

PROJECT SUMMARY:

Our goal is to develop an effective and secure digital portal named *BioScreen* to access and display real-time clinical and biomarker information for use by patients and health providers, linked to the development of novel instruments and methods that promote evidence-based education, the generation of innovative hypotheses and an integrative approach for patient-centered outcomes research. This project will initially focus on multiple sclerosis (MS), a common autoimmune disease of the nervous system, but will include the elements for transferability to other chronic diseases. Using state-of-the-art information technology we will carry out the proposed research goal through the following specific aims:

Specific aim 1. To integrate multiple dimensions of patient information in a single modular navigation system, including: clinical evolution of the disease, treatments, environmental exposures, brain imaging, plus genomic and biomarker data.

Specific aim 2. To enable the analysis of an individual's clinical course and data within the context of relevant reference groups, thus creating a transparent platform to quantify clinical outcomes and disease trajectories.

Specific aim 3. To facilitate the patient's engagement in disease management and data acquisition.

RELEVANCE:

An increasingly difficult challenge for clinicians and patients is to organize, integrate and interpret diverse types of clinical and biologic data to track disease processes, predict outcomes, and personalize therapeutic decision-making. For the common neuroinflammatory and neurodegenerative disorders, high-resolution neuroimaging metrics, often combined with laboratory and other biologic data, are now available. Although these biomarkers are increasingly used to help guide treatment, they are applied to decision making irregularly, in a haphazard and non-standardized fashion, and with insufficient evidence to inform their use.

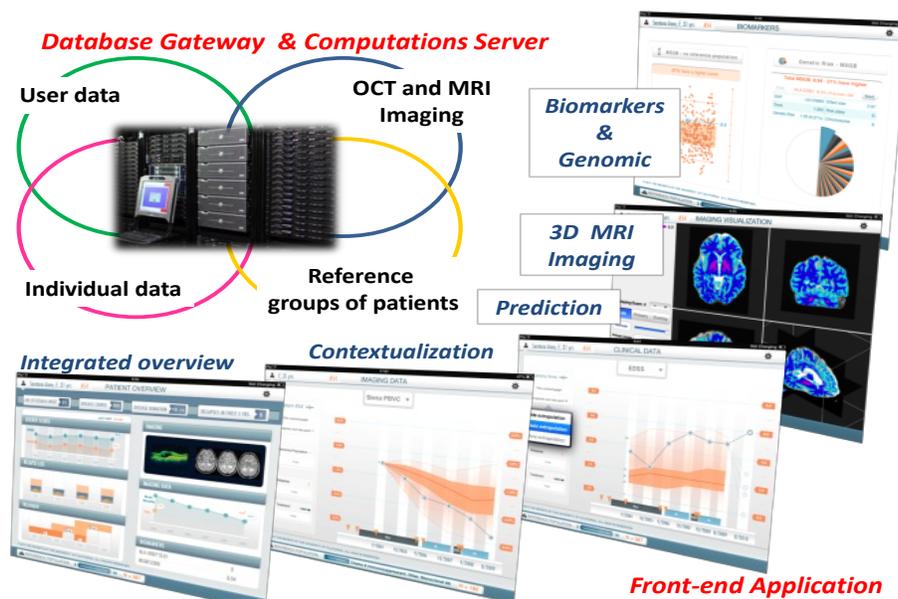


FIGURE: The MS Bioscreen: a front-end tablet application supported by back-office computation server and database gateway.

Here we propose a project that (1) uses an innovative multi-disciplinary approach, (2) moves from bench to bedside and back, (3) efficiently combines the realms of personalized medicine, education, social media and telemedicine, and (4) establishes a unique, recyclable model for multi-dimensional outcomes research.