

A. ZARLI, J-C. VANDERHAEGEN (Conveners). **The role of the construction industry and the built environment in an aging society.** *Gerontechnology* 2012;11(2):285; doi:10.4017/gt.2012.11.02.780.00

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ISSUE The architecture, engineering and construction (AEC) sector can make an essential contribution to needed breakthroughs and provide new solutions for the improvement of independent and active living in the built environment, including for older adults. This is related to (i) reducing impediments of immobility and maintaining autonomy at home, (ii) reducing the number of accidents and increasing health, (iii) developing integrated care and cure of disabled and aging people, (iv) providing a setting that enables physical, environmental, and social integration, and (v) meeting personal needs, e.g. by realizing new forms of living arrangements that reduce loneliness and improve communication and social expectations in the built environment. **CONTENT** This symposium originates partly from workshops organised by the European construction industry under the patronage of ENCORD (European Network of Construction companies for Research and Development)¹ and ECTP (European Construction Technology Platform)² that took place in Holzkirchen (Germany, 2010), Nice (France, 2011), and Warsaw (Poland, 2011). It became clear that engineers and architects are aware of the new technological options and solutions for the aging society in the built environment, and that new systems and services need to be integrated and deployed so as to support them in their daily practice – relying on a multidisciplinary innovation approach for independent and active living, and integrated care and cure of aging people in the built environment. **STRUCTURE** The four speakers will introduce the ambition and expected impact of the AEC-industry, especially with respect to specification of buildings favorable to healthy and active aging through the incorporation from the very start of the right technologies and services, to be a key step towards healthy and active aging in the built environment. The presentations will also introduce some innovative viewpoints related to the potential value chain to be erected with the habitat at its very heart, so as to contribute to achieving the goals of active and healthy aging, as well as the needed integration in construction practices, and the economic and marketing aspects. **CONCLUSION** This symposium will demonstrate the European construction industry readiness to take the next step towards improving the economy of an aging society by architecture and construction of schools, hospitals, housing, offices, public buildings, urban districts and cities with a focus on both active aging, and aging well at home.

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J.C. VANDERHAEGEN. **From PowerPoint presentations to real life: How to make telehomecare and design for all work.** *Gerontechnology* 2012;11(2):285-286; doi:10.4017/gt.2012.11.02.795.00

Purpose An ageing population will have serious consequences for public finances and the demand for traditional health service. The construction industry can help by providing innovative solutions to this challenge. By building accessible houses and infrastructure people may be able to stay in their homes instead of being institutionalized; this will relieve the burden on the public health system. Implementation of domotic healthcare systems (telehomecare), can diminish the need for hospitalization and enhance the quality of life of medical staff. There are a lot of R&D, pilot projects, but as yet no consolidation or diffusion. There is a 'technology push' – not a 'demand pull'. Traditional innovative methods are failing, but what kind of innovative methods do we need to market at scale telehomecare systems and accessible houses? **Method** Literature study and field visits, benchmarking between Scandinavian countries and the USA, participation in innovation and business developments in the building and real estate industry¹. **Results & Discussion** Accessible housing should be implemented in the context of a general 'sustainable construction' approach. The industry will evolve from a specific approach (adapting the home of

specific person with a specific disability) to a general approach; from design for people with a disability to design for all. At the moment, the approach is too focused on energy efficiency, whereas sustainable construction is a more general concept, comprising: (i) The idea that the healthcare sector is not a consumer-directed market and is fragmented. ‘Customers, customers, customers’ is the credo for a dynamic industry, but who are the customers in the healthcare sector? (ii) Recognition that ICT must take the diverse needs of all stakeholders into account, such as users, patients, formal and informal care providers, insurance companies, state and local authorities, public administrations. Moreover, the stakeholder who will pay must be identified? (iii) Recognition that telehomecare is not only about technological innovation; for it to be successfully implemented new business models and lead organizational changes must be developed.

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S. ISAAC, F. SADEGHPOUR. **Facilitating the adaptability of buildings through the separation of components.** *Gerontechnology* 2012;11(2):286-287; doi:10.4017/gt.2012.11.02.189.00 **Purpose**

Buildings need to be adaptable with relative ease to new user requirements, regulations or technologies. Adaptability reduces the effort and expense involved in adding, changing or replacing building components (such as partitions, doors or plumbing fixtures), throughout the building's life-cycle. This increases the buildings' value and sustainability, as well as the building user's satisfaction¹. In practice, however, most buildings are designed and constructed to suit their current use, while their future adaptability is ignored². Our research follows an approach that is based on the systematic separation of building components whose replacement occurs at different intervals. Such a separation reduces the efforts, waste and costs currently involved in adapting buildings to the changing needs of their users. **Method** A number of methods are used in order to support the design of adaptable buildings. The building components in the design are ordered through pair-wise comparisons of their replacement rates³. This is preferable to an assessment of the actual life expectancies of the components¹ in light of the uncertainty regarding external factors such as maintenance policies and future technologies. The relationships between specific building components with different replacement rates are then detected using graph-based methods. A clustering algorithm⁴ is applied to a weighted graph representing the design, in order to distinguish between groups of components with different replacement rates. Building components with different replacement rates are then separated through the systematic application of buffers in the building design. A scenario-based method is used to evaluate the costs and benefits of these buffers. A path-search algorithm⁵ automatically identifies the components that will be affected by changes in each scenario. **Results & Discussion** Preliminary research included an implementation of the proposed methods in a small-scale case study. Results of this test gave an indication of the feasibility of these methods, suggesting that they might support the design of adaptable buildings. This could facilitate an alternative to current housing policies for elderly people – i.e. adjusting buildings according to the frequently changing needs of their inhabitants, instead of requiring the inhabitants to keep moving as they need more assistance⁶⁻⁷.

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*E.R.M.C. HUISMAN, E. MORALES, J. VAN HOOFF, H.S.M. KORT. **The meaning of physical environmental factors on patient, family, carers and staff outcomes.** Gerontechnology 2012;11(2):287-288; doi:10.4017/gt.2012.11.02.543.00*

Purpose In recent years, the effects of the physical environment on the healing process and well-being has proved to be increasingly relevant for the patient, family, carers (PFC), and staff. Moreover, it is a growing concern among health care providers, environmental psychologist, consultants, qualified installers of technologies, and architects. These concerns are about the traditional, institutionally designed health care facilities (HCF) in relation to the well-being of patients. Different studies have found that an improved design of the built environment can enhance the safety and quality, satisfaction of this so-called healing environments. This is an overview of the evidence presented in the literature on healing environments. The scientific research on evidence-based design is ordered and structured. **Method** The Cochrane Methodology¹ was used to search data. Pubmed [Medline], Jstor, and Scopus were searched for relevant articles. A total of 54 keywords were used and structured in four groups, patient, staff, environmental factors, and relevant authors. After eliminating duplicate articles, the remaining articles were examined for further selection. At the final stage, articles were selected based on title and abstract that referred to the physical environment of healthcare facilities in the title and the abstract. To order and structure the evidence regarding healing environments, the framework of integrated building design by Rutten² and Ulrich^{3,4} was used and adapted. The studies included in the review were subdivided into two groups, PFC-outcomes and staff outcomes by using methodology according to the pyramid of evidence⁵. **Results & Discussion** Results illustrate the effects of different aspects and dimensions that deal with the physical environmental factors of HCF on PFC and staff. A total of 798 papers were found to fit the inclusion criteria. Of these, 68 articles were selected for the review: less than 50% were classified with a high level of evidence, and 87% were included in the group of PFC-outcomes. The study demonstrates that evidence of staff outcomes is scarce or insufficiently substantiated. With the development of a more customer-oriented management approach to HCF, these results are important for the design and construction of HCF. Some design features to be addressed are: identical rooms, single-patient rooms; and lighting. For future research, the main challenge is to investigate and specify staff needs and integrate these needs into the built environment of HCF.

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A. ANFOSSO. **Duplicating the nursing home service model to extend the life of elderly at home with ICT support.** *Gerontechnology* 2012;11(2):288; doi:10.4017/gt.2012.11.02.789.00 **Purpose**

Allow people to stay at home should be considered as a transfer of the services generally provided in nursing home into the private home. The population concerned by gerontechnology is generally frail: that means that there is no priority to meet a need for those who have no difficulties during their aging. For those who have difficulties to live alone, the stake is to provide a solution to support the absence of carers between two visits. Two main questions come then: how to control the safety of the dweller with the help of a monitoring solution? How to guarantee the effectiveness of the service?¹ **Method** The technical configuration that supports the monitoring service is a well studied solution to ensure the continuity of the detection of presence and activity in the housing. For an efficient remote monitoring service, we have to guarantee the presence of the dweller in the housing since the detection of risk is based on this assumption. In addition, carers have to control that activities of daily living are correctly performed (eating, hygiene, taking medicine, food is provisioned, house servicing etc.). Then the most common risks related to geriatric frailty and their consequences more generally can be monitored (fire risk, flood risk, falling etc.) between the absences of caregivers. In a context of rationalization of health expenditures and of preservation of the quality of the services and cares, information sharing (collaboration) between caregivers is fundamental. The deployment of a network infrastructure to connect the home to a decision-making body, which will analyse the information brought up by social and medical employee, is advocated². Then the most common risks related to geriatric frailty and their consequences can be monitored between the short term absences of caregivers. **Results & Discussion** The prescription of the infrastructure (geriatrics compliant) to support the services requires a multi-disciplinary competency. This will demand the implementation of a training combining geriatric and technological expertise. The responsibility for the organisation of the prescription of these services and their implementation by stakeholders is up to a public or private entity, with probably a formal labelling of this jurisdiction and recognition of the responsibility (accreditation)³.

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