can also be mapped to parameters to further enhance worklist capability

Example of an XML configuration

```
<!-- Current InPatients -->
<worklist-view id="CurrentInPatients_v1" label="Current InPatients"
    code_scheme="99PRLS_GPWL" code_value="WARD"
    allow_perform="false"
    completion="none"
    perform_method="none">
    <import-into product="IV" />
    <import into product="PRS" />
    <param-data name="WardStatus" label="Status" filter="dropdown" width="70">
        <drop-down value="On Ward"/>
        <drop-down value="On Home Leave"/>
        <drop-down value="Deceased"/>
    </param-data>
    <param-data name="ConsultantCode" label="Consultant Code" filter="freetext" width="60"/>
    <param-data name="ConsultantName" label="Consultant Name" filter="freetext" width="100"/>
    <param-data name="SpecialityCode" label="SpecialityCode" filter="dropdown" width="60">
        <drop-down value="CO"/>
        <drop-down value="ONC"/>
        <drop-down value="ENT"/>
    </param-data>
    <param-data name="WardName" label="Ward" filter="freetext" width="60"/>
    <existing-data data="DueBy" label="Admission Date" filter="single-date" width="100"/>
    <existing-data data="PatientName" label="Patient Name"/>
    <existing-data data="PatientNumber" label="Patient Number"/>
    <existing-data data="PatientSex" label="Sex"/>
    <existing-data data="PatientDoB" label="Date of Birth"/>
    <param-data name="PatientDoD" label="Date of Death" width="100"/>
    <existing-data data="CompletedDate" label="Estimated Discharge" width="100"/>
    <param-data name="AdmissionMethod" label="Admission Method" width="100"/>
    <param-data name="LastTransferDateTime" label="Last Transferred" width="100"/>
    <existing-data data="WorkListStatus" value="INPROGRESS"/>
</worklist-view>
```

So what?

- Field engineers can capture any HL7 field or any Dicom tag into the database
- The GPWL implementation can search any combination of the stored parameters
- The user can set up his\her own saved searches in a user-friendly way
- All without code or database changes!

User authentication...

- Worklists are customised for each user
- Access to certain studies may be disabled
- Uses association time user authentication



Thank you

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