

## hReader

The mobile health platform for **all** of your data.

[Learn more](#)


## SPOTLIGHT

hReader will be released to the open source community and available for free. The code for hReader will be posted soon at [GitHub](#) under the [Apache 2.0](#) license.

## WHAT IS HREADER?

hReader is a patient-centric mobile health data manager that provides patients and their families with their complete health information securely. It provides an applet framework to provide hyper-personalized applets to engage patients in their own health status and how they can improve.

## DEVELOP APPLETS

hReader includes an open applet framework that allows anyone to extend its functionality, whether it's an interface to a web site, web service, or wireless sensor.

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## TWITTER UPDATES

[hreader](#): Just released two new applets!

## LATEST APPLETS

Oxygen Saturation  
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## CONTACT

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github

hReader is funded by [The MITRE Corporation](#)

\*All health data and information in the screen shots is synthetic.

## About hReader

### THE PROBLEM:

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Today, it is very difficult, if not impossible, for patients and families to obtain their complete health information. Patients and families often see many different providers and specialists and that data is owned and scattered across those providers. Many patients today have little or no access to this health care data. When data is made available to the patient, it is often spread across a variety of portals and difficult to understand. Patient-provider communication is also seasonal, often happening only once or twice per year.

All of these factors makes it very difficult to engage patients and empower them to improve their health.

### RESEARCH QUESTIONS

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hReader is a research project looking to answer the following questions:

**Can mobile technologies empower patients and their families to improve their health?**

Can we make health information easier to access, use, and understand?

Can we improve communication between the patient and the provider?

Can we improve the understanding of the plan of care?

### HREADER DIFFERENCE

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hReader is designed, through the **RHEx** project, to be provider-agnostic while other mobile solutions are currently proprietary, walled gardens. By having all of their data in one place, patients and their families can determine their current health status more quickly and completely.

hReader is also an **open source software** project released under the **Apache 2.0** license. Anyone can use it and add functionality to it.

### INTENDED USERS

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hReader is aimed at patients and families to help empower them with their health care, improving their health while lowering costs.

### PROJECT OBJECTIVES

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The desired outcome for hReader is to securely collect and capture the patient's entire health care record to make it easy for them to understand and correct, if necessary. By helping patients understand their individual health data and their family's health status, and by providing a mobile platform to access that data, hReader seeks to improve the communication between patients, family members, and health care providers. This should engage and empower patients to improve their health, with better results at a lower cost.

### LEARN MORE

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Check out the [documentation](#) for hReader!

Have more questions? Visit the [Frequently Asked Questions](#)

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## Screen Shots

All data and information in hReader screen shots are associated with fictional individuals.



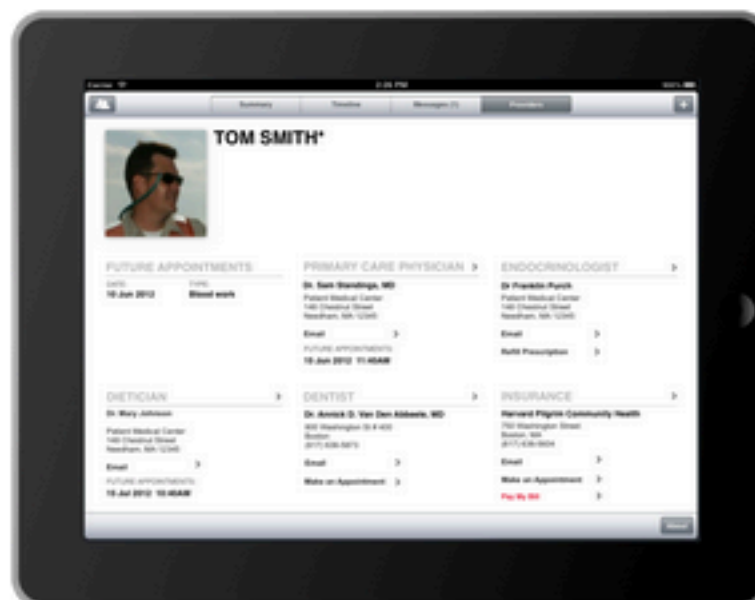
Randomized passcode keyboard for additional security



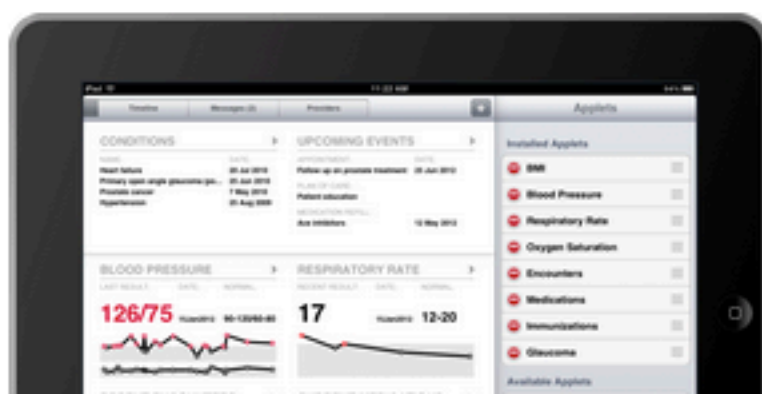
Profile summary provides top-level info at a glance through various applets



Clicking the conditions applet provides more detailed information



Providers page lists all the patient's providers





Applet picker customizes applets for each profile



Profile picker to easily manage family profiles



Timeline page displays all recorded data over time



Timeline page displays all recorded data over time

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# Code

## DOWNLOAD THE CODE

The code is posted on  [github](#)

[View Code](#)

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# Documentation

## hReader Setup Guide COMING SOON!

This document provides instructions for setting up a local development environment for hReader.

## hReader Applet Developer's Guide

This document describes the hReader applet architecture and how to write both native iOS applets as well as HTML5/CSS-based applets for hReader.

## Setting up the RHEx Patient Data Server

This document provides instructions for setting a local instance of the RHEx patient data server, which provides the patient data to hReader.

\*Documents in PDF format require [Adobe Acrobat Reader](#).

If you experience problems with PDF documents, please [download](#) the latest version of Acrobat Reader.

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# How to Participate

## DEVELOPERS

### GitHub

Code contributions, bug fixes, ideas for new features, are all welcome for the hReader user interface and to the applet code framework. Visit our [GitHub](#) site to offer your ideas!

### Pivotal Tracker

The hReader Team uses [Pivotal Tracker](#) for feature/bug tracking using agile project management and planning.

## COMMUNITY FEEDBACK

### Announcement List

Join the [hReader Announcement List](#) to receive information about new developments in the project.

### Developer List

[Communicate](#) with the hReader developers!

## SELF SERVICE

### Instructions

The hReader [documentation](#) provides instructions for setting up and extending hReader.

### Contact

[Email](#) the Talk List with questions for a response within 24 hours!

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# Latest News

May 2012

The hReader just released two new applets: Oxygen Saturation and Respiratory Rate!

TWITTER UPDATES	LATEST APPLETS	CONTACT
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# Frequently Asked Questions

## GENERAL OVERVIEW

What is hReader?  
Why is hReader needed?  
What is the objective of hReader?  
Who are the intended users of hReader?  
Who is funding the hReader project?  
Can hReader be used to demonstrate Meaningful Use?  
Does hReader have human factors specialists on the team?

## TECHNICAL DETAILS

What is the basic theory of operations for use of hReader?  
What standards does hReader use?  
Are there step-by-step instructions for setting up hReader from source code?  
Does hReader run under iOS?  
Does hReader run on an iPhone or iPod Touch?  
Does hReader run under Android?  
Does hReader run under Blackberry?  
What programming languages does hReader use?

## OPEN SOURCE

Under what license is hReader released?  
How is communication managed on the open source project?  
Is hReader related to project hData?  
Is hReader related to project RHEX?  
Is hReader related to project popHealth?  
Can I contribute software open source to hReader?  
Are there coding conventions that I must follow to submit code?

## WHAT IS HREADER?

hReader is a patient-centric, simple, safe, mobile health data manager that provides patients and their families with their complete health information in the palm of their hand. It leverages the [hData](#) and [RHEX](#) projects, and provides an applet framework to provide hyper-personalized "focused-on-me" applets to engage patients in their own health status and how they can improve. hReader will be released to the open source community and available for free.

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## WHY DO WE NEED HREADER?

Today, it is very difficult, if not impossible, for patients and families to obtain their complete health information. Patients and families often see many different providers and specialists and that data is owned and scattered across those providers. Many patients today have little or no access to this health care data. When it is made available to the patient, it is spread across a variety of portals and often difficult to understand. Patient-provider communication is also very sporadic and inconsistent. All of these factors makes it very difficult to engage patients to improve their health, which results in increased office visits and higher cost.

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## WHAT IS THE OBJECTIVE OF HREADER?

The desired outcome for hReader is to securely collect and capture the patient's entire health care record to make it easy for them to understand and correct, if necessary. By helping patients understand their individual health data and their family's health status, and by providing a mobile platform to access that data, hReader seeks to improve the communication between patients, family members, and health care providers. This should engage and empower patients to improve their health access protocols, security, and vision, with better results at a lower cost.

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## WHO ARE THE INTENDED USERS OF HREADER?

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Patients and families.

## WHO IS FUNDING THE HREADER PROJECT?

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The hReader project is currently being funded by the MITRE corporation.

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## CAN HREADER BE USED TO DEMONSTRATE MEANINGFUL USE?

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Stage 2 Meaningful Requirements mandates that information on allergies, adverse reactions, alerts, medications, problems, procedures, and results be reported. hReader provides this information in the summary, conditions, and timeline pages. hReader also provides information that is optional in Stage 2, including encounters, functional status, immunizations, plan of care, and vital signs.

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## DOES HREADER HAVE HUMAN FACTORS SPECIALISTS ON THE TEAM?

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Yes, hReader has human factors specialists on the team. Human factors is a multidisciplinary field that concerns the study of how people interact with technological systems. Human factors practitioners consider the physical settings, cognitive and perceptual capabilities of the user, the organizational climate and how these factors interact with technology. The primary goal is to understand the user and develop technology that enhances what people do well and provide support for those tasks that people find difficult. Human factors has important implications for health care systems, so human factors experts apply their knowledge of human computer interaction, usability, and user interface design to improve the usability of the hReader software.

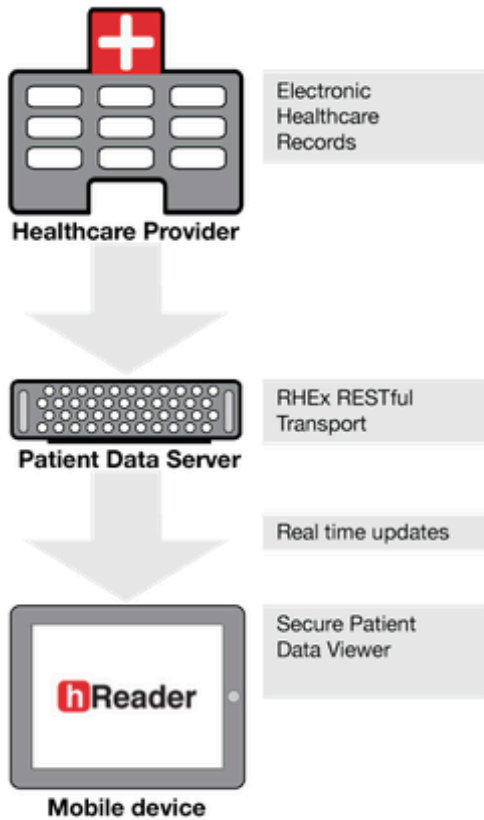
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## WHAT IS THE BASIC THEORY OF OPERATIONS FOR USE OF HREADER?

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hReader works in conjunction with the RESTful Health Exchange project (RHEX) Patient Data Server to provide patients with their data. RHEX interfaces with a variety of different EHR systems and acts as a secure repository for patient data. RHEX also provides a single RESTful API, which hReader uses to access the data.

**hReader**



Once the patient's data is downloaded to hReader in greenCDA JSON format, it is encrypted (if the pass code has been set) and stored on the iPad so that it can be accessed even without a network connection. Local iPad storage allows the patient to control their own data, bring it to their provider, and ask more informed questions about their health.

If a network connection is available, real-time updates are possible between RHEx and hReader.

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## WHAT STANDARDS DOES HREADER USE?

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hReader make use of several emerging standards, both directly and indirectly, including **hData** and the **RHEx Patient Data Server**. Soon, it will also integrate with standards established by the **popHealth** project.

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## DOES HREADER RUN ON AN IPHONE OR IPOD TOUCH?

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Not at this time. Currently hReader is designed for the iPad.

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## DOES HREADER RUN UNDER ANDROID?

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Not at this time.

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## DOES HREADER RUN UNDER BLACKBERRY?

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No. There are no plans to develop hReader for Blackberry.

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## WHAT PROGRAMMING LANGUAGES DOES HREADER USE?

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hReader runs on Apples iOS application framework. Developing new software with hReader, and/or adding new customized features, will require non-trivial software development knowledge of iOS, Objective C, or HTML5/CSS3 programming languages.

## IS HREADER RELATED TO PROJECT HDATA?

While hReader is not directly related to hData, hReader depends on the RHEX Patient Data Server to obtain its data and RHEX depends on hData.

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## IS HREADER RELATED TO PROJECT RHEX?

hReader relies on the RHEX Patient Data Server to obtain patient Electronic Health Record (EHR) information.

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## IS HREADER RELATED TO PROJECT POPHEALTH?

hReader will soon integrate the clinical quality measures provided by the popHealth project.

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## CAN I CONTRIBUTE SOFTWARE OPEN SOURCE TO HREADER?

Yes. Code contributions, bug fixes, ideas for new features, are all welcome for hReader. A requirement for contributing software is that any and all software contributed to hReader is released under an Apache 2.0 open source distribution license, and that you transfer copyright of any code or patches you submit to the project. Source code contributions, as well as dialog/discussions for feature requests and enhancements will be publicly reviewed and vetted by the hReader project's governing organizations.

To submit a new feature for consideration into the hReader repository, setup an account on GitHub. Fork the hReader code, and create a branch of hReader on your repository. Send the link to your hReader branch to the hReader developer email list, and cite either an existing bug or feature from the hReader project tracker to specify the changes that you are contributing.

If you have suggestions on new features, or want to report a bug that has not yet been tracked, send an email to the developer email list with either the details to reproduce a bug, or detailed description about a suggested feature that you would like to see added to hReader.

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## ARE THERE CODING CONVENTIONS THAT I MUST FOLLOW TO SUBMIT CODE?

Yes. The hReader open source community is dedicated to ensuring that the quality of the software source code is always supporting very high standards. There is an Objective-C code convention requirement and any additional features added to the hReader project must include mature unit tests to ensure that the intended feature is performing correctly.

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