



## Engaged Research Case Study Template

<b>Project title</b>	ProACT: Designing Integrated Technology Systems For ProACTIVE Patient Centred Care
<b>Descriptor (50 words max)</b>	ProACT is a digital health research programme funded under the European Union Horizon 2020 framework that aims to develop and evaluate a digital integrated care system to support older adults (65 years and over) living with multimorbidity (multiple chronic conditions). ProACT uses digital health solutions to improve home-based integrated care, to support people to remain living independently in their community for as long as possible.
<b>Societal Challenge (50 words max)</b>	Presently in Europe there are 50 million people living at any one time with multimorbidity. The cost of chronic disease management across the EU a staggering €700bn annually. Unfortunately, our healthcare systems have not been designed to effectively support people with multimorbidity. ProACT seeks to address this problem.
<b>Project Synopsis (200 words max)</b>	<p>Up until now, little has been done to understand and respond to peoples’ daily experiences of trying to manage multiple conditions, including balancing multiple medications and doctors’ appointments, understanding the symptoms of their various conditions, and trying to follow different sets of advice from many different health professionals.</p> <p>Managing multiple health conditions at home can often feel like a burden, making it difficult to live life to the full. This has consequences for not only the person living with multimorbidity but also for the people who are responsible for their care within the home, such as loved ones and informal carers.</p> <p>Core to ProACT is the ability to empower people to connect with their family, healthcare, social care and community supports (e.g. formal/informal caregivers, their GP, their pharmacist) in a way best suited to their needs as they manage their conditions. Presently, ProACT is tailored for the following conditions; Diabetes, chronic heart failure, coronary heart disease and chronic obstructive pulmonary disease, or COPD.</p> <p>The aim is to ensure a promotion of technology as a way to empower patients to proactively manage their conditions, promoting a sense of ownership over their health and care, within their own homes.</p> <p>ProACT, when complete, will be the first cloud-based, digital solution of its kind in Europe to specifically support home-based integrated care and management for older adults with multimorbidity.</p> <p>The key innovations of ProACT that make our system unique are:</p> <ul style="list-style-type: none"> <li>• ProACT allows for the self-management (including medication management) of multiple diseases on one single platform</li> <li>• At the core of ProACT is person-centred care – as such it allows for an older person to determine who best to include in their care network, providing a</li> </ul>



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	<p>secure means to share their health and well-being data to enhance both their social connectedness and support they may receive.</p> <p>Behind ProACT is an artificial intelligent learning and data analytic system which analyses each person's use of the system over time and better guides their self-management. It has been designed from concept using the latest approaches in human behaviour change and computer interaction and developed with strong ethical, data protection and security measures in place. This includes being GDPR compliant.</p>
<b>Principal Investigator</b>	Dr. John Dinsmore
<b>Higher Education Institution</b>	Trinity College Dublin
<b>Civic / civil society organisation or other</b>	<p>Through ProACT, the Trinity Centre for Practice and Healthcare Innovation brings together a consortium of 12 academic/research institutions, small to medium enterprises (SMEs), health service providers, EU networks, and multinational corporations including two of the world's largest ICT companies:</p> <ul style="list-style-type: none"> <li>• IBM, Ireland</li> <li>• Philips, UK</li> <li>• AIAS Bologna Onlus, Italy</li> <li>• NetwellCASALA, Dundalk Institute of Technology, Ireland</li> <li>• Imec, Belgium</li> <li>• Tyndall National Institute, Ireland</li> <li>• Treelogic, Spain</li> <li>• Home Instead Senior Care, Ireland</li> <li>• The Association for the Advancement of Assistive Technology in Europe (AAATE), Austria</li> <li>• EASPD (European Association of Service providers for Persons with Disabilities), Belgium.</li> <li>• ASP Città di Bologna, Italy</li> </ul>
<b>Funding source</b>	EU-funded Horizon 2020 in PHC-25-2015.
<b>Engaged research method or technique (200 words max)</b>	<p>ProACT adopted a co-design research approach, which provided flexible, responsive, and practical methods to follow. A consequence of this approach, was the promotion of patient and public involvement in the process, ensuring that we identified the actual stakeholders involved in community care.</p> <p>This was achieved by:</p> <ul style="list-style-type: none"> <li>• A research panel consisting of participants for the duration of the project's design process, including co-design and usability testing.</li> <li>• Interviews and Focus Groups to explore and understand the experience of people with multi-morbidity (PwM). We could not attempt to design for the experiences of these people until we identified all the stakeholders in their daily care: 166 stakeholders were identified including PwMs, informal and formal carers, GPs, consultants, nurses, and pharmacists.</li> </ul>



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	<ul style="list-style-type: none"> <li>• Design workshops in response to the experience of PwM. Participants were encouraged to be active stakeholders in not just the data collection but also the design process. This ensured co-design was at the core of ProACT.</li> <li>• Usability testing to evaluate our design decisions. The consequent design decisions from the design workshops were returned to the participants for further feedback. Participants were encouraged not to become passive agents in the research process and instead to voice their opinions.</li> <li>• 12 month trials across EU Health systems to evaluate the technology. Living Lab facilities in Ireland and Belgium including 120 patients and their formal and informal care networks. A European feasibility study in Italy will also assess the cultural and political determinants for adoption ProACT.</li> <li>• Non-traditional dissemination is promoted so that ProACT can be shared with the public, the actual community of users that it is designed for: For example, Information evenings, information stands at caregiver events.</li> </ul>
<p><b>Outputs: (200 words max)</b> Outputs are key areas of work that enable desired outcomes Who we will reach What we will do Where, when and how it will happen Targets for numbers to be reached Frequency of activities</p>	<ul style="list-style-type: none"> <li>• Dissemination &amp; communication outputs across multidisciplinary contexts (44 scholarly outputs across peer reviewed publications, white papers, conference presentations).</li> <li>• International collaboration across 50 work package deliverables successfully submitted to the EU Commission.</li> <li>• The Launch of ProACT by Minister of State for Mental Health and Older People, Helen McEntee T.D., Science Gallery, 2016.</li> <li>• Media engagement across press releases, ProACT website and social media platforms, and ProACT newsletters.</li> <li>• Data protection protocols and ethical approvals.</li> <li>• ProACT partner, NetwellCASLA, a finalist EU Innovation Radar Award, 2017.</li> <li>• Participation in European Researcher's Night, a Marie-Sklodowska-Curie (MSCA) action, funded by the EU., 2017.</li> <li>• ProACT EU SPARKS exhibition at Science Gallery Dublin, 2017 and SPARKS Seminar 2018.</li> <li>• EIT Health International Summer School, 2017.</li> <li>• Satellite seminar at the 14<sup>th</sup> AAATE Congress, Sheffield, 2017.</li> <li>• Workshop and Keynote at the Centre for Behavioural Change Conference, London, 2018.</li> </ul>
<p><b>Outcomes: (200 words max)</b> Outcomes are shorter terms changes in knowledge and skills attitudes &amp; behaviour. Organisational development Change in local situation and circumstances Social change – policy, practice, decision-making</p>	<p>Facilitating behavioural change (self-management) via ICT-AT in a patient-specific not condition-specific manner:</p> <ul style="list-style-type: none"> <li>• Design &amp; development of suite of supportive ICT-AT data aggregation platform and training tools as well as an innovative data analytics framework.</li> <li>• A behavioural change tool kit and framework to design and evaluate the efficacy of ProACT as a behaviour change intervention.</li> <li>• Extensive user requirements report to support the co-design of digital devices, platforms, &amp; applications, including proof of concept trials within EU Health Services with associated living labs to ensure co-design. Promotion of technology as a way to empower patients to proactively manage their conditions, promoting a sense of ownership over their health</li> </ul>



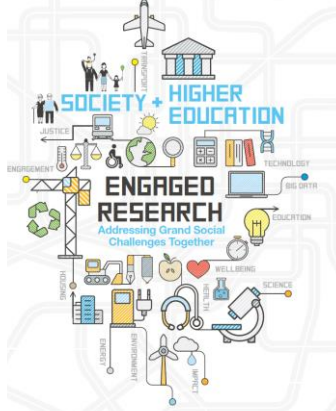
and their care. This will promote digital literacy by highlighting the relevancy of digital health to their wellbeing.

**Advancing international collaborations:**

- ProACT consists of an international consortium, with each partner disseminating research findings, through conference presentations and scientific publications. This is creating a dialogue around the importance of empowering older adults to take ownership of their healthcare, through digital technologies, and hence attracting an audience of international peers and funding bodies.
- A transferability deliverable outside the main trial will be produced, which will address policy issues for the transfer of a digital health system across the EU developed by pan EU organisations, AAATE and EASPD. This will also be submitted to the European Innovation Partnership on Active and Health Ageing (EIP-AHA).
- Early and sustained engagement with health services across the EU trial locations has ensured facilitation of the ProACT system for future research and or exploitation purposes. This has resulted in local health services, such as Home Instead Senior Care in Ireland, and regional bodies, such as AIAS in Italy, being keen to support the future integration of ProACT within their operations.

**Informing future digital health solutions:**

- ProACT’s solution involves a ProACT tool kit, consisting of an iPad with a suite of commercially available devices to track an individual’s health symptoms (E.g. Weight, heart rate, blood glucose levels) and wellbeing (e.g. sleep and mobility) and a CareApp, designed and developed specifically to meet the needs of over 65’s with multimorbidity.
- The application allows individuals to record and track the management of their conditions using the tool kit (including self-report), in a secure, simple way that is easy to use.
- The AI behind ProACT, which analyses each person’s use of the system over time, can personalise and guide people on their self-management as it learns more about the user, tailoring care needs while informing data collection & delivery practices.
- ProACT is part of the EIP-AHA specifically the B3 Action Group on Integrated care and will submit commitments to this action that will be used by the EIP-AHA to inform policy related to active and health ageing within the EU.
- Potential to influence policy based on recommendations from our change management workshops (as listed under outputs), which show how digital integrated care can impact on change management within health systems.



	<p>Identifying stakeholders involved in community care:</p> <ul style="list-style-type: none"> <li>• ProACT allows for people to determine who best to include in their care network, providing a secure means to share their health and well-being data to enhance both their social connectedness and support they may receive.</li> <li>• In doing so, we can learn how best to support, through policy and service design, community care in our society.</li> </ul>
<p><b>Longer term anticipated areas for Impact (Choose from below):</b> Economic          Policy &amp; Public Service          Societal Engagement          Health &amp; Wellbeing          Professional services          Environmental          New knowledge          Human Capacity</p>	<p>ProACT is co-ordinated by Dr John Dinsmore at the Centre for Practice and Healthcare Innovation (TCPHI), within the School of Nursing and Midwifery at Trinity College Dublin. The expertise and experience of the TCPHI team in implementing science and healthcare knowledge supports research capacity between academics, healthcare providers, and industry. This is illustrated by the many successful collaborations across our large network of clinical, industry, and research partners.</p> <p>ProACT exemplifies this by bringing together a consortium of 12 academic/research institutions, small to medium enterprises (SMEs), health service providers, EU networks, and multinational corporations including two of the world’s largest ICT companies to design and develop the first cloud-based, digital solution of its kind in Europe to specifically support home-based integrated care and management for older adults with multimorbidity. Core to ProACT is the ability to empower older adults to connect with their family, healthcare, social care and community supports (e.g. formal/informal caregivers, their GP, their pharmacist) in a way best suited to their needs as they manage their conditions.</p> <p>Our aim is to ensure a societal impact to our research, ensuring the health and wellbeing of our ageing population by ensuring patient engagement through our methodologies and the most advanced digital health solutions in response to their daily healthcare needs.</p>