ABSTRACT
In this paper, we discuss how IBM is working with Lero – the Irish Software Research Centre and the Ireland Smart Aging Exchange. The proposed project will observe, analyse and coordinate Smarter Care models as they apply to active ageing and healthy living, building on models taken from Connected Health. We consider these as socio-technical models, extending from the older person’s home and family into wider society. They can and will include healthcare models, but will also include further elements such as social interaction, exercise, intellectual requirements and personal assistance.

CCS Concepts
• Professional topics→Computing / technology policy, Medical information policy, Medical technologies

Keywords
Smarter Care, Connected Health, User-centric

1. INTRODUCTION
The projected increase in longevity is a cause of celebration and affirms improvements in standards of living, lifestyles, nutrition, medications and healthcare systems. However, the agenda on ageing has generally been negatively depicted – traditionally painted as a portrait of decline, loss, frailty and a societal problem. However, older persons should not be seen as a burden on society. Consequently, our challenge is to consider older persons as assets, and to view them as valuable sources of innovation.

Therefore, as a society, we require long-term planning to ensure that we have the necessary systems, structures and support needed to improve the current quality of life which is poor for too great a percentage of our older people. These require “a combination of (i) personal assistance (for example, meals, shopping, and housework) (ii) medical services (for example, wound dressing, medication, health monitoring, rehabilitation or services of palliative care) and (iii) psychological support (for example, basic interaction and discussions, education or counselling)” [1]. This should take into account the scale of the projected increase in the population of older people. It is in each of our own best interests to drive to such a strategy as our time/need will also come! [2]. One of the strategic areas for development within IBM is to research into and understand our potential contribution to this strategy, which falls within a new and broad data-centric innovative imperative. In their white paper [3], IBM have recognized that new opportunities have arisen to observe, analyse and coordinate between “social determinants, clinical factors and lifestyle choices”. They further add that “the ability to transcend these traditional boundaries and work towards the common goal of holistic and individual care is called Smarter Care”.

2. CONNECTED HEALTH: A SUBSET OF SMARTER CARE
While healthcare is seen as a requirement for older persons, given that they have other social and intellectual needs, projects are not focused solely on healthcare. However, as a subset of Smarter Care, it is reasonable, therefore, to consider that Connected Health research and innovation can provide a stable foundation to Smarter Care research. In Connected Health, there have already been some solutions, but, more importantly, Connected Health research has shown that there needs to be a congruence of processes, technology and people. Connected Health has been defined by [4] as “patient-centred care resulting from process-driven health care delivery undertaken by healthcare professionals, patients and/or carers who are supported by the use of technology (software and/or hardware)”. Therefore Connected Health can be considered to be a socio-technical healthcare model that extends healthcare services beyond healthcare institutions [5]. Through the exploitation of technological innovations, healthcare providers can generate accurate and timely information for patients and clinicians to make better decisions. Improved decision-making tools can improve the likelihood of saving lives, reducing costs, maximising the efficient use of healthcare resources, and ensuring a better quality of life during and post treatment [6]. However, as we face growing needs within society...
due to the growth in the global elderly population [7], this inevitably leads to a growing demand on service provision. Consequently, to provide technological solutions, we must clearly identify the older person’s needs and understand how technology aligns with the need to avoid of improved social and care pathways.

3. SMARTER CARE PROJECT
In similarity with Connected Health, Smarter Care as it applies to active ageing and healthy living can be considered to be a socio-technical model that extends from the older person’s home and family into wider society. This can and will include healthcare models, but will also include further elements such as social interaction, exercise, intellectual requirements and hobbies. Therefore, in a joint project between Lero – the Irish Software Research Centre, IBM and the Ireland Smart Ageing Exchange, we plan to develop a prototype system for Smarter Care. This will include understanding social pathways can be evolved through the inclusion of technology and the modification of processes. Coupled with resource constraints, social reform provides a natural environment in which to explore technological innovations to improve the quality of life for the older person. We are focusing on the exploitation of technology and software services to play an increasingly dominant role in supporting the delivery of Smarter Care in active ageing and healthy living. This ultimately can support improved quality of life for our older citizens, but can only do so by combining technological capabilities with process evolution and the involvement of all stakeholders – older persons, family, carers, clinicians, educators and the wider society. We recognize that there is an apparent lack of insight in to how social requirements are mapped onto technological (hardware and / or software) requirements, which, if ill informed, can have a negative effect on the older person’s quality of life. Our expectation is that, through this project, we will deliver better outcomes at lower costs, and see new opportunities to influence the interconnections between social determinants, clinical factors and lifestyle choices.

4. INNOVATION THROUGH IBM SMARTER CARE
IBM Smarter Care aims to unite healthcare providers, public and private payers, life sciences, social programs & benefits providers to provide optimal care to citizens across all age cohorts. It recognizes an ecosystem of organizations that must come together and collaborate to care for an individual or a family unit. We believe that creating integrated communities of care requires common goals which are:
- Centered on the individual;
- Centered on the person’s context and the populations to which they belong;
- Centered on delivering more individualized care to improve outcomes at lower costs.

The potential for innovation to support new drivers of quality care can occur through interventions which identify and influence populations, knowledge by assessing what works best to drive evidence-based and personalised care. This is achieved through planning, collaboration by engaging individuals and stakeholders to drive towards positive health choices, coordination which shares care, knowledge, accountability and risk across clinical and social boundaries and analytics. This supports more informed decisions and continually improves healthcare quality and outcomes.

5. CONCLUSION
Unlike many solutions which are developed using a technic-centric approach, the project presented in this paper will adopt a user-centric approach. Therefore, we shall ensure that we understand the needs and circumstances of older adults in the community before we embark on the design, development and evaluation of the prototype solution. Using research methods drawn from the social sciences, we will first develop a thorough understanding from an older person’s perspective. Then, facilitated by technology, we will be enabled to reconfigure and enhance existing pathways to develop new Social and Participation Pathways. Our focus in this case is on the social needs of the population, and our expectation is that, by providing this Smarter Care solution, we can improve the quality of life of older persons.

6. ACKNOWLEDGMENTS
This work was supported, in part, by the Science Foundation Ireland (SFI) Lero Grant (www.lero.ie) 13/RC/2094 and by ARCH - Applied Research for Connected Health Technology Centre (www.arch.ie), an initiative jointly funded by Enterprise Ireland and the IDA.

7. REFERENCES