HealthManagement
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Open Platform Enables Secure Personal Health Record Apps

Patient participation in healthcare is facilitated by the use of personal health records. However, the closed nature of Personal Health Record (PHR) systems and privacy concerns have limited their adoption. In this paper, the authors introduce the MyPHRMachines cloud-based PHR platform, which enables external developers to develop apps, and allows patient access to their PHR data on remotely running virtual machines.

The limitations of current PHR platforms are discussed. Pieter Van Gorp and his co-authors argue that there will always be medically meaningful data for which a competitive app market moves ahead of platform-imposed standard data formats. The MyPHRMachines platform is an open platform which enables open access to app developers and guarantees that patients can safely secure their personal data.

Patients can delegate the remote access to a VM and can also share the raw PHR data using the underlying data cloud. The data cloud is private, with file sharing features similar to DropBox and Google Drive. The data is physically located by default within the MyPHRMachines infrastructure. With the OwnCloud sync client, patients can upload new PHR content.

The platform is flexible, as any middleware running on an operating system that can be virtualized can be used to build apps. VM sessions in MyPHRMachines are stateless so data written to the local disk of a VM is deleted after VM shutdown. VM sessions can be updated in a patient's PHR via a writable mounted folder in the patient's VMs or via the private data cloud. The security is assured as once all software is available in the MyPHRMachines private cloud, apps do not need access to external Internet services.

The authors demonstrate its use with externally contributed apps for Radiation Exposure Measure and an radiology image viewer example app. Their demonstration site at https://www.sites.google.com/site/myphrmachines/ includes this demo as well as instructions on how to contribute apps to this platform.

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