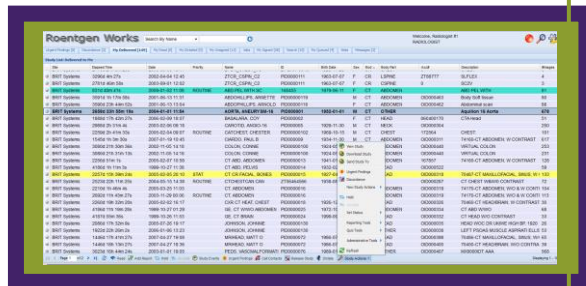


*Beyond  
Roentgen  
Imaging  
Technologies*

**ROENTGEN WORKS FLOW** (RWF) is a service for radiologists to provide remote reading services for multiple healthcare facilities. Designed to allow independent reading groups to compete with the largest groups for reading contracts, this service provides superior tools for supporting the specific needs of this environment. Combining years of real world experience working with DICOM studies and reading services, the Roentgen Works Flow includes an additional layer of functionality to efficiently support, report, and track the preliminary and final diagnosis in a remote reading environment. Built using the latest Web technologies, Roentgen WorksFlow:

- requires no loading of applications onto a workstation
- provides real-time updating of screens
- Supports viewing of images via the browser or the iPad
- Utilize Skype and automated calling tools



*Radiologist's Screen*

The first of a new generation of BRIT products, Roentgen Works Flow is really a specialized workflow established utilizing the base Roentgen Works tools and can be enhanced with additional modules such as critical results auto-phonng and a selection of radiologist's reporting tools.

**ARCHITECTED FOR MULTIPLE SITES**

Roentgen Works has been architected from the ground up to support multiple sites. It combines the best features of virtual servers with the best features of a shared server environment. Each site can have its own security rules, own patient IDs and AE Titles – including a different AE title for the server for each site, own users, own reporting metrics, etc. Yet, users can be granted permission on multiple sites, they see a single worklist for all sites, each site can still have prepends to accession numbers and patient IDs if desired and the entire system can be managed as a single system.

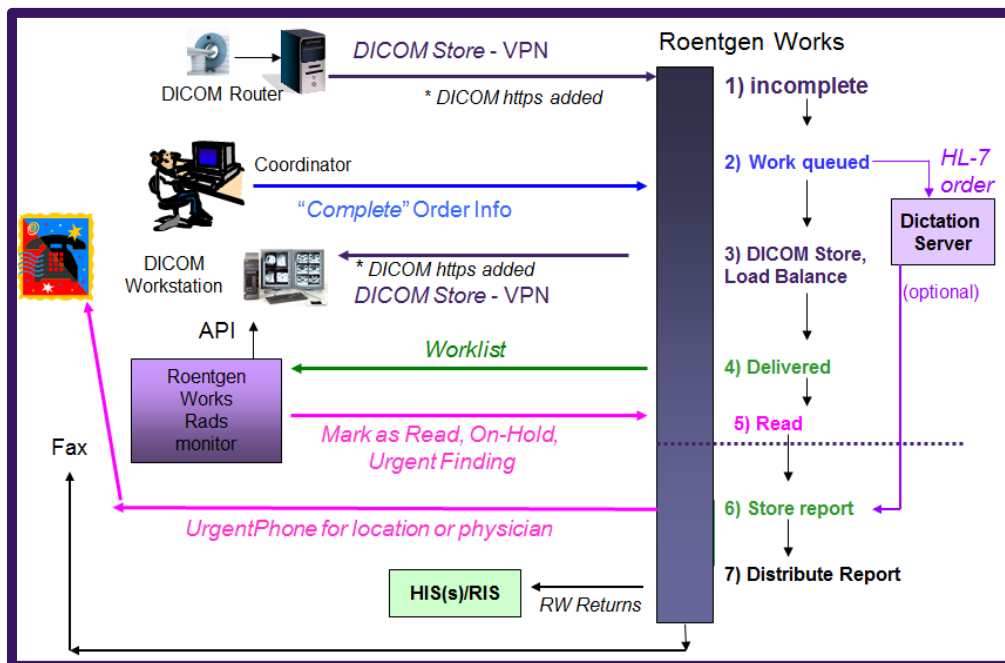


*Site Customization Screen*

# ROENTGEN WORKS FLOW

## WORKFLOW AND COMMUNICATIONS

The Roentgen Works Flow implements workflow rules for studies and relevant study information to flow from multiple, local sites to radiologists who are authorized to read for that site and modality type. Roentgen Works also handles the communication between radiologists, referring physicians and local technologists, and it can support the radiologists' reporting process as well.



Workflow diagram

Upon receipt of a study, the RWF creates an order ticket. The "order" can trigger a DICOM request for relevant comparison studies from a server. A site coordinator accesses The RWF Server over a secure web connection and views a page of "incomplete" studies. They indicate the study status, the requested service (such as final, wet read or over-read request) on each study and enter any missing information, such as referring physician contact numbers. Once a study has been "completed" in this manner, it is automatically assigned to the appropriate radiologist based on their credentials and their current workload / availability. The study goes into a Queued status once it has been assigned and the study starts being sent to the assigned radiologist. Each radiologist is associated with an AE Title and the study is stored to that device. This allows radiologists to use their DICOM workstation of choice.

# ROENTGEN WORKS FLOW

Once the entire study has been stored, the status changes to “delivered”.

Elapsed Time	Date	Priority	Name	ID	Birth Date	Sex	Mod	Body Part	Acc#	#Images	Description	Site
3304d 9h 39m 27s	2002-03-26 10:49		ZTCR_CHEST_FLVFP	ZT-BRIT-0011	1938-02-20	M	CR	IVP	0	12	FLVFP	BRIT Systems
2775d 4h 47m 45s	2003-09-06 15:41		ZTCR_CHEST_T6	ZT-BRIT-0016	1928-11-29	F	CR	CHEST	0	3	CHEST	BRIT Systems
3295d 7h 43m 47s	2002-04-04 12:45		ZTCR_CSPIN_C2	PID0000111	1963-07-07	F	CR	LSPINE	ZT88777	4	SLFLEX	BRIT Systems
2780d 8h 26m 18s	2003-09-01 12:02		ZTCR_CSPIN_C2	PID0000111	1963-07-07	F	CR	CSPINE	0	3	SC2V	BRIT Systems
830d 8h 20m 1s	2009-01-02 11:08	ROUTINE	ABD PEL WITH SC	168455	1979-06-11	F	CT	ABDOMEN		81	ABD PEL WITH	BRIT Systems
3590d 8h 57m 18s	2001-06-13 11:31		ABDOHILLIPS, ARNETTE	PID0000119		M	CT	ABDOMEN	OID000463	80	Body Soft tissue	BRIT Systems
3590d 7h 24m 12s	2001-06-13 13:04		ABDOHILLIPS, ARNOLD	PID0000118		F	CT	ABDOMEN	OID000462	88	Abdominal scan	BRIT Systems
2658d 7h 34m 39s	2004-01-01 11:54		AORTA, ANEURYSM-16	PID000001	1952-01-01	M	CT	OTHER		678	Aquillon 16 Aorta	BRIT Systems
1888d 1h 21m 47s	2006-02-09 18:07		BASALARA, COY	PID000002		F	CT	HEAD	060400170	51	CTA Head	BRIT Systems
2987d 10h 10m 24s	2003-02-06 09:18		CAROTID, ANGIO-16	PID000005	1929-11-30	M	CT	NECK	OID000304	250		BRIT Systems
2258d 10h 20m 53s	2005-02-04 09:07	ROUTINE	CATCHEST, CHESTER	PID0000102	1969-10-15	M	CT	CHEST	172564	101	CHEST	BRIT Systems
1511d 8h 42m 50s	2007-01-10 10:45		GIARDO, PAUL R	PID000000	1924-11-30	M	CT	ABDOMEN	OID000311	647	71160 CT ABDOMEN W/ CONTRAST	BRIT Systems

Sample Radiologist’s Delivered Screen

Radiologists select studies from a “delivered” list, opening the study into integrated workstations and launching the dictation process. BRIT provides integration to both BRIT and Osirix workstations. On the dictation screen, there is also a timeline showing comparison studies for this patient from integrated PACS. With integration, it can utilize an IHE Patient Discovery process to access patients from outside system, even if the patient has a different ID. These studies may be selected for viewing as well. Next, the radiologist can put a study on hold and select the reason from a site customizable list. The study then shows up on an Actions Needed List at the local site. The radiologist may also call out an urgent finding using the browser-based tools, tools integrated with the workstation or via parsing of a radiologist’s report. This initiates BRIT’s urgent finding workflow, which may include the optional auto-phonng of contacts and reading of the finding. The urgent findings can be acknowledged via the phone or via the web interface. All steps are documented.

Action	Time	User	Finding	Note
MARK URGENT	03/31/2010 11:39 AM	Radiologist #1	internal bleeding.	
ACKNOWLEDGED	03/31/2010 11:39 AM	jim camp		Urgent Finding delivered via Automated Phone Call to 8323093832
CALLED	03/31/2010 11:39 AM	jim camp		message played; DONE, 8323093832

Turn around time: < 1 minute

Add an Urgent Finding:

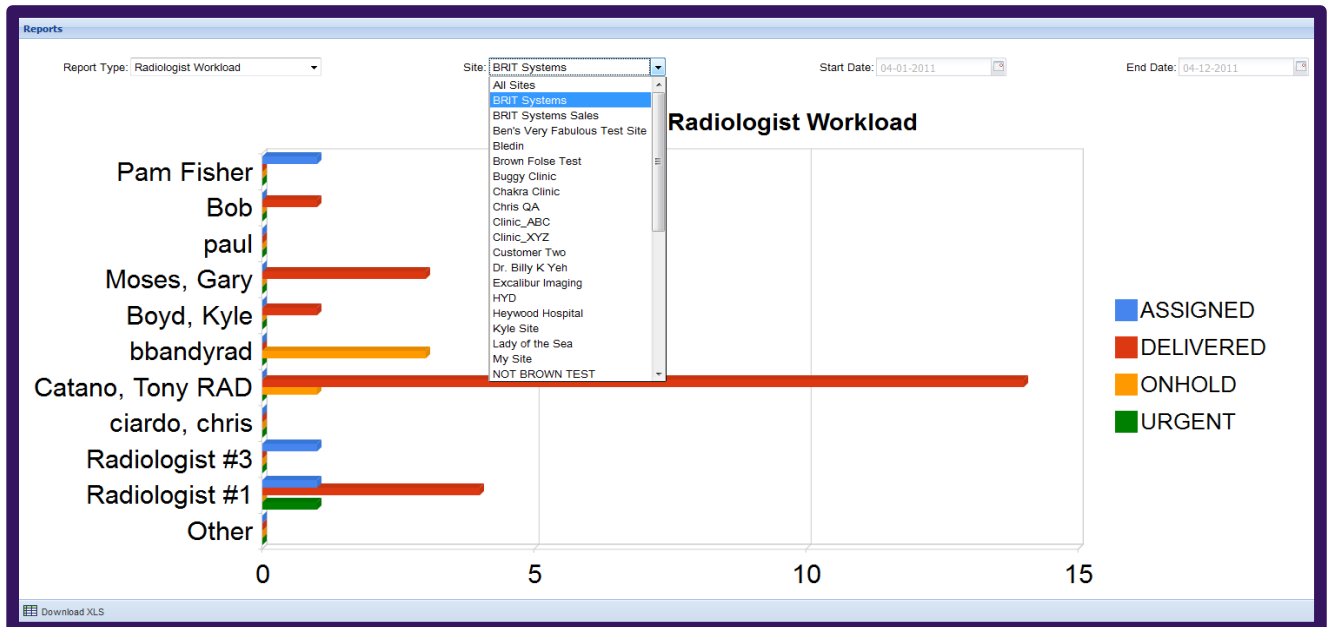
Add an Urgent Note:

Sample Result of Urgent Calling Panel

The radiologist may use BRIT’s voice dictation solution, an integrated Dragon Voice Recognition Solution or their dictation solution of choice. Once a report is available to Roentgen Works via one of these tools or via an HL-7 report message, Roentgen Works can email a link of the report to the referring physician / location or optionally, fax it. The reports are available via the zero foot-print browser to users with permissions to view that patient. Permission is automatically granted to the referring physician of order, physicians in the same physician group, users associated with the ordering location or those manually selected.

# ROENTGEN WORKS FLOW

Management tools include workload tools for radiology managers to gauge the current workload for each doctor. Managers can also reassign studies. All management tools can view statistics from individual sites or for all sites and the statistics can be downloaded into excel for further analysis.



Sample Radiologists' Workload Screen

Doctors and technologists from referring sites can access the web server and view the images and reports. The reports can be downloaded as pdfs. The timeline of older studies can be made available to them same as the radiologists. Radiologists always have access to the viewer, as well and they can sign reports from the application.



Sample Browser Screen with timeline and report, not yet signed-off.

# ROENTGEN WORKS FLOW

## KEY ELEMENTS:

### **FLEXIBLE DESIGN**

- Users can select which fields to view in different areas of the screen for each tab.
- User can select which tabs to display on screen.
- Works with any DICOM viewer.
- Integrates via API with viewers, such as OsiriX.

### **HIPAA SUPPORT**

HIPAA support is provided by:

- User authentication.
- Auto-screen blanking after set time period.
- Tracking of patient access by user ID in a file that can be imported into databases.
- Tracking of users access to patients in a file that can be imported into other databases.

### **MANAGEMENT INFORMATION**

- Complete exam history at a click of a button.
- Tool to visualize real-time workload distribution across radiologists.
- Granular Statistical Analysis, including turn-around times.
- Statistics by site or for the entire server.
- Export data to Excel, Crystal Report.

### **OPTIONAL OFFERINGS**

- HL-7 Integration for receipt of order information, report receipt/distribution.
  - Speechworks Integrated Voice Dictation, Transcription, Report Distribution and/or Voice Recognition.
  - Auto-phoning for Critical Results Reporting / ER Discordance tools.
  - API for integration with viewers, including BRIT Vision
- Services for writing specialized management reports via Crystal Reports.

### **SUPPORT PACKAGE**

- Roentgen Works redundant servers located in secure ISP environment.
- BRIT 24 x 7 system management support.
- Web-training for users.

### **SYSTEMS REQUIREMENT**

- Browser: Firefox, Safari and Chrome, Internet Explorer (limited performance).
- Memory: Minimum 700 MB, Recommended 1GB – 2 GB depending on OS.