MonAMI: Mainstream on Ambient Intelligence. E-inclusion Living Scaled Field Trial Experience in Spain

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The MonAMI project was aimed to investigate the feasibility of the deployment of open platforms for Ambient Assisted Living (AAL) services provision and to test user acceptance and the usability of the services. The services were designed to give support in the areas of environmental control, security, and leisure. The participants included elderly persons with disabilities, care staff and informal carers. The concept of the open platform proved to be satisfactory for the provision of the services. The usability of the technology was viewed positively and the overall result indicates that this system has the potential to prolong independent living at home for elderly people with disabilities.


Keywords: AAL, ambient intelligence, assistive technology, e-inclusion, elderly, mainstream technology

1. Introduction

The increases in life expectancy and ongoing growth of the older adult population have led to new models of ageing that empower people to have fulfilling lives in the residence of their choice. Independence is a critical issue not only for older adults but also people with disabilities who wish to remain at home and increase their quality of life.

The use of assistive technology is a successful strategy to help promotion of independence and maintenance of health. Despite these positive outcomes, access to assistive technology is very restricted in developing countries. Availability of assistive technology is achieved by ensuring that infrastructure, personnel, products and materials are available. Appropriate assistive technology should meet users’ needs and environmental conditions with services sustained, at the most economical and affordable price.

When it comes to the design and development of new devices and services for independent living, the specific requirements of users have to be taken into account as well. They must ensure and guarantee an accessibility and usability by older people, people with various disabilities as well as other users. Elderly people especially have particular user requirements, e.g. due to their restricted ability to hear, to see or to control ICT equipment.

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With regard to individual, economic and social challenges by demographic trends, it is clearly stated that ICT can make key contributions to the independent living of elderly people. This refers to the following points in particular:

- ICT can reduce high expenses for health and care services
- ICT has the potential to provide individual solutions and hence to meet individual needs
- ICT has the potential to improve living standards
- ICT opens new business opportunities

The European Commission has set up several activities under the 6th Framework Programme (FP), which have been continued under the 7th FP to initiate a Europe-wide dialogue among all parties working for an accessible and inclusive information society. Mainstreaming on Ambient Intelligence (MonAMI, 2006) is a five years long project, funded under the 6th Framework Programme by the European Commission, with 14 European partners and a budget of 13 M€.

2. State of the Art

The European commission fosters “the emergence of innovative ICT-based products, services and systems for ageing well at home, in the community, and at work, thus improving the quality of life, autonomy, participation in social life, skills and employability of older people and reducing the costs of health and social care”. This description of goals is already a completion of what is comprised by ICT for independent living of the elderly.

Several e-inclusion and AAL projects were funded under IST Call 5 and 6 by the 6th Framework Programme leading to a first wave of research and development in these knowledge areas.

SOPRANO (SOPRANO, 2007) develops a home environment to support assistive technology by “unobtrusive components seamlessly linked to external service provision”. The platform is developed through a service-oriented architecture (SOA). The main objective of SOPRANO is the development of “affordable, smart ICT-based assisted living services with interfaces which are easy to use for older people...” Thus, the project also tackles the problem of how to convince elderly people to accept technology-based monitoring systems.

PERSONA (PERSONA, 2007) aims at advancing the paradigm of Ambient Intelligence through the harmonisation of Ambient Assisted Living (AAL) technologies and concepts for the development of sustainable and affordable solutions for the social inclusion and independent living of senior citizens, integrated in a common semantic framework. It develops a scalable open standard technological platform to build a broad range of AAL Services, to demonstrate and test the concept in real life implementations, assessing their social impact and establishing the initial business strategy for future deployment of the proposed technologies and services.

CAALYX (CAALYX, 2007) aims to prolong the time people can live in a decent more independent way by increasing their autonomy and self-confidence, by allowing them to discharge normal everyday activities, by improved monitoring and care of the elderly or ill person, by enhancing their security while ultimately saving resources. The system is tested in a real usability site arranged through a social programme for the elderly, and obtains reliable assessment by gathering real end users’ feedback.

NETCARITY (NETCARITY, 2007) proposes a new integrated paradigm for supporting independence and engagement in elderly people living alone at their own home place. The project fosters the development of a ‘light’ technological infrastructure to be integrated in the homes of old
people at reduced costs, that both allows the assurance of basic support of everyday activities and health critical situations detection, as well as the social and psychological engagement required to maintain in the elderly the emotional wellbeing enhancing dignity and quality of life.

EMERGE approach is to use ambient and unobtrusive sensors to monitor activity, location, and vital data. Daily routine is tracked in order to detect abnormalities and to create early indicators for potentially arising emergencies. The impact of the developed prototypical solution on quality of life is measured in an Assisted Living Laboratory and in a multinational site evaluation. It is expected that EMERGE will help elderly people to live a safer, self-determined life and to stay longer in their preferred environment.

Sensaction-AAL develops an ICT-based solution which is highly usable and can support elderly people in their preferred environment. An extended in-vivo accurate validation carried out with the support of end-users is required to assess the satisfaction of key user requirements and produce a solution which is adequate for industrial take-up.

SHARE-IT (SHARE-IT, 2007) aims to develop a scalable, adaptive system of add-ons to sensor and assistive technology so that they can be modularly integrated into an intelligent home environment to enhance the individual’s autonomy.

Easy Line+ (EASYLINE+, 2007) foresees using the integrated RFID, Neuronal Networks and HMI technologies to build a system that can capture data of the home environment, and can control via wireless communication (Zigbee) or the mains electricity (EMS PLC), any white good in the home. The users, elderly persons, may actuate by himself any white good in the home, or may leave the “e-servant” to do the actuation. The e-servant is a white good control system, based on the sensor information and the habits of the user that can program any application without/or with user cooperation. The e-servant is also a learning system that detects the loss of abilities of the user and tries to compensate for them.

MPOWER (MPOWER, 2006) defines and implements an open platform to simplify and speed up the task of developing and deploying services for persons with cognitive disabilities and the elderly. Previous European projects have shown that technological augmentation of the living space can help alleviate the problems of daily living, increase quality of life and reduce the need for institutional and other care. MonAMI builds on these results and aims to move such services from the laboratory and small scale demonstrators to the status of mainstream technology.

MonAMI focus on:
- capitalizing on Ambient Intelligence (AmI) technologies to ensure that the services can be used without behavioural change
- building on top of mainstream devices and services such as TV based internet, nomadic devices, etc.
- doing initial experimentation in Feasibility and Usability centres and subsequent large-scale validation in Validation centres in five countries
- addressing economic viability and long term sustainability of such services in large communities in different Member States

MonAMI selects bouquets of services in the areas of comfort applications, communication/information, health, safety and security. It builds, tests and deploys these services and demonstrate that they can be economically brought through the future mainstream ambient intelligence technologies (Fagerberg, 2009).
MonAMI focuses on services, platforms and usability: The technology platform is derived from
mainstream technology. Usability requirements are identified, an evaluation methodology is
selected and usability analyses are carried out (Fagerberg, 2009).

3. Objectives
The objective of the MonAMI project is to demonstrate that accessible, useful services for elderly
and disabled persons living at home can be delivered in mainstream systems and platforms. This
was done in close cooperation with users and by involving key mainstream actors throughout the
whole process.

This report describes the work carried out at the living scale field trial (LSFT) site in Zaragoza,
Spain to test the MonAMI services and technologies in a living environment. It is intended to
contribute to the body of knowledge concerning the testing and usefulness of ambient assisted
living (AAL) services and technologies for persons with disabilities, elderly persons, their family
and friends who care for them, and care staff. Main findings are a positive proof of concept of
open architectures for service provision for the elderly with impact on the exploitation and
marketability, on the service update and new functions development and a potential support for
improvement of quality of life for the final user and caregiver. It has shown potential as
alternative and complementary solutions for dependency and its associated social cost and
affection to quality of life.

4. Methodology
4.1 Technical Development
The technology base for delivering the MonAMI services is the MonAMI platform developed
from mainstream, open-source components with a touch screen computer as the central element.
Other parts are a Universal Control Hub as the user interfaces server, wireless sensor networks
and a remote service management function. The total is a platform flexible enough to deliver a
wide range of different services and facilitate future development and addition of services in a
cost-effective manner. The services developed by MonAMI have been grouped into five packages:
AMISURE for safety and security, AMICASA for home control, AMIVUE for home status
information, AMIPAL for time management and AMIPLAY for games.

The selected services were first tested in six Feasibility and Usability centres with user tests in lab-
like conditions. The centres have different profiles and address different user groups. For
example, the Slovak centre focused on analysing and enhancing the integration of inclusion
services based on mainstream technologies in new EU Member States (Balog et al., 2012; Galajdová
et al., 2011; Simsik et al., 2010; Simsik et al., 2012).

Once the services and applications were found to be feasible, usable and appropriate to user
needs, a living-scale field trial was carried out at sites in Slovakia, Spain and Sweden. Many users
tried the services in their homes and the impact and consequences have been analysed. The
economic viability and long term sustainability of the services has been addressed in order to
facilitate real mainstream implementation.

4.2 Living Scaled Field Trial
The LSFT in Zaragoza was carried out in a sheltered home owned and managed by the local
government. This site was chosen to gain an insight in the deployment of AAL services in this
scenario as well as to provide information concerning usability and acceptance of ICT support services for independent living.

There is an identified “independent living gap” that makes a difference in quality of life and social expenses in the transition of people from their own homes to shelter homes. MonAMi has set pilots in both sides of the gap: in the homes of elderly persons living independently in their own apartments/homes in Sweden and Slovakia and in shelter homes in Spain for elderly persons. As such, the LSFT in Spain intended to provide insight on the acceptance, usability of AAL services by people at the least autonomous side of the gap.

The selection of participants was user-centred. The participants in the trial were 15 elderly persons with disabilities (users) living in the Romareda residential home (sheltered home) in Zaragoza, their carers (2) and care staff (7, from 12 recruited).

<table>
<thead>
<tr>
<th>Gender</th>
<th>N° users</th>
<th>Age</th>
<th>Sight</th>
<th>Hearing</th>
<th>Dexterity</th>
<th>Memory</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>man</td>
<td>7 (38.89%)</td>
<td>579/7=70</td>
<td>3 (42.85%)</td>
<td>3 (42.85%)</td>
<td>7 (100%)</td>
<td>3 (42.85%)</td>
<td>%</td>
</tr>
<tr>
<td>woman</td>
<td>11 (61.11%)</td>
<td>896/11=81.45</td>
<td>4 (36.36%)</td>
<td>2 (18.18%)</td>
<td>11 (100%)</td>
<td>3 (27.27%)</td>
<td>%</td>
</tr>
<tr>
<td>Totals</td>
<td>18</td>
<td>1475/18=81.94</td>
<td>7 (38.89%)</td>
<td>5 (27.77%)</td>
<td>18 (100%)</td>
<td>6 (33.33%)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 1: The description of user profiles

Installation of the technology and services began in October 2010 in two rooms to get feedback on the procedures to facilitate installation in the remaining rooms. Installation in all of the rooms was completed by mid-December 2010. The services were used by the residents as soon as installation in their respective rooms was completed thereby giving the residents time to acquaint themselves with the services. The operational phase, when information was gathered for the evaluation, is from 1 January 2011 to 31 March 2011. The participants used the services a longer period of time: from installation (latest 15 December 2010) to the end of project (31 May 2011). With the exception of three drop-outs, services in all rooms ran until final interviews were carried out in May 2011.

Those residents of the sheltered home selected as candidates for the trial (users) and their families were informed of the project and requested to consider if they would participate in the trial. Those who volunteered to participate signed an informed consent agreement to ensure protection of their rights. Their needs and preferences in relation to the MonAMI services were assessed and the appropriate services were adapted to their needs and preferences. Training of participants was carried out and was found to be an important and critical part of the LSFT implementation. Specific data is offered in this regard, describing how training was planned and performed in a structured way. The training was designed, and where appropriate carried out separately for the users, carers and care staff.

Table 2: Usability and acceptability extra users profile
To introduce the participants to the services there was an adaptation phase from installation to the end of December 2010, during which time users, carers and care staff had the opportunity to acquaint themselves with the new services, and the LSFT team had the opportunity to identify difficulties in relation to acceptance and addressing issues that appeared.

The MonAMI Living Scale Field Trial (LSFT) was the culmination of much of the work of the MonAMI project and provided the opportunity to field-test services developed within the project at three European sites. It was designed as one pilot project implemented in varying infrastructures at different locations in different configurations around the core set of MonAMI services to provide information for a coherent analysis with the additional potential for the comparison across geographically and culturally separate contexts.

5. Experiences

5.1 Guidelines

LSFT activities were coordinated with other MonAMI activities to ensure:
- that the technical platforms would be available with sufficiently mature services,
- the participation of local stakeholders,
- that a continuation strategy would be promoted, and
- that the evaluation could be carried out consistently.

Guidelines were provided to assist the sites to establish service specifications consistent with social inclusion, commercial gain and the observation of public sector and legislative responsibilities and to ensure coherent deployment and evaluation methodologies.

Services to be evaluated in the LSFT were selected from those tested at the six MonAMI Feasibility and Usability Centres and had to fulfill criteria based on:
expected improvement in the quality of life of the user
expected improvement in the quality of life of the caregiver (formal and informal)
expected improvement in cost efficiency, both private and public
expected improvement of e-inclusion in society and accessibility to ICT services
expected marketability of services

Experience from the feasibility and usability testing was taken into account, including:
usability (effectiveness, efficiency, satisfaction) as per ISO 9241
suitability
user acceptance
mainstreaming ability
economical viability
European benefit
potential innovative nature
business opportunity

The MonAMI services selected for testing are grouped in the following packages:
AMiSURE for safety and security
AMiCASA for home control
AMiVUE for information on status of home
AMiPAL for time management
AMiPLAY for leisure and entertainment

The following plan for the activities in the LSFT was used to guide the LSFT sites:
Service specifications in terms of common core components with local adaptations as needed
Recruitment of participants
First installation with specific attention to the individual’s needs
Full (final) installation with attention to the individual’s needs. Any difficulty in installation, integration in the services ecosystem and integration in the user’s daily life is expected to have been identified and solved by this installation
Operational phase with continual feedback for evaluation
End of operational phase with final feedback for evaluation
Documentation of field trial experience according to the guidelines from the field trial coordinator
Dependency on other projects
Local promotion of continuation of services identifying potential interested stakeholders in local communities.

5.2 Technical experiments and experiences
We had carried out various reliability and functionality test to ensure that the system is ready to be installed in the home environment. The tests were carried out in our laboratories, by qualified staff and all incidences have been recorded. After studying the test reports we identified the issues to be addressed and modifications that were necessary before continuing to the next set of tests. The actions taken depended on the relevance of the issue, and the possibility to modify within the
After this internal verification of the system, the device was put under stress/fatigue testing, that is, temporary operation above the normal demands to detect possible failures due to stress/fatigue. When the result of this first stress/fatigue testing was found satisfactory, the devices were installed in the pilot flats located in Valdespartera, where they were run in a real life environment together with other devices. In this environment they were also exposed to new factors/conditions such as changes in voltage, failures in net connections, etc. In this controlled environment (yet closer to real life environment), trials were carried out with some carers and potential users. The trials provided us with usability data on the system and its services.

When the reliability, functionality and usability tests were passed, we installed the services in real home environments at the Residential Home Romareda where functionality tests were carried out by users who used the system and its services for a specified time.

Reliability tests were described and reported by the partners providing technical support for the field trial. Functional tests were also performed and several incidences reported to and addressed by the technical support and the LSFT technical staff. These tests led to significant improvements concerning usability (especially the user interface) but at the cost of delays that impacted on management, installation and user training.

The devices had to be adapted to the real conditions at the Residential Home Romareda where the users who are participating in the field trial live. There is a limited and defined physical space (placing of equipment, electricity, connections ...) and time available for the trial. Also, the trial must not cause disturbances in the sheltered home.

Therefore, we carried out three types of testing in the trial:

- testing with care staff in the users’ unit
- testing with care staff from the entire home
- testing with residents, carers (informal) and users.

Four main factors were considered in the selection of services to be tested in the LSFT:

- Results of the feasibility and usability testing, final reliability testing, as well as consultation exercise with external experts concerning their evaluation of how services could affect the different evaluation dimensions.
- Adjustment to project goals as framed by evaluation design to facilitate collection of information in evaluation dimensions that is comparable over the three LSFT sites (e.g. feasibility of larger numbers, using scenarios with carers or not, sheltered homes or private dwelling, etc.)
- Budget: Ability to comply with available budget for the project.
- Local needs: Taking into account individual LSFT sites and stakeholders’ resources and expertise.

**Maintenance and Configuration**

Service maintenance not only relies on technical maintenance of the devices and software so the system runs in the proper way. Keeping the services operative also implies some work to achieve a continued use of the services.
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- For the user and the informal caregiver, the first aspect to work on was the inclusion of a new element in the room – an intrusion in their decorations and free spaces to make them feel comfortable with these modifications in their rooms. Explanations and familiarisation exercises were also needed when the installation was properly finished but the user handled the system incorrectly, not being familiar with the technology. This meant in some cases that users were afraid to “break” the system if they touched the screen. Users’ concerns about security and other aspects meant in some cases that they unplugged the User Interface Screen for a long time.

- Sometimes the formal caregivers were those who really used AMiSURE and AMiVUE services. Work was then needed to ensure that the users were really familiar with the services and could manage them while going about their daily tasks without any problems.

Gathering Evaluation Data

The MonAMI architecture is prepared to use a log mechanism to store and report log messages generated by the MonAMI platform and each of the services. The log entries are used to detect issues for debugging (reported to the service providers itself) and to analyse the usage of the services. The OSGi system and the respective service providers implemented a common log mechanism.

Each of the log entries is stored locally on the user gateway. They can be consulted in real-time using the web console (information included in the installer manual). For off-line analysis, a

![Architecture Diagram]

Figure 2: Architecture. Description of technical implementation based on OSGi architecture. The picture shows different technologies integrated into the system: PLC, Bluetooth, Zigbee, Lonworks or Infrared.
MonAMI service takes the log entries and sends them periodically by e-mail. The period and the e-mail address are configurable and were configured by the installer.

Each LSFT site had a data repository for the log of service use. This log was developed such that each time a MonAMI service is employed in each home, data on the time and exact service are transmitted and filed back at the site. The log only records the User ID, so that the participant’s identity is unknown to the staff member collecting the log data.

The purpose of the log is to record usage of a particular service. Any issues can subsequently be addressed either through re-configuration or removal of the service (at the users’ request). The log is also designed to investigate any sustained periods of under-use or user-abandonment of the service. The log is a quantitative measure which can be used to support the users’ self-assessed, anecdotal acceptability (or non-acceptability) of the services.

5.3 Economical viability

The objective of this task is to promote awareness and interest in the continuation of the provision of the MonAMI services by local stakeholders. This was pursued among stakeholders in the various stakeholder groups. The stakeholders include those in the care and service for elderly persons sector as well as in other sectors such as education for persons with disability and independent living. In addition, its objective is to promote AAL community building locally, to involve a complete set of stakeholders to promote ICT services delivery via an open platform.

We have addressed the feasibility of the service provision chain, identifying and contacting local organisations/stakeholders who may:

- become service providers,
- take care of installations,
- take care of configuration and updates,

![Figure 3: AAL stakeholder categories, value chain and actors. This picture shows the different actors that are involved in the implementation of an AAL system. AAL stakeholder categories are based on AAL roadmap.](image-url)
We identified local primary stakeholders who could potentially be interested in MonAMI services (e.g., local public institutions and user organisations). We have identified areas of interest and specific criteria that such stakeholders would use to decide service provision support. We have included and focused on these areas as far as possible in the operational phase to be able to collect information from the trial that could be used for the local dimension of evaluation.

Actions have also been taken to propose new solutions or consider new stakeholders to support sustainability of services after MonAMI and to provide information to collaborating stakeholders about un-installation decisions for each service or service pack if the services is/are not to be continued.

Vertical vs. horizontal markets

In the AAL Joint Programme key thematic areas, which constitute promising markets ("quick wins"), should be identified in which R&D funding should have priorities. These "low hanging fruits" are service solutions based on existing technologies, standards and infrastructures. This will encourage SME and service/care provider participation and give necessary insights about user motivation and raise awareness. In these areas products/services, business models, markets intelligence, value chains and networks should be explored with combined resources from the public and private sector.

Furthermore, no long-term results regarding the cost and labour saving effects of AAL technologies are available at the moment. These effects and their relation to the costs of AAL applications must to be identified. But firstly, a cost estimation of AAL system and services is
necessary to quantify the cost-effectiveness of a particular AAL service considering the current ICT infrastructure.

Our goal in this part is to analyze some AAL developments done in the MonAMI European project based on mainstream technologies and open interoperable platforms from an economical perspective. This point of view represents another trend that unifies economics with technology and fosters the creation of cost-effective assistive technology for the home that the average user can buy, install, and monitor.

A horizontal market approach for the MonAMI infrastructure therefore potentially:
• Provides routes to get the MonAMI gateway infrastructure installed in a significant user base
• Provides “the right product for the need”

Figure 5: Vertical vs. horizontal markets. The picture shows the transformation involved in the selected AAL services due to MonAMI implementation. Two commercial monitoring domain applications (green) become an open and flexible system with a great variety of technology providers involved.
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6. Results and significance

We consider that the proof of concept of deployment of the technological architecture of the system has been a success, mainly due to its modularity and interoperability, and its potential to lower costs of equipment by introducing mainstreaming technologies. Awareness of the importance of the value chain, open platforms, interoperability, modularity and mainstreaming has been raised by a large extent.

Facility to change or add services has been a large advantage of the current technological system. However, further development is needed to reach an off-the-shelf solution with more mainstreaming options.

We consider that the proof of concept of deployment of the system has been a success, searching and linking the elements of the provision chain ready to perform the experiment, integrating it in the environment of the shelter home, and proving and that the open platform is viable and potentially much very powerful in service provision, mainly due to its modularity and interoperability.

We have succeeded in raising awareness of the importance of the value chain, open platforms, interoperability, and modularity among the local stakeholders (government, organisations, industry) in Zaragoza. Having gained the interest and support of the stakeholders we are now...
making a number of national proposals to continue the work of MonAMI, to develop new services and to extend benefits to other groups (e.g. to demonstrate the extent independent living can be supported by ICT, to demonstrate the economic impact ICT services can have on the cost for support).

We identified several local stakeholders such as local public/private institutions and user organisations who could potentially be interested in the MonAMI services in various sectors. We held meetings with these stakeholders to check the possibility for integration of the services in schools, sheltered homes and homes for persons with disabilities and training/counselling institutions.

Interest shown by these stakeholders is centered on Quality of life, help to the caregiver and improvement of cost-benefit regarding economical terms. In general, user associations are more open to the way these benefits are assessed, while institutions have more specific requirements prior to their support for this system in service provision, as we have been gathering through the various meetings we have had with them:

- **Comparative study of MonAMI services with other similar services on the market**: Main advantage of MonAMI system compared with market is the open architecture that allows for integration of different components without forcing the system to be limited to proprietary solutions. Local government have recognized through MonAMI LSFT that MonAMI system has the potential to give similar and superior services as the ones now in the market, in a more flexible and cheaper way, with the possibility to customize them to local singularities.

- **Compatibility of the platform with other existing and necessary platforms for service delivery (i.e. health and social services)**: This is clearly an advantage that the MonAMI open platform offers. Moreover, in the frame of Spanish national projects we are linking medical diagnostic devices for the home to this same platform.

- **Demonstrate the flexibility of the MonAMI system to add and update services efficiently (both convenient and with significant cost reduction)**: Local institutional stakeholders we have worked with are convinced of this advantages of the MonAMI system.

- **Demonstrate economic impact related to savings in the public and private expenditure with regard to the installation and maintenance of the system versus the cost of caring for the person without MonAMI system or with alternative solutions**: Also economical impact has gone out of the scope of the project as it is explained in evaluation study limitations and scope. This dimension will also be taken into consideration in the next steps. For this we have made agreements of collaboration with socio-economic research groups and are starting to design new simplified models to try and raise some evidence in medium term studies, which may later be verified by longer term studies. Still, simple inferences have been done together with local government staff in which the potential for these savings are recognized when associated to longer independent living at home.

The reader may appreciate that some crucial institutional local requirements, mainly cost benefit and assessment of user dependency improvement are still to be assessed. This pending work is necessary to have institutional promotion of the MonAMI system for service provision and will be addressed in the next steps. MonAMI has provided a starting point with technology and an initial set of services with assessed evidence of acceptance and usefulness.

Local government is considering the provision of an institutional framework and a budget to pursue actions concerning these suggestions with the Tecnodiscap research group, University of Zaragoza. The local government has demonstrated their interest in this work through their
collaboration in the LSFT (e.g. involvement of the care staff, monitoring and registration of generated alerts, assistance with the recruitment and training of residents).

During the MonAMI project we contacted the majority of user associations in our region, and had continual collaboration with the largest ones. With this action, we have promoted the concept of an open platform for delivery of AAL service provision based with focus on interoperability and mainstreaming, and culture of cooperation in finding new solutions integrating capacities and perspectives of implied stakeholders. During the MonAMI, a small local AAL community was created, which acted as a reference group, supervising and suggesting changes in services, validation methods, scenarios, timing, etc.

The combination of increased awareness of the importance of horizontal actions with a vertical market and a local AAL community are major achievements that the MonAMI project has reached on the local level. This may stimulate AAL services in the community and support more horizontal and standardisation actions in the future.

We consider the LSFT trial positive as a proof of concept of open architectures for service provision in a stakeholder ecosystem which implies the elements of the service provision chain and the primary stakeholders (carers and beneficiaries) and the quaternary stakeholders (political institutions). The raising of awareness and the creation of a local AAL community centred in the development of services and deployment of the LSFT have been important successes.

References


Biographical Notes

Alejandro Ibarz received the M.Sc. in electrical engineering from the University of Zaragoza, Zaragoza, Spain, in 2007. He has since been with the Department of Electronic Engineering and Communications, University of Zaragoza. He has participated in +10 R&D projects (two for private companies) and published near 10 indexed papers. He has been involved in different research and development projects. His main research interests include indoor positioning systems, ultrasound ranging meters and the use of information and communications technologies to improve the quality of life.

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