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Social Innovation, consultation and its role in designing a new national innovation centre

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Executive Summary

The National Innovation Centre for Ageing (NICA) was established with funding from the UK Government and Newcastle University. The Innovation Centre is a new build, located in the heart of Newcastle upon Tyne in northern England and comprises ~10,000 square metres of innovation space. Part of the role of the Centre is to encourage public engagement with what it means to "grow old" and how society engages with ageing.

As a consequence, the building has to be designed and built in a way which encourages accessibility and inclusivity, particularly for older members of society. This paper describes how the design process for the new building has drawn upon best practice in design for in order to address the needs of, amongst others, those with dementia or suffering age related visual impairment. It also describes the process of co-design and social innovation with local older citizens through NICA's VOICE programme.

Introduction

Ageing is one of the largest global challenges facing society today.

Within only 10 years there will be one billion older people worldwide. By 2047 there will two billion people aged 60+. In the UK life expectancy increases by 12 minutes every hour or five hours every day.

The continued growth of average life expectancy is a triumph, and medical advances have been significant in prolonging the lives of older people. It has delivered huge benefit and promises of future opportunity. Yet such a change in our demographic presents us with a global challenge on an epic scale. But this challenge goes far beyond health and care. It includes education, employment, housing, how we provide, market and use products and services.

The "older people" of the 21st century are better educated and in better health than generations ever before. They want to live independently, continue to contribute to their communities and enjoy their later lives in good health – they want to "age well".

The United Kingdom's National Innovation Centre for Ageing (NICA) has been established by government to match the needs and demands of an ageing population, with world-leading science, technology and design. It is a new building currently being built in the shadow of St James Park football ground in Newcastle upon Tyne and forms part of the Science Central development.

Drawing upon Newcastle University's 700 experts in all aspects of ageing it will do this by bringing together business, academia and the public to stimulate innovation of products and services that make older lives better. We will do this at our iconic new building, which we will share with innovation experts and businesses. The building, which will open from 2020, will be at the heart of Science Central, one of the largest developments of its kind in the UK.

Critical to the success of the building will be that is it is seen to be, and delivers on being, "meaningful and visible" in the lives of the community and that the public spaces in the five storey 10,000 sq. m building provide facilities to support an active events programme focussed on ageing related themes, appealing to experts and non-experts alike. This one of the key objectives of the building and NICA: attracting and engaging with members of the public and encouraging their contribution to the debate as to how society and individuals address the issues associated with an ageing demographic.

It is vitally important that this new innovation building is designed in a way that is age friendly, designed and configured in a way that it takes into account the differing requirements of differing age groups: clearly an innovation centre for ageing should be sensitive to, and able to accommodate the requirements of older people.

One of the key challenges that have been presented to the building design team in developing the design proposals for the new innovation centre is the need to ensure that the building is designed to promote access for all and to ensure that it stands as a design exemplar of inclusivity, both internally and externally, addressing the needs of the widest possible range of public needs. This means ensuring that the design is attractive and accessible from the very young to the very old, catering for the widest possible range of accessibility needs.

In the context of an ageing population, this more specifically translates into design for dementia, whilst also designing to cater for individuals suffering visual impairments, auditory disorders as well as for visitors living with various types of mobility issues.

This paper will describe the process undertaken by NICA to develop a design solution to support inclusivity for its new building. It will describe the work undertaken with various bodies including representative charities and specialist bodies to identify specific issues. It will also outline how NICA's VOICE programme has been utilised to encourage citizen input. VOICE (**V**aluing **O**ur **I**ntellectual **C**apital and **E**xperience) is an organisation that captures the public's vast experience, ideas, opinions and expectations about research, innovation and policy developments which affect their lives. Lessons learnt during the design process will also be considered.

Developing a design solution to support inclusivity for its new building

The new Innovation building has been designed to house two national innovation organisations – the National Innovation Centre for Ageing (NICA) and the National Innovation Centre for Data (NICD). Both bodies form part of Newcastle University. NICD's mission is to deliver data analytics skills into industry. Co-located with NICA will be the National Institute for Health Research Innovation Observatory (NIHRIO) applying state-of-the-art data analytics to explore trends in health innovation across drugs, medical technologies, diagnostic tools and healthcare services. In addition to the public engagement space, the building will house a café, exhibition space, a large 200 seat "TED" style theatre, specialist facilities including, product testing, market research facilities and a data visualization suite. On the upper floors the building will provide accommodation for commercial businesses with a direct relevance to the work of NICA and NICD and visiting translational researchers and innovation ecosystem and economic development partners.

An image of the exterior of the new building is shown below.

This co-location of business, innovation specialisms, supporting actors and managing their differing requirements in the context of building design and functionality presents obvious challenges. Over layering this with the requirements of members of the public using the ground and first floors of the building adds additional complexity.

Balancing the needs of these different user groups was recognised at an early stage in the design process. Once the functional requirements of the building had been agreed with the two primary "clients" (NICA and NICD) the building was then assessed to identify those areas where the requirements of all users were largely similar. These relate mainly to the upper three floors of the innovation centre comprising office space which are intended to house innovation experts operating in the ageing and data domains and commercial companies which will chose to co-locate with them.

On the ground and first floors the anticipated pattern of usage is more complex. On these two floors the building needs to accommodate the needs of both innovation professionals, commercial tenants and members of the public ranging in age from 5-100+. Some of these users may have visual or cognitive impairment or a combination of impairments.

In order to best address the needs of such users, a widespread consultation exercise was undertaken with organisations including various charities with specific relevant expertise.

These included:

- The Royal National Institute for the Blind (RNIB);
- Dementia Services Development Centre at Stirling University;
- North East Dementia Alliance;
- AGE UK;
- Action On Hearing Loss;
- Alzheimer's Society;
- Thomas Pocklington Trust a national charity committed to increasing awareness and understanding of the needs of people with sight loss);
- Attendance at relevant conferences such as the national Design for Dementia Conference held at Liverpool John Moores University in summer 2017;
- Suppliers with involvement in the area e.g. Forbo Flooring (who supply products assessed and rated for suitability for people with dementia).

Alongside this process, a consultation exercise engaging with the VOICE (**V**aluing **O**ur Intellectual **C**apital and **E**xperience) Global was undertaken. NICA was pioneering in recognizing the opportunities arising from demographic change and ageing. VOICE Global is an organization based within NICA, which was established to champion and harness the immense mental capital, insight, ideas and experience of the public (especially older people) on ageing. VOICE works with both research and businesses to develop the knowledge base, identify needs, and co-develop desirable, innovative products and services and so help to bring about solutions to meet the challenges and opportunities presented by ageing and demographic change - ultimately to help people live better for longer.

In late 2016 NICA, the building architects and a cohort of VOICE members met to discuss the proposed innovation building. The aim of the consultation session was to bounce ideas around and consider any potential issues that will need to be addressed in the design. This event was a starting point for VOICE members to contribute towards formulating the brief and for NICA to assess how the proposed facilities are to be utilised. VOICE members were drawn from the local area and included retired building professionals including architects and engineers. Insights based on the professional and life experiences of VOICE members highlighted a number of areas for improvement and development including key features of the building design, transport and accessibility, surrounding public realm space and signage.

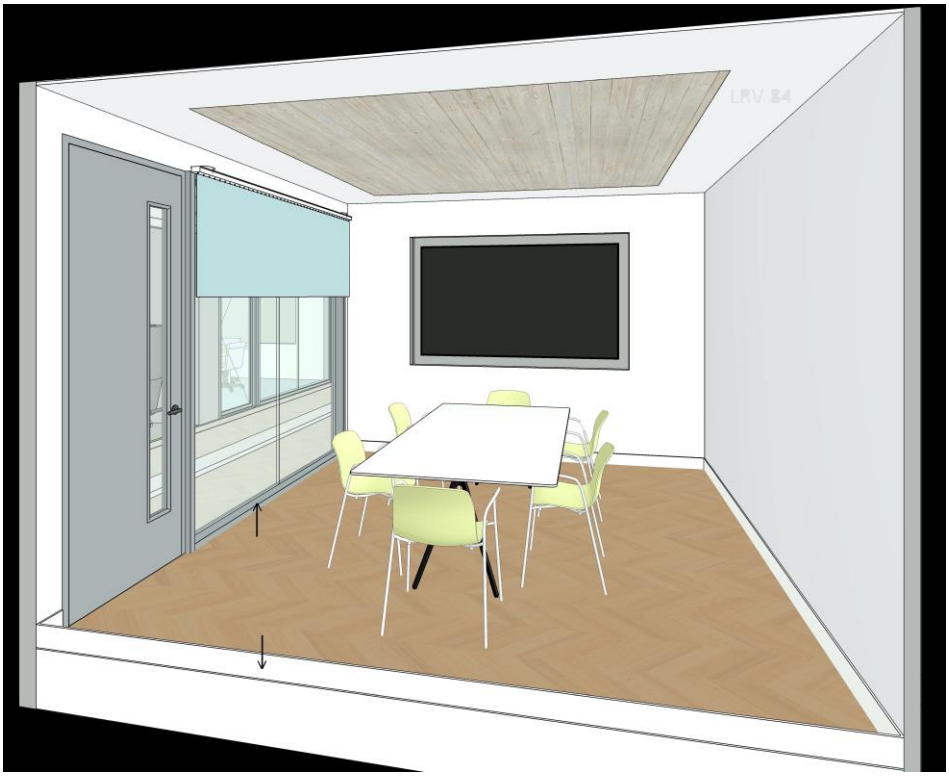
Based on these consultations, the following issues and requirements were identified as being of particular relevance for an age inclusive building:

Flooring:

- Avoid shiny, reflective floors, which can appear to be under water.
- Avoid speckled flooring.
- Trims (such as low walls and stairs, should be contrasting to wall colouring, (this assists people with visual impairments, such as cataracts.
- Avoid sudden changes in floor colours. Strong contrast on flooring can cause people to fall forward, due to them anticipating a level change.
- Do not use black mats at entrances, which can look like abysses. Similarly, use lighting to minimize shadows.

Lighting and reflections:

- Older eyes require bright, natural light (twice requirement as young eyes). They do not tolerate glare as easily and need longer to adjust to changes in lighting.
- Avoid high-shine and reflective finishes (e.g., chrome handrails, metallic strips in doorways).
- Avoid the use of mirrors in elevators and consider placing roller-blinds above mirrors in bathrooms.
- Glass screens, doors and balustrades can cause disturbance, particularly smoked glass.



Sight, signage and way finding

- To prevent people walking into doorframes, they should contrast in colour to the doors. Doorframes can appear to move for some people with dementia.
- There should be contrast between furniture and flooring, so that people can identify seats easily "what does not contrast is invisible".
- For signage, words should be mixed case, as it most familiar to read.
- For some older people it becomes harder to distinguish between colours. Primary colours remain identifiable for longer – in particular red and yellow, so these can be good choices for important signage.
- Consistent 'landmarks' can assist with way-finding. Colour can also be used to identify rooms or zones (e.g., the viewing room has a turquoise door and sign posting).
- As people age they often start to stoop. Proprioception can also cause older people to look down at the floor more. Therefore signage should not routinely be placed above head height.

Noise

- Some people with dementia can have distorted auditory perception. As we age, we tend to lose high frequencies and find it harder to distinguish low frequencies.
- In certain circumstances, noise can be the key aggravating factor in episodes of distress or agitation in people with dementia. People who are feeling overwhelmed will either withdraw or become angry. Within buildings there should ideally be access to quiet areas and, if possible, the natural environment.
- Use of soft furnishings, carpets and sound absorbent materials is essential.

Toilets

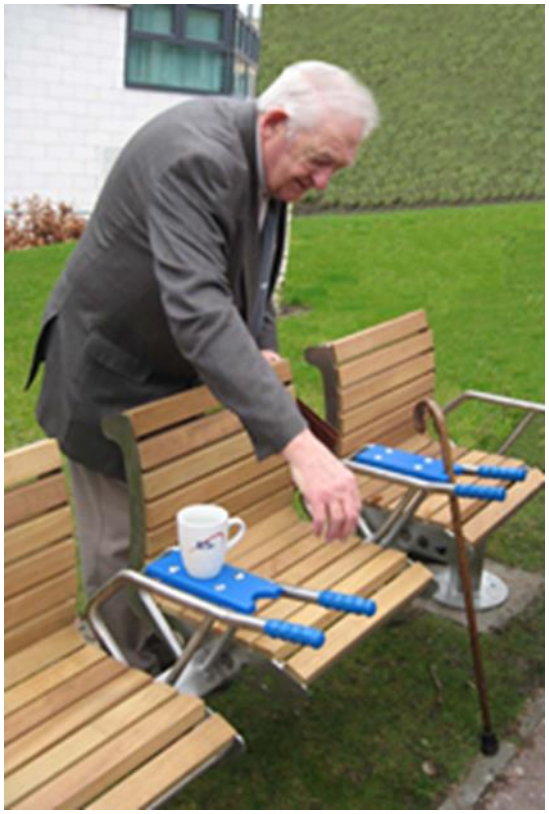
- Easy access to toilets together with clear signage is critically important. The traditional use of images of a man and a woman to signify toilets rely on memory – a picture of a toilet with the word 'Toilet' can be clearer for someone with dementia. Signs such as that shown below whilst visually arresting are at best unhelpful and at worst can be highly confusing.

- Due to eyesight deterioration with age, it is essential to have contrast in the bathrooms. This applies not just to handgrips and toilet seats, but also hand soap and hand driers.

Public realm space

In addition to the innovation centre, careful consideration has been given to the environment surrounding the building as there is little point designing a building which encourages inclusivity and accessibility if the surrounding public space is not equally welcoming. Some members of the community (of all ages) find walking distances challenging, without the right seating, at the right places, those members of the community can find themselves excluded from many public places including those around the new innovation building. Re-thinking the design of a public bench was identified as a key priority which could have significant benefits.

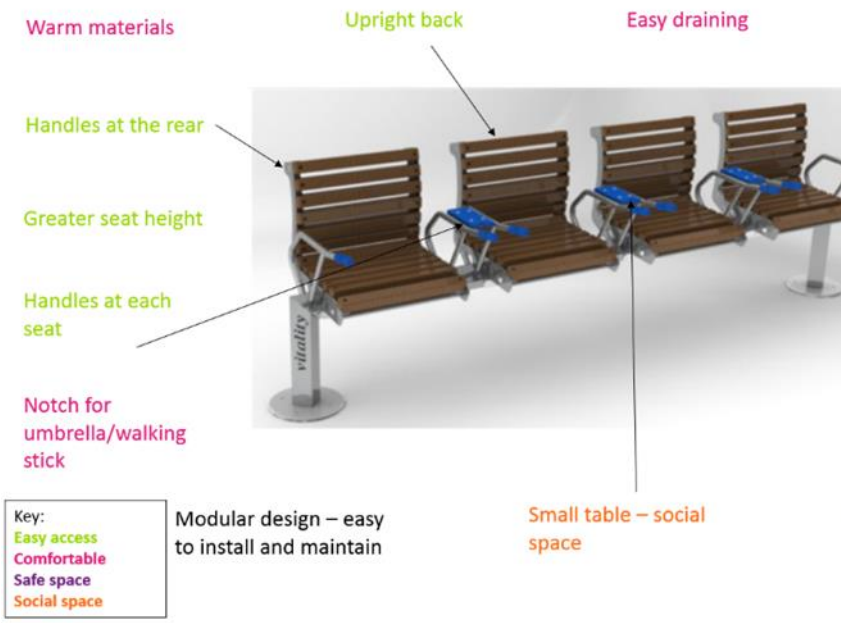
The age inclusive bench (named the Vitality Bench) has been co-designed with members of VOICE, as well as with the knowledge and expertise from research, design and manufacturing partners (Design Network North, a Gateshead-based design centre of excellence who, provide expertise to businesses, NICA and a designer with a keen interest in innovation and ageing – Jonathan Butters of from Butters Innovation).



Specific requirements were identified by members of VOICE: easy to get in and out of, comfortable (warm and dry), a good social space, suitable for all generations, easy to clean and maintain, and a safe space.

The image below shows the prototype bench and explains each new function.

The Vitality Bench has been a huge success, with all age groups, and has demonstrated the value of collaboration in the design process, particularly in the involvement of the public.



Feedback on the bench has been extremely positive – from all ages:

"With two young children and a dog, the features of this bench make it ideal seating for my family".

"Given that I have poor eyesight and a bad back this seat is much easier for me to use and I think the design is very contemporary".

Observations on the process, and practical implications

- Finding the balance from the design guidance relating to differing conditions has been important and something which continues with the appointment of interior designer and choices of colours. What is correct for one condition may be the opposite for others. For instance the design for dementia creates a conflict with the design for autism. The use of pastel colours is suitable for dementia however bright colours are best suited to people with Retinitis Pigmentosa. Clear requirements for hygienic handwashing facilities (infrared sensors) may be preferable but this may not be appropriate for individuals suffering from dementia. In such situations compromises may be necessary or inevitable.

- Creating an iconic building with a "wow" factor has also created areas where compromises have had to be found. The design has intended to create a simple geometric form which is

clad in as few materials as possible. This has led to a glass façade to the building which thermally is not very efficient unless the glass is treated with a coating to improve its thermal performance. By doing this the reflectance of the glass increases and in turn creates issues for visitors with dementia. To overcome this it has been necessary to change the specification of the glass to reduce the reflectance around the main entrance and beneath the overhang (where a key objective is to encourage interaction with the building and the public) but maintaining the reflectance elsewhere for building efficiency reasons. To mitigate this issue a protective planting bed has been proposed to provide a barrier to the façade.

- Due to the steepness of the site the Landscape Architect carried out an accessibility study to review whether a ramped approach would be inclusive or act as a barrier. Consideration of travel distances at a fixed point to the main entrance indicated that a ramped approach would actually increase the distance travelled to the front entrance and would therefore considered to be less accessible than a set of steps.

- Whilst working on a project with two end user groups, (especially one focused on ageing) there is the potential for the building project to be pulled in two very different directions. One of which is focused on design (NICD) while the other is focused on the practical aspects (NICA). Through ongoing consultation of all user groups this risk has been minimised.

- A holistic view of inclusivity is important – designing and creating accessible buildings which will be relevant and appropriate for an ageing population is important, but ensuring that the public spaces surrounding them is equally important.

- Age friendly spaces should still look to fight against the stigma attached to care homes of the past. There are certainly boundaries that need to be established but with the buy in of both sets of end users decisions have been made on this project which is to the benefit of the spaces which are being created. This all boils down to collaboration which has been at the heart of the project from the inception of the brief and is a testament to the end users.

Conclusions -why is this important?

Our buildings are physical manifestations of what we as Science Parks and areas of Innovation aspire to be, how we can contribute to society and help deliver economic value and societal benefit. They are demonstrations of what innovation can do for the public in a meaningful and visible way. However in many instances individual citizens and the wider community struggle to understand how and where this contribution occurs and how it is improving their personal lives. Many would be unable to answer the question “what has, and is, innovation doing for you?”

A disconnect can exist between citizens and our buildings. The danger is that Science Parks and areas of Innovation become perceived as islands of elitism and irrelevance with invisible walls around them. Science and Innovation needs to connect with citizens, to engage with them on the Grand Challenges which face our communities and nations. Good, thoughtful building design can encourage this, but it needs to be inclusive and it needs to reflect the needs of all its citizens. Design should not exclude. The new National Innovation Centre for Ageing goes some way towards demonstrating what can be achieved.