Welcoming Workplace

Designing office space for an ageing workforce in the 21st century knowledge economy

Guidance for architects and developers
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The Welcoming Workplace study is part of the Designing for the 21st Century initiative, which is jointly funded by the Arts and Humanities Research Council (AHRC) and the Engineering and Physical Sciences Research Council (EPSRC). www.welcomingworkplace.com

A seminar based on the Welcoming Workplace study has been accredited for Continuing Professional Development by the Royal Institute of British Architects.
Foreword

A different workforce
The conventional focus for design research in the corporate workplace is on what economists call the ‘family-formation workforce’, typically aged 20 to 45 and in full-time employment. But as populations age, and as work itself evolves in a knowledge-based society, we know that a different type of workforce is set to emerge – comprising older people who are using their knowledge and experience to undertake special-assignment and part-time work, often after the normal retirement age.

How should office environments flex and change to address extended working lives? This report written by Dr John Smith of JSA Architecture explores the challenges and sets out guidance, by drawing on a research project led by the Helen Hamlyn Centre at the Royal College of Art, with academic partners in Japan and Australia.

We are grateful to all the individuals and organisations that participated in the study, and especially to the British Council for Offices for endorsing the research and to Kinnarps for supporting this publication.

Jeremy Myerson
Helen Hamlyn Professor of Design, Royal College of Art

A key dimension
In May 2009, the British Council for Offices will update its Guide to Best Practice in the Specification of Offices, which was last published in 2005. This will be an important publication offering guidance to architects, developers and end users on all aspects of office design from site, location and building form to engineering, finishes and fit outs. Particular attention will be paid to the challenges of sustainability and workplace productivity.

As part of the exercise of producing this landmark publication, we have been drawing together insights, ideas and information from a wide range of professional experts in practice and academia. The Welcoming Workplace research team at the Royal College of Art contributed their thoughts on the effects of demographic change to our workplace productivity group.

A key dimension of the changing story of office design since 2006 has been the ageing of the working population – an ongoing process that has growing implications for how we plan our future office space. The authors of this report have studied the ways of older workers in the knowledge economy and learnt much about their needs. I commend this exploratory paper which sets out an alternative viewpoint on corporate offices at a time when experience and knowledge will become more prized than ever before.

Mat Oakley
Chair, British Council for Offices Research Committee and Head of Commercial Research, Savills

An important challenge
Kinnarps are proud to have supported the Welcoming Workplace research and this publication, as it looks to answer some of the most important challenges in workplace planning and management today.

Our emphasis as a furniture company has always been to focus on the people at the heart of any working environment. As the demographic mix of employees is set to change so dramatically over the next 20 years, the work of the Helen Hamlyn Centre at the RCA is central to all those involved in office design and facilities management.

This exciting study was the perfect opportunity for Kinnarps to play a part in looking ahead to what we will all have to consider as we strive to deliver different products and new ideas to help people be better at work in the future.

Marc Bird
Head of Marketing, Kinnarps
Executive Summary

By 2020, nearly half of the adults in the European Union will be over the age of 50. In the developed world, people living longer combined with low birth rates are producing demographic changes that will impact upon the world of work. Older staff will increasingly continue beyond today’s normal retirement age and this will require changes to certain work patterns and to the design of the workplace itself. This report considers these issues with specific reference to the knowledge economy in which many older people now find themselves working.

The term ‘knowledge worker’ was initially used to describe doctors, academics, scientists and similar professionals, but is now taken to include most executive and managerial roles within business, industry and government. It refers to work that depends on applying theoretical knowledge and learning, rather than on formula and repetitive process.

Knowledge workers drive the success of many modern organisations and the attraction and development of such talented people has become a priority. A key goal for management and for office designers is to find ways to improve the performance of knowledge workers, many of whom tend to be older because they have acquired their high level of professional experience and expertise over the course of a long career.

This report is based on the Welcoming Workplace research study of knowledge workers aged over 50 in three ‘knowledge industries’ (pharmaceuticals, technology and financial services) in three different countries. The research was undertaken by the Helen Hamlyn Centre at the Royal College of Art, London, in partnership with Kyushu University in Japan and the University of Melbourne in Australia. The purpose of the study was to use a range of design research methods to give a voice to the ‘silent’ group of older knowledge workers, including research chemists, process engineers and financial analysts, within the work environment – a group that deliberately does not draw attention to itself.

The author of the report is Dr John Smith of the London architectural practice JSA Architecture and its aim is to provide design guidance for office developers, designers and facilities managers on ways to help older knowledge workers remain productive at work for longer.

Research was carried out in the offices of major companies in London, Yokohama and Melbourne. Both older workers and the senior managers in facilities, property, occupational health and so on, who are responsible for their welfare and productivity, were interviewed. Experimental design interventions were then built onsite in rapid response to the findings to further deepen the dialogue around people’s expectations, needs and preferences. More than 80 corporate staff worldwide participated in the study.

The findings of the project can be divided into two categories: physical requirements of the workplace and how the office can support different work styles.

The report provides guidance on five types of physical and psycho-social requirements:

- vision
- hearing
- physical ergonomics
- cognition
- health and wellbeing

The report also investigates various ways of working that are not always catered for in the average open-plan office. In particular, the need for three alternative types of space for knowledge work were identified:

- spaces to collaborate
- spaces to concentrate
- spaces to contemplate

The report concludes that an inclusive design approach that introduces general workplace improvements that benefit the whole workforce is more likely to succeed in supporting the specific requirements of older knowledge workers than singling them out for special needs design.
Context

In the early decades of the 21st century, growing numbers of older office workers will not retire at the expected age but will remain at work for longer, many of them on a consultancy, special-project or part-time basis. Several factors are driving this trend: a shortfall in pension funds; a management emphasis on retaining knowledge and experience built up over many years; age and disability discrimination legislation which provides more protection to older workers; and, above all, the fundamental demographic facts of population ageing.

At the same time as the age balance of the workforce is changing, the type of work we do in offices is changing too. Today, much of the repetitive process work that once occupied large numbers of staff is done by computers. The contemporary office is increasingly the setting for a new type of work for which the most common term is ‘knowledge work’. This type of work depends not so much on formula and process within a supervised hierarchy but on applying theoretical knowledge and learning as part of a culture of collaboration, initiative and invention.

This report addresses these issues with particular attention to the consequences of changes in workforce demography and work typology on office design. It has been developed from the results of a research project called Welcoming Workplace that investigated the requirements of older knowledge workers working in three ‘knowledge industries’ (pharmaceuticals, technology and financial services) on three continents. The aim of the project was to identify ways to help older knowledge workers remain productive at work.

Taken together, the ageing of the population and the emergence of new patterns of knowledge work present a critical challenge to current practice in office design. If we are to have extended working lives, the places in which we work will need to adapt and improve to help us keep on working – and want to keep on working.

By taking the key findings from the Welcoming Workplace project and filtering the insights through the lens of the office property industry, this study provides concise design guidance for the creation of office environments that are healthier, more efficient and more productive places for older knowledge workers.

Demographic context and the knowledge economy

There are several key reasons why it has become important to study the relationship between age and the office environment. Underpinning all of these reasons is the fact that, in the developed world, the overall population profile is becoming older. This is due to people living longer as a result of better healthcare, combined with a reduction in birth rates. It is projected that by the year 2020, nearly half of the adult population in Europe will be over 50. At that age, life expectancy is becoming as high as a further 40 years: people are not only living longer, but they are also staying healthier for longer.

These underlying demographic trends are likely to have significant economic consequences. The reduction in the ratio of workers to retirees will produce a broad

Older workers are often knowledge workers on account of their experience and expertise acquired over many years
pension crisis for many developed economies. Moreover, for many individuals, pensions are inadequate for supporting long retirements.

The implications for the knowledge economy are particularly important. As repetitive, process-driven tasks have been undertaken by computers or out-sourced to lower-cost economies, there has been a growing recognition of the value of knowledge workers to the future prosperity of the world’s most advanced economies.

The term ‘knowledge worker’ was first introduced by the American economist Peter Drucker around 1960. It was initially used to describe professionals such as doctors, lawyers, engineers, scientists and academics but is now taken to include most executive and managerial roles within business, industry and government. Increasingly, organisations recognise the creation, exchange and manipulation of knowledge as key to current performance and future progress.

Sophisticated organisations place a high value on the individuals who perform these vital tasks. The attraction and development of talented staff have become priorities and this will increasingly extend to the retention of highly experienced, older people, who in many cases represent the repository of a company’s tacit knowledge or its corporate memory. In some areas of the economy there is a shortage of talented graduates and it will be imperative to retain experienced staff to provide leadership, guidance and mentoring to younger workers.

There are a number of key issues to consider with respect to the ageing knowledge-based workforce:

- Life expectancy has risen by 30 years since the UK state pension age was established.
- There were 9.5 million people over the age of 65 in the UK in 2002 and there will be 15 million in 2040.
- Better health in later years means that many people do not wish to give up their life’s work at the expected retirement age. More people want to work longer out of choice rather than only financial necessity.
- The introduction of age and disability discrimination legislation offers more protection for older workers. There will be increasing pressure on government and business to address the pension crisis by raising the legal age of retirement.
- Productivity rates of economically active people have increased as living standards and healthcare have improved. Studies have shown that older workers generally retain the physical and mental ability to maintain their productivity compared to other age groups.
- Older knowledge workers are more cost efficient when trained because they are less likely to change their jobs compared to younger workers.
- A quarter to a half of workers in advanced economies are knowledge workers whose primary tasks involve knowledge and information manipulation. A study of over 28 million jobs in the UK found that 32 per cent were knowledge-based workers requiring a degree. (Brown and Hesketh, 2004)
- Knowledge workers have the biggest impact on the economy because they are paid the most but add the greatest value for their companies.
- In a knowledge economy, experience is a valuable asset, and organisations are becoming more aware of the effects of knowledge drain when they lose their most experienced employees.
- Retention of tacit knowledge in a company can be promoted through creating a knowledge exchange culture between

different generations. Older workers can push their organisations forward through mentoring and guiding younger staff.

- Research has not demonstrated any determinant relationship between job performance and age, and the performance of older workers has been shown to be at least as good as that of younger workers. Nevertheless older people’s experience of age discrimination has been well documented; they face widely held prejudices that they are cognitively deficient and less competent. Such perceptions have a negative impact on the willingness of employers to provide the support and skills training needed to maintain and enhance productivity among older workers.

Office design and business productivity

The importance of the office environment for knowledge workers is widely recognised, but the general relationship between office design and productivity is not well understood. Research has concluded that many companies are uncertain as to how the design of the work environment can improve levels of work satisfaction and performance.

This uncertainty is even more pronounced when the requirements of an older workforce is a consideration. At a more fundamental level, there is little understanding of the dynamics of knowledge worker performance in general. Davenport (2002) found that companies often did not appreciate 'what makes knowledge workers tick'.

Despite this, business is well aware of the need to provide staff with a good quality environment. A large part of the motivation for providing state-of-the-art offices has been to promote the company’s brand and to entice skilled staff to join and stay with the organisation.

Considerable attention has also been given to supporting the collaborative side of knowledge work and facilitating communication within the office. The trend towards open plan has been seen to provide significant benefits in encouraging team working and building social capital.

The spatial distribution of individuals and work groups within the office is a key to the way ideas are exchanged and tacit knowledge is retained and passed on within an organisation.

Trends in office design

Open-plan has the added advantage of providing more economic use of space than cellular offices. The desire to reduce overheads has led to an ever-increasing scrutiny of the costs of office space. The relative cost efficiency of open-plan and its benefit for collaborative working have appeared to be a happy coincidence.

Moreover, companies have become increasingly aware of the low occupancy rates found in some of their premises. The proportion of time that workstations are used can be very low: in offices where every member of staff is allocated their own desk, utilisation can often be lower than 50 per cent. In addition, the realisation that many staff spend their time moving between offices or visiting clients and customers has led to the growth of hot-desking.

However it is now recognised that open-plan and hot-desking might have disadvantages for some people and for some types of knowledge work. In a study of work performance by Davenport (2005), it was noted that while staff communicate better in open spaces – particularly with people in close physical proximity – there was a widespread preference for working in closed offices.

Trends in office design point to a general shift towards collaborative environments at the expense of space for high-concentration work. ‘Solo’ knowledge work and tasks requiring uninterrupted thinking can be compromised by background noise and activity. Meeting rooms and social spaces may offer little respite from the communal life of the office. As a result, many people seek alternative environments, such as taking work home, when they need to concentrate.

Some of the issues regarding the suitability of different office environments for particular types of work vary between individuals and between age groups. For example, one research study suggests that younger workers thrive in a more collaborative environment while older generations favour more privacy.

The potential benefits of more flexible office environments that can be better adapted to particular work styles and to a multi-generational workforce underpinned the Welcoming Workplace research study.
Introduction to the Welcoming Workplace project
The Royal College of Art in London explores the design of the workplace as part of the research remit of the college’s Helen Hamlyn Centre, which specialises in inclusive and user-centred design. The Welcoming Workplace study was jointly funded by the UK’s Engineering and Physical Sciences Research Council (EPSRC) and the Arts and Humanities Research Council (AHRC) as part of the Designing for the 21st Century initiative.

Welcoming Workplace was conducted with academic partners in the User Science Institute, Kyushu University in Japan and the Faculty of Architecture, Building & Planning, University of Melbourne in Australia. The project was supported by a number of industry partners, including Kinnarps, Logitec and Future Acoustic.

The research looked at knowledge workers aged over 50 in the pharmaceutical, technology and financial services industries, including research chemists, process engineers and financial analysts, in London, Yokohama and Melbourne. A number of experts in property, facilities, human resources, diversity and occupational health from the employing organisations responsible for staff welfare and productivity were also interviewed. Around 80 people worldwide participated in the study.

As part of the project, JSA Architecture has worked with the research team to produce this office design guidance document, offering practical recommendations, insights and ideas on designing office space for an ageing workforce.

Beginning in January 2007, the Welcoming Workplace research addressed a number of key questions including:

• What are the specific ergonomic and psycho-social needs of older knowledge workers and how can these be addressed by office design?

• What spatial, material and technical concepts can support older workers, improve productivity and health, and make the office environment more inclusive?

A range of research methods was used to gain an understanding of what knowledge workers over 50 need to do their work, how they interact with their environment, and how the environment supports them in doing their work. For example, the project pioneered a methodology of rapid intervention, which involved responding quickly to the results of user interviews to build experimental design installations on site that gave a focus to a deeper dialogue with the people being studied.

These interventions addressed issues about acoustics, lighting, furniture, wireless technology and the perceived sterility of office interiors, and helped generate further reflection on the future workplace.
Findings

Concentration versus collaboration
The corporate offices studied in the UK, Japan and Australia typically had large, open-plan spaces for use by all but top management. Supplementing the open-plan design were additional spaces such as meeting rooms, cafeterias and ‘breakout areas’. These alternative spaces were used mainly for collaborative work, meetings with colleagues and visitors, as well as mobile staff from other offices. The open-plan office and alternative team spaces seemed to successfully facilitate those forms of collaboration which are so important to flexible, multi-site, knowledge-based work.

The office spaces provided did not, however, facilitate the best environment for another host of essential knowledge-work activities which are dependent on deeper concentration. Planning, analysis, creation, processing and writing of large and complex systems of information require uninterrupted thought, a state of mind deemed difficult within the open-plan office. Background noise was mentioned as the most significant and consistent cause of distraction.

Generally there were few spaces specifically allocated for concentration tasks. Inward-looking thought activities appeared to be underestimated in relation to the communication and teamwork aspects of knowledge work processes. This resulted in people looking for quiet, empty offices or staying at home in order to avoid distraction. Additionally, older staff felt that working in the open-plan office meant they were ‘public property’ or ‘on call’ at all times. With little control over the environment, people often struggled to concentrate to the extent that the task required.

Hot-desking was perceived by most interviewees as detrimental to both collaboration and concentration: collaboration was seen to be hindered by the potential break-up of stable communities sitting in proximity, while concentration was reduced because of hot-desking areas being more crowded, noisy and transient.

Alternative ways of working
Modern office design typically revolves around accommodating technology and assumes that all working needs come out of the computer screen. Older knowledge workers consistently rejected this assumption. They have developed tried-and-tested ways of working honed over the years to optimise their productivity. They believed they would benefit from alternatives to screen-based work for creating, processing and storing information: storage for hard copies, books and manuals; visual displays to stimulate or structure their thoughts; backdrops and walls to hang maps and charts.

Dependence of physical environment
Older interviewees were generally fit and active and believed that work maintains their well-being, both physically and mentally. However there were numerous mentions of symptoms related to age and an acknowledgment of physical changes with age. Weakening of sight, ‘aches and pains’ and tiredness were mentioned most frequently by respondents. Though in no way debilitating, these symptoms form a backdrop to older people’s work. Coping and compensating strategies were evident – for example getting up from sitting in front of a computer and reading from print-out in preference to screen. Most importantly, the symptoms experienced by older workers increase their sensitivity to and dependence on the physical work environment. They require better light to see by and may need to be more particular about the chair they sit on.

In most open-plan offices, staff control very little of their environment. Variables such as lighting, temperature, ventilation, acoustics and visual environment tend to be controlled centrally and collectively. The research showed that great benefits could be derived by giving more flexibility and greater control to older workers, who could then personalise their environment to suit their needs.

A variety of workspaces
Generally, the research indicated that everyone would benefit from a variety of workspaces to accommodate different types of working. As well as spaces to better support collaboration and concentration, staff would also benefit from spaces for contemplation: quiet zones away from the busy communal areas where staff could experience a calm, soothing environment that promotes recuperation, relaxation and creative thought. A high quality, responsive workplace can also be a significant factor in encouraging older professionals to continue working – when, sometimes, financial reward is no longer the main motivation.
Physical requirements of older knowledge workers

Vision

Adult vision declines with age in a number of ways. The eye of a 20 year old can admit up to three times more light than someone of 65 (Wegman, McGee 2004). Changes occur in visual acuity, depth perception and peripheral vision; subsequently many older workers may find glare from windows or computer terminals affecting their sight.

Older workers often cannot read as well as they once did from certain distances and with lower levels of illumination. Personal preferences regarding lighting conditions become more important with age and people adapt less well to poor lighting. However where good quality lighting is provided, vision changes have little impact.

The Welcoming Workplace study tested the installation of a controllable fluorescent light system called Dynamic Lighting, which enables workers to locally set and change blue and yellow light sources that mimic the natural rhythm of the working day and the nature of the task. User responses to this system indicated a sensitivity towards light, mood and ambience, and an interest in controlling lighting levels locally.

“I have to wear glasses for reading now, but then I can’t look at the computer screen, it’s blurry… and the light sometimes seems to disturb. I open and close the shades a lot.”

“Find the uniform light dispiriting.”

“When there is daylight, you feel physically and emotionally better, it’s more uplifting”. 

“That’s the problem in open plan offices, it’s an average environment for average people, in terms of light, heat, everything.”

Hearing

Hearing generally begins to decline from the mid-40s. Older people may struggle to hear well at higher frequencies, for example being unable to listen to a specific voice or sound in a noisy environment. People may find it increasingly difficult to filter a particular voice from the background noise. The means to address hearing difficulties will vary depending on the particular office context, but consideration should always be given to how sound transmission can be controlled.

The Welcoming Workplace study tested the installation of two systems that addressed acoustics. Future Acoustic offers a software programme connected to a microphone and loud speakers to technically transform background noise into more benign outputs based on orchestral or choral or natural sounds that aid concentration. The Rain Curtain is an office partition that creates a physical wall of water, bringing calming, natural sounds into the open-plan office. Both interventions received favourable comments for addressing background noise, which older knowledge workers described as a major barrier to their productivity.

“Nobody is making a lot of noise, but one is on the phone; another – someone has come up to him to discuss; usually it’s about work; you could have eight conversations at a time.”

“Noise affects concentration. Non-work related noise is very distracting, snippets of conversation and laughing and joking. Sometimes the work is not so interesting and it’s easy to be distracted… I very rarely ask for quiet”

“My hearing is apparently too good. I sometimes play a CD when I want to read something technical or focus.”
Physical ergonomics
Physical maturity is generally reached at the age of 25. Signs of ageing and the beginning of loss of functional ability emerge between 40 and 50. This includes a loss of muscular strength, which on average is reduced by 15-20 per cent between the ages of 20 to 60. Ageing causes some loss of range of joint movement and flexibility. Highly repetitive motions can cause physical problems at any age, but as we age we are likely to become more vulnerable to physical wear and tear.

In general, ageing may make it harder to maintain good posture and balance and therefore increase the risk of accidents due to loss of balance. The Welcoming Workplace study tested a range of adjustable furniture including height-adjustable desks and ergonomic office chairs: the research revealed that controls that are not intuitive will just not be used. The study also explored the adaptation of care home furniture for office use: sofas that fold down into day beds, for example, were seen as having a place within the office environment whilst height-adjustable tables, which enabled older workers to stand for various tasks, proved popular.

“Internally, I get up and visit people. If I’m on an exercise kick, I try not to do anything by phone, I’ll clock up a lot of miles, the building is long.”

“I can’t do the stairs like I used to. I have a knee problem: why put pressure?”

“Don’t really feel a physical difference with age. I have a trolley on wheels to take my laptop and files home, and I have a pass to get the car into the basement parking; don’t do stairs; I couldn’t physically carry.”

“Depends where in the cycle of fitness I am whether I use the stairs.”

Cognition
Changes in mental capacity occur with age. Vocabulary and verbal ability remain constant or improve, but some mental processes decline. Speed of thinking, selective attention and information processing tend to be reduced. In addition, spatial skills generally decline. Research has demonstrated that older people are less efficient at navigating 3D environments and need more time and guidance in finding their way (Sjolinder et al, 2005).

There is some evidence that psychological inflexibility increases with age and this can cause older people to lose patience more quickly with products or services that are difficult to use or that have not been adequately explained.

Cognitive problems appear to have a much lower impact on older knowledge workers. They will tend to compensate for any reduction in cognitive functions by drawing on experience and expertise. Similarly, people who have had a lot of education or training over their lifetime are generally able to learn new skills with ease.

“I still get lost.”

“Offices are set up in a standard way, each floor is the same.”

“Extroverts get energy from busy office around them; introverts are more concerned.”

Health and wellbeing
With an ageing workforce, it is important to consider how the office environment can help to sustain the health and wellbeing of staff. This encompasses not only the physical dimension but the social aspects of health. In this context, dignity and respect are as important to wellbeing and productivity as physical ergonomics. This effectively means that all facilities within the workplace should be designed with older workers in mind, irrespective of who uses them. The drive for greater levels of physical and mental wellbeing is one of the most persuasive factors in promoting an inclusive design approach.

“I don’t play ball sports, the thought of going on a treadmill in the gym drives me to distraction. If I want exercise I’d go up and down the stairs. I trained for a trip in the Alps like that. I hardly ever use the lift, to keep fit, and on nice days I’ll go to the park.”

“We need to be walking around; printers have been strategically placed, at first this seemed to be a nuisance, so you have to walk to them – the benefits of the walking seem worthwhile.”

“I get tired and I don’t mean physical. I get sleepy at the end of the day, around 4pm when I’m doing boring things I need to do. I need to turn off for half an hour in the middle of the day. I’m not comfortable stopping for something non-related to work here. I know lots of people go to the gym.”

“Late in the afternoon, I’m tired.”

“I know from myself, my energy or focus have diminished with age.”
Recommendations

General
- Changes to office design should be aligned to a management strategy for retaining and recruiting older workers as well as improving their business performance.
- The impact on user satisfaction and business performance should be measured through evaluation before and after design changes are implemented.
- Facilities management should be more attuned to the needs of older knowledge workers. There are clear benefits to be derived from encouraging the participation of staff in the process of redesigning the workplace.
- Suggested improvements to the quality of the office environment should go hand-in-hand with a drive for a more efficient use of space. User-responsive design can successfully permit higher densities of occupation and increased desk utilisation.
- An inclusive design approach should be developed as it can often produce tangible benefits for the whole workforce while simultaneously addressing the specific improvements required by older workers.

Lighting
- Natural light is generally preferable to artificial lighting. In designing office buildings, careful consideration should be given to the quantity of glazing and its orientation. It is important to be able to control glare. Ideally the means to control lighting admission should be incorporated into the external envelope or glazing systems.
- Ambient lighting should be provided at an appropriate level for the tasks being undertaken. It is helpful if ambient light levels can be controlled on a zonal basis around the office.
- It may be beneficial to reduce ambient levels (for example to 200 Lux) supplemented by individual task lighting at the desk. Ambient lighting might be designed to suit the viewing of computer screens, with much brighter task lights for reading small print in documents.
- Wherever possible, lighting solutions should correspond to individual needs. Older staff particularly appreciate the ability to personally control artificial light sources.

Acoustics
- Activities that create a lot of noise, for example printing and photocopying, should be separated from quieter work areas through careful space planning or partitioning.
- Disruptive levels of noise can be partially controlled by reducing reverberation within an open-plan office. Acoustic ceilings, carpeted floors and sound-absorbing panels can reduce reflection of sound waves. The quality of the ambient acoustic environment is more important to older people who will generally find background noise more disruptive.
- In open-plan offices, workstations can be designed to reduce noise effects and improve acoustic privacy. Sound absorbing barriers are very important for noise reduction: without them, speech can be heard 50 to 70 feet away, which is reduced to 25 to 35 feet with acoustic panels. For the best results, screens such as systems furniture panels should be at least 65 inches high. Lower-height screens have no significant impact on acoustical control. Increasing the distance between adjacent workstations is also beneficial.
- The acoustic environment will need to be adapted to the tasks being performed. This is particularly important where speech privacy is required by commercial confidentiality, by good practice or by the law, such as for medical records or credit card information.
- Choice of material is important. In general, the best materials for reducing reverberation are...
lightweight and absorbent, whereas the best sound-blocking materials are dense and heavy. For meeting rooms, sound seals or retractable door bottoms help to seal a door once it’s closed.

• Providing people with alternative spaces such as booths or small meeting rooms for private conversations or telephone calls can be beneficial.

• An alternative strategy could be to designate some open-plan areas as quiet work zones with protocols discouraging phone calls, informal meetings and other interruptions.

• Sound masking or sound conversion technologies can also improve noisy backgrounds for individuals or enhance the overall acoustic quality of the office environment.

**Ergonomics**

• Consideration should be given to creating clear lines of circulation for movement within an office building and through an open-plan space. There may be additional opportunities for encouraging more physical activity, for example by planning vertical circulation so that stairs are equally visible and as easy to access as lifts, or by giving access to an outdoor space.

• Staff should be encouraged to move around between a range of designated settings for knowledge work, so ensuring regular exercise and breaks during the working day and avoiding a sedentary workstyle.

• Adjustable furniture such as ergonomic chairs and height-adjustable desks should be provided which give the opportunity to change working positions during the day according to the task.

• Adjustable furniture should have controls that are obvious, simple and intuitive to use.

• Furniture specification should explore higher levels of ergonomic comfort – for example sofas that fold down into day beds.

**Spaces for different workstyles**

Recent office design has emphasised the benefits for communication and cost offered by open-plan and hot-desking. However the Welcoming Workplace research demonstrated the importance of actively supporting all the activities that constitute successful knowledge work: creative thinking, analysis, concentration, project and team-working.

Open-plan has major advantages in terms of cost, efficiency and communication, and is likely to remain the dominant model for most new offices. However it represents a solution for the average type that does not necessarily adapt well to all the needs of knowledge workers.

The reduction in overheads to be derived from more efficient use of office space are considerable. However in most knowledge-based organisations, staff salaries represent by far the highest percentage of business costs. In this context, changes to the workplace that improve knowledge worker effectiveness can bring significant financial rewards.

The cost of providing an office environment that is more responsive to user needs can be substantially outweighed by improved business performance, and overall, productivity and effectiveness can be increased by supplementing open-plan with a range of alternative spaces.

Welcoming Workplace has identified and tested three types of space that will benefit the performance of all knowledge workers, but particularly that of older staff:

• spaces to concentrate
• spaces to collaborate
• spaces to contemplate
Jean Simons
Interpolis
Tilburg, Holland
Veldhoen + Co

This insurance company office in Holland takes an intelligent approach to the demands of knowledge work by providing a range of different settings for different types of work. The words ‘inter’ and ‘polis’ are reflected in a network of structures, squares and neighbourhoods linked by pathways. The enclosed artist-inspired space (above) provides a setting for private, concentrated work; the meeting area on illuminated tiles (left) is a space for collaboration; and the giant winged chairs designed by Jurgen Bey (top left) help to create a space for contemplation and recuperation.
Spaces to concentrate

Provide spaces for knowledge workers to undertake tasks that require sustained focus, high levels of analysis and attention to detail or privacy.

Such spaces can be separate rooms, booths or designated areas of the main office. They should be designed for solo working and should be separated from the noise and distraction of the general office and governed by strict protocols for working.

Concentration spaces can be used by mobile or part-time workers and by anyone who wants to get away from their normal environment to complete a particularly demanding task.

They should be located away from noisy facilities such as kitchens and cafés, print-rooms or social spaces.

Concentration spaces should be equipped with different types of furniture and adjustable settings to allow for a range of working positions.

Window views should be available to connect people to the outside world.

Users should be able to diffuse natural light with curtains and blinds.

Task lights at the desk are important for ageing eyes and for reading off screen, and also allow for lower and more pleasant ambient lighting.

Height-adjustable desks should facilitate standing for periods of the day.

Audio masking and sound transformation systems can reduce distracting noise, as well as more traditional baffles and fabrics.

“It's the concentration problem, you are interruptible. You can't be available to everybody and do your own job.”

“I find it hard to concentrate. My team can all be talking on the phone and I have to concentrate on a financial report. That was a challenge, and continues to be.”

“I work in an open plan office and loathe it; just doesn't suit my way of working. I work visually. They think everything is on the little screen. So when I used my manager's office my productivity went up, now it's gone down again.”

“Privacy is an issue when you are looking at personal information, which I do in my job. I am a bit paranoid about who sees what on the screen, and shared printers... don't get me started...”

1. An intelligent audio-masking system listens to background noise and creates harmonious sounds instead.

2. Motorised height-adjustable desk allows users to stand for periods of the day. Effective for easily and quickly adapting to different ergonomic needs.

3. Task lights are important for ageing eyes, and off screen work, but they also allow for lower and more pleasant ambient light.

4. Window views should be democratically available to connect people to the outside world. Users should be able to diffuse natural light with curtains.
Modul 1  
Stockholm, Sweden  
Ann-Charlotte Nilsson

This open-plan office for a Swedish IT consultancy in the centre of Stockholm creates an effective workspace for sustained concentration. There is a range of desk types to choose from according to user preference, including height-adjustable desks that allow workers to stand for periods of the day. Desks by the windows are double-spaced without partitions, so that occupants can spread out and use more space. The desks away from the windows have large whiteboards adjacent to each desk, allowing workers to work off screen, map out their ideas and pin up charts and graphics. All personal possessions are kept in large lockers in the centre of the room. Uplighting helps to create an open, airy feel to the space, making it pleasant to be in for long periods of time.

Uxus Design  
Amsterdam, Holland  
Uxus Design

This Dutch design office pays close attention to lighting to improve levels of concentration. Spotlighting and uplighters are combined with task lights to minimise the need for high ambient light levels, creating a softer, more comfortable environment without compromising functionality. Good use is made of natural light, using cotton curtains to diffuse the light and provide more local control. The decor is attractive without being distracting. The bench desking enables workers to have more space when occupancy levels permit, and its proximity to alternative settings provides the variety people need for different activities.
Spaces to collaborate

Provide dedicated spaces to collaborate – offices often lack project spaces in which teams can communicate their ideas and work freely without worrying about making a noise, a mess or pinning things up.

A project or collaborate space is something similar to a studio where workers can spread out their sheets and data, talk, argue and not worry about confidentiality or tidying away before the project is completed. It is space that can adopt a character for a period of time – it is not anonymous like most meeting rooms.

Collaborate space can be reserved by the day, week or month, and should be well-equipped with large surfaces, white boards, paper, pens, digital image capturing and AV equipment. It is not a precious space – but it is private and secure for the user while it is booked, or for the duration of the project.

It should provide moveable furniture and flexible work settings for personalised use by individuals as well as by project teams. Bigger desks to spread things out and bigger backdrops to pin things up will enhance collaborative modes of working.

Lighting should be adjustable to suit the task and time of day. The chemistry of collaboration often depends on lighting to deliver the right mood and ambience within the space.

“Collaboration is fabulous, but every now and then you need to have a private conversation… I sometimes take people for a coffee, because it can feel more private than these meeting rooms.”

“The adjacency of the team helps the team with understanding, communication flow, cuts down need for meetings. So I was resistant to moving…”

“If you isolate yourself, how do you maintain that contact?”

“There's nothing here in this meeting room that's mine, and when I go everything goes with me.”

“Booking rooms is a nightmare – procedures and codes.”

1  The project space is 'owned' by a team that can use it on an improptu basis, giving the team members a permanent 'hub'.

2  An abundance of digital and traditional display media allows work to remain on show for long periods of time.

3  Moveable furniture and bench-style tables allow teams to congregate and individuals to spread out for solo work.

4  Dynamic lighting allows users to adjust the light to the task at hand and their specific ergonomic needs.
Nokia
London, UK
Morey Smith

This Soho office provides space for 80 of Nokia’s designers, who were relocated from Farnborough in Hampshire to the centre of London. Communal areas are fundamental to the scheme, with a workshop room, breakout areas and live project rooms providing space conducive to group work. The project rooms enable teams of designers to work away from their desks in open plan; functional workspaces are equipped with moveable furniture and controllable lighting. Two giant revolving acrylic panels separate the communal areas from a presentation room.

GlaxoSmithKline Consumer Healthcare
Weybridge, UK
DEGW

GlaxoSmithKline Consumer Healthcare’s Innovation Hubs in Weybridge provide dedicated teams with space for collaboration. Two key elements are central to the approach. Each team is given its own high-quality project room to spread out, use as they wish and determine their own protocols for ways of working. The walls of the room form a continuous project space, enabling the group to visually pin up and track ideas. The second feature is the use of open ‘kitchen tables’ in the centre of the Hub. These ‘kitchen tables’ break down communication barriers and enable impromptu meetings and reviews to take place, adding to the overall objectives of the Hub project space.

Momentum
Horsholm, Denmark
Bosch & Fjord

This innovation centre on a Danish science park is a dedicated environment for collaboration, for use by businesses and public institutions. Shown here is an example of a project space that maximises flexibility for group work. The walls are a giant whiteboard, allowing projects to be planned, brainstormed and documented. The furniture is free to follow the drawing, and can be easily reconfigured to suit a range of activities from large meetings to small-group and individual work. Even the lighting can be manipulated by hand to address different activities. The elements shown here can easily be adapted to corporate office use and illustrate the differences between a project space and a traditional meeting room.
Spaces to contemplate

Provide contemplation spaces that give people somewhere to recuperate from the stress and noise of the normal working environment; a place to go when workers are tired, or need to prepare for an energetic task; somewhere they can relax, create new ideas or simply do nothing.

A contemplation space should provide a calm environment free from distraction and surveillance. It is a non-bookable area, with a variety of adjustable furniture, where people can go for periods of ten minutes to several hours.

It is a space that the office community respects, within which workers can expect not to be interrupted, and people will not make phone calls or have loud conversations.

It may have strong natural and organic elements, rich with plants, water, fabric banners and adjustable lighting, giving it a different feel to the office atmosphere elsewhere.

There are many different ways a space for contemplation can be designed. The common denominator, however, is that it should be quiet and enclosed, with a degree of privacy. It carries elements of a comfortable domestic environment.

It is not however a sick bay and needs to avoid the stigma of illness, so that staff of all ages feel they can use the space freely. This is particularly important considering workers’ long exposure to computer screens and mobile devices. Migraines, stress and sore eyes should no longer force workers to take the day off, but should be catered for on-site in a supportive way.

Just as modern working life has meant that the home has begun to accommodate work, so contemplation space redresses the balance by becoming a ‘home’ within the office.

“It’s how you deal with issues; some people would like to go to a quiet place, put head in hand and mull.”

“There is nowhere to have time on your own, a place to think. In the glass meeting room you are exposed. It would be nice to have somewhere like that.”

“If you look around the coffee shops around the building, they are full of people reading and writing presentations and that sort of stuff”

1 An ‘office garden’ provides for informal interactions, a sense of ownership over the environment, and an organic element to the office.

2 A variety of furniture, including a day bed, and ergonomically supportive reading chairs allow people to recuperate and think.

3 A curtain of falling water provides a sense of acoustic peace, humidifies the air, and adds elements of purity and nature to the space.

4 This area is semi-private, not on show but not hidden away. These semi-transparent dividers help to create the right levels of privacy.
Office of Ryue Nishizawa
Tokyo, Japan
Ryue Nishizawa

Although Japanese architects Kazuyo Sejima and Ryue Nishizawa work mainly in the domestic sphere, their designs have exactly the qualities that are proposed for contemplation spaces in offices. This is not so surprising in that a contemplation space should be a break from the corporate open-plan, and provide elements of domesticity. The low-tech space shown here incorporates furniture for recuperation and relaxation, natural green elements to instill calm, and an open environment to inspire deep thought.

Mexx
Amsterdam, Holland
Sevil Peach Gence Associates (SPGA)

This break-out area for an international fashion company is one way to create a distinctive contemplation space in a corporate environment. It has furniture that places a high value on rest and on thinking, and it is set within a boundary that provides semi-privacy; you can be in the space without feeling on show, unlike a reception area, while people outside can see whether the space is occupied without disturbing the occupants. The inclusion of hedges and grass, albeit expressed within a strictly geometric style, introduces an element of the outside to the space, especially under the large glass ceiling. The inclusion of domestic floor lamps further helps to create a more intimate, domesticated space.
Conclusion

This report presents a summary of the findings of the Welcoming Workplace research project and reflects upon its implications for office designers and developers. It gives an account of the key issues organisations should consider when creating or improving work environments in the context of an ageing workforce. Such improvements will usually benefit the whole workforce and not just older staff. Indeed, it is important that older workers are not perceived as a ‘special case’: most of the older people studied in the research were healthy and productive and did not want to be labelled in any way.

The way business and industry operates today is in continuous flux and the most successful organisations are those that can best respond to rapid change. A well-conceived workplace can be a significant help in supporting this process, but much research still remains to be done on the relationship between office design and business performance.

The Welcoming Workplace study set out to investigate the needs of older knowledge workers, whose voice is rarely heard, but it is striking how many of the results are relevant to the whole workforce. The research has emphasised how a flexible, adaptive workplace can cater for the wide range of activities that occur in the contemporary office. The importance of having good communication and an innovative work community is widely recognised and the most progressive organisations have been discovering the benefits of providing work environments that genuinely facilitate teamwork and knowledge transfer.

However, this study has also demonstrated the need to cater much more effectively for analytical, concentrated work – the ‘solo’ aspects of knowledge work. Moreover, the successful office must provide for the wellbeing of its occupants by addressing a variety of workstyles and providing space for contemplation and recuperation.

Demographic change will inevitably change the age profile of many organisations, but the retention of older staff can be of great benefit, both as repositories of a company’s tacit knowledge built up over many years and as experienced guides to a younger generation. Ultimately, an inclusive, democratic and user-led approach to office design will stand the best chance of success in keeping tomorrow’s multi-generational workforce happy and productive.

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www.welcomingworkplace.com

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In the developed world, people living longer combined with low birth rates are producing demographic changes that will impact upon the world of work. Older staff will increasingly continue beyond today’s normal retirement age and this will require changes to certain work patterns and to the design of the workplace itself. The Welcoming Workplace study considers these issues with specific reference to the knowledge economy in which many older people now work. Based on extensive user research inside organisations in London, Yokohama and Melbourne, this report provides guidance on five types of physical and psycho-social requirements, and proposes three different work settings to support older knowledge workers: spaces to concentrate, collaborate and contemplate.