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

Stefan Claesen
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
Search for a patient record
Locate the patient record

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Patient Name</th>
<th>Sex</th>
<th>Date of Birth</th>
<th>Registration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>6765438548</td>
<td>Mr. Jim Green</td>
<td>M</td>
<td>12-02-1971</td>
<td>22-09-2003</td>
</tr>
<tr>
<td>7412596128</td>
<td>Nicky Green</td>
<td>Female</td>
<td>05-01-1968</td>
<td>22-09-2003</td>
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<tr>
<td>7214813298</td>
<td>Limah King</td>
<td>Male</td>
<td>15-08-2003</td>
<td>15-08-2003</td>
</tr>
<tr>
<td>56412359</td>
<td>Mr. Robert Lee</td>
<td>U</td>
<td>22-02-2003</td>
<td>22-02-2003</td>
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<tr>
<td>090</td>
<td>Mr. David Luna</td>
<td>Male</td>
<td>21-03-1990</td>
<td>21-03-1990</td>
</tr>
<tr>
<td>9783905023</td>
<td>Douglas Markham</td>
<td>Male</td>
<td>15-08-2003</td>
<td>15-08-2003</td>
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<tr>
<td>12313</td>
<td>Oliver Opaca</td>
<td>Male</td>
<td>16-11-2003</td>
<td>16-11-2003</td>
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<tr>
<td>6461283945</td>
<td>ADISA QUINN</td>
<td>Female</td>
<td>15-08-2003</td>
<td>15-08-2003</td>
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<tr>
<td>09771087414</td>
<td>Athenos Silver</td>
<td>Other</td>
<td>15-08-2003</td>
<td>15-08-2003</td>
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<tr>
<td>7451032140</td>
<td>Keny Simms</td>
<td>Female</td>
<td>23-09-2003</td>
<td>23-09-2003</td>
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<tr>
<td>7201365203</td>
<td>Ms. Monica Simms</td>
<td>U</td>
<td>22-02-2003</td>
<td>22-02-2003</td>
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<tr>
<td>7201362002</td>
<td>Ms. Sarah Simms</td>
<td>F</td>
<td>23-09-2003</td>
<td>23-09-2003</td>
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<tr>
<td>8765493423</td>
<td>Ms. Mist Smith</td>
<td>M</td>
<td>22-02-2003</td>
<td>22-02-2003</td>
</tr>
<tr>
<td>90321112360</td>
<td>Mrs. Mary Taylor</td>
<td>F</td>
<td>22-02-2003</td>
<td>22-02-2003</td>
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<tr>
<td>1123334465</td>
<td>Mary Taylor</td>
<td>Female</td>
<td>22-02-2003</td>
<td>22-02-2003</td>
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<td>4533392074</td>
<td>Bernard Test</td>
<td>Male</td>
<td>22-02-2003</td>
<td>22-02-2003</td>
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<tr>
<td>4664273819</td>
<td>Debbie Test</td>
<td>Female</td>
<td>15-08-2003</td>
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<tr>
<td>6698572994</td>
<td>HILARY VALENTINE</td>
<td>Female</td>
<td>15-08-2003</td>
<td>15-08-2003</td>
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<tr>
<td>9875545422</td>
<td>Mr. John White</td>
<td>M</td>
<td>22-02-2003</td>
<td>22-02-2003</td>
</tr>
</tbody>
</table>
Locate the imaging study

[Image of a software interface for patient records and clinical summary with a screenshot of a patient named Mr. Nelson Sanchez and a clinical summary table with variables such as BP Systolic, BP Diastolic, Height, Weight, Alcohol, Smoking, Pulse, and Temperature.]
...And finally review the study
The Solution

- 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
And directly to the study
Technical Overview

- PAS system supplies appointment information
- HL7 Interface
- SQL Server 2000 Database
- Image Store
- Web Interface

ComMedica
Communication in Medicine
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
How does it work?

PAS system supplies appointment information

HL7 Interface

Web Interface

SQL Server 2000 Database

Image Store

Dicom Interface

Image Viewer

PACS workstation

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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
<!-- 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="Speciality Code" 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 Transfered" 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

s.claesen@commedica.com