MID-ATLANTIC GIGABIT INNOVATION COLLABORATORY

MAGIC Healthy Smart Home Project

Executive Summary

The MAGIC Healthy Smart Home project (Smart Home) is a "living lab" research and development platform with the primary mission of improving health outcomes and quality of life for six resident adults with disabilities. The project explores questions and develops solutions in four primary domains:

1) Engineering of sensor, data aggregation, storage, and analysis in a residential setting.
2) Using environmental, physiologic, and behavioral data to improve health and quality of life for residents.
3) Developing security policies, practices, and technologies to ensure the privacy, security, integrity, and controlled use of resident data.
4) Creating an individual-centric health data ecosystem that shifts control of personal data to the individual.

The confluence of IoT technology, big data analytics, community-based health management, and enhanced broadband connections enables an unprecedented reorientation of health data collection, analysis, and decision-making toward a community setting. However, almost all sensors and analytics platforms currently deployed harvest data and sequester it in isolated third party silos, often without the permission or awareness of the individual. The data is used to train proprietary clinical algorithms, creating value for the third party using data collected from individuals who may not share in that benefit.

The MAGIC Healthy Smart Home inverts that paradigm, centering data collection and ownership on the individual, recognizing the value of that data, and the importance of security and privacy in how that data is collected, handled, and stored.

Specifically, the project combines telehealth technologies, in-home monitoring, and controls to decrease Emergency Department visits, decrease unplanned medical appointments, and decrease staff time spent on unplanned medical care for a population of medically fragile adults with intellectual disabilities.

Specific features:

- Open platform: sensor and analytics agnostic
- Integration of multiple, novel data streams
- Flexibility for adding new sensors and data types
- No stove-piping or moats because of third-party data ownership or usage
- Focus on patient-centric interoperability and data portability

- Open, modular approach to analytics and sensors
- Creates longitudinal view inside home (memory), enhancing continuity of care
- Enables secure remote access into home for active care management
- More comprehensive data empowers analytics
- New data streams, new analytics, new insights into wellness and disease in a community setting.

Project oversight for compliance with human research regulations is provided by the MAGIC Institutional Review Board (IRB), comprised of volunteer professionals with relevant technical, legal, and ethical experience. The MAGIC IRB oversees and approves all aspects of the Healthy Smart Home project involving human interactions and health data collection, storage, and utilization to ensure client privacy and dignity.