PCASSO Retrospective

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By Chris Dimick on Dec 18, 2008

PCASSO—the Patient Centered Access to Secure Systems Online project—was an early trailblazer in using the Internet to give patients and providers instant access to medical records. The project started in 1996, a time when most people considered the Internet an unsecure and scary place to post a person's most private and sensitive information.

Now, more than 10 years since its creation, PCASSO can be more fully appreciated as an innovator in technology that many hospitals have only recently begun to adopt.

As complex health data exchanges such as health record banks, health information exchanges, and personal health records begin to gain ground, PCASSO deserves a retrospective look as an early project that promoted patient access to health records and demonstrated it could be done security over the Internet, says Dixie Baker, PhD, former principle investigator with the PCASSO project and senior vice president and chief technology officer for health solutions at Science Applications International Corporation. The project anticipated many of today's security threats and incorporated a high level of protection that many contemporary portals do not.

"Military-grade Security"

PCASSO used "military-grade security" in protecting access to health records, Baker says. The system protected against threats that most people did not think possible, let alone common. "Some of the things we did, people couldn't understand why we did it," Baker says, "[but] today the threats that we were protecting against are very, very commonplace."

For example, PCASSO protected against malicious software that hackers might use to capture user names and passwords. At the time many people did not expect such programs could be developed, but such spyware and other snooping devices are common today. (Yesterday, in fact, Microsoft rushed out a patch for its Internet Explorer Web browser that addresses such as vulnerability.) "Everything that we protected against is now widely recognized as a threat," Baker says.

In recent years, major healthcare networks such as Kaiser Permanente and Cleveland Clinic have implemented patient and provider health record Web portals. But Baker says the precautions taken with PCASSO are still not fully implemented in some portals. "From a security perspective, we went well beyond securities implemented in any Internet-based [electronic medical record] system today," she says.

Beginnings

PCASSO was developed through a partnership between the Science Applications International Corporation and the University of California, San Diego (UCSD). The National Library of Medicine provided funding as a way to test the feasibility of using security technology to enable safe assess to personally identifiable electronic health data over the Internet. If the project succeeded, it would open up vast possibilities for online information access and data exchange.

UCSD healthcare facilities served as the testing grounds for PCASSO, where 178,000 patient records were made accessible. The project had nearly 300 active users, including both patients and providers, who could search and view electronic health records for patient demographics, medications, lab tests, and transcription reports. Data were displayed through a Web interface.

As configured for the UCSD trial, PCASSO recognized five levels of information sensitivity; the level of access was tied to user role. The system allowed organizations to define roles and the rules associated with them.

Logging in to the system was a multistep process that required a diskette to establish an encrypted link between the server and the client computer. Once that link was established, the server "challenged" the user to enter a number from a list previously issued to the user. Each number could be used only once.

The project ran from 1996 to late 1999, when it came to the end of its test period and was closed down.

Some Annoyances

High security was both an asset and annoyance in PCASSO. The portal's strong protections came at the cost of convenience to users. During patient and provider reviews, PCASSO received some negative feedback that the security measures made the program cumbersome. Baker believes this is the reason most portals today do not use the high level of security protections PCASSO possessed.

However, the strict security measures did their job. Numerous attempts were made to break into the portal, Baker says—both by her team as well as unauthorized outside entities—and it never cracked.

A Legacy of Patient Empowerment

The high level of security may have frustrated some users, but it allowed PCASSO to offer patient information that many portals still do not.

"One thing that distinguishes it from anything that is out there today is we allowed [patients and providers] access to the entire record, including information that has special protections like HIV/AIDS information, psychological health information, [and] sexually transmitted diseases," Baker says. "These kinds of diseases and conditions have special protections and in general are not usually viewable through the portals that are out there today."

Putting information into patients' hands is an important part of PCASSO's legacy. The research project is remembered for more than demonstrating the ability to tame the Web for exchange of health information. It is also viewed as groundbreaking in patient empowerment.

"Prior to the PCASSO project, patients were never enabled access to their own medical records," Baker says. The prevailing attitude was that patients didn't need to see their records. "The whole movement towards patient empowerment, which is gaining momentum every day right now, really got its start here," she says.

As time goes on and hackers become better at cracking systems, Baker feels more and more of PCASSOs security precautions will prove necessary in today's portals.

"I think the state of the art in security will migrate more and more toward PCASSO, because the threat environment is getting greater and greater on a day-to-day basis," she says.

Baker wrote about PCASSO for the Journal in 2000. You can read the article here.

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