Open source teleradiology platform emphasizes data security

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German researchers have addressed these risks with a centralized web-based teleradiology platform called Clearinghouse. The open source system is designed to securely connect distant clinics and physicians.

"Clearinghouse enables communication of medical images and data between geographically separated experts, with the potential to significantly improve medical care in rural regions with low coverage of specialized physicians," said Michael Spitzer, Ph.D., of Medizinische Informatik und Biomathematik at Universität Münster. Clearinghouse also enhances and simplifies communication in urban regions.

The system implements a certified data security concept consistent with data security mandates, according to Spitzer. "Patient and treatment data are communicated separately and merged at authorized clients only, minimizing the risk of eavesdropping and preserving data confidentiality," he said. Clients need no special software, other than standard Firefox or Internet Explorer browsers with Java and JavaScript. Optionally, Flash can be used for embedded viewing of multislice DICOM objects. Users authenticate by providing a username and password or via a smartcard solution. Complete workflow is carried out within the user's browser, including the login process, management and uploading of patients' files and documents, sharing of data with other authorized physicians, and forwarding of DICOM objects to receiving centers.

"Since Clearinghouse is a central web platform providing decentralized access to previously uploaded data, instantaneous access from any place in the world is easily possible," Spitzer said. Users need not deal with storage and backup strategies, since these are handled centrally. All communication is encrypted using SSL (secure socket layer) and SSH (secure shell).

Clearinghouse differs from similar teleradiology platforms that employ central web server architecture, special Java-based solutions, or DICOM e-mail facilities, Spitzer said. "Collaborative features such as instant access for multiple users are not available except by sending e-mails to several recipients simultaneously," he said. "Plus, utilization as an electronic patient record is not feasible since other document types would have to be encapsulated in a DICOM container first."

The Clearinghouse teleradiology platform is in wide use by several research networks, including the Ewing study, the nephroblastoma and AML study, and the network for epidermolysis bullosa. "These networks use Clearinghouse in regular routine for sharing patient data and corresponding medical images among participating physicians and clinics," Spitzer said.

Disclosures:

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