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**Secure Adaptable Ambient Assisted Living Environment for
Ageing Society**

SCALABLE

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Partnership

Participant no.	Participant organisation name	Participant org. short name
1 (coordinator)	TCORE Limited	TCORE
2	University of Newcastle Upon Tyne	UNEW
3	University of Minho	UMINHO
4	LINCIS Limited	LINCIS
5	Paderborn University	UPB
6	Codeworks Limited	Codeworks
7	Smart Solutions Limited	Smart Solutions

Name of the coordinating person:
Coordinator e-mail:
Coordinator fax:

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Proposal Summary

Secure Adaptable Ambient Assisted living Environment for Ageing Society

SCALABLE

Strategic Objectives

SCALABLE addresses the strategic objective 2.6.2: Ambient Assisted Living (AAL) for the Ageing Society and aims to extend the time during which elderly people can live independently in their preferred environment with the support of ICTs.

Proposal Abstract

SCALABLE is a user led project that will create revolutionary technology to assist older people to live independently for longer. European wide focus groups of older people and their carers will be organised in order to ascertain their perceived needs and concerns regarding assisted technology. Ethical considerations such as privacy and the protection of dignity will be also taken into account. The results of this exercise will be emulated in a computer model to be created within the project. This emulator will map assisted technology living environments for the older person and will be capable of being adapted for specific needs, levels of disability and scenarios. The emulator will be used to design a self-organising wireless network system of sensors and actuators taking into account constraints such as low cost, low maintenance, fault tolerance and fail-safe life criticality. Platform technology hardware and software will be developed to realise this network. The technology will build on ongoing work in low power asynchronous digital processor design and optimised network and operating system design combined with existing low-power wireless technology to provide a fully integrated solution. The self-organising network will be deployed in an assisted ambient living environment (AAL) for the older person and will be evaluated by project scientists and the focus groups. The results of the evaluation will be used to refine both the emulator and the technology so that the emulator may be used for future detail tailored design of AAL accommodation.

B1 Scientific and technological objectives of the project and state of art

B1.1 The challenge

Globally, the population aged 60 and over is growing faster than any other age group. The 60+ population will almost double in the next 20 years, from 605 million today to 1.2 billion by 2025. This trend towards an older population is most pronounced in Europe, which by 2025 will have 8 of the 10 'oldest' populations (in terms of the percentage of people aged 60+ in countries with at least 10 million people). By 2050, an estimated 35% of the European population will be aged 60+, compared to 20% today.

This dramatic shift in the demographic profile of Europe is due to the combination of three factors:

- ? Longer lifespans, typically well into late seventies or early eighties
- ? Falling birth rates, from an average of 2.16 children per female in Europe in 1970 to only 1.38 children per female today
- ? The baby boomers (the sizeable cohort born between 1946 and 1964) reach 60 from this year onwards

The most dramatic increases will be in the 'old-old', those aged 80+.

One of the key effects of this demographic shift is the impact on healthcare systems. According to OECD projections, the ageing European population could result in expenditure on health and long-term care increasing from 6% of European GDP today to 9% by 2040.

A key objective, both of governments and older people themselves, is to enable older people to remain in their own homes for as long as possible. However, as the population reaches very old age, the impact of physical and cognitive impairments affects the ability of older people to perform Activities of Daily Living without support.

This has led to the development of various Telecare systems, primarily in the UK, Scandinavia and the US. These are currently mostly old analogue technology, using pull-chords linked to a land-line telephone to summon assistance, for example in the case of a fall in the home. Whilst these systems clearly work at a basic functional level, they have a number of weaknesses:

- ? They rely on physical installation involving wiring. This is therefore costly, except for 'new build' properties. However, much of the European housing stock is old and installation is therefore costly and disruptive;
- ? They have fixed physical locations (typically one pull chord per room), requiring the older person to be able to reach them (unlikely in the event of a major fall or if the older person is unconscious);
- ? They are limited to use within the home and so do not help the older person outside (e.g. in their garden); and
- ? They are unsightly and lead to stigma. Many older people simply remove the pull chords once installed! Little or no attention has been paid to the feelings of the older person.

There is a clear need to move to more advanced technology solutions, involving digital technology and wireless infrastructures. This will make installation less disruptive and more cost effective. The systems can also be improved to make their use more effective.

Low power consumption is a key requirement of such systems, as older people cannot be expected to continually change batteries. The system is also part of the overall emergency support, so functioning needs to be 100% reliable, with built-in redundancy.

B1.2 Summary of specific objectives

The **overall objective** of SCALABLE is to develop software and hardware for the creation of an ambient assisted living environment that will assist older people to live independently for longer. This will be based on an ambient self-organising wireless network of smart sensors and actuators for deployment in and external to the living environment of the older person. The system will be low cost, low maintenance, and secure.