RTI's Personal Health Intervention Tool (PHIT)

PHIT is a versatile development platform that develops mobile apps for health assessment and intervention. PHIT-based apps manage self-reported and sensor data—including a library of validated health assessments—and deliver health education, behavior change, and skills acquisition based on evidence-based practices.

Overview

RTI's PHIT is a pocket-sized mobile laboratory that adds layers of technology to conventional mobile applications to create a powerful tool for conducting health assessments and interventions. The PHIT platform

- Collects data through survey-style assessments or personal diaries and through a full complement of mobile data, such as geolocation and movement
- Captures physiologic data through Bluetooth wireless sensors that track measurements such as heart rate or sleep disturbances
- Offers a logic engine that can analyze these data to classify health status, identify potential problems, and recommend solutions using evidence-based criteria
- Delivers multimedia educational content, behavior-change interventions, reminders, and other self-help activities as indicated according to study protocols.

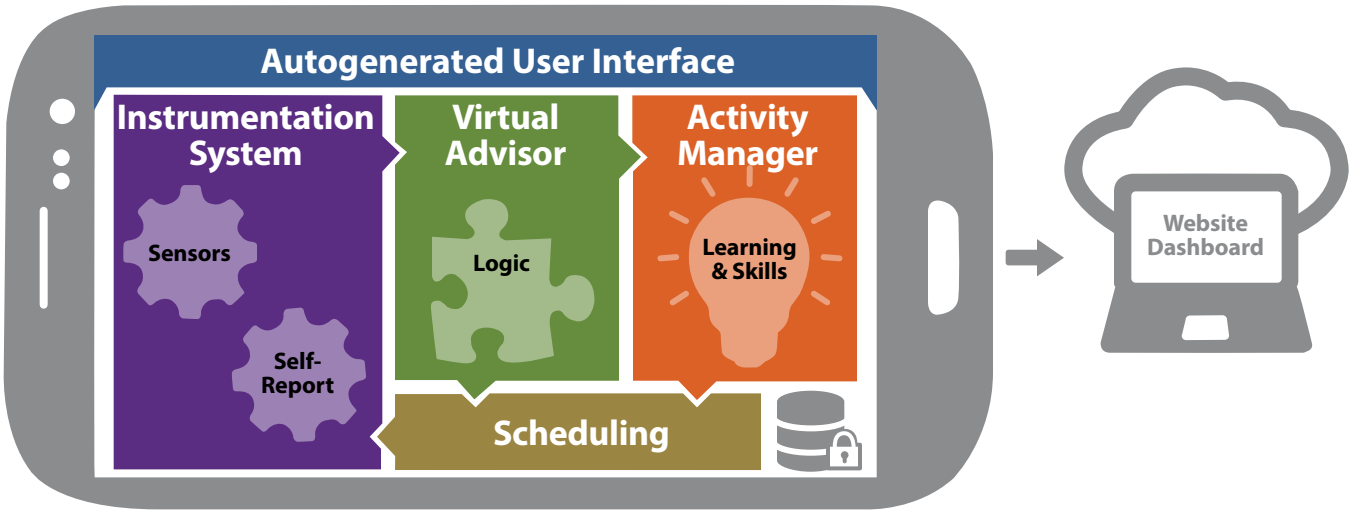
Features of PHIT

PHIT's cross-platform design integrates a suite of health assessments with an expert system—a central software processor—that recommends, tailors, and presents self-help interventions. The platform is simple, allowing for auto-generation of the user interface using XML, and flexible, enabling PHIT-based apps to collect health data from many different sources. PHIT has runtime intelligence—researchers can use it to conduct dynamic data analysis and to plan interventions tailored to each user and study protocol. PHIT-based apps are highly configurable and allow users to work offline.

PHIT applications run on a large segment of popular devices, including those using operating systems from Google and Apple; these apps automatically scale to screen size to optimize the user interface. PHIT-based applications are also readily implemented for both Microsoft and Apple desktop computers. To ensure privacy, the PHIT platform provides a secure login and stores data in an encrypted database with optional uploading to a backend server. When personally identifiable information and other collected data are uploaded, the information is encrypted to protect against security risks.

Using PHIT in a Research Study

Establishing the scientific framework is the first step in using PHIT for a research study. Experts in the cohort, disease, or condition being studied work closely with PHIT developers to identify priorities for data collection—including selection of self-report instruments, diaries, and physiologic data points. These experts also develop algorithms that trigger reminders for additional assessments, recommend self-help tools, or point to clinical referrals for study subjects.



The PHIT platform is domain agnostic. Researchers decide how much of the PHIT platform to incorporate in a given application—for example, interventions would not be included if the study merely collects data. PHIT takes full advantage of the potential of mobile devices to advance research in personal health, but the platform can also be tailored for use in medical, clinical, public health, environmental, financial, or any other domain in which data can be collected and analyzed.

Project Highlights

PHIT for Duty, a Personal Health Intervention Tool for Psychological Health and Traumatic Brain Injury (U.S. Army). PHIT for Duty assesses psychological health risk and provides self-help activities for reducing symptoms for post-traumatic stress disorder and other health conditions among soldiers returned from deployment. This study integrates self-report and physiological sensor data for health assessment. A structured mindfulness stress relaxation course comprised of learning modules and meditation practices is provided, along with evidence-based methods for improving sleep quality, and suggestions for reducing alcohol consumption.

Professional Services for Pediatric Guidelines for Cardiovascular Health (National Heart, Lung, and Blood Institute). This project uses PHIT for clinical decision support. Physicians access the decision support module on their mobile devices and retrieve guidelines for pediatric cardiovascular disease. The application includes tools to interpret risk and guideline-based recommendations.

ActiSleep (National Institute on Drug Abuse). This study monitors marijuana use and sleep quality in adolescents. The PHIT-based ActiSleep app provides daily sleep assessments and guides biosample collection.

Young Woman-Focused HIV Prevention (National Institute on Drug Abuse). This PHIT-based application presents educational materials and behavior change interventions for HIV risk reduction in young, sexually active, substance-using African American women from low-resource communities.

Monitoring Outcomes for Change (MOCHA) (RTI Internal Research). MOCHA uses PHIT for quick, discreet, and simple data collection—via the observer's mobile device—relating to behavior issues commonly seen in children with rare conditions.

More Information
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