Thought Leaders

Essays from urban innovators

Edited by Simon Willis

Contents

Preface

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This is a book about cities, largely written by cities. It is also a book about the future of the city and therefore a book about the future of the place where most of us live. The city leaders writing here are a diverse group and their experiences with connecting themselves and their citizens are very different – but a number of common themes emerge, which taken together and carried forward, suggest that we are on the brink of some very profound changes.

People construct the endlessly complex architectures of their cities over time – driven by their desire to be with each other, learn from each other, and grow economically, culturally and spiritually. To serve these desires, cities have created physical spaces and mechanisms; the street, the marketplace or the coffee shops. In our own age these have been supplemented by digital spaces. As the means for the instant exchange of digital information are built, a new dynamic emerges at the heart of what makes a city – information can flow towards people rather than people towards information.

As this dynamic begins to affect work so it has subtle but profound effects on the nature of the city. Firstly, the boundaries of the working day and of the workplace begin to blur. Cities are partly defined by days and offices. If the information people need flows more effectively to where people are, then there is less imperative to bring them all into the same place. Secondly, more collaborative ways of working and decision-making emerge and this changes the relationship of the city with itself and with its citizens.

In the following sections I look at three themes that emerge from the essays. The first is the changing nature of work and particularly the increasing importance of collaboration in the successful enterprise. This is a much wider trend that cities are inevitably effected by. The second is the growing realisation that for the city to change in the way enterprises have changed, they require the kind of information exchange environment that enterprises now take for granted. In the process they may have discovered the next pervasive social infrastructure to follow water, roads, power and telecoms. The third theme is political – a new model for the *polis* becomes possible when new ways of working are combined with a new pervasive social infrastructure. These cities are collaboratively reconstructing themselves around the needs of their citizens. What emerges is the connected republic.

The first common theme we see emerging in these essays is that changes in ways of working are starting to effect the city's fundamental strategic planning. The first

essay from Dubai by a true innovator and entrepreneur, Saeed al Muntafiq, Director General of Dubai Development and Investment Authority, shows how digitisation and networking develops the way people work. Dubai constantly reinvents itself around the concept of the trading hub. Demands for education and medicine across a huge area are converging on Dubai's new knowledge city – built on a fibre infrastructure.

In the essay from Barcelona by Joan Clos, visionary mayor of Barcelona, you see an example of an innovative, creative and competitive city that has seized the opportunity to change itself again and again over the past few decades. Mayor Clos has put education at the heart of his city's endless recreation of itself.

The essay from New York by Mayor Bloomberg shows how digitisation and networking change the nature of work by developing collaboration. The traditional model of government put public servants in a position of gatekeepers, controlling flows of information. The focus was to get access to the information – to control it, to trade it, to protect it. In New York (as elsewhere) networked information has changed the nature of gatekeeping.

One of the differences between networked information and telephonic, mailed or verbal information is that networked information takes the best route – traditional information goes from point to point, while networked information takes the best route it can find. One of the implications of this is that it becomes harder to control. This makes it both more resilient – and harder to gatekeep. With IP networking, fewer premiums are placed on, and less power is given to, the gatekeepers of information. This is potentially revolutionary.

In connected cities, power and influence is a function of how well you facilitate networks of information and action, not how much information you control. Collaboration and facilitation supplant hierarchy and formal structure as the dominant tests of effective organisation. It is not surprising to find cultures that already tend towards the collaborative are at the forefront of this revolution. Our fourth essay is a collective work from Anita Ferm, Education Director of the City of Stockholm, Per-Olof Gustafsson, Deputy Managing Director of Stockholm's Economic Development Office and Monica Bernestrom, Head of the Department TIME (Telecom, IT, Media and Entertainment|). Stockholm is a city whose long-standing enthusiasm for collaboration has given it an edge in the struggle to embrace new thinking.

Many cities are on the brink of taking a fundamentally new step in their thinking. That is to categorise, in their minds, communications infrastructure as on the same level as roads, railways, dams and airports. The cities highlighted in this book (and many others) know that they need to modernise their cities so that people can interact within them more effectively. If a city is sufficiently connected, then investors will arrive and find the right kind of employees. Competitive cities are increasingly regarding real broadband networks as belonging in the same political and investment categories as transport networks. Fibre infrastructure for a couple of million people is equivalent in cost to a couple of miles of highway. It has become a viable option for a city investing in its future. The question is, whether and when it will become an imperative.

All those reading this book will be acutely aware of the rapid growth of the amount and the speed of connectivity in the past ten years. This transformation is happening much faster than previous revolutions. If you go to the Linx server (www.linx.net) and look at internet activity over Europe's largest internet exchange point over recent years, you will see that the dot-com crash apparently didn't happen. Just about the only event that has a significant impact on the graph is Christmas. The apparent rollercoaster that we have been on since 2000 has been just a trivial variation around a remorseless upward rise in connectivity.

Each of the pervasive social infrastructures that our cities are built around, such as those for water and transport, have a slightly different set of characteristics and a slightly different set of effects on the nature of our cities. It is in the nature of many of these infrastructures that the market cannot provide them at the outset. We all are aware that water and transport are first developed as a social infrastructure, in the first instance created, paid for and owned by the public sector. What emerges from these city essays is the possibility that the next pervasive social infrastructure that society wants to advance to the next stage, is broadband fibre.

Although there are exceptions, it appears that the public sector may have a key role to play in this development. There are two fundamental reasons why a pervasive social infrastructure cannot generally be effectively provided by the market. Firstly, that the investment required in this case (in order to achieve critical mass in connectivity) is so huge that the market cannot move, because the services cannot be provided to the consumer by the private sector until the connectivity is available and the connectivity cannot be invested in until the demand for future services is understood.

Investing in real broadband infrastructure is expensive. The establishment of telecoms presents the most obviously comparable example. To build the fundamental social infrastructure for telecoms required public-sector intervention both at the beginning of that revolution and well into it. Then came a point of maturity where it became appropriate to allow the market much more freedom. In fact, you may require the market to drive innovation onwards and give the consumer more choice, but there is a build-out stage where you

require some kind of public investment and public intervention to make it work. In the case of real broadband the amount of investment involved is large.

The second set of reasons as to why the market cannot provide broadband structure is based on what services people require. Someone investing in infrastructure will have to get payback over such a long period of time that they will require exclusivity over the services that they are going to provide. This limits the field of access and services. The city decision-maker or public-sector decision-maker (who wants people to have access to a wide range of entertainment services, government services, communications services and so on) will find that their needs are not met. City decision-makers may not want to have access limited and pre-defined by a single infrastructure investor or service provider.

The essays in this book show how different environments create different models, but increasingly the city is stepping in as a fundamental stakeholder and investor. The city will invest in the passive infrastructure for connectivity and can borrow more cheaply than the private sector. The city can run the business case and will be able to sustain its borrowing from quite a small stream of returns by giving access to the infrastructure. The city knows that this passive infrastructure (and I'm thinking here about fibre) has about 15-20 years of life in terms of its usability, which takes it beyond the type of return on investment calculations that most shareholder-owned companies and organisations are able to contemplate.

So, the public sector steps in and funds the really fundamental passive longterm infrastructure. The essays show different models in different cities of what stands between the infrastructure and the end users. These allow people access to different service providers – whether it is telephony, video telephony, IP telephony, security applications around housing estates and into schools, and then education, healthcare provision, video on demand and entertainment and more. We still don't know what services will develop in this environment. It is clear that somebody needs to sit between the fundamental investment and the set of services that are going to be provided, and the city is emerging in many places as the vehicle to do that, on its own or through a public/private partnership or through some other joint mechanism.

Among our examples, the Milan story told by the far-sighted Silvio Scaglia, Chairman of e.Biscom, is of a pure private play. The availability of venture capital in the late 90s, the lack of pre-existing cable to prevent the new entrant from getting rapid take-up of services and the density of housing were a set of unique circumstances in Italy that allowed e-Biscom to take off in a really impressive way. Italian cities are only just beginning to look at the wider set of city-service applications and aggregated demands that they want to use this infrastructure for. The Fastweb experience has not been driven by the desire to put e-learning into schools or do initial primary care health consultations in people's living rooms. The driver for growth in Milan has come from the video on demand and video telephony and entertainment and private communication applications that people demanded.

That is one end of the spectrum and it has produced an interesting and successful business. The next step will be for those city governments (increasingly not just Milan but many other Italian cities as well) to look to the infrastructure to see how they can improve their own services as well as proving an attractive investment environment for the growth of small businesses.

Stokab is at the other end of the spectrum in that it is a pure public play. There was a very clear vision in Stockholm that the building of a knowledge economy and the attraction of inward investment and the provision of better public services would all be facilitated by a fibre-based communications infrastructure. When you read the essay by key Stockholm decision-makers (and visionaries) Anita Ferm, Per-Olof Gustafsson and Monica Bernestrom, you see that at the very heart of it is not only a business plan but a profound belief that this would be the right way to go. They couldn't calculate all the benefits to Stockholm at the time that the investment was commenced, but they can see the benefits now. For example, as people in Stockholm begin to telecommute, strain on the transport infrastructure is being reduced. This is a fascinating development and is more or less at the forefront of what is happening in the modern city. Stockholm already has a different approach to work and the workplace emerging. Now they are looking at wireless and turning Stockholm into a wireless hotspot. The whole Stockholm model represents a very Swedish belief in public provision of fundamental infrastructure.

Then we have a mixed model, often very complex, and affected by the local political environment as well as local legal and economic factors. One model is like a utility, which is majority-owned by the city but has a lot of private-sector money and investment. Wroclaw's story as told by the deputy mayor, Slawomir Najnigier, is a good example of that kind of approach, as they have actually used the heating utility (which has the holes in the ground) as a public/private vehicle to develop the passive infrastructure. Hamburg too, as shown by Senator Gunnar Uldall, offers a mixed model, where the private sector leads and the public sector encourages and invests. In Hamburg, the public sector will intervene as and when necessary, and will ensure that through the services provided Hamburg remains a growing and successful trading hub.

How significant is this trend? We are aware of at least 40 European cities that are currently either planning or building real (Ethernet) broadband infrastructures. The number increases weekly. It seems likely that something very significant is taking place here.

In this very complex and confusing environment, it may be useful to try to look at what is happening in more conceptual terms. This may allow us to develop a framework within which we can see what is common to these success stories. The republic in political history was an idea that broke with the concepts of monarchy, oligarchy and timocracy and established the idea of rule by the *'polis'*. It was in the small trading-hub cities of Greece in the 6th century BC that the democratic experiment truly began.

The prospect of a 'connected republic'

now presents us with the opportunity to make the idea of rule by the people more real than it has ever been, creating an environment in which people reconnect with each other politically and at the same time rediscover the connection they have lost with their rulers. And the natural geographical confines of the connected republic are, as in ancient Greece, those of the city-state rather than the nation-states which dominated the past century.

Every city is an autonomous competitor in a globalising economy. It is not enough that a national government is doing the right things to attract investment. The individual city needs to attract investors. The people in that city need to be attractive to employers. Workers in a successful city have to deliver value in an environment where what you knew ten years ago is irrelevant to what companies now need from their employees. As a successful city, once you start to understand modern educational needs you start to get this sense of lifelong education actually built into the heart of the economic strategy of city, the survival strategy of the city.

Meanwhile it is widely accepted that there is an emerging crisis in democracy because people do not feel engaged with their political decision-makers. They don't understand them, they don't know what motivates them and decisions appear to come from on high. There is a kind of disengagement. This is a disaster for politicians as it takes away their legitimacy just as it begins to undercut their ability to raise revenues. Unwillingness to pay tax leads directly to restrictions on their ability to provide services. This feeds back into their unpopularity with people, who feel that the schools are not good enough, healthcare is not good enough and the police can't protect them from danger on the streets of the city. These are the big city issues, and our politicians are caught in a situation where their people are disengaged and not willing to pay more money but are demanding higher levels of service.

At the same time, technology has created the possibility of more responsive services that are more flexible to the signals that consumers send. The new connectivity has made the private sector much more responsive to consumer demand, and that has made consumers much more demanding, which has in turn made them more disconnected from their unresponsive governments. That is not because the public service is stupid and the private sector is clever. The reason that the private sector grabbed hold of change is that for a private sector company, change is a life or death issue. For example, when British Airways has competition from easyJet and Ryanair it either responds or it goes out of business in the face of competitors with lower back-office costs, simplified fare structures and incredibly low transaction costs based on new forms of technology-enabled connectivity.

For government, with its quasi-monopoly, it has been harder to respond to this new trend, although governments are beginning to see that they face an emerging crisis of legitimacy and service. City governments have responsibility for looking after the poor and vulnerable and, because they are using public money, they must take fewer risks. So they find themselves unable to move as quickly as

the private sector, and up until now they could not subject social services or healthcare provision or the criminal justice system to the risks associated with innovation and new technology.

That may now be changing. Even if the city governments are boxed in, they are responsive political animals; they want to deliver good things to their communities. They need to find a solution. These essays document the emergence of that solution in the development of what we call the connected republic. Ideas that have been applied to business over the past ten years are being applied to the different public-sector environment in ways that overcome the obstacles which are holding this process back. (I'm indebted to my colleagues, Martin Stewart-Weeks and Mark Badger for much of this analysis – see their forthcoming book on the Connected Republic.)

Despite their differences, all cities have some fundamental things in common.

First of all, they must grapple with the issue of how to re-engage with people who are becoming disengaged. Governments have to become transparent: citizens must be able to see what government is doing. Communications technologies unlock the possibility of reorganising and presenting information in a way that is appealing to citizens.

Mayor Bloomberg's New York essay describes what appears to be a small, but is in fact a crucial step forward. The principle behind the 311 service is that citizens shouldn't have to work out for themselves how the city is organised. Cities have been opaque because there have been 25 or so different departments dealing with everything – if you want your garbage picked up it is this department, and if you want your water turned off it is another one, and if the people next door are noisy it is another. But as the New York essay makes clear, you shouldn't need someone with a doctorate in municipal politics standing next to you as you try to sort your way out of a problem. Now, the city's networked information system allows New Yorkers to pick up a phone, dial 311 and be put through to the right person to solve their problem. It is the city which thus has to rearrange itself around the needs of its citizens, and not vice-versa.

Several years ago, Barcelona rearranged its network around a portal that reflected the way people live their lives and the problems they have. This sounds very obvious, but it is very difficult for public servants to make that fundamental shift from 'this is the way we are arranged' to 'this is how your needs as a citizen are arranged'. Clearly public servants are not going to reorganise their departments around citizens' needs every week. People's needs are different: they are constantly changing; they overlap and contradict each other. However, once citizen and official are networked, they can collaborate. The official finds himself or herself working in a great virtual contact centre where inquiries can be routed to the appropriate destination. It's what the Government of Canada called 'No Wrong Door'. And once information is networked, citizens see it is transparent and become ready to engage with authority, which they now see as offering them a service. Indeed, it becomes more likely that citizens will use the opportunity to influence, shape and guide authority.

A key element of any strategy for the connected city is customer-centricity, or citizen-centricity. Hillingdon is a borough of London and it discovered that the investment required for customer-centricity would repay itself in an incredibly short amount of time. So one of the fundamental drivers for Hillingdon's connectivity was to reorganise its services around what citizens actually wanted and to be more responsive to requests coming in. It has discovered a double win. Firstly, citizens feel better served, and re-engaged; secondly, it becomes cheaper for the city to do its work. It is a similar story in Barcelona, where the CAT 365 project has set up a clearing house for citizen information. CAT 365 involves the private sector as well – a public/private partnership runs the clearing-house, which also offers services out to banks, and utilities and other private-sector players which need private sector information. What will perhaps emerge is a new funding model, as these people pay for the ability to become more responsive to citizens. If the government is effectively subsidising the service, so much the better.

Citizen-centricity can help make it possible for organisations to become orchestrators rather than doing everything themselves. They reach out to the place where the thing is best done. The city is no longer the great monolithic provider of services to all people and disappointer of people at all times. In contrast, the city is the facilitator for a set of groups, some of the independent, some of them semi-independent, who are able when networked together to provide a much more responsive service.

It's that kind of emerging role as orchestrator that you see in the essay from David Carter, Director of Manchester's Digital Development Agency. Connectivity in Manchester is not just about big business and knowledge workers. It is also about excluded communities becoming connected through the city as it orchestrates local community groups. These local voluntary groups and public-sector groups are trying to meet the needs of local communities, whether by giving them access to training, or giving them information about where they can get childcare so they can get back to work, or by helping them connect with other people in similar situations so that they can feel more part of a community and develop common, mutually supportive strategies. Manchester is an example of real people using connectivity so they can start to take control of their own development and their own fate. The city depends on its infrastructure to become an orchestrator – and in the Manchester case, wireless has played in increasing part of that infrastructure, even in the poorer eastern district of the city.

Mancunians are typically innovative, creative and entrepreneurial people. The city is trying to serve all of them and at the same time include that group of people who were left behind when the last industrial revolution left Manchester. So there is a very rich emerging portfolio of what the city can orchestrate. Dubai has also developed an orchestrator function, but one much more focused on the resources of its people and their ingenuity. Through the internet, it is orchestrating local talent, regional players and the private sector. Large companies are being attracted to Dubai to provide a

set of services for the region so the city can re-invent itself as a knowledge hub for the region – and Dubai has a typically radical conception of what its region is.

None of this is easy. The industry is awash with the dynamic of early hopes and expectations that shoot up too high and lead to disappointment when they are not fulfilled. Yet these essays engender the feeling that people have recently been too glum; new connectivity is actually happening. It turns out that it is harder to do than some people thought. It is not just a matter of whacking up a website and saying, 'come and visit our city'. Nor is it just a matter of putting a bunch of networks out to the classrooms and hoping that classrooms will be transformed by mere access to technology. It actually requires changes in processes and fundamental changes in the way people work. You can see in the Hillingdon case study how people had to stop doing certain jobs because functions disappeared. Hamburg too offers a great example of quite ruthless standardisation, driven by a finance department in Hamburg which would not give access to IT budgets to anybody who failed to adhere to the standards it had established. This is pretty dry stuff, but it is actually critical because it turns out that this is where money has been wasted, as everybody re-invents the wheel in the housing department, the refuse collection department, the benefits department and so on.

Addressing that back-office process, re-engineering, standardisation, the creation of shared service bureaux, will be the task of the next wave. The city can increase the productivity of its workforce, unlocking real value in services that citizens require. So successful has Hamburg become that the countryside around it has towns coming to the city and asking them to act as a bureau for them as well. It is the same in Hillingdon, which has started to work with larger groupings of local authorities in London.

The Hillingdon in-depth case study offers a road-map for the early part of the journey. Resources are limited, however strong the case is, and the options for what you might do are many. Any city manager will be standing with a small pot of money and a huge number of claims on it – and the question is, 'What do I do next week? How do I get started on this journey and what should I do first?' The reason the case study shows step-by-step prioritisation and budget allocation is that even in a tough investment environment it will allow a city to make changes that will not only pay back and allow it to expand ambitions, but will change the way that people work.

Hillingdon takes quite small processes and changes people's relationship to their work and the way they collaborate. With all the money and political will in the world you are not going to get anywhere unless the actual city workers buy into collaboration, start to behave differently and become more responsive.

The development of a business case to support the modernisation of Hillingdon council's housing service is a tangible outcome. Although not completely unexpected, the scale of the potential for deploying new working methods – affecting nearly 70% of the workforce – and the consequential impact on office

accommodation – almost a 50% reduction – was more significant than anticipated. The relevance and impact of these initial findings were enhanced by the subsequent quantitative ROI analysis. This work established a financial cost and saving of fully deploying modernised working in housing services. More people can work from home and stripping out 35% of office costs on a recurring basis from year four onwards means local councillors have choices to make regarding reallocating resources that were previously locked up in relatively fixed assets.

The Hillingdon business case generated, or rather confirmed, a piece of learning that has been stated before but is worth reiterating. The modernisation business case is not 'about' putting forms on the web, implementing CRM or having colleagues work from home. What the modernisation business case is "about" is achieving profound business transformation through carefully managed organisational change. There is nothing particularly radical in this statement other than that the words are now grounded on a detailed business case whose scope and scale constitute a complete transformation for Hillingdon's housing service. What is more, the business case process is now a useful diagnostic tool.

What we see in these essays is perhaps the emergence of a political and economic phenomenon – the city as the new connected republic of the 21st century. Standing on the bedrock of real broadband as a new social infrastructure, these innovators and visionaries are redefining their role in the globalising information economy. As orchestrators of networked information and information-based services, they can redefine what they offer around the actual needs of their citizens.

They are driven by democratic demands for re-engagement and for better and more responsive and accessible city services. They are also driven by competitive forces.

As it looks outside its nation-state boundaries to define what it is going to be in the future and how it is going to be successful in this environment, the successful city learns not just how to work differently within its departments and agencies but how to collaborate with its own citizens on the project and make them part of the success of their own city – thus giving the city back to them.

Dubai

Saeed Al Muntafiq, Director General, Dubai Development and Investment Authority

Dubai has an economic blueprint for the future, first conceived in 1998 by the Crown Prince with the simple objective of increasing per capita GDP. Unlike some of our neighbours, we have little in the way of naturally occurring mineral resources, so we needed a service- or technology-based approach.

The strategy we adopted was based on the model usually referred to as 'cluster development'[1] and is designed to create specific engines to drive economic growth. The objective was the creation of a 'technology cluster'.

Six years later, Dubai has become the hub of – and therefore the gateway to – an untapped market that spans the Middle East, North and South Africa, the Indian subcontinent and the CIS. This market consists of 31 countries, 53 languages, 1.8 billion people and a collective GDP of $1.1 trillion.

Our vision is now increasingly focused on one aim: to make Dubai a global hub of the world knowledge economy by 2010.

Why did we start with technology?

History – and there was no more pressing historical example at the time than Netscape: a small company that IPOd at about $18 dollars and closed on the same day at $75. Examples like this were still very much in everyone's mind in 1999, when His Highness launched Dubai Internet City (DIC).

We soon realised that technology alone was not enough. We also needed content, convergence and – of course – talent. So, after the launch of DIC, Dubai Media City (DMC) arrived in 2001. In late 2003 we moved ahead with Dubai Knowledge Village, an enclave within DIC designed to provide a broad range of education and training faculties.

We had to learn tough lessons throughout this process, and especially when we developed our second and third clusters, for the financial and health sectors respectively. Each time, we had to go back to the drawing board. Every project went through major revisions with regard to the parties involved and the relationships, as well as the basic model.

[1] Professor Porter of the Harvard Business School's Institute for Strategy and Competitiveness launched the Cluster Mapping Project to define clusters statistically and create objective, detailed profiles of regional economies.
Cluster mapping involves the analysis – at several geographic/economic/demographic levels – of regional economic units. This data is used to identify those areas that, by virtue of their performance, location and interdependencies between different industries, can be termed 'clusters'. Clusters can be evaluated in terms of their contribution to employment and earnings, economic growth, generation of new businesses, and development of IP.

Dubai at the centre

Since Media City the model has changed, and with Dubai Health Care City (DHCC – see panel), we raised finance exclusively from the regional private sector. This came about from a change in our appreciation of our position geographically and economically – we had to revise what we thought of as being our 'region'.

Investment in any given region flows to the 'hub': for example, the USA has New York, Europe has London, Asia has Hong Kong and Singapore. But if you look at the wider geographical context of Dubai, you soon see that we're in a 'region' that used not to have a hub at all – even, and perhaps especially, taking Africa into account, although it has a vast economy.

It was this realisation that transformed our ambitions. We stepped in to fill the gap. We have since been very successful in positioning ourselves as the hub of the extended region outlined above. With a collective GDP of $1.1 trillion, it's no surprise that we can rely increasingly on 'regional' financing!

This shift has changed the way we work and especially the way we plan, legislate, foster talent and create communications infrastructures.

Change of plans

Firstly, it's forced us to focus on sound business planning, working through everything from (in the case of Dubai Media City) how technology and media companies can work together, to how real-estate management can increase return on investment.

This planning process goes through several stages. First, the business opportunity analysis, from conception through idea mapping, process specification and so on. We bring in experts to look at each sector, weighing up the value propositions.

Once we've mapped the sector within the industry and within the cluster, we choose specific business opportunities and create a top-level business plan for each one. We run due diligence on the plan, then profile the top 150 or so key investors in the region. We establish relationships with them, so that we understand their investment profiles and can match our offerings to their portfolios.

This is hard, carefully targeted work. For example, when we launched Health Care City, we knew exactly who to go to for investment in our teaching hospital, our diabetes research centre (diabetes is the number-one killer in this region), the medical centre and so on.

The rule of law

Secondly, it's forced us to introduce new statutory frameworks – especially where finance and health are concerned. There are numerous issues that can be overlooked – the role of intellectual property law in healthcare, for example, where companies are investing heavily in IP research and development.

The lessons we've learned here are principally that you can't do it all at once. You have to focus on one sector and map it out carefully. Every new regulation you introduce is going to impact on the country and the region as a whole. When you're operating subsidies at the level required for these sorts of projects, statutory influence is mandatory to avoid destabilising niche economic sectors: you're not simply managing projects at this scale; you're also macro-managing the economy as a whole. The critical success factor here is leadership – you have to stay on top of everything – and you need to be able to win vital support and commitment to keep going.

The human factor

Next, we've had to deal with human factors, such as how the people at the top should be incentivised to boost performance. This is an important example, because each cluster is totally independent, responsible for its own success and managed, in effect, like a company.

At a higher level, there's a council of ministers or executive council, which is effectively the corporate holding company with all the cities as subsidiaries. Each subsidiary has its own president and operates as a separate business unit. So just as GE, for example, has its engine's division, its plastics and chemicals, so Dubai has its Media City, Financial City and so on.

But you also need to be aware of the human element at the bottom of the pile. Where is the skills pool that is driving the machine? Personally, this is something I think about every day: from where are we going to get the talent? Right now, if you sat down and worked it out, we'd have about six projects for every individual! People are the issue, which is why we spend a lot of time in finding, grooming, mentoring and then pushing new young nationals.

Our educational strategy is an identical proposition to Boston. It is not cluster-driven – any cluster structure emerges organically from seed projects. Boston has Harvard; it also has MIT, and that's what we're aiming for here. We're expanding our facilities for those entering high school and, at the other end of the scale, for postgraduates. We're not dealing with the 18-year-old age range, where there are very significant costs involved. We want to lay the foundations with a good general education, and then we'll provide the specialist finishing courses to take people into work.

Making connections

Today, each city independently determines its technology and connectivity requirements but, going forward, we envisage that all of these cities will be connected.

Their needs will be different, of course. You only have to think of something like telemedicine to realise that the Health City, for example, will require higher communications specifications than other sectors. It's not just infrastructure either: applications and protocols are needed to create a comprehensive healthcare system in Dubai, answering the requirements of the teaching hospital and ultimately enabling the linking of all healthcare information systems – clinics, hospitals, pharmacies etc – to the central Health City 'hub'.

Then there are the cultural challenges implicit in extending communications links. Schools don't want to lose control over communication between students of different gender, for example. In all these cases, the first step is to research and identify what the customers want and need. Broadband may be driving infrastructure development in many modern cities, but that doesn't mean you can take your eye off the basic question: what do people actually want to use it for?

It's also important to define your own role in this process. Our approach is to get the experts to define the needs and the specifications and to carry out the work; we're only the project managers. After all, we're not doctors (for example) and shouldn't pretend that we are.

From vision to reality

These strategies have borne fruit: our projects have been extremely successful.

Today, DIC is home to over 500 companies including Microsoft, Hewlett Packard, Oracle, IBM, Cisco, Compaq and Ariba. We allow 100% foreign ownership and sales. Furthermore, company earnings and private income are exempt from any form of taxation. DIC is already cash-positive, although not profitable yet, but this is largely an issue of how we treat depreciation – there are obviously vast infrastructure costs.

Dubai Media City is already home to over 550 media companies including key players such as CNN, Reuters, Sony Broadcast & Professional, McGraw Hill Publishing, Bertelsmann and MBC. Regional companies and new start-ups supplement the mix and there's a growing talent pool offering creative skills and services to the larger companies. Media City is cash-positive and already looking at launching a second project: Film City – a Hollywood of our own.

Dubai Knowledge Village launched in the fourth quarter of 2003. It's become home to a broad range of education and training operations, ranging from major international universities, such as the US Purdue University with large, on-campus facilities, to independent, freelance trainers operating out of fully serviced business centres.

Dubai Health Care City will take longer to reach profit. This is because the health sector has demanded a different approach. DHCC operates in both the academic research and healthcare service arenas. We feel that we have to subsidise the former while allowing the private sector to develop the latter – and therefore to take the profit. This isn't a problem for us: any economy that aspires to global status needs to invest a

percentage of GDP in research.

The business model for Dubai International Financial City works predominately through real estate. We also offer access to regional markets – Saudi, Bahrain, Kuwait etc. One of our value propositions is our time zone. We have a six-and-a-half-hour slot between close of business in New York and the start of trading in Asia – a very attractive proposition for finance houses and especially those involved in foreign exchange.

In the past, the main focus in the real estate market has been on taking profit. But there's increasing focus on taking longterm revenue from real estate, via tourism, financial services, manufacturing and so on. If you look at a ten-year business plan for any of these cities, the first four are going to be focused on real estate revenue streams, but strategic revenue streams kick in during the second half.

Revenues generated by a city from its real estate will not go to government: they help to pay back the banks and boost investment in the value-added industries that the city needs to take it to the next level. Dubai Internet City, for example, can pay back the bank and put money into research in technology and telecoms, redefining itself as an alternative service provider.

Meanwhile, it's onwards and upwards. In October 2003, Dubai announced the region's biggest tourism project yet – Dubailand – with an estimated investment of more than Dh18 billion. The government intends to spend Dh2.6 billion in the first phase to develop the project's infrastructure. The sky's the limit.

Killer instincts

What have I learned during this period of enormous growth and tremendously hard work? The most important lesson, I think, has been to trust your instinct.

Articulate the vision, address the economies of scale, clusters, competitiveness of the region – then go with what you know. Don't keep asking consultants: go for entrepreneurs, for people who get the things done. Plan, cost, manage – and then don't let anything get in the way of executing the plan – ruthlessly. You want to think like a team of mercenaries: go in, assassinate, and get out!

Dubai Internet City

A strategic base for companies targeting emerging markets in a vast region extending from the Middle East to the Indian subcontinent, and Africa to the CIS countries, covering 1.8 billion people with GDP $1.1 trillion.

Within a short span of time, a dynamic international community of ICT companies has established itself in Dubai Internet City. These companies represent a community of over 10,000 knowledge workers. The cluster of ICT companies in Dubai Internet City comprise software development, business services, web based and e-commerce, consultancy, education and training, sales and marketing, and back-office operations. DIC provides a scalable state-of-the-art technology platform that allows companies looking to provide cost-effective Business Process Outsourcing (BPO) services, such as call centre operations, and easy access to these services.

Dubai Media City

The Media City provides an advanced infrastructure and supportive environment for media-related businesses to operate globally out of Dubai. The Media City brings to the media community an advanced infrastructure based upon a global interconnected network, linked by satellites, computers, the internet, television, radio, journalism, cinema and film production.

The Media City is already home to over 600 media companies, including global giants such as CNN, Reuters, Sony Broadcast & Professional, McGraw Hill Publishing, Bertelsmann, and MBC, along with regional companies and new start-ups. The interdependent media community also boasts a growing talent pool that offers a range of creative skills. Currently, over 250 freelance media professionals are based in the City. As a free-zone entity, Dubai Media City allows companies 100% company ownership along with commercial benefits that include a 50-year tax exemption from personal, income and corporate taxes.

Dubai Knowledge Village

Knowledge Village aims to create a rich ecosystem for a variety of organisations and individuals to create and disseminate knowledge. Knowledge Village provides a world-class learning infrastructure and environment for the development of scholarship, education, training, ideas, creativity, innovation and entrepreneurial expertise.

Knowledge Village will be a catalyst for the development of a strong and sustainable future, based on a wealth of knowledge – human resources rather than natural resources. Knowledge Village creates access to this new culture of learning in three distinct ways: firstly, by facilitating access to high-quality learning opportunities – for all ages, career stages and levels; secondly, through the wide diversity of areas of studies available; thirdly, through the strong, close and diverse background and interaction of learners at Knowledge Village – a global learning habitat where individual contact and

connectivity into global networks via technology are richly combined into a unique experience.

Dubailand

The government intends to spend Dh2.6 billion in the first phase to develop the project's infrastructure, and with an estimated investment of more than Dh18 billion.

Dubai's strategic plan is to add more depth to the tourism sector and contribute towards transforming the city into one of the top tourist destinations internationally. The project will be built along Emirates Road, next to Nad Al Sheba, Al Qouz and Al Barsha, which will give it the advantage of easy access from Abu Dhabi, Dubai, Sharjah and the Northern Emirates.

Dubailand will be completed by late 2006 and expects to attract 15 million tourists to Dubai by 2010.

Dubai Health Care City

The Dubai Health Care City (DHCC) initiative is to provide the highest quality of healthcare services to medical care and wellness seekers from the region (comprised of the GCC, Indian Subcontinent, Northern Gulf, Central Asia, the Levant, North and East Africa), by creating a world-class cluster of healthcare professionals and service providers at the heart of Dubai.

DHCC aspires to provide state-of-the-art medical care services in selected disciplines that are relevant to the health problems facing the patients in the region. The 'core' of the healthcare cluster economy is a university medical complex; consisting of a university specialty hospital, a post-graduate medical school and nursing school, and a life science research centre. The combination of these three components will enable Dubai to leapfrog to the forefront of regional medical practices, establishing a position of regional leadership through leading edge education and research, and thereby becoming a centre of excellence in global healthcare.

Dubai International Finance Centre

Situated as a bridge between the financial centres of Europe and Asia, Dubai International Finance Centre (DIFC) is a platform for accessing the trillion-dollar regional market. Dubai is building its international financial centre on four foundations:

The first is regulation and transparency, because a global finance centre of the 21st century has to be open and well regulated so that it is trusted by other jurisdictions and companies who locate within it, knowing their reputation is safe. Second is the creation of new financial capital markets, which will help bring prosperity to the entire region. Financial capital moves to where it is safest and best rewarded, so DIFC's combination of total transparency and zero tax enable Dubai to benefit from the global flight to quality. Third is, it's a great environment for people, and fourth is its stable political environment.

Barcelona

Joan Clos, Mayor of Barcelona

Barcelona, one of Europe's major cities, is the economic, cultural and administrative capital of Catalonia, an autonomous region in the northeast of Spain on the Mediterranean coast. It is sixth in Europe in population density and fifth in industrial concentration. The metropolitan area of Barcelona traditionally had a high proportion of industrial activity as part of its total economic activity. Today, the city and its surrounding area are a significant economic centre in terms of new technologies and advanced services within the framework of the information society.

Our aim is to transform Barcelona into a great city, where the knowledge economy can develop out of the dense urban nucleus that is our city. The new EU policies that will increase the funds available for research and knowledge offer us a great opportunity to move forward.

We are known as a city that produces and exports medium-high-tech goods. ICT manufacturers have increased exports almost fourfold since 1993 and Barcelona has become the principal export base in Spain.

More important is the capacity of the 'New Technologies' to bring government closer to our citizens and to create transparency in the city management. We have experience in citizen networks. The neighbourhood portals have created debate, because they are not only news portals but also interchange platforms within the community. For example, when an urban city planning reform is launched, the community can air their views – the dialogue itself is a tool for the planners in the decision-making process. These websites work in the majority of the Barcelona districts and have increasing citizen participation.

Barcelona City Council is moving towards e-government, using the internet as a tool to achieve the following key strategic objectives:

- Rethinking and improving internal management
- Enhancing and deepening commitments to citizens
- Developing a participatory strategy for the city

At present, the data network of Barcelona City Council is made up of four clearly distinct areas:

- Corporate network
- Access network
- Extranet
- Internet

The official website of Barcelona City Council provides access to a broad range

of information and services. Barcelona is a European city with a high number of transactional services. The site displays its contents in three languages – Catalan, Spanish and English – and provides information for residents, companies and tourists. The site and its services have won several awards: third prize in Design in the European E-City Awards (2002), first prize of the Auna Foundation (2002), the Stockholm Challenge Award (2002), and it was also a finalist in the World Technology Awards (2002).

Barcelona City Council has broad experience participating in European projects: Dalí, Gala, Exe, NetForNets, Permis, Gaudi, Eurociti, Elda and others. It also belongs to large networks of cities such as TeleCities, and belongs to big city networks (currently holding the presidency), including EuroCities, Metropolis, Major Cities of Europe and ELANET.

The broadband city

In order to explain the development of broadband in Barcelona, you need to understand the setting in which it has taken shape. This essay first describes the demographic context, and then the socio-economic context.

According to the latest data from studies by Barcelona City Council (Ómnibus, June 2003), 46.5 per cent of the city's homes are connected to the internet. That means that nearly one in every two Barcelona homes is connected to the net. Of this group, 37.8 per cent has a broadband connection at home, and the last quarter has seen swift growth in DSL connections, a technology that is replacing the traditional telephone line, along with slow but steady growth in connections by cable.

Compared to the Scandinavian countries or Southeast Asia, these figures are low, but one must bear in mind our demographic context.

In Spain as a whole, 27.4% of the population is connected to the internet, while the figure is 32% in Catalonia, according to the latest EGM survey performed by AIMC. However, it must be remembered that this survey includes all internet users, not only those with home connections. That is, there is a differential of at least 20 points between Barcelona's geographic surroundings and Barcelona itself. The same trends can be seen in broadband connections.

Furthermore, certain socio-economic factors have hindered the growth of broadband in the city. Elsewhere in the world, broadband developed in the

framework of a pre-existing cable network, which had been created, extended, operated and made profitable in the 80s and 90s for television. However, in Spain, digital television entered people's homes by satellite rather than by cable, and satellite technology has not yet made an effective leap to bi-directional data transmission – a necessary condition for broadband internet.

Barcelona City Council has faced up to these challenges with the longterm vision of providing better services to citizens, as broadband is not an end in itself but rather a tool for improving the productivity, and therefore the competitiveness, of the city. And most of all for achieving internal changes in the council itself. As we have said, the aim is always to provide citizens with better services.

For instance, for some time now the City Council has been broadcasting live online, via streaming video, all municipal plenary sessions. Users can also see all past plenary sessions on demand through an index of plenums by subject. Here, the limited spread of broadband in the city has prevented provision of more advanced services to citizens.

- The Broad Services City: the challenge of transforming administration through broadband
- Multi-Channel Integrated Service System (MISS): e-government beyond an Internet portal
- The creation of a 155 Mbit/s high-speed internal network for the City Council has enabled the development and implementation of the Multi-Channel Integrated Service System (MISS).

The system, which serves more than 18 million requests a year, centrally manages most of the information and services going both from the City Council to citizens and from citizens to the City Council.

MISS is based on internet technology, and it allows for sharing the same information through three channels: the website www.bcn.es, the telephone information service and the public information offices.

In order to develop the MISS, intranet and integrated internal services, we have had to create a powerful internal broadband network to support the information flows required in an information architecture of this type.

Data network

- Corporate network
- Access network
- Extranet
- Internet

The **Corporate** network is a private network that links together the 123 centres of the City Council.

The **Access** network ensures the connectivity of centres with lower broadband requirements to City Council applications by means of a channel between the centre and the CPD/IMI. It is defined on the basis of public networks and configured like a VPN. There are four main access technologies: frame-relay, ADSL, XDSI-XTC and GPRS.

Public administrations must take advantage of the development of wireless technologies to involve citizens by giving them a greater role in management processes

Most of the equipment supporting the network is Cisco. All the networks use a combination of Radius-LDAP as the authentication system of entering users.

For its part, the **Extranet** provides a link between external companies and the City Council. It is based on point-to-point links that originate in the City Council and have an endpoint in each of the companies involved. The technology of the Extranet is Gigabit Ethernet and is supported by operator links. The system operates with CISCO 2948 and 3512 units.

The corporate **Internet** provides an internet connection to the internal network as well as to the public internet services available.

The City Council has its own public IP address, as it is constituted as an LIR.

The Multi-Channel Integrated Service System helps improve people's quality of life by offering those without internet access the chance to benefit from the same information and the same services provided by the City Council on the internet.

Moreover, the MISS structure is the technological framework that allows us to enlarge our internal network and make it more complex, thereby being capable of including citizens, other public institutions, private companies and other actors in the city.

Towards the universal availability of public services and information

Public administrations must take advantage of the development of wireless technologies to involve citizens by giving them a greater role in management processes, while reducing costs in service management. Above all, the most important goal is to improve both provision of services to the public and citizens' quality of life.

One of the most important challenges of m-government in meeting this aim is to effectively combine secure methods of identification and easy-to-use applications so as to ensure citizen-accessibility.

The following are some good examples of the possibilities of m-government: automatic question-and-answer services (the voice portal, currently under development in Barcelona, based on voice-recognition and web-semantic technologies); reminders of appointments with the administration; sending of public transport timetables depending on location; use of multimedia messages (MMS) as instruments of public participation; payment of public parking tolls; tickets for public transport; information about public employment vacancies; services in museums and other tourist attractions; and an endless list limited only by our imagination.

Barcelona is already seeking to design an effective model of global m-government that would meet all these challenges and place all these actors at the service of the city.

This is because m-government is not only a phase of e-government, but a reinvention of public services from the standpoint, more than ever, of the citizen.

The broadminded city: towards e-governance

According to the United Nations, the concept of governance must be understood as a process. In this process, institutions, organisations and citizens organise to make decisions through effective mechanisms of transparency.

Thus, and continuing with the definition of the United Nations, e-governance is the use by the public sector of the most innovative information and communication technologies, such as internet, to provide citizens with better services, more reliable information and more knowledge in order to facilitate access to governing processes and promote citizen participation.' It is, indeed, an unequivocal commitment by decision-makers to strengthen the collaboration between private citizens and the public sector.

The introduction and acceptance of e-governance is the path towards ensuring that each citizen has the same right to be a part of decision-making processes that affect them directly or indirectly, and to influence the process so that it can improve his or her conditions and quality of life.

In short, e-governance helps citizens take a more proactive role in deciding what kind of services they want and through what type of structure they wish to receive them.

Two emblematic projects

- 22@ Bcn
- The Universal Forum of Cultures 2004

Currently, two projects are running in Barcelona that are examples of the commitment of the city to the socio-economic, urban and international position of the city in the future. At the same time, these two projects show our belief in technology as an indispensable element of building a just and equal society.

22@ Bcn

Barcelona has set itself a new goal: to fully integrate itself into the new technological revolution and face the challenge of the information economy. The Poblenou, the leading nucleus of industrialisation in Spain in the 19th century, is striving to be the main technological platform for Barcelona and Catalonia.

Real, living Barcelona, as a labour market that includes nearly two million jobs and a population of 4.3 million, is the sixth leading metropolitan region of the EU demographically, exporting 22.5% of Spain's industrial and non-industrial goods.

In short, e-governance helps citizens take a more proactive role in deciding what kind of services they want and through what kind of structure they wish to receive them.

The network of metropolitan cities, with Barcelona in the lead, is quickly shifting its productive specialisation: nearly two-thirds of its exports today are goods with high or middle-high technological intensity. Its future competitiveness critically depends on its capacity to integrate new information and communication technologies and to strengthen knowledge-dense tertiary or industrial activities. The city of Barcelona acts as both the main centre of services to a multi-nucleus metropolitan area and as capital of Catalonia. To preserve its leading role economically and professionally, it must deepen its specialisation in knowledge-dense activities, as these are also employment-dense activities.

Barcelona's traditional economic and urban planning strategies were based on manufacturing as the dominant economic activity, and on the premise that zoning in the central municipality of the metropolis was needed to preserve manufacturing. The transition from an industrial manufacturing model to one based on the information society has entailed in-depth revisions of urban regulations of the old industrial areas of the Poblenou district (zone 22a of the General Metropolitan Plan of 1976).

The updating of the regulatory framework has taken the form of the Modification of the General Metropolitan Plan for the renewal of the industrial areas of Poblenou (MPGM), approved 27 July 2000, which has generated conditions favourable to stimulating and attracting advanced economic activities. These activities demand a central location, good infrastructures and a quality urban environment.

The Modification of the PGM changes the characteristics of the urban planning regulations of the industrial area, replacing the old urban zoning qualification 22a with the modern 22@:

- It regulates the uses and density of construction
- It provides incentives for conversion to attract knowledge-dense activities
- It creates a new equipment qualification called 7@, which will clear the way for building information infrastructures
- It defines new standards of urban development and – in the Special Plan for Infrastructures – provides for the complete urban development of the area
- It defines the obligations of landowners and determines the forms and mechanisms for derivative planning – Special Plans – in order to enable conversion

Throughout its execution over 15 to 20 years, the project will allow for the building of 3,200,000 m^2 of new and used buildings for productive uses, between 3,500 and 4,000 new housing units under a regime of official

subsidisation, the freeing of some 220,000 m^2 of land for new facilities and garden areas, and for an increase of 100,000 to 130,000 jobs in the area.

Forum 2004

Barcelona is starting the innovative Universal Forum of Cultures in 2004. This is a new type of event with an international dimension, where the city aims to provide a space in which to reflect upon and experiment with the most important cultural and social conflicts faced by the world in the 21st century. It will be held from 9 May to 26 September, and will be structured around three themes: cultural diversity, sustainable development and the conditions of peace.

Knowledge of other cultures is essential to engaging in constructive dialogue between peoples. Such knowledge entails reflection upon the commonalities of all human beings as well as their differences. To the extent that we are able to conceive difference as enrichment and a common heritage, not an obstacle, we will be able to reduce tensions and turn them into a positive force.

Today, it is more urgent than ever to find forms of growth that respect natural resources and conserve them for the good of all, particularly for future generations. It is important to understand sustainability as a concept that goes beyond ecology, and also as a factor that enables creating conditions for coexistence, dialogue between peoples and peace.

The creation of a culture of peace must be based, most of all, on respect for other cultures, social and political justice, safeguarding of human rights and forms of living in harmony with the environment. These elements, among others, are crucial for forging conditions that are more favourable to progress and human development. Barcelona is committed to a future where a stable peace means much more than absence of conflict.

New York

By Michael R Bloomberg, Mayor of the City of New York

Citizen Service – the concept of government agencies providing world-class service to its citizens – is a major goal for my administration. Over the past 20 months, we have focused our attention not only on balancing the budget, improving our schools and keeping crime down, but also on improving service delivery wherever possible. Technology is a driving force in providing better Citizen Service to all New Yorkers. Instead of paper-based systems that inherently make it difficult, costly and time-consuming to share information, we have made an aggressive push to drive more applications and functions to the internet (or other digital mediums) where the information can be quickly shared and distributed to the parties that need it. Over this period, there is no question that New York City has become more efficient, innovative, technologically adept, and citizen service-friendly.

During the current fiscal crisis, we cannot afford to operate at anything less than full efficiency. In business, we are judged by performance, not by how much we spend. Government should also be judged by the same standard. Cutting $2.3 billion from the budget does not mean we cannot provide good or improved services to the public, and that is exactly what we have done this year. From using technology to improving citizen service, to cutting into the city bureaucracy of cars and permits, we are streamlining government and doing better with less.

New York City is at the forefront of technological innovation in municipal government. From our 311 Citizen Service Hotline, to digitising 911 emergency response calls, New York City continues to deploy technology to every agency to help them fulfil their goals.

Below is a sampling of the different programmes New York City has underway and how we are using them.

311 Citizen Service Hotline

On March 9 2003, the 311 Citizen Service Hotline went online. Before 311, every time the city announced a new programme or service, there was always a new number attached to that programme or service. By the time I took office, there were 11 pages of telephone numbers in the phone book listing different ways New Yorkers could contact their government. Whenever New Yorkers had to contact their government, they had to be a near-expert in municipal government to find the right office (for instance, the Fire Department doesn't repair broken fire hydrants, the Department of Environmental Protection does). 311 changes all of that. Now New Yorkers only need to remember two numbers when contacting their city government – 911 for

emergencies and 311 for everything else. If you want to report a broken streetlight, find out if you qualify for food stamps, or even report graffiti, all you need to do is dial 311 (or 212-NEW YORK if you are outside New York).

In five months we have already received two million calls, and call volume is picking up every day (nearly 20,000 calls come into 311 each day). Clearly, providing easy access to city services is a big hit with New Yorkers.

Using 311 technology, for the first time the cty can prevent problems before they arise. How can we do this? For instance, we can map all double-parked car complaints, noise complaints, and all establishments with liquor licences from the State of New York. We can use this data to ascertain if some of these double-parked car complaints and noise complaints are coming from a club or bar, and try to prevent the problem from arising again.

311 represents a major achievement of my administration. Not only did we consolidate 12 call centres (eventually, all 40+ city call centres will be rolled into 311), but we now have sophisticated tools to measure our performance in responding to requests. 311 affects every city agency in New York and has helped all of them conduct their business more efficiently and with better citizen service.

Digitising x-rays

In November 2002, the Health Hospitals Corporation (HHC) completed the installation of Picture Archiving Communications Systems (PACS) at all HHC facilities. Each year, PACS electronically stores digital x-ray images for one million radiology cases, replacing the use of outmoded and cumbersome x-ray film. Prior to the system-wide installation of PACS, it took 24 to 48 hours to access almost every radiology image. With PACS, every image is available within four minutes. Using PACS, a patient's medical team can review the digital x-rays from virtually any location over secure internet gateways 24 hours a day, seven days a week, consult on treatment options faster and more efficiently, and maximise the productivity of scarce radiology and medical expertise. Digital storage further improves patient care by allowing for easy comparison of images over time, and by providing detailed and accurate magnifications of images.

The programme saves doctors' time and hospitals' money – $1 million at Elmhurst alone. In fact, instead of having a radiologist at all times at both Elmhurst Hospital Center and the Queens Hospital

Center, just one is needed for both locations at night. The PACS system maximises the productivity of scarce radiology and medical expertise. While fewer than ten per cent of hospitals nationwide have digitised x-rays, the PACS system has been installed at every HHC facility in the city. This has saved $4 million and will save $11 million annually.

Computerising physician orders

In 2002, HHC completed system-wide installation of Computerized Physician Order Entry (CPOE) throughout its 11 acute care hospitals and at over 100 community-based clinics. Annually, HHC clinicians now use CPOE to order approximately 13 million pharmacy prescriptions, 96 million lab tests, and one million radiology tests. National safety experts widely agree that using a CPOE system reduces medication errors by as much as 50 to 70%, and HHC's medication error rate with this system is less than .000001% – or less than one in a million. CPOE also provides clinicians with alerts and warnings, and detailed medication history. CPOE further improves patient care by giving clinicians faster centralised access to lab results, allowing doctors to treat patients promptly. For routine lab tests, results are available in under two hours, urgent tests are available in under 30 minutes, and emergency screening results are back in less than ten minutes. HHC remains far ahead of the national trend in this effort, with 100% of all HHC physicians using the CPOE system for all their ordering. Only five per cent of all hospitals nationwide – public and private – have achieved this goal. Ultimately, these innovations not only enhance patient care but also improve the bottom line – patients are treated more quickly, at a lower cost, and insurers are providing higher reimbursement rates to healthcare facilities with CPOE, an increase of as much as four per cent in 2002.

Putting all medical records online

The successful implementation of the Computerized Physician Order Entry system is hastening the completion of HHC's overall goal of storing all patient records in its Electronic Medical Record (EMR). Currently, the electronic medical record of every one of HHC's 1.3 million patients includes medication history, lab results and radiology tests. The EMR also links to the Micromedex patient information system, which clinicians use to provide patients with a printout – in English or Spanish – of complete information about their prescribed medications, specific medical conditions such as asthma, and other critical medical information.

Improved adoption access

In February 2002, the Administration for Children's Services (ACS) launched the 'Meet Our Kids' website. The website allows interested families to view photos and stories of children who are waiting for a permanent, loving adoptive family. The benefits of having adoption information online include immediate availability of adoption information, 24 hours a day, seven days a week, significant savings in staff time, and the ability to reach adoptive homes outside of New York City, which is a great way for ACS to find homes for children who might be hard to

New Yorkers can now pay parking tickets, property taxes, water bills and other fees in one quick visit over the internet

place. Since 'Meet Our Kids' was launched, enquiries to the ACS Parent Recruitment Hotline have increased by 65%, with internet inquires accounting for about 50% of the average 600 total calls to the hotline each month. 'Meet Our Kids' is also one of the most visited areas of the ACS website, consistently ranking among the top ten pages viewed, with about 2,200 hits per month. Savings for the city include a reduced number of mailings, reduction in staff time on the phone and digital photography cost savings of $35,000 a year.

Benefit QuickCheck for seniors

In May 2002, the Department for the Aging released QuickCheck, an easy-to-use, online tool that helps New York City's senior citizens check their eligibility for a variety of benefits and programmes. The QuickCheck user completes an online application, and can then choose from 16 assistance programmes administered by various branches of federal, state and local government. QuickCheck informs the applicant which benefits they are most likely to receive and then provides a link to the administering agency's eligibility form. Following the introduction of QuickCheck, the number of monthly visits to Aging's website rose by nearly 50% to over 23,000 hits.

State-of-the-art revenue collection

Thanks to NYCServ, New Yorkers can now pay parking tickets, property taxes, water bills and other fees in one quick visit over the internet at www.nyc.gov/finance. Through NYCServ, which went online in February 2002, New Yorkers can also contest tickets online by conducting a hearing with an Administrative Law Judge via email. Individuals can also track down towed cars and pay certain business taxes. Since January, NYCServ has serviced 630,000 transactions, collecting a total of $1.4 billion.

Purchasing permits online

Last year Parks established an online credit card payment system for special events and tennis permits. The Parks website also allows users to obtain special events permits/applications, athletic permits and applications, forestry permits, lifeguard applications, guidelines for donating works of art to Parks, volunteer sign-up forms, and more.

Mayor's Office of Film, Theatre and Broadcasting

In 2002, the Mayor's Office of Film, Theatre and Broadcasting loaded all permit applications online at www.nyc.gov/film. Prior to this, the agency had been processing permits by hand and with typewriters. In addition to streamlining the permit process, the agency has installed a new phone system whereby an individual answers the phone rather than an automated voice mailbox system.

Mayor's management report – streamlined and online

In September 2002, the Mayor's Office of Operations released the newly streamlined Mayor's Management Report (MMR – a report of different statistics compiled by the different city agencies). The new MMR has been redesigned as a 'Public Report Card' – to help citizens, civic groups and public officials understand how government is performing. The City introduced a companion website – www.nyc.gov/myneighborhoodstats – that makes obtaining and understanding the data more user-friendly and accessible. The website also allows the public to view, locally mapped performance statistics, so the average user can enter his or her zip code and learn the local crime statistics, park cleanliness rates, fire response times and more. Since its launch on 24 September 2003 the e-MMR has received over 170,000 page views, and over 59,000 people have taken advantage of the neighbourhood performance application.

Telecommunications cost-savings initiative

In 2002, the Department of Information Technology and Telecommunications (DoITT) began an aggressive review of all city telecommunications needs to discover ways to reduce telecommunications costs without reducing service. DoITT negotiated a revised local telephone usage billing plan with Verizon that is expected to reduce expenses by approximately $10 million annually. In addition, the city will save $1.7 million by cancelling unused voice and data lines, and save $2 million by securing better pricing for various telephone services.

Leveraging technology resources

At the beginning of 2002 the DoITT was instructed to assist agencies in cutting their technology and telecommunications costs, and upgrading their technology infrastructure. DoITT began sharing its data centre and fibre resources to save agencies the costs typically associated with securing internet access or housing data centre facilities at alternative locations. Currently, 13 agencies are using the service, saving the city $1.3 million annually.

In addition, city agencies are now able to use DoITT's Virtual Private Network facility to gain remote access from the internet for individual agency users, saving the city $1 million annually. DoITT has also opened up its data centre to any agency, allowing them to save the cost of building their own data centre, saving the city over $5 million annually.

And finally, DoITT is transferring the NYC.gov website from its external host site in New Jersey to the DoITT data centre to avoid third-party vendor costs. The move will save the city $1.4 million annually.

Paperless procurement

Starting in July 2002, the Department of Citywide Administrative Services (DCAS) suspended the monthly distribution of all paper copies of its Requirement Contracts (RC) to City agencies. Instead, city agencies now must log onto the city's intranet to view RCs. To make the new system work, DCAS developed a searchable database of all RCs as well as the central storehouse catalogue of items in inventory. Users can easily search the

By making procurement information available electronically, paper waste has been reduced dramatically and Requirement Contracts are accessible instantaneously

databases based on key words, contract numbers, vendor names or contract types, and view or print electronic versions of the actual RC reports. By making the information available electronically, paper waste has been reduced dramatically and RCs are accessible instantaneously. This programme has saved $55,000 in FY2002. In FY2003, and every year thereafter, the programme will save $100,000.

Paperless city offices

In 2002, the Human Resources Administration (HRA) converted 19 of 31 job centres to a paperless office system, with the intention of having all the centres completed by June 2003. With the paperless system, employees enter information about clients directly into the computer, instead of filling out forms in longhand or on a typewriter. The system prompts workers to ask for information and ensures that data is not missed. As workers become increasingly familiar with the system, the time necessary to serve each client will continue to decrease, and to date HRA has imaged 230 million documents. The paperless office has already substantially cut processing time and eliminates paper files and the need to search for them.

Using technology and multi-agency coordination to combat domestic violence

In October 2002, the NYPD completed work on a new system that digitally records and indexes all calls made to the city's 911 emergency response system. As a result, clear and accurate recordings of these calls are now retrieved and made available to prosecutors almost immediately. Prior to the implementation of this new technology, 911 calls were manually retrieved by technicians and provided to prosecutors on cassette tapes, a process that took an average of three months to complete. The Kings County District Attorney is now using the system to strengthen the prosecution of misdemeanor domestic violence cases. Prosecutors may now play victims' 911 calls for arraignment judges, increasing the likelihood that bail will be set. In some cases, 911 recordings can even serve as direct evidence, enabling prosecutions to proceed even if the victim refuses to cooperate. From 22 October through 4 December 2002, the District Attorney's Office accessed and screened 197 digital 911 recordings prior to arraignment. Approximately one-third of those calls were deemed to be of significant evidentiary value and were played in the courtroom to bolster bail applications.

DNA technology

During the first three-quarters of 2002, OCME's Forensic Biology Laboratory increased the number of Combined DNA Index System (CODIS) profiles 140%, from 1,313 to 3,156 profiles, resulting in a 52% increase in case-to-case matches, a 36% increase in convicted offender matches,

and a 61% increase in conviction matches. Turnaround time for DNA work related to sexual assaults averaged 39 days per case – the fastest turnaround time for regular casework in any large public DNA laboratory in the United States. Over the past year, OCME has also electronically archived two years of medical examiner case records, forming the basis for an electronic records management system. Finally, OCME has been developing an agency-wide system to electronically generate death certificates. This system will be fully operational on1 January 2004, when the city adopts the new national death certificate standard.

OCME has successfully continued to respond to the largest, most complex mass fatality incident in the history of the United States, namely the September 11th attacks. The Office restructured operations, created new processes and procedures and coordinated efforts with other agencies, jurisdictions, and more than 80 countries. As of this date, 52% (1,443) of the victims reported missing have been identified, and OCME anticipates that the introduction of new DNA technology will push the figure to 72% (2,000) of the victims. OCME has also utilised DNA technology to link remains of the victims of Flight 587. The victims' families have claimed more than half of the remains and OCME is meeting with the families to decide upon a final resting place for the remains that have not been identified or claimed.

Digital cameras

In 2002, the NYPD distributed digital cameras to all precinct, housing, and transit commanding officers through a grant from the New York City Police Foundation. The NYPD has also expanded the 'Digital Photographs Pilot Project' from Queens to Brooklyn to assess the use of new digital camera technology and software, and expedite the transmission of photographs to the District Attorney's Offices for the prosecution of defendants in domestic violence cases. In addition, the NYPD has provided laptop computers to all precinct, PSA and transit commanders, connecting each to the Compstat.

Forensics

The NYPD has launched several technological initiatives to enable forensic scientists to provide a higher quality report in a timely manner to prosecutors in New York City. These include the enhancement of ballistic imaging, digital imaging and the handling of data and evidence.

Stockholm

Monica Berneström, Head of Development TIME at the Economic Development Agency; Anita Ferm, Director of Education Administration and Per-Olof Gustafsson, Deputy Managing Director, Economic Development Office, Stockholm

A passionate interest in technology – and communications in particular – seems to be a hallmark of the Swedish national character. Perhaps it's the combination of a small population and many isolated island communities. Or perhaps it's because we feel ourselves part of a little country on the outskirts of the world, so that when new ideas arrive we delight in making it possible for all our countrymen to share these innovations as quickly as possible.

By 1898, for example, Stockholm had more telephones than London or Paris. The phone had become an enduring national pastime. It's an obsession that has certainly paid off: in 1910, when the wife of inventor Lars Magnus Ericsson first bought a car, her husband insisted on taking his phone with him on every journey. They solved the problem of connecting to the exchange with fishing rods. When Lars felt a compulsion to make a call, Hilda would park the car under the nearest telegraph pole and wave the rods in the air, hooking the wires onto the overhead lines. The rest, as they say, is history...

This story perfectly illustrates another national trait: a desire not to adopt the conventional solution, but to implement practical strategies that actually work. In 1993, Stockholm became the first deregulated telecoms market in the world. We wanted to improve the infrastructure by laying new fibre, but we wanted to do so in a manner that would not perpetuate the existing monopoly (since, like most countries, we had only one telecoms provider at that time).

The solution was Stokab (www.stokab.se) and the international community was initially as dismissive of this as Lars Ericsson's neighbours must have been about his fishing rods. It has, however, been equally successful.

The idea was simple. The City of Stockholm raised the finance and incorporated a vehicle (AB Stokab – the name is not an abbreviation or anything, simply the title of the company), to cable the city. This meant turning our backs on short-term revenues – making a quick buck by effectively selling the right to dig up the roads – and embracing long-term investment. Just as the civil authority is responsible for the roads but not for the traffic, so Stokab is responsible for providing dark fibre (ie fibre-optic cable without the light signalling component), without dictating the use it is put to.

There are now 68 customers or operators that lease capacity from Stokab. We reached break-even in three to four years. It's a lot easier to buy capacity from Stokab than it is to start from scratch. And

it's not just a corporate resource: 95% of homes in the city of Stockholm have been passed, so all the home-owner needs to do is connect to Stokab either by themselves or through a service provider.

We developed the Stokab model because we wanted to foster competition, but we didn't want the situation that had arisen in, for example, London, where numerous different providers dug holes in the ground, causing difficulties for citizens and endless traffic disruption. On the other hand, at a strategic level, the issue of competition had to be addressed because in the inner parts of the city there was room for two or three operators.

In addition to practical considerations, we chose the public investment route because we realised that we could use the network as a tool in raising the profile of the city. Our international marketing position is that Stockholm is a good place to invest in. This is an indirect financial benefit for the city: Stokab itself is not a revenue source. Although it does make a small profit, this is not the objective. Indeed, the city is a customer and pays for network capacity just like everybody else.

By 1997 the city had become a market leader and a decision was made to break up the city into 24 districts (although this number has now fallen to 18). Each district has its own local council and its own public administration. Together, these districts are responsible for the great majority of the city's budget and also have direct control over childcare, schools, care of the elderly and other social duties within their district boundaries.

This decentralisation was an excellent opportunity for the city to rewire and put fibre into city institutions. Each district council was connected to the network and at the same time it was decided that all schools should also be connected, as well as elderly care institutions and daycare centres.

This future-proofed infrastructure was financed by the city, the expenditure justified by the benefits of having a public access network. These benefits have fallen principally into the areas of education and training, information services and telecommuting.

The networked school

Stockholm has good-quality upper secondary schools. 41% of children in Stockholm have one parent that comes from another country – and even with this high level of immigration the schools are successful. In fact, 70% of 16-19 year olds are satisfied with their education and will recommend the programme they are

studying to other pupils. A recent OECD survey highlighted the success of the system, with 91% of the population achieving the equivalent of 5 GCSEs at grades A-C (placing the country's educational system ahead of the USA and every European country except Norway). There is a private system as well – 13% of schools are independent, but the students are paid for by the state, and every independent school must use the national curriculum.

Stockholm has been working for many years trying to provide all schools with network and computers. The programme has been running since 2000; all schools are now connected and the focus is on older students – 16-19-year-olds. Students now have much greater individual choice of study topics. The traditional classroom with a teacher lecturing to assembled students is on the way out as greater use is made of broadband internet resources.

For example, a student interested in history would traditionally have picked up a book, read five or ten pages on World War II and then looked for another book to consult on another related subject. A library search involved not only locating volumes, but scanning the indices and reviewing the content before building a reading list. Today, you can use the web and find many different resources for the topics you are particularly interested in, easily building a reference library of books and articles that enable you to approach the topic from many different angles. You can even find people who were living during World War II and discuss the war with them in person.

Of course, now that the methods of teaching are different, the approach of the teacher has had to change – and that's not an easy task. We had begun an extensive teacher training programme in new media studies as far back as 1985, using city- and government-funded education programmes. We discovered that there was no substitute for practical experience: teachers need to experience the value of the net in their own subjects so they can see what's possible both for themselves and their students.

Some teachers are understandably nervous about IT, but once critical mass is achieved the late arrivals start hurrying to catch up. We now have teachers in different schools exchanging lesson plans with each other and cooperating in other ways.

It's not just teachers that benefit, either. School administrators can now communicate much more effectively with parents. Initial feedback seems to suggest that parents are particularly concerned to get information about homework, food, tests (pass and fail) and what the teachers are like, so we're developing programmes to share this information as part of an overall strategy to improve communication between school and home. This is particularly useful now that parents choose the school they want the child to attend; getting to know more about the school in question is very important.

Another established project centres on distance learning. Mature students – or those who don't want to come to school – can find up to 25 courses on the web. This has been particularly important for adults who failed in their earlier years. Initially it was difficult persuading people to sign up, but several hundred adults have now

The political objective behind e-learning is not to increase or decrease the number of staff, but to raise the status of working in the public sector; attracting the right people and developing the right skills

taken these courses. Your work is graded remotely by a qualified teacher via email. An additional benefit is that distance learning can be made available internationally: we have Swedes using the service all over the world.

Improving public service

Distance learning and lifelong education extends into the workplace as well. It's not just about taking a course in English or German: it can be about developing new skills and changing jobs. This is an area where we still have a lot to learn, but we are looking at ways of briefing staff on new working practice, legislation and other issues, as well as simply making materials available for sharing and re-use by small, widely distributed groups.

Up until recently, most of our investment has been in providing services to the general public. However, it is clear that our own internal training methods are inefficient and we'd like to introduce computer-assisted training for the 45,000 employees who work for the state. To do this, we have to re-educate our staff to find and use material online. We also need new authoring and publishing tools to adapt core material for use by many different groups. It's not easy: while everyone may welcome a reduction in paperwork, new systems involve process re-engineering and can be seen as reducing face-to-face contact.

As a result, 2bn krona have been set aside for training local government staff and an important part of the fund is to use IT as a tool to develop e-learning. The political objective behind e-learning is not to increase or decrease the number of staff, but to raise the status of working in the public sector; attracting the right people and developing the right skills. We want to be an attractive alternative to the private sector – and by having well-trained personnel we increase the status of public sector employees.

The business case

Of course, the city is involved in the school budgets – how much they spend and their results – and there are procedures laid down that need to be followed, but in the development of the education network there was not always a formal business analysis. We were not asked what the alternatives were or could be. We didn't have to submit a formal business plan in every case and we didn't necessarily know how much things would cost. However, the city district budget set aside 200m krona per year to start with (recently reduced to 80m), an allocation which reflected general agreement that pump priming was necessary for growth. The central education authority has a specific budget earmarked for computers and software and each individual school has its own budget as well.

It's therefore very difficult to assess the exact expenditure on e-learning. It's equally impossible to establish the measure of the benefits. Our attitude is that this is a question of democratic right, rather than a profit and loss account. The programme extends from the very young to the very old. It helps the disadvantaged as well as the physically and mentally handicapped. One young man pointed out to me recently that 'although I may struggle to write my email, no-one who receives it knows that I took seven hours to write it. For the first time in my life, I am an equal.' Can you put a value on that?

e-democracy

If you're going to exercise your vote correctly, you need the information to make a decision. 10m krona has been set aside for e-democracy projects. We have tried to put as much as we can on the web, providing information and at the same time helping to demystify the political process.

For example, Kista is often referred to as Sweden's 'Science-City'. There are over 700 technology companies based there, employing 65,000 members of the local population. Forthcoming votes in the city council are now published online a month ahead, together with an application that allows people to chat with and email politicians. We also made sure that people could view the debate on the web via a live video link.

Stockholm is also working with the Cyber Vote EU project (www.eucybervote.org), but currently we do not plan to use it in the next election. The Government has decided it is not secure. And on the topic of security, we have a PKI (Public Key Infrastructure) project in progress and expect this to be rolled out in 2004.

Telecommuting

Sweden's island geography makes telecommuting more attractive here than it might be in other countries. People often work from home one or two days a week and Stockholm has invested in laying fibre out to the many tiny islands to move companies away from the city centre. We had another agenda here: wiring the islands reduces traffic flow into the city, easing congestion. Call centres, cab and taxi firms, and others now work from the islands, and managers are growing accustomed to the idea. If it's a sunny day, then a work team can sit in a warm spot outside; never mind their location – only their output matters.

Information online

In addition to the information services already referred to, there are two other areas of application that have been particularly useful. The first relates to job-hunting. We have seen a great deal of development in this field and all job searches are computerised and published online at a national level. This makes it much easier for us to support and monitor employment services.

Finally, we've made a considerable investment in our transport system. Thanks to investment by the city, we can now publish real-time online information about traffic jams and other transport issues, reporting both local and national conditions.

People often work from home one or two days a week and Stockholm has invested in laying fibre out to the many tiny islands to move companies away from the city centre

What's next in Stockholm?

We have a new project called M-city, a generic title for services accessed by mobile phone. The city sees 3G as having a role in creating public services, providing better administration for services related to the care of the elderly and fast-tracking the registration of students in schools.

M-City connections could be through fibre or wireless – 3G or wireless LAN (and in Stockholm they are complementary). Wireless LAN enables operators to create hot spots within the city – there is already a huge hot-spot at the university campus and another in the city centre.

For schools, pupil check-in each day is a heavy administrative burden for every teacher. Our aim is to link this process with feedback to parents, using SMS. We can text them to tell them if the child is not at school. We can also use GPS in the phone to pinpoint a child's location for both teachers and parents. Over a certain age every child in Sweden has a mobile phone, so the system has a lot going for it. And in higher education, students can receive SMS notification of cancelled lectures and other last-minute programme changes.

A more specific M-City case study involves a small daycare unit for the elderly. It has between 10 and 15 workers and one manager. The workers are elderly themselves and often unable to work – the manager would have days when five out of ten of her team were sick. On these days she had to spend two hours a day phoning other people to fill the slots in the complicated schedule. The M-City programme enables her to send a group SMS to everyone who wants to work that day and the first person who calls in gets the work. She now spends only five minutes a day on this task, saving 40 hours a month.

We're already seeing the benefits of the M-city programme. Inward investment from the IT sector is increasing and at the time that this article went to press, ten IT companies had relocated to Stockholm in the preceding six-month period. Our infrastructure makes it possible for us to be a test-bed for services and we can open up marketing opportunities at many different levels, contributing to the critical mass of demand that the markets require. All this has helped enormously in marketing the city as a place to live and work.

Looking ahead

Issues ahead of us include how we can get rich educational content into the home. We believe that users will want more games, more movies and hopefully more of a say in how they are governed. All these things come from dialogue between people and government.

- We have our fibre network; now all we need are more ideas for applications.

With this in mind, the Stockholm Challenge Award was developed to connect with other cities. The Challenge Award is a competition for user-driven application development. New ideas have to be innovative, user-friendly and must show a clear social benefit. We now have a database of 4,000 ideas. In the end, we believe that investment in our own city has not only brought benefits to Stockholm, but will also bring benefits to the world.

The Stockholm archive

Our latest municipal project is about the city itself. We've built an online archive of historical views onto the network so that students can see what it would have been like to live in Stockholm 100 years ago – not only what the environment looked like, but also how people lived and worked.

This project has shown the benefits of inter-departmental collaboration: the city archive, administration and libraries are all working together to see how schools and citizens can interact with the past. One archive project went back to the 13th and 14th centuries, focusing on a single district of the city. The knowledge base is derived from historical, political and social archives and one of the main objectives is that it should encourage a sense of belonging among those living in the city. It's also timely: the city celebrated its 750th anniversary in 2002, an event that helped to raise interest in the project and vice versa.

e-learning – the lessons we learned!

Here are the five most important lessons we learned in deploying our e-learning programmes:

- Efficient technical support is crucial. Frustration with technical problems involving the computer, the network or the switches is completely unacceptable
- There must be enough capacity. If the net is down it kills interest
- Support in learning is necessary
- Try to arrange network structures that bring teachers together
- Remember that it's not going to be easy! Never downplay the challenges involved

Milan

Silvio Scaglia, Chairman of e.Biscom, Milan

Milan, city of La Scala and Da Vinci's Last Supper, sits at the centre of northern Italy's road and rail networks, straddling lines of communication between east and west. For Europeans travelling overland, Milan is the gateway to Italy.

Its dominant position in the physical network infrastructure of the country is mirrored by dominance in networks of a different kind. A fortuitous combination of entrepreneurial daring, good fortune and technological innovation has put Milan at the forefront of Italy's broadband revolution, helping to push the country into the world's top-performing DSL and fibre-optic broadband performers.

Fibre-optic came first. In 1999, our company e.Biscom rode the internet wave with the largest private-sector IPO in Italian history, raising 1.6bn euros in a float that valued the company at 7.3bn euros. The cash was earmarked for a courageous rollout of 2,500 kilometres of new optical fibre, offering business and consumer broadband cable services. The only threat came – as it has done elsewhere – from the telco sector and its deployment of cheaper but slower DSL technology.

Over three years later, e.Biscom has emerged from the IT downturn with rising sales and a burgeoning stock price. The company has achieved this by maintaining a strong cable presence and simultaneously beating the telco sector at its own game by rolling out a DSL service that is not only three times faster than the main competitor but has succeeded in more than doubling subscription levels in 12 months to 249,000 customers (with an ARPU of over $900). This growth has continued in the context of strong national demand; Italy as a whole saw over 525,000 new DSL lines taken up in the first six months of 2003.

Template for a networked city

Although e.Biscom operates in the main metropolitan areas of Italy and further afield, Milan was the cradle of the operation. This was not just for geographical reasons, but also because of Milan's unique characteristics as a city and community.

First, the city has a vibrant creative industry that drives an economy based around design, fashion, media and IT R&D. We set up e.Biscom knowing that Italy already had the highest proportion in Europe of SMEs (Small and Medium Enterprises). These thrive in small offices and home offices and are often in the same multi-storey buildings as residential customers.

Second, Milan is characterised by a high

proportion of high-rise buildings, concentrating both domestic and business demand for services into a single address. We were aware that AEM, the local utility, had already developed an infrastructure of ducts for fibre optic cables, which had not been completed. We reasoned that, since the average number of residential clients is 16 per building, the critical parameter would be the adoption rate in these high-rise buildings. Since each presented a micro-market demanding anything from VOD and entertainment through broadband voice and data services to traditional home internet service provision, e.Biscom set its sights on a diverse offering.

When you have a single provider in this context, it can have a dramatic effect on people's lives. You live and work locally and time is of the essence. Your provider offers VOD, so you don't have to wander the streets in search of a title to rent or buy. The same provider cables up your business, provides your digital TV service and helps you call your mother. This makes for ease of use that attracts creative companies; while the performance advantage helps to grow innovative operations.

IP to cut costs

From the beginning, e.Biscom's service was based on pure IP (Internet Protocol). There would be no voice switches, no cables, no boxes. Milan's micro-markets can be served by an IP switch or router for a fixed cost; the costs then decrease as take-up in the same building, or cluster of buildings, increases. Given that penetration is now 20-25% of areas covered by the service and that an average of four clients per building will be connected, the company forecasts a return of the initial investment in just over two-and-a-half years, reaching break-even in 2005.

IP gave e.Biscom this competitive advantage over other telecoms companies, but there is another benefit for Milan. The company uses IP to facilitate the integrated management of voice, data and video using a packet-switched network running over fibre-optic cable. This gives the Milan operation two advantages – practically unlimited bandwidth and maximum efficiency of its investments in infrastructure. The fibre-optic IP network has enabled e.Biscom to integrate previously separate functions and develop innovative, value-added services, which can be used simultaneously over a single connection that suit perfectly the physical structure and creative drive of

the Milanese community and its workplaces. We can offer entertainment, commercial services such as video conferencing, and other high-bandwidth applications that would not be possible over a standard DSL offering (generally three or more times slower).

Entertainment as business driver

Entertainment services such as VOD and digital TV are not only profit-centres in their own right: they also carry a branding advantage that demystifies the technology service, drawing in the individual who in turn brings commercial custom in his wake.

Cable TV combined with VOD and broadband internet (itself a rapidly growing entertainment medium) is a compelling offer. Technology companies cannot change their spots entirely, however, and e.Biscom's successful strategy was initially to build Joint Ventures (JVs) with established operations.

Rai Click, for example, is a JV between e.BisMedia (a wholly-owned e.Biscom content provider) and RAI, the Italian State owned broadcaster. This JV provides on-demand content on a commercial basis, with over 2,500 videos available through TV and Web. Rai Click also supplies access on a PC via ADSL (and, in the case of FastWeb – e.Biscom's operating company – customers (see panel) on television), to RAI's current and archival programming of films, fiction, TV shows, classical music, concerts and theatre. The customer can choose between a fixed-fee subscription and a pay-per-view option.

Content companies, however, are growing increasingly aware of the gate-keeping role played by local network providers. This probably helped e.BisMedia to sign agreements with leading content producers such as Universal Studios, 20th Century Fox, Dreamworks, Discovery Channel, BBC, MTV/Nickelodeon, United Features, as well as complete channel offerings from companies including CNN and Cartoon Network. These companies see innovative distribution (and VOD over IP can be an especially powerful combination), as a means of building positive brand associations as well as generating additional revenue.

Entry into the digital broadcast market means brushing up against new statutory bodies and legislation. In Italy, the merger between TELE+ and Stream into the new satellite pay-TV platform Sky Italia, and the consequent ruling of the EU Antitrust Commission, means that e.Biscom will be able to complete its television offer with live Serie A and Serie B soccer matches, starting from September 2003. On the basis of the European Commission's decision, the premium content of the new single platform Sky Italia (mainly Serie A and Serie B football matches, sports events and movies) will be purchasable by non-satellite competitors at a 'retail minus' price; that is, the price offered to the final client reduced by a percentage.

The power of telepresence

Video networking provides another example of how IP over fibre optic can generate new applications. e.Biscom's broadband telecoms operator FastWeb launched a videocoms service in the third quarter of 2002, making it available to all

Fast Web technology supports audio/video links between remote government agencies, public bodies, schools and hospitals to permit significant enhancements in the quality of public services as well as cost-effectiveness

its residential customers in Milan, Rome, Genoa, Turin, Naples and Bologna.

The technological features of the new service and its applications in public, private, social and business environments make it easier to manage or establish in businesses in Milan. TV-quality video conferencing is a world away from the more familiar narrow/mid-band variety and is a strong competitor to established satellite linking technologies. Subscribers need only a TV, touch-tone telephone (cordless, for preference) and a small FastWeb TVcam video camera placed on top of or next to the TV. The simplicity that arises out of service integration is immediately obvious: to make a video call you simply press the asterisk key before keying the phone number.

Apart from opening up new opportunities for person-to-person, videocoms can be used for a host of applications in the public sector. FastWeb technology supports audio/video links between remote government agencies, public bodies, schools and hospitals to permit significant enhancements in the quality of public services as well as improved cost-effectiveness. Application opportunities include tele-education and e-learning (extra lessons from home), parent-teacher communication and links between geographically distant schools.

There are also numerous applications in tele-healthcare and e-health. Remote medical consultations, healthcare services, transmission of patient records, samples and x-rays are all possible without getting out onto the road. Another growing area is remote security: the ability to monitor your office, shop or studio from another location using high-definition CCTV.

The business model and partnerships/JVs we pioneered in Milan are all based on new technology, which makes investment more efficient than traditional approaches. The city itself – its historic, physical infrastructure – helped to create this technology for the vital triple play of telecoms-entertainment-internet, which we've driven to profit by maintaining service, visibility and branding in each of the consumer and business sectors. Within those sectors, we maintain strong focus and maximise market share. The investment is very high, but the returns are there and our quarterly returns are demonstrating that we're meeting the challenge.

FastWeb: triple play to home and business

FastWeb was originally a partnership with existing local municipal utility provider AEM. In 2003 e.Biscom acquired AEM's stake in the company and since then we have driven the operation into a period of rapidly increased growth and profitability, reporting an EBITDA of 40.1m euros in the six months to June 2003 compared to 5.5m euros in the first half of 2002.

FastWeb provides voice, broadband internet connectivity, data transmission and video services in all existing formats: broadcast (ie traditional free-to-air TV), multicast (ie pay TV and pay-per-view) and unicast (ie video-on-demand and full interactive TV). Access to the end-user is provided directly through fibre optics (with Fibre-to-the-Home/Fibre-to-the-Office solutions), or through xDSL technology over unbundled lines.

The technological solution and the fibre-optic infrastructure support much faster access speeds than those currently available on the market: up to 10 Mbit/s upstream and downstream for residential customers and virtually unlimited speeds for business subscribers. Also, the use of the IP protocol has allowed the development of a DSL service in cities where the fibre-optic network is still being rolled out, thus enabling advanced telecommunication services, at reception speeds of up to 4 Mbit/s and transmission speeds of up to 0.512 Mbit/s, much faster than those delivered by other DSL operators in Italy.

As well as providing faster access compared to the competition, FastWeb is constantly focused on the development of new value added services. The residential offer, on top of voice and broadband internet services, includes:

- Videocommunications via the TV set
- FastWeb TV – this service allows subscribers to access the main Italian broadcast TV channels in digital format, plus a selection of satellite channels and a video-on-demand service. The latter offers more than 3,000 e.BisMedia and Rai Click titles on-demand. There's also an EPG (Electronic Programme Guide) and a virtual network video recording system (VideoRec) which allows the recording of programmes without the use of videotapes or VCRs. FastWeb TV is provided over its network without the need of antennas, satellite dishes or decoders
- Wi-Fi – this service allows customers to take full advantage of FastWeb's bandwidth, surfing the net rapidly from any point at home without having to install additional cabling

There are many business applications on offer, but the most requested services include VPN (Virtual Private Networks) and Business to Employee (B2E) services. FastWeb offers connectivity between different branches at speeds of up to 1 Gb/s, and from employees' premises to the corporate LAN at speeds of at least 2 Mb/s on FastWeb's network, with no need for dedicated links.

Business users can also benefit from video-conferencing systems, web hosting (including audio-visual streaming services), and a number of bandwidth solutions from bandwidth-on-demand to SDH high capacity lines at speeds of up 155Mb/s.

Wroclaw

Slawomir Najnigier, Deputy Mayor of Wroclaw

My city Wroclaw is in Poland, the capital of Lower Silesia, with a history going back over 1,000 years. Following the collapse of communism in 1989, Wroclaw has been making up for lost time. External investment has multiplied enormously: in 1989, there were only 17 companies with a foreign capital base: now there are almost 2300.

The country is politically stable, has several industry sectors ranked in the top five in European economic tables, enjoys an international reputation for innovation and has established new benchmarks in several IT areas. Fashionable and popular, Wroclaw enjoys growing international recognition.

All these advances have taken place against a background of increasing connectivity, driven by targeted programmes, a strong skills base, the provision of a broadband infrastructure and assiduous promotion.

First, the programmes. 'e-Wroclaw – City of the Future' is part of the Wroclaw Economic Development Support Programme and is a good indicator of our objectives. The slogan 'City of the Future' highlights our belief that state-of-the-art data technologies have a direct impact upon local economic development. Those who fail to adapt to the data revolution will be eliminated from the game.

Programmes alone are not enough: you also need the skills. Wroclaw has them. Not only are our academic standards well-known throughout Poland and elsewhere, we also have a fund of new ideas, which local entrepreneurs (there are around 400 IT companies in Wroclaw) are quick to put into practise.

Broadband infrastructure has been put into place, largely because the Wroclaw regional authority itself has, with over 350 departments and nearly 20,000 staff, an urgent need for it. No surprise, then, that the e-Wroclaw programme is principally concerned with municipal operations and management. Initiatives range from the construction of e-Administration, e-Education, e-Transport, and e-Security platforms, to providing support to local business (e-Services). Local government cannot, of course, provide the answers (or the services) which rightly come from the independent sector – nor can it provide all the capital that that sector requires – but it can provide support and help to speed things along.

Hence the provision of broadband infrastructure, without which none of these initiatives could be put into practice. The city has financed the building of the

largest local communication system (TETRA) in the country. At present TETRA is set to become the national standard for municipal and police services. The authorities in Wroclaw were also the first in Poland to initiate the launch of a broadband multimedia network (described in more detail below). Broadband service infrastructures will soon, we believe, be an everyday feature of city life, just like water and sewage systems.

Finally, self-promotion. We've found that new media distribution is the cheapest and most effective. Our website (www.wroclaw.pl) is the most popular municipal site in Poland, with around 250,000 visitors per month, including 15% from abroad.

E-Wro Municipal Data Network

Our flagship project is undoubtedly the E-Wro Municipal Data Network. On its own initiative, the city launched a state-of-the-art municipal infrastructure project with the objective of building a broadband multimedia network (METRO or MAN).

E-Wro is a good example of local drive and ingenuity. Miejskie Przedsilbiorstwo Energetyki Cieplnej Wroclaw S.A. (MPEC Wroclaw S.A., owned 56% by the city and the first heating company quoted on the Warsaw Stock Exchange) is responsible for providing heating to 60% of the apartments in Wroclaw. Following the disastrous floods of 1997, MPEC Wroclaw S.A. had to restore and re-engineer parts of the system and, with typical local ingenuity and enterprise, decided to use the cables (used for system monitoring) to provide broadband services.

A local consulting firm provided the expertise needed for building, integrating and commissioning the network, which went live in March 2003. The services, including permanent and fast internet access, are affordable at around 12.5 euros per month and between July and October 2003 contracts were signed with over 3,100 customers (out of 7,000 homes wired). We plan to extend the E-Wro network to approximately 40,000 flats by 2005.

What makes this project extraordinary is that it's comparable with similar projects taking place in the best-developed countries of the world. We may be only the fourth largest city in Poland, but we have always been an important economic, academic and cultural centre. Wroclaw needs to compete with other cities and it's pleasing to realise that, in many places, projects like this are still confined to the

drawing board. E-Wro was innovative, turned a natural disaster to our advantage and, most important of all, was entirely conceived and carried out by the local community.

E-Wro is not just about shuttling data back and forth. We now have evidence to support the theory that data infrastructures act as catalysts for new applications. Schools located in the E-Wro catchment area, for example, are using the service to create e-mail accounts and web-sites, as well as to swap information and set up local networks. We expect most of Wroclaw's 300 schools and educational institutions to be connected to the network by the end of 2003.

Another example can be found in neighbourhood security. Wroclaw has a TETRA-based communication system, which provides the foundations for the e-Security Programme, but it was the broadband infrastructure that made it possible to install a CCTV camera network to monitor housing estates. Without access to a network such as E-Wro, projects of this kind would have been prohibitively expensive.

Projects in Wroclaw use a range of different financial models to get off the ground. Some projects, like e-Administration, e-School or e-Transport are financed by the city and, in some cases, from European Union grants. In these cases, the City has direct status and influence. Other projects, including the E-Wro network, involve the independent sector. So far the implementation of this broadband network has not cost the city a single zloty.

Non-commercial projects are not ignored. The City of Wroclaw actively researches the possibilities of securing – and canvasses for – EU funding for deserving causes. We have been using these funds for years for expanding the road and sewage system – we now apply our experience in raising such finance to the funding of IT projects.

We further believe that private, commercial and public-sector projects should not be carried out in isolation. For example, by developing the e-Administration programme, the city not only provides new services, but also reduces the business risk of the METRO network by acting as a consumer. It works the other way too – the company developing the network indirectly enables many non-commercial schemes. The burden of developing IT is therefore spread between different organisations and sectors. The benefits are shared by all.

One thing is paramount: the E-Wro network has to follow the market and bow to market forces. Its primary task is not to meet the requirements of education and administration, but to provide commercial broadband services to Wroclaw residents. Before the network was built, we studied and developed careful business plans. It's a little early to speak of a commercial success – as I have already explained, the local authorities have not spent a single zloty on the project – but it's just as important for us to see that the services are being used. Take-up of the services has already exceeded our original projections.

Computer-based administration platforms can be rather incestuous affairs;

E-Wro is a project on a truly European scale, watched with interest by our colleagues throughout the international community

government departments can get carried away by new internal applications, forgetting the true end-user – the citizen. In the third quarter of 2003, Poland began the task of introducing legislation to enable and promote online services to ease the administrative burden on the public. Without such appropriate legislation, we could waste the entire potential of IT. It's a myth that the public is indifferent: most inhabitants of Wroclaw are behind us on this and, wherever the E-Wro network offers free line installation (with no obligation to sign a service provision contract immediately), over 80% of inhabitants place an order. The demand is proven.

Wroclaw plays an active role in regional development, so these projects are having an impact way beyond the boundaries of Wroclaw City limits. Early 2004 should see the launch of the Wroclaw Technology Park (with the city as principal shareholder), while the Wroclaw Technology Transfer Centre is active at Wroclaw Technical University. Institutions such as these, as well as other colleges, chambers of commerce and industrial bodies are invited to sit on the Board of the e-Wroclaw Programme. It's a prime board objective to ensure that innovations are propagated throughout the region; a regional conference devoted to online multimedia promotion is just one recent example.

I said at the start of this essay that we are building an international reputation and, again, the E-Wro network is a great example – a project on a truly European scale, watched with interest by our colleagues throughout the international community and matched by very few initiatives elsewhere. I'm convinced that the developments taking place in Wroclaw are a taste of the future: witness the level of attention paid to the city and the E-Wro project in particular. Other cities in Poland are eager to benefit from our experience and plan similar investments - and what better example than a good plan, successfully implemented? We can only hope that the number of connected cities will grow steadily in future.

Finally, I am delighted that you have taken the time to read about what we've been up to and for giving me this opportunity to present our town. I invite you to Wroclaw – a City of the Future. And, if you cannot visit us in the flesh, you can always pay us a virtual visit over the internet!

Important addresses:

City of Wroclaw: www.wroclaw.pl

MPEC S.A.: www.mpec.wroc.pl

Miejskie Sieci Informatyczne 'e-wro': www.e-wro.pl

'E-Wro' operator: www.dcg.pl

Manchester

Dave Carter, Director of Manchester
Digital Development Agency

The success of modern Manchester is founded on a long and proud history. Manchester was the first city of the Industrial Revolution – the first city in the world to experience the shock of rapid industrialisation. Within the space of little more than a century, it grew from a small mercantile centre to become the second largest city in England, with a global recognition of its 'Made in Manchester' brand. The cradle of the Industrial Revolution, it remains a breeding ground for innovation and enterprise.

Manchester was founded as a Roman settlement and was a historic commercial and trading centre for 400 years before the Industrial Revolution. It has a proud international history dating back to the settlement of Flemish weavers in the city in the 14th century, through Manchester merchants playing an active role in the Hanseatic League, to its role as an international centre for political and economic thought in the 19th century, hosting both Adam Smith and Karl Marx. By the middle of the 20th century, Manchester had already provided the world with the first steam engine and passenger railway system, split the atom and started the IT revolution with the invention of the first computer with a stored programme.

At its height, Manchester controlled 80% of world trade in textiles, and from this base in textile manufacture and trade the economy diversified into engineering, chemicals, publishing, legal services and banking. These are still the cornerstones of the regional economy, together with the fastest-growing internet and new media sector in the UK outside of London. During this period of wealth creation the foundations of the city's traditions and institutions were laid. In education, Manchester has the largest student campus in the UK, with 60,000 students and three universities within one kilometre of the city centre; in health, teaching hospitals and research institutes; and in transport, it has the world's first passenger railway and now one of the world's top-ten airports. The foundations of the city's cultural life were also laid with Manchester having England's first public library, the first professional orchestra, the first repertory theatre company and a series of historic museums and art galleries.

A new strategy for Manchester as a post-industrial city

The challenge for Manchester now is to combine sustainable economic growth with the delivery of real local benefits to the city's residents, in terms of employment and quality of life. The impact of globalisation and the new knowledge-based economy presents new

challenges where traditional approaches to urban regeneration will not necessarily ensure sustainable economic growth or that social exclusion can be tackled effectively. Alongside a continued commitment to physical regeneration, and the development of the new infrastructures required for the knowledge economy and the information society, new approaches need to be developed to connect opportunities with needs and re-engage excluded communities with economic and civic life.

In response to this situation, the city is pursuing parallel economic strategies. The city has seized the opportunity to strengthen its position as the regional capital of the North-West of England with new investment, including:

- Transport infrastructure: with the continuing expansion of Manchester Airport and the extension of the new Metrolink tram system
- City-centre regeneration, particularly following the impact of the terrorist bomb in June 1996 which destroyed part of the centre, and the development of a new retail core including the world's largest Marks & Spencer store
- New residential developments, both in the city centre itself and at the Castlefield industrial canal site, increasing the number of people living in the city centre from 600 in 1989 to more than 6,000 in 2000, with associated leisure facilities
- Business tourism: with new hotels and a new international exhibition and conference centre
- Cultural facilities: the opening of the new international concert hall – the Bridgewater Hall, the City Art Gallery Extension and the renovation of the Royal Exchange Theatre
- Our Sports City initiative where, in 2002, Manchester hosted the Commonwealth Games with a new national stadium, new national Velodrome and Swimming Centre

The primary objective is to ensure that there is real benefit provided to local communities while, at the same time, assisting the city to emerge as a key European Regional Centre which is able to attract and deliver investment and major sporting and cultural events. The City Council has taken the lead in channelling resources towards area regeneration and local benefit strategies. These aim to develop sustainable local economic communities linked into the opportunities provided by the regional centre. We also need to be able to identify areas for potential economic growth which will contribute positively to local employment

opportunities and to social inclusion. It is here that 'new' industries, such as the arts and cultural industries and the internet/New Media sector may have an important role to play in the structure of the economy of the 21st century.

Manchester's vision for the future

Manchester's vision for the future, as expressed in its 'City Pride' Prospectus, is to be a European regional capital – centre for investment growth, rather than regional aid, and an international city of outstanding commercial, cultural and creative potential. The city will be an area distinguished by the quality of life and sense of wellbeing enjoyed by its residents, where all will have the opportunity to participate in and benefit from the investment and development of their city and, therefore, live in truly sustainable communities.

Our aims and objectives also characterise what has become an increasingly sophisticated role played by the City Council. We continue to be a major deliverer of services; and as an organisation employing over 20,000 people, with gross expenditure of some £1.4 billion, a significant player in the local economy. Increasingly, however, our role has become that of coordinator and facilitator; that of bringing together different public-sector organisations and ensuring that they deliver services together in an integrated way, linking them with the communities they serve. The City Council also aims to provide leadership to develop shared visions and the public/private/community partnerships that are required to deliver them.

There are also other challenges to face up to in terms of achieving our vision. Some are practical and not all are in our control. We are, for example, in European terms for example, a peripheral region and, because of this, transport links with the rest of the world are a key priority. This is partly why the airport is of such strategic importance but also why the upgrading of rail links is essential to our future. Manchester Airport has 95 airlines serving 175 destinations and employs, directly and indirectly, over 50,000 people. It continues to grow, serving over 18 million passengers a year since the second runway opened in February 2001 and with predicted
growth to over 40 million passengers in the next 15 years.

Sustaining economic growth and connecting the new opportunities thus created with the needs of local people, many of whom face poverty and social exclusion, underpins all aspects of the city's regeneration strategy. One of the biggest causes of poverty is unemployment and low-wage employment, and that is why job creation is such a high priority. Where will the jobs of the future be? Some traditional sectors, like construction, are key, while others, like textiles, chemicals and engineering, will remain significant. But jobs that have been lost from manufacturing in these sectors are not likely to be replaced. Quantum-inspired electronic devices, convergent media technologies, nanotechnology, biotechnology and other innovation-led developments can create a very considerable number of jobs. Similarly, the region's strengths in environmental management are another key asset. The cleaning up of more than 100 years of

industrial pollution regionally and nationally in the UK, let alone the rest of the world, is a massive task in itself and will create many jobs.

Manchester will be concentrating on creativity, innovation and technology but we recognise that so too will many other cities and regions in similar positions all over the world. This means that while Manchester continues to highlight its particular strengths, building upon textiles, computers, broadcasting, publishing and football, it is now looking forward to the new entrepreneurial spirit coming from the creative and cultural sectors, from its local universities and from the new enterprise partnerships that the City Council is helping to facilitate.

Manchester as a creative city

There is a strong tradition of creativity, pioneering and invention in Manchester. This creativity is taking new forms and is part of the experience of Manchester today: the conversion of redundant warehouses by innovative property developers and local architects into accommodation for design, software and multimedia companies; the clubs where many of the UK's leading music groups have emerged; the café bars and restaurants fitted out by young designers. Manchester is a seedbed of youth enterprise and creativity. The presence of the universities is a major influence, and it is essential that the city should not only attract students but also provide opportunities for them to remain. Cultural industries are important in their own right; they are also a source of creative capital, of ideas and communication, which is so vital to the future.

Manchester has a significant and growing level of employment in film, media, music, authorship, architecture and design and in internet services. The largest enterprises are mainly in the field of television and publishing. The most significant of these is Granada TV, which is the UK's largest private sector television company and part of a large global enterprise. Manchester is the only regional city with a role in national newspaper publication. Since the 1950s' Manchester has been at the forefront of British pop and dance music, ranging nowadays from the commercial success of local bands like Simply Red and Oasis to the dynamic underground dance scene that has sent Manchester-made music and DJs across the world.

These new growth sectors are in the position of maintaining their local position and competing for access into global economies. The fastest growth is being seen in the design-based sectors (fashion, buildings and products), which are less dominated by large enterprises because small businesses are more able to access global market opportunities directly. Recent research in the city has confirmed that employment in the cultural industries in Manchester is significant and that it promises future growth. This is why we are trying to create one of the world's leading 'post-industrial' sustainable cities, based on the new technologies and industries of the future. Manchester is, not for the first time, reinventing itself.

Central to this is the need to accelerate the transition to a knowledge-based economy by stimulating creativity and innovation across the local and regional economy. We need to be at the forefront of a cutting-edge digital culture, based on

innovative business clusters and networks, which are uniquely capable of and necessary for sustaining growth within the information society. In the UK, a recent Government report highlighted ten critical success factors for cluster development, starting with the importance of a strong science base and including an entrepreneurial culture, the ability to attract key staff, effective networking and a supportive policy environment.

Manchester making it – a networked city in a networked global economy

The regeneration of Manchester is far from complete, but much has been achieved in the past ten years. This has only been possible through the imaginative and dynamic partnerships that the City Council has been able to establish with the private sector and the wider community. This idea of a networked city being essential for operating in the increasingly networked and global economy is central to our thinking.

A partnership approach to economic development is particularly important in building the foundation of the knowledge-based industries of the future. They play a leading role in incubating new businesses, for example, where through the Campus Ventures agency, established as a partnership between the city and the three local universities, 50 new companies employing 400 people have been established so far, with another 70 new start-up businesses planning to spin out over the next year.

Alongside this is the Manchester Science Park, another joint venture between the City Council and the universities, which is the home for 50 companies employing 700 people. This will double in size over the next three years. Added to this must be Manchester's growing internet and e-business success, the most rapid growth of any region outside London and the South-east, where we have the only international Internet exchange outside London, called 'TeleCity', which is also based on the Science Park.

Manchester's first strategic report on new technologies and regeneration appeared in 1989 under the title of 'Manchester – the Information City', and more recently we have stressed Manchester's focus both as a 'creative city' and a 'digital city'. What is now clear from our experience is that these capacities are interdependent, and that to be a successful creative city you must be a digital city and vice versa. This is why, in 1993, Manchester was one of six European cities that set up a new network, called TeleCities, which now has more than 150 cities involved in a trans-European network stretching from Iceland and Ireland in the west to Russia and Romania in the east.

Creating a sustainable future for Manchester

The longterm vision for Manchester is based on achieving a thriving economy in the industries of the future. To do this we need the research and educational facilities to keep us thriving and a population with the skills to maintain those industries. Key to this success is the growth of the city centre's population, from the current 6,000 to over 20,000, and the sound infrastructure to support that population. The development of the

Manchester is on the way to achieving the successful transition from being the world's first great industrial city to one of the world's leading post-industrial success stories

Manchester City region with its own government, at the heart of social and economic revival of the North-west, is also vital, as is the country's first fully integrated public transport system, building on our successful and expanding Light Rapid Rail Transport System – Metrolink. Finally, we must ensure an improved quality of life and environment in every part of the city.

Manchester is on the way to achieving the successful transition from being the world's first great industrial city to one of the world's leading post-industrial success stories. Even then, the speed of economic and social change will require that the city continually finds new forms of dynamic urban management to ensure that this success can be sustained. We believe that only by adopting a holistic, creative and cooperative approach can we rise to the challenge of the new global knowledge economy and information society. We need to ensure that what makes Manchester an increasingly attractive place in which to live, study and work can be sustained in ways that will continue to attract and develop creative talent, noteworthy events and lasting opportunities for the people who do and will make it their home.

e-commerce, e-government and the internet/New Media sector in Manchester – the national policy context in the UK

The UK Government has set out its ambition to make the UK the best place in the world for e-business and e-commerce. At the same time it aims to make the UK a world leader in the electronic delivery of public services: e-government. All public bodies, including local government, have to ensure that 50% of services are delivered electronically by 2003 and that 100% of services will be capable of being delivered in this way by 2005. Four key challenges have been highlighted, which need to be addressed before these ambitions can be fully realised. We must develop a world leading infrastructure with access for all, both in terms of business and the wider community, and ensure that the education and skill base is there to develop the workforce of the future. It's also essential that we tackle the 'digital divide', ensuring that the information society is fully inclusive and, finally, that we create a business-friendly environment for e-commerce and e-business to develop.

The UK Government has made strenuous efforts to push forward the agenda with the appointment of e-Minister together with a national e-envoy. All government departments are now required to produce e-business strategies and to set clear targets for the delivery of e-government services. Priorities for local-national Government cooperation include forging closer links between local authorities and national government, increasing the use of e-commerce for public procurement and business-to-business transactions including

digital signatures, promoting e-democracy through improved Internet services for MPs and councillors, developing community-based networks and moving towards electronic voting.

Manchester – from information city to e-city

Manchester has a number of important strengths as a leading location for internet/New Media investment, that enable it to take a leading role in e-business and e-government developments. It has one of the best infrastructures outside London in terms of telecommunications and R&D networks – using the universities' broadband Metropolitan Area Network – 'Net North West', with digital cable, ADSL and wireless broadband services. It has an extensive enterprise and incubation network – the North west Incubation Partnership – coordinated by Campus Ventures at the University of Manchester and linked into Manchester Science Park, and the new Manchester Science Enterprise Centre, based at UMIST (Institute of Science and Technology). Another strong point has been the development of local community-based initiatives such as the network of Electronic Village Halls (EVHs) and community access centres together with the award-winning Manchester Community Information Network (MCIN) and Innovation in Digital and Electronic Arts (IDEA), which is the largest online access learning initiative in the UK. Lastly, all the partnership agencies supported by the City Council are committed to support the further growth of the internet/New Media and creative industry sectors as a priority.

The future is here, so what happens next?

The city has recently established the Manchester Digital Development Agency to take forward new initiatives aimed at making Manchester a world-class digital city. By working with a wide range of partners in the universities, business and the voluntary sector, the Development Agency will ensure that projects across the city are coordinated and made sustainable.

Whereas many of the drivers for e-government have come from the centre, Manchester's approach has always been supported by officers and representatives at the local level, and, ultimately, this improves the chance of sustainability through the 'mainstreaming' of services.

Manchester's aim of making ICT accessible to all does not stop with the internet as it is now, but looks forward to the development of new technologies such as broadband and Wi-Fi and mobile communications.

By pulling together responsibility for the use of technology across business, communities, education and local government, the city is building on its ICT legacy in ways that are innovative and inclusive. Our experience has shown that businesses in the city require a skilled and technologically literate workforce, that local government needs to use electronic methods to engage directly with businesses and communities, and that the city's creative and entrepreneurial spirit benefits from the opportunities made available through new technologies.

The city's creative and entrepeneurial spirit benefits from the opportunities made available through new technologies

At the Digital Development Agency's 2003 launch, there were representatives from community groups, businesses and the universities, alongside web designers and New Media developers. A specially made film for the event asked the question, 'What's the trouble with technology?' highlighting a determination to see technology as an enabler, rather than as an end in itself. A poem, written specially for the event ended with the words:

'The future is here
So what happens next?
When even your grandma
Sends you a text.'[1]

In Manchester, at least, that is not likely to be a rarity, but an everyday occurrence.

Networking Manchester

Manchester City Council has a long-standing commitment to prioritising information and communication technologies as a key part of its economic regeneration strategy for the city. The City Council recognised this more than ten years ago, when it carried out the first major review of its economic development strategy in 1989. Manchester was the first city in the UK to highlight this as a priority in its Economic Development Strategy in 1991. In the same year Manchester launched the UK's first public-access computer communications and information system, the Manchester Host, with a not-for-profit company, Poptel.

This partnership resulted in Manchester being one of the first local authorities in the UK to have an extensive website and the first to be an Internet Service Provider (ISP) through its partnership with Poptel. In 2000, a not-for-profit consortium led by Poptel won the right to administer one of the new high-level domain names for the internet on a global basis, with .coop. This means that Manchester, the original home of 'The Co-op', is now the home to the worldwide administration of the on-line '.coop' of the future. Poptel is still the UK's only employee-owned and controlled ISP.

Manchester's strategy is based on a commitment to encourage partnerships across the city to provide the services required to ensure that both businesses and the wider community can take up the opportunities offered by the information society and the new internet/New Media technologies. City Council supported initiatives include:

- Establishing local Electronic Village Halls, community access and learning centres, where people can gain confidence, overcome their technophobia and learn new skills and where small businesses can get 'hands-on' experience of IT and the internet
- The setting up of the Manchester Community Information Network (MCIN) in 1994, which has since expanded to be one of the largest online community networks in the UK, available over the internet (and soon via Digital TV) and through interactive information points in libraries, health

[1] The entire poem follows this essay.

centres, advice centres and community buildings across the city – it has also just joined up with Radio Regen, Manchester's community radio training agency to launch the first internet community radio station for the city
- Developing partnerships with the local universities, particularly the Manchester Metropolitan University (MMU), where a wide range of business support services are provided through a linked set of centres and projects including:
  - The Manchester Technology Management Centre (MTMC)
  - The Manchester Multimedia Centre
  - the Information Society Awareness – 'IS Aware' – project
  - The North-west New Media Network, coordinated by the Manchester Institute for Telematics and Employment Research, MITER, based at MMU
- Supporting the arts and cultural industries through a new business support agency – the Creative Industries Development Service (CIDS) – which provides advice, training and support for business networking
- Coordinating events through the Digital Summer/Inter:face festival which showcases cutting edge collaborations between arts, science and technology
- Developing new community based broadband services, such as the Eastserve community portal (www.eastserve.com) backed up with wireless broadband access for the local community

In Manchester's experience, those projects and initiatives supported by sections of the community facing social exclusion are often some of the most creative and innovative. It is no coincidence that some of the most dynamic contributors to the development of the information society in Manchester are the three original EVHs – the Women's EVH; Bangladesh House EVH, whose work involves excluded communities from many different ethnic minorities; and Chorlton Workshop EVH, based in one of the local churches, as well as the trade union-based 'Labour Telematics Centre' and the digital arts pioneers who established new digital arts initiatives across the city.

All of these groups demonstrate a social entrepreneurship which has historically been largely untapped and ignored, yet which has a real potential to create new jobs and training opportunities and to reconnect excluded communities to the benefits of the information society. This is one of the most important challenges facing this area of work: how to find ways of connecting these capacities across Manchester and the wider region and to develop new pathways into employment in these growth areas for society as a whole. This is the only way that we can realise the critical mass of activity and participation required to achieve sustainability in the longer term. This is what Manchester is most committed to in terms of linked strategies for economic regeneration and developing the information society.

The Eastserve Project: wired up and ready to go[2]

East Manchester is using new technology to turn its community into one of the most computer-literate in the country, helping to drive the regeneration of the whole area.

Raise your eyes above the rows and rows of terraced houses that make up many of the traditional streets of East Manchester and you will see the masts of the new Sportcity Stadium, pointing bravely upwards.

Built for the very successful Commonwealth Games in 2002, the stadium seems to symbolise the area's huge efforts to pull itself out of a seemingly endless cycle of decline.

East Manchester has taken many knocks over the decades, driven by successive losses of coal, steel and power industries and large parts of the manufacturing sector, particularly in the 1970s and 1980s.

The resulting wide-scale unemployment, often affecting several generations, has left its scars in the shape of heightened crime and vandalism, poor-quality and abandoned homes, wastelands of empty spaces, as well as low educational achievement and poor health.

Today that picture is changing... the Industrial Revolution may be over, but a new IT revolution is just beginning.

Through New Deal for Communities, over 140 regeneration projects are completed or under way, helping the community get back on its feet. One of the most popular of these – taken up by around half the households in the area and with around 1,000 'hits' a day – is Eastserve, an interactive website.

'Connecting' the neighbourhoods of Beswick, Clayton and Openshaw, Eastserve is much more than an information service. It is helping to promote many of the NDC objectives by drawing longterm unemployed people into training and jobs, encouraging those who are without a bank account or credit rating to save, and getting people who have been hard to reach involved in new initiatives. There are signs that it may also be sparking improvements to key public services.

Eastserve's first aim was to provide residents with computers and internet access. By March 2003, over 4,000 households had their own computer. Schools and other organisations are also linked in.

The equipment is supplied by ITEM, a local community enterprise that collects and recycles redundant computers and buys new ones in bulk to sell at a large discount. Many people still can't afford the £200 to buy a new computer, and that's where East Manchester Credit Union (EMCU) comes in. They arrange a loan, in the process taking on new customers and introducing them to the benefits of

[2] This information is reproduced from an article by Sara Lovell in 'Inclusion' magazine, published by the Social Exclusion Unit in the Office of the Deputy Prime Minister. The Social Exclusion Unit cannot accept liability for any omissions or errors. The views expressed are not necessary those of the Social Exclusion Unit. (C) Crown Copyright 2003.

saving. This has turned EMCU into the fastest growing credit union in the country, with around 3,000 new members via Eastserve. As a bonus, new jobs have been created to handle the huge demand.

Everyone who buys a computer must also take up a three-hour training course to learn how to use it. The training, provided by Manchester College of Arts and Technology (MANCAT), may be their first learning experience in a very long time, providing a gateway to further training and, for some people, into work.

Shirley Hughes, who was unemployed for 14 years, bought a reconditioned computer for just £30, and with the help of training and support gained new teaching and ICT qualifications, enabling her to secure a job as a teacher with MANCAT. 'It has been an amazing experience and my thirst for knowledge is growing. I was pretty much a novice at the start,' says Hughes, 'but now I am confident in my own ability. I am looking forward to providing other women with the chance to gain confidence and new computer skills at MANCAT.'

Once people have the funding, hardware, training and back-up to get online, they can use Eastserve's extensive website service, which is just about to be launched on a wireless broadband network, solely for the East Manchester community. Broadband costs less, and is more in tune with a whole range of community uses – from 'surgeries' with service providers to schoolchildren downloading their homework, to working out benefits using an online calculator.

Much of the local information on the site is provided by a Residents' Panel of journalists who also make decisions about the site's future direction.

Eastserve's Website Manager, Daniel Bainbridge, says: 'Broadband can help to develop individual projects on issues such as crime, safety and health. For example, we are talking to the local Primary Care Trust about video-conferencing GP surgeries so that doctors can consult with patients about minor problems online. There are wider implications too – we could improve consultation with organisations such as the Greater Manchester Police Authority, enabling residents to influence policy.'

There have been a few initial stumbling blocks during the development of more interactive services with public services, in that some have been wary of speaking directly to their customers via discussion forums and local businesses have been slower than anticipated to get on board.

The DFES will be carrying out a full evaluation of the project, but NDC Regeneration Officer Lesley Spencer believes that it has already contributed to the overall renewal of the area. 'Eastserve has been very valuable in pushing things along and engaging services and local people faster than would otherwise be possible. Having it

tied into training and the credit union has made it much more sustainable.'

Partner organisations such as Manchester City Council are now starting to provide some of their services online. Lesley adds: 'Service providers are keen to see how Eastserve can help them and to promote themselves, but they also have to respond. They cannot just deliver services online in their existing format – they are finding that they have to change and improve them.'

How far the website can influence the quality of public services may be difficult to assess at this stage, but it has certainly had a considerable impact on local people and on the NDC programme and it looks like it is here to stay. Eastserve is confident that by the time its funding runs out in 2004, it will be an integral, self-standing part of the community.

Key network contacts in Manchester

Manchester City Council:

www.manchester.gov.uk

The current website, for more details about the city's work in the internet/New Media field contact the Economic Initiatives Group (EIG) at the City Council

Manchester Digital Development Agency:

www.manchesterdda.com

The website of the Digital Development Agency articulating a vision for ICT developments in Manchester

MIDAS: www.midas.org.uk

The inward investment agency for Manchester. MIDAS is also managing the Commonwealth Games Economic Benefits Legacy Programme

Marketing Manchester:

www.marketingmanchester.com

The tourism and promotional agency for Greater Manchester

Creative Industries Development Service

CIDS: www.cids.co.uk

The business support agency for the arts and cultural industries sector

North-west New Media Network

www.nw-newmedia.net

The regional network supporting the development of the new media sector (see also MITER below)

Manchester Community Information Network

MCIN: www.mymanchester.net

One of the first and now largest community information networks in the UK

MITER@MMU:

The Manchester Institute for Telematics and Employment Research at the Manchester Metropolitan University (MMU) has been developed from one of the longest-running partnership initiatives

in the city, established by the City Council and the MMU more than ten years ago.

The key projects which are co-ordinated by the partnership:

Digital Media – U:

www.dm-u.co.uk

Digital Media Watch:

www.dm-w.co.uk

Further information on MITER from:

www.miter.org.uk

IDEA – Innovation in Digital and Electronic Arts:

www.idea.org.uk

Digital Summer/Inter:face -

www.digitalsummer.org/interface

***Telecities and the European Digital Cities programme*:**

www.telecities.org

THE FUTURE IS HERE

by Adrian Slatcher

We once painted cave walls
With berries crushed down,
Made music with jawbones
And horsehair we'd found.
Scratched on slates,
Made papyrus from reed,
Learnt ABC
When we wanted to read

Dipped quills in ink
To fill our long scrolls,
Then bound up the pages
Into books we could hold.
We once filled whole rooms
With adding machines,
Abacus to spreadsheet
Still counting out beans.

We used smoke signals
And pigeons to send,
Advance warnings of foes
Or news to a friend.
The email of the species
Is quicker than the mail
And our most hated words
Are Abort-Retry-Fail.

If the future is here
Then think what comes next,
When even your grandma
Sends you a text.

Hamburg

Senator Gunnar Uldall, Minister for the Economy and Employment

Broadband is a way to a digital quality of life. While an athlete's motto is 'higher, faster, further', the motto of the networked society is 'faster, further and broadband'. After you have tried the video-on-demand offering (as explained later), there really is no going back.

To Hamburg, e-government means fast and effective administrative services for citizens and local businesses. Public-sector processes must keep pace with the technological advances made by private industry and consumers. As Hamburg is an open-minded trade and media city, as well as a centre for the digital economy, we must drive e-government to provide the best possible service to our customers, Hamburg's citizens.

In Hamburg there is intense competition between carriers and service providers, which leads to a wide range of low-priced high quality services based on the Metro Ethernet infrastructure. Local providers offer bandwidths of up to 9.2 Mb/s. So this is interesting even for businesses with high data traffic volume.

DSL is also available throughout the city and there is increasing demand from private households. Furthermore, Hamburg is one of the first cities in Germany where UMTS, the latest mobile broadband technology, is deployed. We now have approximately 200,000 DSL connections in Hamburg, allowing broadband access to many more people.

In addition, last year the Hamburg@work initiative started the largest non-commercial WLAN project. Forty hot-spots throughout Hamburg will offer DSL-based wireless internet access for everybody.

As the so-called Gateway to the World, the Free and Hanseatic City of Hamburg sets the framework for all companies to be successful on the base of a solid, future-oriented infrastructure.

Finance department: e-Government, IT infrastructure for the administration[1]

The access to local services through the internet is an additional way of communicating with the administration in an effective and convenient way. There is a wide range of offerings for citizens and businesses in our e-government road map.

For example, citizens who want to contact a government official may prepare themselves online by finding the best contact. They may also research the relevant regulations and download all necessary forms.

[1] This essay has been prepared by the Government of Hamburg

The business service offers companies a database with more than 100 online forms and links to contacts and other sources of information. Furthermore, Hamburg uses the latest software for public tenders via the internet.

Hamburg is currently implementing a unique access point to our internet services – the Hamburg Gateway. You can use all administrative services with only one user ID and password. Our goal is to save unnecessary travel and waiting time for our customers, while at the same time improving the quality of service with significantly less cost and complexity.

How it works

For ten years, the City of Hamburg has managed its IT infrastructure in a simple – and possibly unique – way, which facilitates a unified and coherent IT strategy. This budgetary mechanism provides focus and muscle to ensure that all IT spending is planned and controlled from the centre, which virtually removes the possibility of duplication, incompatibility and waste.

There are no Hamburg local government agencies with discrete IT budgets. Before any money is allocated to departments such as justice, finance or internal affairs, there is a mechanism that removes the IT element. The aggregated budget is held under the stewardship of the finance department, which also holds responsibility for e-government. Funds are then allocated from that single source.

A committee – which also records, reviews and manages development spending – takes all IT investment decisions centrally. Each agency wishing to establish an IT or e-government project has to make a case for each project, develop its own proposals and submit a business case into an applications databank. All projects are assessed in the same way for ROI and cost savings.

Diether Schönfelder, Head of e-government for the City of Hamburg, explains: 'Any department wanting to establish an IT or e-government project has to make a specific case for that project. Each business case is assessed so that we can make decisions according to a citywide view.'

The system requires that each project must state how and when the investment will be paid back. If a proposal is not considered sound and is not in line with Hamburg's overall e-government strategy and IT standards, it will not proceed. Annual reviews are held and, occasionally, projects have been terminated as a result of technology problems or lack of success

according to the city's criteria. 'Every project,' says Schönfelder, 'has to be a win-win: this means that it must provide citizens with a better service and save the city money.'

Only sound projects that fit with overall city and regional strategy are permitted to proceed. This budget mechanism has also been responsible for introducing a healthy element of competition between the various agencies in their pursuit of IT funding, cost-cutting and improving service.

Germany's federal system can lead to duplication of resources in bordering states: Hamburg, however, has sidestepped the issue by extending its e-government domain bilaterally across the neighbouring states of Schleswig-Holstein and Niedersachsen.

Collaboration across the region benefits citizens, particularly those who travel daily into the city and have no time to visit their local office. Early next year, commuters into the city will be able to log into the Hamburg office to transact their own council business during their working day. This is enabled by a secure network using XML, which allows information to be shared and data to be input in one location – in Hamburg – and processed in another, their local office.

The merging of the IT provider for Hamburg with that of Schleswig-Holstein will bring economies of scale. These are publicly-owned companies organised as stand-alone businesses with their own budgeting and accounting systems, providing services for private companies as well as managing the infrastructure for the areas served by Hamburg. From the start of 2004, the single business will run services for two adjoining councils, and offer services further afield, to provinces and small cities to the north of the region.

There are two key projects for the citizens of Hamburg and her neighbours as explained by Jörn Riedel, Head of Network Architecture and IT for the City of Hamburg. 'The internet platform has gone from strength to strength during the last six years and now supports the second biggest website in Germany, with over ten million page views per month.' This website is run as a public/private partnership and reflects all the activities of the city including the booking of theatre tickets and hotel rooms, as well as administrative services.

The second project is the Hamburg Gateway. 'This,' says Riedel, 'will provide the connectivity for all transactions with our citizens and our commercial customers as well.' Online public information services are already hugely successful. The most used, with up to 750,000 hits per month, helps people get the services they need. Once a query has been input, a page comes up with the nearest office that deals with the matter, its opening times, the requisite forms and information on the public transport that will take the citizen to that office. Other well used services are the online ordering of birth certificates, new passports and special voting forms for voters away from home.

Diether Schönfelder is convinced of the value of getting the e-government message across to customers and to partner organisations alike. 'Number of users is what counts for us, not number of

Western democracies have deliberated long and hard on the vital task of providing access to government services to all citizens while maintaining levels of security and confidentiality

services. e-government must not be esoteric: access has to be simple. Our e-government strategy and what we offer are designed to make it that way.'

But while Schönfelder believes that simplicity of access to electronic services is all important to their quick take-up, he is well aware that it will take time for electronic routes to take over. Traditional methods of access – letters, telephone calls to the developing Citizen Contact Centre and visits to the local office – are all still in place and being updated so that whichever access method is used by business or by individuals, there will be no doubling-up of data input; the same electronically supported business processes will be used throughout. Hamburg is also planning the online management of municipal grants. An example of this would be the administration required when a claim is made by a charitable institution such as a church, for the running of a kindergarten. The church is entitled to reclaim some of the costs, but in staggered payments, and only once receipts have been provided. The process will be quicker and easier online and will no longer require piles of paperwork.

Another simplified process will deal with permissions. Currently, when a public utility requests permission to dig up a road, up to 16 copies of the request must be sent to interested parties like cable companies, building contractors and other public services. Soon the utility or builder will only have to register once to receive messages electronically.

The benefits of websites and online transactions can be measured in many ways: in Hamburg this is done by usage and by the savings made. But Diether Schönfelder emphasised that in Hamburg: 'The "electronification" of services is always accompanied by improvement in business processes, so that further financial benefits are derived from these as well as from the transfer of systems online.'

Economy department: broadband, SP competition, economic development

As a result of the commitment to e-government, Hamburg is focusing on new technologies including the ongoing development of broadband. The implementation of a modern technical infrastructure for effective e-government has been under way for several years with the administration network of 30,000 PCs, a standardised communication infrastructure and secure online access at its heart.

Western democracies have deliberated long and hard on the vital task of providing access to government services to all their citizens while simultaneously maintaining appropriate levels of security and confidentiality. The endorsement of digital certificates by the European Parliament has led many federal German authorities to insist on their use online,

in all cases where a handwritten signature would otherwise be required. But the digital certificate is not commonly used by individuals (fewer than one per cent of Hamburg citizens), or indeed by many businesses, and there are problems with compatibility of systems from different suppliers.

Having analysed practices across Europe and examined the UK model, Hamburg managers found that digital certificates are not mandatory, provided there is a single secure gateway to government websites, and that once a stringent process of authorisation has taken place, a digital signature is not required to undertake e-government transactions.

Now Hamburg is adopting a process similar to that used when a client opens a bank account. To access those more secure areas of the Government intranet in order to, for example, make payments for e-government services, a citizen completes an application form and sends it to the council. The council sends authentication data, password and ID to a local office. To collect the data that will enable transactions to be made online, citizens visit that office to show their faces and a personal ID card or passport. They then receive authentication data and it is their responsibility to keep it secure.

This data is entered just like a normal login process with a user code and password. The data includes address and other personal details that can make it more useful, and arguably more secure than those digital certificates with single fields. Once the citizen is signed up, all services can be accessed and transactions made. The gateway to the government services will be up and running shortly once relevant legislation has been passed by the Department of the Interior.

The new Hamburg Gateway, using a similar model to the Government Gateway in the UK, will provide connectivity for citizens and commercial customers for all transactions through a single interface. Jörn Riedel explains: 'Four or five hundred software applications run on the back end systems, and data shared across the infrastructure will be translated to provide the view seen by the user. This will share an underlying functionality so that features can be accessed in the same way with a similar look and feel for ease of use.'

Companies use the broadband service mainly for fast data transfer and real-time connectivity. The media and logistics industries, including the harbour, are good examples of industries in our diverse economic landscape that have a strong demand for broadband. In the private sector, a local service provider has started an innovative video-on-demand service that has set the ball rolling for vod services all over Germany.

Take the example of mobile radio technology via UMTS: the combination of mobility and broadband is a high technology base for the development of innovative services, and therefore new market opportunities. Consequently, driving the adoption of these technologies will also have a positive impact on the numerous Hamburg-based IT and Telco companies. With the variety of mobile business applications used, they are already among the pioneers in that sector in Germany.

All services that Hamburg provides will be available electronically. Once an account has been established, all data made available is on that account. If a user accepts a service, and a result cannot be provided online immediately, the user can logout and will later be sent an email. They can then return to find the result of the query, or the completion of the transaction.

Senator Uldall summarises: 'Hamburg works as a team so that everything goes easier and faster – especially with broadband.'

Hillingdon - a case study
How to create the Business Case

Pacey Cheales, Corporate Programme Manager for the Hillingdon Improvement Programme and Steve Palmer, Head of Technology and Communications, Hillingdon Council

The local strategic planning context for modernisation

Introduction

Each local authority will have its own drivers for modernisation. Whether responding to national or local priorities, the modernisation of service delivery through e-government is a common factor in community plans, best value performance plans and service specific plans.

Hillingdon's business case for modernisation work does not try to establish a definitive set of modernisation drivers applicable to all local authorities. However, the detailed analysis carried out by Hillingdon's Housing Service highlighted the importance of answering the question 'What are the drivers for modernising the service?'. The answer to this important question is for each local authority to determine based on its own circumstances.

Strategic planing context for modernisation – London borough of Hillingdon and housing services

To place the more detailed aspects of Hillingdon's modernisation work in context, this section provides a thumbnail sketch of the council and its Housing Services department.

London Borough of Hillingdon:

Hillingdon is London's second largest unitary borough – covering 42 square miles of west London from Harefield in the north to Heathrow airport in the south. Located 14 miles from central London Hillingdon shares its boundaries with neighbouring west London boroughs and the counties of Hertfordshire, Buckinghamshire and Surrey.

The borough is home to 250,000 people from diverse backgrounds. BAME (black, Asian and minority ethnic) communities currently comprise 19% of the population – this figure is expected to rise to 25% by the end of the decade. Hillingdon includes the world's busiest international airport at Heathrow and the main campus for Brunel University.

Housing Services:

Hillingdon council's Housing Service provides a comprehensive range of housing-related services to all tenures in the local community. The department's strategic priorities and operational activities are focused on positively contributing to the borough's Community Plan in the following areas:

COMMUNITY PLAN AIM	HOUSING'S STRATEGIC OBJECTIVE
A HEALTHIER BOROUGH	*Improve services for older people and promote independent living for vulnerable tenants*
A SAFER BOROUGH	*Work with the police and others to reduce crime, anti-social behaviour, domestic violence and racial harassment*
AN ECONOMICALLY PROSPEROUS BOROUGH	*Increase the supply of housing for low income and key worker households*
A CLEANER AND MORE PLEASANT BOROUGH	*Satisfy basic needs for warm homes and safe streets and improve conditions in the private sector*
A BOROUGH WHERE OPPORTUNITIES ARE OPEN TO ALL	*Focus resources on excluded groups, reduce homelessness and ensure equality for all service users*
A BOROUGH THAT ENCOURAGES LIFELONG LEARNING	*Provide training opportunities for council tenants and people living in temporary accommodation*

Within this strategic context the operational scope of Hillingdon's Housing Service is illustrated by highlighting the operational services delivered by the department's 520 directly employed staff and its other partners:

- Landlord for more than 11,500 tenancies and 1,500 leaseholders – collecting rent and service charges valued in excess of £45,000,000 per annum
- Administering housing and related benefits valued in excess of £70,000,000 per annum to 18,500 new and existing service users
- Annual planned maintenance and day-to-day repairs investment in council housing stock valued in excess of £18,500,000
- Provision of 23 sheltered housing schemes providing independent living accommodation for 925 elderly and vulnerable members of the community
- 18-month, £27,000,000 capital programme to supply 230 new affordable homes

Drivers for modernisation:

This local context helped Housing Services identify the following objectives for modernising the service:

- National and local government policy agenda re: BV157 and wider Best Value regime
- Generate cost/productivity gains,

demonstrate willingness to positively scrutinise costs and working methods
- Socially inclusive e-delivery, ensuring potentially excluded groups had access to digital delivery channels
- Work-Life-Balance aspirations, strive to be an employer of choice in a competitive labour market
- Meeting citizen expectations, ensuring a positive response to evidence from citizen panel of awareness and desire to transact electronically
- Improving accessibility to services, using online facilities and new working arrangements to establish more flexible pathways into services

Identifying these objectives at an early stage was productive as they focused Housing Service's attention on the benefits that had to be delivered by modernisation.

Building the modernisation business case

Introduction

Having identified the most important 'drivers' for modernisation, the core of Hillingdon's work focused on building the business case for modernisation. The business case emerged over time and was refined through an iterative process. Having completed the process Hillingdon's experience suggests there are five steps involved in building the modernisation business case.

Building the Modernisation Business Case

There follows a brief explanation of Hillingdon's process, as well as the key outcomes from the Housing department's modernisation business case:

Step 1
Benefit identification
Identify the benefits modernisation needs to deliver for your organisation

Step 2
The modernisation diagnostic
Identify the opportunities and risks of modernising working practices, e-delivery and citizen contact

Step 3
Reality check
Review the diagnostic outcome against the benefits required

Step 4
Completing the business case
Develop a costed ROI on all or selected priority elements of the diagnostic

Step 5
Prioritising the business case
Evaluate the business case using agreed prioritisation criteria to assist resource allocation decision-making (This step is not relevant to the main focus of this paper and is not reported in here)

Step 1: Benefit identification

INTRODUCTION

Each local authority's strategic and operational context will create the framework in which the modernisation business case is built. In building any business case the importance of establishing the anticipated benefits of a particular initiative at the outset if self-evident.

In the case of modernisation the anticipated benefits will be relevant to each council's circumstances. Consequently, Hillingdon's work is not presented as a definitive list of benefits for modernisation. Instead the experience gained from Hillingdon's approach may assist other councils faced by similar challenges.

BENEFIT IDENTIFICATION – LONDON BOROUGH OF HILLINGDON

Hillingdon's process of benefit identification was as follows:

- First, the benefits associated with modernisation were explicitly defined. Hillingdon found it helpful to identify a number of broad target groups as potential beneficiaries of modernisation:
  - Citizen and community
  - Employees
  - Service providers
  - External stakeholder

- Second, a 'long list' of benefits was developed. Nothing was ruled out in the first instance as the benefits from modernisation can be unexpected and diverse.

- Third, a practical categorisation system was used to map each 'long list' benefit against one of three broad groupings:

  - Red benefits – are those that will (when delivered) realise hard tangible cost savings, eg reduced premises costs or savings in procurement costs.

  - Orange benefits – are productivity improvements in terms of employee time saved, eg from web-enabled citizen self-service. These types of benefit require proactive management to be realised. They can either be banked as financial savings or alternatively used as 'free' resources to be reallocated elsewhere.

  - Green benefits – are those benefits that cannot be converted with any degree of reliability into cash or productivity gains, eg, building organisational capacity or raising the council's profile with key stakeholders.

When this process was complete, a set of desired red, orange and green modernisation benefits were identified by Hillingdon:

Potential red hard cost benefits

Reduced premises costs – savings on officer accommodation
Reduced ICT costs – reduced connectivity as accommodation declines
Flexible working methods – simplified terms and conditions
Recruitment costs – reduced turnover, declining advertising costs
Restructuring – potential increased spans of control
Reduced facilities management costs – reduced premises numbers
Cheaper, faster procurement – enabled by b2b online procurement
Reduced postage costs – channel swapping from manual post to email

Potential orange time and/or productivity benefits which may be converted to cash or redirected elsewhere

Reduce commuting time – flexible working reduces commute frequency
Greater productivity – increased staff motivation from flexible working
Better use of specialists – focus on value-added tasks, via job redesign
Reduced staff turnover – improved work-life-balance
Access to electronic information – greater efficiency in data-handling
Single point of contact – reducing resource duplication
Standardisation of response – via call-scripting, reduced transaction costs
Online forms/transactions – citizen self-service and channel-swapping
Tracking/data management – enhanced performance-monitoring
Disintermediation of third party – simplify supply chains
Regional/subregional economies of scale – west London mechanisms

Potential green intangible benefits, not reasonably converted to a financial value

Community leadership – major local employer embracing information age
Reputation – as a forward-looking organisation
Closeness to citizen – better understand needs and more responsive
Social inclusion – use digital technology to promote inclusion
Identify and respond to trends – via improved data capture and management
Citizen empowerment – via digital self-service and engagement
Meeting citizen e-expectations – surveys indicate citizen readiness/desire
Faster turnaround time for the citizen – self-service, single point of contact
Ability to attract funds – improved reputation helps attract resources
Attracting partners – private sector attracted to local authority exemplars
Quality of service – reduced cost, faster services that meet citizen needs
Improved work-life-balance – for staff involved in modernisation
Staff motivation – improved by modernised flexible working
Openness to innovation – building future capability and capacity
Project image of modernity to stakeholders – innovator to work with
Greater employee responsibility – cultural change via modernised working
Output/outcome based management – performance orientated focus
Service accessibility – better meeting statutory duties
Regional/sub-regional good practice – being an exemplar for peer authorities

The process of benefit identification resulted in a matrix that combined both benefit categories and target groups shown below:

Benefit, target group matrix:

TARGET GROUPS	BENEFIT CATEGORIES		
	RED	ORANGE	GREEN
Citizen and community		Disintermediation	Socially inclusive
Employees		Reduce commute time & turnover	Staff motivation
Service providers	Reduce premises & recruitment costs	Greater productivity	Service accessibility, staff motivation and meeting citizen e-expectations
External stakeholders		Subregional economies of scale	Meeting citizen e-expectations

By identifying the benefits of modernisation at the outset of the business case Hillingdon found:

- It focused attention on the benefits most relevant to the organisation.
- It established a set of benefits that the modernisation diagnostic would be assessed against, and, finally,
- It helped address the question of where to apply the modernisation diagnostic – which is explained further in step 2.

Step 2: The modernisation diagnostic

INTRODUCTION

The objective of the Hillingdon's modernisation diagnostic was to identify the opportunities, benefits and risks associated with deploying digital communication technologies to:

1. Modernise working practices
2. E-enable service delivery
3. Improve citizen contact management

The diagnostic was characterised as follows:

- A set of pre-determined questions applied systematically
- Service-based approach that focused on the experience and judgement of service managers
- Scaleable management tool applied both to relatively small staff groups of half a dozen as well as service teams of more than staff
- Conscious of the capabilities presented by the internet and other digital communications technologies to change the organisation
- Sensitive to the human resource benefits, implications and risks of deploying and sustaining modernisation

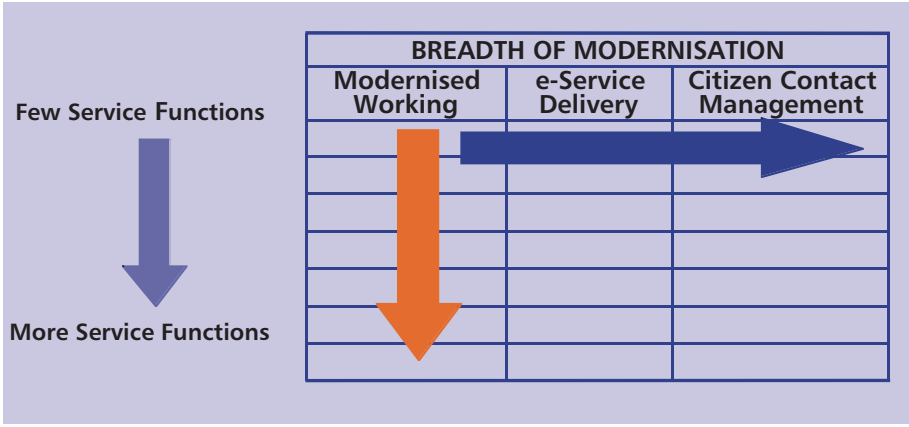
However, the diagnostic was relatively time-consuming to apply, required data preparation beforehand and a fair amount of quantitative and qualitative analysis afterwards.

Scoping the modernisation diagnostic:

Hillingdon decided to carry out all three elements of diagnostic across the Housing Service. An alternative would have been to focus a single part of the diagnostic on a wider range of service function, eg applying the modernised working diagnostic to staff who work in major civic buildings or all peripatetic staff.

Clearly there is a continuum of scoping options available, and each council will determine what's best for its own circumstances. For example, if cost improvements were a priority, applying the modernised working element of the diagnostic would be most relevant. Whereas if identifying services to be e-enabled to meet BVPI157 was of particular significance then the e-services part of the diagnostic would be used.

Hillingdon's experience was that reviewing the benefits identified (during step 1) helped scope the application of the diagnostic.



Diagnostic scoping matrix

The following sections summarise each element of modernisation diagnostic and set out the opportunities and risks identified when it was applied to the Housing Service.

THE MODERNISED WORKING DIAGNOSTIC – HOUSING SERVICES

The broad objective was to work with service managers to identify the opportunities to modernise the way Housing Service's 500 staff work. Particular attention was paid to how mobile and teleworking could be utilised in parallel with more flexible working policies and electronic document management (EDM) to enable modernised working.

The importance of effectively managing human resource (HR) issues to deliver modernised working was recognised as being central to the entire modernisation agenda. Consequently priority was given to identifying the important HR policy, organisational and staff competencies associated with deploying modernised working.

Opportunities for modernised working

The objective was to work with service managers to identify opportunities to utilise a range of modernised working arrangements in Housing Services, including:

- Mobile working
- Teleworking
- Hot desk modernised working arrangements
- Extended service availability
- Increased use of flexible working

The investigation highlighted the job functions that best lent themselves to modernised working, as well as the numbers and proportions of FTE's involved. Teleworking functions were defined as non-public contact back-office activities that supported front-line delivery, eg client casework, project preparation, write-up/preparation for inspections/visits etc. High-volume telephone public contact work was excluded from the teleworking category. The view was taken that initially employees should not be isolated at home

dealing with potentially irate telephone calls in virtual contact centres. Mobile working was defined as any functions requiring regular, dedicated time away from a civic office, whether to deliver services to the community, inspect properties or meet with external partners.

Service managers also highlighted how they thought their team(s) would respond to the implementation of modernised working. The modernised working diagnostic identified the following:

✓ Estimate of 295 or 70% of the total workforce was potentially suitable for mobile working and/or teleworking for between 2 – 4 days per week.

✓ Consequently, that 295 staff could move from a dedicated work desk in a civic building to a hot-desking/ touchdown facility.

Similar to other organisations, Hillingdon recognised that pursuing opportunities for modernised working would require hot desk/touchdown facilities being substituted for existing dedicated work desks. This in turn could leverage the opportunity for space savings, more efficient use of assets and associated reductions in accommodation costs. The potential impact on office accommodation pre- and post-modernised working in Housing Services is summarised in the table below:

Indications were that a reduction of approximately 50% in the number of work desks could be achieved post-modernisation – when compared with the number used in mid-2001. However, the overall space reduction (and cost reduction) could be greater if modernised working was deployed in parallel with EDM, as the latter could further reduce the office space required to store manual data.

Location (headcount)	CURRENT WORKDESKS	Opportunities For mobile, Teleworking	Hot desks on 1:3-1:4 ratio	Balance needing 1:1 desk ratio	MODERNISED WORKDESKS
Civic Centre	**265**	183	45-61	82	**127-143**
Area Housing Offices x 4	**154**	112	28-37	42	**70-79**
TOTAL	**419**	295	73-98	124	**197-222**

Opportunities for flexible working:

The objective was to identify the preferences of service managers for promoting the use of flexible working arrangements to support the implementation of modernised working.

Service managers were asked to evaluate the potential benefits of deploying a number of flexible working arrangements, including:

- Changes to the start and end of the working day, ie 8am – 8pm
- Service availability each week, ie 6 or 7 day working
- Application of flexi-days
- Flexible weekly hours within a banded upper and lower limit.
- Annualised hours, eg working standard pattern/hours during specified periods – leaving other periods when the employee does not attend work.
- Compressed hours – eg, the ability to either work agreed annual hours in a shorter period (at flat rate) or to work above contracted hours (at flat rate). In both cases above the 36 hours national conditions
- Pre-set annual leave arrangements, ie prohibiting leave at certain times, smoothing leave throughout entire leave year and the use of 'closedown' periods.

The options were discussed with service managers and a number of priorities consistently emerged across the Housing Service:

✓ Preference to extend both the start and end of the working day (ie, to 8am-8pm) and extend service availability to 6 days in 7 by working Saturday mornings

✓ Flexible weekly hours within a banded upper and lower limit was not supported in general as this would make resource planning too difficult

✓ Annualised and compressed hours were seen as offering potential benefits to service delivery and resource planning

✓ Pre-set annual leave, ie prohibiting leave at certain times, smoothing leave throughout the year or use of 'closedown' periods were seen as offering potential benefits, particularly where there were cyclical peaks in workload

✓ Common theme to emerge was the continued relevance of core/fixed working hours to teleworkers. Service managers broadly took the view that so long as work was carried out to agreed levels working time could be credited on a 24/7 basis

Opportunities to utilise HR to support modernised working:

The objective was to identify:

- The HR policy priorities that service managers believed were needed for modernised working to be effectively deployed
- To highlight the 'softer' less tangible organisational risks that threatened the effective delivery of modernised working
- The competencies (knowledge, skill and behaviour) that service managers believed were most necessary for their staff and managers to deliver modernised working

This part of the analysis identified a number of consistent perceptions and messages from service managers:

✓ The priority was for HR to develop an effective policy response to teleworking (including health and safety issues), managing the performance of geographically dispersed teams and resolving the contractual issues associated with modernised working

✓ Potential threats to modernised working identified by service managers included focusing on ICT at the expense of human factors (eg maintaining team identity and culture despite geographic dispersal), ineffective performance management of dispersed teams, (management concerns that 'I can't manage what I can't see') and managing the uncertainty created for both managers and employees by modernised working

✓ Common competencies for employees and managers necessary to sustain modernised working included:

- Self-learning
- Professionally up to date
- ICT self sufficient
- Increased health and safety and equalities awareness
- Customer focused
- Personally accountable and organised
- Flexible and having good colleague relationships

Opportunities for electronic data management (EDM) to support modernised Working:

The objective was to identify the data that needed to be available electronically to support modernised mobile and/or teleworkers.

Service managers identified the manual and electronic data requirements for each function previously earmarked as being potentially suitable for modernised working. The following results emerged:

- Confirmation of the value of Housing's previous ICT investments in an integrated housing management system and the deployment of 'thin' client technology across Housing's 430 user base in 2001. Both were seen as providing foundations for future web based applications and new working methods
- Broad categories of data needed to support modernised working were highlighted as information hubs for a number of modernised working practices:
  - Tenant files (people based data)
  - Client case files (Benefits, Emergency Housing, Private Sector, Sales etc)
  - Property files (capital programme project data, property related, ie estates, sheltered and hostels)
  - Mobile data requirements for employees, particularly for staff involved in site inspections/visits. These offered opportunities for productivity gains by enabling remote access to back office databases (either read only or to update online)

- Service specific and generic policy/technical/professional guidance (ie health and safety etc)

Risks and issues raised by the modernised working diagnostic

Completing the modernised working element of the diagnostic raised a number of issues and risks for Housing Services to consider:

Modernised working:

1. How to effectively manage the reduction in dual purpose building assets – ie those that contain both office space and face-to-face public contact facilities?
2. What happens to office accommodation post-modernised working? Is the remaining office space rationalised (ie close down), consolidated (ie merged) or centralised?
3. Where and how will future face-to-face contact with the community be conducted after the accommodation portfolio has contracted post-modernised working?

Housing Services' approach to the sensitive and complex issue of face-to-face public contact was to seek the community's views via a citizen survey. The options being evaluated are to increase the use of home appointments (where safe to do so), develop single delivery points for face-to-face contact ie at centralised or consolidated office locations or develop surgeries/drop-in facilities located at community facilities ie hospitals, GP surgeries, other council premises – libraries, or shopping centre etc.

Flexible working preferences:

1. How to manage the potential tensions between the needs of the service and employees' desire for an improved work-life-balance? The opportunities presented by greater flexible working could allow employees to develop a work-life-balance suitable to their personal circumstances. However service need to take precedence. A solution being considered is to develop a 'menu' of flexible working options that managers and employees can select from to ensure service needs are met.
2. How to manage the resource implications of extending total hours of service delivery and availability? The key factor is likely to be the impact of modernised working on aggregate demand for services. Where demand remains unchanged despite increased service availability (ie total demand is spread more thinly), the priority will be to reorganise existing resources to cover the extended hours of service availability. Where aggregate demand expands in line with increased service availability, additional resources will be needed unless modernised working delivers offsetting productivity gains.
3. How to reconcile the need for increased flexible local employment practices with local government's national employment conditions framework? Hillingdon's approach has been to seek a negotiated provision of flexible working through the council's existing single table harmonisation machinery.

Human Resource priorities

Some of the most important questions posed by the modernisation agenda were highlighted at this stage:

1. Is the implementation of modernised working (particularly teleworking, mobile working and changes to service availability) mandatory or voluntary? If mandatory, does it apply to existing and/or new employees, or will implementation be phased over time? There are a range of factors to be considered, particularly social exclusion, health and safety, and issues where employees do not have suitable domestic accommodation to support teleworking. There is also the clear issue of personal choice: some people want to go to their employer's place of work and do not want to remain at home. However, this needs to be carefully balanced against potential cost and productivity gains that may accrue from reductions in accommodation costs, improved productivity and enhanced service quality resulting from modernised working.
2. Are managers and colleagues competent (knowledge, skills and behaviour) to operate effectively in a post-modernised working environment? The greater degree of personal responsibility and accountability, professional discretion, lone working, often accompanied by more direct contact with the community may not motivate all existing staff. What will the employer's response be in these circumstances?
3. What is the impact of modernised working on established forms of job design? Throughout Housing Services staff multi-task, performing front and back office tasks at different times as well as desk-based and mobile working. Productivity gains could be achieved by specialising and consolidating tasks at particular times. Indeed, this is likely to be a prerequisite for modernised working as tasks suitable for tele and mobile working will have to be consolidated into continuous working periods.

Electronic document management:

1. The EDM aspects of the diagnostic raised the question of how to effectively manage existing manual data? Consideration needs to be given to data protection, client confidentiality and possible Human Rights Act implications. In addition, the practical consideration that widescale modernised working is not sustainable if mobile and teleworkers are transporting large amounts of manual data between different places of work needs to be addressed.

Housing's objective is that to support modernised working, data needs to be available electronically via the council's ICT network – and that the data is accessible to remote staff 24/7 without the need for confidential citizen or commercial data being hosted/stored outside the council's secure 'firewall'.

CITIZEN CONTACT DIAGNOSTIC – HOUSING SERVICES

The context for this element of diagnostic was the recognition that digital communication technologies were creating new opportunities in the management of citizen contact. In North America and the EU, large public and private sector organisations are progressing beyond telephony based call centres and towards multi-channel contact centres. These changes in channel management have been giving greater focus by the emergence of customer (or citizen) relationship management (CRM) software applications being marketed for use in the UK public sector.

Consequently, the objective of this part of the diagnostic was to understand the nature of Housing Services contact with its community and the channel preferences for this contact. This information would help determine how citizen contact could deliver higher quality service outcomes for the community and leverage potential economies of scale for the council by deploying:

- Multi-channel contact centre(s)
- Consolidated handling of generic enquiries
- A single point of contact for citizens
- Improved service accessibility through 24/7 online information
- Citizen self service

Preferred service delivery and communications channels:

The objective was to work with service managers to identify and categorise service delivery using two criteria. First, the channel used (for both inbound and outbound communications) and second, the qualitative nature of the service relationship between Housing and the citizen.

- Channels were categorised as face- to-face, telephone, letter, email or fax
- Service relationships were qualitatively categorised as either:
- 'Tell Me' – where there was a relatively simple exchange of information that was not necessarily client-specific.
- 'Help Me' – where further assistance/enquiry was needed and related to the specific circumstances of the citizen.
- "Relate To Me" - where the specific communication or transaction was, in almost all cases, part of a longer term, more complex relationship between the council and citizen.

Service managers estimated current volumes of interactions with the community for each channel – and characterised the nature of the relationship as either 'tell', 'help' or 'relate to me'.

Total inbound communication was characterised as follows:

Relationship	Face-to-Face	Telephone	Letter	Email	FAX	TOTAL	
'Tell me'	29%	49%	16%	4%	2%	100%	**29%**
'Help me'	39%	44%	12%	4%	1%	100%	**38%**
'Relate to me'	36%	49%	11%	3%	1%	100%	**33%**
TOTAL	**35%**	**47%**	**13%**	**4%**	**1%**	**100%**	**100%**

Analysis of inbound communication identified that:

✓ The reasons why citizens' contact with Housing were in broad terms equally split between 'tell', 'help' and 'relate' – in other words more than two in three contacts were seeking some form of generic information/general help with a specific problem.

✓ In line with other research the telephone was the preferred channel for inbound communication, although not unsurprisingly face-to-face contact increases in preference for more complex/sensitive service contact(s). It was of interest to note that one in six inbound communication remained in writing, either manual or electronic.

Total outbound communication was characterised as follows:

Relationship	Face-to-Face	Telephone	Letter	Email	FAX	TOTAL	
'Tell me'	23%	50%	23%	3%	1%	100%	**27%**
'Help me'	34%	43%	19%	3%	1%	100%	**39%**
'Relate to me'	40%	33%	23%	3%	1%	100%	**34%**
TOTAL	**33%**	**42%**	**21%**	**3%**	**1%**	**100%**	**100%**

Analysis of outbound communication identified that:

✓ The reasons why Housing Services' contacted citizens appeared to be similar to the inbound analysis, namely, equally split between 'tell', 'help' and 'relate' interactions. This suggested that two in three outbound transactions were related to an exchange of information or providing general help to the citizen.

✓ Housing's preferred channel for outbound communication was also the telephone. However, face-to-face communication was preferred for the more sensitive and complex 'relate to me' interactions. It was noted that one in four outbound transactions was undertaken in writing – the vast majority undertaking in writing and posted to the recipient.

In overall terms this analysis suggested a number of priorities for Housing Services:

- The need to develop online citizen self-service for the 65% of total communication which was either exchanging data ('tell me') or providing general advice to the citizen ('help me')
- Seek to digitise (email etc') written communication that for legal or other reasons needs to be retained

Risks and issues raised by the citizen contact diagnostic

Completing this element of the diagnostic highlighted a number of important risks and issues for Housing Services:

1. The importance of developing a thorough citizen contact strategy – setting out how first line citizen contact will be managed on a channel-by-channel basis. Housing Services' preferred approach is to consolidate the handling of the 65% 'tell me' and 'help me' transactions in a contact centre – while retaining specialist teams to manage the 35% of complex 'relate to me' interactions.
2. The citizen contact strategy will need to address sensitive organisational issues. For example, which forms of citizen contact are best managed on a council wide basis and which are best managed by individual services? Hillingdon's corporate approach has been to simultaneously participate in a Pathfinder CRM project, pilot a contact centre in a discreet service area while prioritising services that could be located in a council-wide contact centre in the future.
3. At an organisational level a key question was whether Housing possessed the specialist skills to manage effectively the high volume of 'tell me' and 'help me' transactions. The deployment of a contact centre would require people with specialist customer (citizen) service and management competencies. This would represent a potential threat to existing back office and public contact staff who may possess different competencies.

E-SERVICES DIAGNOSTIC – HOUSING SERVICES

The context for this part of the diagnostic was central government's information-age society agenda and the specific e-services performance measure BVPI157. Moving beyond the work required for BVPI157, Housing Services considered the ways that service quality and effectiveness could be enhanced via e-enablement. From this work the e-services element of the diagnostic emerged.

Opportunities for modernised e-Services

The objective was to build on the initial BV157 audit by working with service managers to systematically identify the opportunities to e-enable service functions against of the following themes:

- **Citizen self-service**: Making both generic and citizen specific information available online – so the community could directly access information to answer their own queries without needing to make direct contact with the council
- **Online transactions**: At its simplest level this meant digitising existing manual processes including service enquiries, commissioning, online payment for services and the ability to provide citizens with an end-to-end online process for services that are fragmented amongst different parts of the council or between local and central government agencies.
- **Removing intermediaries**: Digital communication could facilitate direct contact between citizens and service providers – eg council, contractor, government agency or voluntary sector. There were examples where the council acted as an intermediary between the citizen and third parties. The diagnostic challenged the council to review whether this intermediary role added value or whether direct access between the citizen and third party should be e-enabled
- **Cross-boundary working**: It was recognised that digital communication and government policy were challenging existing administrative boundaries. Therefore the diagnostic was directed to identify opportunities to develop regional and sub-regional inter-agency partnership and service delivery
- **e-speed**: The statutory nature of Housing's activities and the long-term relationship with tenants meant that end-to-end service delivery processes could be time-consuming, particularly if mail was posted. Consequently the diagnostic identified opportunities to use electronic communication to reduce the total elapsed time to complete multiple stage transactions.
- **Community engagement**: It was recognised that direct, ongoing engagement with service users, the wider community and hard-to-reach groups could be facilitated online. Improved online engagement could be facilitated between the council and community on a number of levels. For example between citizens and business, between citizens themselves and between citizens and the voluntary sector or government agencies.

An extensive range of e-service opportunities emerged from discussions with service managers. Examples include:

- **Citizen self-service**: Online FAQs, access criteria and policies for all services. Making project case files accessible to tenants and development partners etc. E-enabling client case files (Benefits etc) to facilitate online citizen enquiry. Online referral points/contact details for tenant associations and landlord services.
- **Online transactions**: Including service request forms, booking appointments for home visits, end-to-end online service process, eg Housing Benefits application, decision, appeal and change of circumstances. Discreet transactions eg 'Homefinder', nuisance complaints, mutual exchange, arrears escalation process and the tenant exit checklist were also identified.
- **Removing intermediaries**: Direct tenant-to-service provider contact to address Resident Quality Promise performance issues were identified and direct tenant-to-tenant contact where needed, eg for mutual exchange and finally b2b procurement by service managers with suppliers.
- **Cross-boundary working**: Opportunities to develop sub-regional procurement and/or delivery mechanisms were identified, eg, empty homes strategy, procurement of property, temporary accommodation support, mutual exchanges, transfers and Right to Buy process.
- **e-speed**: Lengthy, multi-stage processes such as Benefits, Repairs for services (tenants and leaseholders) could benefit from using electronic communication.
- **Community engagement**: More immediate and targeted community engagement opportunities were identified including the capital programme formulation, Works Over Prescribed Limit consultation, tenant initiative funds and advisory services. Ongoing performance and tenant feedback on service delivery and promotion of take-up for particular services could also be e-enabled.

Risks and issues raised by the e-services diagnostic

The step-wise change envisaged by wide scale e-service modernisation raised a number of challenging questions.

1. Does a robust community access strategy exist? The potential benefits of e-services are underpinned by an access strategy that raises awareness, promotes, and supports the take-up of digital technologies. This is particularly relevant for hard to reach, socially or economically excluded groups who otherwise are likely to be late adopters of digital technologies. Hillingdon's approach has been to promote library based public access terminals and develop an iDTV pilot.
2. How to prioritise investment in e- services? This was particularly difficult to answer, due to a lack of clear evidence demonstrating the tangible benefits of e-service initiatives. Hillingdon's response was to develop an e-services prioritisation model which is not reported on here.
3. How will the supply chain be e- enabled? Housing's initial diagnostic work focused on e-services to the end service user or citizen. It became apparent that this approach did not pay sufficient attention to e-enabling other elements of the supply chain, including procurement, supply of goods and

services, and data exchange with government agencies and partners.
4. Does a resilient network of technology providers and partners exist? Work with council colleagues and other suppliers has developed a resilient communications infrastructure to support the piloting of mobile and teleworking solutions as well as online payments and citizen authentication portals. More problematic (in Housing's case) was generating supplier markets, commitment to develop a comprehensive range of innovative citizen focused e-service solutions. Housing's approach has been to continue to work with existing and new suppliers to pilot innovative solutions as a step towards achieving a broader strategic partnership(s).

Step 3: Reality check

INTRODUCTION

Having completed the modernisation diagnostic and identified the key opportunities and risks – step 3, The reality check – was the next element in building the business case. The objectives of step 3 were to:

1. Clarify the key opportunities and risks generated by the diagnostic
2. Assess the opportunities and risks against the benefits identified at step 1
3. Determine whether the opportunities and risks were likely to generate an acceptable level of benefit, paying particular attention to the evaluation and management of risks identified by the diagnostic. In Hillingdon this assessment was directed towards the following issues:

   - If an acceptable level of benefit was not demonstrated – pause and review the original benefits, revisit the diagnostic's scope and if necessary determine why the modernisation business case was not sustainable.
   - If an acceptable level of benefit was demonstrated, the costs and savings associated with the opportunities in question were developed into a costed ROI in step 4, completing the business case.

REALITY CHECK – LONDON BOROUGH OF HILLINGDON AND HOUSING SERVICES

Clarify the opportunities and risks generated by the diagnostic

Applying the three elements of the modernised working diagnostic to Housing Services identified a number of opportunities and risks:

Business case opportunities:

1. 70% of office-based staff could benefit from modernised tele/mobile working for 2-4 days per week. Wide scale deployment of modernised working could reduce the number of office work desks by between 47% – 53% via the provision of internet-enabled e-working arrangements.
2. The preference among service managers to combine improved service availability (both morning and evenings, plus Saturday mornings) with more flexible working practices including annualised and compressed hours, 24/7

credit for working time and changes to annual leave arrangements.
3. Approximately 65% of total services transaction volumes with the community were characterised as relatively generic in nature. This data generated the opportunity to use online applications to centralise the management of these generic citizen contacts – while leaving the more complex sensitive transactions with existing specialist teams.
4. A wide range of service functions were identified as suitable for e-enabling. Opportunities to deliver potentially faster, cheaper and more consistent services online were clarified. In addition, new and innovative opportunities to enhance community engagement, reduce the need for mediation and develop sub-regional delivery mechanisms through e-enablement were also identified.

Business case risk factors

1. A common theme to emerge was the importance of effectively managing key human resource factors – and the risk to the modernisation programme of not doing so. In particular:

   - Whether modernised working was mandatory or voluntary?
   - Maintaining a balance between employee expectations for improved work-life-balance and the needs of the service
   - Capability gap analysis – whether the right skills to sustain a modernised organisation exist, and if not how are they going to be nurtured
   - Managing constrained human resources when faced by increased community expectations and aggregate demand
2. The effective management of physical assets was identified as crucial. Decisions on how to rationalise post-modernised working office accommodation and how future face-to-face public contact will be delivered are vital
3. Fostering and promoting community access to digital channels was identified as critical to realising the opportunities and benefits of e-services. Without an effective access strategy the risk exists that considerable public resources will be committed to e-enable services that only a relatively small proportion of the local community will access or use
4. Delivery of the modernisation agenda needs a robust and diverse network of technology partners to plan, deliver and maintain the core ICT infrastructure and value-added software that underpins both modernised working, improved first line citizen service and e-enabled services

Does the business case deliver acceptable benefits?

The modernisation diagnostic identified a wide range of opportunities to improve cost-effectiveness, service quality and citizen service. It also highlighted a number of risks – primarily associated with delivering organisational change, asset management, socially inclusive e-delivery and maintaining a robust network of partners and suppliers.

To assist the discussion on whether the diagnostic delivered acceptable benefits, Housing revisted the original benefits matrix. Through a qualitative, rather than

quantitative process, each of the key benefits originally identified was reviewed with the opportunities and risks generated by the diagnostic. The outcome was to rate each benefit as either:

- Sustainable (ie 'Yes')
- Unclear due to partial or incomplete data ('?') or,
- Compromised due to insufficient opportunities or outweighed by risk (ie 'No'). In Hillingdon's particular case 'Nos' were not identified

Benefit, target group matrix

TARGET GROUPS	BENEFIT CATEGORIES RED	ORANGE	GREEN
Citizen and community		(?) Disintermediation	(Y) Socially inclusive
Employees		(Y) Reduce commute time. Reduce turnover	(?) Staff motivation
Service providers	(Y) Reduce premises costs (Y) Reduce recruitement cost (?) FM costs (?) Post costs (?) Telephony	Greater productivity	(Y) Service accessibility (?) Staff motivation (Y) Meet citizen e-expectations
External stakeholders		(?)Subregional economies of scale	(Y) Meet citizen e-expectations

The qualitative review of the benefit matrix suggested the modernisation diagnostic had provided evidence that a number of benefits identified at step 1 were potentially sustainable. The next step was to complete the business case by carrying out a quantitative assessment of the costs and savings derived from the key opportunities and benefits.

Step 4: Completing the business case

INTRODUCTION

To support the business case for implementing key initiatives a financial Return on Investment (ROI) model was developed covering each of the three areas of modernisation diagnostic: modernised working practices, implementation of CRM practices to improve citizen contact and e-enabling service delivery.

The outcome of Housing's reality check, identified a number of red and orange benefits that appeared sustainable. The purpose of the step 4, completing the business case was to use an established ROI model to identify and scrutinise the quantitative costs and savings associated with each of the following benefits highlighted by Housing's reality check:

Red benefits
Reduced office space
Reduced ICT infrastructure – related to fewer buildings
Reduced recruitment costs through improved staff retention
Potential savings from restructuring
Reduced commute time

Orange benefits
Restructuring – additional person hours
Reduced commute time– additional person hours
Reduced average response time –additional person hours
Citizen self-service (self-service)– additional person hours

ROI METHODOLOGY – STRENGTHS AND LIMITATIONS

The ROI analysis was carried out using a cashflow model as is common practice in the private sector. The model was developed specifically for Hillingdon's purposes using the same methodology as has been used to evaluate benefits of internet business solutions at Cisco Systems across a number of e-business domains including Customer Care, Supply Chain Management, Workforce Optimisation and E-Learning.

Simple cash-flow-based models like this have been widely developed by organisations looking at combinations of internet business solutions and IP technologies. ROI analysis is particularly helpful when used to consider not only new technologies being adopted but also impacts on working practices and associated business processes. This is the manner in which it was used at Hillingdon.

For each of the three areas of modernisation, a number of scenarios was created and modelled. Each scenario considered a different combination of initiatives with associated benefits and costs. In each case:

- Red benefits (ie hard cost reductions) were estimated in terms of their monetary value
- Orange benefits (ie time saving productivity benefits) were modelled in two ways; in terms of their monetary value (by equating the time saved to the average salary rate); and in terms of the additional hours of time available to provide extra value-added services
- Green (ie non-financial) benefits were not modelled as part of the ROI although they do, of course, form part of the overall justification for implementation.

It is important to interpret what comes out of an ROI analysis. It should not be thought of as a 'forecast' predicting a known future outcome. Such a view implies that the hard work is done once the business case is estimated. Rather, it is a way of helping an organisation to design the future that they wish to create. The ROI is a way of capturing assumptions about initiatives, their likely costs and benefits in a transparent manner which allows inspection and investigation of the implications of variations to the assumptions. Ultimately the real value of the model is making assumptions explicit and capturing the logical implications of those assumptions in terms of value to the organisation. The ROI at the planning stage does not address the key issue of allocating accountability to those responsible for achieving the estimated benefits. The following sections describe the analysis and main results from the analysis.

THE ROI BUSINESS CASE FOR E-WORKING – HOUSING SERVICES

Cost categories and indicative values:

The table below describes the major cost components in the ROI model. These costs

Cost summary	Estimated Costs
One-off costs	**£**
One-off electronic data management costs (backscanning of images, EDM software)	265,000
One-off voice and data network costs (enhanced corporate, mobile and teleworker infrastructure)	83,500
One-off implementation support costs (project management and employee training)	90,000
One-off real estate costs (potential reverse premiums and new office kit)	371,000
One-off delayering costs	80,000
Annual costs	**£**
Annual electronic data management costs (EDM software maintenance and upgrade)	15,000
Annual voice and data network costs (enhanced corporate and teleworker infrastructure)	128,500
Annual mobile technologies costs (mobile worker technologies)	25,000
Annual real estate costs (provision of alternative public contact premises)	100,000
Annual restructuring costs (potential redundancy and regrading costs)	128,250

are broken down into those which are one-off costs associated with the implementation of modernised working and recurring annual costs. Descriptions of each category are provided below.

Benefit categories and indicative financial values

To create the ROI business case, the costs outlined above were compared to the benefits achieved from modernised working. These benefits were derived by comparing the working practices under modernisation to those pre-modernisation and examining the costs associated with each. The resulting savings, over a four year period, are described in the following table.

Benefit category	Year 1 £	Year 2 £	Year 3 £	Year 4 £
Real estate – Benefit from released space	116,096	559,994	682,920	682,920
Technology Infrastructure - benefits from fewer location	7,560	18,060	21,000	21,000
Employee Retention – annual recruitment cost saving	11,100	22,200	33,300	44,400
Restructuring – Average annual net cost saving	142,500	213,750	285,000	285,000
Commute time – Value of commute time	49,138	73,707	98,276	98,276
Sub total – modernised working benefits	**£326,394**	**£887,711**	**£1,120,496**	**£1,131,596**

Indicative additional service provided by reallocating productivity time savings

In addition to 'red' cost savings' opportunities to save employee time were examined. These productivity (or 'orange') savings were converted to a cash equivalent by applying the average salary rates for the relevant job functions. These benefits differed from the red benefits in that they represent an opportunity for Hillingdon to do something with this saved time. At one extreme this could mean fewer people providing the same service at the other it could mean the same people providing more service to citizens.

Benefit category	Year 1 Hours	Year 2 Hours	Year 3 Hours	Year 4 Hours
Restructuring – additional person hours	6,380	9,570	12,760	12,760
Reduced commute time – additional person hours	2,200	3,300	4,400	4,400
Sub Total – modernised working benefits	**8,580**	**12,870**	**17,160**	**17,160**
Additional hours converted to full time equivalents(*)	**4.9**	**7.4**	**9.9**	**9.9**

(* Based on 1728 working hours per annum, ie 36 hours X 48 weeks)

Modernised working - scenarios modelled and outcomes

A number of scenarios were modelled which are summarised in the following table and described below. Each scenario represented a separate run of the model where some of the input assumptions were changed:

- In case 1 orange productivity benefits were not included; in cases 2 and 3 some productivity benefits were included
- In case 2 orange productivity benefits were evaluated in financial terms
- In case 3 orange productivity benefits were evaluated in terms of additional hours of service available

The table below summarises the outcome of each case 1, 2 and 3:

Modernised working scenario	Payback month	Net annual benefit In year 4	Additional hours In year 4
Case 1: Property benefits only	39	£435,000	0
Case 2: Full case with orange productivity benefits converted to monetary value	29	£735,000	0
Case 3: Full case with orange productivity benefits converted to hours	37	£480,000	17,160

The potential benefits of each case were profound – although to differing degrees. Taking Housing's annual gross office accommodation costs of £1,300,000:

- Case 1 represented an ongoing saving of 33% on office accommodation costs from year 4 onwards
- Case 2 represented an ongoing saving of 56% on office accommodation costs from year 4 onwards
- Case 3 represented an ongoing saving of 37% on office accommodation costs from year 4 onwards and 3% productivity gain from mobile and teleworking staff

Case 1: Property benefits only

The most significant red benefit identified

Case 1: Property benefits only	Year 1 £	Year 2 £	Year 3 £	Year 4 £
Total financial benefits	123,656	578,054	703,920	703,920
Total costs	978,000	268,500	268,500	268,500
Cumulative financial benefits	123,656	701,711	1,405,631	2,109,551
Cumulative costs	978,000	1,246,500	1,515,000	1,783,500
Annual net benefit	**-854,344**	**309,554**	**435,420**	**435,420**
ROI on financial benefits	**13%**	**56%**	**93%**	**118%**
Financial break even month				**39**

at step 1 was the potential to reduce office accommodation costs. This was examined in detail during the diagnostic phase (step 2). Case 1 examines the ROI associated with this option. Payback occurred just after three years and annual net benefits from year four onwards were £435,000. The table below describes the outcome from this scenario in more detail.

This shows that the upfront cost of e-working was estimated to be £978,000 with a net cost of £854,000 in year 1. The annual net benefit is positive in each subsequent year rising to £435,00 in year 3 and beyond. The ROI percentage value is cumulative benefits divided by cumulative costs, ie 100% ROI indicates break even.

Case 2: full case with monetary productivity benefits

In addition to consolidation of the property portfolio based on modernised mobile working practices the business case was extended to include:

- Improved employee retention achieved as a result of an enhanced work-life-balance for employees. It was assumed that this benefit would manifest itself in a reduced staff turnover rate with a resulting impact on recruitment costs. The ultimate improvement to the retention rate was assumed to be phased in over four years.
- Restructuring and redesign of supervisory processes were assumed to be phased from year 2 onwards.
- Reduced commute time for managers achieved through flexible working arrangements. It was assumed that these time savings are shared 50:50 between the employee and Hillingdon (for all grades below manager it was assumed that the employee takes all of this benefit).

In case 2 all productivity time saving benefits were converted to cash at the appropriate average salary rate. The outcomes were:

In this case break-even moved from month 39 to month 29 and recurring net benefits increased to £734,000 in year 4. This illustrated (in financial terms) the significant additional benefits from the extra initiatives considered in this case. However, it is unlikely that Hillingdon would attempt to convert productivity time saving benefits into cash. More likely would be case 3, where red benefits are evaluated in terms of cash savings and orange benefits are evaluated in terms of additional hours of service available for value added services.

Case 3: full case with service productivity benefits

The results from this case were:

Case 2: Wider Business Case	Year 1 £	Year 2 £	Year 3 £	Year 4 £
Total financial benefits	233,032	983,530	1,120,496	1,131,596
Total costs	1,058,000	396,750	396,750	396,750
Cumulative financial benefits	233,032	1,216,563	2,337,058	3,468,654
Cumulative costs	1,058,000	1,454,750	1,851,500	2,248,250
Annual net benefit	**-824,968**	**586,780**	**723,746**	**734,846**
ROI on financial benefits	**22%**	**84%**	**126%**	**154%**
Financial break even month			**29**	

Case 3 Full case with service productivity benefits	Year 1 £	Year 2 £	Year 3 £	Year 4 £
Total financial benefits	134,756	600,254	737,220	748,320
Total costs	978,000	268,500	268,500	268,500
Total hrs for additional services	4,400	17,160	17,160	17,160
Cumulative financial benefits	134,756	735,011	1,472,231	2,220,551
Cumulative costs	978,000	1,246,500	1,515,000	1,783,500
Annual net benefit	**-843,244**	**331,754**	**468,720**	**479,820**
ROI on financial benefits	**14%**	**59%**	**97%**	**125%**
Financial break even month				**37**
Cumulative additional service hrs	**4,400**	**21,560**	**38,720**	**55,880**

Financial break-even was achieved in month 37 and the annual recurring net benefit by year 4 was £480,000. In addition this case 'freed' 56,000 working hours in productivity gains over the four years (at a recurring annual rate of 17,000 hours) that could be made available to improve service quality to Housing's tenants and other service users' services. Of course the managerial challenge of ensuring that this 'freed' time is used effectively remains, and this is an issue that needs to be addressed to ensure that benefits are actually realised.

THE ROI BUSINESS CASE FOR CRM AND E-SERVICE DELIVERY – HOUSING SERVICES

INTRODUCTION

Building on the results from the e-service delivery and citizen contact diagnostics, the purpose of the ROI was to estimate the impact on Hillingdon of implementing CRM and moving routine enquiries towards web-based citizen self-service.

However, there was less clear cost data available in this area and more uncertainty about the impact of the benefits identified by the diagnostic. Therefore the initial work in developing a business case focused on establishing an hypothesis as to what impact was hoped for, how it may

be achieved and what some of the key risks appeared to be. To do this a cause and effect map was developed to make explicit the key relationships impacting the likely outcome.

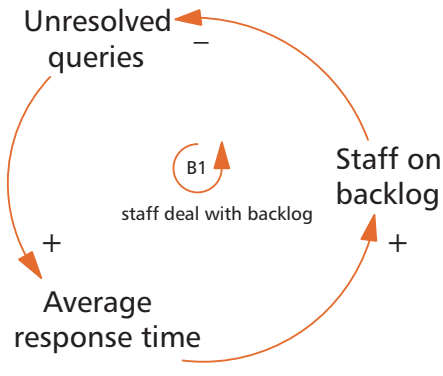
Conventions used in the diagrams

In the diagrams that follow a '+' indicates that the variable at the head of the arrow moves in the same direction as the variable at the foot of the arrow while a '-' indicates that the variable at the head of the arrow moves in the opposite direction to the variable at the foot of the arrow (all other things being equal). The direction of the arrow shows the hypothesised nature of causality. For example an increase in unresolved queries (foot of the arrow), other things being equal, will lead to an increase in the average response time (head of the arrow).

Where feedback loops are formed in the diagram 'B' indicates a balancing loop where increasing (or reducing) any variable in the loop then working round the chain of cause and effect leads to a compensating decrease (or increase) in the same variable next time round. Conversely 'R' indicates a reinforcing loop where any increase or decrease in a variable is amplified by working through the chain of cause and effect.

Hypothesis for impact of CRM and e-services deployments on service capacity, aggregate demand and service quality

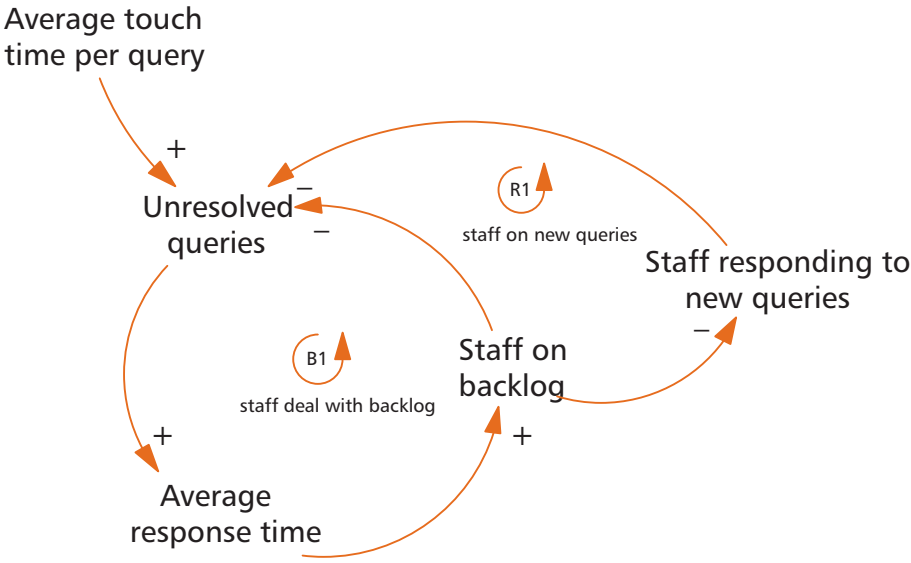
Initially, consideration was given to the way unresolved queries are dealt with. As they build up, the response time to the customer gets longer (ie time to deal with the query increases) thus more staff are allocated to dealing with the backlog of unresolved queries. This is captured in the first balancing loop shown right.

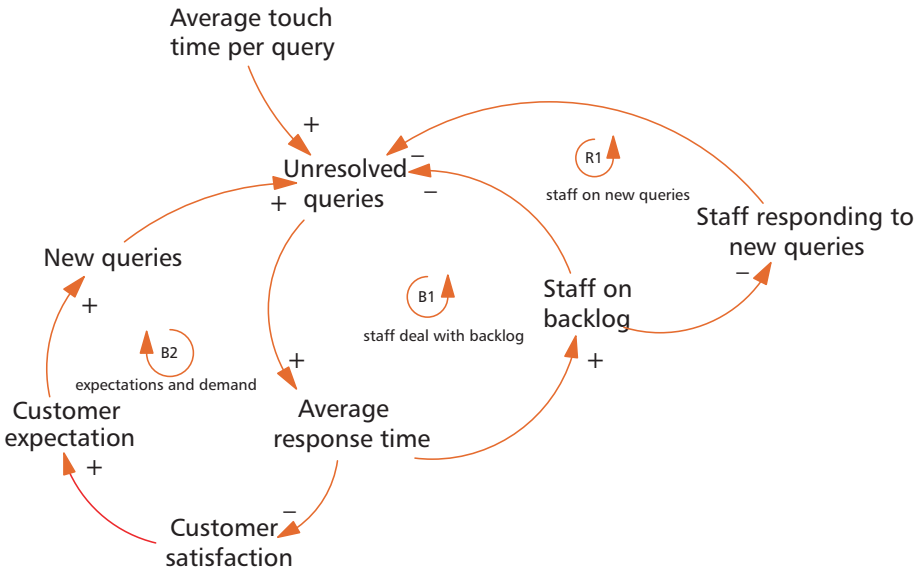


Next, consideration was given to the impact of allocating more staff to deal with the backlog of unresolved queries. This results in fewer staff available to deal with new queries. Consequently, as staff are reducing the backlog of existing queries, new queries are being added to the same backlog. This compensating behaviour shown in the reinforcing loop means that, overall, the backlog may be

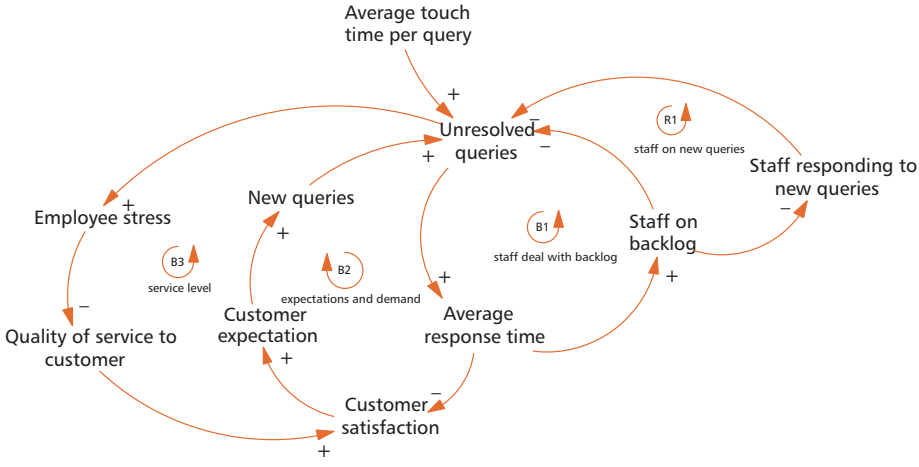
increasing or decreasing depending on the arrival rate of new queries and the rate at which they are being resolved. What tends to happen over time is that demand is fairly constant and, with a fixed allocation of resource between the backlog and new queries, a more or less constant level of unresolved queries results.

What is the impact of reducing the average time to deal with a query? Irrespective of why this time may be decreased, what is the likely impact on the backlog of unresolved queries? An initial response is that as queries are dealt with faster, other things being equal, this would lead to a fall in the backlog. However, this means that the equilibrium described in loops B1 and R1 is disturbed, therefore consideration needs to be given to any knock on effects this may have.





The model developed so far shows the impact would be entirely positive, however demand had not been introduced to the model at this stage. Loop B2 illustrates a counter-effect that could potentially increase the backlog once again. As customers are served faster, their satisfaction levels increase and, over time, they come to expect this faster service as the norm. Consequently, they are more likely to come back with another query in the expectation that this too will be dealt



with promptly. Thus the overall demand increases as more new queries emerge which once again adds to the backlog.

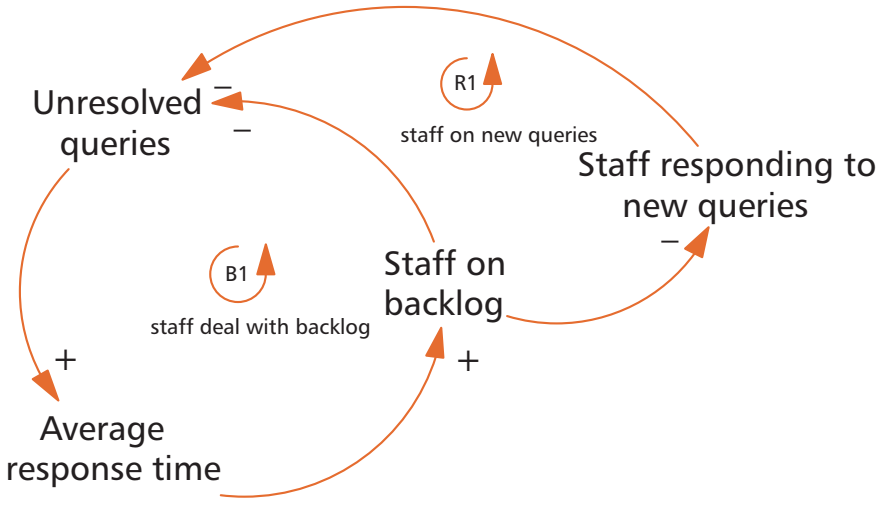
A further complication was added when considering the impact on the workforce of high levels of unresolved queries. Customers become agitated and staff are put under increasing levels of stress. If maintained over a period of time this is likely to lead to a deterioration in the service provided to customers and a reduction in the level of customer satisfaction.

This analysis suggests that reducing touch time in a stable environment produces at least three effects:

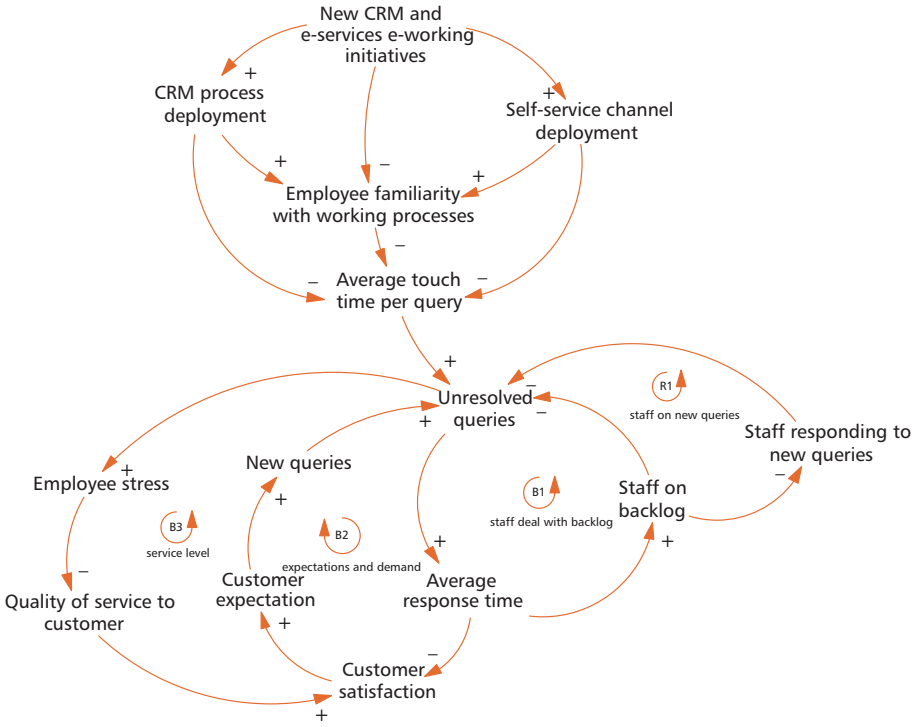
1. As the average query handling time is reduced unresolved queries are reduced and customer satisfaction improves.
2. This can lead to an increase in demand which increases the backlog of queries and reduces customer satisfaction.
2. In the meantime an increasing backlog can lead to a deterioration of service which reduces customer satisfaction, with potential implications for discretionary demand.

So, it is important that improvements in customer satisfaction achieved through reduced touch time are not lost through a combination of excess growth in aggregate demand and deteriorating quality of service.

Finally consideration was given to the mechanism by which average touch time would be reduced through implementation of CRM processes and introduction of self-service channels on the web. In doing this it was recognised that these initiatives eventually have the desired effect on touch time. However, in the short term these new ways of working mean that the workforce have to learn new skills, which can actually increase touch time during this transition period. This means that there may actually be an initial deterioration in service to customers while the new processes are 'bedded in.'

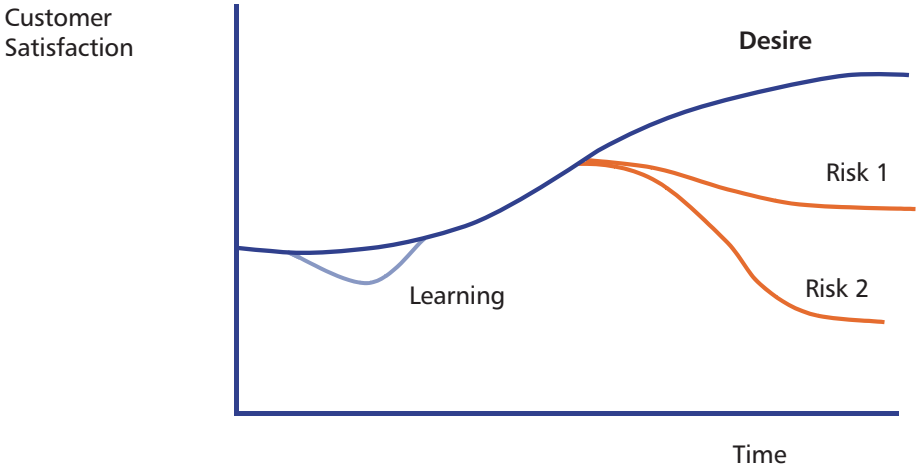


Hypothesis for impact of CRM and e-services deployments on service capacity, aggregate demand and service quality



The desired impact of reduced touch time, achieved via the introduction of self-service through the web and CRM, will be to reduce average response times for dealing with queries and improve customer satisfaction. However, the impact of increasing demand anddeteriorating service levels could reduce customer satisfaction. Furthermore customer satisfaction could, potentially, fall to levels below the initial levels achieved prior to the introduction of e-services (see line 'Risk 2' below). These hopes and fears are captured in the following diagram.

Potential impact of CRM and e-services on citizen satisfaction



In conclusion this means it is important to understand the capacity of the workforce, to manage customer expectations and the quality of service provided.

Investigating The Extra Capacity Generated By CRM And E-Services:

To manage these risks Hillingdon wanted to estimate the additional service capacity it was capable of generating through modernisation. An ROI model was the ideal vehicle to do this as it provided the means of translating the CRM and e-services initiatives into (orange) productivity time savings. However, the implementation was not defined sufficiently at the time of this analysis to obtain accurate costs of implementation, consequently the analysis focused on the productivity benefits ie this was an 'R' analysis rather than an 'ROI' analysis. This provides the basis for planning enhancements to service, actively managing expectations and considering value by comparing costs, when known, to anticipated service improvements.

The following table describes the initiatives and benefits analysed for CRM and e-service delivery.

Case	Initiative	Description	Benefits
Case 1	CRM	• Single point of contact for citizens • Consolidated public contact centre	• Faster service for citizen • Reduced touch time for Hillingdon • Consistency of service
Case 2	e-services	• Citizen self-service • Online transactions • E-speed • Disintermediation	• Faster service for citizen • Reduced touch time for Hillingdon • Consistency of service
Case 3	CRM and e-services	• Multi-channel customer contact facility	• Faster service for citizen • Reduced touch time for Hillingdon • Consistency of service
Case 4	Regional consolidation	• Consolidation across local authorities	• Economies of scale • Adoption of best practices

These four cases were considered in the order suggested as this represents the most likely sequence of implementation. Cases 1 to 3 are self-explanatory, case 4 considers the potential impact of regional consolidation across local authorities beyond Hillingdon, for example the West London Alliance.

The scenarios modelled and outcomes

The results from the analysis indicates that between 2.3% and 6.3% of the total workforce can be freed up from the introduction of the initiatives described in cases 1 to 3. Case 4 was not estimated as regional delivery of services has not been sufficiently well defined. This provided an estimate that could be tested in pilots to determine the actual level of additional capacity generated through the introduction of these initiatives. Once these estimates are validated via pilots they may be compared to the cost of implementation to assess value for money. They can then be used to set policies to manage citizen expectations (and future demand) as well as desired service levels. All three components: capacity, demand management and quality of service should then form part of the performance review system.

Case	Impact by year 4	Equates to
Case 1: CRM only	12 people freed up to deliver value added service (approx)	2.3% of the total workforce
Case 2: e-service only	21 people freed up to deliver value added service (approx)	4.0% of the total workforce
Case 3: CRM and e-service	33 people freed up to deliver value added service (approx)	6.3% of the total workforce
Case 4: Regional e-service	Not estimated, as solution not scoped. Clearly potential for additional benefit	

SUMMARY – COMPLETING THE BUSINESS CASE

1. The business case for modernised working practices shows a payback of just over three years on a cashflow basis (ignoring any benefits of charges to capital). The total cost, both capital and operating expenditure, over four years is approximately £1.8m. By the end of this period annual net benefits of something like £435 to £480k were estimated with up to an additional 17,000 hours per annum (or approx 10 FTE's) of value-added service time made available.
2. CRM and e-service delivery were less well defined and pilots are now under way that should allow a better estimation of costs. However, a compound growth in productivity of approximately 6.3% is estimated from full implementation of these solutions which would result in an additional 51,000 hours of time (or 33 FTE's) for value-added customer service.

This case study has demonstrated the value of a rigorous structured approach to identifying the costs, benefits and risks associated with implementing modernised working practices and e-government. The process of articulating and quantifying the business case was an invaluable step in understanding and communicating the opportunities at stake. This analysis can now be extended to all other service areas and will form the basis of setting and managing targets for real improvements in services to citizens.

Michael R. Bloomberg
The 108th Mayor of the City of New York

He was born in 1942 to middle-class parents in Medford, Massachusetts, where his father was the bookkeeper at a local dairy. Mayor Bloomberg's thirst for information and fascination with technology was evident at an early age, and led him to Johns Hopkins University, where he parked cars and took out loans to finance his education. After his college graduation, he gained an MBA from Harvard and in the summer of 1966 he was hired by Salomon Brothers to work on Wall Street.

As a young trader, he created a financial information computer that would collect and analyse different combinations of past and present securities data and deliver it immediately to the user. In 1982, Bloomberg LP sold 20 subscriptions to its service; 20 years later, Bloomberg LP has over 165,000 subscribers worldwide. As the business proved its viability, the company branched out and in 1990 Bloomberg LP entered the media business, launching a news service, and then radio, television, internet, and publishing operations.

He funded relief programs for victims of domestic violence in New York City, sponsored the Children's Health Fund's Mobile Medical Unit, which serves the children of homeless families, and supported construction of new athletic fields at city high schools throughout the five boroughs. He also served on the boards of 20 different civic, cultural, educational and medical institutions, including: the High School for Economics and Finance; Lincoln Center for the Performing Arts; Metropolitan Museum of Art; Police & Fire Widows' & Children's Benefit Fund; SLE (Lupus) Foundation and Prep for Prep.

In 1997, Michael Bloomberg published his autobiography, *Bloomberg by Bloomberg*. All of the royalties from sales of the book are donated to the Committee to Protect Journalists.

Monica Bernestrom
Head of the Department TIME (Telecom, IT, Media and Entertainment) at the Economic Development Agency in the City of Stockholm.

Member of the working group 'IT and Democracy' run by the Swedish Government. Member of the Council of Mobile Services. Chairman of the national council of 'e-services and growth'

Dave Carter

Director of the Manchester Digital Development Agency following on from being Acting Head of the Economic Initiatives Group within the Regeneration Division of Manchester City Council.

Over the past 15 years he has been involved in developing projects utilising information and communication technologies in the context of urban regeneration.

Pacey Cheales

Corporate Programme Manager for the Hillingdon Improvement Programme (HIP)

Pacey Cheales is a corporate Programme Manager for the Hillingdon Improvement Programme (HIP), where he is leading the implementation of flexible working and e-delivery programme for the council. He developed the initial Modernisation Business Case in Housing Services in 2001, and worked with Cisco Systems in 2002 to create the final case study that was referenced in the UK Government's National e-Strategy for Local Government in late 2002. Since then, in partnership with Cisco, he has presented Hillingdon's Modernisation Business Case at both national and regional seminars. He has 17 years' experience in strategic business support, project and programme change management with London authorities; as well as an MBA from Warwick Business School and Prince2 qualification.

Joan Clos

Mayor of Barcelona since 1997.

In 1999 he was elected for a four-year term, and was then re-elected in the municipal elections of May 2003. Joan Clos was born at Parets del Vallès in 1949. He is a doctor, having taken his degree in medicine with the first graduating class from the Universitat Autònoma de Barcelona, and studied at the Hospital de Sant Pau, one of Barcelona's modernist architectural jewels. After a period working as an anaesthetist, he decided on a radical change of course in his professional life, moving into epidemiology, community medicine and health resource management. He took part in the movements of anti-Franco professionals and health services reform. During the post-Franco period of political transition he worked in primary healthcare with a group of doctors who defended the political transformation of the country as a means of reclaiming professional dignity.

Joan Clos has led the process of transformation from the industrial city born in the 19th century towards the 'city of knowledge' of the 21st century.

The future of welfare, cohesion and opportunities for Barcelona, destined to be a natural leader in southern Europe, depends on its excelling in the new economy.

Anita Ferm
Director of Education Administration, Stockholm

Anita Ferm has for many years been Director for the Stockholm Education Administration with responsibility for upper secondary schooling, local-government administrated adult education, Swedish language tuition for immigrants, and special schools for people with learning difficulties. Anita Ferm has also held positions directed towards adult, technical and vocational education at the Swedish Educational Agency and at the Swedish Ministry of Education.

Per-Olof Gustafsson
Deputy Managing Director, The City of Stockholm's Economic Development Office and Chairman of IT-forum (an organisation for cooperation and development in the IT-sector in the Stockholm region)

Some examples of Mr Gustafsson's earlier positions are Controller, Deputy IT Director and Director for external relations at the City of Stockholm's Executive Office directly subordinate to the CEO.

Saeed Al Muntafiq
Director General of the Dubai Development and Investment Authority

Saeed Hussain Al Muntafiq graduated from Schiller International University, UK, with a Bachelor of Arts Degree in International Relations with Psychology. He also attended the Program Management Development at Harvard Business School in USA.

Saeed Al Muntafiq has worked for Emirates Petroleum Products Company (EPPCO) for a period of 11 years. While at EPPCO, he spent two years at Caltex Malaysia as the Assistant Director of Marketing. In December 1999, he joined the Dubai Technology, E-Commerce and Media Free Zone as Project Manager to compile the strategy for Dubai Internet City and in May 2000 was promoted to the role of Chief Executive Officer of Dubai Media City While at DMC, Saeed Al Muntafiq achieved numerous successes including attracting 400 companies ranging from broadcast to publishing, formulating the Freedom of Expressions Laws and engineering the infrastructure and legal landscape for the media industry to operate in Dubai. In August 2001 Saeed Al Muntafiq was appointed Chief Executive Officer of

Dubai Ideas Oasis and in November he was given the additional role of Vice-President of Real Estate and Facility Management of the Free Zone. In March 2002 he was again promoted to the role of Chairman of the Board of Media City.

In April 2002 Saeed Al Muntafiq was appointed Director General of the Dubai Development and Investment Authority where he now heads a team that is responsible for advancing the economic development and growth of Dubai.

Slawomir Najnigier

Deputy Mayor of Wroclaw

In 1983 Slawomir Najnigier graduated from the Department of Fundamental Technology Issues at the Wroclaw University of Technology and in 1988 he graduated from the Faculty of National Economy at the Wroclaw University of Economics. Following this he worked as chairman of a computer company and since 1990 he has been a councillor and a member of the Municipal Government of Wroclaw, responsible for finances and ownership transformations. From 1992-1993 he was Undersecretary of State at the Ministry of Physical Planning and Construction and in July 1994 he became Deputy Mayor of Wroclaw, responsible for the municipal economy. During the flooding in Poland in 1997 he headed the Wroclaw District Flood Committee and then became President of the State Office for Housing and Urban Development. In 2002 he was Adviser to the Executive Board of KGHM Polish Cooper Ltd.

Steve Palmer

Head of Technology and Communications, Hillingdon Council

Steve Palmer is Head of Technology and Communications at Hillingdon Council in London and he has a brief for E-Service delivery both within the Borough and as part of its regional working. He was elected to be Chairman of SocITM London Branch in November 2001 having been its Secretary for the previous 2 years. The broad issues of citizen access and identification are key and his Communications brief includes management of the Council's Press and Public Relations functions as well as the Council's ICT infrastructure. As a geographic area Hillingdon is currently enjoying unprecedented commercial investment but it also suffers from significant deprivation. The Borough is multi-cultural and reflects the residency of Heathrow within its Boundaries.

Prior to his move into a Corporate level role he had a 20 year background at senior level in delivering and supporting front line service delivery including refuse collection, street cleaning, vehicle maintenance and engineering. He has also managed a diverse range of

environmental issues including working with the Coroner's Service, Infectious Disease Control and other similar, glamorous, functions. He has acted as an adviser to the Law Society Local Government Group and has chaired a number of policy development teams. He lives in Essex, is married with two grown-up children, and has two grandchildren. He has the rare distinction of being one of the select few Leyton Orient Football Club supporters and enjoys travel and reading in his spare time.

Silvio Scaglia
Chairman of e.Biscom, Milan

Silvio Scaglia was born in 1958 in Lucerne, Switzerland, and grew up in Novara.

After graduating from the Polytechnic University of Turin in 1983 with a degree in Electronic Engineering, specialising in telecommunications and computer science, he worked for a short period in Aeritalia Spazio on the data transmission system between the tethered satellite and the Space Shuttle.

In the autumn of 1983, he moved into the consultancy field, becoming part of Arthur Andersen Management Consulting, transferring in 1986 to McKinsey & Co, and subsequently in 1989 to Bain Cuneo e Associati. During this time, he was mainly involved in the definition of strategy projects, marketing and organisation regarding the automobile sector and distribution in Italy, Switzerland and Germany.

Two years later, in 1991, he moved from the consultancy field to direct management entering the Piaggio Group, initially as General Director of Motovespa S.p.A. in Madrid, and then as Senior Vice-President of non-European activities, establishing and managing companies in China, India, Indonesia and South America.

At the beginning of 1995 he entered Omnitel as Chief Operating Officer and became CEO in July 1996. During this period Omnitel underwent its transformation from start-up to successful company, becoming the second largest mobile operator in Europe and one of the five highest value Italian companies.

At the end of July 1999, Silvio Scaglia founded e.Biscom with Francesco Micheli and has been CEO ever since. In April 2003 he was also appointed Chairman of the Group. e.Biscom's success comes from the development of a new generation of broadband telecommunications services, based on the innovative Fiber To The Home and IP technology, allowing the company to become Italy's main alternative carrier. Today e.Biscom employs over 1,850 people and has total revenues of about 237 million euros.

Adrian Slatcher
ICT Development Officer of the Manchester Digital Development Agency and poet

Since 1999 Adrian Slatcher has worked in developing, researching and disseminating ICT in universities, local government and the voluntary sector. He has published poetry and short stories widely. He is now ICT Development Officer of the Manchester Digital Development Agency

Senator Gunnar Uldall
Minister for the Economy and Employment

Gunnar Uldall was born in Hamburg. After military service he studied Political Economics. In 1962 he became a member of the CDU and in 1966 a management consultant. From 1966-1982 he was a Member of Hamburg City Council and then Member of the German Parliament. From 1996-2001 he was spokesman on economic policy for the CDU/CSU Parliamentary group. In 1996 he published 'Die Steuerwende – Eine neue Einkommenssteuer, einfach und gerecht' ('The Tax Reform, a new income tax, simple and just') Knauer Verlag, München

Gunnar Uldall has won many awards – the 1997 Deutscher Mittelstands Prize and the 1998 Wolfram-Engels Prize for proposals on the reform of Taxation. Since 2001 he has been Minister for Economy and Employment.

Simon Willis
Director, Public Sector, Internet Business Solutions Group Europe, Middle East & Africa Cisco Systems, Inc

Simon Willis came to Cisco after 15 years of work in government and e-business. He has held various senior management and policy positions in the UK Government, including private secretary to a Minister of State, head of operational reform at the Department of Social Security, head of pensions equalisation and Chief Executive of a national disability agency. He ran a high-level criminal justice operation and helped design the new financial services regulatory regime for the UK Treasury. He also headed numerous UK delegations to the EU, UN and OECD. After leaving Government he worked for a large systems integrator, where he focused on IT integration and e-business work specialising in payment systems, security and market infrastructures. He has run the European Public Sector Group at Cisco's Internet Business Solutions Group for three years.

Simon Willis has a first-class degree in Politics, Philosophy & Economics from Balliol College, Oxford.

Cisco Internet Business Solutions Group

As a long-term trusted business and technology advisor, Cisco Internet Business Solutions Group (IBSG) helps customers maximize their return from technology investment. IBSG business and industry experts bring customers the latest industry trends and technology innovations, sharing Cisco and industry best practices. The group engages globally with Cisco's largest customers to help refine their business processes to increase productivity, reduce costs, and create new revenue streams. IBSG offers business and internet expertise across seven vertical industries, including the public sector. It works with more than half the largest organisations across each vertical industry and all of the top ten global telecoms service providers.

Simon Willis is Director of the Public Sector team, Internet Business Solutions Group, Cisco Systems, Europe, Middle East and Africa. He works as trusted advisor at the most senior levels of large public-sector organisations where transformation is imminent or there is the potential for ground-breaking projects likely to be emulated by others. These projects include tax, education and payment systems along with mass client service and claims-processing organisations. Other projects range from integrated justice and security initiatives, large procurement operations as well as whole-government programmes and those seeking seamless government and transformed service delivery across their full range of services. Among his team's current engagements are public-sector projects in the Netherlands, Belgium, Spain, Italy, Germany, France, UK, Russia, Jordan, Lebanon, Turkey, Morocco, Romania, Poland, Bulgaria and Hungary.

Thought Leaders

Essays from urban innovators

Edited by Simon Willis

The ideas explored in this book chart the emergence of a political and economic phenomenon – the city as the new connected republic of the 21st Century. Simon Willis, Director of the European public sector team in Cisco Internet Business Solutions Group, has collated essays that show how different cities, at the cutting edge of the process, are grappling with the various stages of connectivity.

There are striking differences between their experiences. But they also have certain things in common. They are driven by their citizens' demands for political re-engagement and for better, more responsive, more accessible city services. They are also driven by competitive forces. As they look outside their nation state boundaries to define what they are going to be in the future and how they are going to be successful in the newly emerging global environment. The successful city learns not just how to work differently within and between its departments and agencies but how to collaborate with its inhabitants on the project and make them part of the success of their own city – thus giving ownership of the city back to its citizens.

Monica Berneström, Stockholm
Michael R. Bloomberg, New York
Dave Carter, Manchester
Pacey Cheales, Hillingdon
Joan Clos, Barcelona
Per-Olof Gustafsson, Stockholm
Anita Ferm, Stockholm
Saeed Al Muntafiq, Dubai
Slawomir Najnigier, Wroclaw
Steve Palmer, Hillingdon
Adrian Slatcher, Manchester
Silvio Scaglia, Milan
Gunnar Uldall, Hamburg
Simon Willis, Cisco

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