Fact sheet on public deliverables

The involvement of end-users is crucial to AAL projects from the initial planning phase, through the pilots and testing of results, and in preparing market introduction. The AAL Programme targets projects that operate around TRLs 5 to 8, thus it is central to the projects that demonstration and validation of the technologies and the solution as a whole are tested with end-users in a realistic user environment.

Moreover, the AAL Programme sets high ambitions for value creation in service deliveries for elders, which underlines the importance of preparing pilots for the projects, that not only test and validate user acceptance, accessibility, usability and functional testing of requirements, but also assesses the improvement in quality-of-life for the end-users, the challenges in wider implementations of the solution, and prepare for market introduction.

In recent years, a number of hard requirements for the pilots within AAL projects have been introduced; for example, pilots and testing should be conducted in at least two partner countries, and due to the importance of the testing phase it is actually expected that a realistic prototype or pilot application is available no later than one year after the start of the project.

Main findings from the analysis of the public deliverables

Based on the large number of AAL projects that have been running since 2009, several key findings can be derived from the public deliverables related to pilot and testing, which can serve as inspiration and background material for other projects.

No such thing as a common model exists for testing and piloting AAL projects. A few hundred AAL projects have been running, and even though some of the first Calls had a rather narrow thematic focus, all projects are unique, and the differences between the projects are significant. Thus, the pilots must be specifically designed for the individual project; since deliverables from previous and existing projects are most often classified as public deliverables, they represent an invaluable knowledge source of background information for designing new pilots.

Clearly, there is a huge difference whether the purpose of the testing phase is a clinical trial to validate a methodology or a medical technology, or an ICT platform to improve care delivery for elders. It is not difficult to find other projects which deliverables target the same user groups, which partly have done similar surveys or basic user assessments.

Set up a natural "living lab". The importance of setting up a realistic environment for the pilots should not be underestimated. One of the main challenges for the projects are to create realistic settings for testing the solution and recruiting a representative group of end-users. Some of the most successful projects have given this a lot of attention already in the composition of the consortium. Having relevant care organisations and user associations from the individual countries onboard from the very beginning is clearly an advantage. They know their users in advance and recruiting of participants is less risky. They are able to weave the testing into the daily life of the elders, whether it is new training equipment for a nursing home, or an approach to strengthen involvement and knowledge sharing for relatives and informal caregivers in home care delivery services.

Creating a natural living lab, where users, including the professionals, can continue to live their normal life or carry out their job servicing the elders without constantly

feeling they are part of an experiment, and at the same time being aware of the testing, is the main challenge.

ICT partners (universities or companies), as an example, are usually not good at recruiting participants for pilots or supporting the pilots, which often creates a strong imbalance between pilot sites, depending on whether some countries have strong end-user partners, who know they users, and technology partners are given the responsibilities for pilots in other countries in order to meet the Call recruitments or are trying to create the illusion of a truly European project. Furthermore, it is also important to plan the pilots so enough time is reserved for the users to experience a normal situation with the solution, and long term effects can be assessed.

Iterative testing is another key to effective pilots. For some successful projects, there is almost a continuous transition from the end-user involvement from case studies and surveys to define user needs, to the first initial testing of the prototypes. It does not matter if there are still aspects of a mock-up in the first prototype or not all use cases are supported. It is important to keep in mind that end-users are also more honest and give critical feedback if they can see it is not a complete product, and there are still opportunities to improve the solution. There are several examples of situations where pilots have been squeezed or pilot phases have been merged due to delays in the technology developments; this eliminates the possibility of providing valuable feedback to improve technology developments. 2-3 testing phases often allow appropriate durations for the testing and generate sufficient feedback for developers to improve the solution to a new level, where the end-users feel there is actually a significant difference between the different versions.

Don't leave it to the elders. Pilots and testing in general require significant effort from the partners. Shipping the solution in a box with a questionnaire and a return envelope has close to no value. In some cases, elders may be left alone with the solution for too long, and if they have challenges using it, they quickly return to normal procedures and forget about the test. Keep in mind that ICT skills are very different among elders (and among social backgrounds), and in some situations if they cannot proceed or are anxious about the consequences, they stop using the solution or put it away. It often requires a lot of technical support and effort reserved to help the elders during the pilots, not just due to a lack of ICT skills of the elders, but quite often prototypes have several technical errors, and they should work in conditions which are very different from lab settings.

Integration with R&D is perhaps one of the most important aspects for successful pilots and projects. It is further elaborated in the next section, but it is a factor that often becomes apparent during the project and in the review, and less obvious from

proposals. There is a risk that technology development and pilots are siloed projects within the same projects. Most often it is the developers, who are disconnected from the pilots. In the worst examples they run a technology project and neglect or over-look feedback from the end-users – pilots are only there to make the project eligible.

Match your target groups. Business plan and exploitation are usually developed during the project, which means that the initial expectation of the target group might change due to findings in the projects. Personas and scenarios are instruments that have been used from the beginning to give reasonable clear identifications of the target-group. Recently, more attention has been given to this aspect already in the evaluation phase, as it is now considered if the solutions targets a regulated or non-regulated market. It could make a significant difference to the pilots and selection of relevant user organizations if there is a change to target the private consumer market or volunteers instead of professional care organizations.

Main criticalities/weaknesses/gaps identified

Looking 3-4 years ahead at the stage of writing the proposal can of course be challenging, so modification and adaption is perfectly okay and expected for the objectives of a project to be continuously relevant. However, reading through the public deliverables, there are issues related to pilots and testing, which can be avoided.

Simplistic testing. One of the most common pitfalls for pilots and testing are simplistic functional testing of the technologies. It relates to the issue mentioned above about running a technology project within the frame of an AAL project, where all efforts are concentrated on R&D among the technology partners. It is often the case when there is an unbalance in the consortium between technology partners and user organizations. Quite often the tests with the end-users become very simple, such as follow-up questionnaires that only provide feedback on the functioning of the solution and often do not match the effort of the pilot, e.g. "should the font-size on the interface be larger?", "do the batteries of the device last for normal use, or should they be recharged?", and results as well: "15% enjoyed exercising with the (solution)", "network coverage was not suitable for the intended use of the device", "sensors where to hard to install". If these are the only results, the gap to market introduction may seem enormous, and there is a significant risk that the project dies with the public funding.

Lack of integration between pilots and development. Related to the previous point, and also mentioned above, neither tech partners nor user organisations should be an alibi partner in the project, for it to be eligible. Even the Gantt charts can often be the indicator of a project that has not been well prepared – showing for instance a lack of iterations for the development. On the other hand, pilots should also be planned, so they are aligned with the strategies of developments. It requires meetings, collaboration and effective management skills from the coordinator to align the different partners on the interdisciplinary common path.

Recruitment of end-users. Even with the right user organisations in the consortium, the enrolment of end-users is typically more challenging than expected. Optimistic numbers for participants in the pilots and trials are set in the proposal, but it is more the rule than the exception that the projects succeed in reaching the KPIs of participants, which could be influenced by a number of factors. Scheduling of pilots and costs are often an issue and discussed below.

Cost and Equipment. Running pilots is costly, not only in manpower for analysis, but also in terms of equipment and support teams to install the solution and handle support. Small budgets are usually reserved for equipment, and a truly limited amount of the contributed funding should be spent on purchasing equipment, but there could be other means to make the resources available for the pilots. Additionally, in comparison to purchasing a pile of smartphones with the required specs, the installation cost for equipping a series of elderly homes with the needed sensors and other technologies could be much higher, and unexpected costs are very likely to apply. It happens that testing periods are chopped and the use of equipment is scheduled among participants due to the cost, which might influence the results quite significantly.

Infrastructure by Integrators. If the technologies of the pilot require an infrastructure – then it is advisable that partners with companies in the consortium that already have such infrastructure available take part in these pilots. Often these companies could also be the integrators that could exploit and sell the solution afterwards. In the prosperous days of the set top boxes, the broadband companies could be the natural partners to provide a suitable infrastructure for care or training services at home. Online services using the internet of course build on a more universal infrastructure, but there might be more needs as well. Technical universities are usually good at doing research and developments, but less experienced in installing reliable solutions outside the lab settings.

AAL projects are born European, or even global, thus multi-language support should be considered from the beginning. Most pilots need to be conducted in the native language of the participants, so when developing platforms and interfaces, this should be taken into account from the very beginning.

Opportunities deriving from criticalities

Taking a look from the outside on the numerous AAL projects that have been running through the last decade, one might get surprised in the substantial overlap between projects. Projects as a whole are clearly unique and different, but similarities in parts of the projects are significant, in particular for pilots and testing. It is thus suggested to not re-invent the wheel – the public deliverables of previous projects may hold some of the answers an applicant is looking for.

In general, literature and larger more focused research projects and surveys might often have more detailed answers to what is assessed in the project again. In order to stand on the shoulders of each other is fundamental to research, and in that perspective the public deliverables are a source that should not be overlooked. Also, one should not get misled by the identified weaknesses and criticalities addressed above, as there are many projects with results and methods that are of high quality, and which are a goldmine of inspiration.

To evaluate if a new solution, even though its prototype is at TRL 5, is effective and there is a market potential, make sure there really is a strong link between the overall objectives of the projects and what is evaluated in the pilots. Improving quality of life for the elders is one of the common denominators for most projects, and quite a few actually make the proof of it in the pilots. Maybe more sophisticated approaches could apply than just follow up questionnaires with simple questions like "do you often get bored?", which is not rarely seen. Keep in mind the pilots do not only provide feedback to further development, but also form the foundation of convincing arguments for exploitation and e.g. attracting more investors for stages after the funding period.

The Hawthorne effect in pilots cannot be overlooked. Participants are usually volunteers, and many of them are quite happy to contribute and like the attention, so a natural environment is very hard to create. Furthermore, willingness to pay for the

solution is a quite common question for many pilots, but elders normally join testing for free, so the real test of user adoption is very rarely done within the projects.