The radiology module is intended to help in the radiology department workflow: order creation by the referring physician, scheduling by the scheduler staff, image acquisition for an order by the performing physician either a technician or specialist and finally the diagnostics from the reading physician. The module is designed for three modalities Computed Radiography, Magnetic Resonance, and Computed Tomography. The module is developed following DICOM standard.
The Radiology module supports the clinical part of the radiology department workflow by integrating the functionalities of EHR, RIS and PACS: order creation by the referring physician, scheduling by the scheduler staff, image acquisition for an order by either a technician or a specialist, and finally diagnostics by the radiologist. The module conforms to DICOM and is designed for three modalities: Computed Radiography (CR), Magnetic Resonance (MR), and Computed Tomography (CT).

CONTENTS

1. MANAGE RADIOLOGY ORDERS explains the interface for radiology orders management. This interface allows access to other interfaces.
2. REFERRING PHYSICIAN explains the interaction between the module and a referring physician.
3. SCHEDULER explains the interaction between the module and a scheduler.
4. READING PHYSICIAN explains the interaction between the module and a radiologist.

MANAGE RADIOLOGY ORDERS

This interface allows viewing, finding, and selecting an order from which any of the four roles (referring physician, scheduler, performing physician, reading physician) created by the module perform a specific task.

The user gets this interface (Figure 1) by clicking “Manage radiology orders” in the admin page. The following are the interface functions (look for the numbers in the figure):
1. Allows creating a new order to a user that has ‘Add orders’ privilege.
2. Permits user to query for orders complying with the criteria (Patient, Start Date and End Date) established.
3. Clears the results in the table.
4. Selects results per page.
5. Filters currently listed entries by all columns contents.
6. Lets the user customize the columns viewed.
7. From each one of these links the user edits a radiology order or makes observations depending on the user role.
8. Shows instructions for an order. A popup window extends the information when the link is clicked on.
9. Information about entries being viewed.

The order status (Status column) is showed depending on the role of the user viewing the interface (Table 1):

<table>
<thead>
<tr>
<th>Role</th>
<th>Status shown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referring physician</td>
<td>Scheduled and performed</td>
</tr>
<tr>
<td>Scheduler</td>
<td>Scheduled</td>
</tr>
<tr>
<td>Performing physician</td>
<td>Scheduled and performed</td>
</tr>
</tbody>
</table>
REFERRING PHYSICIAN

Referring physician gets this interface (Figure 2) by clicking add or edit a radiology order in Figure 1 (functions 1 and 7). The following are the interface functions (look for the numbers in the figure):

1. Fields that searches in database while the user is writing. It looks for: patients, concepts, encounters and system users, respectively.
2. Shows a popup window with patient overview when clicked (Figure 3).

Figure 2. Order form – Referring physician.

Figure 3. Patient overview popup.

Here the user can view basic information about the selected patient as well as see and add allergies and other problems.
Other fields the referring physician enters in the order form are: Priority (STAT, HIGH, ROUTINE, MEDIUM or LOW), Modality (CR, MRI, or CT) and Instructions.

**SCHEDULER**

The scheduler selects an unscheduled order and sets a date to it. He gets this interface (Figure 4) clicking edit radiology order (function 7) in Figure 1. The following are the interface functions (look for the numbers in the figure):

1. **Order dates selectors.** Date of the image acquisition process.
2. **Reading physician selector.**
3. **Discontinue or void this order.**

When the scheduler sets the date, the scheduled status of the order is set to SCHEDULED in the manage radiology orders interface (Figure 5).
**READING PHYSICIAN**

Reading physician gets the observation form (Figure 6) from function 7 in Figure 1, when the order status is set to COMPLETED. This happens after the modality has taken the image(s). The following are the interface functions (look for the numbers in the figure):
1. Previous observations for this order.
2. Adds new observation to this order.
3. Current observation. It can be a new or a previous one to be edited.
4. The user can void this observation.
5. Downloads a file that allows the user to automatically launch an application (the Weasis viewer) to see the diagnostics image(s) (Figure 7).

![Figure 6. Observation form.](image1)

The downloading interface (Figure 7) depends on the user web browser. The system may ask for several confirmations before executing this file, the user should accept all of them.

When the user executes the downloaded file, the Weasis image viewer is launched (Figure 8). The following are the interface functions (look for the numbers in the figure):
Figure 8. Weasis controls.

1. Displays the image. The example in the figure shows the viewer measurement capabilities for area and angle, but there are a lot more. You can access to them through the Measurements button in the yellow rectangle marked 4 in Figure 8.

2. Shows all DICOM information contained in the file. You can activate this function with an option (DICOM Information) in the button marked 2a in Figure 8.

3. Expanded area corresponding to the selected button in rectangle marked 4. The example in the figure shows the options for Display button, which allow the customization of the information shown around the image (e.g. for anonymization).

4. There are four menus:
   1. Measurements, for selecting measurements as shown in rectangle 1.
   2. Display, for display options as explained above.
   3. Image Tool (Figure 9). Windowing, level, lookup table (LUT), filter, zoom, rotation, frames per second options are available to the user.
4. **Mini Tool**, allows scrolling between several images in a series.