Work

A Futurizon Report

December 2008

Author: Ian Pearson BSc DSc(hc) CITP FBCS FWAAS FRSA FIN FWIF

info@futurizon.net

INTRODUCTION

Technology progress is accelerating, and with it the pressure on every area of life, including work. Some changes will be beneficial, others will be problematic. Companies of all kinds will have to adapt, and adaptability will be more important than optimisation. For workers, some will become more powerful and wealthier, while others will suffer the consequences of global commoditisation. This short report considers some of the underlying technology changes and looks at some of the more obvious consequences.

DEMOGRAPHIC CHANGES

The UK population is changing quickly, and over time we will see enormous change in the population makeup. The two main trends are ageing and migration.

An ageing population has different needs, but people don't get old suddenly, and we will not suddenly have an older population that can't cope with technology. Rather, tomorrow's older population will be much more familiar with networks and gadgets than today's, who are also becoming more familiar with technology, and they will be adept at using networks for their own purposes when it suits them. With a large and politically powerful older group, many of whom will be living on pensions that have been under-funded, tax rates will have to rise substantially, while the people paying those taxes will have less say in what is happening. This will lead to resentment, with young people often considering that many of the problems are essentially self inflicted. Pension deficits will not have occurred by accident, but because many of the pensioners will not have invested properly in their pensions. Even for those that did, actuaries are still not taking sufficient account of future medical technology and corresponding extension in life spans, so almost all pensioners will cost far more than they have contributed. Add the pressures of over-population, increasing health care costs, too many systems designed mainly for the benefit of older people, public transport clogged with pensioners travelling for free, and it is easy to imagine that a high level of tension will build between young and old. Inter-generation conflict will be very significant.

For a similar reason, there is very likely to be a major backlash against civil service terms and conditions as the private sector workers feeling the stress of economic decline become more resentful of the much better treatment of public sector employees. And again, as those people reach retirement, there will be a huge gap in wealth between public and private sector pensioners.

Migration is more complex. In recent years, the focus of attention has been on high levels of immigration, leading to racial tensions as immigrants compete for jobs, welfare and public services. But as we have seen recently with many recent immigrants, they are obviously those people more inclined to migrate, and when conditions change adversely in the UK relative to their own homelands, many are only too happy to return. So we are now seeing a new but significant trend – remigration. It is not just recent immigrants such as Poles that this affects. Lots of Indians and Chinese, even second generation, are leaving, and this leaves large holes in the UK's skill base. Indians form a large part of the IT skill base of the UK, and it is very hard to fill their roles with home grown staff, because our education system can't produce enough good quality graduates in the required disciplines. But immigration will still continue. There will be many people for whom the UK will be seen as an attractive alternative, who will still want to come here. The difficulty for the UK will be to catch those that we need.

Meanwhile, we are likely to see our own young people considering migration to other countries too if they have enough of the right skills. With increasing tax rates and the country over-run by

pensioners, their personal solution might well be to leave to get a better life for themselves and their kids.

The result or ageing and migration will be a very different social mix in the next few decades. And of course this means a significant change in culture too. And even though none of the changes will happen overnight, some will generate significant changes over just a few months, so companies will have to work hard to keep up. Every change presents a new challenge, but also new opportunities.

ECONOMY AND SOCIAL CHANGE

The UK is in a recession, suffering the consequence of banking collapse like with most countries, but to a greater degree, partly because the UK economy was in a weaker position to start with, and partly because the UK is also much more dependent on banking than most economies. However, there will be some social benefits that will last long after the recession is over. People tend to pull together in times of adversity, and the web is a perfect platform now for social entrepreneurs, as has been amply demonstrated over the last few years. Also, when money is scarce, people tend to have more intimate social contact instead of going out and shopping. While this makes a difficult period for sales, it will result in a stronger, better networked society.

Also, as AI makes its presence felt in the much longer term, we will see the evolution of the care economy (on which more later), and this will be well suited to companies that have already become adept at integrating into local communities. Indeed, care economy companies will have arisen naturally out of this new social structure during its formation. Other companies will have to deliberately engage local community activities if they want to keep up.

The current economic stress will lead directly to reduction of waste and eradication of many inefficient practices. An IT renaissance is already long overdue, where companies tackle the bloated micromanagement systems they have created by indulging every administrative whim of management over the last decade. Leaner companies will be better placed to survive, but will also be able to provide better services at better prices.

THE NEED FOR AGILITY

In turbulent markets, adaptability is much more important than optimisation, as evolution shows is in nature. Optimisation is a goal of many companies, but it is quite wrong in a changing environment, as the company becomes optimised for an historic market at the expense of survivability in the coming market. Many species in a rain-forest are wiped out because they are too specialised, perfect for exploitation of a particular niche, and when that niche dies, they do too. Agility and adaptability are the keywords in survival strategy now.

This has implications for the planning cycle. Many companies produce 5 year plans, and while this may still be appropriate in the most capital intensive companies such as chip fabrication or car manufacture, for many companies, the pace of change is more rapid now and companies must be prepared to change quickly, and not be held back by investment commitments. As new market sectors appear, they need to be ready to pounce on them, especially as survival often means having to find substitutes for products and services as they become commoditised or globalised.

Personal agility is important too. People will generally change jobs many times during their careers, and many will have several different careers. Keeping up to date with skills is key. It is likely that many people will choose to telework because of the rapid job churn, since moving home every time they move job would be stressful for themselves and their families, and of course if both partners are working, it is even more difficult to uproot. Given that not everyone

enjoys working from home all the time, and people value the social contact that comes from 'going to work', it is likely that many will choose to go to telework centres, where they may hire an office, or charge it to the company. Then they can have social contact, with the convenience of a telework centre close to their home so commute time is reduced. Telework centres can double as social facilities out of hours on account of the many valuable facilities they would offer.

Such remote working is increasingly possible because of the ongoing impact of the web on work, mainly the better communication facilities, reducing importance of paper-based systems, greater use of email, and the use of Skype and other conferencing and collaboration software. All these make it easier to work from home or anywhere else, and people therefore go to the office mainly when they want to meet someone.

NETWORK COMMUNITIES

The web is already being used as a political platform, and it will soon become the default choice for organising political campaigns and actions. The web offers some major advantages over the physical world. The same factors that make it suitable for political activity also lend it to marketing, but they can also represent be serious threats to companies. Marketing may be mainly an outreach activity today, but in the future, it will become much more closely integrated with corporate security, PR, and corporate social responsibility. This is already the case in many large companies, and it will spread further down the economy to medium and even small companies.

Firstly, web communities may include membership from a number of physical countries. These members can use anonymity technologies to hide from physical detection, organising and leading communities without fear of being identified. While this makes it easier to attack companies without worrying about libel action, it also gives an opportunity to companies to use anonymous membership of network groups to influence opinions or even actions in their favour.

Secondly, with members in a number of legal jurisdictions, it is not easy for governments to control the activities of network communities. Again, this can allow companies to influence events outside the jurisdiction of their own government to bring external pressure, or to seed new markets by assisting communities elsewhere to gain advantage over incumbent companies, even treading into practices that might well be deemed anticompetitive on home soil.

Leaders can communicate with the membership almost instantly, and consequently the potential exists for actions to be initiated in a very small time and coordinated with fast response as they happen. It is very hard to do this in the 'real world'.

Software enables more sophisticated actions, even for peaceful activity. For example, electronic boycotts of products from particular companies or regimes can easily be implemented by means of emails that set preferences in buying profiles. Other software can enable a central command to use the power of each member's computers (with their consent of course). This may be used for marketing, campaigning, and mass emailing. If a network community doesn't want to stay on strictly legal grounds, then of course they may also use this power for malicious cyber-attacks, again relying on anonymity to hide command structures.

ELECTRONIC JEWELLERY

Miniaturisation and integration has taken only a decade to condense half a ton of electronic equipment into a mobile phone. The hi-fi, TV, games console, laptop, camera, video camera, watch, filofax, wallet, dictionary, satnav, voice recorder and phone are all available in a 100g package now. This obviously has enormous environmental advantages, showing the stupidity of

environmentalists who complain about rapid obsolescence, without which a half ton of stuff would still need to be replaced every few years instead of the 100g. More importantly, this high-capability device presents a superb platform for marketing and thus will be a key weapon in company survival battles. The mobile phone knows all your regular contacts, where you are, where you've been, who you're with, the time, your diary (and hence where you are going and why). If the owner uses it, as is increasingly likely, to access Facebook or other social networking, it knows a lot more about you, and your friends.

Miniaturisation hasn't ended with the mobile phone. If we get rid of the keypad and replace it with fingertip tracking and voice interaction, and replace the display with a video visor, the rest of the phone can be condensed down to jewellery size, and over time almost any piece of jewellery will be big enough to house the electronics needed. So lapel pins, brooches, and even ear-rings could be equivalent to today's most powerful mobile phones in a few years time. The cost of electronics continues to fall rapidly too, so people might well wear several pieces of digital jewellery, each with a particular role.

DISPLAYS

Video visors are an important step in display evolution. Today's versions produce a large image that allows people to watch movies or play games. They are improving rapidly in terms of price, performance, ergonomics and looks. With positioning data coupled with mobile phones and PDAs, it is both possible and attractive to be able to give personalised and context-sensitive date to people as they wander around, and such displays offer an ideal platform on which to overlay data on the person's field of view instead of having them looking at a mobile phone display. To make them useful for overlaying data, they need to be semi-transparent, cover only a part of the field of view, or have a means of relaying real world images into the computer generated images. The latter would be the ideal solution, as it allows any blend of real, virtual and hybrid images to be produced. While the first people wearing visors on the street might appear odd, this was also the case with the first users of Bluetooth headsets, which are now common and accepted as normal. So people will soon become accustomed to working with dual environments, with the real and virtual worlds blended together, computer generated information overlaid on the real-world field of view.

In the same time frame as video visors take off, we will see posters using digital paper, so that the image can be changed every few seconds, and even some with video panels, with either polymer screens or fat-response digital paper. There are already a few electronic posters in use, but the numbers will rise greatly.

We will also see a wider range of displays in use around the home and office. Large wall-hanging displays, TV style monitors, desktop and laptop computer displays, magazine tablets, electronic paper, electronic photo-frames and various other specialist displays will accompany the pocket-sized ones on our phones and PDAs. These displays will provide new options for office design, make spaces more attractive and more functional, without constraining people to sit at desks as they have to today.

The far future will bring active contact lenses, which condense all the required electronics down to contact lens size, making an image directly on the retina using a combination of lasers and micro-mirrors. This will enable full high resolution wraparound virtual environments. Also far away, active skin displays can be printed onto the skin surface, so that people can have an extra computer display on their arm.

As well as dual architecture, we will also see people using dual appearance. It is likely that their digital jewellery will transmit appropriate data on their avatars according to the person looking at them. So while some people might see a plain person walking past, others might see them

very differently, exhibiting a particular costume, makeup or role. This can be used for personal marketing of course, but can also be used to add various 'professional' layers. So charity street collectors might all be seen in similar ways, with the same uniform, as might employees from various service companies. Indeed, when people have multiple simultaneous roles, their image might alternate quickly between several.

ACTIVE SKIN

Active skin is electronics printed onto the skin surface. Upper layers might contain electronics for connecting to the network, while lower layers might connect to blood sensors and nerves, allowing continuous health monitoring, and extending IT right into the nervous system. With nerve links, sensation can be recorded and replayed, enabling full sensory environment almost as powerful as Star Trek's Holodeck. Obviously, adding the sensation of touch to communications would make it much more natural, and hence more powerful. Another use of active skin is to add displays to the skin surface, which can be used for body adornment or as a general purpose computer display. They could be touch sensitive, so also act as an input interface.

Capabilities such as this can be used to greatly enhance everyday experiences, by adding sensations according to the dual environment. So a museum could provide much more information, such as replica interactive immersive environments that effectively take the visitor back to the period and situation the artefact came from. This has huge educational potential, but also huge marketing potential, adding extra layers of interest to any everyday situation, and if they are compelling enough, people might willingly expose themselves to large amounts of marketing, government information or any other form of data.

DUALITY

The duality of virtual and real images offers dual architecture, dual appearance for people, and overlays of computer-generated images or data onto the field of view. It is in essence a convergence of the real and virtual worlds, and as with any convergence, we should expect an abundance of innovation, an opportunity explosion. It goes far beyond just being able to access internet while on the move. It allows every metre of high street to be extra display space for art galleries, at the same time as being a huge interactive space for computer games, or a personalised shopping mall, or any visual environment imaginable. It will for example greatly affect how customers shop on-line. Instead of only being able to do so from a computer, online shops can also lay their stores out in real space using overlays, anywhere in the physical world. Even in real shops, virtual layers can be used to add personalised shopping opportunities, allowing shoppers to buy some items in the store and some online at the same time. Since virtual space is infinite, a pass through the virtual layers of the store could allow access to a huge range of stock that would not fit physically, or is only available from allied suppliers. Being able to market products online and physically on the same trip will increase the capability of shopping trips, allowing more shopping around, which is a threat or opportunity depending on the positioning of your product. Clearly, this will have a huge effect on the retail industry, and the balance between real shops and web sites.

Duality also allows computer games to be overlaid on the physical world. Playing computer games while your partner browses for clothes would reduce boredom levels for both kids and many adults. This potentially allows shopping trips to be longer, with less rush to finish.

Duality could allow shoppers to inspect competitors' products alongside the ones in front of them physically. Looking at a suit and seeing the nearest equivalent from a range of other suppliers in the same town or online would seem an advantage to the shopper, but as far as the

shop is concerned, it is really a form of digital trespassing. We might well see shops trying to jam radio reception in their stores to prevent this, but even then, the storage capacity of devices will be such that a shopper could download most of the useful data before they leave home, or more likely, it could be downloaded for them automatically, since the device knows a great deal about their preferences, and diary. So it might be nearly impossible to prevent this kind of digital trespassing, and shops will have to get used to a world where the market is far more transparent.

However, there is a great opportunity here for services that support marketing and shopping. The duality market will have many layers, with players at each level. Someone has to design the best interfaces, the many virtual worlds, overlay them creatively, figure out the best ways or personalising to a large number of market sectors, and create auxiliary content such as avatars, dual architecture and so on. Then there is another market for filters, bubbles, outreach technologies, context, profiling and position based services. On top of all these, aggregation and comparison sites can build applications.

ARTIFICIAL INTELLIGENCE AND THE CARE ECONOMY

AI will continue to accelerate. Many people make the mistake of dismissing talk of AI catching up with people because it hasn't happened yet. That is similar logic to the man falling from a cliff telling himself that there is nothing to worry about because he has already fallen 100m and nothing has happened yet. Exponential progress is highly deceptive. Nothing much happens visibly for a very long time, then after a very short transition period, the curve goes almost vertical. Mathematically, the curve is smooth, but people don't notice the progress when computers go from 1 hundred billionth as smart as humans to 1% as smart, as they now are. The progress in the next ten years will make computers comparable with people in many areas, not just playing chess and doing sums, but making all kinds of decisions, processing administrative tasks, carrying out junior professional work and our-performing most people in medicine, law, accountancy, engineering etc. This progress depends not only on better chip technology. It also relies on nanotechnology enabling devices that can monitor signals in then brain, so that neuroscientists can gradually gain insights into the brain's workings. These insights can then be used to seed new approaches in AI. Progress in AI also creates new insights for neuroscientists, who can then explore new research avenues.

Opinion is strongly divided in the AI field, with some people predicting human levels of AI in the next 10 years, and some insisting it will never happen. Most researchers do agree that computers will be able to undertake a great many tasks that are currently beyond them. The main disagreements is on the scope of AI, i.e. what sorts of tasks it will be able to undertake and how well it will be able to achieve them compared to humans.

The addition of high levels of AI to human effort will enhance the economy, but it will also change it. Productivity will increase dramatically as AI takes on a lot of work, so we will need fewer people to do the same work. But people will not be idle. Freeing up people from being cogs in a machine will allow them to concentrate on providing truly human-based value add. One term for this is the care economy. People will be valued mainly for their interpersonal skills, emotional and caring skills. Typical roles will be in leadership, motivation, empathy, entertainment, sports, care work, teaching, policing, security and military, and of course a substantially increased personal services sector. Work in the manufacturing sector will continue to be substituted by robotics and outsourcing.

However, there will still be a role for people in all sectors at the specialist level. Even when (and if) most tasks can be done by machine, there will always remain some that are best done by

people. But only a few people will have such specialist skills, and they will attract high rewards, even as most people see their pay suffer from worldwide commoditisation.

For routine work, where the bulk of people are working in the care economy, it is likely that women will play a much greater role, since it is women who often have the better emotional and interpersonal skills. But of course, men can keep up perfectly in areas of leadership, motivation and so on, and so we will still see many men at the tops of companies. Of course, gender ability does not divide on black and white lines, there is a lot of overlap of ability, but the general population does show marked statistical differences in the abilities and skills of each gender.

Remuneration will become more polarised in skill-based jobs. The elite have always been well paid in every sector, but the differences will increase because success in the market will come from having the best team. Those in the top 0.1% will do very well, with many companies competing for their services, but the rest of the population will find that the skills they can offer are in abundant global supply.

One useful factor in the care economy is that generally, people skills improve as people get older, and people skills do not require physical or mental dexterity. This means that older people will have an advantage in the job market, compared to today where legislation is needed to prevent age discrimination.

WINNERS AND LOSERS

Changes is every area will bring both winners and losers. As manufacturing technology brings efficient desktop manufacturing, local manufacturers will be able to recoup some of the previous losses to far-away countries, but only in sectors where there is an advantage in speedy response or personalisation, or a key ‘green’ element. Similarly, web-based retailing is gradually making it harder to make high street shops cost in. Rents will have to fall if they are to compete, because the web offers a large advantage in price, convenience and shopping around. The desire to take something home immediately from a shop is significant for food and clothes, but much less so for many other categories. Even in shops, the progress towards customised manufacturing means it is likely that people will use the shop to try something on, and then order it in exactly their size, to be delivered later. This means that shops can stock a wider range of items, but still increases the utility of web-based shopping.

In the construction industry, it is likely that factory made modules will once again become commonplace, because of the level of electronic sophistication that can be added in a factory compared to a building site. Bathrooms and kitchens particularly lend themselves to such trends, and this will also accelerate the use of robots in construction. Architects too will have to learn to design virtual layers on buildings as well as physical ones, to increase the building utility. Flexibility of interior space may become much more important as virtual worlds start to overlay the physical world. This trend may also make pressure for common designs across a number of buildings, so we will see more design re-use. Design re-use will also apply to desktop manufacturing at the home level, where some basic functionality will be present in the home to make simple items, such as ornament and simple electronic gadgets, based on design downloads from the net.

The increasing importance of elite employees will make it much harder to recruit them, as the web offers them better rewards for freelancing, and also makes it easier for them to start up collaborations with others. Standard business software makes it much easier and faster to start up small businesses, and this again helps to accelerate the other changes that affect every business, in a virtuous circle of technological innovation and change. This trend incentivises the deconstruction of companies by allowing key staff to capitalise on their own value without the overheads of supporting less able staff by leaving and setting up small new focused companies.

This means that full time work will generally be substituted by more flexible working, as freelancers choose when and where to work. Younger people will expect a much better work life balance than has been the norm of late.

Health care will of course be a bigger sector, as new technologies constantly increase the range of treatments available. However, increasing use of appropriate technology can reduce health costs greatly, and the NHS is long overdue for an appraisal of methods, using many antiquated systems, and subject to extremes of inefficiency and inappropriate IT advice. Certainly, much better health care could be provided at lower cost and with fewer employees. It is likely that people will make use of home medical technology for supervision and remote consultation, partly for convenience and partly to avoid picking up infections. So medical care will be less focused on hospitals and we will see more use of call centres. These call centres will use expert systems extensively, so staff will not need high levels of medical training. All of this points to deskilling of health care, hence potential cost reduction, and with fewer staff needed, fewer managers and administrators will be needed too.

Regulation and law will increase significantly, as new technologies create new problems and require more decisions. For example, technology enables new methods for food production, so more regulation is needed to ensure ongoing safety and ethical compliance, and indeed many ethical questions will be raised by future technology, so new laws will need to be debated. As business structures will also be changing rapidly, law will struggle to keep up.

Some sectors will be dis-intermediated, and re-intermediated, just as the travel industry already has. High street travel agents have been largely replaced by self booking via web sites such as expedia. Similarly, the centralised music industry is being replaced quickly now by bands using sites such as YouTube or Facebook to reach their audiences. There is nothing in principle to stop bands marketing direct, but such sites offer a useful search and aggregation utility. However, the traditional music companies don't, and since they have alienated their customer base over the last decade, they will not survive the change.

WORKFORCE COMPOSITION

The care economy will favour those people with good interpersonal skills, nice personalities, or sports or entertainment value. People whose only advantage is intellectual will lose out, as will those with no skills at all. There are simply too many such people for the range of job suited to them, so they will see their financial value drop a great deal in a global marketplace where commodity skills are available anywhere and prices will consequently low.

A few elite will be needed, as product differentiation requires high level skills to be applied, and by definition, high level skills are in short supply, and will be highly rewarded. So there will be greater wage disparity in the future than today. If pressure is applied to companies not to pay staff too highly, as currently seems likely, then key staff will simply go freelance and charge market rates, which cannot easily be regulated. Additionally, younger people will be much more mobile worldwide due to the increasing wealth of other countries, and they will be encouraged to emigrate by intergenerational conflict, especially the higher taxes that we must expect. The nightmare scenario here is that without key staff, companies may be forced to relocate their main development sites, leaving unemployment here in the UK across other sectors of the population. It is therefore important to ensure that key staff are well rewarded so that they will stay here in the UK.

Women will generally have an easier time than men if emotional skills dominate, but the evidence is that most such work is not highly paid, so even though women will have less difficulty in finding work, it will not be high paid work. High end interpersonal skills such as

senior management will fare better, but with extensive industry restructuring, there may be less need for senior managers.

As manufacturing jobs are replaced by robotics, and analytical/professional jobs displaced by AI, with many others outsourced, traditionally male jobs will be hardest hit, while jobs such as teaching, nursing etc will hardly be affected. Many men will readjust and re-skill, but many will find it hard to do so, with consequent social strain.

Older people will find that their retirement age is being increased due to the pensions problem, but with enhanced interpersonal skills compared to younger people, the care economy will arrive at a very convenient time to provide jobs for older people.

Low paid jobs may not be affected so much, as it often is not worthwhile automating them, as people make quite cheap machines.

The public sector employs a great number of employees that would be affected by these same trends if they were in the private sector, but of course they are relatively insulated from commercial pressures today. It is highly unlikely that a struggling private sector workforce will remain willing to sustain such a privileged sector, so it is inevitable that the public sector will have to accept change eventually, which means addressing the enormous differences in terms and conditions between public and private that exist today, and also widespread job-pruning. Of course this will meet with enormous resistance, but it can only be a matter of time.

WORKING PATTERNS

Summarising the key changes in work patterns, people are likely to have to change jobs and re-skill more frequently because of accelerating technology-enabled change. Flexible working will increase, and people will often work from home, or from local telework centres. This will also cause a resetting of work-life balance.

The main change that is likely, caused by company restructuring, is that more highly skilled people will be self-employed, and they will see their incomes improve, while those lower-skilled people left in companies, which will be fighting for survival in an ever fiercer marketplace, will inevitably see their terms and conditions worsen as incomes are globally levelled.

The office will be less important as people increasingly work away, but people will need meeting places. With IT becoming smaller and more flexible, desks will lose their current status, and offices will need to be redesigned as places to meet colleagues, collaborators, suppliers and customers, as well as staff and bosses of course. The personal services sector will be one of the most increased sectors, and people in this field will often need to travel to meet their clients, who will often be at home. ‘Third places’ (e.g. coffee bars) will floiurish too, as people often do without an office completely and work from there. As the number of shops is likely to decline, it is obvious that these places will take a large share of the high street.

However, with greatly enhanced IT and telecoms, it will be very easy to work with other people across networks, so much of the travel and meetings will be optional. This effectively sets upper limits on the markets for 3rd places, office, telework centres and so on. People will only use them if the price and convenience matches up, otherwise they will simply stay at home and use networks.

IMPACT ON UNIONS

Of all the trends outlined in this report, the most significant for unions is the move away from companies towards freelance working. It will be more important for unions to support people

across industries rather than just within individual large companies. But in the professional space, they will compete with trade organisations, professional bodies, and web communities for the allegiance of members. Many freelancers will be happy to go it alone since their skill levels guarantee them good conditions on their own. Others will value combined muscle and the influence it can bring on politicians and regulators, and of course employers. Professional bodies are better placed to provide functions such as accreditation and representation of industry issues, rather than the personal interests of individual employees. This provides a natural ongoing niche for unions, but unions must realise that for many people, social web sites such as Myspace, Facebook, LinkedIn and so on, will provide much of the networking potential in the future, and manhy people may see little need for extra platforms. Unions do of course provide other useful services such as life insurance, but with the web making it much easier to separate out such functions and associate them with large network communities, unions will find it hard to rely on this as a way of persuading people to join.

If unions make good use of social networking sites, they will find they are an ideal platform to communicate with members, organise actions, and to apply pressure. This is the new platform for power and politics, and unions will ignore it at their peril. Relying on traditional communications routes instead of being web savvy will see them being sidelined.

However, it is not just those with good IT skills and freelancers that unions represent. For a great many people that are unable to fight their own battles, unions are still an excellent vehicle for mass representation and the appliance of combined strength. As many people will be adversely affected by many of the upcoming changes, unions will have to work hard to support their members. Technology will change whether people like it or not, and companies and individuals must adapt to survive. Unions cannot fight changes that are global and irresistible, they must work with the changes to get the best result for members during the changes. They must accept also that there will be winners and losers across the board, and accept that for some people, all they can do is help them cope with major life changes.

Unions can still hold a valuable place in future UK society, supporting people through tough times. If they work with employers and government, they can help society adapt to changes in ways that will bring the greatest benefit to the most people. But they will have to pick the right battles and not waste effort on hopeless causes.

ABOUT THE AUTHOR

Ian Pearson graduated in 1981 in Applied Mathematics and Theoretical Physics from Queens University, Belfast. After four years in Shorts Missile Systems, he joined BT Laboratories as a performance analyst, and later worked in network design, computer evolution, cybernetics, and mobile systems. From 1991 until 2007, he was BT's Futurologist, tracking and predicting new developments throughout information technology, considering both technological and social implications. He now does the same for Futurizon, a small futures institute.

He is a Chartered Fellow of the British Computer Society, the World Academy of Art and Science, the Royal Society of Arts, the Institute of Nanotechnology and the World Innovation Foundation. He also holds an Honorary Doctor of Science degree from the University of Westminster.