senior watch

European SeniorWatch Observatory and Inventory -
A market study about the specific IST needs of older and disabled people to guide industry, RTD and policy

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POVES

Successful technology transfer from an publicly funded research and development project.

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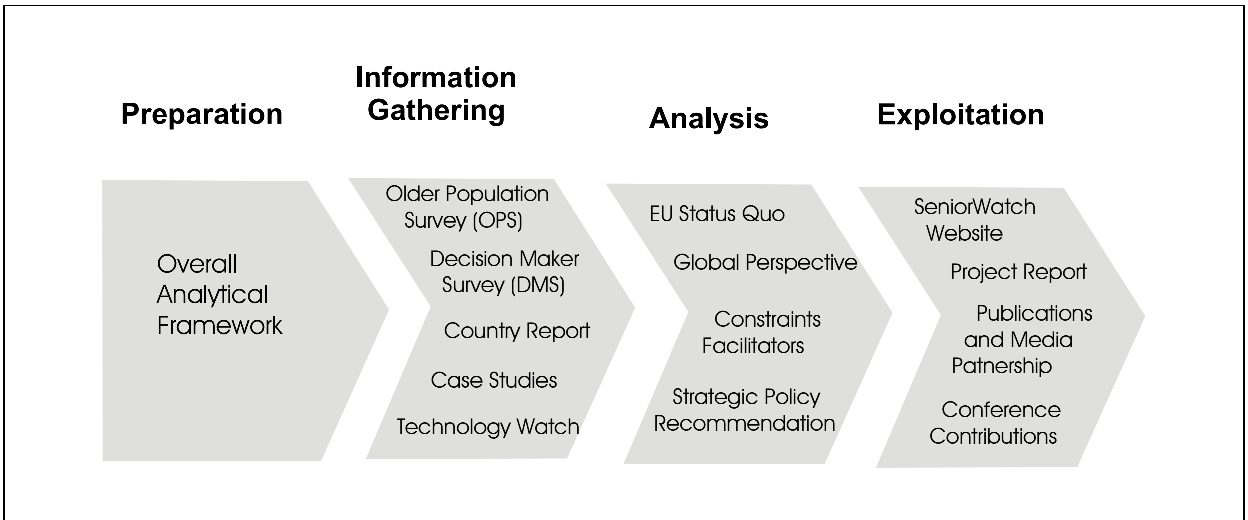
1 Introduction

The SeniorWatch project addresses the need to understand better and to monitor the market dynamics of Information Society Technologies (IST) applications and services targeted at older (and older disabled) citizens. Currently, there is insufficient empirical data about the needs of older citizens which could be met by IST-based applications and services, and a lack of awareness on the part of industry, users and politicians that hampers the rapid exploitation of new market opportunities arising from IST developments. In order to redress this state of affairs SeniorWatch will provide a European single source of empirical information on the market potential of IST-based products and services targeted at older people. The main objectives can be summarised as follows:

- to help and encourage European industry to address the market opportunities, and particularly challenge current competitive advantages of the US industries,
- to enable policy to really influence the current situation and to benchmark achievements between different European regions and countries and to make comparisons with competing world economies (Japan, US) most relevant to the field,
- to inform citizens about what is now possible with the support of IST and, thus, encourage them to demand IST products and services which meet their requirements.

As illustrated by Figure 1-1, these objectives require a comprehensive methodological approach to be applied. On the basis of an overall analytical framework, it integrates a set of complementary research methods such as European-wide surveys of older people and of decision makers in care services, best practice case studies, technology watch work shops and country reports. Synthesising the various types of empirical information gathered with help of these methods will finally enable the project to arrive at an holistic overview, to establish a technology and market observatory, and to derive policy recommendations to accelerate market development. Research results will be exploited by means of different measures.

Figure 1-1: The Project Phases of SeniorWatch



Source: © SeniorWatch, 2001

As part of the project's overall methodological approach the SeniorWatch case studies aim at providing a useful source of information on how the IST-related needs of the target groups in question can adequately be served. They are also intended to help to understand - in a qualitative manner - more deeply specific aspects of the market situation related to IST products and services relevant for older citizens. To allow a comparative analysis of real-life examples, a common approach for selecting and describing suitable cases was developed. The main selection criteria applied in this context include:

- suitability of the case to provide input to the overall understanding and analysis of the market for IST among older people;
- suitability of the case to serve as an example of a success story (or failure) that can guide and motivate others to take actions that will support the diffusion and take-up of IST by or for older people.

In the folowing the SeniorWatch case study no.22 is described.

2 POVES. Successful technology transfer from a publicly funded research and development project.

2.1 Description

The POVES project

The aim of the POVES project was to develop the prototype of a night vision system for nightblind persons. A particular objective was to develop small, lightweight, head-worn, optoelectronic glasses which would improve the mobility of nightblind persons affected by retinal degenerative diseases. Also, the project team intended to prepare exploitation and marketing of the device.

Optoelectronic glasses with integrated CCD camera weighing about 200 g, connected with a pocket part weighing more than 2 kilos were initially developed. The first version of glasses (NIVIS 1) was tested twice during project development in-house, involving the main target groups : nightblind patients with Retinitis Pigmentosa and congenital stationary nightblindness.

NIVIS 1 was delivered after two years of project work (1994-1996) and redesigned into DAVIS 1 and DAVIS 2 (Dark Adapted Vision System) with less weight, more comfortable wearing on nose and ears and six infrared lights for illumination in extreme darkness. DAVIS 1 was again extensively tested in an outdoors parcours by 43 nightblind patients at the university eye clinic in Heidelberg with the result, that 22 patients expressed an interest to wear" the glasses. There was no correlation between this "interest to wear" and age (4 probands were > 50 ; 5 probands were < 20).

In 1999 a start-up company was founded which further developed DAVIS to become NIVIS 2 (less weight of glasses: 150 g ; more comfortable nose fixation; walkman-size pocket part). The pocket part to be worn on the belt with batteries for more than 2 hours duration time is to enhance light and contrast and provides connection for watching TV.

It became clear at the end of the POVES project that the prototype NIVIS 1 would require intensive redesign before entering the market. No further project funding however was available. The two companies who produced the prototype reluctantly invested some money for this purpose, but slowly withdrew (1997 to 1998).

Delivery of new components, e.g. LCD display, were significantly delayed by the Japanese suppliers ; additionally, some initial difficulties came up with the series production of special optical and mechanical parts, produced by small and medium sized European companies. The objective was to bring NIVIS 2 on the market with a series of about 500 pieces with lowest weight possible, sufficient resolution and sufficiently wide visual angle (30 degrees horizontal, 21 degrees vertical). This became possible by the foundation of a start-up company in Germany, with capital made available by a private German foundation, sufficient to finance work for NIVIS 2 development, based on DAVIS 2, series production and for marketing activities. This was **the** critical economic success factor.

The POVES project team did not dispose of sufficient know-how, capital, and interest to found a start-up company. The product would have never reached the market without the start-up company in spite of some extremely dedicated actors of the POVES project team. The alternative solution, to integrate NIVIS or DAVIS into the product spectrum of the two involved consortium companies (Jurca, CAE) did not work due to lack of market know-how, conflicting interests and inconsistent individual actor strategies. The advantage of the start-up solution was to provide capital for further development, series production and marketing as well as taking over key personnel from the POVES project.

History and policy context

Two main actors pushed NIVIS from the first idea and conceptualisation (1992) to the production series in the start-up company (2000). One of the two "pushers" worked in industry, the other one (nightblind himself) worked in a private research institute and simultaneously represented a user organisation. New partners joined them during proposal writing (1993) and POVES project implementation (1994-1996). DAVIS redesign (1997/1998) was reluctantly and insufficiently financed by two POVES industry partners, which both were not willing to keep up financing levels. The two main actors therefore, after leaving their respective companies, took a new strong business partner on board the frailing NIVIS ship in 1999. This new actor was a private business owner with connections to other actors who themselves knew the people from the private German foundation, finally co-financed the new start-up company. The new business manager took now the "pushing" role, founded the start-up company, invested some funds himself, employed the two earlier "pushers" in the start-up company (one of them as director, the other as consultant) and put a new team of marketeers, developers and producers together (7 persons).

Perspectives

With 200 to 500 pieces NIVIS 2 went into production in 2000 and with the support of the two "pushers" in the first half of 2000 a sales and marketing network with low vision clinics was established by the start-up company in Germany and other European countries. At the same time diversification was taking place: While NIVIS 2 is being further developed into "3 max"(e.g. new camera and LCD for improved resolution and widened visual angle; integrated mouse for mobile reading application, etc.); hunting and marine application (3-max hunter; 3-max marine) have been selected for expanding the market and reducing the price. Attempts to get NIVIS 2 recognised as "assistive aid" by the German health insurance system have failed so far. Hence, individual nightblind patients get no reimbursement for the price of about 1000 Euros (October 2001). According to the marketing manager of the start-up company, global marketing and sales promotion for NIVIS 2 has been taken over in 2001 by the renowned specialised private US company "Ligthhouse International". Low Vision departments of eye clinics, Retina societies and rehabilitation institutes in Germany and other European countries have all showed an interest in the new device and have either put some on stock for demonstration and marketing purposes or have started selling or presenting the system.

The start-up company is still looking for recognition of NIVIS 2 as assistive aid by the health insurance system. This looks more promising in France than in Germany. The user organisations are still reluctant to embrace the system because of low demand rather high price and because they have no experience in marketing on their own this new technologies to their members. The two "pushers" are no more active in the start-up company company, the old board of trusties of the company (Aufsichtsrat) has been dissolved and replaced by a new one and the CEO (the new pusher) is the only and most powerful director of the company.

2.2 Analysis

Impact

The POVES/NIVIS story can today (2001) be regarded as a successful technology transfer story owing to the following factors:

- Two "technology pushers" with a complementary mix of skills and relationships, one engineer and one educated user, established a network of researchers and developers, rehabilitation experts and interested users who contributed to the success of product development and redesign during the first phases (until DAVIS 2, 1999).

- The "chance success" of finding a business manager who helped to find a private foundation which financed the start-up company was essential for production take-off.
- The continuing risk taking attitude and personal (charitable) investment of work by the pushers after completion of the TIDE project ascertained the bridging of the most critical phase of the overall product development.
- The success of technology transfer was fully established when the POVES project leader (the engineer pusher) became director of the new start-up company and the representative of the user organisation (Pusher 2) became a consultant to the start-up company.

Still it cannot be excluded, that obstacles or failures will jeopardise the long term market success of the product:

- Only with the continuing support of low vision clinics and patient organisations will the product be established on the "first" market of nightblind patients. The improved successor product of NIVIS 2 may block full exploitation of NIVIS 2 (negative waiting effect).
- The diversification strategy of the company has not yet been successful, (also) since NIVIS 2 has still the image of an assistive technology. Even if diversification into the hunter, marine or medical markets succeeds and the price goes down, the "first" market will only be conquered if the insurance companies will reimburse the assistive product.

For the latter purpose, however, close co-operation with patient organisations may be required:

- as the start-up company has cut off its co-operation with the first generation of product pushers, it has to rely on new marketing and development personnel who is rather inexperienced and unaware of the mechanisms of the patient market.
- Due to patent conflicts, the start-up company does not acknowledge the POVES project and its prototype as predecessor of NIVIS 2. Neither the funding institution nor the project partners seem to be in a position to defend their interests. Attempts of the former POVES project partners to form a "Interessengemeinschaft" (community of interests) vis-à-vis the start-up company, are ongoing; no former project partner maintains any work relations to the start-up company anymore.
- The establishment of a network of distributors in Germany for NIVIS 2 is restricted to about a dozen low vision clinics; they can only make available for tests or prescribe but not sell the product.
- The intended global sales promotion for NIVIS 2 successor products seems to become centralised in the United States (Lighthouse International, New York) and not in Europe, where the product was originally developed and tested and complies with the CE norms of the medical products regulation. It will have to be proven if with this strategy the NIVIS product and its "spin-offs" will be able to penetrate the US and the European markets.

Lessons to learn

The main lessons to be learned from this case-study are directed to the **party which funded the development of the prototype:**

- Success of the NIVIS product until now is due to a number of (chance) factors that emerged after the initial development phase; the marketing and production phases did not systematically build upon the development phase.

- The co-operation agreement between the POVES partners, foreseen by the funding party contract with the consortium, was not systematically exploited for transfer purposes. The burden of compensation of former project partners was considered too high by the industrial partners to systematically pursue exploitation activities and funding of user oriented marketing activities.
- Only by chance one of the pushers (the educated user) used the instrument of "interest grouping" in order to loosely network the former consortium partners. This network, however, was not used to exploit the product but to put pressure on the start-up company to recognise the POVES project and its patents as basis of NIVIS 2. Without the funding institution's future support, however, this pressure may not be successful.
- The most important lesson relates to the financial aspect of the technology transfer process. The two pushers, in particular the engineer and project leader were left alone, when the two consortium companies after initial investments did not further pursue the development and marketing of NIVIS. The former project leader pursued product development on his own, together with his family and the second pusher, who used his close contacts to the user organisation.
- Funding institutions could consider the following measures in order to establish a more targeted and systematic transfer process once development projects for IST systems are completed:
  - Pre-competitive assessment of the prototype's market prospects, if possible by a non-consortium expert organisation
  - Depending on the positive outcome of the assessment study:
    - Promotion of the establishment of a new "transfer-consortium", composed of selected former consortium members but also of new marketing and exploitation oriented organisations
    - Promotion of initial funding for redesign and marketing activities of the transfer consortium (e.g. 10% of funds of original product development)
    - Promotion of a "Compensation agreement" among original consortium partners: renunciation of compensation by those partners who do not participate in the subsequent "transfer consortium"
- The double role of the second "pusher" of NIVIS as representative of a user organisation and as project partner certainly helped in the transfer and marketing process. It would be useful, if the funding institution developed clear procedures for the inclusion of users in project implementation (see Fortune project) and observed closely how these rules were complied with. Useful support from the funding organisation could, for instance, involve contacting business angels, public technology transfer agencies or local funding authorities after project completion.
- The industry has to watch more closely the structures and strategic actors operating on an unknown market before deciding not to enter it. Network with former project partners to reduce marketing risks and find new partners.
- Although user organisations may be strong partners in determining user requirements for new products they are charitable organisations and cannot be (mis-)used as sales agencies or business partners. User organisations often have long established informal structures and procedures for making aware, testing and announcing new interesting products to their members which should be known to the product manufacturer before (co-)marketing the product.

Trends and Vision

NIVIS 2 is a novel high tech product for (old, middle-aged and young) nightblind persons to increase their mobility, independence and social participation. It has replaced earlier unsuccessful generations of uncomfortable, monocular, hand held or head worn light amplifier systems.

Small, light-weight opto-electronic glasses with a small pocket part seem to be acceptable for a specialised target group of nightblind persons in particular if technical features are improved and health insurance system provides for reimbursement. Although general cost reduction strategies may prevent acceptance of the device as official "assistive aid", user organisations may be successful in going to court in individual cases and "forcing" the health insurance companies into reimbursement.

As the market for virtual glasses increases, and the NIVIS product diversifies into peripheral TV, PC or further applications, and as LCD and camera technology advances, the price for the NIVIS application may decrease to a level where even private purchase may become affordable. Two potential technical breakthroughs may further increase marketing potential:

- The addition of a small **telecommunication unit** to the glasses may significantly widen its range of application (e.g. picture transfer for security purposes, but also for private applications) beyond the assistive market segment.
- The addition of special **software features** to the NIVIS glasses may significantly increase its potential on a rather large market for various forms of visual impairment (e.g. color modification for the color blind; picture compression for patients with various forms of scotoma; glare adaptation for numerous eye diseases, etc.)

2.3 Acknowledgements and links

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