

The Global Aging Experience Project

ETHNOGRAPHIC RESEARCH

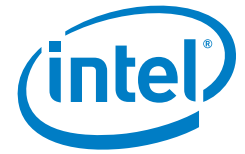


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Welcome to Intel's Global Aging Experience Project

It is not news that the world is undergoing profound changes. In the developed world, adults aged 65 years and over comprise about 15% of the population - unprecedented in human history. That will increase to about 25% of the population by 2030, presenting health care organizations, governments, entire societies with immense challenges. At Intel Corporation, we believe that new technologies, developed with an explicit focus on the needs of real people, can help on many fronts. Health care organizations can use new tools for more efficient service delivery, or to help chronically ill patients avoid expensive and catastrophic events. Care givers and family members can find new ways of supporting the well being of loved ones. And most importantly, seniors themselves can benefit from added peace of mind, more active participation in their own health, and more meaningful forms of engagement, all keys to successful aging.

Our goal is to help deliver on this promise. We are members of a social science research team at Intel's Digital Health Group. In 2006 we launched a multi-year project to provide a global, cross cultural understanding of aging, building on prior work done in the United States. Utilizing ethnographic techniques such as open-ended interviews, observations and multi-day visits at multiple households in each country, we've gathered thousands of images, stories and insights about what it really means to grow old from the perspective of seniors themselves. This was the first step in a long process of understanding the needs - and developing products - for real people.

This booklet presents a slice of what we've discovered in the first phase of this project. It is organized in a way that provides a somewhat progressive delving into the details of aging in Europe. First, simple quantitative data provides a snapshot of the demographic indicators. Following that are top level qualitative insights about each of the countries we studied. Finally, we provide a preliminary analysis - in particular some of the more robust patterns associated with aging across these different countries, as well as a characterization of the key needs to be addressed.

This project was a major effort involving considerable help and guidance. Margie Morris and Jay Lundell, both colleagues in our research organization, as well as Eric Dishman, our general manager, had conducted similar research in the United States. That work provided both a jumping off point and point of comparison for the present project. Many of their initial insights are reflected in the work below. Our colleagues in Ireland, including Julie Behan, Tina Basi and Adam Drazin all contributed to this project as research associates. Kyle Kilbourn and Maurice Ten Koppel provided invaluable design insights and organized the layout of this booklet. A Piece of Pie consulting (Barcelona) and Heinrich Schwarz, an independent consultant, provided fieldwork and logistical collaboration during the European research as well. Without all these people this project would not have been possible.

We hope you find the contents of this booklet helpful, and always welcome questions and feedback. Providing products, services and technologies that meet the needs of our elders is a big job; no research team or corporation can hope to go it alone.

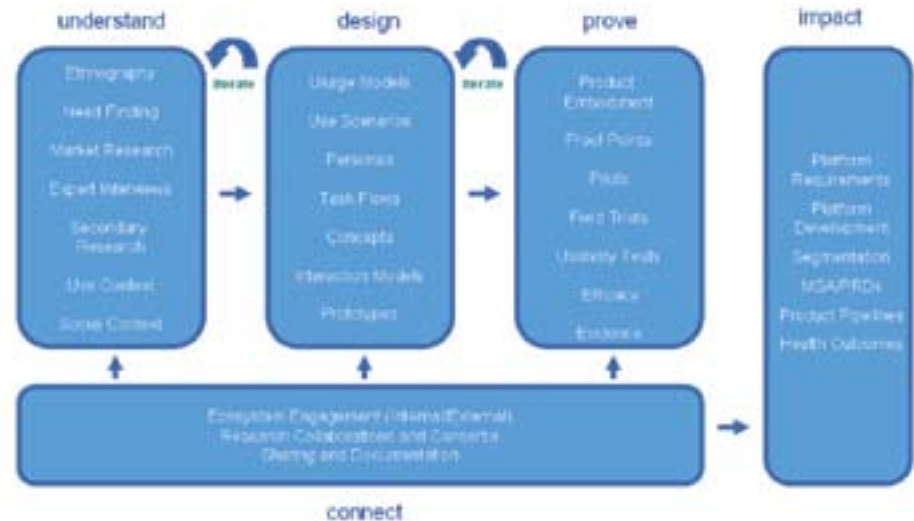
Simon Roberts, Tim Plowman and David Prendergast, Principal Investigators
John Sherry, Director of Social Science Research
Intel Corporation Digital Health Group

Project Overview

The Global Aging Experience project has been designed to bring together two kinds of data: an ethnographic study of people's experiences of aging and health, with an understanding of the demographic, policy and fiscal frameworks in which healthcare systems develop.

- We examined academic and policy literature relating to aging in general and in each country, and commissioned bespoke research for several key markets.
- Our sample includes people with physical and cognitive conditions, and those living with life-long or chronic disease. We also interviewed a small number of 'healthy' older people in each country.
- We interviewed experts from policy, academic, clinical and voluntary sectors in each market who could illuminate core issues facing aging populations and healthcare systems.
- Using a qualitative research application called NVivo*, we have created a long lasting database for Intel.
- Our data review and analysis sessions produced insights and core themes, needs and opportunities. From that we have developed over 50 product or service concepts.
- We have developed strategic tools such as a customer segmentation, a market opportunity map and design principles to help product development, planning, marketing and product teams.

From People to Product (or Service)



Global distribution of people over 65. © 2006 SASI Group (University of Sheffield) and Mark Newman (University of Michigan), www.worldmapper.org.

*NVivo™ is a trademark of QSR International Pty Ltd

Section I: Data

The first section of the report provides quantitative and qualitative material on the European countries we visited in 2006.

Quantitative Comparisons

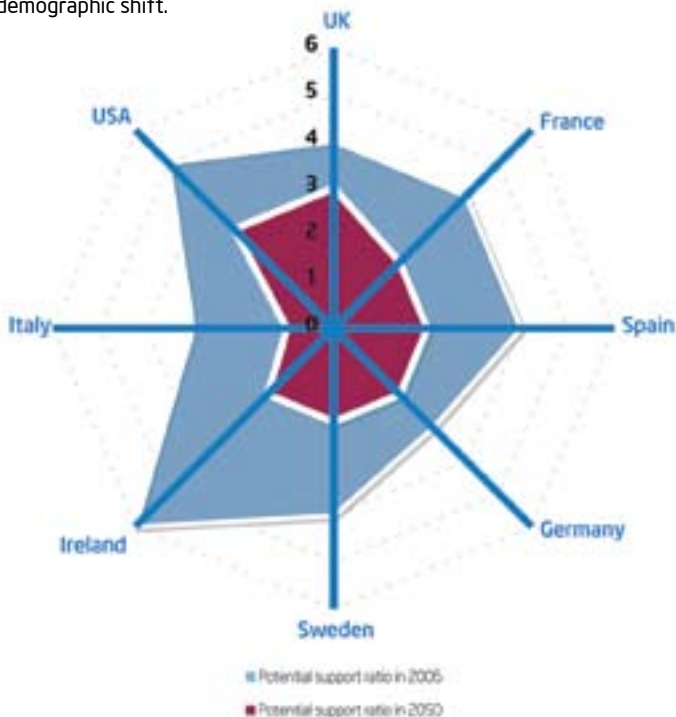
A range of key aging indicators for the European sample countries including comparison with the USA

Growing Numbers of Elders

We are living longer and it shows. The graying population trend occurs in many countries and will almost certainly continue for the foreseeable future. But the amount of support available, unfortunately, does not have the same growth rate.

Potential Support Ratio

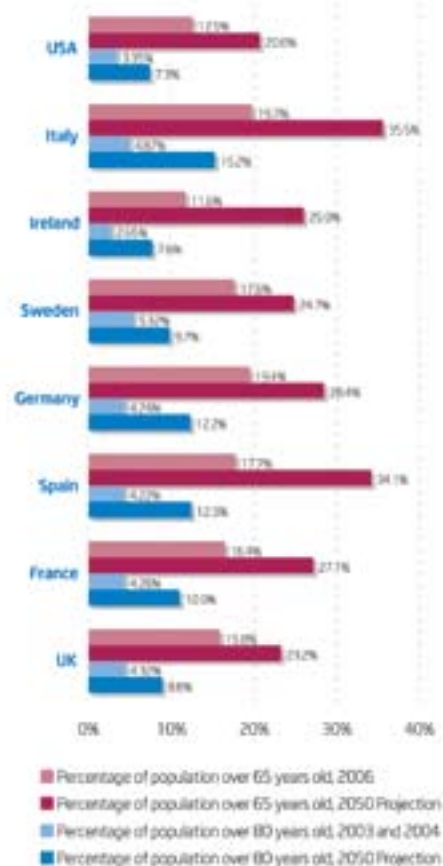
As Europe's population ages, the number of younger people available to provide support for elders is predicted to fall. This is also due to falling fertility rates. A shrinking workforce threatens the fiscal base of healthcare systems. Although all countries will experience this phenomenon, older people in Italy are likely to be most effected by this demographic shift.



Source:
WHO: <http://www.un.org/esa/population/publications/ageing/ageing2006chart.pdf>

Percentage of Population 65+, 80+ and Projections

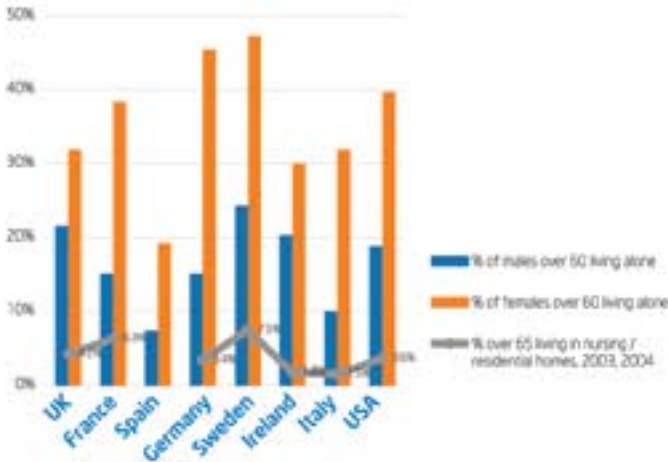
The Mediterranean countries of Italy, Spain and France will experience the most dramatic increases in their proportions of over 65 year olds over the next half century. The most striking change however will be the rise in the numbers of those in the 80+ age category. This 'old old' cohort will grow most profoundly over this period in Germany, Spain and Italy bringing severe challenges to the healthcare systems of these nations.



Sources:
65+: CIA Factbook 2006 est.
85+: UN World Population prospects 2004 Revision
UNSD: <http://unstats.un.org/unsd/demographic/products/dyb/DYB2004/Table07>

Percentage of Females and Males Living Alone

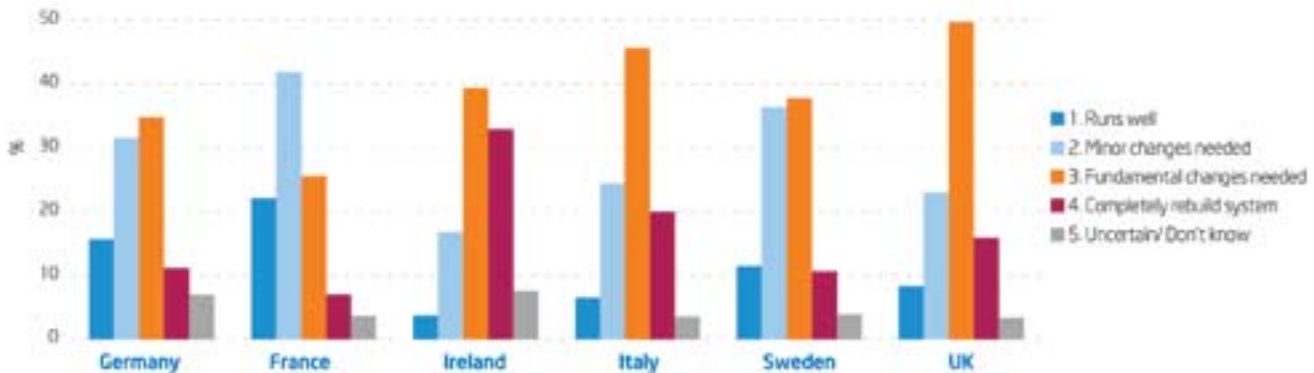
Many aging Europeans live by themselves, especially women due to longer life expectancy than their partners. A preference for living independently is commonly expressed by older people in many northern Europe countries, often until failing health dictates relocation to a retirement home or the household of a family member. Intergenerational living is more common in Spain and Italy, yet is increasingly less possible. Italians are beginning to counter this problem by hiring paid migrant workers to care for their aging parents.



Source: United Nations Population Division

Public's Satisfaction with Healthcare System

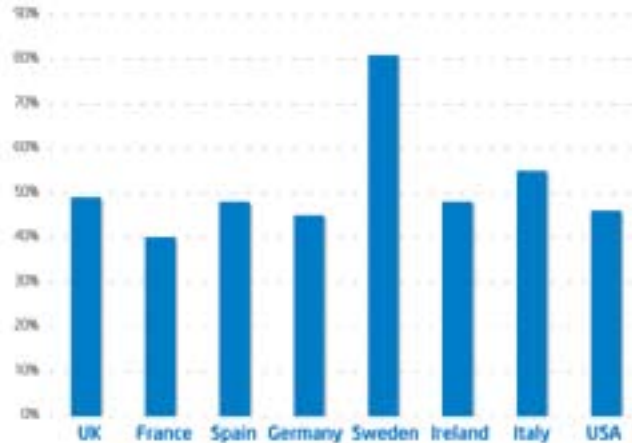
National health services are objects of pride and despair for European citizens. In Europe, satisfaction with healthcare systems is generally low. This reflects very high levels of expectation and a sense of entitlement on the part of people. It also results from people's direct experiences of treatment and care.



Source: Eurostat 2002

Percentage of 65+ Owning a Mobile Phone

Possession does not equate with use but with average levels of cell phone ownership for seniors at c.50%, the common perception that seniors are afraid of technology should be viewed with scepticism.

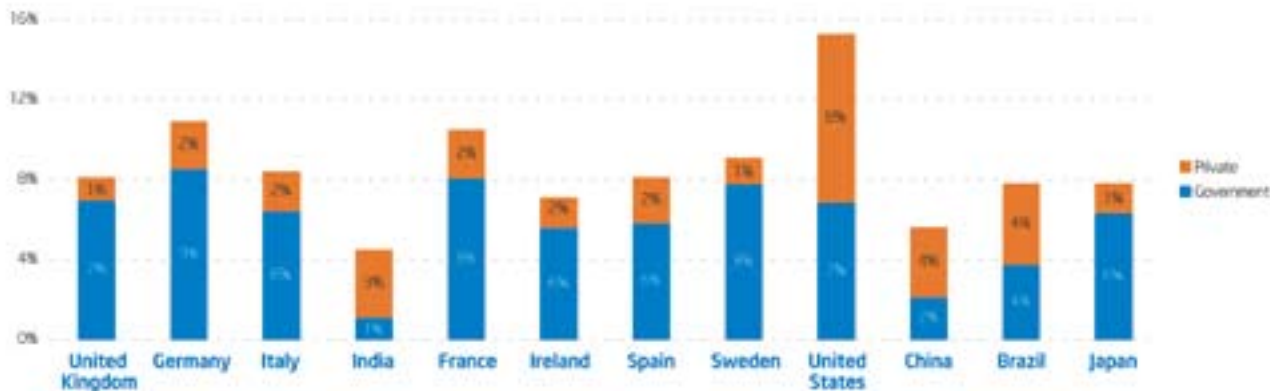


Source: World Bank - World Development Indicators 06

Note: The figure for France is for those aged 60+. Figures for Ireland and Spain are EU averages for 50+. For Sweden the figure is for those aged 61-75.

Government and Private Expenditure on Health as a Percentage of GDP

The relationship between private and public expenditure on health is complex. High levels of private expenditure can result from low levels of government spend, but also from dissatisfaction with what the public healthcare system provides. One notable feature of this chart is the broadly similar proportions between public and private spend across the European sample.

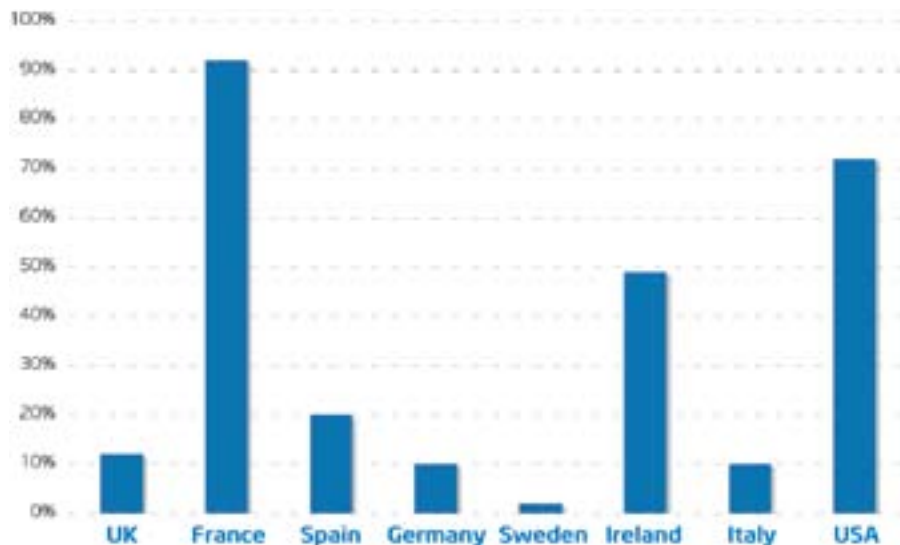


Sources:

World Health Organisation: <http://www.who.int/nha/country/>
 OECD Health Data Book 2006

Percentage of Population Covered by Private Health Insurance

Most European health services are funded out of direct taxation or additional ring-fenced levies. Free care at the point of delivery is the general rule. The drivers for insurance take up vary across country. In Ireland, insurance levels are high because free access to healthcare is not universal and there is distrust in the public system. While France has a universal public health insurance system, the coverage it provides is incomplete and the vast majority of the French population has private complementary health insurance. In the UK, private insurance is regarded as the best way to get treatment quickly for clinical procedures.



Sources:

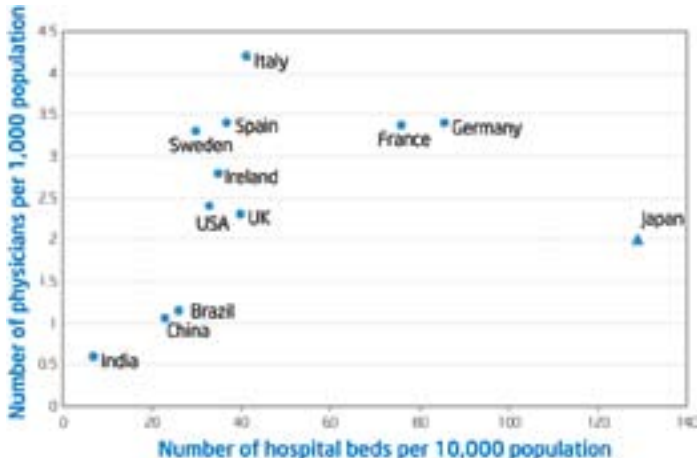
European Observatory on Health
 Systems and Policies 2001

OECD <http://www.oecd.org/dataoecd/55/29/29157620.pdf>

World Health Organisation, OECD

Distribution of Physicians and Hospital Beds per 10,000 Pop.

France and Germany both invest heavily in ensuring provision of sufficient numbers of hospital beds and physicians for their populations. Italy has the highest ratio of physicians to population, despite public dissatisfaction with its healthcare system. Sweden, with its focus on home care, spends much of its budget on community services and has difficulties recruiting and retaining young doctors.



Source: OECD Health Data Book 2006

Did you know?

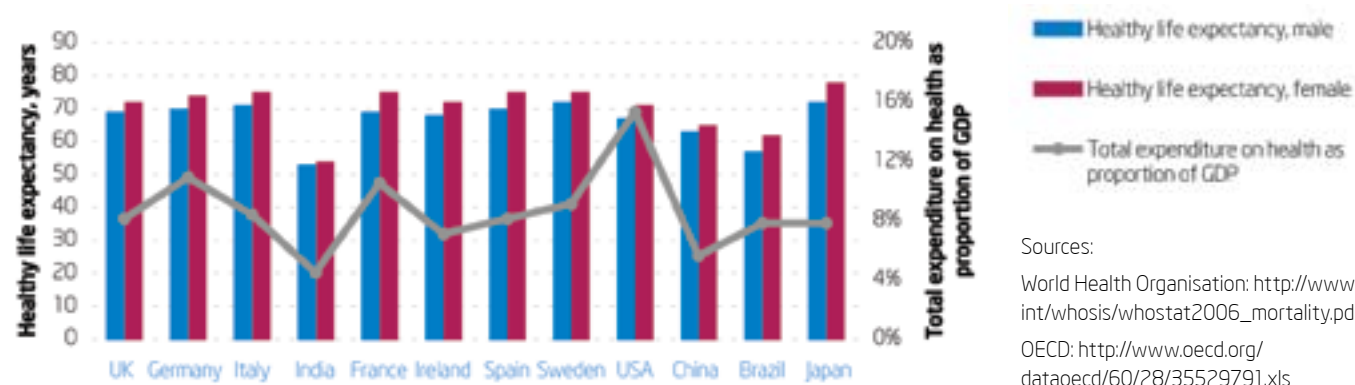
- Today India is home to one out of every ten senior citizens of the world.
- During the 1998-2025 period, the world’s aging population (ages 65 and above) will more than double
- The number of elders is now increasing by 8 million per year; by 2030, this increase will reach 24 million per year.
- Asia and Latin America and the Caribbean are the world’s fastest aging regions, with the percent of elders in both regions projected to double between 2000 and 2030
- In the US...“About 10,000 people will turn 60 every 24 hours for the next 20 years, helping to double the number of people aged more than 65 in the next quarter century”
- When pensions were introduced in the early 1900s there were 22 people of working age in Britain for every retired person. In 2024 there will be less than three.

Paying for Health

The relationship between healthcare expenditure and outcomes is highly complex and there is no clear relationship between the amount a country invests in healthcare and health outcomes.

Expenditure on Health vs. Healthy Life Expectancy of Females and Males

Spain, Sweden and Italy would appear to receive comparatively high dividends for their levels of investment in healthcare. This suggests that cultural, environmental and other factors are at least as important as formal healthcare systems in shaping health outcomes. However, it is worth remembering that a high proportion of healthcare expenditure comes with ill-health, particularly with those over the age of 75.



Sources:
 World Health Organisation: http://www.who.int/whosis/whostat2006_mortality.pdf
 OECD: <http://www.oecd.org/dataoecd/60/28/35529791.xls>

Country Profiles



Experiences of Aging in Sweden

Most people in Sweden retire at age 65 though this may soon be raised. Many older people express satisfaction with their health and welfare system suggesting that only minor changes are needed, though acknowledging that things aren't as good as they used to be.

Many continue living in their own homes for the rest of their lives, supported most directly by outside professionals and home helps rather than family members. It is fairly unusual for Swedish older people to live with or depend on their children.

Work and hobby associations, clubs and churches provide an active social and spiritual scene for older people but few describe extensive foreign travels. Many were very house proud, yet few houses were ostentatious, objects are meant to have a function. Assistive devices can be seen everywhere. As Christmas approaches, colourful festive curtains are hung to break the monotony of dark winter days and nights.



Frederik (83) Skövde, Sweden

Frederik was born into a farming and woodcutting family about an hour from the town of Skövde in Sweden. He has lived in the same area most of his life and stresses he has always loved agricultural work and a quiet simple Lutheran existence. He advises 'work is important for a good life. Not just leisure. There is nothing better than work for good health.'

Widowed in the mid 1990's and with a wheelchair bound daughter unable to visit often, Frederik has lived alone for over a decade but until recently never considered himself to be lonely. Friendly neighbours and

his gardens keep him busy and as his health gradually started to fail he was very happy with the support he received from the Swedish home care services.

Six months ago however all this changed when his sight rapidly declined and he began to experience episodes of fainting. A series of falls has destroyed his confidence in his abilities to look after himself and he now refuses to leave his farmhouse without a helper. If he lands on his back he cannot get up again and once had to lever himself up using an electric fence as support. He applied for a place in a state nursing home but was rejected on grounds of lack of beds.

Health and Healthcare in Sweden

- Sweden has a population of 9 million people, 17.6% of which are over the age of 65. By 2040 this will rise to a quarter of all its citizens.
- 5.3% of the population is over the age of 80. This is the highest proportion in our EU GAE sample, which has an average of 4.3%.
- Cited internationally as the example of strong state investment in public services, Sweden has reduced its tax base and now invests less in healthcare than Germany, France or the USA as a percentage of GDP.
- A small, heavily subsidized fee is charged for healthcare services in Sweden. An overnight stay in hospital costs \$12, a hospital or private consultation around €45 and a cap on prescribed pharmaceutical preparations means a patient never has to pay more than \$265 in a twelve month period. Very few people take out private medical insurance.
- The provision of home care for older people is highly developed, with ongoing investment in community nursing services and home help but access to nursing home and long stay beds is very limited and there is a shortage of doctors in many areas.



SWEDEN



Experiences of Aging in the UK

Currently, the over 65 population in the UK enjoys unprecedented levels of good health and a strong financial position; mainly due to high levels of home ownership. There are wide disparities in the wealth of this population since the state pension is low and older women have less adequate private or occupational pension provision.

British state pensions as a percentage of wages are the lowest of all of the G7 countries and the expectation is that individuals will have made their own supplementary pension provision. The state retirement is currently 65 for men, but the government has recently introduced plans to raise it to 66 by 2025, 67 by 2035, and to 68 by 2045.

Public transport services are good, though bus services are more limited in rural areas. To counter this, the community transport sector is very large - there are over 100,000 minibuses serving over 10 million people, many of whom are elders.

The aging population has become a salient social and political issue - people are increasingly aware of the concerns and problems of seniors. For example, the requirement for those without funds to sell property to fund long term care is a burning issue, as is the obligation of older people to pay a significant and costly contribution to their council tax, forcing many to relocate. Equally, there is a trend towards recognising the contribution that older people can make in the workforce - "big box" retailers are leading a drive to recruit seniors.



Bill (71) Brighton, UK

Bill is a 71-year-old working-class male who lives alone on the south coast of England. His family also lives in the area, but he sees less of them than he would wish. As friends move away, his social networks are shrinking fast.

Bill still drives - his old Mercedes is his pride and joy - but rising insurance premiums make it a luxury. He plays golf but limited mobility is making this harder, and he cannot afford to hire a buggy. Almost solely reliant on his state pension, Bill laments the fact that he never thought about the finances of retirement. "I was stupid. I'd go out spending money not thinking about the future you know. I never bought a house. That was my biggest

mistake". He retired at the age of 70.

Bill lives in a one bedroom flat in a sheltered housing unit. The flat is untidy. He has few personal possessions and his diet is limited to the basic dishes he can cook for himself. Bill smokes roll up cigarettes and is suffering from respiratory and heart problems.

He has just seen a specialist about the "narrowing of my aorta". Questioned about his hospital experiences, he complained not about the treatment - "it's not for me to question what they do" - but the parking. He also dislikes the waiting and being around what he perceives as ill people. "Healthy" for Bill means "no pain".

Health and Healthcare in the United Kingdom

- The UK has a population of 60 million people, 15.8% of whom are over the age of 65.
- It is projected that this will be 23% by 2050, which is lower than all other European countries in the GAE sample.
- In the last few years there has been a significant spike in investment in the National Health Service (NHS) with spending as a proportion of GDP now in line with the European average.
- The NHS is mainly funded through national taxation but regional devolution is leading to increasingly different directions in health reform. Controversially, long term care in England, unlike Scotland, is means tested.
- The NHS provides care free at the point of delivery. Private healthcare insurance levels are currently 12% of the population.
- Many regard the NHS as being the 'National Sickness Service' since much of its focus is on reactive rather than preventative care.

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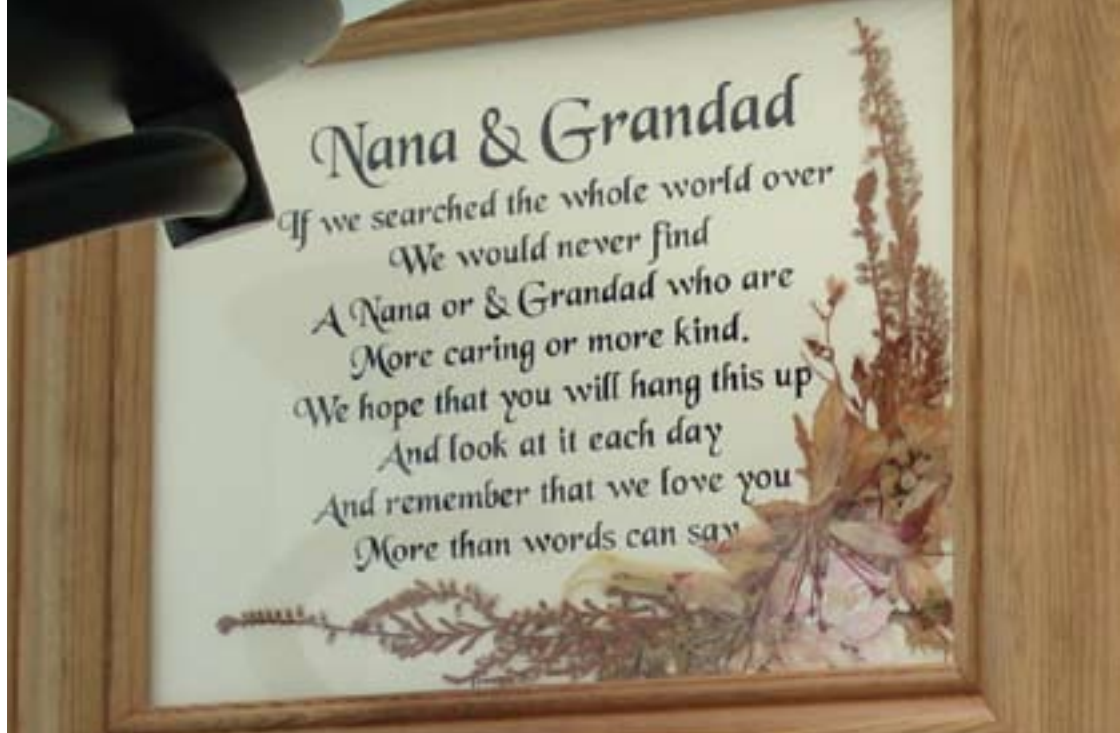


Experiences of Aging in Ireland

Retirement for many Irish older people begins with a period of intense activity and travel. Trips abroad, pilgrimages to holy places and family members overseas are often described as are more local journeys of discovery with the free travel pass. Minding grandchildren, whilst common, is not always a pastime of choice.

Provision of a generous state pension and services for older people is appreciated by many though complaints are often heard among the elderly of the price of Ireland's economic prosperity: rising living costs, disrespect, immigration, crime, and the decline of the church. Traditional volunteering roles from home help to providing meals on wheels are waning, as modern standards and demands to professionalize, drive both older and non-profit bodies away.

The big cities of Ireland are places for the young. Dublin hosts over a quarter of the Irish population but only 9% of people residing in the capital are over 65. Access to home and healthcare services often depends on location; older people in wealthier urban areas are frequently unable to secure home help. Almost half all older people in Ireland live in the countryside, in locations often impossible to reach by public transport. Isolation and a narrowing of opportunities are brought on by the bereavements arising from loss of spouse or driving ability. Almost one third of all Irish women over 60 live alone.



Mary (92) Cork, Ireland

Mary lives alone. She lived in Dublin until recently but moved away from her social networks to be closer to her family. Mary gave up driving over a decade ago. She is a proud and resourceful woman committed to living independently in her own home.

She wears a hearing aid, has broken a hip and has had a range of other routine operations. She complains of slowly losing the ability to remember names and that her declining sense of smell means worrying about not detecting a gas leak.

While Mary would agree that she is old she says she doesn't feel that

old. Much of the interior of her house is therefore a testament to her current sense of her 'age' but aspects of it reflect impending changes or events. Mary has installed a shower, complete that a seat – but is keen to explain this is for an elderly visitor from the USA she is expecting.

In her bedroom, Mary has a television. It sits unplugged and unused. Mary says this television is like her walking stick. Something that is ready at hand for the time when she is less mobile and more limited to the bedroom.

Health and Healthcare in Ireland

- The Republic of Ireland has a population of 4 million people, 11.6% of which are over the age of 65. This proportion will rise to 16.5 % by 2025, with the 80+ category most rapidly expanding.
- Historically, levels of investment in the public healthcare system have been low. Despite recent economic growth the proportion of GDP spent on healthcare is the lowest in the GAE sample of EU countries.
- Public satisfaction with the system is relatively low and a very high proportion of the population (49%) have private health insurance through BUPA or VHI.
- The Irish pay for visits to the doctor (\$60-70) until the age of 70. This leads to reactive rather than preventative healthcare - people seek free treatment from hospital emergency departments. The severe strain this is putting on the health service has led to the introduction of a €45 ER charge.
- The social work system is highly underdeveloped for older people and mainly relies on public health nurses rather than trained social workers.
- Recently, the government has committed to expand home care services for older people through a home care package financing system. Financing comes through the state but direct provision is mainly through non-profit or increasingly private organisations.



IRELAND



Experiences of Aging in Germany

The aging population is a key issue in a country still resolving post-unification issues, suffering from a sluggish economy, and a declining birth rate. Moreover, an AARP survey in October 2005 showed that older Germans are more pessimistic about retirement than citizens of any other country surveyed except Italy.

As one German writer, Elisabeth Niejahr, put it *"the topic of aging is presented very gloomily and apocalyptically... demography was stigmatized as a subject for so long and associated with the National Socialist past, an obsession with population control and German jingoism"*.

The term 'altenlast' is used in Germany to refer to the some of 'elderly burden' created by predictions that life expectancy will increase by as much as 4.5 years whilst the size of the workforce will drop from 50 million to 39 million.

One quarter of Germans have no confidence in the State's ability to provide suitable benefits. Nevertheless, half of all Germans say they expect their government to be responsible for all or most of their retirement healthcare costs.

In 2005 there were an estimated 50,000 migrant care workers, mostly from Eastern European countries, many of whom were paid through long-term care insurance, but many work informally, paid for by older people's families.



Dagna (82) and Bertram (79) Weissenhorn, Germany

Dagna and Bertram are a couple whose lives have been hugely impacted by WWII, ultimately resulting in their relocation to Bavaria. They live a quiet, home-based life. They have a small social network, mainly family, and are enjoying the freedom and 'laziness' of their old age. Their daughter, living 10 km away, provides social and moral support to her parents.

Both are of stable, if not good health. They say that they feel the symptoms of aging but don't feel old. Dagna had a mild stroke in 2004. However, this diagnosis is contested. Dagna certainly feels less energetic, less carefree and less able to conduct things 'speedily'. She has ceased painting. She is inse-

cure in her walking but denies herself a walking stick saying it will make her both look and feel old.

She feels her ability to be the housewife and 'provider' of years gone by has disappeared. Her identity as the caring mother and wife is threatened. This is amplified by Bertram's well meaning control of her existence. Dagna is dependent on him for her mobility and he claims she is less healthy than their medical professional insists is the case. His care is all-encompassing and almost suffocating. Bertram has survived cancer, diagnosed soon after retirement and has also had an operation on his prostate. Bertram is adamant that he would rather die than live in a home or live an undignified life.



GERMANY

Health and Healthcare in Germany

- Germany has a population of 82 million and boasts the largest economy in Europe. With 19.4 % of its residents over the age of 65, it is also the second oldest population within the GAE European sample.
- The number of people aged over 80 will rise from four million to 10 million by 2050
- Germany has the highest total spend on health as a proportion of GDP in our European sample at 10.9% - reflected in its high number of hospital beds and physicians per capita.
- In contrast, residence in nursing and residential homes is low for a northern European country.
- The older and sicker a person becomes, the less likely they are to receive a visit from their GP, doctors suggest this is because house visits are poorly paid.
- Co-payment is a recent innovation - designed to raise awareness of the cost and misuse of healthcare system. However, once you go private you are unable to return to the public healthcare system.
- Of all countries studied, Germany exhibits the absolute lowest rate of confidence in its government's ability to meet the current and future health care expenses of retirees.





Experiences of Aging in France

Shifting the balance toward home-based care is promoted by the government to enable older citizens who need assistance to remain in their own homes. Home services are expanding to give a choice to older people and the number of recipients is increasing by 4,000 each year. Older people in France appear to see a physician more often than those in many other countries, and to take more medication.

A plurality of French respondents (about four in ten) said that they planned on retiring between the ages of 60 and 64. Only 1% expected to have to put off their actual retirement until age 70 or later. The French are more likely to say that they will stop working completely in their retirement years compared to respondents in the other countries studied (43% vs. 31%) and this is reflected in practice by its very low numbers of economically active seniors.

The SHARE project noted significantly higher levels of depression amongst older people in France than many other European countries. Approximately one in five men and almost half women over the age of 75 live alone, though many maintain very active social lives beyond the household.



Charlene (76) Paris, France

Charlene was born in the southern city of Toulouse in 1930. The daughter of a local physician, she grew up and attended school just outside the city, remaining there until the war had ended. She recalls her youth as idyllic and deeply embedded in the local community. After the war she married and gave birth to a son and a daughter with whom she now lives. When her husband passed away, nearly 6 years ago, her daughter, who was living in Paris, urged Charlene to sell the family home in Toulouse and move north to live with her. The daughter and her husband were concerned that Charlene was becoming depressed in the wake of her husband's death and the passing of many of her friends. They were also concerned about early signs of Alzheimer's disease including the increasing loss of her short term memory and episodes of disorientation.

Charlene finally sold the family home and moved in with her daughter in 2002. While she remains physically very fit, climbing the 5 flights up stairs to her daughter's apartment on a regular basis, her Alzheimer's has steadily grown worse. She still goes out by herself to the store or the local senior center but she has gotten lost on several occasions. Her condition has not gone unnoticed by young grandchildren whose parents no longer feel they can safely leave alone them with Ann Marie. In an effort to help her function, her son-in-law has devised a system of color-coded, paper prompts that he hangs from all the door knobs in the apartment when Ann Marie's needs prompting or reminding. He has printed out a series of regularly used messages such as "the children are sleeping, please be quiet," or "we are out, you can reach us on our cell phones." He also puts small post-it notes on her sleeve when she goes out to help her remember her purpose for leaving the house and any task she intended to complete.



FRANCE

Health and Healthcare in France

- France has an aging population with 16.4% of its population currently over 65 though it enjoys a relatively high fertility rate by European standards, at 1.84 children born per woman.
- Life expectancy in France currently stands at 76.1 years for men and 83.54 for women, a gap of almost seven and a half years, producing a high number of widows.
- There are significant regional health variations in France. Mortality rates are higher in the northern part of France (from Brittany in the west to Alsace in the east), and in regions located on an axis from the north east to Auvergne in the centre of the country.
- In 2000 the World Health Organization ranked the French healthcare system first among all WHO member states in overall health system performance. The system is based on a national social insurance system complemented by elements of tax-based financing and complementary voluntary health insurance. The French health system is gradually decentralizing from national to regional level. At the same time, power has shifted from the health insurance funds to the state.
- The vast majority of people over the age of 65 continue to live at home, and retirement homes become particularly significant only after the age of 80 when 12.8% of older people live in one and 26.1% of the over 90s.





Experiences of Aging in Italy

Italy's long-term care system has historically depended heavily on family care-giving but this has been increasingly challenged by the decline in average family sizes and the changing gender balance of the workforce. Nonetheless, an estimated 83% of long term care needs are still met by family and friends.

It is still seen by many as socially unacceptable to send relatives to nursing or residential homes and this is reflected in the low rates of institutional care for older people. Many families are attempting to resolve this discrepancy by recruiting paid live-in help from Eastern European or Asia. Approximately 10% of older people in need of long term care in Italy are looked after through this avenue compared with less than 1% in the UK, Sweden, or Germany.

Problems with long term unemployment, especially in the south, combined with strong retirement incentives lead to the early withdrawal of many from the formal, full time workforce. Only one in three Italians are confident they will have sufficient resources to live comfortably in retirement for 25 years or more.



Giuseppe (77) Pisa, Italy

Born in 1930, Giuseppe still lives in the small medieval village outside Pisa in which he grew up. The son of a woodcutter, his childhood was cut short when at the age of 15 he was sent to work for ten years as a labourer on the construction of Italy's road network. He recalls this as a hard but rewarding period in his life when he was able to support his parents and siblings, disaster struck when he was diagnosed with osteoarthritis – a condition that was to plague his life and make mobility and independence a constant struggle. In and out of hospital, Giuseppe worked only sporadically and was never able to marry. Now in later life, he is reliant on the state and his unmarried sister for

financial and emotional support. Giuseppe's pension and a contribution from his sister allows for the hire of a Romanian woman to help with care and domestic chores.

Giuseppe's life dream has been to walk properly. 'I even dream about it at night, especially walking on the beach'. For a time an operation allowed this, but a bad fall in 2002 reduced him permanently to a reliance on walking sticks. Until this point, Giuseppe had passed much of his time working at his hobbies of crocheting pictures and making houses from matchsticks. He now cramps if he sits too long and finds his concentration fails. He fills empty days by endless rounds of walking, struggling on his sticks during summer on a circuit around his village, and in winter when ice restricts him, pacing around the table in his front room.

Health and Healthcare in Italy

- 19.7% of Italy's 58 million people are over the age of 65, making it the oldest population in Europe and the second oldest in the world after Japan. Fertility rates of just 1.28 children born per woman suggest that this trend will continue and by 2050 over 35% of Italy's citizens will be over 65.
- It is estimated that 15.2% of its population will be over 80 by 2050, twice the percentage predicted for the USA. Life expectancy in Italy is among the highest in the OECD.
- There is a pronounced regional disparity in public healthcare and welfare resources, with the industrialised North and Centre spending a much greater proportion on older people.
- Only 10% of the Italian population is covered by private health insurance. Despite this relatively low figure, there are high levels of distrust of the Italian universal National Health Service with dissatisfaction frequently expressed about poor quality of care, excessive bureaucracy, burdensome prescription procedures, and insufficient public accountability.
- One third of hospital beds for severely ill people are occupied by patients aged 65 or older.



ITALY



Experiences of Aging in Spain

Spain is a predominantly apartment dwelling society with over three quarters of its population living in urban areas. Many elders report enjoying early evening walks, park bench conversations and a high degree of social interaction beyond their immediate kinship network. Forty percent of older people in Spain attend day centres, associations and clubs.

An expectation still exists amongst Spanish policymakers that the family will be central in the decision-making and provision of care for elders; though the new 'law of personal autonomy' to be introduced during 2007 adopts a client or patient-centred focus. Furthermore it recognizes that reliance on filial obligation is an increasingly risky strategy in a period of rapid social change and economic development and as many more women and potential caregivers enter the workforce.

Twenty percent of those over 65 in Spain live alone, of whom only 36% own their own homes. State retirement benefits are in general low, focused on subsistence. Health and social welfare improvements are in the pipeline but these will initially concentrate on people with high dependency needs. Currently 150,000 Spanish elders have a telecare alarm system installed.



Monica (83) Barcelona, Spain

After her husband died, Monica chose to live alone. Much of her retirement was spent volunteering at a national non-profit organization where she would organize trips and holidays for groups of seniors. Monica says 'everything was perfect until I hit 80, then everything started going wrong.' A bad fall finally persuaded her to accept the offer of a room with her daughter, a hospital nurse and her houseful of teenagers. Though she likes her family, Monica is not happy with this turn of events as she feels a guest in the house, as if she is imposing. When the family gather around the TV in the evening, she makes sure she goes to her bedroom so they have some privacy.

Loss of access to a good public transport system and a reliance on others for lifts has left Monica feeling isolated and dependent. Furthermore, she is aware of her old activities and identities being stripped away. 'Now our relationship has changed – she treats me like a daughter now. Checks on things like what I am wearing when I go out or my personal cleanliness.'

What Monica's family haven't told her is that she has been diagnosed with Alzheimer's disease. She was taken for tests after having to give up her volunteering work due to spells of disorientation and forgetfulness. She now spends much of her time at a day centre where she greatly enjoys doing crosswords, painting and is trying to put together a cookbook.

Health and Healthcare in Spain

- Population of 44 million, nearly 18% over 65 predicted to rise to almost 35% by 2050
- Spain spends on public health only 65% of the EU-15 average, far less than would be appropriate for its wealth level, which is almost 84% of the EU average.
- Nine million citizens or circa 20% of the population have private healthcare insurance. This is growing at a rate of 10% a year. On reaching the age of 65, the monthly payment increases between 75% and 100%.
- 4% of Spain's older population live in residential care homes, which are mainly provided by the private sector. There is very little provision of sheltered accommodation. Just 5% of those over 65 receive home help.
- On average each Spaniard spends 325 euros per year on medical prescriptions as compared to 600 euros spent in the USA. Pensioners are exempt from these charges.



SPAIN



Section II: Analysis

This section of the report shows how we analyzed all the data, identifies common themes, design principles and areas of opportunity for Intel's Digital Health Group.

Workshops

Translating ethnographic research into ideas for products is a multi-step process.

It starts, obviously, with planning and executing fieldwork. Ethnographic fieldwork requires a balance between having an appropriate focus, but not being so focused on one topic that you lose sight of what's important to people themselves. Ethnography, in this respect, is not like requirements gathering, or design research, where the goal is to figure out the boundary conditions for a particular product. Instead, we are trying to figure out what it is that people want and need. The requirements come later.

When we return to the office, we have thousands of pictures, hours of audio tape, and hundreds of pages of notes to both analyze and log for later analysis. At group analysis sessions, (we also call them "harvest sessions") we share the stories from the field, the photos, and other collateral in an attempt to identify the most robust patterns in the data, as well as to note the important dimensions of variability. (In this study, we were, of course, interested in how the aging experience varied from country to country.)

We do this by working through the data and actively listening for recurring insights, themes and other aspects of the data. This requires very active participation. We are addicted to Post-it notes, for capturing the flow of key ideas that jump out of stories, and sharing them in a very public way on the wall. After hours, sometimes days, of story telling, we organize what might be hundreds of post-it notes into clusters – robust patterns begin to appear.

Identification of the patterns in the data leads to insights about what is most important to people. For instance, one persistent idea that came up in story after story in our Global Aging project was simply this: people don't want to be treated as if they're no longer competent or valued

members of society. They are human beings, with aspirations, goals, and a sense of identity and self-worth. And yet, so many health-care devices and services treat older people as if they were children, or worse. There were other important patterns and insights as well.

As we note more and more of these needs, we begin to cluster them into what we call the "opportunity map". The map, featured in the following pages, helps us organize all the possible ideas about needs and technology ideas that come up during sharing of field stories, or ideas about services or other interventions – into a collective whole. We refer to this map again and again – for doing such things as thinking about products already on the market, or products in flight within DHeG. By doing this we can identify gaps or places where more attention is needed.

There are many more things that can come out of analysis sessions. Very often, in thinking about our ethnographic data, we identify insights that are neither ideas for new products or areas of explicit need, but rather insights about the characteristics of any device or solution we might make. We capture these as design principles.

Finally, with all these materials and insights in hand, we have the basis for actually thinking about products, services or other interventions. We follow up harvest sessions with actual design brainstorms. Here we use the opportunity maps to identify which "slice" of the map we want to address. Keeping in mind the values and design principles from our data, we begin to explore ways of addressing particular needs. Here is where mapping other products, technologies or research onto the map ahead of time really helps inform our thinking.

The opportunity map at an early stage of its development during a data review and analysis session in July.



Key Aging Experience Themes

People want to focus on what they CAN do, not what they CAN'T do.

As one woman told us, succinctly and unambiguously: "You are sick when you are lying in bed." That is why so few people self-identify as either ill or old. Many people chose not to use canes, assistive devices in the home, etc. This is not just because these devices are socially stigmatizing in appearance, but because these devices reinforce a personal identity as someone who is "sick." Many people sought out challenges as ways of keeping themselves sharp – in fact it seemed that it was people's energy level, will to pursue such challenges that most correlated with self-identification as ill or old. Still, we cannot avoid the fact that many people will need assistance. The key is to provide in ways that people recognize "as helping me do what I want to do", not as a constant reminder that I am no longer capable.

- Adaptive optimism is healthy – go with it. This is a notion from M. Morris, J. Lundell and E. Dishman in the Proactive Health project – that applies here as well. There is a sort of "denial" that is a healthy part of the natural aging process that makes some interventions very difficult. People will regard most interventions as "not necessary" frankly until it is too late, unless we can find a way to get these into the mix earlier on. IMPLICATION: We need to be thinking about technologies that adapt and age with a person, changing the mix of offerings as the person ages. Planning for vacations, taking the stairs instead of the elevator, caring for the garden or doing "brain work" such as Sudoku or crossword puzzles, all give people something to orient to that is positive and aspirational. That's how people prefer to orient themselves.
- But give people non-threatening ways of planning the future. Closely related to "adaptive denial" is the fact that many people seem unwilling / unable to think about and plan for future states of poorer health / frailty. We don't know if this is a generational thing (WWII generation have lived with so much insecurity in their lives, they've learned to take it as it comes?). Implication might be better tools for imagining / planning for the future in a non-threatening way.



Healthy aging and independent living mean far more than "health".

There are many, many factors that enable a person to remain at home and relatively "independent." These include a wide variety of capabilities, not just health-related ones. The ability to take care of one's own home maintenance or gardening, the ability to get groceries, prepare meals, and clean up afterwards, the ability to get around the neighborhood or town, all of these factors can seriously impact a person's ability to live a desired life in later years. We need to be thinking about all of these. A few of the key areas for enabling services include:

- Mobility and transportation in the community are crucial. Community-based transportation initiatives are catching fire both in the US and in Europe. Different attitudes towards private transportation and different availability of public transportation will mean very different systems in different places – but one constant will be the need for intensive information processing to coordinate and ensure the efficiency of decentralized, community-based services.
- Services for the home. Particularly for widowed husbands or wives, the loss of a spouse can mean a serious adjustment of lifestyle, at a time when the ability to adapt is not what it once was. Cooking, cleaning, home maintenance, and other forms of routine care will

become increasingly needed. An opportunity exists to provide an infrastructure to enable a broader, less centralized marketplace for trusted providers.

- The need for finding trustworthy providers is going to increase. Technology can play a major role in helping communities identify and enable trusted providers. This may be particularly important considering that some forms of care that one would expect to come from family members will come from “strangers.” We found interesting and surprising cases of migrant laborers providing more intimate types of services, such as bathing and cooking, and developing very close bonds with an aging adult. This trend will only increase as the ratio of seniors to family members increases.



Both she and her daughter, felt that the husband was being overly protective. In multiple cases, children had put their parents in nursing homes even though those parents didn't feel they needed to be there. And yet, the parents acquiesced, mostly because they “did not want to be a burden”.

- Notions of “health” varies from place to place in both major and minor ways. The cultural, social and political systems in which we're embedded shape our attitudes and behaviors with regards to health. In England, people behave in particular ways as a result of the presence of the NHS's guarantee of life-long, free healthcare. In Mediterranean countries, people don't recognize eating as a health-related practice. They simply eat what others recognize to be very healthy foods.



“Health” is not an objective quality, it's defined collaboratively and culturally. That is, health is defined through interactions and negotiations among various people, including informal caregivers, family members, hired in-home care-givers, and medical care givers. We saw many differences within and between these networks over assessments of an elder's health.

- Assessments of health can vary from person to person. In Germany, for instance, an elderly husband insisted that his wife (who had suffered a mild stroke) needed much more help with driving, shopping, and taking her medications than the woman herself felt she needed.

People mark the progression of aging by watershed events. People don't experience aging as a gradual loss of capability, but rather as a series of threshold events. This is partly a result of the “adaptive optimism” described above. It is most obvious in the case of falls, where a combination of physical or cognitive decline might go unacknowledged for a long time before the precipitating event – the fall – makes it “official”. While the obvious solution might seem to be monitoring and intervening earlier, we suggest it's not that simple: people who are in this state of “adaptive optimism” might not willingly submit themselves to this kind of intervention.

- Some watershed events initiate decline. Non-health-related events can have a serious health impact, for example the loss of a loved one or child, resulting in grief and depression, may have measurable, negative health consequences.
- Sometimes external events leave deficits that expose health decline. The loss of a spouse may entail the loss of a person who has for years helped one cope with other deficits. A wife who has prepared her husband's meals, done his laundry, and helped with other daily life needs over a period of forty or fifty years will, upon death or disability, leave a huge deficit that the husband or other informal caregivers will need to overcome.

Healthy aging is inextricably linked to social participation.

People of all ages aspire to have a sense of belonging, a legitimate role in the life of their family and community. We are meaning makers all through life, meaning is made through social interaction...and that doesn't end with old age. At the same time, people become more acutely aware that ongoing engagement with the community or their family might actually increase their sense of being a burden, not a contributor. Enabling social participation thus means lowering the costs associated with social engagement in at least three ways:

- Feeling useful or productive, or at least having something to offer and the sense of identity that comes with that. This could be either in the form of caring for grandkids or being able to tell one's story, to put my life's history in context. Many people explicitly mentioned how "busy" they are.
- Enabling emotionally satisfying contact with the people they care about, people they share relations or a history with. At the same time, note that there are costs associated with such social contact and those costs seem to rise with age (e.g., as you lose your ability to drive, or when cognitive impairments affect your ability to remember names on the telephone).
- Enabling "recognition" and lightweight engagement with a broader community. As one of our participants told us: "Sometimes you just want to look out your window and see what's happening in your

neighborhood." In many European communities people expressed strong value in a sense of being "known" in a place, of interacting with people with whom you share some history or interests. This could come from such activities as going regularly to the local market, or participating in a club.



The lived-in space is crucial to the experience of aging.

People's choice of objects to inhabit their homes, as well as less malleable aspects of architecture, location, and other aspects of the physical environment were important in how people experienced aging and health. One interesting thing to emerge from our work was a deeper discussion of why nursing homes or institutional residences were generally regarded as "bad" while staying at home is generally regarded as "good." As we teased the attributes apart we realized that these elements characterize differences across many kinds of environments, including movement from one private residence to another. These elements suggest interesting possibilities for technology:

- Houses reflect cultural norms around physical privacy. There's a reason why bathrooms are hidden in European and American homes. There are cultural notions of privacy and intimacy associated with care and nurturing of the body, particularly hygiene. We need to be cognizant of how different cultural values around bodily intimacy may shape acceptance or resistance to technologies. Institutional care settings

don't often provide this.

- Houses are the sites of spiritual and personal expression. Expressions of spirituality and the emplacement of memories (e.g., in shrines to lost loved-ones) abounded in the houses we visited. One of the things that makes a home a home is the way in which such “ritual” behaviors are allowed to happen there. Some nursing homes allow a person to bring some things from home, but not to the degree that people have in their own homes.
- Enacting of “micro-routines.” Simple daily activities, from checking the barometer, to drinking a glass of juice at bedtime (and using the empty glass as a medication reminder in the morning) to gardening, were crucial for people for multiple reasons simultaneously: as a way for people to fill little slots of time, as a way of grounding behaviors in some structure that aids memory, to provide some lightweight ways of finding meaning and having something to talk about, get a little bit of physical exertion, keep one’s mind sharp, and generally have some sense of small purpose to focus on each day.



- The “home” is not just the four walls. It is the physical situation of the house in the neighborhood, proximity to other services and opportunities for social engagement. One woman we visited in a nursing facility in Spain was quite happy there, partly because the home was in her old neighborhood, near the same market, the same services, and the same social network.

Healthcare networks are large and increasingly complex just about everywhere.

People in virtually every country we visited struggled to get the best value out of their healthcare systems. People struggled with healthcare bureaucracy and sought to bring alternative approaches to care into alignment.

- Help people figure out their options. In places where coverage is “universal”, people still seek out alternatives. In the UK, despite universal coverage, people found it necessary to pursue alternative (private) healthcare systems to either speed up access. In Germany, people who opted for private care are forced to relinquish their claim on the national healthcare system, so must make a complex calculation about which is going to be better for them. In some cases, people had to leave their country to gain access to treatments that were unavailable because of resources or regulations.
- Help people help each other. Several people we visited had been forced to learn a lot about the healthcare system, because of a chronic condition or the need to care for someone who is ill. More than one noted that it was unfortunate that, when their situation changed (a patient died or got better) they had no place to share this hard-won knowledge about navigating the healthcare system. Simple tools might make a collaborative user-based system to help people share that knowledge and help each other.

Eight Key Areas of Need

Our data shows that an aging population shares a set of common concerns and values that prove robust for thinking about new technologies. However, we also note that these concerns may manifest themselves quite differently for a healthy 65 year old versus a frail 90 year old.

1) Environments of Choice:

The lived-in space is crucial to a person's sense of well-being. It's not just a question of "home good, nursing home bad." A good nursing home can be desirable – and one's own house can become a prison for someone who lacks mobility. Technology can help people truly inhabit a space more fully, with a greater sense of well-being, by enabling the practices that make healthy living at home so appealing: enacting micro-routines (small daily rituals such as gardening, checking the weather or cooking), interacting with locals (such as those at the local market) with whom one might be familiar but not intimate, or encountering simple things such as photos, mementos or other touch points where one's personal history and identity are enacted.



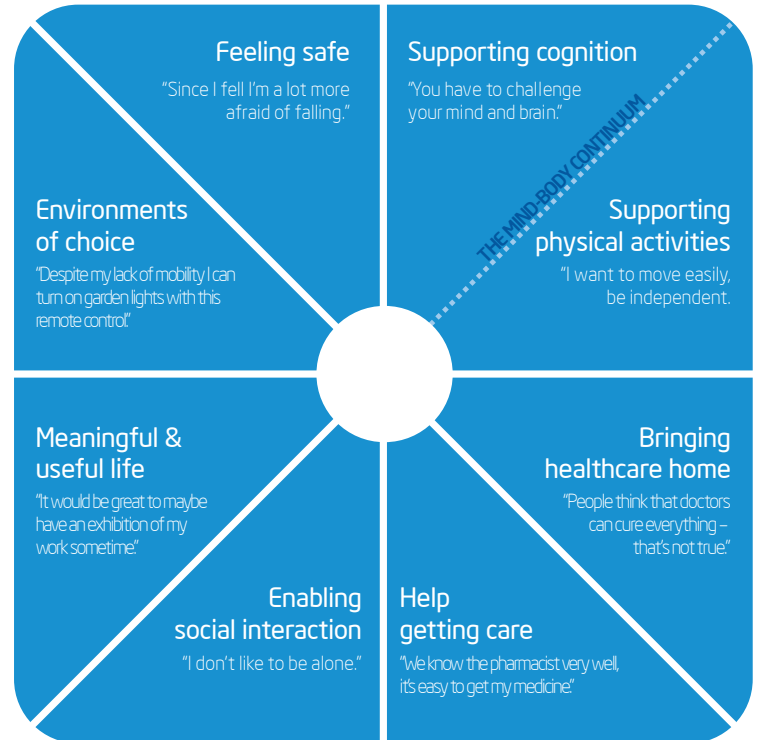
2) Feeling Safe:

One's needs for "feeling safe" may shift over time. At one end of a spectrum, younger adults may worry about financial stability, saving for retirement, or living in a neighborhood free of crime. An older person might share these concerns, but also be concerned about the consequences of a fall in the household, and will someone be there to help them.



3) Supporting Cognition:

Adults of all ages are constantly looking for ways to "stay sharp", whether by playing games or getting out of the house. Research has shown that engagement in novel, stimulating mental activity has important benefits for health overall. Meanwhile, for those facing cognitive decline, important innovations might include aids in memory, to prevent the stigmatization or embarrassment of forgetting names or other details associated with daily life. A key need for such a situation is preventing what is known as a "downward spiral" wherein such stigmatization causes social withdrawal, which in turn leads to depression, accelerated decline, and other negative effects.



4) Supporting Physical Activities:

"Canes are for old people" we were told at more than one household. Still, when done properly, people find tremendous value in simple, unobtrusive devices for aiding with physical mobility, physical perception (eyeglasses, hearing aids) or other issues associated with physical activity. Currently, few if any computing technologies fit that description, and yet technology carefully designed and placed either on the body or in the environment offers tremendous promise.



5) Bringing Healthcare Home:

There are major opportunities in helping people cope with chronic disease more proactively and in the home, rather than in the doctor's office. The cost savings to health care providers will be immense by helping people stay on top of such diseases as diabetes, cardiovascular diseases, COPD, or others. Beyond that, there are opportunities in helping people identify and pursue practices that enhance their health and wellness, from eating right, to using natural remedies, to getting more exercise. By providing information, coaching, motivation or simply routine personal contact, technology can enhance wellness in simple yet profound ways.



6) Help Getting Care:

Simply navigating the health care system in any of the countries we've visited (including the U.S.) can be overwhelming. There is the logistical burden of waiting in lines, processing forms, etc. But even more so is the cognitive and emotional burden of dealing with and extracting help from mostly unfriendly bureaucracies, especially when many of these do



not talk to each other. Technology-based services can ease this burden tremendously, if well designed.

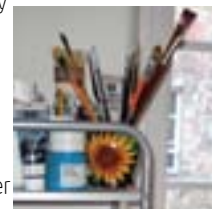
7) Enabling Social Interaction:

People are naturally and thoroughly social. Our sense of self-worth, our feelings of pleasure, our very brains are wired for social interaction. For many aging adults, as a result of logistics (loss of ability to drive, or get out of the house), cognitive decline or other reasons, are faced with a drop-off in social engagement. Research has shown this has devastating effects on health. There are many interesting ways technology can help overcome social isolation.



8) Meaningful and Useful Life:

Just because people get older does not mean they feel that they have nothing more to offer their family, their community, or the marketplace. With a growing cohort of adults over 60 will come an increasing demand for avenues of expressing creativity, energy, skills and talents developed over a lifetime. Technology could prove to be a useful tool and outlet for this wealth of human capital.



Global Aging Experience: where do we go from here?

The GAE Project is a prime example of Intel's commitment to developing creative solutions to meet the challenges of improving healthcare and addressing the needs of a growing elderly population. Our commitment is long term, broad in scope, and deeply human centered in its approach. Within Intel, this research is driving innovative technology ideas and new ways of understanding the diverse needs of aging adults. Beyond Intel, we hope that this research will provide a resource for many organizations – public, corporate, or academic, to better understand and serve the needs of aging adults.

To those ends, we are progressing the GAE agenda in two ways:

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Most immediately, we are driving a number of deeper investigations into topics highlighted by our original research. The GAE research team is currently exploring how technology might support the extension of existing business models and services provided by Continuing Care Retirement Communities (CCRCs) in Europe. GAE researchers are also investigating the role of technology in enabling new options for transportation and mobility for seniors, both in Ireland and beyond. We are also deeply involved in long-term research projects with the Third Age Center in the community of Summerhill, Co. Meath, Ireland, exploring the role of the broader community in successful aging. Finally, much research is being conducted in association with an innovative corporate / public / clinical research consortium known as the Technology Research for Independent Living Centre (TRIL Centre), focusing on key issues that contribute to the institutionalization and loss of life quality for aging adults, including cognitive decline, falls and decreased social engagement.

Beyond that, our GAE research plans include gathering additional data from new parts of the world, where policy or cultural practices associated with aging may show marked difference from Europe or the United States. Our global aging travels will thus include sites in both Asia (Japan, Korea, India and China) and Latin America (Brazil, Mexico, and the Caribbean) within the next two years. This work will yield similarly structured data that can be added to the already substantial and growing dataset that developed after the first wave of GAE field research in 2006. As our research continues, we are committed to publishing widely, and sharing with collaborators of all kinds. We welcome your questions, feedback and interest both now and going forward.



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