

National Disability Authority submission to Enterprise Ireland regarding future competence areas for applied research in Ireland

Universal Design Thinking - as an approach for economic recovery

Introduction

Universal Design is the design of products, services, environments or ICT so that they can be used by anyone regardless of age, size ability or disability. Innovation which builds in a Universal Design approach from the outset has the capacity to reach significantly wider markets than an approach which disregards human diversity and results in outputs suited to a narrower range of abilities.

This paper sets out a practical approach to achieving rapid transformation to stimulate both the private and public sectors through an applied research programme of up-skilling professionals and businesses and educating students in Universal Design Thinking, (UDT). UDT can be achieved at two levels:

- By supporting a designated capacity to research and to create methodologies and tools on UDT for use by Competence centres.
- By integrating UDT as a key approach for all Competence centres.

Key spokespersons for design and innovation in Ireland, Kumar and McNulty maintain that "while creativity is thinking about a new way of doing something, innovation is the process of transforming ideas into successful market commercialisation in all sectors".^[i] Design thinking is a process that integrates both creativity and innovation to create the desired "user experience". It is a process that "helps shape the business proposition, solve problems, makes practical its supply and usability, as well as its desirability to the end user."

A 2009 European Commission staff working paper on "Design as a driver of user-centred innovation" showed that the results of introducing this type of design thinking are compelling: "Companies that invest in design tend to be more innovative, more profitable and grow faster than those who do not. At a macro-economic level, there is a strong positive correlation between the use of design and national competitiveness".^[ii] In short, design thinking is the engine that drives innovation.

Universal Design Thinking, (UDT) takes this one step further by coupling design thinking with the requirements of a wider range of users in order that the end product

National Disability Authority submission to Enterprise Ireland regarding future competence areas for applied research in Ireland

or service can be used regardless of their age, size, ability or disability.^[iii] While traditional thinking has been to try and improve a service or product by investing more resources, money, staff etc to build it 'bigger and better', UDT asks the question, "How can we do it differently?" and meet the needs of more stakeholders.

Ireland is well positioned to become a leading innovative hub in Universal Design Thinking. The Centre for Excellence in Universal Design was set up as part of the National Disability Authority (NDA) on a statutory basis under the Disability Act 2005 in order to promote the achievement of good design which enables the use of a building, facility, product, service or ICT by any person in the most independent and natural manner possible, in the widest range of situations and without the need for adaptation, modification, assistive devices or specialised solutions to the greatest practicable extent. It covers all persons regardless of their age, their size or whether or whether they have any particular physical, sensory, mental health or intellectual ability or disability.

The NDA's Centre for Excellence in Universal Design (CEUD) has specific functions to promote excellence in Universal Design (UD) by:

- supporting and assisting in the development of standards in UD by liaising with national and international standards bodies.

- recommending adoption of, and encouraging compliance with the UD standards.

- providing information to bodes on practical and theoretical aspects of UD.

- promoting the integration of UD principles into education and training course curriculum as well as in the examinations for those involved in work on the environment including architects, engineers, town planners, systems analysts, software designers, transport providers etc.

- assisting in the development of knowledge, skills, understanding and values to achieve a universally designed environment.

Also, the CEUD recognises and associates its work with points from the report of the Innovation Taskforce, which recommends key actions for embedding product design research and teaching into Ireland's engineering schools, by a shift in design thinking in Ireland to a model where creativity and innovation in product design are more encouraged.^[iv]

National Disability Authority submission to Enterprise Ireland regarding future competence areas for applied research in Ireland

This paper further outlines how Universal Design Thinking can be incorporated as applied research in continuous professional development and third level education, and during technology development and public service delivery. It explains how this can bring about the double win of improving Ireland's competitive advantage as an exporter of products and services that meet the needs of a wider market, while also making an Ireland that is more equitable and fairer place to live.

Universal Design Advances Globally and in Ireland

Some parts of Europe are behind its main competitors in the USA, China and Japan in how design is central to producing marketable, usable and commercially viable products. Europe's 'innovation leaders' such as Finland, Denmark and the UK have already started to tap into the potential of design as a tool for innovation.^[v] To align with the European Flagship initiative "Innovation Union" that sets out a plan of action at a European level, Ireland needs to prioritise what can create short term results to jump start the Irish economy as well as focusing on longer term challenges such as its ageing population.^[vi]

Ireland is experiencing a major demographic shift to an ageing population which presents both a challenge and an opportunity for Ireland. It is imperative that we consider how older people can be supported to live independently for longer in their own homes and communities. Everyday products, services and buildings will need to be more user-friendly to facilitate a more diverse range of user needs and functional ability limitations that the older demographic is requiring.

As Ireland moves to ratify the United Nations Convention on the Rights of Persons with Disabilities, we must ensure that Ireland continues to grow as an equitable and fair society in which all its citizens have equal access to goods, services and a better quality of life. The UN Convention sets out Universal Design as a key strategy for the design and development of products, services, ICT and buildings that are accessible and usable to the widest range of users possible regardless of age, size, disability or ability. It recognises the established 7 Principles of Universal Design and moreover the convention recognises the underlying 29 Universal Design guidelines.

UDT as a Driver in Business – Standards and Regulation

It is acknowledged that technical standards and regulation play an important role in innovation. Irish companies selling their ICT goods or services to the Federal Government in the USA have long been required to ensure accessibility for people with disabilities (under Section 508 of the Rehabilitation Act). While these types of

National Disability Authority submission to Enterprise Ireland regarding future competence areas for applied research in Ireland

regulation currently only exist in a small number of countries, the European Commission have mandated the development of public procurement standards for ICT and the built environment that will come into force in all member states in the next few years.^[vii] Public procurement accounts for 17% of the EU's GDP. The Commission advocates for a single market in which goods and services can be traded between member states; therefore an Irish company with the capacity and skills to design and develop universally accessible ICT products and buildings will have an advantage when going for lucrative public contracts in Europe.

Many consumer electronic and health care device companies are focusing on developing products for independent living for the increasing older population. There is a proliferation of new devices aimed at this so-called 'silver market' that is being driven by a clear message from the informed and relatively rich older consumer and their representative organisations. This message is that, only products that are attractive, easy to use and unobtrusive will have a place in their homes and lives. An example of such an innovation is the Raku Raku (or Easy Easy) phone in Japan. The Universal Design features in this phone enabled the manufacturers to sell over 15 million units by 2009. Given Ireland's mix of highly educated graduates, technical research networks and highly skilled work force, there is a clear opportunity for Ireland to become a hub for designing and developing desirable products for this 'silver market' segment at home and abroad.

UDT and User-Centred Design

At the core of Universal Design and Design Thinking is a design method called User Centred Design. In a 2009 report by Accenture titled "Open innovation: How to create the right new products, the right way", leading communications companies worldwide were examined about the results of their R&D investment. The report demonstrates that companies with a strategy for systematically including consumers in the design process managed to significantly reduce the time required to develop new products. In comparison to the global average of six months for new product launch, companies in France and Germany were significantly more likely to have launch times of less than three months. As the report states, "Slow development times go to the very heart of communications companies' competitiveness."^[viii]

Key opportunities exist within the services industry. Ireland has a strong service-based economy with 70% of the Irish work force employed in services, and it is the 10th highest exporter of service in the world. However, research conducted in Ireland

National Disability Authority submission to Enterprise Ireland regarding future competence areas for applied research in Ireland

has shown that generally, businesses know their customers through only what a small sample tells them and little is known about the majority of their customers.

Traditionally there is a push for Research & Development to underpin innovation and yet, research also shows that over 50% of innovative companies do not perform R&D. Design Thinking merged with Universal Design can be key to rapid, low cost transformation of underperforming service companies both for the national and international market place. The provision of support and training on Universal Design Thinking for public and private organisations that support SMEs in Ireland will help enable this sector to improve how they conceive of and produce what their customers want and need.

UDT in Education

There is a high expectation set on the contribution of highly skilled graduates and that the research system in third level institutions will initiate Ireland's economic recovery and social regeneration. While Ireland continues to produce very technically proficient graduates in areas such as architecture and civil engineering, product design and IT, most of these students have had little or no exposure to design methodologies that take end user needs into consideration, or that engage with users at any stage in their education or research. As the section above on Universal Design as a Driver in Business demonstrates, it is through systematically researching and including users' needs in the design process that enable companies to bring better products to the market faster. The focus in technical and design related courses needs to shift to include more content and practice on methodologies such as participatory design to ensure the inclusion of the end user and other stakeholder needs and preferences in the development of products, services, buildings and IT systems.

UDT in Public Services

While significant monies were spent within the public sector under the National Disability Strategy on improving access to public buildings and services for persons with disabilities, in the current economic climate this momentum will be difficult to maintain. A similar programme of funding is unlikely to occur in the medium term and many public bodies have either stalled current accessibility works or have cancelled new works. The public sector needs a new focus and strategy for delivering public services and achieving social innovation. Universal Design Thinking can help shift the focus from dealing exclusively with disability access toward solutions that

National Disability Authority submission to Enterprise Ireland regarding future competence areas for applied research in Ireland

improve buildings and services for all. This shift in thinking from designing systems and solutions that benefit a relatively small number of people to solutions that benefit all has been proven in Norway to have had a very positive return on investment.

Universal Design has recently been introduced as a legal instrument in anti-discrimination legislation in Norway. The goal has been to develop the means for accessibility based on equality in order to include persons with disabilities in society and increase their participation. The action plan “Norway Universally Designed by 2025” was adopted in May 2009. The action plan has four prioritized areas including, Information and Communication Technology, Buildings, Planning of Outdoor Areas, and Transport.

Some early research on the economics of universally designed transport projects have shown extremely promising results.^[ix] Three projects on transport system accessibility were compared in the research:

- Implementation of a low-floor bus,
- Installation of a high curb at a bus stop,
- Installation of enhanced lighting at bus stops.

Enhanced lighting at bus stops proved a very high return on investment because of its low cost to deploy as compared to a significant increase in rider-ship. This finding is an example of how a design solution placed for persons requiring higher levels of lighting ended up benefiting all users of the facility. The change in lighting has increased ridership and has proven to be a very positive business investment.

Build-in universal design as a condition for funding

The statutory Sectoral Plan of the Department of Enterprise Trade and Employment (now Enterprise, Trade and Innovation) adopted by the Oireachtas provides that the potential to maximise R&D support to universal design of products, services and ICT will be considered, in conjunction with the NDA's Centre for Excellence in Universal Design. Our advice is that by **making a universal design approach a condition for funding of relevant competence centres**, the widest possible market for the end-products can be built in at the design stage.

A Competence Centre with a focus on supports to independent living

Across the developed world, there are ageing societies. Here in Ireland CSO forecasts are that the number of people over 65 is set to double by 2021 from its 2006 level, and to treble by 2041. The number of people over 85 is set to rise from

National Disability Authority submission to Enterprise Ireland regarding future competence areas for applied research in Ireland

48,000 in 2006 to 94,000 in 2021, a doubling, and to grow to 258,000 by 2041, a five-fold increase.

International estimates of the proportion of people with disabilities fall in the region of 10-18% - the number is sensitive to the precise definition being used, but however measured, there is a significant group of people with functional difficulties. There are some overlaps in people with disabilities and older persons. In Ireland about a third of people with disabilities are aged over 65. Together, elderly people and people with disabilities represent a significant segment of the population. To live as independently as possible and to live in their own homes in the community like anyone else is a key to cost savings and is a value to be developed and maintained.

In business terms, older people and those with disabilities form a significant potential market for goods and services. With demographic change, future care and support needs for these groups are a significant challenge and governments are facing rising health/care systems budget pressures. This suggests that there are significant potential national and international markets for products, services or systems that enhance and prolong independent living and that can contribute to a lesser reliance on health or care services. The UK Department of Health is completing a major randomised control trial pilot of telecare and telehealth. Early indications show very promising returns in efficiencies and cost savings from the government and supply sector as well as improved quality of life from the end user perspective. The NDA advises that a Competence Centre focused on supports to enhance independent living (with learning from the Tril project) holds potential for significant market and social gain.

Recommendations

- 1. There should be support for developing capacity to research and create methodologies and tools on UDT for use by Competence centres**
- 2. Adopting Universal Design thinking should be a condition of the funding of Competence Centres**
- 3. A Competence Centre with a focus on products, services and technologies to support independent living across the lifespan should be established**

National Disability Authority submission to Enterprise Ireland regarding future competence areas for applied research in Ireland

Conclusions

Ireland needs to innovate to recover. This paper sets out a number of practical steps to achieving rapid transformation to stimulate both the private and public sectors through an applied research programme of up-skilling professionals and businesses and educating students in what we call Universal Design Thinking. As stated above, UDT can be achieved at two levels, at one level by developing capacity to research and create the methodologies and tools on UDT for use by competence centres, and at a second level, by integrating UDT as a key approach for all competence centres. Also recommended is a competence centre on applied research of new technologies and services to support independent living in the future.

By embracing Universal Design Thinking Irish industry and government can develop more usable and accessible products and services. This will increase Ireland's competitiveness not only within Europe but also in the global market place.

ⁱ "Design Thinking - Underpinning our Future Competitiveness and Capacity to Innovate", Available at http://www.taoiseach.gov.ie/eng/Innovation_Taskforce/Submissions_and_Consultation/Kumar,_Dami_ni.pdf

ⁱⁱ "Design as a driver of user-centred innovation " Available at http://ec.europa.eu/enterprise/policies/innovation/files/design_sw_d_sec501_en.pdf

ⁱⁱⁱ Disability Act, 2005.

^{iv} "Innovation Ireland, Report of the Innovation Taskforce" Available at: http://www.taoiseach.gov.ie/eng/Innovation_Taskforce/Report_of_the_Innovation_Taskforce.pdf

^v "Design as a driver of user-centred innovation". http://ec.europa.eu/enterprise/policies/innovation/files/design_sw_d_sec501_en.pdf

^{vi} "Europe 2020 Flagship Initiative Innovation Union" Available at: http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf#view=fit&pagemode=none

^{vii} "Information and Communication Technologies (ICT) CENELEC" Available at: <http://www.cen.eu/CEN/sectors/sectors/isss/Pages/default.aspx>

"CEN Construction" Available at: <http://www.cen.eu/cen/Sectors/Sectors/Accessibility/Construction/Pages/default.aspx>

^{viii} "Open innovation: How to create the right new products, the right way" Available at: <http://www.siliconrepublic.com/reports/partner/25-accenture/report/108-open-innovation-how-to-cre/>

^{ix} "Economic appraisal of universal design in transport: Experiences from Norway" Available at <http://www.worldtransitresearch.info/research/3676/>