



Fig. 4. Architecture of a web-based referral information system.

web server and a gateway server as shown in Fig. 4. The server is used to provide interfaces for manipulating the referral's chart summary and to communicate with computer systems both in and outside of the hospitals. The gateway server is used to transform the requests or data from (to) the web server to (from) the clinical or administration information systems inside the hospital, and to block unauthorized clients accessing information stored in the hospital.

The major components of the referral information system are shown in Fig. 5. The acquisition integrator helps a user to collect a referral's RIF either from the existing hospital information systems or from manual input. It provides a form-based user interface as shown in Fig. 3. The form contains the information of an RIF. The physician can use the interface to compile the referral's chart summary. In fact, the physician just needs to enter the referral's unique identification number to request the patient's clinical information. The acquisition integrator sends the request to the gateway server. The gateway server distributes the request and initiates

the retrieval of the information from the corresponding hospital's information systems. However, for that information that is not stored in the hospital's information systems, the interface also provides authoring tools to assist the physician to manually input information such as GCS, outcomes, and so on. By means of the acquisition integrator, the acquired information of an RIF can be integrated, and presented to users as forms. The users can filter the information and compile the appropriate RIF, which is sent to an RIF/XML transformer for generation of an XML-based RIF.

The RIF/XML transformer accepts a form-based RIF, and then converts it into the corresponding hierarchical tree. A user can initiate the XML/RIF transformer by clicking the XML button shown in Fig. 3. Based on the transformation rules described in the previous section, the tree can be translated into an XML-based RIF. The XML-based RIF is the medium for sharing and exchanging information between the referring and accepting hospitals.

The e-mail server includes an XML-based RIF