
TAFETA: Frequently Asked Questions

What is the TAFETA program about?

TAFETA Smart Systems for Health is a research partnership between the Elisabeth Bruyère Research Institute and Carleton University which identifies, develops, and tests new “smart” technology solutions to help older adults live independently in a safe environment.

Why is TAFETA important?

Keeping older adults healthy and in their own homes has major benefits to society and the economy. TAFETA is important because independent living leads to greater independence and quality of life amongst seniors. At the same time, TAFETA addresses the issue of rising healthcare costs, resulting from unprecedented growth in our elderly population.

TAFETA also gives researchers, developers, caregivers, industry partners, and others an opportunity to contribute to the development of innovative healthcare technologies for our aging population.

Where does research take place?

Research is conducted at the TAFETA Smart Apartment at the Elisabeth Bruyère Hospital, the Carleton University DSP lab and at partner sites.

What is the TAFETA Smart Apartment?

The TAFETA Smart Apartment is an independent living lab which has been used to develop and house technologies since TAFETA’s inception in 2002. These technologies include:

- **Motion sensors** – track the presence and motion of the resident throughout the apartment
- **Lited pathway** – illuminate the walkway from the bedroom to the bathroom to assist clients at night
- **Fridge sensor** – provide audible cues to patients when the fridge door is open, sending an alarm to indicate potential distress and/or food spoilage
- **Pressure-sensitive mats** – located under beds and chairs, these mats by Tactex Controls Inc., are integrated with custom software developed by Carleton University engineering students and trigger additional sensors throughout the apartment through pressure. Researchers are currently developing new software algorithms to extract data from these mats in order to study breathing rates, sleep apnea, and bed entry/exit trends.
- **Smart flooring** – dual-stiffness flooring has been shown to reduce morbidity related to falls. This flooring, by SATech Inc., is installed in the bathroom.

Who participates in the TAFETA Program of Research?

The TAFETA research program is considered multi-disciplinary and brings together a variety of players, including patients, caregivers, researchers, students, and both private and public partners. Currently, there are approximately 12 private and public partners involved in the program.

Who provides the direction for the TAFETA program?

Dr. Frank Knoefel, TAFETA Co-Chair and Co-Founder: Dr. Knoefel is the Vice-President of Medical Affairs, Clinical Information and Support at Bruyère Continuing Care. He holds appointments as Associate Professor, Family Medicine at the University of Ottawa and Adjunct Research Professor in the Department of Systems and Computer Engineering at Carleton University. He is also a Clinical Scientist at the Elisabeth-Bruyère Research Institute. Dr. Knoefel's research has focused on geriatric rehabilitation and medical complexity and the role of technology in "aging in place."

Dr. Rafik Goubran, Dean, Faculty of Engineering and Design, Carleton University: Dr. Goubran is the Dean of the Faculty of Engineering and Design at Carleton University. He has published more than 150 journal and conference papers, filed 10 patents, and completed the supervision of 11 Ph.D and 48 Master's students. He participated in different committees including IEEE guest editor, IEEE conference chair, CEAB visits, CITO board, NCIT technical committee. Dr. Goubran has also acted as a consultant to several industrial and government organizations including Nortel, Mitel, Bell Canada, and Revenue Canada. In 2004, Dr. Goubran was awarded a Research Achievement Award by Carleton, and in 2003, he was selected as "Champions of Innovation" by CITO.

What is TAFETA's current focus?

The TAFETA research team is currently engaged in more than 12 studies to further the advancement of smart technologies that promote the independent living of older adults.

As an example, the team is focused on **remote patient monitoring using pressure-sensitive mats** and the development of a fully integrated system to monitor restlessness and respiration of palliative care patients. The pressure-sensitive mats are also being utilized to monitor changes in bed entry and exit patterns with the goal to develop warning systems which could help prevent hip fractures, a common occurrence amongst the elderly.

In addition, the team is exploring the development of an **artificial intelligence system** that will correlate information from the sensor technology throughout the home and make decisions regarding the resident's status and physiological condition. The research will contribute to the development of a system will detect pattern abnormalities in real time and report them through a four-tier alarm system ranging from "mild abnormality" alarms to "emergency" alarms.

Where do I get more information?

Please visit www.tafeta.ca and/or contact:

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