The Need for a Strategic R&D Roadmap for Active Ageing

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Abstract. The application of the collaborative networks paradigm, combined with a new generation of collaboration-support platforms, can offer a promising approach to active ageing and better use of the talents of senior professionals. This paper introduces a roadmapping initiative focused on elaboration of a new vision for extending professional active life. To support this vision, a strategic research plan for the development of a new collaborative ecosystem, covering the social, organizational, and technological perspectives, is being designed.

Keywords: Roadmapping, professional active life, active ageing

1 Introduction

There is a growing recognition that the elderly population should not be seen as a burden on the society but instead an asset that needs to be properly considered [7]. In particular the senior professionals possess a number of skills and accumulated experience that need to be better used in value creation activities. And yet the way society is organized does not offer many opportunities to older people.

Recognizing this situation, the World Health Organization has been advocating the need for proactive strategies for the ageing population. Kofi Annan, while secretary-general of the United Nations, stated that "by promoting [older persons'] active participation in society and development, we can ensure that their invaluable gifts and experience are put to good use. Older persons who can work and want to should have the opportunity to do so" [9]. It is also well known that by keeping an active life people can remain healthier. As such, the concept of active ageing was developed.

The critical challenge for the society in respect to the "**active ageing / ageing well**" process [10] is to identify new organizational structures, approaches, and mechanisms so that elderly citizens do not feel excluded, and have the chance to use their knowledge and expertise to contribute to the communities where they live.

On the other hand, as the older population increases and the growth in the middle-aged population slow down, older adults are becoming an increasingly important labor source. They typically bring maturity, dependability, and years of relevant experience to the workplace. Nowadays with more people remaining in good health at older ages and increasingly more jobs not involving physical strength, more old adults are able to continue working than ever before. Retirement will indeed no longer represent the end of working period, but rather a career and lifestyle transition, where the retiree in principle has multiple options -- such as continuing to work (though perhaps at a different pace), returning to school for additional training or education, changing career, venturing into entrepreneurship, becoming more involved in volunteer work, or simply enjoying leisure and travel possibilities – thus a mix of working, learning, relaxing, and trying new things can be foreseen.

In addition to the traditional initiatives focused mostly on socialization and entertainment activities for elderly, a number of new organizational forms and mechanisms are emerging, focused on providing ways to help senior professionals remaining active, in professional terms, after retirement. Although with different involvement and commitment levels from retirees, such initiatives try to make use of their valuable knowledge, wisdom, and experience, namely through consulting and mentoring activities. ICT and particularly collaborative technologies, can play an important facilitator role in this area. There is a need to provide support in the form of "ready-made 2nd generation affective and socio-economically integrated communities" to which the elderly professional can join. Moreover, there is a need to provide the opportunity for elderly professionals to choose a balanced proportion between their value creating and the leisure activities, as well as the opportunity to modify the balance in their portfolio of activities over time. In order to elaborate a strategic R&D plan in this direction a 2-year European initiative – ePAL (extending Professional Active Life) project – was launched in 2008 [4].

2   Towards a Strategic Roadmap

Most R&D efforts regarding ICT and ageing, both past and present, have adopted a reactive strategy while trying to mitigate the problems "after" the elderly reach a critical phase in their physical and mental capabilities. ePAL however adopts a proactive strategy, identifying measures of a more "preventive" nature. The hypothesis followed in

1	Characterize and consolidate the baseline
2	Perceive trends and design scenarios
3	Elaborate first vision statement and instantiations
4	Fill the gap: from Where we are – to – Where we wish to go
5	Propose a plan of actions
6	Verify the planned actions
7	Plan the timing and other characterization of actions
8	Finalize the definition of the roadmap chart
9	Perform consultation and refinement
10	Perform roadmap consolidation.

Fig. 1 - Roadmapping method

ePAL is that collaborative networks provide an adequate framework for the implementation of effective support to active ageing. In this context and bearing in

mind that one of the main goals is to keep the elderly engaged and socially active in society, an organized collaborative network is a fundamental instrument. After retirement, most of the social and professional bonds are rapidly broken. An organised Professional Virtual Community for seniors is a vital instrument for keeping their involvement in society.

Need for a roadmap. The potential of ICT to support better ageing and individuals' well-being has been widely recognized, which has led to many R&D projects during the last decade. For instance, in the Framework Program 7 of the European Commission there is a research line devoted to ICT and ageing. And yet, the sensitivity of the area, the dependency on the "parallel" introduction of new organizational models and creation of a new culture in society, the lessons learned with the limited success of existing associations of senior professional, the risk of continuously developing technology that is not taken-up by target users, among others suggest the need for a careful analysis and a new approach towards what concerns new developments. It is thus clearly very important at this point in time to design a strategic R&D roadmap focused on active ageing. In ePAL a 10-step roadmapping process is adopted (Fig. 1). These steps result from a consolidation of experiences in previous roadmapping initiatives for collaborative networks, namely THINKcreative and VOmap [3].

ePAL aims at establishing a strategic **research roadmap towards a 2nd generation support system for active ageing**. ePAL aims to explore innovative ways to facilitate the development of the active ageing process and to ensure an improved transition for the elderly citizens as they cope with the onset of age. For this purpose, **a strategic RTD roadmap**, focused on novel collaborative solutions and ensuring a balanced post-retirement life-style is pursued in ePAL. It mainly defines the needed strategy and the action plan-assisted philosophy, to support both the dynamism in behavior/emotion as well as the elderly's desire to involve in professional interaction in socio-economic system.

Table 1. Studied associations of senior professions

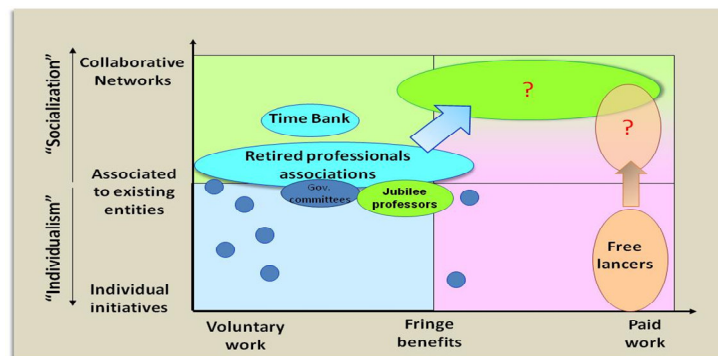| Organization	Country
AGIRabcd	France
APCS	Portugal
ASECAT	Colombia
ASEP	Austria
BSC-I	Belgium
COGAMA	Spain
CONFEMAC	Spain
CONJUPES	Spain
ECTI	France
EGEE	France
FRAE	Spain
ISES	Italy
JUBIQUÉ	Spain
KOS	Poland
NESTOR	Finland
OTECI	France
PUM	Netherlands
REACH	UK
RSVP	UK
SECOT	Spain
SEN@ER	Spain
SENA	Belgium
SENIORES	Italy
SES	Germany
SFPA	Slovenia
SHARE	Portugal
SWB	Denmark
UDP	Spain
Vis VITALIS	Poland

3 Current Situation

Preliminary analysis. As part of the baseline characterization phase of the roadmapping process, an extensive analysis of the existing associations of senior professionals was conducted. Table 1 shows the list of those that either took part in the survey or participated in our workshops.

These associations are mostly composed of "professional elite" (people with a high education and that had high positions in the socio-economic system before retirement). In most cases, these people have reasonable pensions (although varying from region to region) and therefore can afford to do voluntary (unpaid) activities. However, the number of people involved in such mechanisms is not very high. On the other hand, considering the current difficulties of the social security systems all over Europe, most governments are trying to implement new formula for pension calculation which in practice means a reduction of the pension. In such context, it is foreseeable that more retirees will have fewer resources than needed to satisfy their standards of life and thus need to continue being involved in value creation activities.

Most participating organizations, in spite of their ambitious mission statements, operate on a relatively passive basis, basically "expecting the client or the business opportunity to show up". As a consequence, they do not have many projects. A frequent complaint we encountered is that they do not have enough work for all their members. And yet, many SMEs and start-ups world-wide that cannot afford to pay market prices for consultancy and coaching, could greatly benefit from the accumulated knowledge and experience of senior professionals. But there is a clear difficulty to reach the potential clients due to the lack of proper brokerage mechanisms or support of intermediary entities.

In addition to these associations, various other mechanisms and practices towards active ageing can be found. Examples include the maintenance of some links to the former employer [8] (as in the case of jubilee professors), free-lancing, time bank, etc. Free-lancing is a typical option for those that wish to continue involved in some form of remunerated activity. Nevertheless it represents an individual initiative, requiring some degree of entrepreneurial spirit that not retirees are able to exercise. It also requires some preparation for which training is not easily available. Most of these professionals have developed their careers in the context of an organization and are not prepared to start doing a consultant work.

Fig. 2: Panorama of approaches in active ageing

In addition to the need to move from voluntary (only) activities to (some options of) paid work, it is also important to find new forms of "socialization", a critical issue after retirement for which collaborative networks can be an answer. Fig. 2 illustrates this situation and trends.

Multi-disciplinary area. The design of a new collaborative ecosystem to support active ageing and facilitating the integration of seniors with the socio-economic system requires the development of advanced ICT platforms and tools, and a sound theoretical foundation which requires the contribution of multiple disciplines (e.g. Collaborative networks, Behavior modeling, Causal reasoning and soft computing, Affective computing / emotion-oriented systems, Machine learning).

Another way of rephrasing the ePAL hypothesis is that an effective approach to prolonging the active life of elderly and their involvement in the economic and societal system involves the following key elements:

- *Organizational architecture element that includes the organization and support for operation of an affection-based virtual community of senior professionals as well as the organization of "business liaison" units that allow keeping them involved in the economic system.*
- *Theoretical foundation to cope with deeper understanding of the principles and laws regarding the evolution of people's behavioral pattern after retirement and their corresponding needs.*
- *Advanced ICT support (infrastructure and services), providing a platform to support active ageing (balancing professional, cultural, and leisure activities).*

Given the current state of the art, and the fact that different necessary scientific areas do not have a sound tradition of working together, it is quite risky to make big investments in focused R&D activities before a more strategic planning is made towards a **roadmap** for a research agenda.

Technology baseline. The current situation regarding technological support for a new model of active ageing for senior professionals can be summarized as in Table 2.

Table 2: Technological baseline

Theoretical foundation for technological developments
▪ Good progress was achieved on conceptual models for collaborative networks (CN) during recent years, including reference models (e.g. ARCON), CN taxonomy, VBE generic ontology, understanding of the VO creation process, etc. [1], [2].
▪ Achieved research results in the area of collaborative networks mostly address challenges related to collaboration among organizations, e.g., the results from the ECOLEAD project. Considering the ePAL scenario, these results need to be adapted and extended to meet the requirements and challenges related to collaboration among senior professionals.
▪ More research is needed on "soft issues", including trust management, collaboration readiness assessment, value systems alignment, credit assignment, emotional health of the network, etc.
Advanced collaboration support services, including (virtual) teams' formation and management
▪ Various advanced prototypes have been developed for management systems for VO Breeding Environments and Professional Virtual Communities, including tools for VO / VT creation have been developed, but still with limited use in real businesses.
▪ Generic tools in the areas of CSCW and social networking (including chats, forums, emails, VoIP, etc) are becoming widely available.
Support for user-generated knowledge content
▪ Configurable document management platforms supporting multiple users & different roles, over the net are becoming available (e.g. JOOMLA) but still offering limited flexibility.
▪ Various successful experiments (and supporting platforms) for "mass creation" of generic multimedia content (videos, photos, podcasts, etc.) are available (e.g. YouTube, Flicker, blogs). This is also creating a "culture" of content sharing. However, when it comes to supporting the generation of business related content (processes, drawings, and other technical data) the possibilities are much more limited and there are also many interoperability problems.
▪ This area also raises many unsolved issues e.g. IPR, ethical principles, ownership and protection.

"Configure yourself" based philosophy infrastructure
- Some preliminary attempts to let the user configure his/her user interface and customize his/her desired functionalities/services, through composing / assembling the system's components have started to appear (still in a rudimentary form) in some Internet systems (e.g. FaceBook, i-Google). Sustainable development of this concept requires the creation of libraries of components and proper interoperable reference architectures.

Easily adaptable and customizable user interfaces
- The growing number of application features and the desire to optimize usage of screen space raise the need to allow users or applications to customize the interfaces. Adaptive interfaces that can change their appearance based on some algorithm, such as a least-recently used criterion (e.g. the Microsoft XP/ Vista desktop icons, Portlet technology, etc.) start to appear.
- One of the simplest forms of user interface customization is the notion of skins and themes available in some applications and user interface toolkits (e.g. Microsoft OP themes, iGoogle). Other efforts are being directed towards automatic adaptation to different output channels.
- Together with the "configure yourself" approach, this area is likely to have fast developments in the coming years.

Tools supporting the process of value creation
- Preliminary conceptualization of value systems and benefit analysis for collaborative networks is emerging, but no practical support tools are available yet.
- Most existing value systems focus on providing guidelines related to optimizing and/or sharing organization's or individual's gains, and typically related to financial gains. For active ageing scenarios, new value systems and related supporting tools need to be developed.
- There is a lack of sound models and tools for IPR and risk management in CNs, which are fundamental in promoting value creation.

Affective computing and context aware enriched environments
- Affective computing is a new and very active research field. So far most efforts have been put in the perception/recognition of emotions (e.g. biosensors, digital cameras, speech treatment) and expression of emotions through complex media (e.g. robots, avatars, music). However, results are still at an early stage. Other research activities in affective neuroscience and psychology indicate that human affects and emotional experiences play a significant and useful role in human learning and decision-making.
- It is becoming clear that the utilization of emotions to regulate virtual environments (to motivate, engage or create trust) is a promising approach, but no developments yet exist in this direction. In the ePAL context, new directions for affective computing can be opened such as identification of the emotional state of the network (collective emotion), use of affective principles to smooth collaboration, development of self-healing mechanisms in case of conflicts, development of emotional models focused on elderly, etc. But all these areas are practically untouched.

Contractual and cooperation agreements, including negotiation support
- Some contract models / frameworks were developed for specific domains (e.g. civil construction) but this is still a research issue. Various prototypes and models of negotiation, namely following a multi-agent -systems approach, have been proposed, but are still far from practical use.
- There are also some conceptual and prototypical developments on e-institutions such as e-notary, including safety infrastructures, but still with poor integration with collaboration environments. For the support of electronic contracts and negotiation some facilitating tools have been suggested such as "Contract wizards".

Marketing and brokerage services
- Intensive developments around Service Oriented Architectures turned this approach and associated technologies a "popular" stream in systems integration, service publishing and access. Various standards try to facilitate the interoperability issues. However, the usage of this technology still requires good technical skills.
- Considering the universe of SMEs and senior professionals, further developments are needed, namely in the following directions: (i) Facilitating the technology usage by people not very skilled in SOA, (ii) Developing new conceptual and technological approaches to introduce a

"pro-active" component in the software services. E.g. more dynamic services marketing / brokerage (how to make services provided by senior professionals known to the universe of potential clients). A combination of principles from SOA, Multi-agent systems, and blackboard architectures might provide some background in this direction, (iii) Elaboration of libraries of template services oriented to consultancy activities (and particularly to the kind of consultancy services to be provided by senior professionals).

Networking models for elderly communities' involvement with the socio-economic system
- In addition to the free-lancing activities, several (virtual) communities try to organize groups of retired professionals and promote their active ageing.
- One fundamental role for the establishment of collaborations among senior professionals is related to the intermediation of the interactions between individual senior professionals and clients for their services. The intermediary organizations can be either brokers or regulatory bodies. There is still a lack of clear understanding on how this role can be handled and who (or which organization) is responsible. Thus models and tools need to be developed to guide and support the needed interactions related to this role.
- These communities try to promote the involvement in the socio-economic system but currently face a number of limitations: (i) Most actions are carried out by single individuals (no real notion of collaborative network / team work); (ii) Very limited brokerage functionality; (iii) Poor integration with the other stakeholders of the socio-economic system, thus the associations are not really known by potential customers; (iv) Very little use of collaborative technologies is made as these communities only have access to basic tools.

Security and ethical / privacy support
- A large panoply of mechanisms and tools for safe communications (including cryptography), user identification and authentication (including biometric systems), access / visibility rights definition and control have been developed.
- Most base building blocks in this area are available, but their integration and configuration according to the specific needs of each application scenario is still a difficult issue.
- When considering the ePAL scenarios, in which it is necessary to combine leisure / social with professional activities, there is a need to design proper reference architectures that cope with these specific contexts.

The above characteristics set the baseline for the actual preparation of a roadmap towards a new vision of active ageing and the development of a new generation of support technology.

4 A New Vision for Active Ageing

A fundamental prerequisite for developing a vision for the desired future of this area is to identify both: the key drivers (i.e. the main driving forces in the market and society) and their related trends (i.e. the main happenings in the market and society) regarding the

Fig 3: Key drivers for ePAL environment

ePAL environment. In our research, to comprehensively cover the most important aspects related to a desired vision for ePAL, we have identified three main perspectives that are required to be addressed, namely the technological, the social and the organizational perspectives (Fig. 3). Under these perspectives the main trends

were identified and analyzed in terms of their potential positive or negative influence regarding active ageing [5].

Complementarily, building **scenarios** is a tool to provide actors with essential understanding, orientation, context, direction, and some degree of consensus in planning research developments and implementations. In relation to ePAL's vision for future, a number of scenarios were elaborated in order to support understanding of different future possibilities regarding the enhancing of active life of senior professionals, as well as possible actions to take and which events are probable to occur in future.

Based on extensive analysis and elaboration, a first vision

Core ideology:

Building a strong and cohesive social fabric to embody active senior professionals, as an important part of the European silver economy

Envisioned future:

In the coming decade, a comprehensive paradigm will emerge in response to Europe's ageing population and its inevitable skill shortage, that extends the balanced active life of senior professionals, facilitating the use of their talents and expertise, and thus facilitating value creation from these mature assets, for the benefit of both Europe's economy as well as the European society as a whole.

Main desired facets:

- Well founded reference model of the environment, specifying its:
  - endogenous *(structural, componential, functional, and behavioural)* and exogenous *(market, support, societal, constituency)* elements, and their interlinks
- Well established technological infrastructure, support tools/services
- Support for social responsibility and adaptation of suitable ethical code
- Established organizational infrastructure, supporting economic and societal involvement through government policies and actions
- Established national/international regulations for involvement of senior professionals in market/society and related legal frameworks
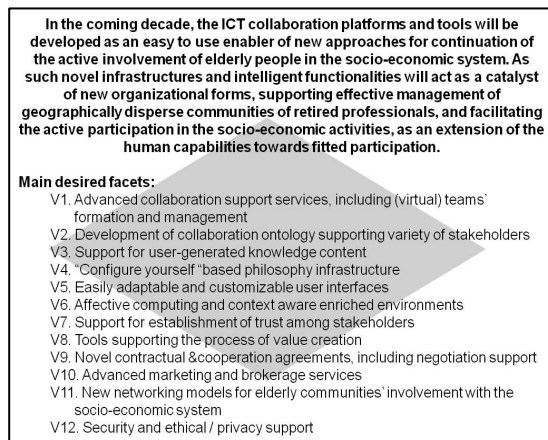
Fig. 4: 1st desired ePAL vision

statement for ePAL is proposed, as shown in Fig. 4. In order to facilitate the analysis of needs, it is effective to instantiate the vision statement according to the social, organizational, and technological perspectives (example in Fig. 5 for the technological perspective).

Taking into account the desired vision and the current baseline, a detailed gap analysis was then performed, comparing that state of today's market and society against the state planned by the vision for creating a balanced active life for senior

In the coming decade, the ICT collaboration platforms and tools will be developed as an easy to use enabler of new approaches for continuation of the active involvement of elderly people in the socio-economic system. As such novel infrastructures and intelligent functionalities will act as a catalyst of new organizational forms, supporting effective management of geographically disperse communities of retired professionals, and facilitating the active participation in the socio-economic activities, as an extension of the human capabilities towards fitted participation.

Main desired facets:

V1. Advanced collaboration support services, including (virtual) teams' formation and management
V2. Development of collaboration ontology supporting variety of stakeholders
V3. Support for user-generated knowledge content
V4. "Configure yourself "based philosophy infrastructure
V5. Easily adaptable and customizable user interfaces
V6. Affective computing and context aware enriched environments
V7. Support for establishment of trust among stakeholders
V8. Tools supporting the process of value creation
V9. Novel contractual &cooperation agreements, including negotiation support
V10. Advanced marketing and brokerage services
V11. New networking models for elderly communities' involvement with the socio-economic system
V12. Security and ethical / privacy support

Fig. 5: 1st ePAL Vision instantiation – Technological perspective

professionals. This analysis focuses on Strengths and Limitations, the most relevant elements facilitating or constraining the elaboration of a plan of actions. Table 3 shows the identified elements for the technological perspective. Similar tables were developed for the other two perspectives [6].

The identified gaps can be expressed through the generation of an "Influence map" to represent both the positive and negative influences of the baseline
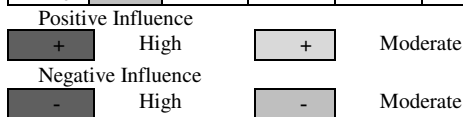
Strengths/Limitations on the achievement of the vision (example in Fig. 6). A qualitative scale (e.g. as High and Moderate) is adopted to express the influences.

Table 3: Example of gap analysis for the technological perspective

> **Strengths**
> **S1** Good progress in conceptual models for collaborative networks (but mostly focused on industry cases)
> **S2** There is already an understanding of the needed management functionalities for VO breeding environments and professional virtual communities
> **S3** Various partial models and advanced prototypes (e.g. negotiation, trust promotion, value systems) have been developed to support collaborative environments
> **S4** ICT infrastructures exist across Europe to provide the basic communication building blocks that will be needed to implement the ePAL vision.
> **Limitations**
> **L1** Lack of consolidated theoretical base in areas such as reference modeling for active ageing support systems
> **L2** Lack of effective and integrated ICT support for collaboration (till large fragmentation of functionalities).
> **L3** ICT research in this area too much focused on the "last phases of life", reducing the needed attention to active ageing support.
> **L4** Fast proliferation of new tools and functionalities without a holistic approach, an obstacle for adoption by seniors.
> **L5** Increasing trend to focus on techno-centric approach for ICT R&D, which hinders proper understanding of the critical issues of the socio-technical systems needed to support active ageing.

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
S1	+	+			+	+			+	
S2		+				+	+	+	+	
S3		+				+	+			+
S4		+	+	+						
L1	-						-		-	-
L2		-	-		-	-			-	-
L3	-	-				-	-	-	-	
L4		-	-	-	-					
L5	-					-	-	-	-	-

Positive Influence

+	High		+	Moderate

Negative Influence

-	High		-	Moderate

Fig 6: Gap analysis - Influence map

5 Some Organizational Issues

One important aspect when designing a roadmap to extend professional life of individuals is to consider the organizational forms that can best support the main objective of keeping seniors involved in the socio-economic system.

An association of retired professionals can represent a special form of a professional virtual community. The establishment and management of such associations can benefit from well researched and developed concepts and tools for professional virtual communities. These communities are business oriented entities, mostly focusing on supporting their members to jointly optimize individual financial gains. The focus of traditional associations of retired professional is not necessarily the enhancing of financial gains of members as they might have a pension. The main aim of retired people that join such associations is to remain professionally active and thus involved in the society. They are mostly willing to share and exchange their

knowledge and experience to those individuals or organizations that need them.

There are two challenges which are facing retired people when they do want to provide their knowledge and experience to beneficiaries as described below:

- *Finding opportunities to apply their knowledge and experience – beneficiaries, willing to accept their offers – is quite challenging. As mentioned by many associations, it is difficult for retirees to individually acquire opportunities in the society that are also being targeted by other formal service providers, such as consultancy and other organizations.*
- *Some acquired opportunities cannot be responded by one retiree alone, the normal practice in traditional associations. For example, SMEs which need consultancy on a subject, require more than one kind of expertise.*

To address these challenges a new kind of networked environment constituting seniors– **Community of Active Senior Professional (CASP)** can be envisioned:

CASP constitutes a long term association of senior professional individuals that are largely autonomous, geographically distributed, and potentially heterogeneous in terms of their: capabilities, offered capacities, culture, system of values, etc., but sharing their main compatible and/or common goals of increasing their active professional life in the society and/or market, through co-working with others in Teams of Senior Professionals (TSPs) supported by computer networks, under the slogan of: "Together Everyone Achieves More!".

TSP is a dynamically configured collaborative network of individuals configured and established within the CASP in response to opportunities in the society and market that are in need of their wisdom and/or knowledge assets that they can offer, which as a consequence supports the retired professionals remaining professionally active.

As mentioned above, the effective involvement of seniors in the socio-economic system needs to consider other entities (Fig. 7). Thus ePAL proposes a tri-partite network, involving, besides seniors, the intermediary entities and the recipients of the services provided by seniors, to benefit from tangible/intangible assets generated in CASP.

Fig. 7: A tri-partite ecosystem

Intermediaries: Organizations or people which act as mediators or agents between CASP (or individual TSPs) and recipients.

Recipients: These can range from individual persons, groups of people, entrepreneurs and start-ups, SMEs, or large organizations. Recipients include the categories of clients and beneficiaries.

There are further two categories of intermediaries depending on their objectives,

i.e. the brokers and supporters:

- *Brokers are organizations or people whose principal objective is that of making it possible for senior professionals to be able to supply their services (experience and knowledge) to the market and society. These entities play an important role in extending professional active life of seniors.*
- *Supporters are organizations that have as their principal objective the maintenance of an active life for the elderly and improvements in their quality of life, providing a range of services that allow the elderly to provide a service in a more structured manner. These types of organization basically offer three types of support: financial support, service support, and ICT support.*

Each one of these groups might have distinct organizational forms. For instance, recipients can be organized around SME Associations, start-up incubators, etc. Therefore, an effective organizational form to cope with the requirements of the stated vision is a multi-level collaborative network involving three groups of stakeholders and their specific organizational forms.

6 Plan of Actions

Next challenge is to elaborate a plan of research actions and their suggested timing to lead us from current baseline to the desired vision, taking into account the gap analysis results. As illustrated in Fig. 8, the roadmap includes a number of actions for each perspective. An example of action according to the technological perspective is:
"Develop affective-based and context aware ICT collaboration platforms for communities of senior professionals"
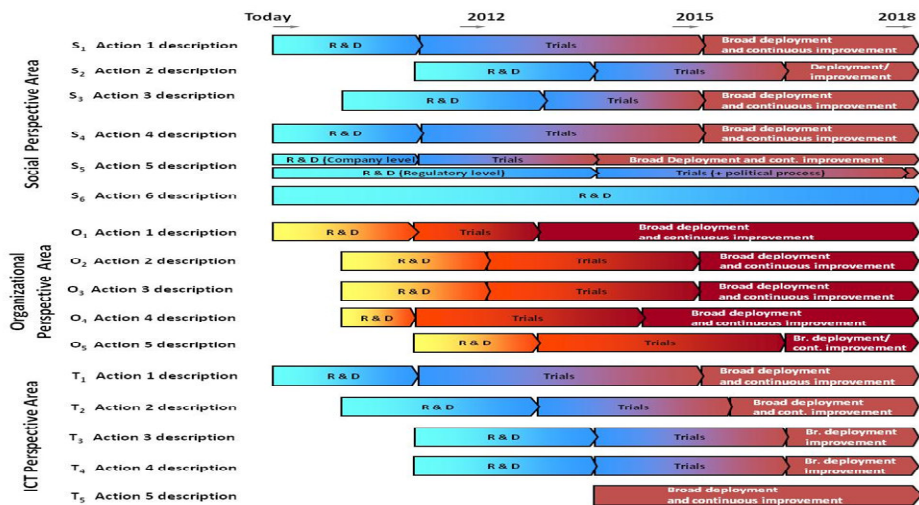

Fig. 8: The roadmap structure

Furthermore, for each action, it also gives a qualitative indication of the efforts needed in R&D, take-up and deployment. The last step will be the consolidation and consensus building phase. The steps performed so far have been conducted in close interaction with dozens of stakeholders and experts in different domains, but a final consolidation is needed when all pieces of the roadmap will be assembled.

7 Conclusion

Extending active professional life of senior people became an important need as the expectancy of a longer healthy life increases. Such extension is likely to: (i) Facilitate active ageing, keeping elderly involved in and contributing to society; (ii) Generate additional income to help them keep their standard of living.

ICT can be an important enabler in facilitating the creation of collaborative networks involving not only communities of seniors, but also potential recipients of their services and intermediary entities in a multi-level network.

Given the lessons from early experiences and the sensitivity of the area, future RTD needs to be supported by carefully designed roadmaps. First results from ePAL give important insights in developing such roadmap. Ongoing activities are now addressing the finalization of the roadmap and consensus building process.

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