

Web Service Interface for Conventional DICOM Sources

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Purpose: To develop a Web Service interface for conventional DICOM sources (e.g. imaging modalities, PACS systems, stand-alone databases, etc), enabling integration at the application level within the health care enterprise, and with external partners, through general purpose standardized Web technologies.

Methods and Materials: During the past years web-based applications have enabled users to access DICOM image servers through the Web. The next step is to deploy healthcare specific Web Services that allow applications (as opposed to users) to exchange information and data through standardized web technologies. We have employed SOAP (Simple Object Access Protocol), XML (eXtensible Markup Language) and the related web technologies to create a Web Service permitting query of different DICOM servers. The system transforms SOAP/XML queries into DICOM protocol, communicates with the conventional server using the DICOM protocol, and transforms the results back into an XML document, encapsulated in SOAP.

Results: Any conventional DICOM source can use the proposed Web Service to expose the principal DICOM operations of store, query, and retrieve over the Web, using XML documents communicated via SOAP messages. The WSDL (Web Services Description Language) document allows other web-service enabled applications to seamlessly invoke any of the methods exposed. For demonstration purposes, a web-based application has been created for accessing our Web Service via a web browser.

Conclusion: The proposed Web Service interface can support integration of conventional DICOM sources through general purpose web technologies with other web-service enabled applications such as authoring tools, general purpose image processing environments, and clinical web servers.