MANAGEMENT OF INFORMATION
IN GERONTECHNOLOGY

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Introduction
Recently an experiment has started in the province of Limburg, town Sittard, that aims at the prolongation of independence of senior citizens. This requires sufficient care, appropriate housing and opportunities for social participation (figure 1).

![Diagram]

- The Elderly

Fig. 1 Actual Situation

In order to achieve this, two conditions have to be fulfilled i.e.:
- care provision (self care and/or professional care);
- technical support (for mobility, communication, housing etc.).

In general terms, the objective of the SENSE (SENIor SErvice)-project is the optimisation of functional environments of the elderly by using technological applications and customised care provision.

Obviously one cannot separate the use of a set of technical products from the package of professional care. In many cases technology offers only support to or marginal improvement of the total care needed. Seen from the consumers point of view it is not always clear which care is provided by which care-organisation and under what circumstances they are entitled to that care (family care, nursing, psychological care, housing, welfare, social activities). This causes situations where people are endlessly referred from one institution (counter) to the other. Sometimes there will be insufficient care leading to faster institutionalisation or redundant care which leads to an expensive health care system. A tailored service package can contribute to independence for elderly. Therefore the care organisation in the SENSE-project is also integrated in the central management structure.

The use of new products by elderly, however, is not an automatic process. At the same time, industries do not know which elderly under what kind of circumstances could be supported by what type of products. An intermediary organisation is set up in order to optimise the technology transfer in the project (see figure 3). It is again the task of the central management to arrange a constant matching between demand for and supply of technical products and services.

In the ideal situation the package will consist of a customised product containing: care, service and technical product(s). The central management will increase efficiency in the process of tuning the exact demand for help and support from the client with the combined offer of professional care and technological possibilities.
Summarised the project aims at:
- a management structure that matches individual demands with a customized supply;
- development of technological applications based on interaction between consumer and producer;
- improvement of interaction between care organisations and industries (specifically SME's = Small and Medium-size Enterprises)

In figure 4 the set up of the SENSE project is schematised.

**fig. 4 Scheme of the SENSE project**

**Does SENSE make sense?**
To make projects like SENSE work is more easily said than done. They are magnificent in aims, but difficult to manage. As is clear from the previous introduction, SENSE is a project in which several groups from several disciplines are involved. The main groups are:
- the elderly, (the ultimate users of SENSE);
- the professional care-givers;
- industry;
- and financers.

Within these groups again several sub-groups can be distinguished:
- younger and older elderly; requiring help or not, extensive or not, etc.
- within the group of care professionals: general practitioners, home-health-care workers, welfare-workers, health educators, senior-organisations, volunteer or organisations, etc.
- as far as industry is concerned: medical technology, telematics, architecture, technical provisions for everyday-life functioning such as wheelchairs, microwaves, elevators, etc.
- financers are a mixture of local-, regional and national government-agencies, and independent funding foundations.

In general one can say that the basic idea behind those kinds of interdisciplinary projects is one of synergy. This means that the set of individual actors in the project must form a whole. The whole has properties that are not shown by the individual actors. Their combined contribution becomes more than the sum of their individual contributions.
From a theoretical point of view we can look at the project as to a Knowledge and Information System (KIS). A KIS can be defined as:
* the persons, networks and institutions,
* and the interfaces and linkages between them,
* which engage in or manage the
  - generation,
  - transformation,
  - transmission,
  - storage,
  - retrieval,
  - integration,
  - diffusion and
  - utilisation
  - possible results

Management of information
In brief, SENSE forms a complicated network of disciplines, each creating and transforming their own kind of knowledge and information. The question is: How to manage all this information in such a way that we get the best possible results? In this case: a tailored service package which can contribute to independency for elderly.

Multi-disciplinary projects mean:
- great variety of expertise (expert domains)
- each having their own objectives
- philosophy
- needs for domain protection
- variety of standards.

Now let us relate this to the two main questions in the SENSE-project:
- what is the exact demand of the elderly for help and support? and,
- who takes care of the combined offer of professional care and technological possibilities.

In relation to these questions, there are several areas of possible tension.
1. Within both the "social-care sector" and the "technology-sector", this leads to questions such as: who is responsible for which part of care; who takes part in the central management? Not all organisations, involved in the project, can be involved in management. Within each domain a representative plays this role. But who? And does this delegate represent all others equally well? As far as industry is involved, commercial interests play an important role. But also non-profit organisations have to protect their field and have to think and act "commercially" to an increasing extent, despite all good intentions of cooperations.

2. Between the "social-care sector" and the "technology-sector". An interesting challenge in multi-disciplinary projects is that many relevant experts are brought together. But, once they are together we are confronted with the problem of how to let them communicate. The variety of standards is already mentioned. But there are also other aspects leading to communication problems: each sub-discipline speaks it's own language; each discipline has it's own frame of reference.

For example some telematic solution might technically be superb, but absolutely user-unfriendly. On the other hand, health care professionals may be well informed about the needs of the elderly; but what do they know about the technical possibilities? Who is in the end responsible for the composition of the offered care? A technician will come to a different solution as compared to a social worker. But which one is the best? The package is not always equal to the best technical solution.
Conditions for optimal KIS performance
Multi-disciplinary projects need a powerful "system integrator". In the SENSE-project this can be the "projectmanagement", but only if it is a group which is large enough to cover the fields involved and small enough for mutual adjustment.

Multi-disciplinary projects ask for a change of attitude, both from the user and the social and technical suppliers of help. This means that special attention is required for the sharing of knowledge and information, as well as for mutual insight into each others standards.

A shared Knowledge and Information System, that is: a system in which several actors want to cooperate, has to be developed around the goals of the project; The incentives of the parties involved should be reflected in the general aim of the project. Cooperation only works when all participants gain enough to make it worthwhile to invest the required extra effort!

Discussion
Multi-disciplinary projects need a powerful system-integrator. He has to function either as a catalyst or as an integrator of knowledge and information, relevant to achieve the ultimate goal, i.e. a tailored service package that will contribute to independency for elderly.

Organisations and institutions involved in multi-disciplinary projects agree on the general aim and on the philosophy of the project. However, cooperation only works when all participants gain enough to make it worthwhile to invest the required extra effort.

A tailored service package contains a combination of social and technical care. It is however not easy to develop such an offer.

Three possible approaches are:

* the package has to be developed on the basis of knowledge from the technical domain, completed with knowledge from the social-care domain;
* the package has to be developed on the basis of knowledge from the social-care domain, completed with knowledge from the technical domain;
* the package has to be developed in a mutual adjustment situation: the technical and social care domain are equally important.