

Gerontechnology at IAGG 2009 for optimal health in a multidisciplinary context

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A.Franco, H. Bouma, G. Cornet, P. Mallea. Gerontechnology at IAGG 2009 for optimal health in a multidisciplinary context. Gerontechnology 2009; 8(2):63-67; doi: 10.4017/gt.2009.08.02.001.00. The gerontechnology concept originated around 1990 and is currently finding its place in the gerontological, geriatric, and technological world. At its heart gerontechnology tries to promote technological products, services, and environments in which ageing people can pursue their ambitions and aims also for needs stemming from functional restrictions and multiple age-related diseases to be answered, whilst maintaining autonomy and self-esteem. For gerontology and geriatrics, this constitutes a change in paradigm that IAGG has recognized by a special position for gerontechnology at the IAGG 2009 congress in Paris. In medicine, the paradigm is changing from a single-acute-disease model for disease management toward a multiple-disease model directed at optimal functioning in the daily environment, be it at home or in institutional settings. The essential value of 'functioning well' rather than 'dealing with disease' has already been recognized by the WHO in 2002, and the effect of this visionary model is increasingly becoming clear. Increased interdependency between gerontology and geriatrics on the one hand, and innovative technology on the other, are the logical outcomes of the paradigm change. Continuous collaboration between the International Society for Gerontology and Geriatrics (ISGG) and the International Society for Gerontechnology (ISG) will be directed at implementing the necessary paradigm change in our ageing society and promoting innovative technologies of proven value.

Key words: gerontechnology, gerontology, geriatrics, older adults, elder

The key concept of gerontechnology, as developed in North-western Europe in the 1990s was to address, beyond a purely medical or technical approach, the challenge of maintaining autonomy and a good quality of life of older adults. Thanks to support from the EU and the activities of the International

Society for Gerontechnology (ISG), this concept has now become mainstream, as demonstrated by events such as the World Congress of Gerontology and Geriatrics¹ which is organized every four years. This unique event is attended by experts in the field of ageing from around the world. This year's

congress is particularly important as in its exhibition room a Gerontechno-platform will showcase a selection of the best and most useful gerontechnologies. These technologies can be characterized by their impact on the life of ageing citizens as divided into the following categories: enhancement & satisfaction; prevention & engagement; compensation & assistance; and care support & care organisation²⁻⁵. At this 19th IAGG World Congress the ISG will be present in both a symposium and a demonstration platform for gerontologists and geriatricians.

The ISG and its French daughter society, the SFTAG (French Society for Autonomy and Gerontechnology) focus on a multidisciplinary dialog and collaboration between the different branches of social and medical care, industries and services, institutional, university, and vocational training, and research. For that purpose they organize thematic think-tanks, workshops, Master classes for young scientists, and promote new post-graduate courses and diplomas. Worldwide they play a role as project facilitators including EU and nationally funded projects.

Here we will elaborate on gerontechnology at the IAGG world congress in Paris, July 5-9, 2009.

CONCEPTUAL REVOLUTION

The implementation of technologies and services conducive to retaining autonomy and support at home for aging or aged people should come to terms with existing economic models. In developed countries the key economic logic focuses on health risks in terms of disease severity. Currently, emerging home technologies and services are of second rate importance coming after disease management. Disease management is characterized by medication, hospitalization, and the physiological response of the patient. Economic tools highlight a reality of health production and productivity that might in all likelihood be useful to the development of e-health and gerontechnology, but the necessary indicators for success are overlooked.

To show usability and suitability of gerontechnology and technologies for the autonomy in the medical-social field, we need to demonstrate that they compensate for the deficiency or the disability present, and prevent the loss of autonomy. Efficiency indicators that are essential to justify costs within case-management logic have neither been used nor developed.

Yet, assuming civilization remains intact, we must imperatively find a solution for the development of these technologies, which our aging population can no longer do without. If we continue 'as usual', within the next decade the number of caregivers for the rising population of ageing people will prove insufficient with an estimated shortfall of 15% or more. Technology will have to take over many roles to assist the human help and in the organization of care at home, within a context of a considerable reduction in the number of available hospital beds and nursing-home places. Faced with this dilemma, familiar concepts will have to be critically re-examined.

Current paradigms

The first paradigm - a constant of French policy ever since the 1962 Laroque report⁶ - is that of support and maintenance at home (Aging-in-Place). Beyond a strict application of this principle - agreed to by all but yet to be demonstrated - it seems prudent and realistic to consider not only the individual home in the 'home' field, but to also include the collective housing, such as provided in nursing homes.

The second paradigm, deeply entrenched in the western medical education, is based on the identification of diseases, their diagnosis, their physiopathology and treatment. But the demographic transition to an ageing society modifies this model from the classical acute and single disease management model, to a chronic, unique, and multiple disease model, which requires a new care model predominantly based on case management. So the existing symbol of disease and of medical power may well be surpassed in favour of a new concept of daily functioning.

The third paradigm assumes that life equals functioning. The World Health Organization (WHO), after having produced 10 International Classifications of Diseases (ICD) in 2001, after long debate, established the International Classification of Functioning, disability and health (ICF)⁷. This new classification favours the environmental aspect over health aspects. Historically, this is the second concept of the WHO after identification of Philip Wood's sequences of the 1980s⁸, connecting disease to disability. This ICF is fairly complex, yet universal in its mission, and represents raw material that is rich in applications to be developed, particularly to evaluate those needs where technologies may turn out to be solutions of choice.

Governments signed up to this, even though they may have misjudged the ramifications, and about fifty countries have adopted this classification as the basis of laws and regulations to encourage taking care of people in disability situations. In France, for example, the law on disability was promulgated on February 11th, 2005.

A user's view

In practice, this may correspond to the highly pertinent remark made recently by one of our geriatrics patients: "You know, doctor, I am aware that I have seven chronic diseases at the same time and that I will not recover; but what is most important is to be able to function and to maintain my position in society for as long as possible... ". This re-evaluation of priorities - the emphasis on functioning as a defining dimension of life - can equally well refer to mobility, to communication, and even to end-of-life projects, and it is a precious tool for allocating funds to promote technologies and services in the field of health and autonomy. Gerontechnology has accepted this challenge.

GERONTOLOGY AND TECHNOLOGY

Gerontechnology is the scientific response to the simultaneous occurrence of demographic ageing and massive technological innovation³. It concerns the study of tech-

nology and ageing (gerontology) to ensure an optimal technological environment for all ageing and aged people, and it aims to optimize practical applications and rapid implementation of new technologies.

Gerontechnology is multidisciplinary; on the one hand there are the disciplines of human ageing (physiology, psychology, sociology, medicine), on the other hand there are the technological disciplines (physics and chemistry, building, mechatronics, communication, ergonomics, business management)³. This set-up has enormous potential benefits for society, but it also faces significant methodological challenges especially in terms of the reproducibility and validity of results. Different disciplinary points of view result in different approaches and methodologies and might lead to invalid conclusions unless interdisciplinary collaboration is practiced in such a way that responsibility for the whole is fully shared. Goals of gerontechnology are directed at realising specific ambitions and needs of ageing people within the domain of daily life. Following the definition of the WHO of health⁹ as a basic condition for independence and for following one's ambitions in later life, the selection to be covered here concentrates on aspects of health and rehabilitation.

An important paradigm of the gerontechnology approach addresses the necessary changes in the way products and systems are designed and marketed. 'Inclusive Design', 'Universal Design', 'Design for all' or 'Design for more' make it possible to leave the niche market of disabled persons, and enter the mass market for products adaptable and adaptive to different needs and cultural settings for a lower price, available for everyone. These changes will result in offering products that are easy to use, robust and reliable, and centered on users' needs and priorities. The gerontechnology interdisciplinary encompasses the design of evaluation tools for these adaptable and adaptive products and environments, both from the viewpoint of usability and implementation.

The main goal of this functional and user-centered approach is to use the resources of technologies to maintain and support quality of life for older persons and its proxy: to improve security and help in hazardous situations and crisis (such as a fall), to support autonomy by removing obstacles and limitations in current daily life activities, at home, but also in assistive living facilities or nursing homes.

GERONTECHNOLOGY AND THE IAGG

For the first time in 2009, a World Congress of Gerontology and Geriatrics has a direct stake in technology for autonomy and gerontechnology. After a period of apparent indifference, gerontologists and geriatricians show an increasing interest in technologies as new tools to enhance the quality of care, of care management, of care security, of disability compensation, of communication between the older person and his/her family and the social and care environment. Oral and poster communications on these themes have been given greater prominence by the organizing committee. A new and original event, the GerontechnoPlatform, has been set up which mixes information and hands-on demonstrations. Gerontology and geriatrics professionals will be able to establish contacts and be informed on evolving new technologies. In addition, the ISG and the IAGG are establishing links for future cooperation; the ISG is also candidate to become a member-society of the IAGG.

The GerontechnoPlatform gathers posters, videos, and demonstrations, with a variety of exhibitors. The purpose of such a platform is to show usability and suitability. Products (including services) adhere to the following conditions; they must be: (i) Useful for aging or aged persons; (ii) Innovative; (iii) Robust, technologically and organizationally; (iv) Existing proof of collaborative design (including end-user participation) or data available from user tests. A selection of the best and most attractive products and services mentioned in this issue has been assembled (*Table 1*).

ASSESSMENT CHALLENGES

The core of gerontechnology is looking through both sides of the lens: (i) to study ageing people from the viewpoint of their lives amidst a dynamic technological society; for them, technology is not an end in itself but a means to a better life, and (ii) to study technology from the viewpoint of its potential to improve the life of ageing people and to facilitate their participation as full citizens in their own society.

Current knowledge in the field is scattered over different domains: care, medicine, social psychology, architecture, building services, automation and robotics. Building and implementing a normalized 'reference frame of evaluation', as well as (specifications for) ICT-based assessment tools will not only lead to integration of the scattered pieces of knowledge and information, but will also lead the way to new approaches in the different domains. The assessment of gerontechnology products and services must answer multiple questions from both suppliers and intermediate and end users. The state-of-the-art must take into account the definition of families of technologies, the classification and the assessment of global and individual needs, the assessment of the cost/benefit ratio, and the definition of the best adapted assessment methodologies.

TOWARDS A RESPECTED OLD AGE

The new technologies that are increasingly shaping our daily environment hold a strong promise for maintaining health, autonomy, and quality of life of older adults. This is the final goal of gerontechnology. In accordance with this aim, this special issue of Gerontechnology shows how in present-day society technology innovation has become all-important for the health⁹ of all ageing citizens, including prevention, compensation of restrictions, rehabilitation, and care support. For gerontechnology research, the challenge is how to combine monodisciplinary approaches and methodologies in a multidisciplinary framework.

A multidisciplinary context

Table 1. Some of the Gerontechno-Platform contributions, with page numbers of descriptions in this issue

		Application domain				
		Health Self-esteem	Housing Daily living	Mobility Transport	Communication Governance	Work Leisure
Main goal	Enrichment Satisfaction	- Sound-wave Chair; 111		- Rolling dance chair; 122 - All-terrain wheelchair; 122	- Age Invaders game; 115 - Confucius computer; 115	- iCat; 94
	Prevention Engagement	- m@dtic bracelet; 123 - Sensing carpet; 123 - Vivago watch; 112	- Pearl robot; 94			
	Compensation Substitution	- SilverFit; 119	- eNeighbor; 120 - Netcarity; 118	- Adaptable walker; 117 - Robust walker; 123 - Wheelchair car; 104		
	Care support Care organization	- AAL; 114 - ITHAQ; 121 - Safygait; 123 - Telegeria; 109	- INNOS; 110, 123 - UbiQuiet; 113, 123	- LDS finder; 116		

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