An ageing population leading to more chronic disease is straining healthcare systems. This paper makes two core contributions to healthcare systems design research: Firstly, a systemic techno-behavioural approach is presented to support intervention design with value-effective health outcomes. The systemic techno-behavioural perspective takes into consideration the interaction between three angles: The current healthcare system in place, the technological opportunities for addressing an issue and a broader and deeper understanding of the behaviour of those involved. The purpose of considering these three angels is to create interventions that are more robust. This will help inform healthcare systems design researchers and other stakeholders. Secondly, it is proposed that interventions should be grounded in behavioural theory, a collection of theories are presented to be incorporated in the design process of interventions. The systemic techno-behavioural approach is applied to dementia care highlighting the need to understand the dynamic relationship between the context of the current healthcare delivery system, technology, and behaviour to improve quality of care during the progression of the disease.