Disruptive Technology for Preventive Geriatric Care

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JDC Israel Eshel
Touching Lives, Transforming Communities

The Need

The growth of the older adult population has led to a steep rise in the resources required to care for this population. This has led to a worldwide trend towards more efficient and reliable care solutions through the use of advanced technologies, as well as a focus on prevention in addition to care interventions.

In light of the Corona epidemic, Israel currently has over 1 million older adults confined to their homes and isolated from family, friends and caregiving support. Government regulations state that it is necessary to minimize, and – if possible – completely prevent physical encounters, especially among risk populations such as older adults. Despite the need for quarantine as a life-saving measure, it brings with it threats to their cognitive and physical health, and with that a need for an effective, reliable and efficient remote monitoring device. Currently, there is no large-scale long-distance approach to monitoring these older adults.

There is an immediate need for scalable and effective monitoring for proactive detection of physical and mental distress.

Big Data

Big data refers to enormous amounts of data, which helps organizations to improve their decision-making processes. Big data refers to (1) large volumes of data and (2) technology analytics services such as descriptive, predictive or prescriptive that any organization utilize to handle the data sets.

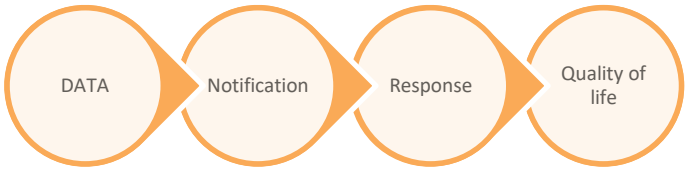
Big data provides insights to improve learning outcomes of research by comparing different data sets and thus can assist researchers to identify and understand patterns and make predictions.

In healthcare, big data has added benefits such as patient safety. Big data in healthcare is overwhelming not only because of its volume but also because of its diversity (clinical and financial). Understanding trends and patterns within the data may allow healthcare systems to improve quality care of patients and curb healthcare costs.

For example, the utilization of artificial intelligence (AI) to analyze an individual's mobile usage data. Awareness of changes in patterns may indicate cognitive or physical regression and overall wellbeing, which may need to be dealt with.

Yet available tools on the market require either hardware and/or software, which raises issues around usability, which affects the products' effectiveness and accuracy.

Currently, no known technology is able to provide real-time, simple, reliable and accurate ongoing measurement using non-invasive monitoring of outcomes, at no personal price.



Invisicare has developed a product based on analyzing existing (non-medical) data and which does not require installing software (e.g. application) or hardware (e.g. an interface with a sensor).

Invisicare Technology

Invisicare's product is a feasible solution for long-distance monitoring of older adults and identification of aberrant behavior that may indicate the appearance of symptoms (minor alert) and / or distress (major alert). Invisicare's product allows for monitoring the population and providing automatic instructions and guidelines to first responders. The remote touchless monitoring removes the issue of usability for fast adaptation and scale.

The technology processes existing usage data from telecommunication networks and open databases to identify unusual changes in usage patterns, pointing to a change in an individual's functionality across the seven Core Geriatric Domains (CGD): Gait, chronic pain, lower urinary tract symptoms (LUTS), cognition, mood and anxiety, sleep and behavior.

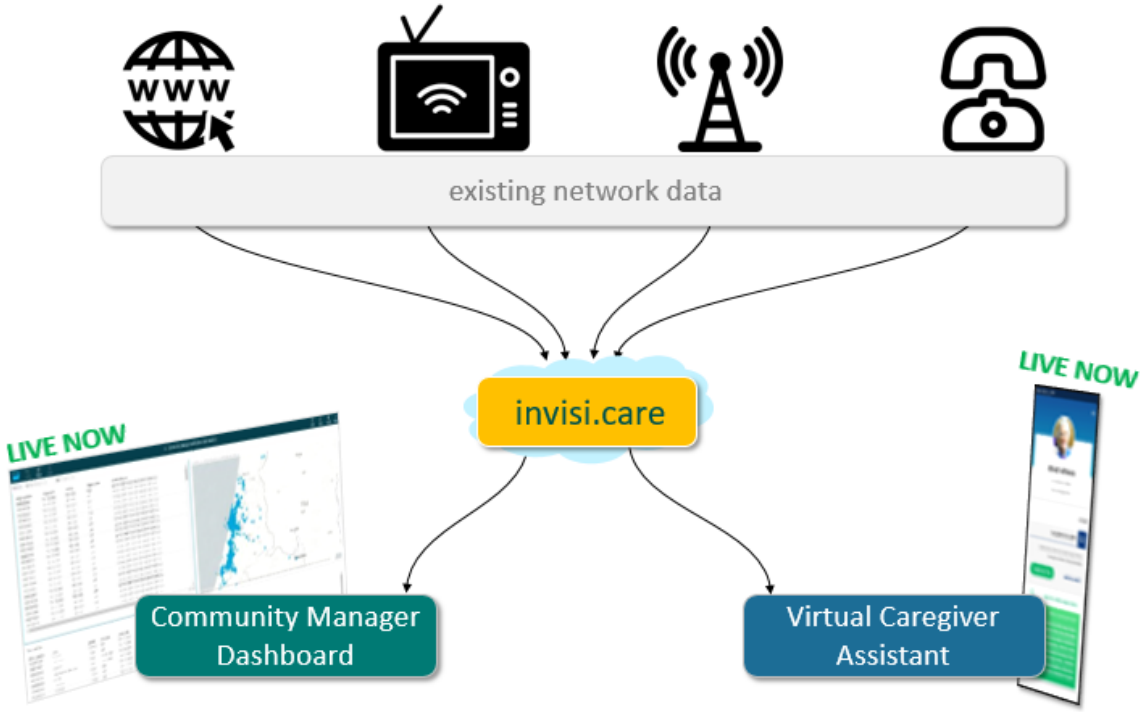
Underlying Logic

The product's underlying logic is that in a world where a large amount of digital data is collected, it is possible to identify "digital" behavior patterns that reflect the individual's functional state. Just like a change in behavioral patterns in the real world can indicate a change in functional state, so can a change in "digital" behavior patterns. The relative advantage of "digital" behavioral patterns is the high frequency with which they are collected via relatively small effort – which enables detecting changes at a very high resolution.

Enabling Early Intervention

Early identification makes it possible to instigate early interventions, preventions, and / or care by the relevant entities. This will optimize the system's ability to improve / retain the older adult's quality of life. Currently, the technology has two types of alerts - one indicating an emergency and one indicating a functional deterioration. The company has developed a **Virtual Caregiver Assistant** application that provides the older adult's family with real time alerts and useful information in real time.

In light of the corona epidemic, the company has also developed a dedicated **Community Manager Dashboard** that is being used to initiate an intervention procedure based on the need and the necessary levels of urgency.



Scalability

Invisicare's technology features enable prompt implementation and scalability among the entire older adult population. The system can monitor one-third of the older adult population (on the Pelephone network, with which it is contracted) in a timely and efficient manner. It has the potential to reach over 90% of the older adult population within two weeks (once it connects to the remaining mobile networks). (This would still be dependent on the older adults' agreement to sign on for the service.)

The system does not require any hardware or software installation by the client – only his or her agreement to access the usage data held by the telecommunication provider. Monitoring and identification capabilities begin immediately upon signing up.

Service Providers

Invisicare currently partners with Ichud Hatzala and a central emergency call center, whom connect to an online dashboard system (in the cloud) displaying alerts and locations of their clients. The online dashboard may be logged into via any computer with a link, username and password.

Enlisting Participants

The regulatory method chosen to enlist participants is "opt in" which means the older adult are required to fully understand the implication and accept (via signature) the company's access to their data. This personal data will be used only for the purposes of the initiative and it cannot be transferred to a third party.

Enlisting older adults to the system follows the strict European GDRP regulations. Interested clients enlist by way of an electronic and / or manual form filled out by service providers in the field. The older adult is able at any stage to cancel this agreement and get back all the information/data gathered via the initiative.

Enlisting participants will be done by the relevant platform/program/NGO (supportive community, day center, integrated care) professionals or volunteers who are familiar with the target population and have no incentives to sign on unwilling clients. The data that the company is accessing is collected under Israeli law by the telecom companies. Thus, it is not collecting new data but only accessing existing data and using it for the benefit of its owner – if they permit access. Once the data is accessed, it is processed and stored on an Amazon cloud server (which meets the rigorous European GDRP standards).